



# 2021 Geely GEOMETRY C Overseas Model Repair Manual

The Manual provides information on GEOMETRY C transmission overhaul

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## Model overview

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## 1.1 Warnings and Precautions

### 1.1.1 Description and operation

#### 1.1.1.1 Warnings and Precautions

##### Definitions of 'Warning', 'Note' and 'Prompt'

Diagnostic and service procedures herein include two general and specific "warnings", "notes" and "tips". Geely is committed to providing maintenance information to help after-sales service technicians diagnose and repair the system so that vehicles can run normally. However, if the technician does not follow the recommended method, some procedures may cause danger to the technician.

'Warning', 'Note' and 'Prompt' are given to prevent the occurrence of the above-mentioned dangers, but not all dangers are foreseeable. Such information is located prominently in the Maintenance Manual. Such information is prepared to prevent following situations:

- Serious injury to personnel
- Vehicle damage
- Unnecessary vehicle maintenance
- Unnecessary components replacement
- Improper repair or replacement of vehicle parts

##### Definition of 'Warning'

When you encounter a 'warning', you are required to take necessary measures or prohibit certain measures. Ignoring "warnings" may result in the following consequences:

- Serious injury to personnel
- This will cause serious personal injury to the driver or passenger of the vehicle.

##### Definition of 'Note'

'Note' requires special attention to necessary measures or prohibited measures. Ignoring "notice" may result in the following consequences:

- Vehicle damage
- Unnecessary vehicle maintenance
- Unnecessary components replacement
- Abnormal operation or performance of the system or component being maintained
- Damage of related systems or components
- Damage of fasteners, basic tools or special tools
- Leakage of coolant, lubrication oil and other major fluids of electric drive system

##### Definition of 'Prompt'

The "prompt" statement emphasizes the necessity of a diagnostic or maintenance procedure. The purposes of the "prompt" statement are as follows:

- Define the maintenance procedures
- Provide additional information to complete a procedure
- Explain the reasons for operating in accordance with the recommended maintenance procedures
- Provide information that helps complete the maintenance procedure more efficiently
- Provide the technician with information on past experiences to make the maintenance procedure easier to complete.

##### Warning about vehicle lifting

###### Warning

To avoid vehicle damage, serious personal injury and even death, when the main components are removed from the vehicle, and the lifter is used for support, the jack should be used to support the vehicle part corresponding to the components to be removed.

##### Warning about handling anti-lock brake system components

###### Warning

Certain components of anti-lock brake system (ABS) cannot be repaired alone. Attempt to remove or disconnect certain system components may result in personal injury and/or abnormal system operation. Only those components that are allowed to be removed and installed can be repaired.

##### Warning about equipment approved for collision repair

###### Warning

To avoid personal injury from exposure to toxic fumes generated from welding arc or electroplating (zinc oxide) metals when grinding/cutting any type of metal or sheet moldings, the work must be performed in a well-ventilated area, and the workers should wear respirators, goggles, earplugs, welders' gloves and protective clothing.

## Warning about assistant driving

## Warning

When the technician inspects the repaired faulty part, the assistant should drive the vehicle. Otherwise, it may cause personal injury.

## Warnings regarding battery disconnection

## Warning

Before maintaining any electrical component, the power supply mode of the start-and-stop button must be in the OFF position, and all electrical loads must be “OFF” unless otherwise stated in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, it is also needed to disconnect the battery negative cable. Violation of these instructions may result in personal injury and/or damage to the vehicle or vehicle components.

## Warning

During the maintenance of the airbag, the negative electrode of the battery must be disconnected for at least 90s before other operations.

## Warnings regarding power battery

## Warning

1. Wear insulating gloves, high-voltage insulating shoes and protective caps when connecting high-voltage copper bars.
2. Before assembling the high-voltage copper bars, make sure that there are no foreign matters such as heat-shrinkable sleeve (adhesive tape) on the contact surface between the connector and the pole.
3. For placing the short-circuit prevention tooling, it is required to check that the device is placed correctly before installing the wiring harness.
4. Bare copper bars not connected to poles need to be wound with insulating tape to prevent short circuit
5. The power battery should be handled with care.
6. Air tightness test shall be carried out after installation of water-cooled panels and water-cooled connecting pipe.
7. Air tightness test shall be carried out after the power battery pack is assembled.

## Warning about brake dust

## Warning

When maintaining wheel brake components, please avoid the following operations:

- Do not repair and grind the brake friction facing
- Do not sandpaper the brake friction facing
- Do not clean wheel brake components with a dry brush or compressed air

## Warning

Brake parts of some models or after-sales installed brake parts may contain fiber, and such fiber will be mixed in dust. Inhalation of fiber-containing dust will cause serious damage to the human body. Please use a damp cloth to clear any dust on the brake parts.

## Warning about brake fluid

## Warning

Brake fluid is very easy to absorb moisture and moisture. Do not use brake fluid that may be contaminated by water in an open container. Using improper or contaminated brake fluid may cause system failure, loss control over the vehicle control and personal injury.

## Warning about the irritation of brake fluid

## Warning

Brake fluid is irritating to skin and eyes. Once contacted, the following measures should be taken:

- Eye contact - flush thoroughly with water
- Skin contact-wash with soap and water

## Warning about brake pipe replacement

## Warning

When replacing the brake pipe, please install and fix it carefully, and be sure to use the correct fasteners, otherwise it may cause damage to the brake pipe and brake system and thus cause personal injury.



Warning about the inhalation of refrigerants R134a and R1234yf

Warning

Inhalation of air-conditioning refrigerant R134a/R1234yf and lubrication oil vapor or mist should be avoided for fear that it will irritate the eyes, nose and pharynx. Work in a well-ventilated area. When R134a/R1234yf is drained from the A/C system, maintenance equipment (R134a/R1234yf recovery equipment) certified to meet the requirements of SAEJ2210 should be used. In case of accidental fluid drainage from the system, the working area must be ventilated before the maintenance continues. Other health and safety information can be obtained from refrigerant and lubricant manufacturers.

Warning about collision sectioning

Warning

Sectioning can only performed at the recommended part, otherwise it will damage the integrity of the vehicle structure and cause personal injury in the event of a vehicle collision.

Warning about cracks in vehicle windows

Warning

If a window glass is cracked but remains intact, protective tapes should be cross-pasted to the window glass to prevent further damage to the window glass and personal injury.

Warning about the window lifting

Warning

When operating the driver's power window switch, the window without the anti-pinch function moves extremely fast and cannot be stopped, which may cause personal injury.

Warning about eye protection

Warning

Approved goggles and gloves should be worn to minimize the risk of personal injury when performing certain procedures (such as welding or cutting).

Warning about sound insulating foam

Warning

When an open fire is to be used in the vehicle body maintenance process, the sound-proof foam materials within the range of 152.4mm (6in) from the open fire must be removed. When the sound-proof foam materials are reinstalled, smoke inhalation should be avoided for fear that it will be harmful to health.

Warning about the handling of glass and metal plates

Warning

When any glass or metal plate with sharp edges or rough edges are processed, approved goggles and gloves should be worn to reduce the risk of personal injury.

Warning about halogen bulbs

Warning

The halogen bulb contains high-pressure gas, improper handling may cause the bulb to explode into glass fragments. To avoid personal injury:

- Before replacing the bulb, it is needed to turn off the light switch and make the bulb to cool down.
- Keep the light switch off until the bulb has been replaced.
- When replacing the halogen bulb, be sure to wear protective goggles.
- When holding the bulb, be sure only hold the lamp base and avoid touching the glass.
- Keep the bulb away from dust and moisture.
- Discard used bulbs correctly.
- Keep halogen bulbs away from children.

Warning about moving parts and hot surfaces

Warning

Avoid contact with running components and hot surfaces when working around a running engine to prevent personal injury.

Warning about the removal of the fluid reservoir cover

Warning

To avoid scalds, the fluid reservoir cap must not be removed before the electric drive system has cooled down. If the fluid reservoir cap is removed when the electric drive system and radiator have not cooled down, the cooling system will release hot high-pressure liquid and vapor.

## Warning about maintenance of cooling system

## Warning

As long as there is pressure in the cooling system, even if the solution in the radiator is not boiling, the temperature of the solution will be much higher than the boiling temperature. If the fluid reservoir cap is opened and cooling system maintenance is performed when the electric drive system is not cooled and the pressure is still high, the coolant in the electric drive system will immediately boil and may be sprayed on the person who opens the radiator pressure cap, causing severe burns.

## Warnings regarding road test

## Warning

Under the premise of ensuring safety, test the vehicle on the road in accordance with all traffic laws. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions may cause serious personal injury and damage to the vehicle.

## Warning about the airbag system

## Warning

The vehicle is equipped with an airbag system. Failure to follow the correct operation procedures will result in the following situations:

- Airbag deployment
- Pretensioner burst
- Personal injury
- Unnecessary airbag system maintenance

## Warning

To avoid the above situations, follow the following criteria:

- You should refer to the airbag system components view to determine whether you are performing maintenance operations on the airbag system components, their surroundings, or their wiring.
- If you are performing maintenance operations on parts of the airbag system components, their surroundings, or their wiring, you should remove the airbag system.

## Warning about the high temperature of the deployed airbag module

## Warning

After deployment, the metal surfaces of the airbag system components may be very hot. To avoid fire and personal injury:

- Allow sufficient cooling time before touching any metal surfaces of airbag system components.
- Do not place the inflated airbag system components next to any flammable materials.

## Warning about the clock spring of the airbag system

## Warning

Improper installation of the clock spring assembly will damage the internal spiral coil of the clock spring, which may cause the coil to malfunction and cause the airbag module to not work normally, thereby causing personal injury.

## Warning about scrapping the airbag module of the safety system

## Warning

In order to prevent accidental deployment of airbags and cause personal injury, the undeployed airbag modules shall not be disposed of as conventional workshop waste. If the sealed container is damaged during the scrapping process, some substances contained in the undeployed module may cause serious illness or personal injury. Use the deployment procedure to safely scrap the undeployed airbag module.

## Warnings about the handling and storage of airbag system and airbag module

## Warning

When transporting non-deployed airbag modules:

- Do not carry the wires or connectors on the airbag module.
- Make sure that the air bag opening is not facing you or other people.

### Warning

When storing the undeployed airbag module, make sure that the airbag opening is not facing the surface where the airbag module is placed. The airbag openings should not be downward. It is prohibited to place any object on the airbag modules. There should be enough space around the airbag for fear of accident deployment, otherwise it will cause personal injury.

It is prohibited to immerse the non-deployed airbag modules in water or contact them with other liquids.

It is prohibited to place non-deployed airbag modules near fire or in high-temperature areas for fear of accidental deployment of airbags and personal injury.

Warning about handling the collision sensor of the airbag system

### Warning

Do not impact or shake the airbag system collision sensor. Before charging the collision sensor, make sure that the collision sensor is firmly fixed. Failure to follow the correct installation procedure may cause accidental detonation of the airbag system or malfunction at the time of detonation, causing personal injury.

Warnings regarding power battery

### Warning

Electric vehicles contain a set of sealed high-voltage lithium ion power batteries. If the power battery is not properly exposed, there will be a danger of severe combustion and electric shock, which may lead to serious casualties and environmental pollution.

Warning regarding high voltage safety precautions

### Warning

Do not touch the high-voltage components with bare hands without disconnecting the high-voltage power.

High-voltage components of the vehicle include: drive control device, high-voltage power distribution device, high-voltage and low-voltage charging system, high-voltage main cable, fast charging plug, fast charging socket, power battery, electric drive system, slow charging socket, slow charging plug, electric compressor, electric heater, etc.

After the vehicle runs for a period of time, surface temperature of the electric drive system, the drive control device and the electric vacuum pump is relatively high; if air conditioner is used for refrigeration, the surface temperature of electric A/C compressor and radiator is higher. During the charging process of the vehicle, the surface temperature of the on-

board charger is relatively high. Do not touch the above parts with bare hands under these circumstances.

It is strictly prohibited to disassemble the high-voltage electrical components in the vehicle without permission, and to unplug or disconnect the high-voltage connectors and cables on the vehicle without permission; otherwise, serious electric shock injury and vehicle damage may be caused. High-voltage cables in the vehicle are all wrapped with orange bellows, please pay attention to identification.

## Warning regarding the vehicle collision accident

## Warning

In case of a vehicle collision (collision of body front, rear, left, right parts and impact against ground):

- Even if the vehicle can still run, stop safely, buckle the parking brake switch, operate the start switch in LOCK gear, and do not touch the body metal.
- It is forbidden for any person to repair the vehicle when the power is not completely cut off for any case.
- Check the vehicle's high-voltage components and wiring harness for damage and exposure (component location can be determined from the high-voltage component layout). To avoid personal injury, do not touch high-voltage wiring harness, connectors and other high-voltage components (IPU, power battery, etc.). Do not contact damaged or exposed wire harness to avoid the danger of high voltage electric shock. In particular, if the vehicle floor scratches against the ground, carefully check whether the high-voltage wiring harness distributed on the floor is damaged. If you need to contact any high-voltage cables or components, please wear insulating protective clothing (including insulating gloves, insulating shoes and insulating clothing) with a withstand voltage of more than 1000V.
- If the damage to the vehicle cannot be estimated, do not touch the vehicle. Stay away from the vehicle, immediately contact the technical professionals from the authorized dealer of the vehicle to inspect and repair the vehicle, and be sure to inform the emergency personnel who will come to deal with the accident. The vehicle is an electric vehicle, and no one else is allowed to approach, contact or move the vehicle.
- If drivers and passengers are trapped and cannot disconnect the HVDC bus, please try to cut the vehicle after confirmed by professionals. Before cutting, flush the battery part and the ground with a large amount of fire water, to wash away or dilute the leaked electrolyte, so as to prevent sparks from igniting the electrolyte and causing fire. Do not touch the high-voltage cable (the skin of high-voltage cable is yellow or orange yellow) and the battery pack during cutting.

It is strictly prohibited to disassemble the high-voltage wiring harness and high-voltage parts in the front compartment without permission. The skin of high-voltage wiring harness is yellow or orange.

- Leakage or damage of power battery electrolyte may cause fire. If so, please contact the authorized dealer of the vehicle immediately. Please do not touch the leaked electrolyte with hands. If skin or eyes accidentally come into contact with such electrolyte, please rinse with plenty of clear water immediately and seek medical advice immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately and use plenty of clear water to extinguish the fire; otherwise it may result in personal injury or death.
- If you need towing, make sure the front wheels are raised off the ground. Because if the front wheels land on the ground during the towing, the electric drive system may generate electricity, damage the high-voltage components of the vehicle and even cause a fire.
- If the vehicle needs repair or painting after collision, it must be handled at an authorized dealer of the vehicle and must not be disassembled without permission. Before painting, high-voltage components such as power battery, high-voltage wiring harness and electric motor controller must be removed. Because the power battery is exposed to the spraying workshop with higher temperature, the life of power battery may be affected. In addition, if the power battery on the vehicle is not removed, it may bring potential safety hazards to maintenance personnel without professional training on electric vehicle maintenance.
- After the vehicle breaks down or has an accident, please immediately place the reflective tripod about 100m behind the vehicle, and about 150m behind the vehicle if on the expressway, to warn passing vehicles or pedestrians for yielding.

## Warnings about charging methods and information

## Warning

When charging, the high voltage system will have high voltage and high current. Please strictly follow the operation instructions; otherwise, serious casualties may be caused. Please read the charging section carefully before charging.

---

**Warning regarding starting the vehicle****Warning**

It is forbidden to continuously operate the power-up/power-down of the start switch.

**Warning regarding driving the vehicle****Warning**

Drunk driving is prohibited.

Accidental movement of vehicles may cause serious injuries.

Do not operate the start switch while the vehicle is running.

Do not depress the accelerator pedal during gear shifting or do not shift gears during depressing the accelerator pedal to prevent the vehicle from losing control.

When shifting gears or parking for carport, please observe the gear information displayed on the instrument to confirm whether it is the gear you expect.

Do not depress the brake pedal and accelerator pedal at the same time.

Emergency braking should be avoided during vehicle driving.

Vehicles should slow down as much as possible during turning corners, and sharp turns are prohibited.

To be on the safe side, don't climb steep slopes.

When the vehicle is in ON state and the gear position is in D or R gear, be sure to depress the brake pedal or buckle the parking brake switch; otherwise, the vehicle will crawl. If you leave the vehicle, always buckle the parking brake switch and put the gear in N position.

When parking on a ramp, do not park by depressing the accelerator pedal. You can depress the brake pedal or buckle the parking brake switch to keep the vehicle stationary.

Avoid vehicles driving in deep water. If they must pass through waterlogged roads, the wading depth shall not exceed the lower edge of vehicle body and the vehicle shall drive at low speed.

When the vehicle encounters fault or accident in rain, do not open the engine hood by yourself. If the bottom of vehicle is seriously scratched during driving, please contact the authorized dealer of the vehicle.

**Warnings regarding parking or lay-up****Warning**

Improper lay-up may lead to serious injuries.

For parking or lay-up, be sure to put the gear in N position and buckle the parking brake switch to avoid accidental movement of the vehicle.

Never leave children or people with mobility difficulties in the vehicle, as they may release the parking brake switch and operate the shift knob, causing the vehicle to move that may further cause accidents and serious injuries.

## Warnings regarding charging

### Warning

If you use an electronic medical device, such as a transplanted cardiac pacemaker or cardiovascular defibrillator, please confirm the impact of electric vehicle charging on the device before charging. Charging may affect the function of electronic medical devices.

If you are transplanted with a pacemaker or cardiovascular defibrillator, please pay attention to the followings when charging:

- Do not sit in the vehicle ;
- Don't go into the vehicle to pick up other articles.

Charging may affect the function of electronic medical devices, resulting in personal injury and death.

Before charging, please check whether the skin and shell of the charging cable are damaged. If so, please contact the authorized dealer of the vehicle for repair or replacement. It is forbidden to use the damaged charging cable.

The charging plug is a high-voltage electrical device and is strictly prohibited for children. Children are forbidden to operate during charging.

Please make sure that there is no water or other sundries in the charging interface and plug, or rust and corrosion. If there is water or rust on the charging interface or plug, please do not charge, so as not to cause short circuit or electric shock, or even cause casualties.

Power supply equipment, vehicles to be charged, charging cables and charging plugs should be kept away from rain, snow and accumulated water, and should not be close to fire sources.

If there is damp near the charging port during charging, please disconnect the power supply to ensure safety, disconnect the plug at the power supply side (do not touch the metal sheet of the charging plug with hands or other parts of the body, to avoid safety accidents in case of possible failure of the charging system), then pull out the charging plug at the vehicle side, use insulating gloves if necessary, and contact the authorized dealer of the vehicle for inspection and confirmation as soon as possible.

If the vehicle has been driving in the rain before charging, please dry the vehicle body near the charging port before opening the charging port for charging. Pay

special attention to the charging socket and its vicinity without residual rainwater.

There may be sparks inside the charging system when it works. Please do not use the charging equipment in an environment where gasoline, paint and flammable liquids are used or stored.

Please keep the charging port dry and clean during charging, and take corresponding preventive measures if necessary.

In case of sudden weather changes (strong wind, rain and snow) during charging, check whether the charging plug is firm and in a dry state in time; do not touch the charging cable and the vehicle body during lightning.

Corresponding protective measures should be taken during charging to avoid children and other unrelated personnel from approaching charging vehicles and charging cables.

Do not insert the slow charging plug and the fast charging plug at the same time.

When charging, do not squeeze the charging cable to avoid electric shock or fire.

When charging, it is forbidden to put the charging cable in the vehicle.

When charging, the charging cable must be kept away from the fire source.

When charging, do not approach or touch the front cabin cooling fan;

Please pay attention to the following points when charging:

- Do not touch the metal part of the charging interface and charging plug;
- Do not touch the electric vehicle and any devices when electric sparks occur in the electric vehicle or the high and low voltage charging system. Otherwise, you may will be shocked, causing personal injury or death.

Any device. Otherwise, you may will be shocked, causing personal injury or death.

The ambient temperature when charging the vehicle is recommended to be 0°C-35°C, avoiding charging in low temperature or high temperature environment (it is recommended to be noon in winter and morning and evening in summer).

Try to avoid charging in high temperature environments such as direct solar radiation in summer.

During charging, ensure that the charging cable is in a natural elongation state and do not hang charging cable in the air.

If special smell or smoke is found on the vehicle, please cut off the power supply immediately and safely. It is forbidden to plug and unplug the charging plug with wet hands and standing in places with water, liquid and snow; otherwise, it will easily cause electric shock and casualties.

When unplugging the charging plug, please hold the insulating part of the plug. It is forbidden to drag or drop the charging cable directly.

It is forbidden to disassemble or refit the charging port without permission.

It is forbidden to extend or modify charging cables or plugs without permission; otherwise, danger will easily occur.

Warning regarding slow charging mode

Warning

To avoid electric shock or fire caused by short circuit, please install a ground fault circuit breaker in the circuit and use a waterproof ground socket.

Misuse of charging equipment can cause fire or serious casualties.

- Do not use aging charging equipment.
- Do not use charging equipment if the output power socket is damaged or not plugged tightly.
- If the charging socket or power socket feels hot or give out peculiar smell, the charging should be stopped immediately.
- Do not use charging equipment on the same circuit together with other electrical appliances to ensure that the load of the power supply line can meet the charging needs of the vehicle.
- Do not continue to use the high and low voltage charging system when it fails. Please contact the authorized dealer of the vehicle for maintenance.
- There are no components in the charging equipment that users can repair by themselves. Please do not try to repair the charging equipment without permission. Problems arising therefrom are not covered by the warranty.

Charging must be carried out in a charging place with stable voltage, and the power socket must meet the specifications required by GB2099. The power socket must have electrical safety protection measures such as waterproof, moisture-proof, dustproof, touch-proof and leakage-proof measures.

It is forbidden to connect any form of power cord without permission, to avoid the power cord being exposed which may cause fire.

When charging, do not squeeze the charging cable.

Do not charge with damaged charging cables.

It is forbidden to refit the charging cable. If you need to lengthen the charging cable, please go to the authorized dealer of the vehicle to purchase 10m or 20m special charging cable.

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**Warning regarding fast charging mode****Warning**

Please use fast charging equipment meeting GB/T20234 standard; otherwise, it may cause failure or fire, resulting in serious casualties.

Please carefully read the operation instructions on the charging equipment before quick charging to ensure that the quick charging plug is connected and locked; otherwise, it will cause vehicle or charging equipment failure.

Children are prohibited from charging vehicles.

It is forbidden to plug and unplug the fast charging plug at will during charging.

Charging or stopping charging must be strictly in accordance with the operation process of fast charging pile.

In case of smoke & peculiar smell at the charging interface or abnormal phenomena inside the vehicle, please press the emergency stop button on the fast charging pile in time to stop charging, evacuate the personnel around the vehicle and dispose of it according to relevant on-site procedures.

**Warning regarding fast charging operation process****Warning**

Before quick charging, please check whether there are sundries, dust, water, etc. inside the quick charging socket (including the socket). If so, please do not charge. Please clean up the sundries and dust inside the fast charging socket (including the plughole) and wipe with water. Keep the charging socket clean and dry before continuing charging.

Please check whether the plughole of the fast charging socket is damaged, ablated or discolored before fast charging. If there is any of the above phenomena, please do not charge and contact the authorized dealer of the vehicle.

**Warning regarding maintenance and service****Warning**

After the vehicle runs, the temperature is relatively high. When you inspect or maintain the vehicle, you must take protective measures and observe the following matters:

Park the vehicle on a horizontal road surface, buckle the parking brake switch, and the gear is in the N position. It is forbidden to connect or disconnect the 12V lead-acid battery when the power-on switch is turned on.

Turn off the power-on switch and turn off the start switch.

The cooling fan of this vehicle may start at any time. Please disconnect the negative electrode of 12V lead-acid battery during maintenance.

During maintenance, please fix or take off loose clothes, rings, watches and other ornaments, and wear protective glasses. Contact of metal ornaments with live parts can cause electric shock or burns.

It is forbidden to maintain without permission and disassemble, move or replace high-voltage components, wiring harnesses and connectors at will; otherwise, it may lead to severe burns or electric shock, resulting in serious casualties.

It is forbidden to enter under the vehicle merely supported by lifting jack. If you enter the vehicle for operation, you must use the safety bracket.

Children or pets are prohibited from contacting vehicle oil.

If you want to replace the bulb, fuse or lead-acid battery, please make sure that the charging plug of the vehicle has been unplugged and the remote control air conditioner has been turned off; set the start switch to ON and then turn it off to prevent the power battery from charging the lead-acid battery.

Attention must be paid to polarity when connecting 12V lead-acid battery cables. Do not connect the positive cable to the negative terminal or connect the negative cable to the positive terminal.



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Note to filling the braking system with brake fluid

Caution

When the brake fluid is added to the fluid reservoir of brake master cylinder, only the brake fluid from the clean, sealed brake fluid container can be used. The model is in accordance with DOT4. Failure to use the recommended brake fluid may lead to contamination and damage to rubber seals or rubber pads within hydraulic brake system components.

Note to the brake caliper (EPB)

Caution

For EPB system component maintenance, the diagnostic apparatus is required to release and reset the brake caliper.

Note to the effect of the brake fluid on paint and electrical component

Caution

Avoid contact of brake fluid with paint, electrical connectors, wires or cables. Brake fluid can damage the paint and corrode electrical components. If brake fluid sprays on the paint, flush the contact area with water immediately. If brake fluid sprays on the electrical connectors, wires or cables, wipe off brake fluid with the clean rag.

Note to remove electric drive system

Caution

When removing the electric drive system, it must be removed together with the subframe. When removing, the jack is supported on the subframe, not on the housing of the electric drive system. Any incorrect lifting of the electric drive system may cause component damage or personal injury.

Note to pedestal of electric drive system

Caution

If the electric drive system supporting seat is broken, some components of drive components may be misaligned, resulting in ultimate damage to components of drive components.

Caution

If one electric drive system supporting seat is broken, the stress applied to the other electric drive system supporting seats will increase, which may cause the rest of the electric drive system supporting seats to break.

Note to the removal of exterior logo

Caution

When removing the sign/nameplate, use a plastic flat-bladed tool to avoid damage to the paint.

Note to fasteners

Caution

Please use the correct fasteners in the correct position. The part numbers of the replaced fasteners must be correct. The fasteners that need to be replaced or the fasteners that need thread locking glue or sealant should be specifically pointed out in the maintenance procedure. Do not use paint, lubricating oil or corrosion inhibitors on the fasteners or fastener connecting surfaces unless otherwise specified. These paints affect the torque and clamping force of the fastener and may damage the fasteners. When installing fasteners, be sure to use the correct tightening sequence and tightening torque to avoid damage to parts and systems.

### Note to handling electrostatic discharge sensitive parts

#### Caution

Electrostatic discharge (ESD) may damage many solid electrical components. Not all components vulnerable to electrostatic discharge are marked with electrostatic discharge symbols. All electrical components should be treated carefully. Please follow the following safety instructions to avoid damage of electrostatic discharge:

- Before repairing any electrical component, the metal ground wire connecting points should be touched to discharge the static electricity (especially after sliding on the seats).
- Do not touch the exposed terminals. The terminals may be connected to circuits that are easily damaged by electrostatic discharge.
- When servicing connectors, do not allow tools to touch the exposed terminals.
- The components should not be removed from the protective shell unless otherwise specified.
- Avoid the following operations unless specifically required by the diagnostic procedures:
- Bridge over or ground parts or connectors.
- Connect the test equipment probe to the component or connector. When using the test probe, connect the ground lead first.

Before opening the protective shell of the component, ground it first. Do not place solid components on a metal workbench or on top of TVs, radios and other electrical equipment.

Notices for placing the start and stop button power supply mode in OFF position when the battery is disconnected

#### Caution

Whenever connecting or disconnecting a battery cable, battery charger, or jumper cable, be sure to put the startup switching power supply mode in the OFF state; otherwise, it will cause damage to the control module or other electrical components.

Be careful not to twist or bend when installing the hose

#### Caution

The inlet and outlet hoses must not be twisted during the installation process. It is forbidden to bend or distort the hoses for ease of installation, otherwise the components may be damaged.

### Note to damage of machined surface

#### Caution

Do not scratch or damage the sealing surface. The sealing surface is a machined surface. Damage to the machined surface will cause leakage.

Notices for the power system control module and electrostatic discharge

#### Caution

Do not touch the connector pins or welded parts on the circuit board to prevent electrostatic discharge from damaging the electronic control module on the vehicle.

### Note to sealant

#### Caution

The sealant cured at room temperature should not enter the thread blind holes. If the sealant cured at room temperature enters the thread blind holes, fastener tightening will have a hydraulic lock up effect when it is tightened. The hydraulic lock up of fastener components causes the damage to fastener tightening and other components. It will also make it unable to get the correct clamp force of fastener tightening when tightening, resulting in incorrect tightness of fastener tightening, loose or separation of components and serious damage to the engine and other components.

### Note to the use of fault diagnosis instrument

#### Caution

Before diagnosing the vehicle, you are required to pay attention to the following conditions, otherwise the control module may be damaged.

- The software version of the fault diagnosis instrument and terminal must be the latest.
- Vehicle battery must be fully charged, and battery voltage should be between 12-14V.
- The connection between the fault diagnosis instrument and the terminal cable must be firm.
- When programming the control module, the battery charger must not be connected to the battery.
- The battery must not be powered off.

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**Note to the test probe****Caution**

Never insert the probe of test equipment (digital multimeter, etc.) into the harness connector or the fuse box terminals. The diameter of the test probe will deform most terminals. After deformed, the terminals will contact badly, which will lead to a system fault. The special tools must be used to detect the terminals from the front and paper clips or other substitutes are prohibited to detect the terminals.

**Caution**

When using special tools to test components, make sure that the selected terminal test adapter meets the size of the connector terminal. Do not select the terminal test adapter by visual inspection, because the hole of some connector terminals may be larger than the actual terminal in the hole. Large terminal test adapters will damage the terminals.

**Note to the window edge damage****Caution**

To avoid damaging the windows due to the exposed edges, the windows must be 1mm (0.025in) below the sheet metal surface to avoid damage to windows.

**Note to power battery****Caution**

To avoid damage to the power battery, observe the following:

- Do not place the vehicle in a high temperature environment of 45°C for more than 1 day, but place the vehicle in a cool environment in time.
- Do not store the vehicle at -20°C for more than 3 days, but place the vehicle in a warm environment in time.
- When the battery power is less than 15%, the vehicle shall not be parked for more than 14 days, and the vehicle shall be charged in time.
- Do not use the power battery on the vehicle for other purposes.

**Note to power battery temperature control device****Caution**

Methods to avoid damage to power batteries caused by too high or too low external ambient temperature:

- Do not park the vehicle in an environment with an ambient temperature exceeding 45°C for more than 1 day;
- The power battery heating device is only turned on when the charging cable is connected, so when the charging cable is not connected, do not park the vehicle in an environment with an ambient temperature below -20°C for more than 3 days.

**Note to parking or lay-up****Caution**

Parking with care in places where there are projections or fixed stop blocks; otherwise, the bumper and other parts of the vehicle may be damaged. Please park before the wheels come into contact with these bumps.

Please take key when you leave the vehicle.

**Note to charging****Caution**

Note: To prevent charging system failure, please pay attention to the following points:

- Please close the protective cover of the vehicle charging socket before closing the charging cover;
- Avoid collision of charging plug;
- Avoid squeezing the charging cable;
- Do not pull or wind the charging cable;
- Do not place the charging cable near the heater or other heat source.

Please make sure to close the protective cover of the charging socket and the charging port cover after charging.

Before starting the vehicle, make sure that the charging plug has been pulled out of the charging port.

The vehicle has anti-theft function of charging cable. After the charging cable is connected, please press the smart key lock button to turn on the anti-theft function of the charging cable; to unplug the charging plug, be sure to press the smart key unlock button first.

Note to slow charging mode

#### Caution

It is recommended to use charging equipment conforming to national standards when charging; otherwise, the normal charging of the power battery may be affected.

Note to slow charging operation process

#### Caution

In order to increase the service life and safety of power batteries, it is suggested that:

- Charge immediately after parking to avoid charging only after the power is exhausted.
- Charging at an ambient temperature of 0-40°C.
- When the temperature is below zero, please charge immediately after stopping, in order to shorten the charging time.

When the vehicle is placed for a long time (more than 1 month), please ensure that the power of power battery is 50%-60%, and disconnect the negative electrode of the 12V lead-acid battery at the same time.

Note to fast charging mode

#### Caution

As the quick charging plug is heavy, please plug it vertically as carefully as possible to prevent damage to the vehicle or charging equipment.

During fast charging, if the button of fast charging plug is touched by mistake, charging may be stopped, so it is necessary to unplug the charging plug and recharge.

### 1.1.1.2 Safety Instructions for Repairing Electric Vehicles

The electrical equipment on pure electric vehicles is divided into low-voltage electrical components and high-voltage electrical components; the former includes instruments, acoustics, lights, horns, blowers, etc.; the latter includes electric drive system, drive motor controller, high and low voltage charging system, A/C compressor, PTC, etc.

Orange warning labels are affixed to high-voltage components. Pay attention to the requirements on warning labels. To avoid electric shock injury, it is forbidden to touch high-voltage components, high-voltage cables (orange) and their connectors.

If the cable on vehicles is exposed or damaged, do not touch it to prevent electric shock.

Non-professional maintenance personnel are prohibited from disassembling, removing or refitting electrical equipment at will; otherwise, touching high voltage electricity will lead to serious consequences such as fire burns and even electric shock death.

### 1.1.1.3 Safety Measures for Repairing Electric Vehicles

Insulating protective fitting

A. Insulating protective clothing

B. Insulating rubber shoes

C. Protective glasses

D. Insulating gloves

b. Maintenance personnel must wear insulating protective equipment before operation:

- Insulating protective clothing.
- Insulating rubber shoes.
- Protective glasses.
- Insulating gloves: Select the corresponding anti-high voltage electrician gloves or anti-acid and alkaline gloves of battery electrolyte according to the working conditions.

#### Caution

Before use, check the insulating protective equipment to ensure that they are free of damage, holes and cracks, and the inner and outer surfaces are clean and dry. In order to ensure safety, do not operate them with water.

Insulating tools

A. Insulating rubber pad

B. Insulating tools

C. Power battery workbench

Use of insulating tools:

- Place insulating rubber pads on the maintenance area.
- Maintenance personnel must use insulating tools when operating live parts.
- When overhauling power batteries and electronic control components, a professional workbench with insulating pads must be used.

#### Caution

Before use, check the insulating tools to ensure that they are free of damage, holes and cracks, and the inner and outer surfaces are clean and dry. In order to ensure safety, do not operate them with water.

## Maintenance site

- A. High voltage warning sign
- B. Carbon dioxide or ammonium phosphate fire extinguisher
- C. Warning line
- D. Grounding wire for special maintenance station

### Maintenance site requirements:

- Isolation measures shall be adopted before maintenance operations: use warning fences for isolation and set up high-pressure warning signs to warn irrelevant personnel to stay away from the area to avoid safety accidents.
- The designated position of maintenance site must be equipped with fire hydrants to extinguish the fire with clear water.
- Before repairing the high-voltage equipment, connect the body with a ground wire to the grounding wire of special maintenance station for electric vehicles.
- Install special AC circuit and power socket. If no special line is used when charging the electric vehicle, the normal operation of other equipment on the line may be affected.
- Keep the working environment clean and well ventilated, away from liquids and flammables.

## Maintenance safety

### Caution

#### Safety precautions for maintenance operations

- After disconnecting the DC bus, it is necessary to wait for more than 5min until the electric motor controller, high and low voltage charging system and other components with capacitive elements are fully discharged.
- When repairing vehicles, a full-time guardian must be set up, and the guardian and maintenance personnel must have the "Special Operation Certificate (Electrician)" and "Electrician Certificate for Primary (inclusive) or Above Level" (Professional Qualification Certificate) recognized within China.
- The guardian's job duty is to supervise the whole process of maintenance:

Supervise whether the composition of maintenance personnel, the use of tools, the wearing of protective equipment, the safety protection of spare parts, and the maintenance safety warning signs meet the requirements;

Responsible for checking the safety maintenance operation procedures in the maintenance process. The guardian shall make check and direct the operation both according to the safety maintenance operation procedures. The maintenance personnel shall inform the guardian after completing an operation, and the guardian shall mark on the operation flow sheet.

- Untrained personnel are prohibited for maintenance of high-pressure parts, and all personnel are prohibited for dangerous operations with fluky psychology to avoid safety accidents.

#### 1.1.1.4 Safety Operations for Electric Vehicles

##### Overhauling of high voltage system

- Before the vehicle is powered on, pay attention to confirm whether there are still personnel carrying out high-voltage maintenance operations to avoid danger.
- When overhauling the high-voltage system, disconnect the starting switch power supply, disconnect the negative cable of the battery and disconnect the DC bus, which shall be kept by the full-time monitoring personnel and ensure that no one will install it again during the maintenance process.
- When overhauling high-voltage lines, any exposed high-voltage parts removed shall be wrapped and insulated with insulating tape immediately.

- When installing the high-voltage wire, the wiring harness must be fixed according to the requirements of the body fixing hole.
- Do not touch the live part of the high-voltage wiring harness connector with your fingers to avoid electric shock. In addition, small metal tools or iron bars should be prevented from contacting the live part of the connector.

Use a multimeter to measure:

- Before overhauling the high-voltage system, a multimeter shall be used to measure the high-voltage circuit of the complete vehicle to ensure that there is no electricity. The method is as follows: After disconnecting the DC bus for 5 minutes, measure the voltage between the power battery and the vehicle body to preliminarily judge the leakage. If the voltage is detected to be greater than or equal to 36V, the operation shall be stopped immediately and the leakage position shall be checked and judged.
- When using a multimeter to measure high voltage, attention should be paid to selecting the correct measuring range. The accuracy of the multimeter for detection shall not be less than 0.5 grade. It is required to have a DC voltage measuring gear with a measuring range greater than or equal to 500V.
- When using multimeter to measure high voltage, the principle of "one-handed operation" should be observed.
- The multimeter used is equipped with an insulating calligator clip on one probe wire (the withstand voltage is required to be 3KV and the overcurrent capacity is greater than 5A). During measurement, the alligator clip is clamped to one terminal of the circuit first, and then the other probe is connected to the terminal to be measured to measure the reading. Only one hand is allowed to hold the probe during each measurement.
- When using a multimeter to measure high voltage, it is strictly prohibited to touch the metal part of the probe.

#### Vehicle treatment

- Vehicle abnormalities, accidents, fires and water intrusions:
- If the vehicle has an accident, it is not allowed to start the vehicle again.
- If a vehicle catches fire, use plenty of clear water immediately to extinguish the fire.
- When the vehicle is immersed in water, it is necessary to wait for the surface of the water to be free bubbles and sizzling sounds before salvaging. After the power runs out, it can only carry out salvaging operations by wearing insulating protective equipment to prevent electric shock.

#### 1.1.1.5 Power battery overhaul

- In order to prevent personal injury caused by electrolyte leakage when overhauling power batteries, maintenance personnel must wear gloves and protective glasses to prevent electrolyte from corroding skin and splashing into eyes.
- Disconnecting the DC bus only cuts off the power supply from the power battery to the high-voltage electrical equipment. The power battery is still electrified. When the power battery needs to be overhauled, the exposed high-

voltage components should be wrapped with insulating tape to avoid electric shock.

- When transporting the power battery to the professional workbench for battery maintenance, a special hanger for the power battery shall be applied. It is strictly prohibited to lift the power battery directly by hand.

## 1.2 Vehicle inspection

### 1.2.1 Description and operation

#### 1.2.1.1 Items to be checked while operating the vehicle

##### Horn operation

It is needed to press the horn occasionally to ensure that it operates normally and check the positions of all buttons.

##### Operation of brake system

When braking, it is needed to keep alert to the signs of the abnormal sound of the brake system, the increase of brake pedal problems or the repetitive brake running deviation. In addition, if the brake warning light turns on or flashes, some part of the brake system may be malfunctioning.

##### Operation of tyres, vehicle and orientation

It is needed to be aware of steering wheel or seat vibration when driving at normal highway speeds. This condition may indicate that a wheel needs to be balanced. In addition, running deviation leftwards and rightwards on a flat road may indicate the necessity of adjusting tyre pressure or implementing wheel orientation.

##### Operation of steering system

It is needed to be aware of changes in steering action. It is important to check if the steering wheel turns hard or free travel is too large or there is abnormal sound while steering or parking.

##### Operation of lighting system

It is important to observe the headlamp light occasionally towards the light. If the headlamp light is not correct, it is needed to adjust it.

#### 1.2.1.2 Inspection items should be checked during each refueling

Check the fluid level and condition of electric motor controller coolant

Check fluid level in the coolant recovery reservoir assembly and add electric motor controller coolant when necessary. Check electric motor controller coolant and replace soiled electric motor controller coolant.

Check the front windshield washer fluid level

Check the washer fluid level in the reservoir and add washer fluid when necessary.

#### 1.2.1.3 Check the items at least once a month.

Tire and wheel and air pressure check

Check whether the tire is abnormally worn or damaged.

Check whether the wheel is damaged. Check the cold state

pressure and the spare tire. Maintain the recommended pressure on the tire label.

##### Operation of the vehicle lamp

Check the operations of license plate lamp, headlamp (including low beam and high beam), position lamp, fog lamp, tail lamp, stop lamp, turn lamp, reverse lamp and hazard warning lamp.

##### Oil and fluid leak check

After the vehicle has been parked for some time, check whether water or other liquid remain on the ground under the vehicle regularly. Dripping after the use of the air-conditioning system is a normal phenomenon. In case the fuel leakage is found, find out the reason and remove the fault immediately.

#### 1.2.1.4 Items should be inspected at least twice a year

##### Brake master cylinder tank level

Check the oil and keep it at the correct level. A low brake fluid level may indicate that the brake pads of the disc brake are worn and need to be repaired. Check the vent hole on the reservoir lid to ensure that there is no dirt and that the air passage is clear.

##### Lubrication of doors and windows sealing strip grease

Use a clean rag to apply the sealing strip with silicone grease film.

Inspection items should be checked during each renewing of the oil

##### 1. Reducer oil

Check the fluid level and add oil when necessary. Refer to the [Reducer Oil Level Check Procedure, Reducer Oil Filling and Replacement](#)

##### 2. Brake system check

Note: A low brake fluid level may indicate that the brake pads of the disc brake are worn and need to be repaired. In addition, if the brake system warning lamp keeps on or lightened, there may be some problems with the brake system. If the ABS warning lamp keeps on or lightened, there may be some problems with the ABS. The check should be completed when the wheels are removed for transposition. Check whether the pipeline and hose connection is correct, and whether there is catching, leakage, crack or scratch. Check the disc brake pads for wear. Check the surface

condition of the brake disc and other brake parts, including brake wheel cylinder, parking brake, etc. Check the adjustment of parking brake. If driving habits or driving conditions require frequent braking, the time interval for checking should be shortened.

### 3. Inspection of suspension and front drive shaft shield and sealing elements

Check the front and rear suspension and steering system for damaged, loose or missing parts, and signs of wear or insufficient lubrication. Clean and check drive shaft sleeve and sealing elements for damage, breaking or leakage, and replace sealing elements if necessary.

#### 1.2.1.5 Items to be inspected at least once a year

##### Condition and operation of seat belt

Check the safety belt system, including braided belt, lock actuator, lock plate, retractor, guide ring and fixing device.

##### Storage of spare tire (if any) and jack

Be ware of the rattling sound at the rear of the vehicle. Spare tyre (if any), all lifting equipment and tools must be fixed at all times. It is needed to lubricate the ratchet or screw mechanism of jack with engine oil after each use.

##### Lubricate and maintain body

Lubricate all door hinges, including engine hood, refuel cap, trunk hinges and plunger latches, glove box, console door and any parts of the folding seat.

##### Cleaning of body rear

First, loose the sediment that has accumulated in the enclosed area of the vehicle. Then, flush body rear with clean water. After winter, it is important to flush vehicle body rear at least once a year. Cleaning body rear can clear up corrosive substances used to remove snow, ice and dust.

##### Warning

Cleaning the body rear requires compliance with safety precautions for hybrid vehicle maintenance to avoid injury due to electric shock.

##### Electric drive system cooling system

##### Warning

It is important to avoid touching with moving parts and hot surfaces when working around a running engine to prevent personal injury. Check the electric drive system coolant. If the electric drive system coolant is too dirty or rusty, drain, flush and refill the electric drive system coolant. It is needed to maintain appropriate coolant concentration in the electric drive system to ensure the correct anti-freezing, anti-boiling, anti-corrosion performance and engine operating temperature. Check hoses and replace hoses that have cracked, expanded or aged. It is needed to implement pressure test for the cooling system and cap to ensure the system is in normal operation.



## 1.3 Lift the vehicle.

### 1.3.1 Description and operation

#### 1.3.1.1 Lifting and jacking of vehicle

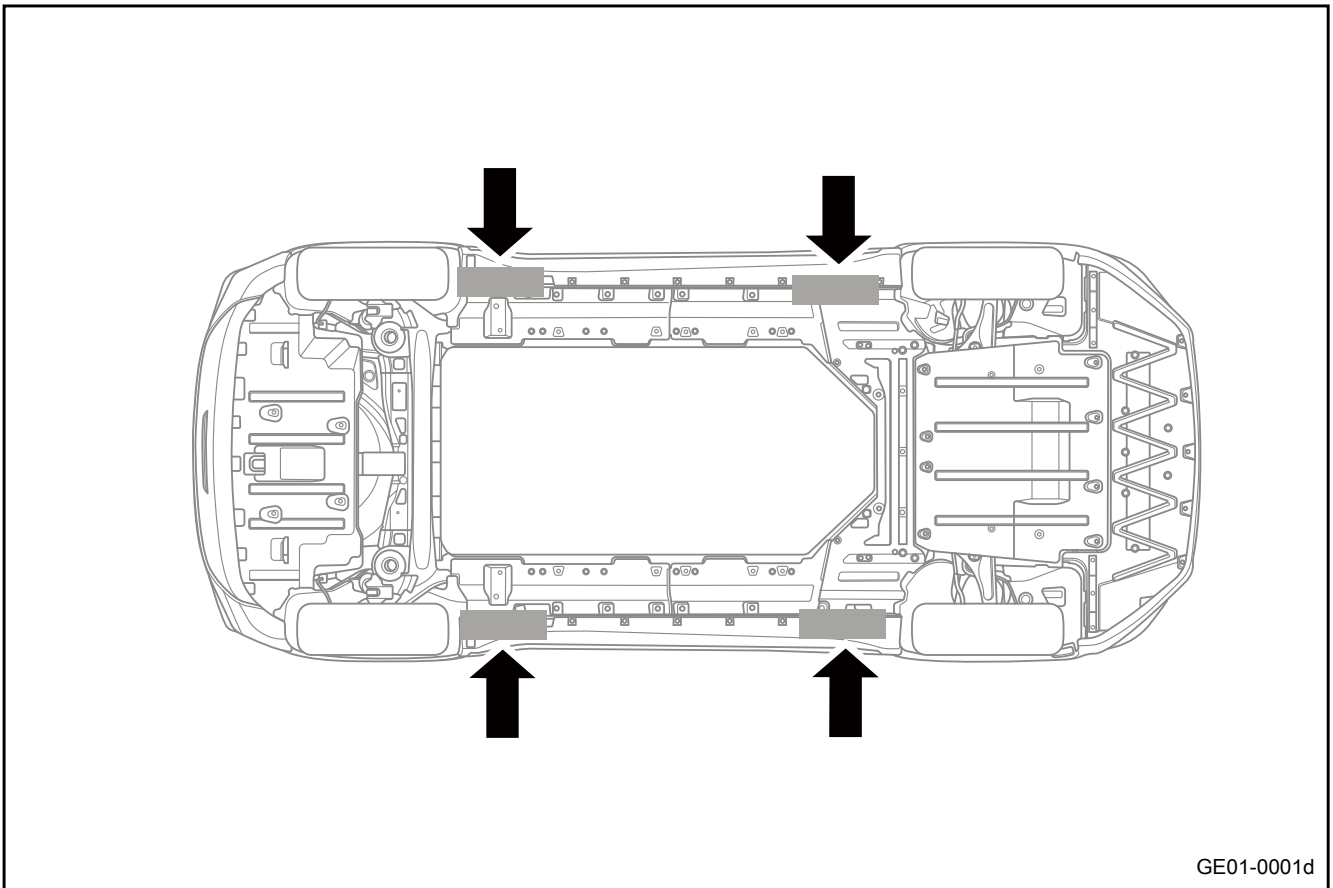
##### Warning

Refer to [“Warnings about vehicle lifting”](#) in [“Warnings and notices”](#) To avoid personal injury, do use the jack pad when performing any operation on or under a vehicle supported by a jack only.

##### Caution

When lifting the vehicle on the frame side rails or other designated lifting points, make sure that the jack pad does not touch the brake oil pipe or fuel pipe. If the above-mentioned parts are touched, it will cause damage to the vehicle or deterioration of vehicle performance. Before starting any lifting procedures, make sure that the vehicle is on a clean, hard, and level surface. Ensure that all lifting devices meet the weight standard and are in good working status. Ensure that all vehicle loads are evenly distributed and stationary. If the vehicle is supported only from the frame rails, make sure that the lifting device does not exert excessive force on the frame rails or damage the frame rails.

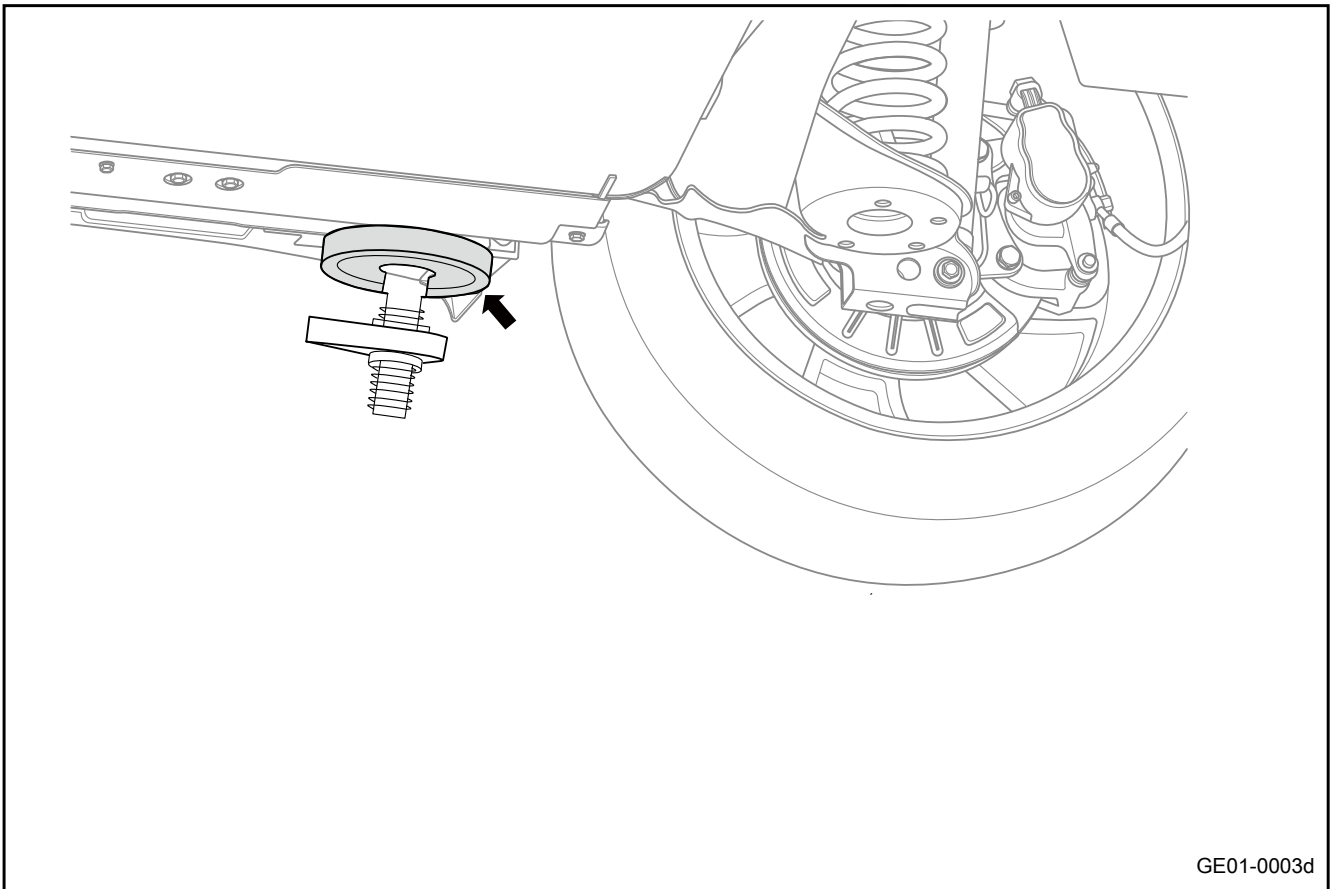
Vehicle lifting point



GE01-0001d

## Lifting and jacking the vehicle - frame contact lifter

Rear end lifter cushion block



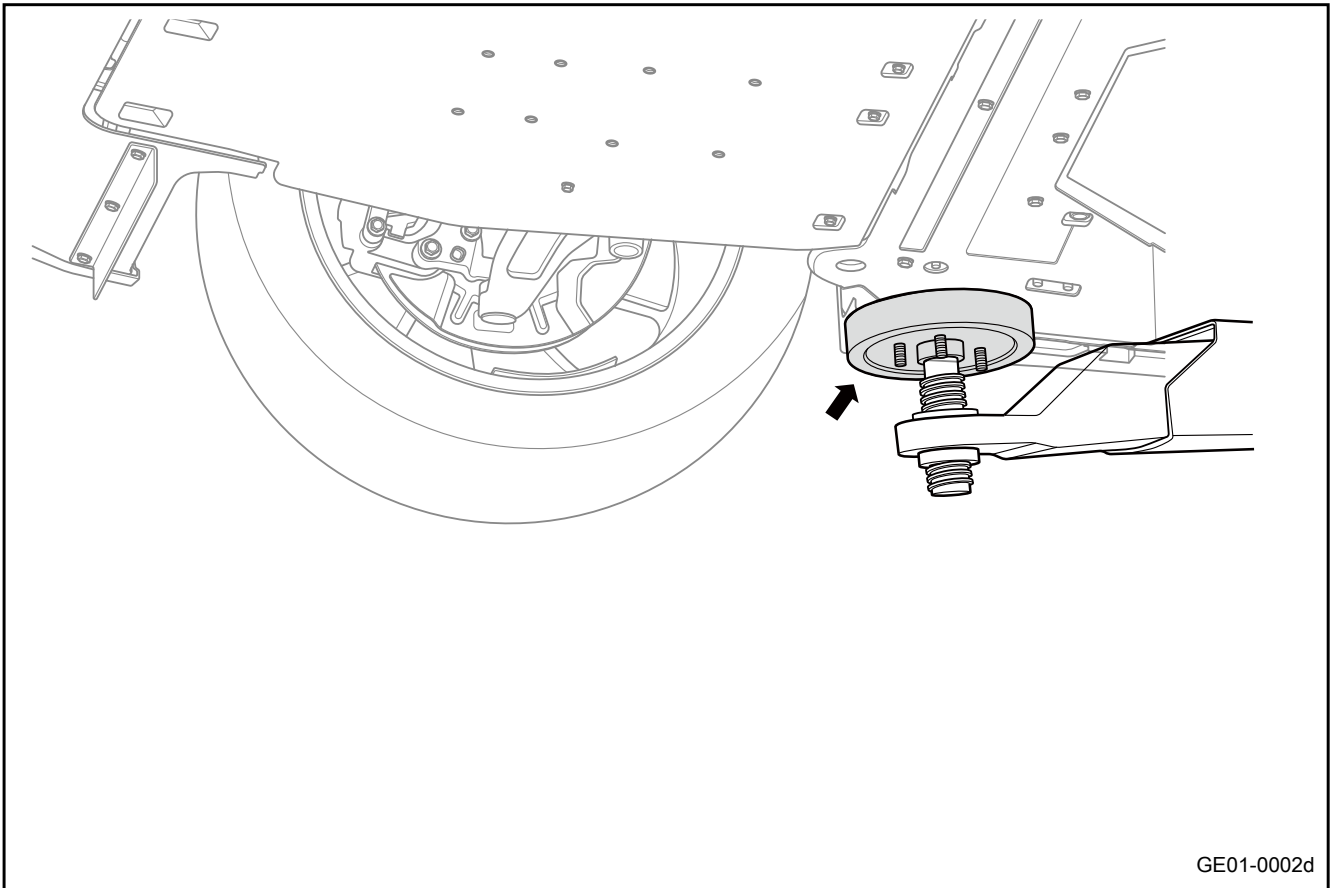
### Caution

The rear end lifter cushion block should not touch the rocker panel to the outside of the frame rail or the floor.

Place the rear end cushion block in the following position:

- Below the junction between the rear frame rails and the side frame rails.

## Front end lifter cushion block

**Caution**

The front end lifter cushion block should not touch the rocker panel to the outside of the frame rail or the floor.

Place the front end cushion block in the following position:

- Below the junction between the front frame rails and the side frame rails.

## 1.4 maintenance

### 1.4.1 Specification

#### 1.4.1.1 Oil fluid capacity and specification

Application	Oil capacity	Oil fluid capacity specification
Reducer lubrication oil	1.79L	MOTF-TS-1
Brake fluid	720mL	Compliant with DOT4
Heating system coolant	2L	Ethylene glycol type coolants authorized by Geely
Drive motor cooling system coolant	7.0L	Ethylene glycol type coolants authorized by Geely
Windshield detergent	1.5L	Water with hardness less than 205g/1000kg or solution with appropriate amount of commercial additives
Air conditioner refrigerant (Type I)	500g	R1234yf
Air conditioner refrigerant (Type II)	500g	R134a

#### 1.4.1.2 Tire rotation descriptions

##### Caution

If there is obvious uneven tire wear, the fault cause of the wear should be eliminated. It is recommended to check the balance of both tire and wheel assemblies if the tire is rotated.

1. Tire rotation is also recommended when performing brake checks on tires in accordance with the maintenance schedule described in the "User's Manual", or when the difference in tread depth between the front wheel tire and the rear wheel tire is 1.5 mm (0.08in).
2. Lift and support the vehicle. Refer to [Lift the Vehicle](#)

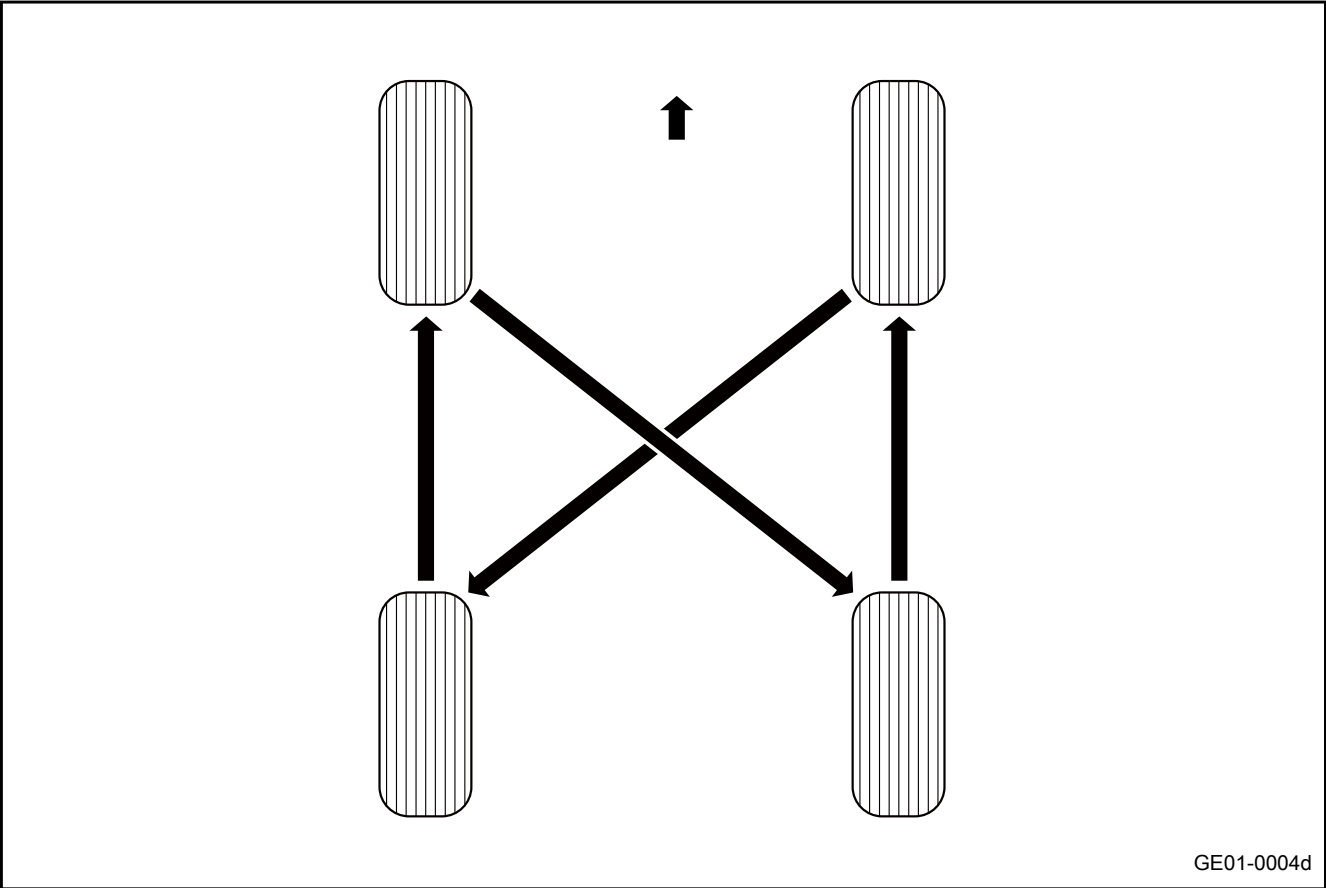
##### Caution

Record the original position of each tire and wheel assembly relative to the vehicle.

3. Remove tyre and wheel assembly. Refer to [Replacement of wheels](#)
4. Shift the position of tire and wheel assembly as shown in the following illustration.

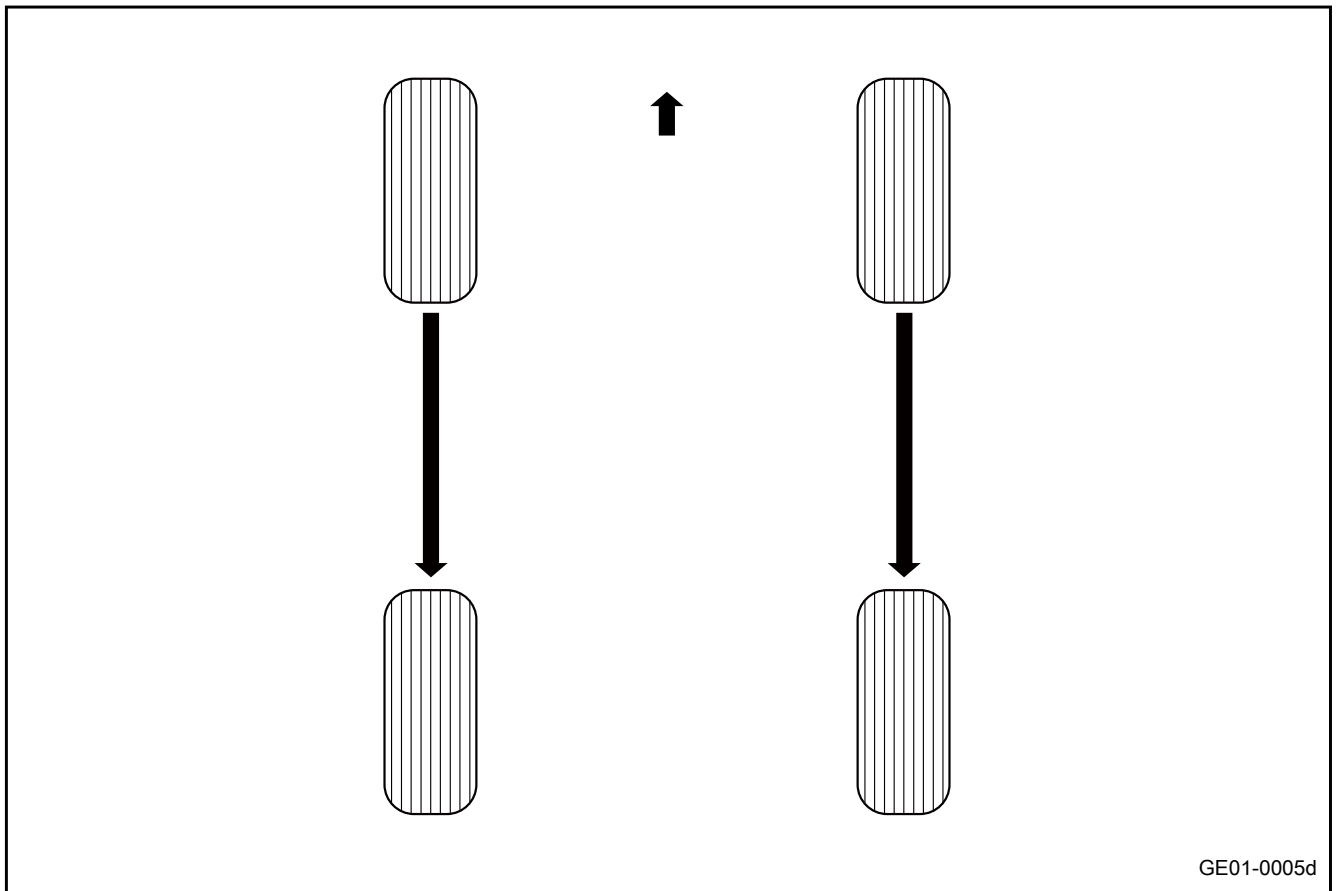
##### Caution

Perform the cross transposition of the tyres (front wheel drive) as shown below.



**Caution**

Perform the cross transposition of the tyres (rear wheel or four-wheel drive) as shown below.



5. Install the tyre and wheel assembly. Refer to [Replacement of wheels](#)
6. Remove safety stands.
7. Lower the vehicle.
8. Check and adjust tire inflation pressure.

## 1.4.2 Description and Operation

### 1.4.2.1 Reducer Oil Level Check Procedure

Inspection procedure

#### Warning

Refer to [“Warnings about vehicle lifting”](#) in [“Warnings and notices”](#)

#### Caution

If the oil temperature of the reducer is too high, burns may be caused when performing this procedure!

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 3 Place the vehicle horizontally and allow the oil inside the reducer to cool down. Remove the reducer refueling bolt. The oil level of reducer should be flush with the lower edge of filler hole.

#### Caution

If the fluid level is too low, add special manual reducer oil through the fill hole plug until the oil starts to flow out.

- 4 Reinstall and tighten the reducer refueling bolt. Torque 34.5N·m (metric system) 25.5 lb-ft (Imperial system)
- 5 Install the front engine bilge guard.
- 6 Lower the vehicle.

### 1.4.2.2 Reducer Oil Filling and Replacement

Adjustment procedure

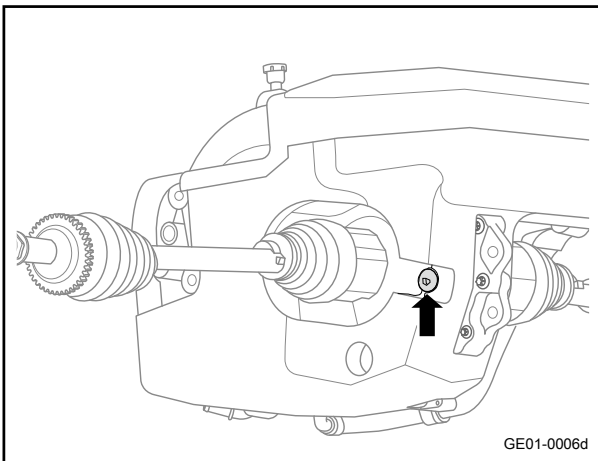
#### Warning

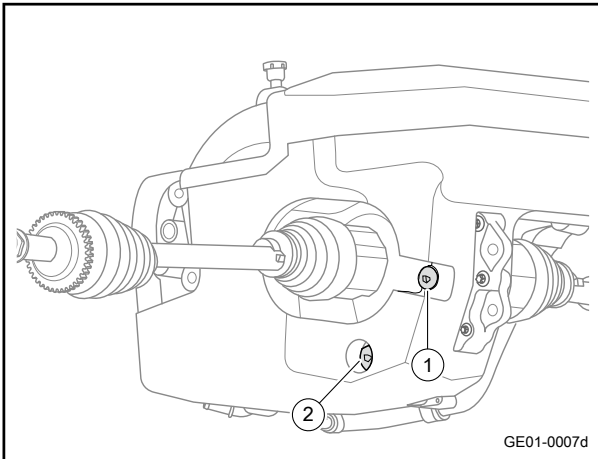
Refer to [“Warnings about vehicle lifting”](#) in [“Warnings and notices”](#)

#### Caution

If the oil temperature of the reducer is too high, burns may be caused when performing this procedure!

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)

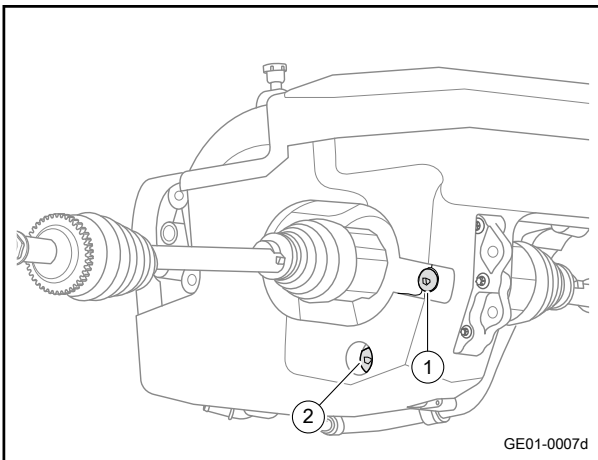




- 3 Remove the reducer refueling bolt 1.
- 4 Remove the reducer drain bolt 2 and use the recovery container to receive the drained reducer oil.

#### Caution

Collect and process the used reducer oil in a centralized manner for scrapping or recycling. For the purpose of environmental protection, do not drain the used reducer oil into the sewer lines.



- 5 Install the drain bolt 2 of the reducer.  
Torque 34.5N·m (metric system) 25.5 lb-ft (Imperial system)
- 6 Fill the hole plug and add special reducer oil until the oil starts to flow out.  
Reference dosage: 1.79±0.1L
- 7 Reinstall and tighten the reducer refueling bolt 1.  
Torque 34.5N·m (metric system) 25.5 lb-ft (Imperial system)

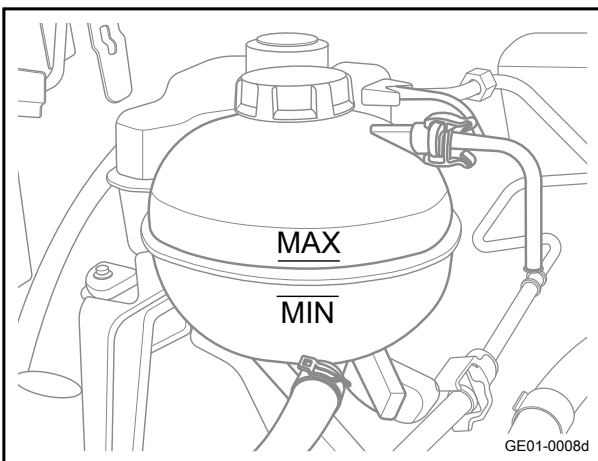
### 1.4.2.3 Coolant Level Inspection Procedure

#### Inspection procedure

- 1 View the fluid level of fluid reservoir. The fluid level should be maintained between MAX and MIN.
- 2 Unscrew the filler flap and check whether the freezing point of coolant is at normal value.

#### Caution

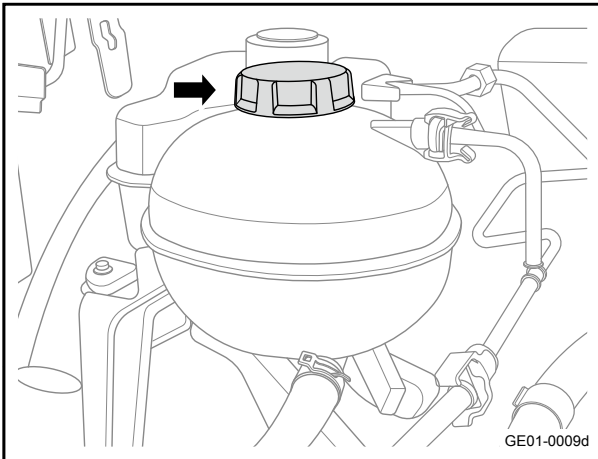
If the coolant is not within the specified range, it should be added, and if the freezing point of the coolant does not meet the requirements, it should be replaced.



### 1.4.2.4 Coolant Replacement Procedure

#### Drainage procedure (electric drive system coolant)

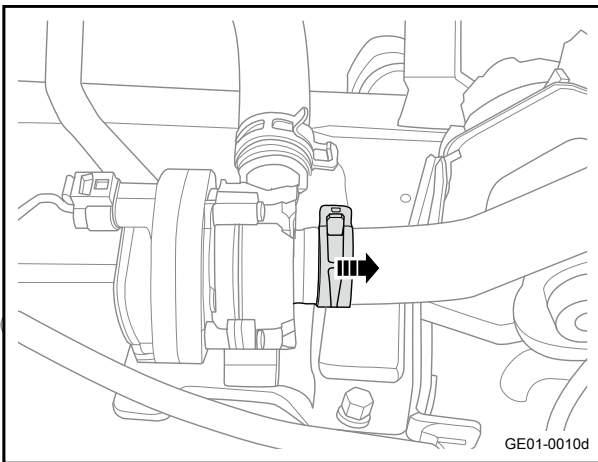




- 1 Open cover of expansion tank (motor cooling).

**Caution**

**Note:** The electric drive system is cooled to perform this operation

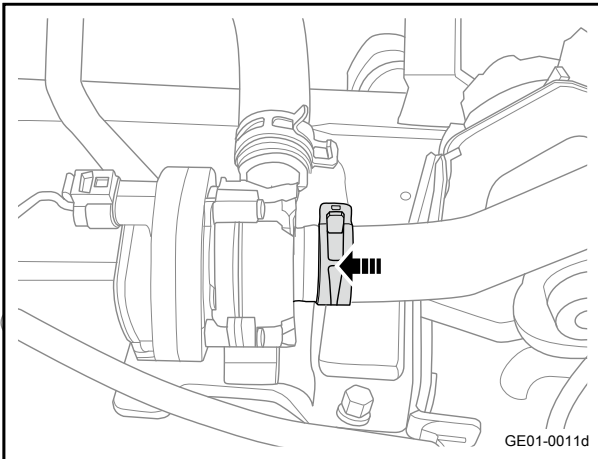


- 2 Disengage the inlet pipe of the cooling water pump assembly (electric motor controller), and use the recovery container to receive the discharged coolant.

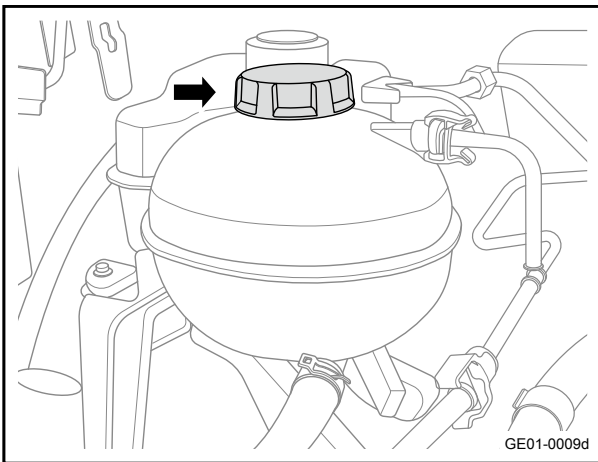
**Caution**

Collect and process the used coolant of electric drive system in a centralized manner for scrapping or recycling. Do not drain the used coolant of electric drive system into the sewer pipes to protect the environment.

Refilling procedure (electric drive system coolant)

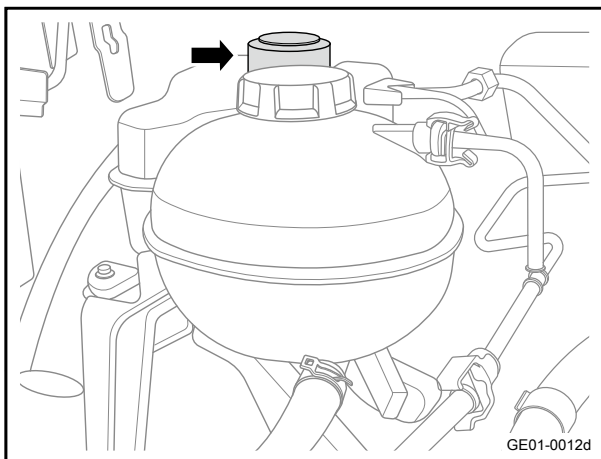


- 1 Connect all pipelines of electric motor circuit and battery circuit to ensure complete pipeline connection.

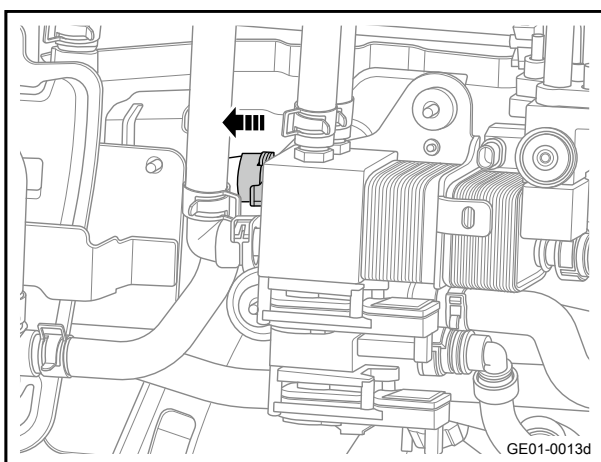


- 2 Open the cover of the heating circuit coolant expansion tank and slowly fill in coolant until the amount of coolant in the expansion tank reaches MAX.
- 3 Ready power on the complete vehicle, and press the "AUTO" key and the "Post Defrost" key for more than 3 seconds.
- 4 Check whether there are bubbles in the coolant jug and whether the coolant level drops (if not, press the "AUTO" key and the "Post Defrost" key at the same time again).
- 5 The filling time needs to last for more than 30 minutes, and the complete vehicle needs to be powered off after the filling.

Drainage procedure (heating system coolant)



- 1 Open cover of expansion tank (heating system).

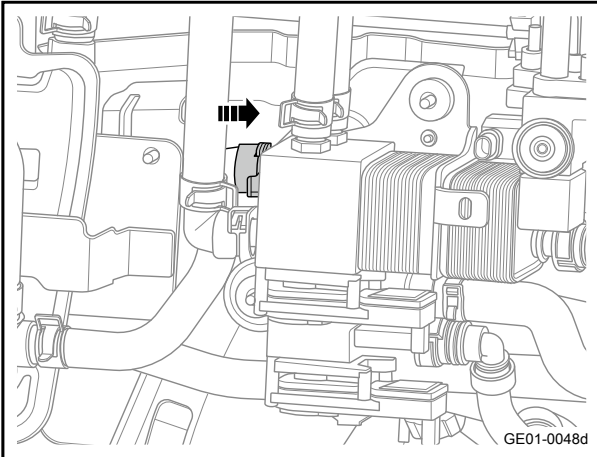


- 2 Disengage the PTC electric water pump inlet pipe (heat exchange control module side) and receive the discharged coolant in the recovery container.

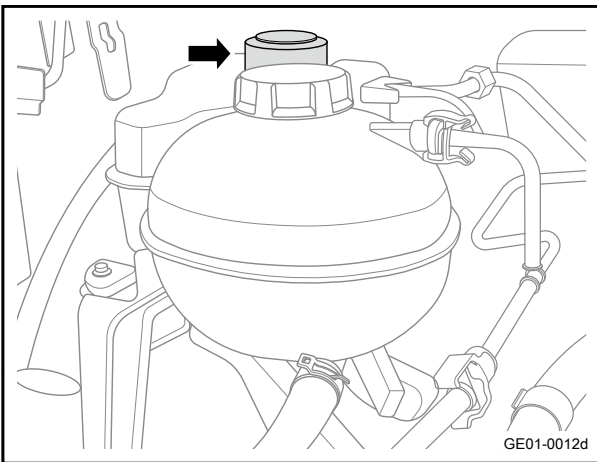
#### Caution

Collect and process the used coolant of electric drive system in a centralized manner for scrapping or recycling. Do not drain the used coolant of electric drive system into the sewer pipes to protect the environment.

Refilling procedure (heating system coolant)



- 1 Connect the PTC electric water pump inlet pipe (heat exchange control module side), and ensure that the pipeline connection is complete.



- 2 Unscrew the expansion tank cover and start filling coolant until the liquid level reaches MAX.
- 3 Start the vehicle to ON and not charged, connect the diagnostic tool, use the diagnostic tool to enter the AC module in Geometry C model, select the control option in AC mode, and select the "Heat Exchange Water Pump" option.
- 4 Control the duty cycle of the water pump to 90%.
- 5 The filling time needs to last for more than 15 minutes, and the diagnosis can be withdrawn after the filling.

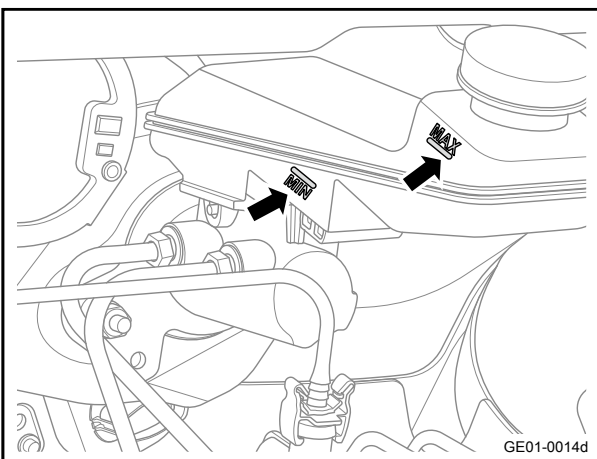
#### 1.4.2.5 Brake Fluid Level Check Procedure

Inspection procedure

##### Caution

Refer to [“Note warning of filling with the brake fluid in the brake system”](#) in “warnings and notice”

Refer to [“Special note warning of the effect of the brake fluid on paint and electrical component in the brake system”](#) in “warnings and notice”



- 1 View the fluid level of fluid reservoir. The fluid level should be maintained between MIN and MAX.
- 2 Unscrew the filler flap and check whether the brake fluid color is feculent.

##### Caution

If the brake fluid is not within the specified range, it should be added; if the brake fluid is feculent, replace it.

### 1.4.2.6 Brake Fluid Filling and Replacement

Adjustment procedure

Refer to [Hydraulic brake system exhaust procedure](#)

Caution

The hydraulic brake system bleed procedure must be performed at the same time as the brake fluid change.

### 1.4.2.7 Hydraulic brake system exhaust procedure

Adjustment procedure

Warning

Refer to [“Note warning of filling with the brake fluid in the brake system”](#) in [“warnings and notice”](#)

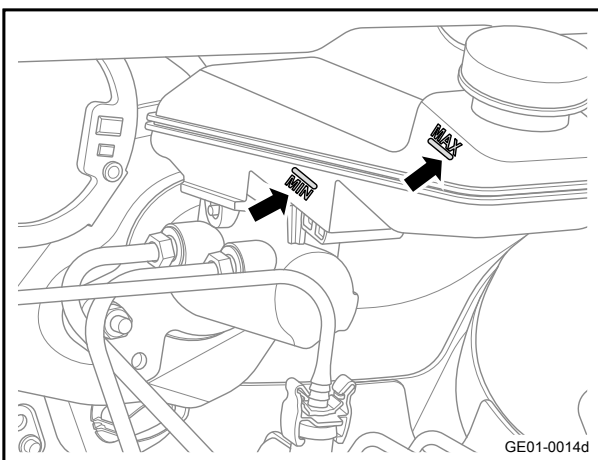
Caution

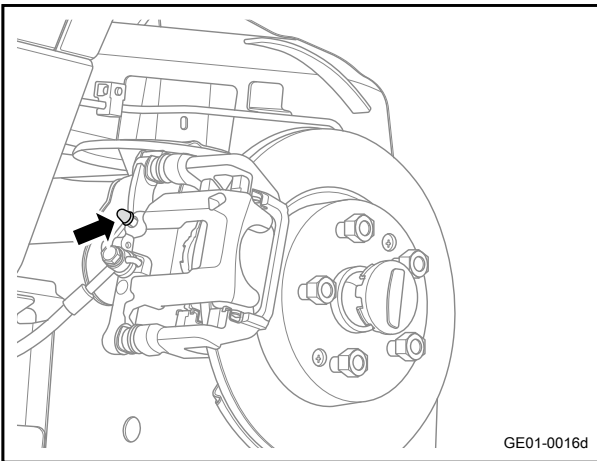
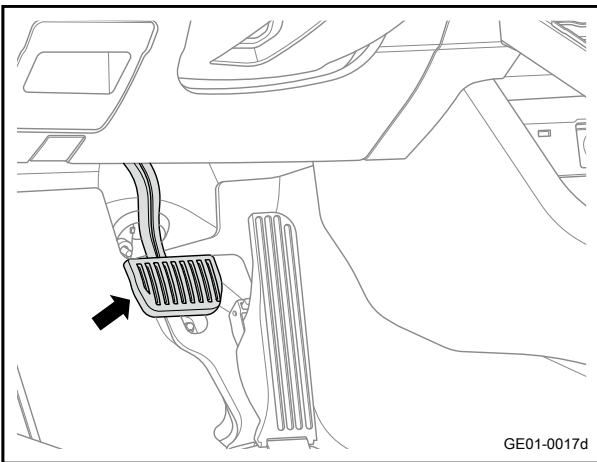
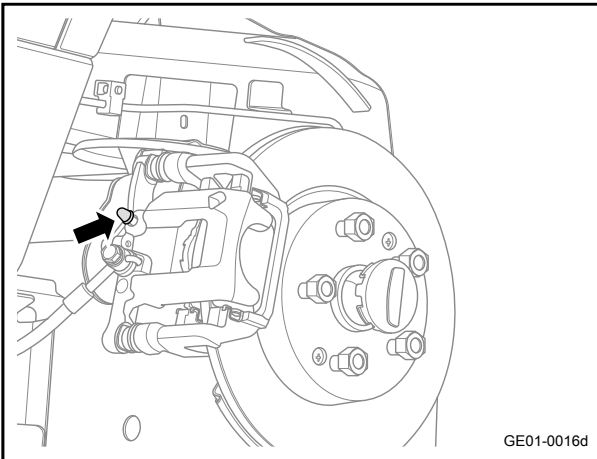
Air in the hydraulic brake regulator is cannot be discharged by hand. If air is mixed with ABS hydraulic brake regulator or when installing the ABS hydraulic brake regulator that is not filled with oil, the diagnostic scan tool should be used to discharge air in the brake system. When leaving the factory, ABS hydraulic brake regulator should be full of oil. After exhausting, air should not enter the ABS hydraulic brake regulator during normal maintenance procedures involving the regulator. In this case, the manual exhaust procedure should be used.

Caution

Refer to [“Special note warning of the effect of the brake fluid on paint and electrical component in the brake system”](#) in [“warnings and notice”](#)

- 1 Keep the power in an off state. Press the brake pedal several times until the pressure in the booster is completely removed.



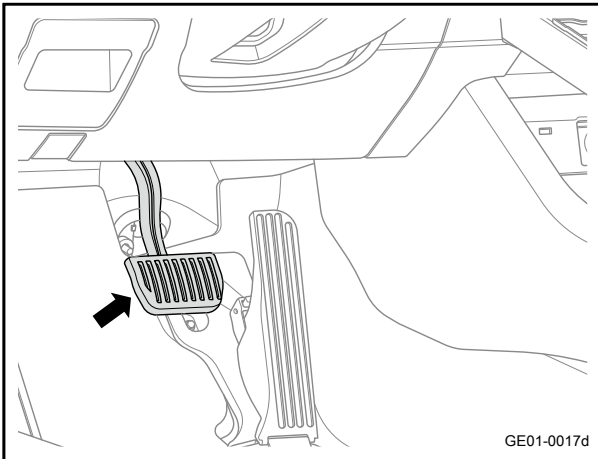


- 2 Remove the bleed screw dust cover. Connect one transparent pipe to the rear bleed screw on the right rear brake clamp to immerse the pipe into the brake fluid in the transparent container. Discharge air from the right rear brake clamp in accordance with the following steps.
- 3 Step on brake pedal slowly, do not slam on the brake pedal.
- 4 When pressing the brake pedal, loosen the bleed screw to discharge air from the brake clamp.
- 5 After the bubble escaping into the brake fluid reservoir, fasten the rear bleed screw slightly.
- 6 Slowly release the brake pedal.
- 7 Repeat the step 3-4 until discharging all air.
- 8 At the time of loosening the bleed screw, if no more bubble appears in the container, it indicates that all air has been discharged.

#### Caution

In the exhaust process, liquid level of the total pump fluid reservoir should be maintained over half at least.

- 9 Fasten the bleed screw  
Torque: 11.5N·m (metric) 8.5lb-ft (imperial system)



- 10 Discharge air in the remaining brake caliper in accordance with the order of left rear, right front and left front. Operate in accordance with the procedure in the step 2-7.

#### Caution

Exhaust air from the brake line from the wheel farthest from the brake master cylinder.

- 16 After discharging the whole air in the brake caliper, check whether the brake pedal is soft. In case the pedal is soft, repeat the whole exhaust procedure until normal.

### 1.4.2.8 Check free play of the steering wheel

#### Inspection procedure

- 1 Park the vehicle on a level ground with the tyres facing straight ahead

#### Caution

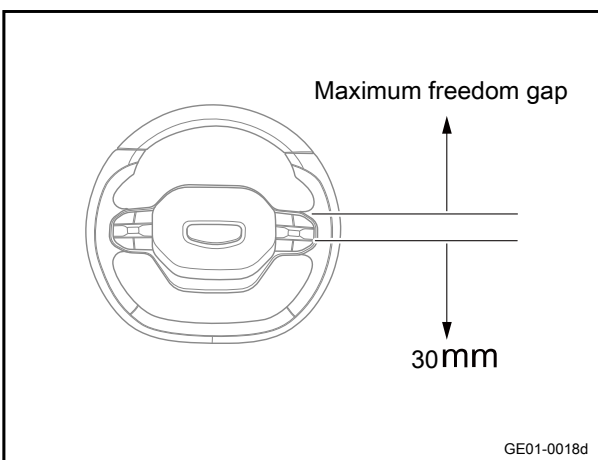
The free clearance of the vehicle cannot be adjusted. Under the normal condition of the intermediate shaft universal joint, replace the power steering gear with tie rod assembly.

- 2 Turn the steering wheel and check the free clearance of the steering wheel.

#### Caution

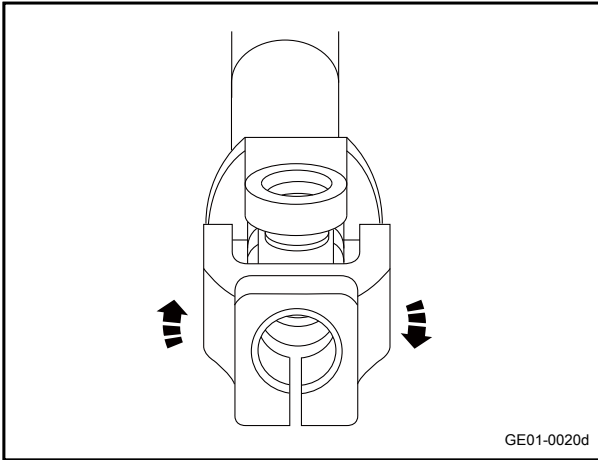
When rotating, feel whether there is a gap between the upper and lower shafts. If so, the upper and lower intermediate shafts must be replaced.

Maximum free clearance: 30mm (in)



### 1.4.2.9 Check of intermediate shaft universal joint

#### Inspection procedure



- 1 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 2 Secure one end of the intermediate shaft universal joint and twist the other ends of the upper and lower intermediate shaft universal joints clockwise and counterclockwise.
- 3 Any movement? If so, you need to replace the intermediate shaft.

- 4 Install left lower fender apron of the dashboard.

#### 1.4.2.10 Steering Force Check

Inspection procedure

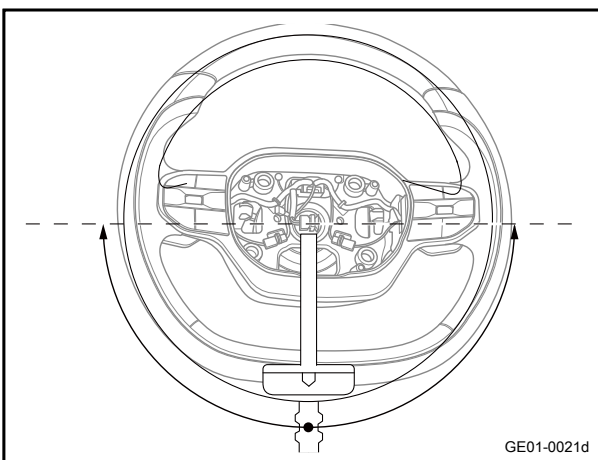
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 1 Park the vehicle on a smooth road and align the wheels straight ahead.
- 2 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- 3 Remove the driver's seat airbag Refer to [Replacement of driver seat airbag](#)
- 4 Connect the negative cable of battery.
- 5 Use a torque wrench to check that the tightening torque of the steering wheel retaining nut is correct.
- 6 Adjust the power supply to the ON state.
- 7 Use a torque wrench to turn the steering wheel to the left and right 90° respectively, and check the steering force torque when turning to the left and right.  
Steering force: 5.5 N·m (metric) 4.5 lb-ft (imperial system)

##### Caution

**Tire type, tire pressure and contact surface must be considered before inspection.**



- 8 Disconnect the negative cable of battery.



- 9 Recheck the steering wheel retaining nut torque.  
Torque:45 N·m (metric) 33.2 lb-ft (Imperial system)
- 10 Install the driver side airbag
- 11 Connect the negative cable of battery.

#### 1.4.2.11 Inspection of steering tie rod ball joint.

Inspection procedure

- 1 Remove the front left wheel. Refer to [Replacement of wheels](#)
- 2 Remove the steering tie rod ball joint. Refer to [replacement of steering knuckle](#)
- 3 Clamp steering tie rod ball joint securely to the caliper.
- 4 Install nut onto ball stud.
- 5 Shake ball stud back and forth over 5 times.
- 6 d. Then use torque wrench to continuously rotate nut at the speed of 2-4rpm/s, and read the torque at the fifth turn.  
Torque:2.3 N·m (metric) 1.7 lb-ft (imperial system)

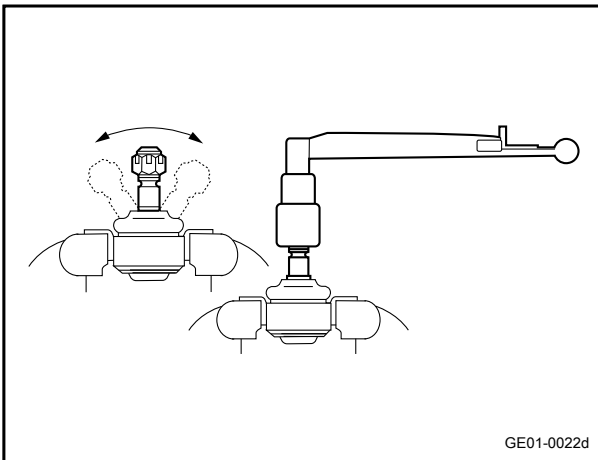
#### Caution

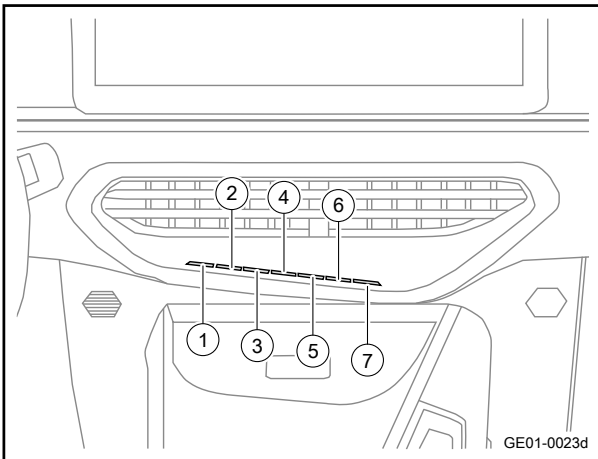
Check methods of steering tie rod ball joints at left and right sides are same.

- 7 Install the steering tie rod ball joint.
- 8 Install the front wheel.

#### 1.4.2.12 Function Test of A/C System

Inspection procedure





- 1 Power up the vehicle
- 2 Test the function of A/C system  
Operate AUTO button 2 to check whether the A/C automatic control function works.  
Operate the air volume reduction button 3 to check whether the air volume is reduced while checking the air volume gear display on the display screen.  
Operate the air volume increase button 4 to check whether the air volume is increasing while checking the air volume gear display on the display screen.  
Operate the windshield defogging button 5 to check whether the defogging function is normal.

#### Caution

When checking the rear defrosting function, a certain amount of water mist can be properly sprayed on the left and right outside rearview mirrors and rear windows, and the inspection effect is more obvious.

Operate the rear window/exterior rearview mirror defrost button 6 to check whether the left and right exterior rearview mirrors and rear window defrost function are normal.

Operate the A/C key 7 to check whether the cooling and heating functions of the air conditioner work normally.

Turn off the A/C system by operating the OFF button 1.

- 3 Turn off the power switch

### 1.4.2.13 Measurement of Insulation Resistance

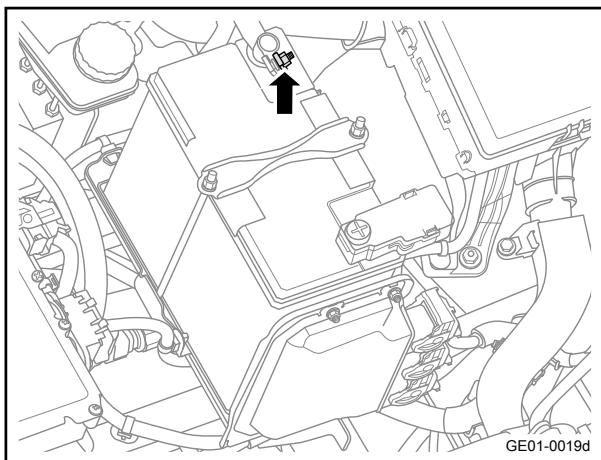
#### Calibrating procedure

- 1 Disconnect the DC bus (the side of the high and low voltage charging system). Refer to the [Replacement of DC Bus Assembly](#).
- 2 Check the insulation resistance of AC charging ports L and N to PE respectively, and require the insulation resistance to be greater than 20M.
- 3 Check the insulation resistance values of the fast charging ports DC-and DC + to PE respectively, and require the insulation resistance value to be greater than 20M.
- 4 Check the insulation resistance of the input end and output end of the high and low voltage charging system to the housing of the high and low voltage charging system, and require the insulation resistance to be greater than 20M.

### 1.4.2.14 Battery Cable Disconnection and Connection Procedures

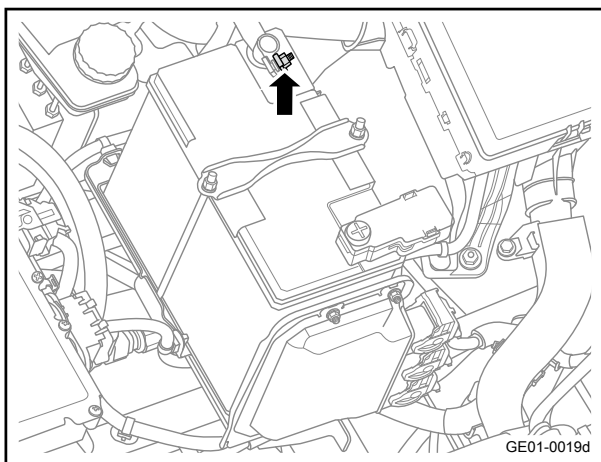
#### Disconnect program

- 1 Switch off all electrical equipment, and operate the start-and-stop button to make the power supply in OFF status.  
Open the battery access cover.
- 2 Release the fastening nuts of battery negative cable and disconnect the battery negative cable.



#### Connection procedure

- 1 Connect the negative battery cable and fit the negative battery cable fastening nut.  
Torque 9 N·m (metric) 6.7 lb-ft (imperial system)



## 1.5 Maintenance Information System

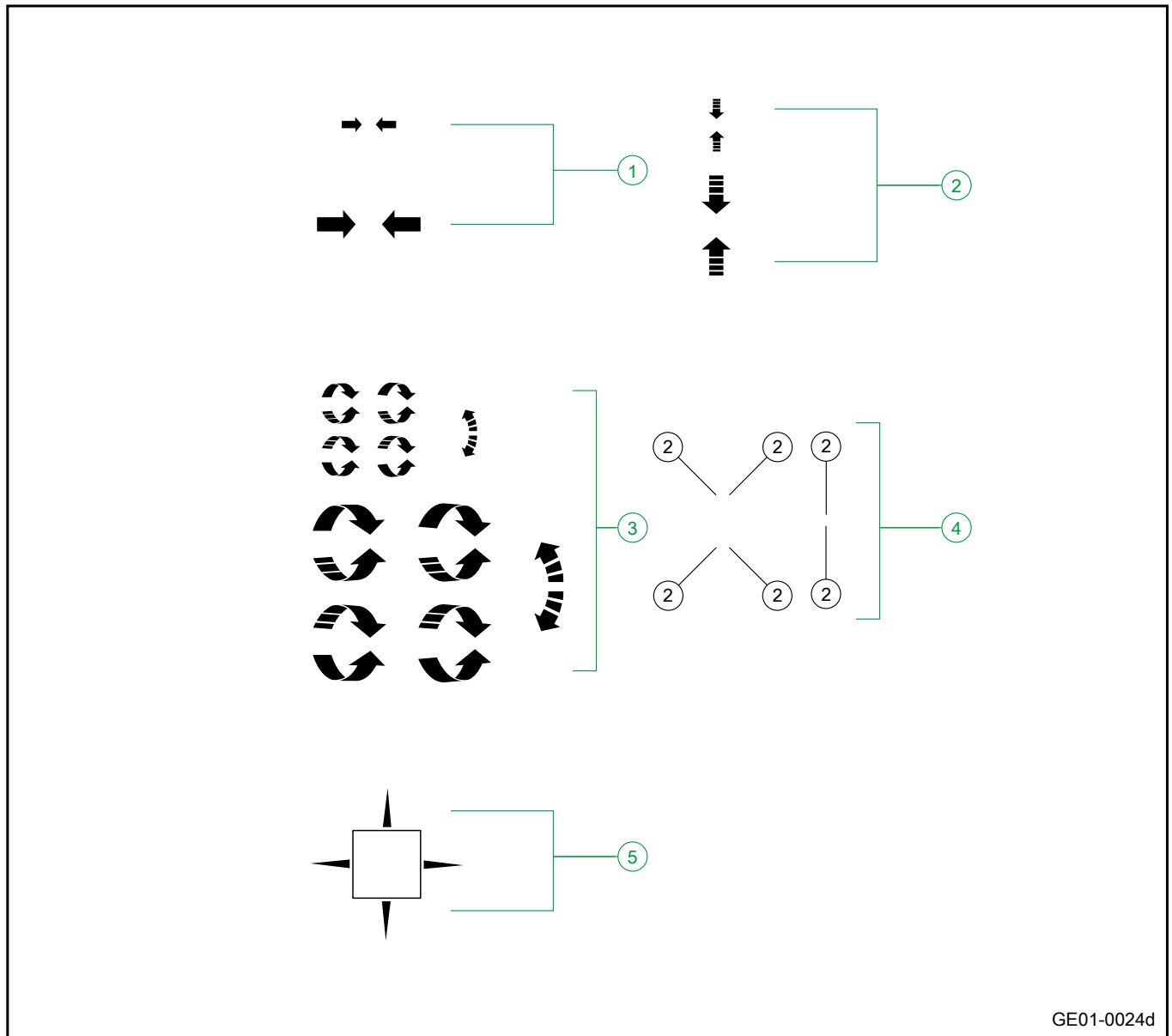
### 1.5.1 Description and operation

#### 1.5.1.1 Abbreviations used in the manual

Abbreviation in English	Chinese description
A/C	Air Conditioner
ABS	Anti-lock braking control system
AC	Air Conditioning System
ACU	Supplementary restraint system.
ACM	Auxiliary control module
AV	Audio and video entertainment system
AVAS	Vehicle acoustic warning system
BC	Body check.
BCS	Vehicle control system
BCM	Body control module
BD	Body structure
BMS	Battery management system
BR	Brake System
BRC	Brake control system
CAN	Controller area network
CCS	Cruise control system
CO	Cooling system
DC-to-DC	High voltage converter
DI	Driver information system
DLC	On-board diagnostics
EBD	Electronic brake force distribution system
ED	Circuit diagram
ESC	Electronic stability control (ESC) system
EPB	Electronic parking brake (EPB) system
EPS	Electric power steering system
EI	Exterior and interior trim
FFS	Front axle and rear suspension
FL	Left front glass lifting anti-pinch module
FR	Left rear glass lifting anti-pinch module
FR, RR	Front, Rear
GI	General
EGSM	Electronic shifter
GW	Glass/window system and rearview mirrors
HVAC	A/C control module
HECU	Hydraulic electronic control unit

Abbreviation in English	Chinese description
IP (Cluster)/ ICU	Instrument cluster
IPU	Integrated electric motor controller
IHU	Information&entertainment unit
LIN	Serial communication system
LH, RH	Left and right
LT	Lighting system
MA	Maintenance
P/S	Power Steering
PAID	Parking distance control
PCU	P gear lock control unit
PEPS	Passive Entry Passive Start system
PG	Power supply, ground, circuit components
PS	Power steering system
PTC	Warm air heating system and temperature control system
TCU	Power synthesis box controller
TEM	Remote monitoring
RBS	Brake feedback system
RL	Right front glass lifting anti-pinch module
RR	LRight rear glass lifting anti-pinch module
RRS	Front axle and rear suspension
SAE	Society of Automotive Engineers
SAS	Steering-angle sensor
SB	Seat belt
SC	Starting and charging system
SE	Seat
SOC	Power battery capacity
SRS	Auxiliary restraint system
SSB	Push-button start switch
STC	Steering control system
VCU	Complete vehicle control unit
VSS	Vehicle speed sensor
WP	Water pump controller
WT	Wheels
WW	Wiper, cleaner and horn

## 1.5.1.2 Description of arrows and symbols used in the manual



## Legend

- |    |                                 |    |                  |
|----|---------------------------------|----|------------------|
| 1. | Indication arrow                | 4. | Part number mark |
| 2. | Movement direction of the arrow | 5. | Enlarged area    |
| 3. | Turning direction of the arrow  |    |                  |

## 1.6 Health and safety

### 1.6.1 Description and operation

#### 1.6.1.1 Description

Many operations related to vehicle maintenance and repair can affect personal safety or health problems. This section lists some materials and equipment related to dangerous operation as well as the safety rules to avoid such hazards.

This section does not include all matters related to health and safety, so all operations, procedures and material handling should be conditional on safety and health. Before using any products, consult the product instruction manual provided by the manufacturer or the supplier.

#### 1.6.1.2 Acid and alkali

Refer to the [Battery Acid-Alkali Fluid](#)

Such as sodium carbonate and vitriol that are corrosive.

Used for cleaning the battery and other materials.

Irritant or corrosive to eyes, skin, olfactory and throat, which will burn the human body and damage common protective clothing.

Avoid splash on eyes, skins, and clothing. Wear appropriate protection suits, gloves and goggles to avoid the inhalation of spray.

Please provide rinsing equipment nearby, such as an eye rinsing bottle, shower nozzle and soap to facilitate timely rescue at any time in case of a splattering event.

Place a mark indicating eye danger in a prominent position

#### 1.6.1.3 Airbag

Refer to the [Chemical Material and Fire](#)

Highly flammable and explosive - comply with the non-smoking rules.

Airbags are installed in steering wheel, front passenger seat, front fascia console and A-pillar, B-pillar and C-pillar as assist safety system.

The air bag expander contains a high-energy propellant, which generates extremely high temperature gas (2500 °C/4532 °F) when ignited.

This propellant is sealed in enclosed unit. When the airbag works, the gas will fill whole air pocket. The airbag should not be deployed during maintenance, because it will cause propellant contact and danger. If gas generator is found broken, one should wear protective clothing which can cover whole body when dealing with spilt material.

After normal detonation of airbag, operators should wear safety goggles and gloves in repairing process.

Detonated airbag should be disposed in accordance with local relevant laws and regulations.

Measure should be taken after contacting the gas derivatives directly:

- Flush thoroughly with clean water at the contact point
- Seek medical care depending on the situation

#### Airbag Actuator - operations to be made

When performing the following operations, please wear safety device as well as possible for your safety; when removing the airbag, make sure that the power mode of start and stop button of vehicle is in "OFF" status, and disconnect the battery negative cable, and wait for 90s before removal.

- Store the airbag unit in vertical position.
- Keep the airbag unit dry in storage.
- Notice not to touch electrode with hands. Keep your body away from airbag as far as possible when carrying airbag unit.
- Place the protecting cover upwards when airbag unit is placed.
- Check carefully whether the airbag unit is damaged.
- Disconnect the battery negative cable first when connecting airbag. Wait for 60s, and stand on the side of airbag unit.
- Accurate correction and maintenance of all equipment.
- After disposing detonated airbag, make sure to wash hands.

#### Airbag - operations to be avoided

- Flammable materials and the unit or gas generator cannot be stored together.
- Airbag assembly should not be immersed in water or contact other fluid.
- Do not store the gas generator in an environment with a temperature higher than 80°C/176°F.
- The unit should not be stored upside down.
- Do not try to open the shell of gas generator.
- The gas generator should be away from open flame or sources of intense heat.
- Do not place other items on the unit cover.
- Damaged unit should not be used.
- Do not touch the airbag assembly or gas generator within 10 min of detonation of the assembly.
- Do not use any electric probe on the circuit.

### 1.6.1.4 A/C Refrigerant

Refer to [Chemical materials](#)

Skin contact can cause frostbite.

It is needed to follow the manufacturer's descriptions, avoid naked lights and wear proper goggles and protective gloves.

If skin or eyes come into contact with refrigerant, it is necessary to wash the exposed area with water immediately. The eyes shall be flushed with appropriate flush solution and shall not be rubbed. Medical assistance shall be sought according to the specific situation.

A/C refrigerant - operations to be avoided

- Do not store refrigerants in the places with sunlight or heat sources.
- When filling, it is improper to keep the refrigerant bottles upright and keep their valves downward.
- It is forbidden to expose the refrigerant bottle to frost and snow.
- Do not drop the refrigerant bottle.
- Do not discharge the refrigerant directly into the atmosphere under any circumstances.
- Do not mix the refrigerants. For example: R12 (dichlorodifluoromethane) and R134a (tetrafluoroethane).

### 1.6.1.5 Adhesive and sealant

Notes for the use of the adhesive and sealant

Before using the adhesive and sealant, make sure that the surface of the sizing part is clean and it must be wiped with the special cleaner, so as not to affect the adhesive effect. The sealants cured at room temperature should not enter the thread blind holes when using the sealant. If the sealant cured at room temperature enters the thread blind holes, fastener tightening will have a hydraulic lock up effect when it is tightened. The hydraulic lock up of fastener components causes the damage to fastener tightening and other components. It will also make it unable to get the correct clamp force of fastener tightening when tightening, resulting in incorrect tightness of fastener tightening, loose or separation of components and serious damage to the engine and other components.

It is needed to follow the manufacturer's descriptions, avoid naked lights and wear proper goggles and protective gloves.

If skin or eyes come into contact with refrigerant, it is necessary to wash the exposed area with water immediately. The eyes shall be flushed with appropriate flush solution and shall not be rubbed. Medical assistance shall be sought according to the specific situation.

Health and safety

Since there are harmful substances in the materials used in adhesive and sealant, long-term exposure will cause some diseases, such as acute and chronic poisoning, career diseases and skin diseases. The ventilation device is used to maintain the ventilation of the workshop when applying glues; protective gloves, face mask, protective clothing, etc. should be worn during operation; hands should be washed carefully and the workshop should be clean, tidy and sanitary after working.

- Waste glues and wastes polluted by the solvent should be promptly cleaned up, and not be accumulated for a long time.
- Products should normally be kept in non-smoking areas. When used, they must keep clean and construction is carried out with applicators or containers as far as possible.

Maintenance of adhesive and sealant

- In the event of fault or accident of a vehicle, it will cause body distortion, cracking of steel plates and getting adrift of welding joint and part damages to the engine, chassis and other assembly components, causing the some adhesive/sealant products to be adrift and damaged. In the process of vehicle maintenance, the adhesive with the same performance should be selected according to the material and functional requirements of components. The following is a list of adhesives/sealants that can be used during automobile maintenance, which can be selected in the automobile maintenance.

Body repair

If the body interior trim and steel plates distort or crack and the adhesive on the body get adrift or cracked, the parts with adhesive should be repaired in the process of maintenance.

- Firstly, remove the adhesive on the vehicle body surface with a knife and wipe the remaining adhesive with alcohol.
- Wipe the adhesive parts with special cleaners to avoid residual impurities such as remaining adhesive on the sizing surface;
- Then apply the repair adhesive to the original sizing parts to achieve the adhesive and sealing effect.



Products	Base materials	Application	Recommended model
Body sealant	Single unit polyurethane	Bonding of vehicle body skin, interior/exterior trims, body structure, etc. The adhesive should have a strong adhesive force and cohesion force and have good adhesion with metal, various paints, etc.	TONSAN Kesaixin: 1922, 1923
Seam sealant	One-component polyurethane	Room temperature curing adhesive is used for sealing the weld inside the car body and is manually brushed with a brush; room temperature curing adhesive is used for fine sealing of trunk and door hem, and special glue extrusion gun is used for thread coating.	China Auto Parts & Accessories Industry Corporation: C8802
Anti-collision primer	Rubber and resin	Anti-collision adhesive cured at room temperature used for chassis protection, forming a permanent anti-aging, elastic, corrosion resistant, protective coating at the bottom of the car and the wheel cover. This kind of product can substitute PVC coating, with excellent functions such as rust-proof, sound insulation, anti-stone chipping.	China Auto Parts & Accessories Industry Corporation: C312DW

Products	Base materials	Application	Recommended model
Front windshield adhesive	Single unit polyurethane	Polyurethane adhesive cured at room temperature, used for direct bonding and sealing of automobile window glasses. The adhesive has a good adhesive performance. It can react with the moisture in the air, solidify and form excellent properties such as high strength, aging resistance, vibration and fatigue resistance, low-temperature resistance, and non-corrosion.	TONSAN Kesaixin: 1956, 1924
Cleaner	-	Cleaning of all surfaces contacted with primer paint and adhesives.	-
Pressure-sensitive adhesive tape	Acrylic acid tape	Bonding of anti-scratch panel, nameplate, fender apron, mud apron, door protection, various trim strips, etc. This adhesive tape has properties of excellent weather resistance and endurance.	3M 4229P, 4215, 4221L
Heat-sensitive adhesive tape	Acrylic acid tape	It is mainly used for bonding the rubber sealing strip system of automobiles. This type of tape should have a strong binding force and strong sealing performance, to avoid clearance and corrosion due to poor adhesion.	3M, 4237P
Tape glue	-	Choose different primers according to the bonding surface materials. The bonding surface should be clean. After being thoroughly dried, apply the primer evenly on the bonding surface with a brush. After being dried, paste the adhesive tapes.	M C-100, K-500\520, N-200

Component maintenance

After some interior parts, reducers and other parts are damaged, bonding and sealing repair is required. When

sealant is applied, the adhesive surface should be cleaned to avoid burrs and cracks affecting the adhesive effect.

Glue for component maintenance

Name	Application	Recommended model
Silicone rubber flat sealant	It is used in the flat sealing of large clearance and flexible joints, such as enclosure, flange, joint surface between bottom shell and end cap of the reducer. After cleaning of remaining glue and drying, the sealing surface (or gasket) should be applied with an appropriate diameter of the sealing glue line. After application, the components should be aligned and closed immediately to avoid wrong movements. The bolts should be tightened to exclude excess glue or it is cleaned with blades after curing. This sealant contains no solvent and can be cured at room temperature. It does not corrode the parts and can withstand impact, medium and high temperature.	TONSAN Kesaixin: 1596, 1598, 5060b
Anaerobic thread locking sealant	For the fastening and locking of bolts, nuts, screws and other components, the mesh should be cleaned when they are applied. After drying, the glue can be applied to the mesh. After cured at room temperature, it has good impact resistance, vibration resistance, no leakage, corrosion resistance and other properties.	Loctite204, TONSAN Kesaixin:1510
Anaerobic sealant	It is used for the sealing and bolt locking of flat components with small clearance whose curing needs to be isolated from the air. It has water resistance, oil resistance, corrosion resistance and other properties	Loctite204, TONSAN Kesaixin:1510

Other maintenance materials

Name	Application	Material No.
Locking fluid	It is used for the fastening bolts with the maximum fastening dimension of M6, such as window glass regulating handles.	TONSAN Kesaixin: 1596, 1598
Rust inhibitor	It is a rust inhibitor based on the rubber. It is used for sound insulation and rust-proof treatment of automobile chassis, with the effect of anti-corrosion and sound insulation	Loctite204, TONSAN Kesaixin:1510

Construction cautions

- The adhesive/sealant is to prevent water and dust from entering the vehicle, but also has the function of anti-corrosion. The original sealing joints are obvious and should be resealed if they are damaged. High-consistency fillers should be selected when open joints are sealed with adhesive/sealant. Follow the descriptions for the selected materials.
- When spraying adhesive/sealant materials, precautions must be taken to avoid spraying into component openings (such as door locks, window trays, window regulating slot and seat belt retractors) and any moving or rotating components, especially parking brake cables. After the

adhesive/sealant is sprayed, make sure that all bleed holes on the vehicle body are opened.

- Special protective glasses and gloves should be worn during operation to prevent personal injury.
- When the vehicle is delivered, the vehicle body metal plates have been coated. After maintenance and/or replacement of components, all exposed metal surfaces must be treated with the rust-proof primer before glue is applied.
- After maintenance by gluing, part of the adhesive/sealant needs to be dried and cured. The baking condition is (70 ~ 80) °C for 20 ~ 30 min.

### 1.6.1.6 Coolant

Refer to [Fire](#)

Such as isopropanol, ethyleneglycol, glycol and methyl alcohol.

Highly flammable combustibles.

Applicable to engine coolant circulation system of vehicles.

Motor coolant (glycol) may produce steam in case heated to high temperatures. Inhalation of this steam should be avoided.

After directly contacting the electric motor coolant, the amount of electric motor coolant absorbed directly through the skin may reach toxic or harmful levels. If you swallow the motor coolant by mistake, your life may be in danger, and you should immediately send it to the hospital for medical assistance.

These products cannot be disposed of in conjunction with common food or connected with the drinking water supply system.

### 1.6.1.7 Asbestos

Inhaling asbestos dust can easily cause lung damage and even cancer.

Prior to disposal, asbestos dust waste should be wetted, placed in a sealed container clearly marked on the surface, to facilitate safe disposal. If it is necessary to attempt to cut or drill holes on materials containing asbestos, such materials should be wetted first. And only hand tools or low-speed power tools should be used.

### 1.6.1.8 Battery acid fluid

Refer to [Acid and alkali](#)

Gases released during charging are explosive. Never conduct open flame operation near the battery which is being charged or freshly charged.

Must keep proper ventilation.

### 1.6.1.9 Brake Fluid

Refer to [Fire](#)

If splashing on the skin and eyes, it will cause slight irritation. Measures should be taken to avoid the brake fluid directly contacting the skin and eyes. The risk of inhaling brake fluid vapor at normal temperature is not high, since its vapor pressure is extremely low.

### 1.6.1.10 Chemical materials

Great care should be given to the use, storage, and disposal of chemical materials of solvents, sealants, adhesives, coatings, resin foam, battery acid fluid, engine coolant, brake fluid, fuel, lubricating oil, and grease. They may be toxic, harmful, erosive, irritant, or highly combustible and with high dangerous odor and dust.

The influence of long-term overexposure to the chemical substances in the environment may be immediate or chronic, transient or permanent, accumulative, superficial, life-threatening, or may affect service life.

#### Chemical materials – required operations

- Carefully read and follow the warnings and notices on the raw material container and any accompanying leaflet, poster, and other instructions. The health and safety data form of raw materials can be obtained from the manufacturer.
- After being exposed to chemical materials, remove them from your skin and clothes immediately, and change heavily immersed clothing and wash it thoroughly.
- Strictly follow instructions and wear protective clothing to avoid direct contact of the materials with the skin and eyes.
- In case of dealing with chemical materials, clean before resting, eating, smoking, or using toilet facilities.
- Keep the tidiness and orderliness of the working area, and do not spill the chemical materials.

#### Chemical materials - operations that should be avoided

- Unless specified by the manufacturer, chemical materials cannot be mixed. Some chemical substances will form other toxic or harmful chemical substances and release other toxic and harmful gases during the mixture and cause an explosion or other accidents.
- Spraying chemical materials in an enclosed environment is not allowed.
- Unless specified by the Manufacturer, chemical materials cannot be heated, because some chemical materials are highly combustible and others may release toxic and harmful gases.
- Do not keep the chemical material container open. Released gases may accumulate to be toxic, harmful, or explosive. Some gases are heavier than the air and can be accumulated in an enclosed space.
- Putting chemical materials in containers without labeling is not allowable.
- Cleaning hands or clothing with chemical materials is not allowable. Chemical medicines, especially solvents and fuels, will dry out the skin and may cause allergies, scytitis, or the direct absorption of toxic and harmful substances, influencing the health of the body.
- Do not store other chemical materials in an empty container arbitrarily unless the container is cleaned under supervision.

- Do not sniff or smell chemical materials. Brief exposure to gases with high concentrations may still cause poisoning or injuries.

#### 1.6.1.11 Dust

Powder, dust, and dirt may be irritating, harmful, or poisonous. Avoid inhaling powdery chemicals or dust raised by dry friction operation. If ventilation is insufficient, it's required to wear a breathing mask and protective device to prevent inhalation of dust.

Fine dust of combustible material may have the risk of explosion. Avoid explosion and combustion source.

#### 1.6.1.12 Electric shock

The electrical equipment on pure electric vehicles is divided into low-voltage electrical components and high-voltage electrical components; the former includes instruments, acoustics, lights, horns, blowers, etc.; the latter includes electric drive system, drive motor controller, high-voltage battery pack, OBC-DCDC-PDU high and low voltage charging system, A/C compressor, PTC, etc.

Orange warning labels are affixed to high-voltage components. Pay attention to the requirements on warning labels. To avoid electric shock injury, it is forbidden to touch high-voltage components, high-voltage cables (orange) and their connectors.

If the cable on vehicles is exposed or damaged, do not touch it to prevent electric shock.

Non-professional maintenance personnel are prohibited from disassembling, removing or refitting electrical equipment at will; otherwise, touching high voltage electricity will lead to serious consequences such as fire burns and even electric shock death.

Incorrect use of electrical equipment without following instructions or abuse of equipment in good condition may cause electric shocks.

Be sure to maintain the electrical equipment within the specified time and test it frequently. Faulty equipment should be marked and it'd better to move it outside the working area.

Do not wear, kink, cut, crack or otherwise damage wires, cables, plugs and sockets, and do not make electrical equipment and wires contact with water.

Ensure that electrical equipment is protected by correct fuses.

Misuse of electrical equipment is prohibited, and equipment with any hidden trouble must not be used, otherwise the result may affect personal safety.

The cables of mobile electrical equipment shall be guaranteed not to be clamped and damaged.

Basic first aid training must be carried out for specialized electrical appliance operators.

In the event of an electric shock:

Turn off the power before contacting the victim.

If the power supply cannot be turned off, the victim's power supply should be removed with dry insulator material.

Those who have received special first aid training should immediately carry out on-site first aid.

Request medical assistance.

#### 1.6.1.13 Fiber isolation

Refer to [Dust](#)

Used to isolate noise and sound.

The fibrous nature of its surface and sharp edges can cause skin allergies.

#### 1.6.1.14 Fire hazard

Many materials related to vehicle maintenance are highly flammable. Many materials will produce poisonous and harmful gases after burning.

Please make certain to follow the fire control safety standards in storing and disposing flammable materials or solvents, especially in places near to electrical equipment and where a welding operation is taking place.

Before using electrical and welding equipment, no potentials of the fire must be confirmed firstly.

While welding or using the heating equipment, it is needed to prepare a suitable fire extinguisher around the operation area.

#### 1.6.1.15 Emergency

It should not only comply with the law, but also have professional first aid coaching personnel in the working place.

If the eyes are splashed, they should be rinsed with water for at least 10 minutes.

If the skin is contaminated, wash the contaminated area with soap and water.

If suffered from frostbite, soak the frostbitten area in ice water or cold water.

The personal inhaling toxic gases should be immediately moved to the area with fresh air, if adverse reactions continue to occur, the injured personal should immediately be sent to a hospital for medical assistance.

In case of accidental ingestion of liquid, inform the physician of the information on the container or coil label, and do not blindly induce vomiting unless instructed to do so on the coil label.

### 1.6.1.16 Foam - polyurethane

Refer to [Fire](#)

The cured foam is used as a buffer pad between the seat and decoration.

Manufacturer instructions are followed.

For persons with problems of chronic respiratory diseases, asthma, and bronchus or with hereditary allergy, they should not handle or be close non-cured materials.

Spare parts, vapor, or spray of non-cured materials will cause direct stimulus and anaphylactic reactions that may be toxic and harmful.

Do not inhale vapor or spray. Such materials must be used under the condition of good ventilation and that breathing is protected. It is not allowable to remove the mask immediately after spraying, and it can be removed until the complete dissipation of vapor and spray.

The combustion of non-cured components and cured foam will produce poisonous and harmful gases. During the period of foam operation, unless vapor and spray have been completely cleared out, and smoking, open fire, and electric equipment are prohibited. The thermal cutting for any foam materials or special foam materials should be operated in a well-ventilated environment.

### 1.6.1.17 Gas cylinder

Refer to [Fire](#)

Gases such as oxygen, acetylene, argon and propane, which are normally stored in gas cylinders at the pressure of 13.8 MPa (2001psi). Special attention must be paid to disposal of these cylinders for avoiding mechanical damage to cylinders or valves. Cylinders filled with gas shall be clearly and appropriately labeled.

Cylinders shall be stored in a well ventilation area and protected from snow, ice or direct sunlight. Fuel gases, for example: acetylene and propane shall not be stored with oxygen cylinders.

Special attention shall be paid to prevent leakage of gas cylinders and pipelines as well as ignition sources.

Only personnel with professional skills are allowed to perform work related to gas cylinders

### 1.6.1.18 General workshop tools and equipment

Always keep good working condition of all tools and equipment, and right operations during use, which are all significant.

Bear in mind that do not use tools or equipment for the purposes contrary to its design function. Do not make equipment such as crane, jack, axle, chassis bracket and sling bear the load exceeding the maximum limit it can bear. Damage caused by overload does not always appear immediately, and it may cause serious accidents in the next use.

Do not use tools or equipment that have been damaged or in poor working condition, especially some high-speed equipment such as grinding wheels. Damaged grinding wheel can shatter without warning and cause serious damage.

At the time of using grinding wheel, chisel or sandblasting equipment, appropriate eye protection equipment should be worn.

When operators use sandblasting equipment, handle materials containing asbestos or use spray equipment to conduct operation, appropriate breathing mask should be worn.

Ventilation equipment that can control the amount of dust, spray, and smoke in the environment must be equipped.

### 1.6.1.19 Lubricants and lubricating grease

Avoid long time and repeated contact with mineral grease. All lubrication oils and lubricating greases are irritating to eyes and skin.

Used reducer gear oil

Long time and repeated contact with mineral grease will give rise to the loss of natural skin oil, and cause dryness, irritation and dermatitis. Besides, it is highly likely that there is harmful substance that may cause skin cancer in the used gear oil. Skin protection equipment, as well as flushing equipment, should be used.

Do not use the used gear oil as lubrication oil, or any other usage that may contact skin directly.

Health protection safety rules

- Long time and repeated contact with oil fluid should be avoided, especially the used oil fluid.
- Wear protective clothing, including impermeable gloves.
- Do not put wiping cloth stained with oil into pockets.
- Prevent the oil contaminating clothing, especially those clothing that can touch human body.

- Do not wear clothing or shoes highly contaminated with oil. Working clothing must be cleaned regularly and kept clean.
- First aid treatment of open wound should be given without delay.
- While working, apply the protection cream to your skin as long as possible, so as to prevent your skin directly contacting oil.
- Use soap and clean water to flush and eliminate all the oil. Apply protective agent which contains wool grease. This will help replace natural oil removed from your skin.
- If skin lesion occurs, seek medical treatment immediately.
- Eliminate the residual grease on components as much as possible before working.
- If direct contact to eyes is possible, please wear protective goggles such as goggles or masks that are protective against chemicals and drugs. Besides, eyes flushing equipment is also needed.

#### Environment notices:

Used waste oil should be recycled and handled by authorized or licensed waste processors, or waste oil recyclers. If you have any doubt, contact the relevant departments of the local competent authority in a timely manner.

It is prohibited by law to pour the used waste oil directly into the ground, sewer or drainage or water pipe directly is illegal.

#### 1.6.1.20 Noise

High-decibel noise may be produced during the process of some operations, and it may cause harm to hearing. At this moment, the appropriate hearing protection equipment should be worn.

## 1.7 Standards and metrics

### 1.7.1 Description and operation

#### 1.7.1.1 Equivalent-decimal and metric

Fraction (in)	Decimalism (in)	Metric system (mm)
1/64	0.015625	0.39688
1/32	0.03125	0.79375
3/64	0.046875	1.19062
1/16	0.0625	1.5875
5/64	0.078125	1.98437
3/32	0.09375	2.38125
7/64	0.109375	2.77812
1/8	0.125	3.175
9/64	0.140625	3.57187
5/32	0.15625	3.96875
11/64	0.171875	4.36562
3/16	0.1875	4.7625
13/64	0.203125	5.15937
7/32	0.21875	5.55625
15/64	0.234375	5.95312
1/4	0.25	6.35
17/64	0.265625	6.74687
9/32	0.28125	7.14375
19/64	0.296875	7.54062
5/16	0.3125	7.9375
21/64	0.328125	8.33437
11/32	0.34375	8.73125
23/64	0.359375	9.12812
3/8	0.375	9.525
25/64	0.390625	9.92187
13/32	0.40625	10.31875
27/64	0.421875	10.71562
7/16	0.4375	11.1125
29/64	0.453125	11.50937
15/32	0.46875	11.90625
31/64	0.484375	12.30312
1/2	0.5	12.7
33/64	0.515625	13.09687
17/32	0.53125	13.49375
35/64	0.546875	13.89062
9/16	0.5625	14.2875
37/64	0.578125	14.68437
19/32	0.59375	15.08125



Fraction (in)	Decimalism (in)	Metric system (mm)
$\frac{39}{64}$	0.609375	15.47812
$\frac{5}{8}$	0.625	15.875
$\frac{41}{64}$	0.640625	16.27187
$\frac{21}{32}$	0.65625	16.66875
$\frac{43}{64}$	0.671875	17.06562
$\frac{11}{16}$	0.6875	17.4625
$\frac{45}{64}$	0.703125	17.85937
$\frac{23}{32}$	0.71875	18.25625
$\frac{47}{64}$	0.734375	18.65312
$\frac{3}{4}$	0.75	19.05
$\frac{49}{64}$	0.765625	19.44687
$\frac{25}{32}$	0.78125	19.84375
$\frac{51}{64}$	0.796875	20.24062
$\frac{13}{16}$	0.8125	20.6375
$\frac{53}{64}$	0.828125	21.03437
$\frac{27}{32}$	0.84375	21.43125
$\frac{55}{64}$	0.859375	21.82812
$\frac{7}{8}$	0.875	22.225
$\frac{57}{64}$	0.890625	22.62187
$\frac{29}{32}$	0.90625	23.01875
$\frac{59}{64}$	0.921875	23.41562
$\frac{15}{16}$	0.9375	23.8125
$\frac{61}{64}$	0.953125	24.20937
$\frac{31}{32}$	0.96875	24.60625
$\frac{63}{64}$	0.984375	25.00312
1	1	25.4

## 1.8 Vehicle specifications

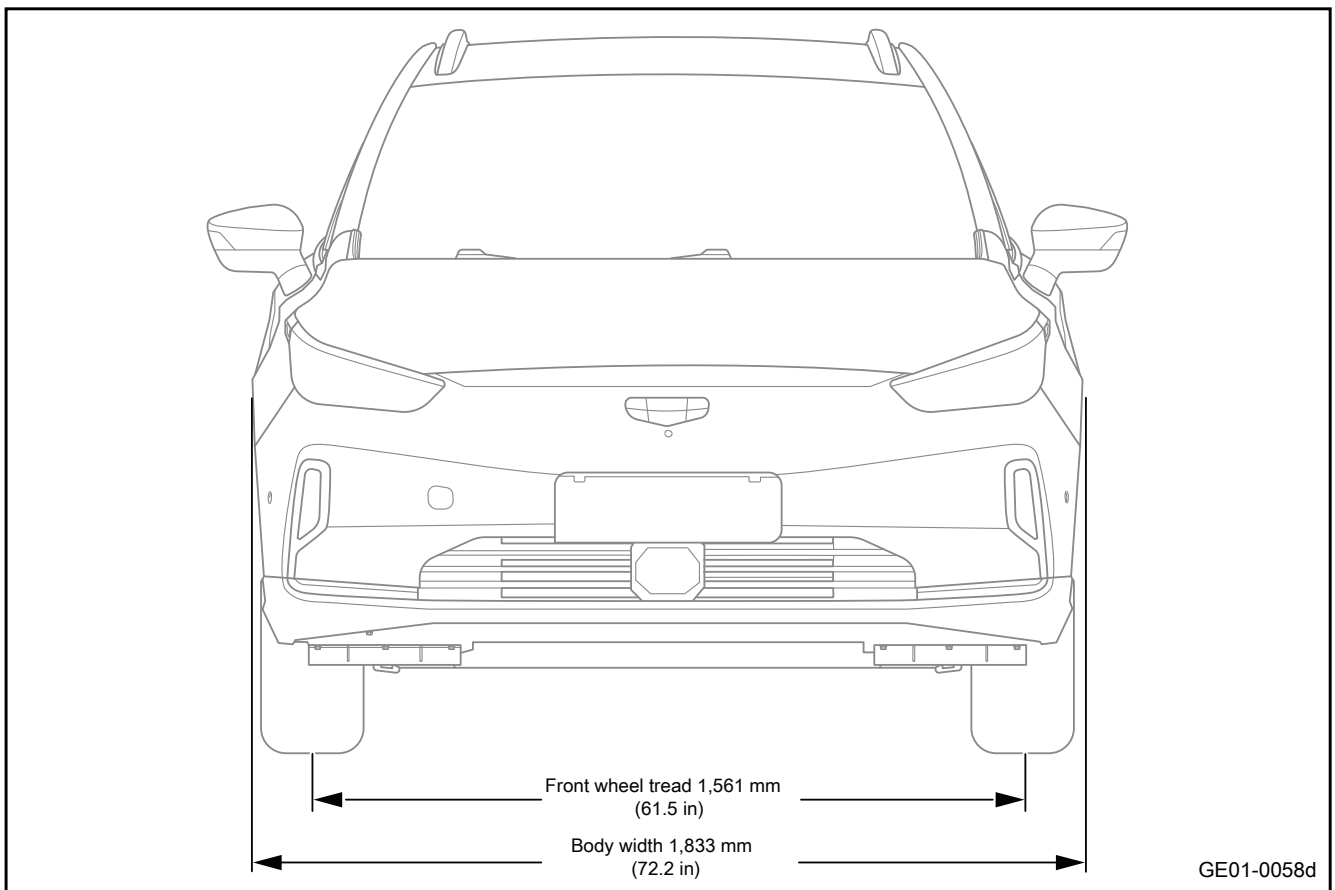
### 1.8.1 Specification

#### 1.8.1.1 Whole vehicle dimensions

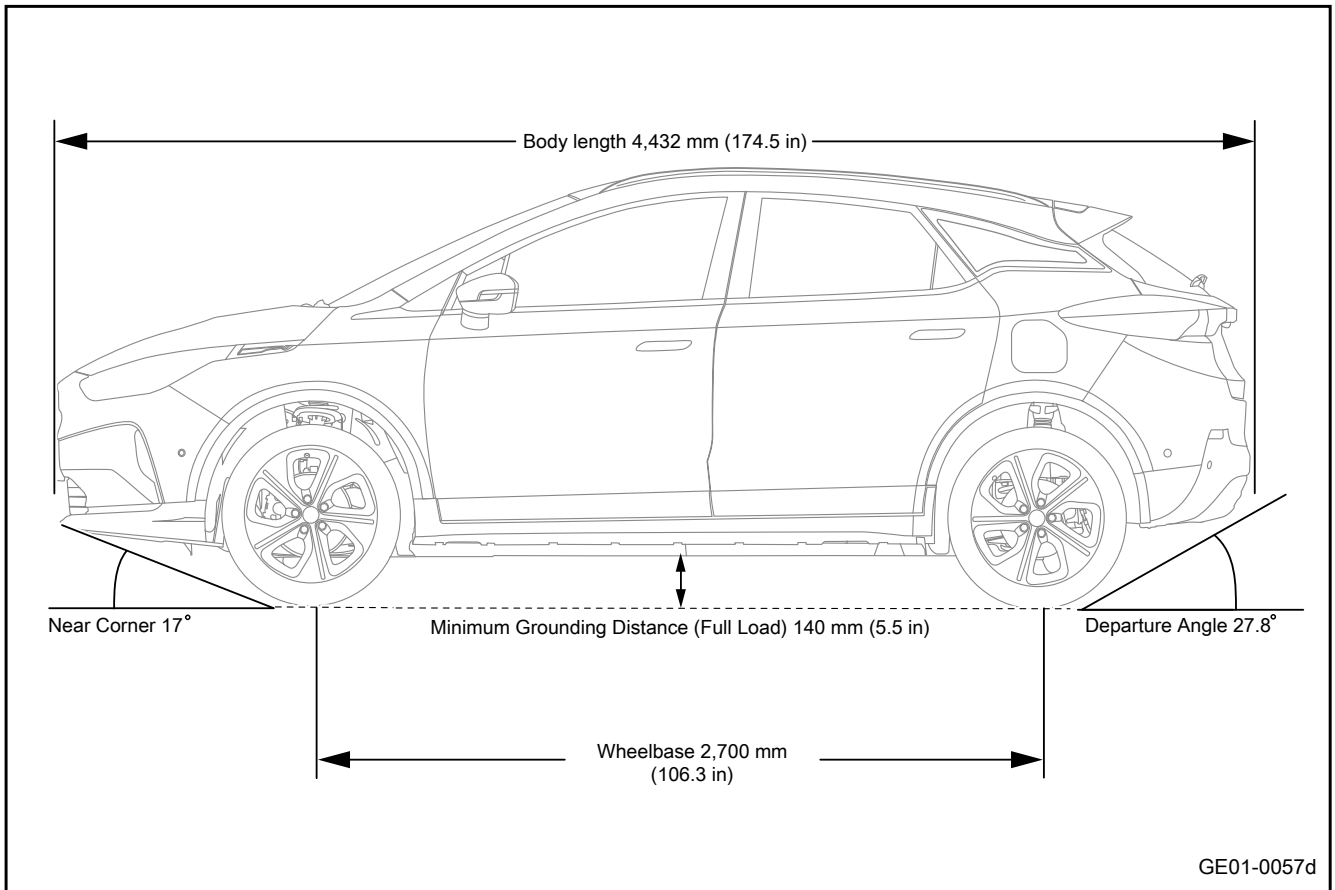
##### Model dimensions

Item	Value	Unit
Vehicle length	4432	mm
Vehicle width	1833	mm
Vehicle height	1560	mm
Front wheel tread	1561	mm
Rear Wheel tread	1560	mm
Wheel base	2700	mm
Approach angle (full vehicle)	17	.
Departure angle (full vehicle)	27.8	.
Minimum road clearance	≥140	mm

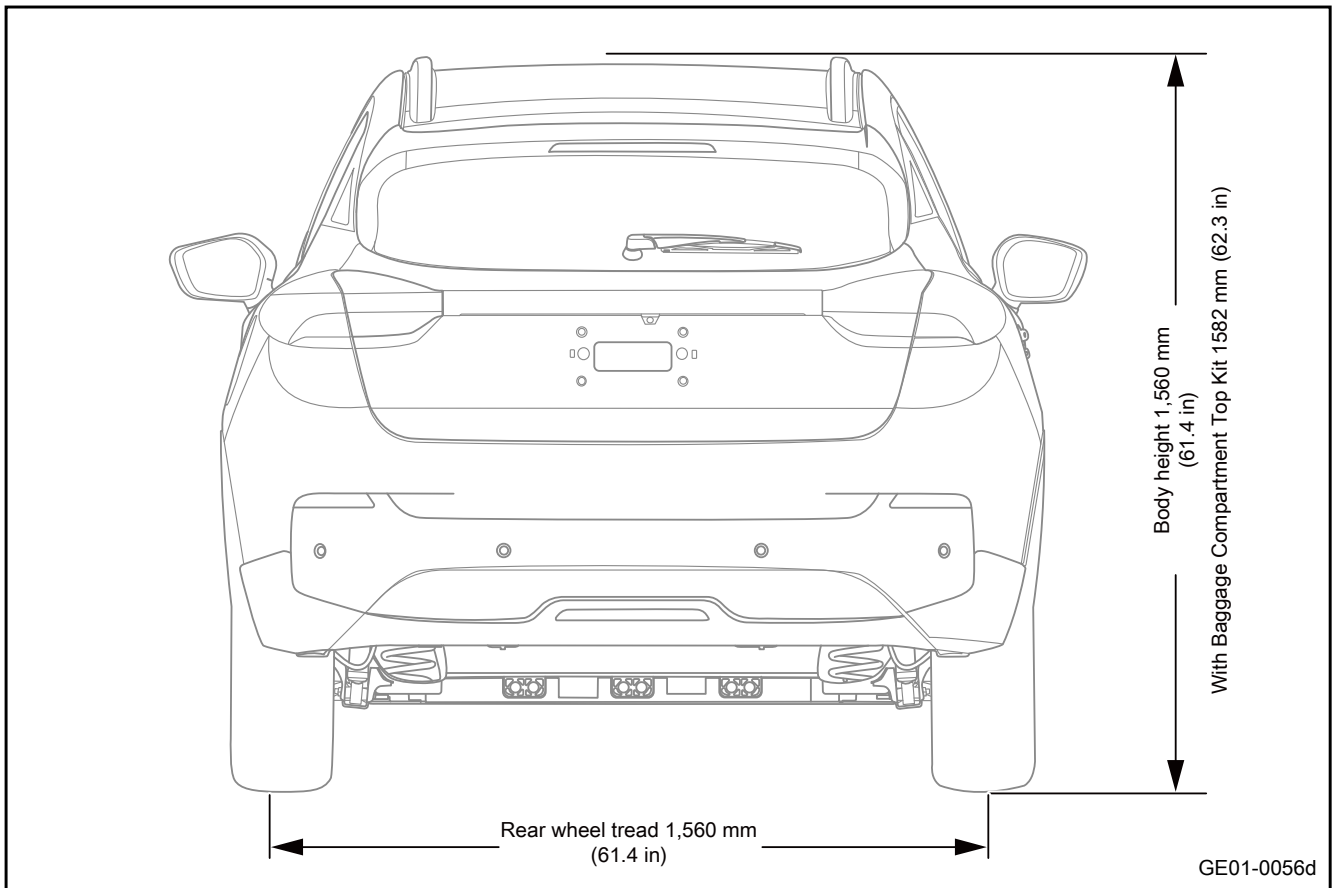
##### Front view



##### Side view



Rear view



## 1.8.1.2 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Power battery assembly bottom fixing bolt	M10×35	68 - 88	50.2 - 64.9
Power battery pack rear mounting bracket fixing bolt	M10×20	35 - 55	25.8 - 40.6
Power battery pack upper cover clamp fixing screw	M6×25	9 - 11	6.6 - 8.1
Fixing bolts of front sealing pressplate of power battery pack	M5×12	5 - 7	3.7 - 5.2
PEU harness assembly bracket fixing bolt	M6×20	8 - 10	5.9 - 7.4
Soft copper bar fixing bolt	M6×20	8 - 10	5.9 - 7.4
Power battery earth wire fixing bolt	M6×12	8 - 10	5.9 - 7.4
Upper fixing bolts of left vibration isolation assembly	M12×50	117 - 143	86.3 - 105.5
Left fixing bolts of left vibration isolation assembly	M14×120	189 - 231	139.5 - 170.5
Upper fixing bolts of right vibration isolation assembly	M12×50	117 - 143	86.3 - 105.5
Right fixing bolts of right vibration isolation assembly	M14×120	189 - 231	139.5 - 170.5
Fixing bolt of left suspension bracket	M12×50	117 - 143	86.3 - 105.5
Fixing bolt of rear suspension bracket (front)	M12×50	117 - 143	86.3 - 105.5
Fixing bolt of rear suspension bracket (rear)	M14×120	220 - 260	162.4 - 191.9
Fixing bolt of vent cover plate	M6×10	7.2 - 8.8	5.3 - 6.4
Three-phase copper bar fixing bolt	M6×10	7.2 - 8.8	5.3 - 6.4
Fixing bolt of driving motor controller	M8×25	16.2 - 19.8	11.9 - 14.6
Fixing bolt of driving motor controller	M8×35	16.2 - 19.8	11.9 - 14.6
Fixing bolt of power wire harness cover plate	M6×14	7.2 - 8.8	5.3 - 6.4
Reducer filling plug	—	30 - 39	22.1 - 28.8

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Reducer drain plug	—	30 - 39	22.1 - 28.8
Electronic oil pump fixing bolt	M6×25	7.2 - 8.8	5.3 - 6.4
Oil cooler fixing bolts	M6×25	9 - 10	6.6 - 7.4
Fixing bolt of inverter to oil cooler water pipe bracket	M6×14	7.2 - 8.8	5.3 - 6.4
Fixing bolt of electronic water pump (20W)	M8×20	20 - 26	14.8 - 19.2
Intermediate shaft universal joint and mechanical steering gear fixing bolt	M8×36	36 - 42	26.6 - 31.0
Fixing bolt of electronic selector and Auxiliary Instrument dashboard switch assembly	ST4.2×13	1.3 - 1.7	1 - 1.3
Accelerator pedal fixing bolt	M6×20	8.5 - 11.5	6.3 - 8.5
Fixing bolt of motor electronic water pump	M6×16	8 - 10	5.9 - 7.4
Fixing bolt of battery electronic water pump	M10×20	35 - 45	25.8 - 33.2
Fixing bolt for connecting compressor exhaust hose to exterior heat exchanger	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of air intake grille assembly	M6×25	5 - 7	3.7 - 5.2
Fixing bolt of three-way solenoid assembly	M6×20	8.5 - 11.5	6.3 - 8.5
Cooling module fixing bolt	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing bolt of exterior heat exchanger	M6×16	8 - 10	5.9 - 7.4
Radiator assembly fixing bolt	M6×16	8 - 10	5.9 - 7.4
Expansion tube assembly (side mounted) fixing bolt	M6×20	5 - 7	3.7 - 5.2
Driving motor ground bolt	M8×18	20 - 26	14.8 - 19.2
Electric compressor fixing bolt	M8×95	20 - 28	14.8 - 20.7
Fixing nut of high and low voltage charging system assembly	M8×25	20 - 28	14.8 - 20.7

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of high and low voltage charging system assembly	M8	22 - 24	16.2 - 17.7
Fixing nut of power battery clamp plate	M6	5 - 7	3.7 - 5.2
Fixing bolt of combined charging socket wiring harness assembly	M6×20	8.5 - 11.5	6.3 - 8.5
Fixing nut of combined charging socket wiring harness assembly	M6	8.5 - 11.5	6.3 - 8.5
Fixing nut for ground wiring harness of combined charging socket wiring harness assembly	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing screw of combined charging socket wiring harness assembly	M6×16	8.5 - 11.5	6.3 - 8.5
Fixed nut connecting the combined charging socket harness assembly and the filter bracket	M6	—	—
Filter bracket fixing bolt	M8×20	—	—
Fixing bolt for front suspension lower left control arm assembly to steering knuckle	M12×60	81+70° ~ 99+80°	59.3+70° ~ 73+80°
Front fixing bolt of front suspension lower left control arm assembly	M12×35	81+85° ~ 99+95°	59.3+85° ~ 73+95°
Rear fixing bolt of front suspension lower left control arm assembly	M14×90	108+85° ~ 132+95°	79.6+85° ~ 97.3+95°
Rear fixing bolt of front suspension lower left control arm assembly	M14	108+85° ~ 132+95°	79.6+85° ~ 97.3+95°
Fixing nut of left front slide column assembly	M10	72 - 88	53.1 - 64.9
Fixing nut at top of left front slide column assembly	M10	70 - 80	51.6 - 59

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Lower bolt-nut assembly of left front strut assembly-nut	M14	183 - 213	135.1 - 157.2
Lower bolt-nut assembly of left front strut assembly-bolt	M14×58	183 - 213	135.1 - 157.2
Stabilizer bar link lower fixing nut	M10	67 - 83	49.4 - 61.2
Stabilizer bar link upper fixing nut	M10	67 - 83	49.4 - 61.2
Fixing bolt of front stabilizer bar assembly	M10×60	63 - 77	46.5 - 56.8
Connecting bolt of steering knuckle to front shock absorber	M14×58	183 - 213	135.1 - 157.2
Connecting bolt and nut of steering knuckle to front shock absorber	M14	183 - 213	135.1 - 157.2
Fixing bolt of steering tie rod ball joint.	M12	50 - 60	36.9 - 44.3
Lower swing arm ball joint fixing bolt	M12	99 - 121	73.1 - 89.3
Outer lockup nut of the drive shaft	M22	260 - 280	191.9 - 206.6
Bolt-nut assembly for rear shock absorber assembly to rear axle	M12×80	126 - 154	93 - 113.7
Fixing bolt in the upper end of rear shock absorber assembly	M10×25	72 - 88	53.1 - 64.9
Fixing nut in the upper end of rear shock absorber assembly	M10	72 - 88	53.1 - 64.9
Fixing bolt for installing rear hub unit	M10×25	67 - 83	49.4 - 61.3
Fixing bolt for connecting the rear axle assembly to the left and right rear axle mounting brackets	M14×120	First time 135~165 Second time 55°-65°	First time 99.6~121.7 Second time 55°-65°
Rear shock absorber assembly and rear axle fastening bolt	M12×80	126 - 154	93 - 113.7

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Connecting nut for left rear shock absorber assembly to rear axle	M12	126 - 154	93 - 113.7
Wheel nut	M12	117 - 143	86.3 - 105.5
Fixing bolt in the lower end of brake caliper	M12×38	27 - 33	19.9 - 24.3
Fixing bolt of front left brake caliper assembly	M12×38	110 - 130	81.2 - 95.9
Brake hose and brake caliper fixing bolt	M10×20	30 - 36	22.1 - 26.6
Fixing nut for connecting No. 1 hard tube of brake master cylinder to ESC control module	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 1 hard tube of brake master cylinder with intelligent booster	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 2 hard tube of brake master cylinder to ESC control module	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 2 hard tube of brake master cylinder with intelligent booster	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left front brake hard tube to left front brake hose	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left front brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right front No. 1 brake hard tube to right front No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right front No. 1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4



Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut for connecting right front No. 2 brake hard tube to right front brake hose	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left rear No. 1 brake hard tube to left rear No. 2 brake hard tube.	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left rear No.1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut of left rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left rear No. 1 brake hard tube to left rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut of right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing screw of front brake disc dust cover	M6×14	8 - 10	5.9 - 7.4
Fixing screw of front brake disc	M6×14	5 - 7	3.7 - 5.2
Rear brake caliper bracket fixing bolt	M12×37	110 - 130	81.1 - 96.0
Fixing nut of smart booster	M8	20 - 26	14.8 - 19.2
Left front brake hose and brake cylinder fixing bolt	M10×20	30 - 36	22.1 - 26.6
Bolt that connects left front brake hose with brake hard pipe	M10	8 - 10	5.9 - 7.4

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Bolt that connects left rear brake hose with brake hard pipe	M10	8 - 10	5.9 - 7.4
Left rear brake hose and brake cylinder fixing bolt	M10×20	30 - 36	22.1 - 26.6
Brake pedal fixing bolt	M8×35	20 - 28	14.8 - 20.7
Fixing nut of brake pedal assembly	M8	20 - 28	14.8 - 20.7
Brake pipe nuts of the ESC control module	M10	8 - 10	5.9 - 7.4
EPB switch pack fixing screw	ST4.2	2 - 3	1.5 - 2.2
Fixing nut for connecting EPB controller assembly to body	M6	8.5 - 11.5	6.3 - 8.5
Front wheel speed sensor fixing bolt	M6×12	8 - 10	5.9 - 7.4
Rear wheel speed sensor fixing bolt	M6×12	8.5 - 11.5	6.3 - 8.5
Fixing nut of ESC control module	M6	8.5 - 11.5	6.3 - 8.5
Fixing nut of steering bar and ball joint	M12	50 - 60	37.0 - 44.3
Steering gear c/w tie rod assembly fixing bolt	M12×130	117 - 143	86.3 - 105.5
Fixing screw in the right lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing screw in the left lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing screw in the underside lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing nut of steering wheel assembly	M12	40 - 50	29.5 - 37.0
A/C control panel assembly fixing screw	ST4.8	1 - 2	0.7 - 1.5
Fixing screw of thermal management controller	ST4.2	1.3 - 1.7	1 - 1.3

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt connecting compressor's air intake hose and the compressor	M8×20	20 - 28	14.8 - 20.7
Fixing bolt connecting compressor exhaust hose and the compressor	M8×20	20 - 28	14.8 - 20.7
Fixing bolt connecting the compressor exhaust hose and the condenser	M6×25	8.5 - 11.5	6.3 - 8.5
Electric compressor assembly fixing bolt	M8×95	20 - 28	14.8 - 20.7
Front fixing bolt of heater assembly bracket	M6×25	8 - 10	5.9 - 7.4
Rear fixing bolt of heater assembly bracket	M6×25	8 - 10	5.9 - 7.4
Fixing screw of heater assembly	ST4.8	2.5 - 3.5	1.8 - 2.6
Fixing nut of heater assembly earth wire	M6	8 - 10	5.9 - 7.4
Fixing bolt of heat exchanger assembly	M6×30	8 - 10	5.9 - 7.4
Fixing nut of heat exchanger assembly	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting heat exchanger highly-configured low pressure hose to heat exchanger assembly	M6×25	8 - 10	5.9 - 7.4
Fixing bolt for connecting battery water pump bracket to electric motor	M6×16	35 - 45	25.8 - 33.2
Fixing nut of four-way valve to solenoid bracket	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt of on-board air intelligent control module	M6×16	5 - 7	3.7 - 5.2
Fixing nut of on-board air intelligent control module	M6	5 - 7	3.7 - 5.2
Rear air-conditioning unit assembly fixing bolt	M6×25	5 - 7	3.7 - 5.2
Blower speed control module fixing screw	M4×14	0.9 - 1.5	0.7 - 1.1

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Blower speed control module fixing screw	ST4.8×13	1.2 - 1.8	0.9 - 1.3
Foot-blowing air duct fixing screw	M4×14	0.9 - 1.5	0.7 - 1.1
Fixing screw of evaporator housing	M4×14	0.9 - 1.5	0.7 - 1.1
Fixing but of electronic water pump	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly bracket	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting evaporator inlet and outlet tube assembly to compressor air intake hose	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting evaporator inlet and outlet tube assembly to condenser outlet pipe assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly bracket	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolts for connecting the highly-configured low pressure hose of the heat exchanger to the evaporator inlet and outlet tube assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly	M6×20	8.5 - 11.5	6.3 - 8.5
Fixing nut of heat exchanger high pressure tube assembly bracket	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting the high-pressure tube assembly of the heat exchanger to the heat exchanger assembly	M6×35	8.5 - 11.5	6.3 - 8.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt for connecting the low-pressure hose of the heat exchanger to the heat exchanger assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting the low-pressure hose of the heat exchanger to the evaporator inlet and outlet tube assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of airbag electronic control unit	M6×12	8.5 - 11.5	6.3 - 8.5
Fixing bolt of left air curtain	M6×16	8.5 - 11.5	6.3 - 8.5
Frontal collision sensor fixing bolt	M6×25	8.5 - 11.5	6.3 - 8.5
Side impact sensor fixing bolt	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing nut of rear left buckle	M12	40 - 50	29.5 - 36.9
Fixing nut of rear centre and right buckle assembly	M12	40 - 50	29.5 - 36.9
Fixing nut under the rear seat left/right seat belt	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9
Front seat belt height adjuster fixing bolt	M10×24	30 - 40	22.1 - 29.5
Fixing bolt of seat belt assembly	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9
Fixing bolt of seat belt assembly in the middle row	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of shoulder guide ring in seat belt assembly	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9
Fixing screw of front millimeter-wave radar	ST4.8×16	1.3~1.7	1 - 1.3
Fixing nut of BCM	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt of complete vehicle control assembly	M6×16	8 - 10	5.9 - 7.4
Fixing nut of complete vehicle control assembly	M6	8 - 10	5.9 - 7.4
Fixing screw of bass loudspeaker	ST4.8	1 - 2	0.7 - 1.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Vehicle-mounted information entertainment display screen fixing screw	ST4.2	1 - 2	0.7 - 1.5
Vehicle-mounted information entertainment host fixing bolt	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing bolt of antenna amplifier assembly	M8×16	8 - 10	5.9 - 7.4
Fixing nut of automobile audio power amplifier	M6	8.5 - 11.5	6.3 - 8.5
Fixing screw of wireless charging module	—	2 - 3	1.5 - 2.2
Front reading lamp assembly fixing screw	M4×12	4 - 5	2.9 - 3.7
Fixing bolt of emergency call system controller	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing nut of emergency call system controller	M6	8.5 - 11.5	6.3 - 8.5
Fixing nut of electric vehicle communication control module	M5	2.5 - 3.5	1.8 - 2.6
GPS antenna fixing screw	ST4.2×16	1.3 - 1.7	1 - 1.3
Fixing bolt of combination switch	M5×10	2.5 - 3.5	1.8 - 2.6
Fixing screw of middle rear fog lamp assembly	ST4.8×16	1.3 - 1.7	1 - 1.3
High-position braking lamp assembly fixing nut	M5	2 - 3	1.5 - 2.2
Fixing bolt of front combined lamps assembly	M6×25	4 - 5	3 - 3.7
Fixing bolt of back door combination lamp	M5	2 - 3	1.5 - 2.2
Fixing bolts of the side wall combination lamp	M5	2 - 3	1.5 - 2.2
Fixing screw of back door through lamp	ST4.8×16	1.3 - 1.7	1 - 1.3
Exterior left rearview mirror fixing nut	M6	8 - 10	5.9 - 7.4
Front left door power window regulator assembly fixing nut	M6	8.5 - 11.5	6.3 - 8.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Front left door power window regulator assembly fixing bolt	M6×12	8 - 10	5.9 - 7.4
Rear left door power window regulator assembly fixing nut	M6	8.5 - 11.5	6.3 - 8.5
Rear left door power window regulator assembly fixing bolt	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left front door glass assembly	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left rear door glass assembly	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left rear door glass guide	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of front left door glass guide	M6×12	8 - 10	5.9 - 7.4
Fixing nut of left/right wiper arm assembly	M10	35 - 41	25.8 - 30.3
Fixing bolt of spray kettle with washing motor assembly	M6×25	5 - 7	3.7 - 5.2
Rear wiper motor assembly fixing bolt	M6×25	6 - 8	4.4 - 5.9
Fixing nut of rear hanging piece	M6	6 - 8	4.4 - 5.9
Install wiper motor and fixing bolts of wiper linkage	M6×28	8 - 10	5.9 - 7.4
Fascia console assembly fixing bolt	M6×20	3.2 - 4.8	2.4 - 3.5
Fixing bolt of cluster instrument controller assembly	M6×16	8 - 10	5.9 - 7.4
Fixing bolt of head-up display	M6×16	8.5 - 11.5	6.3 - 8.5
Auxiliary fascia console switch pack fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing bolt of top cover sunshade motor	M6×20	8 - 10	5.9 - 7.4
Fixing bolt of top cover sunshade assembly	M6×20	8 - 10	5.9 - 7.4
Fixing nut of top cover sunshade assembly	M6	8 - 10	5.9 - 7.4

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Left C-pillar lower trim panel assembly fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left rear pillar middle trim panel assembly fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Sunroof motor fixing bolt	M5×30	2.8 - 3.2	2.1 - 2.4
Fixing bolts on both sides of sunroof frame	M5×30	8 - 10	5.9 - 7.4
Front fixing bolts of sunroof frame	M5×30	8 - 10	5.9 - 7.4
Fixing bolts at the rear end of the sunroof frame	M5×5	0.2 - 0.3	0.1 - 0.2
Fixing bolt of left front door lock	—	5 - 7	3.7 - 5.2
Fixing bolt of door lock assembly	M8×22	20 - 26	14.8 - 19.2
Backdoor lock assembly fixing bolt	M8×22	20 - 26	14.8 - 19.2
Backdoor lock catch assembly fixing bolt	M8×22	20 - 26	14.8 - 19.2
Front keyless entry receiving antenna fixing screw	ST4.2	1 - 2	0.7 - 1.5
Central keyless entry receiving antenna fixing screw	ST4.2	1 - 2	0.7 - 1.5
Rear PEPS receiving antenna fixing screw	M6×16	3 - 5	2.2 - 3.7
Fixing bolt of front seat and front floor	M10×25	40 - 50	29.5 - 36.9
Fixing bolt of seat control module	M6×25	3 - 5	2.2 - 3.7
Air outlet fixing bolt	M6×20	5 - 7	3.7 - 5.2
Tweeter assembly fixing bolt	M8×25	13 - 17	9.6 - 12.5
Bass loudspeaker assembly fixing bolt	M8×25	13 - 17	9.6 - 12.5
360-degree panoramic front parking auxiliary camera fixing screw	ST4.8×16	1.3 - 1.7	1 - 1.3
360-degree left parking auxiliary camera fixing screw	ST4.8×16	1.3 - 1.7	1 - 1.3



Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of 360-degree panoramic camera control module and bracket	M6	5 - 7	3.7 - 5.2
Fixing screw of front millimeter-wave radar	ST4.8×16	1.3 - 1.7	1 - 1.3
Gateway fixing nut	M6	5 - 7	3.7 - 5.2
Fixing bolt of low speed alarm controller	M10×20	8 - 10	5.9 - 7.4
Fixing bolt of the assembly of front engine compartment hood lock	M8	20 - 26	14.7 - 19.1
Fixing screw for opening cable of front engine compartment hood lock	ST4.8×20	3 - 5	2.2 - 3.7
Fixing bolt for support rod of front engine compartment hood	M6×12	8 - 10	5.9 - 7.4
Fixing nut for connecting left front fender to rear mounting bracket	M6	9 - 11	6.6 - 8.1
Fixing screws for connecting the left front fender to the left outer sill lower trim panel	ST4.8×14	1 - 2	0.7 - 1.5
Fixing screw for body connection above left front fender	ST5.5×13	1 - 2	0.7 - 1.5
Fixing bolts above the left front fender to connect with the body	M6×12	9 - 11	6.6 - 8.1
	M6×16	9 - 11	6.6 - 8.1
Fixing bolt for connecting left front fender to front bumper	M6×20	5 - 7	3.7 - 5.2
Retaining nut for connecting the front engine compartment hood assembly to the hinge assembly	M8	21 - 25	15.5 - 18.5
Fixing bolts for connecting left hinge assembly of front engine compartment hood with body	M8×20	20 - 26	14.8 - 19.2

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts for hinge connection between back door assembly and back door	M8×20	20 - 26	14.8 - 19.2
Upper fixing bolt of the front bumper assembly	M6×20	8 - 10	5.9 - 7.4
Upper fixing screw of front bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Left and right fixing screws of Front bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Fixing screw at the bottom of rear bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Fixing bolt of leg protection bracket for pedestrian	M6×35	8 - 10	5.9 - 7.4
Front bumper left mounting bracket fixing bolt	M6×35	5 - 7	3.7 - 5.2
Upper left and right fixing screws of rear bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Rear bumper bottom fixing screw	ST4.8×11	1 - 2	0.7 - 1.5
Left and right fixing screws of rear bumper	ST4.8×11	1 - 2	0.7 - 1.5
Fixing screws for rear bumper and left and right side mounting bracket	ST4.8×11	1 - 2	0.7 - 1.5
Fixing bolt connecting the rear bumper and body mounting bracket	M6×20	5 - 7	3.7 - 5.2
Left and right fixing bolts for front collision beam assembly	M10×40	55 - 75	40.6 - 55.4
Left and right fixing nuts for rear impact beam assembly	M10	20 - 26	14.8 - 19.2
Fixing bolts connecting the upper and lower hinges of the door with the vehicle body	M8×20	29 - 35	21.4 - 25.8

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts connecting the upper and lower hinges of the door with the vehicle door	M8×30	40	29.5
Fixing bolt for connecting front door stopper assembly and door	M6×12	8 - 10	5.9 - 7.4
Bolt & nut assembly of left front door opening handle	—	3.5 - 4.5	2.6 - 3.3
Bolt & nut assembly of left rear door opening handle	—	3.5 - 4.5	2.6 - 3.3
Fixing screw of left front door inner opening handle	—	2 - 3	1.5 - 2.2
Fixing bolt of front left door trim panel bracket	—	8 - 10	5.9 - 7.4
Fixing screw connecting the mechanical lock core and the left front door outward-opening handle	ST4.8×13	1.7 - 2.3	1.3 - 1.7
Fixing bolt of front seat and front floor	M10×25	40 - 50	29.5 - 36.9
Central armrest fixing bolt	M6×16	8 - 12	5.9 - 8.9
Fixing screw of driver's seat outer guard (manual)	ST4.8×9.5	5 - 9	3.7 - 6.6
Fixing bolt for driver's seat back front and rear adjustment crank cover	M6×10	8 - 12	5.9 - 8.9
Fixing screw of driver's seat inner small guard	ST4.8×9.5	5 - 9	3.7 - 6.6
Fixing nut of front seat slide rail	M8	20 - 26	14.8 - 19.2
Fixing bolt for connecting rear hinge and rear backrest	/	40 - 50	29.5 - 36.9
Fixing bolt of central seat belt buckle	/	40 - 50	29.5 - 36.9
Instrument panel lower right fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing screw of diagnostic interface mounting bracket	—	1 - 2	0.7 - 1.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screws of left trim panel assembly of the instrument panel	ST4.2x16	1.3 - 1.7	1 - 1.3
Instrument panel lower right fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing screw of instrument panel right trim panel	ST4.2x16	1.3 - 1.7	1 - 1.3
Center console screen mounting bracket cover plate fixing bolt	M6x12	5 - 7	3.7 - 5.2
Fixing screw of upper trim panel assembly of auxiliary instrument	—	1 - 2	0.7 - 1.5
Fixing screw for the auxiliary fascia console arm rest box coverplate assembly	—	1 - 2	0.7 - 1.5
Auxiliary fascia console body assembly fixing bolt	M6x20	5 - 7	3.7 - 5.2
Auxiliary fascia console body assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Instrument panel lower middle fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing nut of 2nd row seat left front ventilator assembly	M6	5 - 7	3.7 - 5.2
Fixing bolt of 2nd row seat left rear ventilator assembly	M6x20	5 - 7	3.7 - 5.2
Instrument panel body assembly fixing bolt	M6x16	5 - 7	3.7 - 5.2
Occupant airbag fixing bolt	M6x16	8.5 - 11.5	6.3 - 8.5
Fixing bolts for instrument cross member assembly and body	M8x25	20 - 26	14.8 - 19.2
Fixing bolt of instrument beam assembly and air-conditioning control unit	M6x16	5 - 7	3.7 - 5.2
Fixing bolts for instrument crossbeam assembly and ground wire	M6x16	8 - 10	5.9 - 7.4

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Bolts for instrument panel cross member assembly and lower right mounting bracket	M8×20	20 - 28	14.8 - 20.7
Bolts for instrument panel cross member assembly and lower left mounting bracket	M8×20	20 - 28	14.8 - 20.7
Fixing screw of left rear sill trim panel assembly	ST4.8×16	1 - 2	0.7 - 1.5
Left B-pillar upper trim panel assembly lower fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left B-pillar upper trim panel assembly upper fixing screw	M6×16	3.2 - 4.8	2.4 - 3.5
Front end fixing screw for left front door glass outer sealing strip	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screw of front left door glass outer seal rear end	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Left C-pillar upper trim panel assembly lower fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left C-pillar upper trim panel assembly upper fixing screw	M6×16	3.2 - 4.8	2.4 - 3.5
Fixing screw of left upper interior trim panel assembly of backdoor	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screws at both sides of lower interior trim panel of backdoor	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screw of cover interior trim panel rear reading lamp bracket	M6×16	3 - 5	2.2 - 3.7
Fixing screw of left rear safety handle	M5×30	3.2 - 4.8	2.4 - 3.5
Fixing screw of left sunshade assembly	M6×25	3.2 - 4.8	2.4 - 3.5
Fixing nut of driver left footrest	M6	8.5 - 11.5	6.3 - 8.5
Fixing screws for connecting rear door trim panel to rear license plate light mounting plate	ST4.8×16	1 - 2	0.7 - 1.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of rear license plate light mounting plate	M6	3 - 5	2.2 - 3.7
Fixing screw of exterior trim panel of backdoor	ST4.8×16	1.3 - 1.7	1 - 1.3
Fixing screws securing the rear number plate light mounting plate to the back door through light	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for fixing rear license plate lamp mounting plate and back door trim plate	ST4.8×16	1 - 2	0.7 - 1.5
Ventilation cover plate fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Back door handle box fixing bolt	M6×16	3.2 - 4.8	2.4 - 3.5
Fixing screw at the side of left front door inner opening handle	ST4.8×19	1.3 - 1.7	1 - 1.3
Fixing screw at the side of left rear door inner opening handle	ST4.8×19	1.3 - 1.7	1 - 1.3
Fixing bolt for connecting sunshade buckle to front cross beam of top cover	M6×25	3.2 - 4.8	2.4 - 3.5
Fixing screws for connecting front nacelle bottom guard to front fender liner plate	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for bottom guard of front engine compartment	ST4.8×16	1 - 2	0.7 - 1.5
Fixing bolts at the left and right sides of battery bottom guard	M6×16	5 - 7	3.7 - 5.2
Fixing bolt of upper air deflector of the radiator air deflector	M6×25	5 - 7	3.7 - 5.2
Left front fender liner fixing bolt	ST4.8×16	1 - 2	0.7 - 1.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Left rear fender liner fixing bolt	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screw of left outer sill lower trim panel assembly	ST4.8×16	1 - 2	0.7 - 1.5
Fixing bolt of power harness cover assembly	M6×20	5 - 7	3.7 - 5.2
Fixing bolt of luggage compartment bottom guard	M6×16	5 - 7	3.7 - 5.2
Fixing screws for the bottom guard of luggage compartment and the rear bumper	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for fixing the bottom guard of luggage compartment to the rear fender liner	ST4.8×16	1 - 2	0.7 - 1.5
Fixing nut of Luggage compartment bottom guard	M6	5 - 7	3.7 - 5.2
Fixing screw for connecting front license plate mounting plate to front bumper upper body	ST4.8×16	1 - 2	0.7 - 1.5
Fixing bolts for fixing spoiler to back door assembly	M6×12	5 - 7	3.7 - 5.2
Fixing screws at both sides of spoiler	ST4.8×16	1 - 2	0.7 - 1.5
Spoiler assembly fixing screw	M6	5 - 7	3.7 - 5.2
Fixing screw of retro reflector	ST4.8×16	1.3 - 1.7	1 - 1.3
Fixing nut for connecting the left luggage rack sub-assembly to the left front mounting bracket	M6	5 - 7	3.7 - 5.2
Fixing nut for connecting the left luggage rack sub-assembly to the left middle mounting bracket	M6	5 - 7	3.7 - 5.2

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut for connecting the left luggage rack sub-assembly to the left rear mounting bracket	M6	5 - 7	3.7 - 5.2
Front bumper supporting bracket fixing bolt	M8×16	1 - 2	0.7 - 1.5

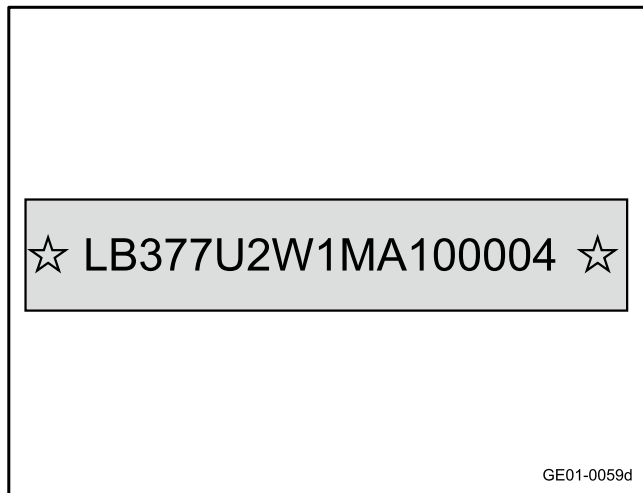


## 1.9 Vehicle identification code

### 1.9.1 Description and operation

#### 1.9.1.1 Vehicle identification

Vehicle identification number



The vehicle identification number (VIN) is a legal identifier.

Marking position of vehicle identification number

The vehicle identification number (VIN) is engraved on the body cross member under the front right seat.

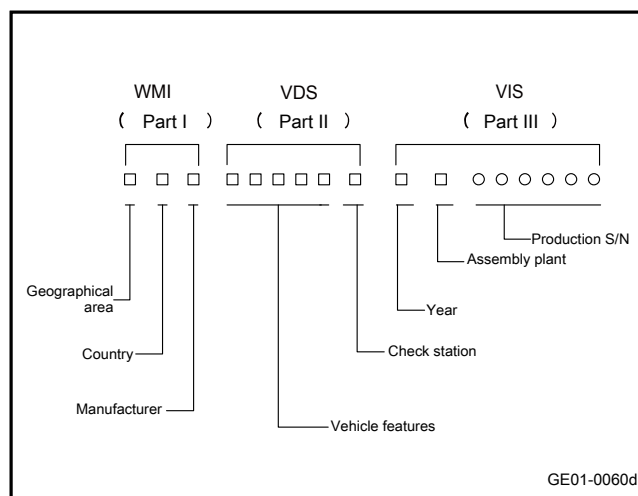
Attachment location of vehicle identification number (VIN)

The vehicle identification number (VIN) is distributed at the front windshield, on the vehicle sign on the lower side of the right center pillar, on the inner panel of the rear door, on the inner panel of the front engine room cover, on the inner side of the left center pillar, on the inner side of the right center pillar, on the upper part of the middle passage, and on the left round wheel package.

#### 1.9.1.2 Description of Vehicle identification number (VIN)

The composition of the vehicle identification number:

The VIN consists of three parts (17 digits in total), including world manufacturers identifier (WMI), vehicle descriptor section (VDS) and vehicle identifier section (VIS), as shown in the figure below:



Taking the VIN LB377U2W1MA100004 as an example, the meaning of each digit is shown in the table below:

Position	Definition	Character	Description
1-3	World Manufacturer Identification Code	LB3	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.
4	Vehicle category code	7	Passenger vehicle
5	Principal parameter code of vehicle	7	Vehicle length is greater than 4.4m-4.6m
6-7	Powertrain characteristics and body type	U2	Pure electric vehicle, sum of motor peak power 150kW, five-door hatchback

Position	Definition	Character	Description
8	Drive type and transmission type	W	Front drive, no transmission
9	Check digit	1	Vin check code
10	Year code	M	2021
11	Manufacturer code	A	Shanxi Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.
12:17	Manufacturer serial number	100004	Production serial number

The global manufacturer identification number (WMI) is located in the first part (first to third digits) of the vehicle identification number. Among them:

LJU-Zhejiang Geely Automobile Co., Ltd. (Yinglun Dihua).

LB3 - Zhejiang Haoqing Automobile Manufacturing Co., Ltd.

L6T - Geely Automotive Co., Ltd.

LJ2-Shanxi New Energy Automobile Industry Co., Ltd.

L10-Chengdu Plateau Automobile Industry Co., Ltd.

Rules for fourth digit code

Serial No.	Vehicle type	Code
1	Chassis (incomplete vehicle)	0
2	Truck	1
3	Special purpose vehicle	5
4	Bus	6
5	Passenger vehicle	7

Rules for fifth digit code

Passenger vehicle/bus				Truck/special-purpose vehicle			
Vehicle length, m	Code	Vehicle length, m	Code	Total weight, kg	Code	Total weight, kg	Code
≤ 3.5	0	>4.0 - 4.2	5	≤ 1,000	K	>3,000 - 3,500	R
3.5 ~ 3.6	1	>4.2 - 4.4	6	>1,000 - 1,500	L	>3,500 - 4,000	S
3.6 ~ 3.7	2	>4.4 - 4.6	7	>1,500 - 2,000	M	>4,000 - 4,500	T
3.7-3.8	3	>4.6 - 4.8	8	>2,000 - 2,500	N	>4,500 - 5,000	U
3.8 ~ 4.0	4	≥4.8	9	>2,500 - 3,000	P	≥5,000	V

Rules for sixth and seventh digit codes

Serial No.	Fuel type		Engine displacement	Body type	Code
1	Mono-fuel	Gasoline	≤ 1	Hatchback/Five-door	02
2			>1~1.3		12
3			>1.3~1.5		22
4			>1.5~1.7		32
5			>1.7~1.9		42
6			>1.9~2.1		52
7			>2.1		62
8			≤ 1	Four-door sedan	04
9			>1~1.3		14
10			>1.3~1.5		24
11			>1.5~1.7		34
12			>1.7~1.9		44
13			>1.9~2.1		54
14			>2.1		64
15			≤ 1	Cab-behind-engine specialized vehicle van	07
16			>1~1.3		17
17			>1.3~1.5		27
18			>1.5~1.7		37
19			>1.7~1.9		47
20			>1.9~2.1		57
21			>2.1	67	
22		Diesel fuel	≤ 1	Hatchback/Five-door	72
23			>1~1.3		82
24			>1.3		92
25			≤ 1	Four-door sedan	74
26			>1~1.3		84
27			>1.3		94
28			≤ 1	Cab-behind-engine specialized vehicle van	77
29			>1~1.3		87
30			>1.3		97
31	Dual-use fuel	Gasoline/ compressed natural gas	≤ 1.3	Hatchback/Five-door	J2
32			>1.3~3.0		K2
33			≤ 1.3	Four-door sedan	J4
34			>1.3~3.0		K4
35			≤ 1.3	Cab-behind-engine specialized vehicle van	J7
36			>1.3~3.0		K7
37	Dual fuel	Methanol fuel	≤ 1.3	Hatchback/Five-door	R2
38			>1.3~3.0		S2
39			≤ 1.3	Four-door sedan	R4

Serial No.	Fuel type		Engine displacement	Body type	Code
40			>1.3~3.0	Cab-behind-engine specialized vehicle van	S4
41			≤ 1.3		R7
42			>1.3~3.0		S7

Serial No.	Types of electric vehicles	Sum of peak power of drive motor, kw	Engine displacement	Body type	Code
1	Pure electric vehicle	150	/	Hatchback/Five-door	U2
2		200			P2
3		240			V2
4		350			W2
5		400			T2
6		450			X2
7		120		Four-door sedan	Y4
8		350		Five-door sedan	W5
9		450			X5
10		550			Z5
11	Hybrid electric vehicle	50	1477	Hatchback/Five-door	E2
12		60	1477		F2
13		120	1477		G2
14		60	1477	Four-door sedan	F4
15		120	1477	Cab-behind-engine specialized vehicle van	G7

## Rules for eighth code

Serial No.	Cab type	Compartment type	Description
1	Front wheel drive	Manual transmission	S
2		Automatic Transmission	Z
3		No transmission	W
4	Rear wheel drive	Manual transmission	A
5		Automatic Transmission	B
6		No transmission	N
7	Four-wheel drive	Manual transmission	C
8		Automatic Transmission	D
9		No transmission	E

## Rules for ninth digit code

This digit is the check digit, the value calculated by the manufacturer based on the remaining 16-digit code value and a certain formula. The code should be any number from 0 to 9 or letter 'X', used to verify the authenticity of the VIN code, so as to ensure the uniqueness and validity of the VIN code.

## Rules for tenth digit code

Year	Code	Year	Code	Year	Code	Year	Code
2001	1	2011	B	2021	M	2031	1
2002	2	2012	C	2022	N	2032	2
2003	3	2013	D	2023	P	2033	3
2004	4	2014	E	2024	R	2034	4
2005	5	2015	F	2025	S	2035	5
2006	6	2016	G	2026	T	2036	6
2007	7	2017	H	2027	V	2037	7
2008	8	2018	J	2028	W	2038	8
2009	9	2019	K	2029	X	2039	9
2010	A	2020	L	2030	Y	2040	A

Note: used to distinguish the year. The year code is used according to the provisions of Table 11 (cycled once every 30 years).

Rules for eleventh digit code

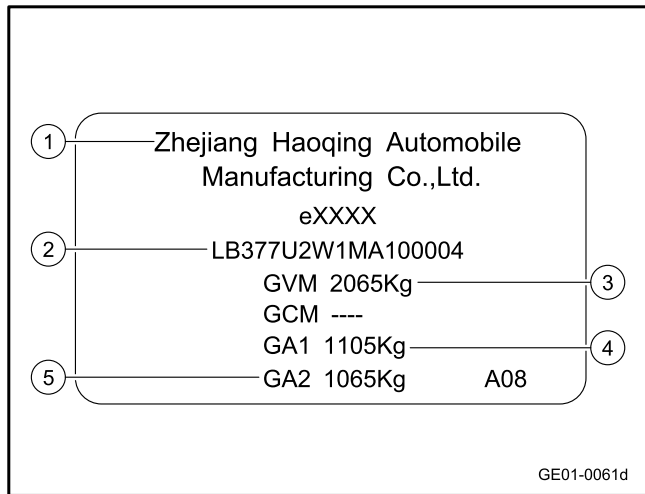
Serial No.	Manufacturer	Factory Name	Code
1	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	H
2		First Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	L
3		Xiangtan Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	X
4		Jinan Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	J
5		Chengdu Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	C
6		Baoji Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	B
7		Shanxi Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	A
8		Xi'an Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	S
9	Zhejiang Geely Automobile Co., Ltd.	Zhejiang Geely Automobile Co., Ltd.	N
10		Zhejiang Geely Automobile Co., Ltd. (Zhangjiakou)	Z

Serial No.	Manufacturer	Factory Name	Code
11		Guiyang Branch of Zhejiang Geely Automobile Co., Ltd.	Y
12		Ningbo Hangzhou Bay Factory of Zhejiang Geely Automobile Co., Ltd.	W
13			D
14		Chunxiao Factory of Zhejiang Geely Automobile Co., Ltd.	U
15		Yiwu Branch of Zhejiang Geely Automobile Co., Ltd.	T
16		Lanzhou Branch of Zhejiang Geely Automobile Co., Ltd.	V
17		Yuyao Factory of Zhejiang Geely Automobile Co., Ltd.	E
18		Ningbo Hangzhou Bay Branch No. 2 of Zhejiang Geely Automobile Co., Ltd.	P
19		Meishan Factory of Zhejiang Geely Automobile Co., Ltd.	M
20		Chengdu Branch of Zhejiang Geely Automobile Co., Ltd.	F
21		Wuhan Branch of Zhejiang Geely Automobile Co., Ltd.	K
22		Lanzhou Branch of Zhejiang Geely Automobile Co., Ltd.	G
23		Shanxi New Energy Automobile Industry Co., Ltd.	Passenger vehicle production line of Shanxi New Energy Automobile Industry Co., Ltd.
24	Chengdu Plateau Automobile Industry Co., Ltd.	Chengdu Plateau Automobile Industry Co., Ltd.	C

#### Rules for twelfth to seventeenth-digit codes

The twelfth to seventeenth-digit codes are the production sequence numbers, which are arranged in sequence according to the sequence of vehicles produced in the same year and in the same assembly factory, starting from 000001 each year.

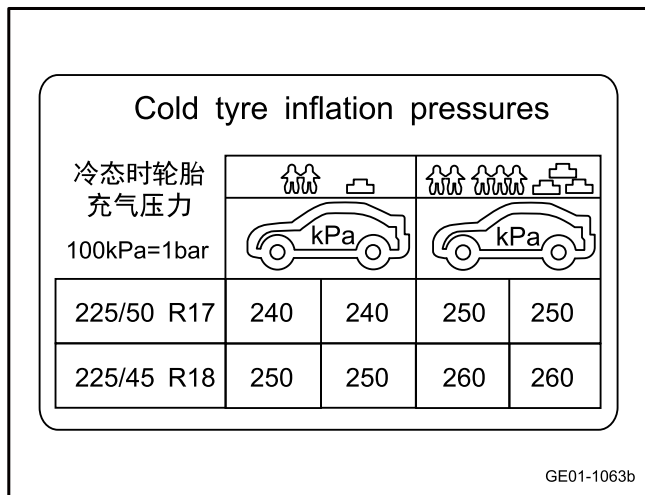
1.9.1.3 Badges - Vehicle qualification certificate



1. Manufacturer name
2. Vehicle identification number (VIN)
3. Gross mass of vehicle
4. Maximum load mass permitted by front axle technology
5. Maximum load mass permitted by rear axle full technology

Qualification certificate badges is under the right center pillar.

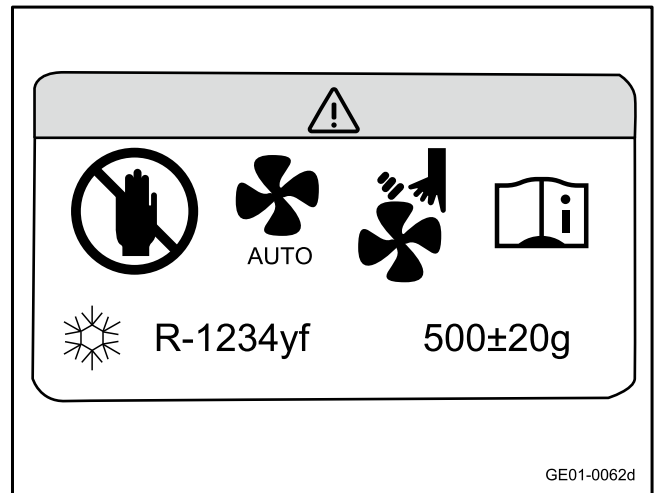
1.9.1.4 Tire information board of tires



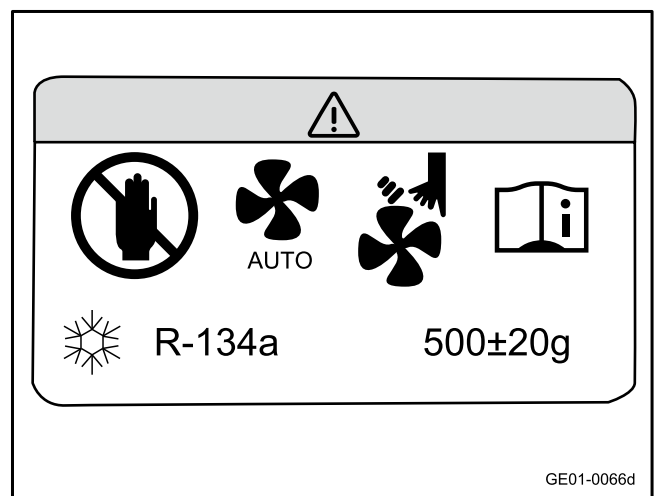
The tire label is permanently attached below the outside of the left central pillar. For tire information, please refer to its contents. The label lists the maximum carrying capacity of the vehicle, tire size and cold inflation pressure.

1.9.1.5 Powertrain compartment operation warning label

Type I:



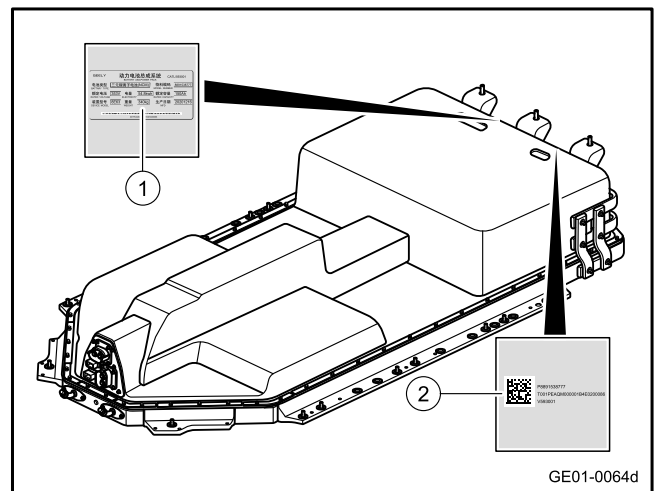
Type II:



The powertrain compartment operation warning label is located on the front engine compartment trim cover.

1.9.1.6 Identification and location of power battery

Position of 24-bit new national standard code label and Geely 43-bit 2D label

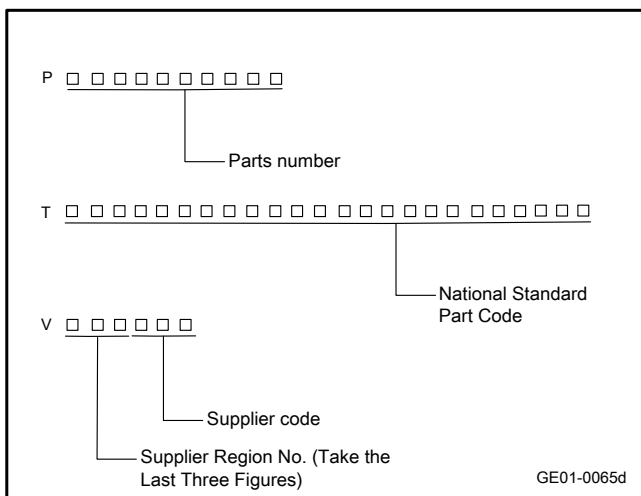


In the figure, 1 and 2 are respectively: 24-digit new national standard coding labels; Geely 43-bit 2D label.

### 1.9.1.7 Geely 43-bit 2D Label Coding Description

Geely 43-digit 2D label code consists of Geely supplier parts code, new parts code and supplier code under national standards, of which Geely supplier parts code is 10 digits; the national standard code for new parts is 24 digits; the supplier code is 6 digits, plus 3-digit letter identification:

Geely 43-bit 2D label code consists of three parts, as shown in the following figure:

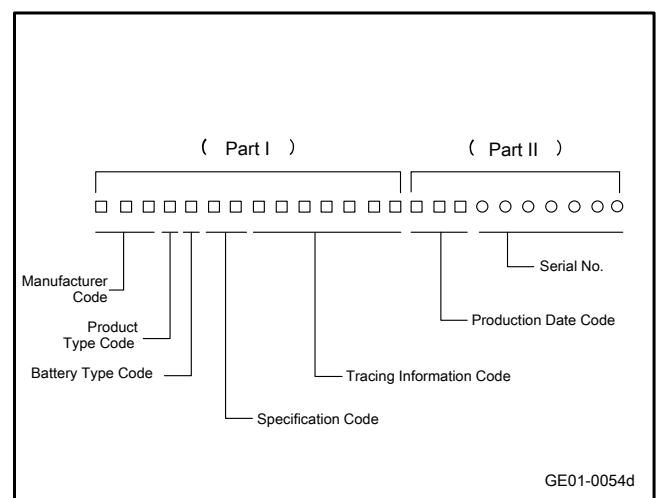


Take Geely 43-bit 2D label code P8891538777T001PEAQM000001B4E0200086V593001 as an example, the meaning of each part is as follows:

- The first part (11 digits) corresponds to: letter identification P, power battery assembly part number (10 digits) 8891538777;
- The second part (25 digits) corresponds to: letter identification T, new parts code (24 digits) under national standards 001PEAQM000001B4E0200086;
- The third part (7 digits) corresponds to: letter identification V, supplier area code (3 digits) 593, supplier code (3 digits) 001;

Composition of new parts code (24 digits) under national standards:

New component code under national standards can be used as the power battery number separately and consists of two parts, as shown in the following figure:



Taking the power battery identification number 001PEAQM000001B4E0200086 as an example, the meaning of each digit is shown in the table below:

Position	Definition	Character	Description
1~3	Manufacturer code	001	CATL
4	Product type code	P	3ZB/GE11/GE12/GE13
5	Battery type code	E	Geely passenger vehicle
6~7	Specification code	AQ	To be determined
8~14	Traceability information code	M0000	CATL uses the first digit as the rule code, and the remaining four digits default to 0000
		0	CATL default 0
		1	Place of Origin (Ningde/ Qinghai/Liyang)
15~17	Production date code	B4E	4/14/2021
18~24	Serial number	0200086	Sequence number of the day on which this battery was produced



Code regulation of production year

Year	Code	Year	Code	Year	Code	Year	Code
2011	1	2021	B	2031	M	2041	1
2012	2	2022	C	2032	N	2042	2
2013	3	2023	D	2033	P	2043	3
2014	4	2024	E	2034	R	2044	4
2015	5	2025	F	2035	S	2045	5
2016	6	2026	G	2036	T	2046	6
2017	7	2027	H	2037	V	2047	7
2018	8	2028	J	2038	W	2048	8
2019	9	2029	K	2039	X	2049	9
2020	A	2030	L	2040	Y	2050	10

Production month code specification

Date	1	2	3	4	5	6	7	8	9	10	11	12
Code	1	2	3	4	5	6	7	8	9	A	B	C

Production date code specification

Date	Code	Date	Code	Date	Code
1	1	12	C	23	P
2	2	13	D	24	R
3	3	14	E	25	S
4	4	15	F	26	T
5	5	16	G	27	V
6	6	17	H	27	W
7	7	18	J	29	X
8	8	19	K	30	Y
9	9	20	L	31	0
10	A	21	M		
11	B	22	N		

Serial number specification

The serial number code is represented by 7-digit decimal numeric values, ranging from 0000000 to 9999999, which refers to the serial number of the day when the power battery pack, module and single product are produced by the designated production line

## 1.10 Noise, vibration and abnormal noise

### 1.10.1 Description and operation

#### 1.10.1.1 Diagnostic information and procedures

Wind noise/air sound

#### Warning

Refer to "[Warnings Regarding Assistant driving](#)" in "[Warnings and Notice](#)"

#### Caution

When the technical persons are checking the fault part reported for repair, the assistant should drive the vehicle, otherwise injury accident may occur.

The position of wind noise can be precisely confirmed when test drive is conducted in the vehicle. Generally, there are primary leakage and secondary leakage of wind noise. Therefore, if all leakages are not repaired during repair, the wind noise can only be decreased, but not be fully eliminated.

During test drive, the maintenance personnel must be equipped with following tools in order to diagnose the specific position of wind noise:

- Echometer
- Masking tape
- Caulking strip
- Marking pen
- Screw driver

Conduct road test according to following procedures:

- Select a line with a straight street of four different directions, east, south, west and north.
- Select a street with less traffic or noise in order to avoid the influence on detection.
- The road test should be carried out at the vehicle speed at which the distributors consider the noise to be the most obvious or to be generated. In addition, the speed should be prohibited from exceeding the speed limited in law.

The wind noise generated under the following conditions is external wind noise:

- When the vehicle window glasses are down, the wind noise can be immediately heard when the driver is driving.
- The wind noise will be immediately eliminated when packaging tape is attached to all decorative strips and clearance.

The internal wind noise is caused by the escape of the air from the vehicle. Therefore, following methods should be taken during repairing:

- When the position of leakage is confirmed, pressure relief valve of body door lock supports should be attached by packing tape. Air pressure will be immediately formed inside the vehicle and the noise will be strengthened.
- Use echometer to confirm the leakage position.
- Use masking tape to temporary repair the leakage part.
- Keep doing road test to ensure whether the wind noise is all eliminated or whether there is still other leakage part.
- Confirm all leakage positions through road test and return to repair workshop. Use professional and reasonable orientation methods and sealed materials for permanent repair.

#### Vibration

Most of the high speed vibration is caused by wheel losing dynamic balance. If there is still vibration when there has a dynamic balance, the reasons may be:

- Tyre out-of roundness
- Rim out-of roundness
- Harness deviation of tyres

Measuring the free run-out value of tyres and wheels cannot detect all the reasons causing vibration. The above three reasons are considered as diameter hop of load. The former tyre and wheel assemblies should be replaced with known good tyres and wheel assemblies to repair the faulty vehicle.

The low speed vibration under vehicle speed below 64 km/h generally is caused by hop. The high speed vibration under vehicle speed above 64 km/h generally is caused by unbalance or hop.

#### Uneven tyre correction

Generally, there are two methods to correct the tyres which are already in balance but still vibrating. One method is to install the tyres on machine tool with automatic machine tool and rub off a small quantity of the rubber on the high spot of decorative design on the left and right of the tyres. Generally, this method of correcting tyres is permanent. No obvious influence on appearance of the tyres and the service life of tyre treads will be caused with correct operation. The machine tool with blade is not suggested to be used for tyre correction because it will shorten the service life of tyres and the problem cannot be solved fundamentally.

Another method is to remove the tyres and turn the tyres 180 degree on the rim. The method can only be used when the

vibration is diagnosed to be caused by tyre and wheel assemblies. This is because this method can also cause vibration on completely wheel assemblies.

There is a squeak noise at the front part of the vehicle in cold weather

Check vibration isolation gluesheath of the front balance pole.

- When the vehicle is cold, the vehicle should be conducted road drive through cavities on road and its front suspension should reach maximum stroke.
- Remove vibration isolation gluesheath and wrap the front balance pole with tapes. Afterwards, reinstall the vibration isolation gluesheath on the tape.

When the roads are uneven and bumpy, there is a depressing abnormal sound from the back of the vehicle

Check whether the spare tyre in trunk is correctly fixed:

- Open the trunk and check the spare tyre and driver's tools
- Retighten the spare tyre and driver's tools
- Conduct road test on the vehicle in order to check whether the abnormal sound is eliminated

When driving on uneven and bumpy roads, there is a glass knocking noise from the rear of the vehicle.

Check whether the lock actuator of the rear door is improperly adjusted:

- Check this kind of condition through road test vehicle.
- Loosen the nuts of the lock actuator and adjust the lock actuators.

The doors generate crunch noise

Check whether the harness connector inside the door trim panel generates crunch noise:

- Gently knock the trim panel and hear carefully whether there is a crunch noise
- Remove the door trim panel and equip the foam pad on harness connectors according to actual vehicle condition.

When the vehicle doors are used, there is a squeak noise

Check whether the hinges of the vehicle doors lack lubrication:

- Repeatedly open and close the vehicle doors and carefully hear whether there is a squeak noise.
- Lubricate the hinges of the vehicle doors by rust remover and apply with lubricating grease.

### 1.10.1.2 Maintenance guidance

Wind noise/air sound

External wind noise

Repairing methods of wind noise leaks and water leaks are very similar. Refer to [Diagnostic message and steps Actual repair procedures depend on the type of seal being repaired](#)

Vibration

Vehicle balance of tires and wheels

Use electric balancing machine lower part of the vehicle to carry out the wheels dynamic balance. Dynamic balancing machine is easy to use, can be static balance, also can be dynamic balance. Balance of lower part of the vehicle can not correct the imbalance of the brake disc, which is different from the balance of upper part of the vehicle. But the precision of the balance of lower part of the vehicle overcomes this shortcoming. Fix the wheels on the balancing machine, and let a cone-shaped body pass through the back of central hole, instead of the wheel nut hole.

Balance of wheels and tires of lower part of the vehicle

Vehicle balance can be corrected is because the vibration caused by imbalance in brake disc.

#### Warning

**Put lower control arm on the normal level position to avoid damaging drive axle. When wheels sink into full stroke, do not put into gear to operate the automobile.**

1. During dynamic balance operation of upper part of the vehicle, remove counterbalance installed for wheels dynamic balancing is prohibited.
2. If the counterbalance needed for dynamic balance exceeds 25 g (1 lb), divide the counterbalance into two pieces, and install them on inner wheel rim and outer wheel rim respectively.
3. Use driving motor to rotate driven wheel and wheel assemblies.

Directional installment of wheels and tires

The installment of wheels and tires is carried out in the factory. The installment matches the lighter part of tire dynamic balance (also called light point) with the heavier part of wheel dynamic balance (also called heavy point).

When the tires are delivered out of factory, the high point of tires is marked with red painting, or wheel outer wall is labeled.

Low point of wheel is the position of valve

Before removing the tire from the wheel, make a mark on the position of valve to make sure it can be installed on the original position.

## Abnormal sound

### Repair of abnormal sound

The abnormal sound mainly is from the relative movement among vehicle components which should not exist. There are three repair methods of the abnormal sound:

- Fasten parts and components to eliminate the relative movement in the running process of the vehicle.
- Separate parts and components to keep them out of contact when working.
- Isolate parts and components to eliminate the abnormal sound when the components are moving. Uniform low friction surface can be used to eliminate viscous sliding among the components.

## 1.11 Water leakage

### 1.11.1 Description and operation

#### 1.11.1.1 Diagnostic information and procedures

##### Water leakage diagnosis

##### Caution

Leakage parts must be found before the next repair can be conducted. Arbitrary repair may only block the leakage but may make future repairs more difficult. Carry out local tests on overall scale so as to find all leakage points.

Carry out correct tests and diagnosis on vehicles during repairing the body leakage. Adjust incorrectly positioned parts and repair water leakage fault with appropriate repairing materials.

First, determine the leakage is caused by what environment. For example: water leakage only occurs when vehicles stop at the slope. Second, if finding a rough leakage area, determine correct leakage point with a water hose and breather hose. If the leakage part is not obvious, use the rain test stand to determine the specific leakage part. It is may be necessary to remove part of the interior trim panel or parts to find the specific water leakage points.

##### Preparations of water leakage test

- The vehicle is designed for the operation under normal environmental conditions.
- The design standard of sealing materials and parts of the vehicle has considered the seal strength required under natural environmental factors. But some specification standards cannot take all human conditions into account.
- Water leakage test procedures are related to environmental factors, and the driving performance under normal conditions of the vehicle can be determined.
- The first step of leakage diagnosis is to determine the condition under which the leakage occurs. If a rough leakage area can be determined, isolate exact water entry with a water hose or breather hose. It is needed to remove part of the trim panel or parts during repairing the leakage point.
- If the leakage occurs on the door, back door, window, or door and window glass lifter, it may be not caused by the poor seal of the sealing strip. Maybe adjusting these parts can eliminate the leakage fault.

##### Water hose test

##### Caution

Do not use water hoses with nozzles.

1. Let the assistant confirm the specific leakage part.
2. Detect from the vehicle window or the bottom of the front air window.

3. Slowly move the hose upward to pass the whole vehicle roof.

##### Vent pipe test

##### Caution

Breather hose test can only be used on completely cured adhesive. otherwise, use this method.

Detection will damage the adhesive layer and increase the leakage points.

1. After diluting the fluid cleaner per a certain proportion, put it into the spray bottle and spray it to edges of the vehicle windows. Spray from the bottom first and then gradually upward and pass the top.

##### Caution

The pressure of the compressed air should not exceed 205kPa (29.75psi).

2. Let an assistant carry the air hose into the vehicle.
3. Let the assistant point the compressed air at the area suspected to be leaking, and if there is a leakage, the fluid cleaner in the leakage part will form bubbles.

#### 1.11.1.2 Maintenance guidance

##### Maintenance of body leakage

When repairing the leakage, you may need to remove some trim panels or some parts and components depending on the leakage positions.

1. Cut open a section of joint binder on the leakage area inside or outside the vehicle.
2. Clean and eliminate the old binder residue on the leakage positions.
3. Apply body and joint sealants on the cleaned leakage position.
4. Wait several hours until the joint binder completely solidifies.
5. Check whether it still leaks.
6. Install the removed decorative components.

##### Fix the maintenance of the window leakage

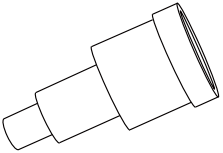
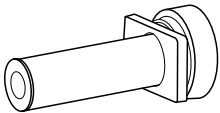
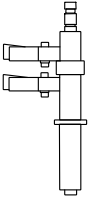
When repairing the leakage, you may need to remove some trim panels or some parts and components depending on the leakage positions.

1. Ensure the specified leakage position
2. If the front windshield edge leaks, use dedicated joint binder to repair the leakage position or replace a new sealed front windshield.
3. If a fixed vehicle window side leaks, use dedicated binder to repair the leakage position or replace a new sealed window.

## 1.12 List of special tools for the whole vehicle

### 1.12.1 Special tools and equipment

#### 1.12.1.1 Special tools for chassis and body

Serial No.	Illustration	Tool number	Name
1	 <p>GE01-0041d</p>	4114720110	Front axle hub bearing removal
2	 <p>GE01-1324a</p>	-	Reducer housing oil seal installation tool
3	 <p>GE01-0470d</p>	4114720113	Damping bolt removal tool





## Electric system

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## 2.1 Warnings and Precautions

### 2.1.1 Description and operation

#### 2.1.1.1 Warnings and Precautions

##### Warnings regarding power battery

###### Warning

Electric vehicles contain a set of sealed high-voltage lithium ion power batteries. If the power battery is not properly exposed, there will be a danger of severe combustion and electric shock, which may lead to serious casualties and environmental pollution.

##### Warning regarding high voltage safety precautions

###### Warning

The rated voltage of the high-voltage power battery of this vehicle is 400V (water cooled). Please do not touch the high-voltage components with bare hands without disconnecting the high-voltage power.

High-voltage components of the vehicle include: drive control device, high-voltage power distribution device, high-voltage and low-voltage charging system, high-voltage main cable, fast charging plug, fast charging socket, power battery, electric drive system, slow charging socket, slow charging plug, electric compressor, electric heater, etc.

After the vehicle runs for a period of time, surface temperature of the driving motor, the drive control device and the electric vacuum pump is relatively high; if air conditioner is used for refrigeration, the surface temperature of electric compressor and radiator is higher. During the charging process of the vehicle, the surface temperature of the on-board charger is relatively high. Do not touch the above parts with bare hands under these circumstances.

It is strictly prohibited to disassemble the high-voltage electrical components in the vehicle without permission, and to unplug or disconnect the high-voltage connectors and cables on the vehicle without permission; otherwise, serious electric shock injury and vehicle damage may be caused. High-voltage cables in the vehicle are all wrapped with orange bellows, please pay attention to identification.

### Warning regarding the vehicle collision accident

#### Warning

In case of a vehicle collision (collision of body front, rear, left, right parts and impact against ground):

- Even if the vehicle can still run, stop safely, buckle the parking brake switch, operate the start switch in LOCK gear, and do not touch the body metal.
- It is forbidden for any person to repair the vehicle when the power is not completely cut off for any case.
- Check the vehicle's high-voltage components and wiring harness for damage and exposure (component location can be determined from the high-voltage component layout). To avoid personal injury, do not touch high-voltage wiring harness, connectors and other high-voltage components (IPU, power battery, etc.). Do not contact damaged or exposed wire harness to avoid the danger of high voltage electric shock. In particular, if the vehicle floor scratches against the ground, carefully check whether the high-voltage wiring harness distributed on the floor is damaged. If you need to contact any high-voltage cables or components, please wear insulating protective clothing (including insulating gloves, insulating shoes and insulating clothing) with a withstand voltage of more than 1000V.
- If the damage to the vehicle cannot be estimated, do not touch the vehicle. Stay away from the vehicle, immediately contact the technical professionals from the authorized dealer of the vehicle to inspect and repair the vehicle, and be sure to inform the emergency personnel who will come to deal with the accident. The vehicle is an electric vehicle, and no one else is allowed to approach, contact or move the vehicle.
- If drivers and passengers are trapped and cannot disconnect the HVDC bus, please try to cut the vehicle after confirmed by professionals. Before cutting, flush the battery part and the ground with a large amount of fire water, to wash away or dilute the leaked electrolyte, so as to prevent sparks from igniting the electrolyte and causing fire. Do not touch the high-voltage cable (the skin of high-voltage cable is yellow or orange yellow) and the battery pack during cutting.
- It is strictly prohibited to disassemble the high-voltage wiring harness and high-voltage parts in the front compartment without permission. The skin of high-voltage wiring harness is yellow or orange.
- Leakage or damage of power battery electrolyte may cause fire. If so, please contact the authorized dealer of the vehicle immediately. Please do not touch the leaked electrolyte with hands. If skin or eyes accidentally come into contact with such electrolyte, please rinse with plenty of clear water immediately and seek medical advice immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately and use plenty of clear water to extinguish the fire; otherwise it may result in personal injury or death.
- If you need towing, make sure the front wheels are raised off the ground. Because if the front wheels land on the ground during the towing, the driving motor may generate electricity,

damage the high-voltage components of the vehicle and even cause a fire.

- If the vehicle needs repair or painting after collision, it must be handled at an authorized dealer of the vehicle and must not be disassembled without permission. Before painting, high-voltage components such as power battery, high-voltage wiring harness and electric motor controller must be removed. Because the power battery is exposed to the spraying workshop with higher temperature, the life of power battery may be affected. In addition, if the power battery on the vehicle is not removed, it may bring potential safety hazards to maintenance personnel without professional training on electric vehicle maintenance.
- After the vehicle breaks down or has an accident, please immediately place the reflective tripod about 100m behind the vehicle, and about 150m behind the vehicle if on the expressway, to warn passing vehicles or pedestrians for yielding.

#### Note to storage of power battery

##### Caution

In the project of storing power batteries, to avoid damaging power batteries, please observe the followings:

- During transportation and maintenance, the power battery or battery module should not be placed upside down or overturned; otherwise, the power battery may be damaged.
- The power battery pack should be stored in a ventilated, clean and dry room with a temperature of 5°C ~ 40°C. Avoid direct sunlight, and the distance from the heat source should not be less than 2m.
- During the storage period of the power battery pack, the remaining power should be kept in the range of 40%-60%.
- The power battery pack should not be placed upside down or horizontally, and mechanical impact or heavy pressure should be avoided.

### Note to maintenance of lithium ion battery pack

#### Caution

- All operations shall be carried out with insulating gloves and anti-smashing shoes, and shall be carried out under the condition of unplugging the maintenance switch;
- It is forbidden to store or use at high temperature, and it must be kept away from heat sources. These environments higher than the safe temperature range will lead to a significant decline in the performance and service life of the product, and even cause serious consequences such as combustion and explosion;
- It is forbidden to store and use in an environment with high static electricity or electromagnetic radiation; otherwise, the electronic devices in this product will be damaged, which may lead to potential safety hazards;
- Do not be affected with damp or even soaked in water. Otherwise, it may lead to internal short circuit, functional loss or abnormal chemical reaction of the product, and cause accidents such as fire, smoke and explosion;
- If smoke, heating, discoloration or deformation are found, or any abnormal phenomena occur in use, storage, transportation and service, professional departments shall be contacted immediately to further observe and control risks;
- It is forbidden for non-professionals to install, maintain, repair and disassemble, unless it is the maintenance operation of professional and technical personnel;
- It is forbidden to discard waste products in fire or hot furnace. Waste batteries should be recovered and recycled by professional institutions or organizations;
- Do not press heavy objects on this product or stack them on each other. All parts removed must be collected using material boxes to avoid loss. It is strictly prohibited to drop screws, nuts and foreign matters into the high-pressure chamber during disassembly; when removing the total positive and total negative wire harness, wrap the harness terminals with insulating tape.

## 2.2 Power battery system

### 2.2.1 Specification

#### 2.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Power battery assembly bottom fixing bolt	M10×35	68 - 88	50.2 - 64.9
Power battery pack rear mounting bracket fixing bolt	M10×20	35 - 55	25.8 - 40.6
Power battery pack upper cover clamp fixing screw	M6×25	9 - 11	6.6 - 8.1
Fixing bolts of front sealing pressplate of power battery pack	M5×12	5 - 7	3.7 - 5.2
PEU harness assembly bracket fixing bolt	M6×20	8 - 10	5.9 - 7.4
Power battery earth wire fixing bolt	M6×20	8 - 10	5.9 - 7.4
Soft copper bar fixing bolt	M6×12	9 - 11	6.6 - 8.1



---

## 2.2.2 Description and operation

### 2.2.2.1 General

Power battery of this vehicle uses a ternary lithium ion battery: compounds such as lithium cobaltate, lithium manganate or lithium nickelate are used as the positive electrode, carbon materials capable of intercalating lithium ions are used as the negative electrode, and organic electrolytes are used. Power battery assembly is installed at the lower part of the car body, and the components of the power battery include: each module assembly, CSC acquisition system, battery control unit (BMS), battery high voltage distribution unit (B-BOX) and other components.

BMS (Battery Management System): BMS can monitor the total voltage, total current, temperature of each measuring point and voltage parameters of the power battery pack in real time, and perform fault diagnosis, SOC (Remaining Power Ratio) calculation, short-circuit protection, leakage monitoring, alarm display, charging and discharging mode selection, etc. The BMS can report the relevant parameters of power battery to the VCU, and the VCU controls the charging and discharging power of the power battery. The BMS of this vehicle is integrated into the power battery assembly.

## 2.2.3 How the system works

### 2.2.3.1 System Working Principles

#### Cell

It is a basic unit device that directly converts chemical energy into electrical energy, including electrodes, diaphragms, electrolytes, housings and terminals, and is designed to be rechargeable.

#### Module

It is a combination in which more than one battery unit is combined in series, parallel or series-parallel, and only a pair of positive and negative output terminals are used as a power supply.

#### CSC acquisition system

Each battery cell has a plurality of CSC acquisition systems to monitor the voltage and temperature information of each battery cell or battery pack cell. The CSC acquisition system reports relevant information to the battery control unit (BMS) and performs unit voltage equalization according to the instructions of the BMS.

#### Battery control unit (BMS)

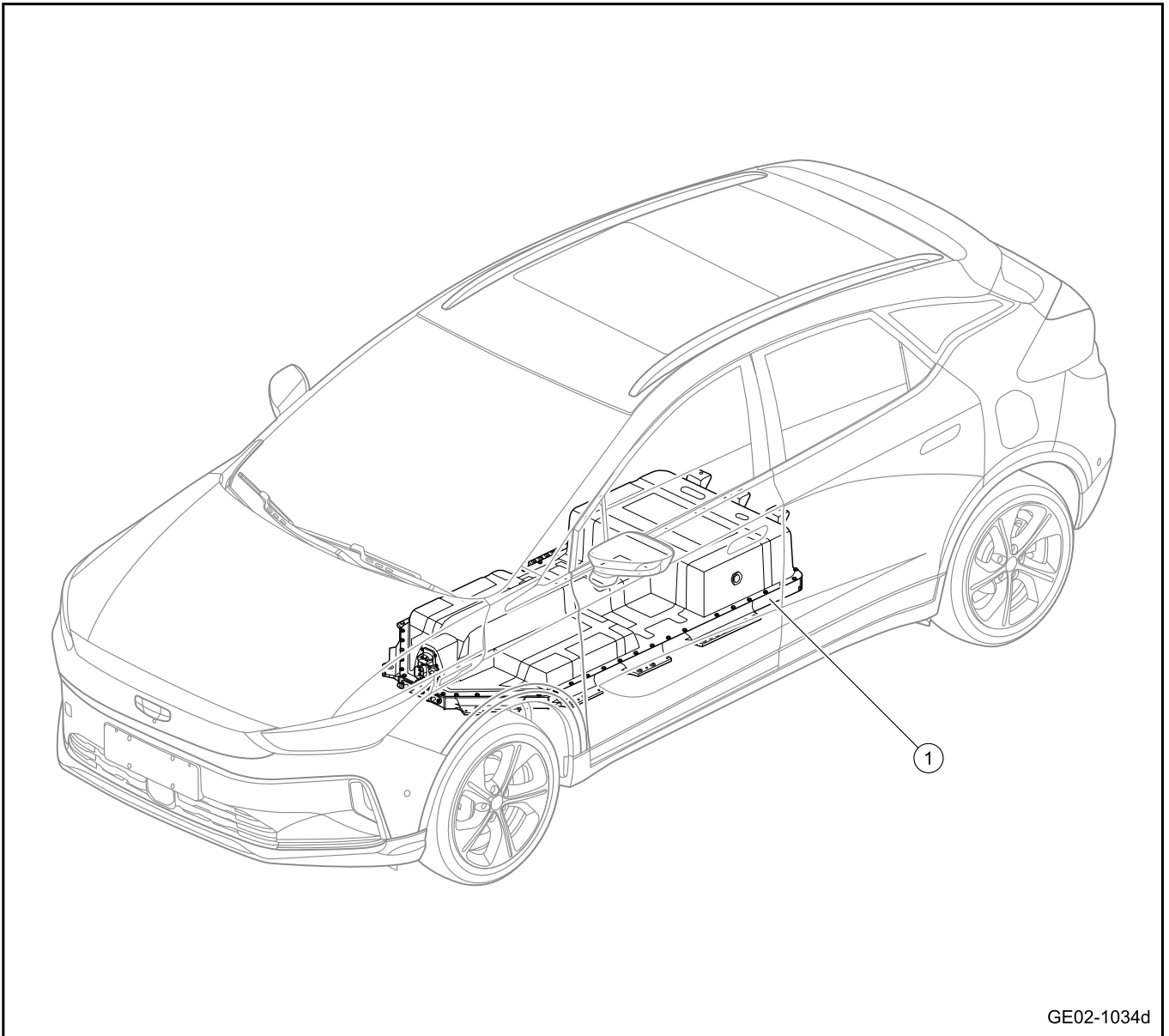
It is integrated into the power battery assembly and is the core component of the battery management system. The battery control unit (BMS) reports the information such as single voltage, current, temperature and high-voltage insulation of the whole vehicle to the vehicle controller (VCU) and controls the power battery according to the instructions of the VCU.

#### Battery high voltage distribution unit (B-BOX)

It is installed at the positive and negative output ends of the power battery assembly and consists of a high-voltage positive relay, a high-voltage negative relay, a precharge relay, a current sensor, a precharge resistance, etc.

2.2.4 Part location

2.2.4.1 Part Position

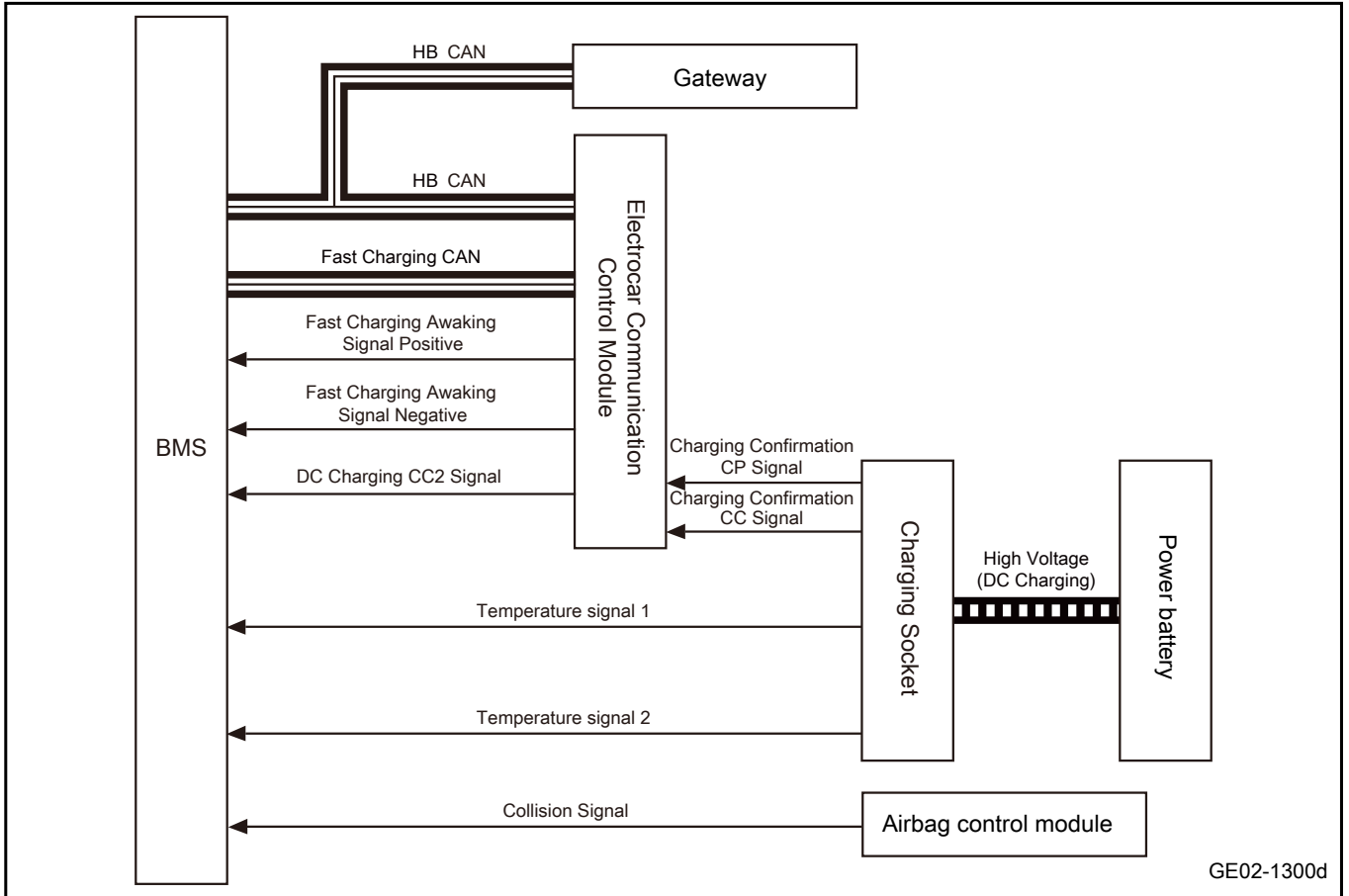


GE02-1034d

- 1. Power battery assembly

2.2.5 Electrical block diagram

2.2.5.1 Electrical Schematic Diagram of Power Battery System



## 2.2.6 Diagnostic information and steps

### 2.2.6.1 Diagnosis Description

Before diagnosing battery management system faults, refer to Description and Operation. Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

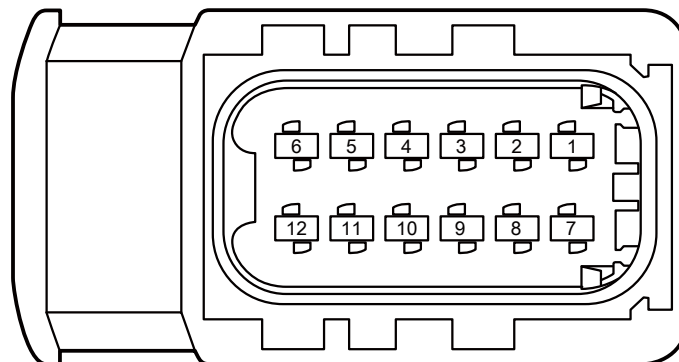
### 2.2.6.2 Routine inspection

1. Check after-sales installations that may affect the power battery system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the power battery.
4. Check whether the power battery high-voltage harness connector is loose and whether there are signs of corrosion inside.

### 2.2.6.3 List of Battery Management System Terminal

#### CA69 BMS module harness connector A

#### CA69 BMS module harness connector A



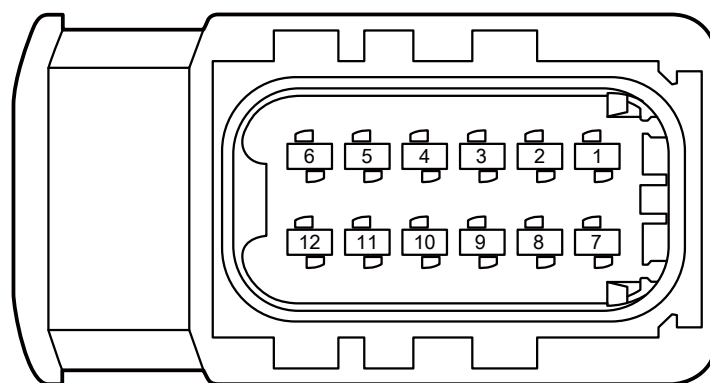
GE02-1321d

Terminal No.	Terminal name	Terminal description
1	B+Power supply	BMS module battery power supply
2	Ground connection	BMS module ground circuit
3	HB CAN-H	Hybrid CAN high line

Terminal No.	Terminal name	Terminal description
4	HB CAN-L	Hybrid CAN low line
5	Ground connection	BMS module ground circuit
6	Collision signal	Airbag crash signal input
7	IG2 power supply	BMS module ACC\ ON\ START power supply
8	-	-
9	Fast charging positive temperature sensor signal is positive	Charging socket temperature signal input (positive signal)
10	Fast charging positive temperature sensor signal is negative	Charging socket temperature signal input (negative signal)
11	-	-
12	-	-

CA70 BMS module harness connector B

CA70 BMS module harness connector



GE02-1322d

Terminal No.	Terminal name	Terminal description
1	Fast charging CAN-H	Fast charging CAN high bit line
2	Fast charging CAN-L	Fast charging CAN low line
3	Charging connection confirmation CC2 signal	Connection confirmation CC2 signal

Terminal No.	Terminal name	Terminal description
4	Fast charging wake-up signal is positive	Fast charging wake-up signal input (positive signal)
5	Fast charging wake-up signal negative	Fast charging wake-up signal input (negative signal)
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	Fast charging negative temperature sensor signal is positive	Charging socket temperature signal input (positive signal)
12	Fast charging negative temperature sensor signal is negative	Charging socket temperature signal input (negative signal)

#### 2.2.6.4 Fault symptom table

Symptom	Suspected parts	Measures
The charging port is unavailable for charging	1. Charging pile	Replace with the normal charging pile
	2. Circuit	Check and repair the charging connection wire and replace the harness if necessary
	3. BMS	Check and update the BMS module software version and replace the BMS if necessary
Battery temperature too high or too low	1. BMS	Check and update the BMS module software version and replace the BMS if necessary
	2. Circuit	Check the cell test circuit and replace the harness if necessary (it is allowed to remove the power battery; otherwise, replace the power battery)
	3. Power battery	Replace the faulty cell
Not charged with charger	1. AC charging pile or AC power supply	Replace with the normal charging pile or replace with the normal and stable power supply
	2. Circuit	Check and repair the charging connection wire and replace the harness if necessary
	3. On-board charger	Replace on-board charger

Symptom	Suspected parts	Measures
	4.BMS	Check and update the BMS module software version and replace the BMS if necessary
Abnormal charging state	1. Circuit	Check and repair the charging connection wire and replace the harness if necessary
	2. Power supply	Replace with the normal and stable power supply
	3. Battery charger	Replace with the normal charger
	4.BMS	Check and update the BMS module software version and replace the BMS if necessary
The whole system does not work after the system is powered on	1. Circuit	Check and repair the high voltage lines and related low voltage control lines, and replace the harness if necessary
	2.BMS	Check and update the BMS module software version and replace the BMS if necessary
	3.VCU	Check and update the VCU module software version and replace the VCU if necessary
	4. Power battery	Check the internal wiring, contactors, etc. of the power battery and replace them if necessary (it is allowed to disassemble the power battery, otherwise replace the power battery)
BMS power failure	1. Battery	Refer to <a href="#">BMS power failure</a>
	2. Fuse	
	3. Circuit	
	4.BMS	
BMS communication fault	1. Gateway	Refer to <a href="#">BMS communication faults</a>
	2.BMS	
	3. Circuit	
Internal fault of BMS	1.BMS	Refer to <a href="#">Internal fault of BMS</a>
Collision signal failure	1.BMS	See <a href="#">Collision signal failure</a>
	2. Supplementary restraint system	
	3. Circuit	
Fault of Fast Charging Port Temperature Sensor\	1. Charging port	Refer to the <a href="#">Fault of Fast Charging Port Temperature Sensor\</a>
	2.BMS	
	3. Circuit	



Symptom	Suspected parts	Measures
Fast charging port signal trouble	1. Charging port	Refer to the <a href="#">Fast Charging Port Signal Trouble</a>
	2. BMS	
	3. Circuit	
	4. Electric vehicle communication control module	

### 2.2.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller supply voltage is low.	Refer to <a href="#">BMS power failure</a>
U300617	Controller supply voltage is high.	
U300629	Lead-acid voltage is invalid during high voltage application	
U347287	Power CAN bus data loss	Refer to <a href="#">BMS communication faults</a>
U006488	Power CAN BUS OFF	
U150087	SCAN current message loss	
U150187	Current collector bus fault	
U111487	Lost communication with complete vehicle controller	
U111587	Lost communication with high and low voltage charging system	
U011087	Lost communication with electric motor controller	
U247281	Message checksum error for VCU instruction	Refer to <a href="#">Internal fault of BMS</a>
P152216	Monomer undervoltage level 1	
P157017	Monomer overpressure level 2	
P157016	Monomer undervoltage level 2	
P152409	Total current sampling failure	
P152617	Battery pack total voltage overvoltage	
P152616	Battery pack total voltage undervoltage	
P152901	Reason for balanced stopping: Balanced loop fault	
P152917	Single voltage difference is too large	
P152B21	Battery low-temperature level 1	
P152B98	Battery overtemperature level 1	
P152C98	Battery overtemperature level 2	
P15E300	Battery low-temperature level 2	
P152D00	Battery temperature difference is too large	
P152F1D	Invalid current sampling	

Diagnostic Trouble Code	Description	Fault location/elimination method
P153722	Excessive precharge current	
P153729	Precharge current reverse	
P153763	Precharge time is too long	
P15371E	Short circuit of precharge	
P153901	Main positive or precharge relay adhesion fault	
P153907	Failure to close main positive relay	
P153900	Electrical adhesion fault under main positive or main negative relay	
P153A01	Main positive or negative relay adhesion fault	
P154100	On the premise of high voltage relay closing, insulation failure (serious)	
P154300	On the premise of disconnection of high voltage relay, insulation failure (serious)	
P154C00	Unexpected power failure of battery management system	
P155E16	Battery cell limit undervoltage	
P155E17	Limit overvoltage of battery cell	
P156609	Fault of temperature sensor (serious)	
P156709	Battery temperature sensor failure	
P156722	Inlet temperature is too high during heating	
P156721	Inlet temperature is too low during cooling	
P158002	Adhesion fault of DC charging relay	
P158007	Failure to close DC charge relay	
P158107	Failure to close discharge precharge relay	
P158219	Discharge overcurrent level 1	
P158319	Discharge overcurrent level 2	
P158419	Discharge overcurrent level 3	
P158519	Charge overcurrent level 1	
P158619	Charge overcurrent level 2	
P158719	Charge overcurrent level 3	
P158819	Recharge overcurrent level 1	
P158919	Recharge overcurrent level 2	
P158A19	Recharge overcurrent level 3	
P158B19	Monomer undervoltage level 3	

Diagnostic Trouble Code	Description	Fault location/elimination method
P158C19	Monomer overpressure level 3	
P158D01	High voltage interlock fault of main circuit	
P158F01	High voltage interlock fault of fast charging circuit	
P159013	Open circuit of high voltage circuit	
P159113	Cell voltage sampling line dropped	
P15918F	Reason for balanced stopping: CMC PCB onboard temperature is too high	
P159298	Battery overtemperature level 3	
P159321	Battery low-temperature level 3	
P159421	Battery aging: battery health status is too low (alarm level)	
P159521	Battery aging: Battery health status is too low (fault level)	
P159600	Voltage sensor fault	
P159729	The high voltage outside the relay is greater than the high voltage inside	
P159801	Excessive zero drift fault of current sensor	
P159901	Thermal management failure: inlet temperature sensor fault	
P15D494	The VCU did not shutdown 90 seconds after the BMS had a Level 3 failure	
P15D519	When charging, the discharge current is greater than 40A	
P15D694	The VCU did not send a shutdown 5s after the BMS had a Level 4 failure	
P15D729	Fault of link voltage sampling during high voltage uploading	
P15D829	Fault of pack sampling during high voltage uploading	
P15D967	The IPU priming completion flag has not been received after priming	
P15DA67	Daisy Chain's failure to update	
P15DB94	BMU unexpected restart fault	
P15DC28	Low temperature outliers	
P15DD64	Unreasonable SOC	
P15E101	Thermal management fault, outlet temperature sensor fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
P15E201	Thermal management fault, temperature difference is too large at the end of thermal management	
P15E319	During power-down, the relay disconnect current is greater than 1A	
P15E404	ROM self-test failed	
P15E500	Unexpected vehicle stop intelligent power supply	
P152104	Thermal runaway fault	
P155342	Battery management system motherboard RAM verification failed	
P15E898	CSU overtemperature level 1	
P15E798	CSU overtemperature level 2	
P15E698	CSU overtemperature level 3	
P159F01	Ineffective temperature fault of balanced plate	
P153E08	Crash signal generated (ACAN signal only)	
P153F12	Crash signal generated (Hardwire PWM)	
P159A01	Chargeing port temperature sensor fault	Refer to the <a href="#">Fault of Fast Charging Port Temperature Sensor\</a>
P159B22	Charging port overtemperature	
P159C00	Fast charging precharge failed	Refer to the <a href="#">Fast Charging Port Signal Trouble</a>
P159D01	Charging fault: Fast charging equipment failed	
P159E01	Charging fault: HLV Charging System failed	
P15DE67	Charging failed, since CC2 hardware signal is abnormal	
P15DF67	Charging failed, since the quick charging wake-up source is abnormal	
P15E094	Charging failed, abnormal termination of charging of fast charging equipment	
P15D294	Unexpected complete vehicle charging stop	
P15D383	Power mismatch between high and low voltage charging system and BMS (unable to charge)	

## 2.2.6.6 Diagnosis system

### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

## 2.2.6.7 Read and clear of fault diagnosis code

### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

## 2.2.6.8 List of Data Flow

Serial No.	Description of DID	Physical value range	Unit
1	Nominal capacity of battery pack	0-999.9	Ah
2	Nominal energy of battery pack	0-999.9	kWh
3	Nominal voltage	0-600	V
4	Total cells	0-254	-
5	Total cell temperature sensor	0-254	-
6	Single charge capacity of battery pack	0-6553.5	Ah
7	Cumulative discharge capacity of battery pack	0-7400000	Ah
8	Cumulative charge capacity of battery pack	0-7400000	Ah

Serial No.	Description of DID	Physical value range	Unit
9	If VCU is allowed for charging	No/Yes	-
10	Level of BMS charge fault	Normal/warning/power deduction	-
11	Precharged state of BMS discharge circuit	Precharging/successfully Precharged/failed to precharge/stop precharging	-
12	Precharged state of BMS charge circuit	Precharging/successfully Precharged/failed to precharge/stop precharging	-
13	Temperature value of No.1 module	-40-120	°C
14	Temperature value of No.2 module	-40~120	°C
15	Temperature value of No.3 module	-40~120	°C
16	Temperature value of No.4 module	-40~120	°C
17	Temperature value of No.5 module	-40~120	°C
18	Temperature value of No.6 module	-40~120	°C
19	Temperature value of No.7 module	-40~120	°C
20	Temperature value of No.8 module	-40~120	°C
21	Temperature value of No.9 module	-40~120	°C
22	Temperature value of No.10 module	-40~120	°C
23	Temperature value of No.11 module	-40~120	°C
24	Temperature value of No.12 module	-40~120	°C
25	Temperature value of No.13 module	-40~120	°C
26	Temperature value of No.14 module	-40~120	°C
27	Temperature value of No.15 module	-40~120	°C
28	Temperature value of No.16 module	-40~120	°C

Serial No.	Description of DID	Physical value range	Unit
29	Temperature value of No.17 module	-40~120	°C
30	Maximum cell voltage	0-5	V
31	Number of cell with maximum voltage	0-200	-
32	Minimum cell voltage	0-5	V
33	Number of cell with minimum voltage	0-200	-
34	Total voltage of battery pack	0-600	V
35	Total current of battery pack	-500-500	A
36	Maximum temperature of battery pack	-40~120	°C
37	Number of temperature sensor indicating maximum temperature of battery pack	0-200	-
38	Minimum temperature of battery pack	-40~120	°C
39	Number of temperature sensor indicating minimum temperature of battery pack	0-200	-
40	Insulation resistance	0-60000	KOhm
41	Insulation monitoring state	Normal/warning/error/invalid	-
42	Whole-vehicle interlocking state under high voltage	Normal vehicle HVIL/ vehicle HVIL fault/invalid	-
43	Relay state	State of main positive relay: On/Off State of main negative relay: On/Off State of precharged relay: On/Off State of charging relay: On/ Off State of charging precharged relay: On/Off	-
44	Actual working state of battery charger	Charging request/ discharging request/ charging/ discharging/ connection state inspection/ charging appointment/ power reduction/ charging pending/ charging end	-

Serial No.	Description of DID	Physical value range	Unit
45	Error condition of battery charger	No error/ limited operation failure/ no charging/ emergency shutdown	-
46	Output current of battery charger	0-50.0	A
47	Output voltage of battery charger	0-1000	V
48	State of charge	0-100	%
49	Dump energy displayed of battery	0-100	%
50	SOH	0-100	%
51	Dump energy	0-1000	Kwh
52	Allowable continuous discharge power	0-165	kW
53	Allowable peak discharge power	0-165	KW
54	Allowable continuous charge power	0-165	KW
55	Allowable peak charge power	0-165	KW
56	Cell peak capacity	0-999.9	Ah
57	Minimum cell capacity	0-999.9	Ah
58	Feedback of air conditioner to battery water pump request	0-100	%
59	CC state of battery charger	Not connected/ connected	-
60	CP connection state of battery charger	Not connected/ S2 lock-out state fault/ power supply available but not activated/ connected with power supply/ CP signal fault	-
61	Order of charging allowed	Charging allowed/not allowed	-
62	Charge current requested by BMS	0-50.0	A
63	Charge voltage requested by BMS	0-1000	V
64	Heat management request of BMS	0-3	-
65	Heat management response of AC	0-7	-



Serial No.	Description of DID	Physical value range	Unit
66	Temperature of battery pack water inlet	-40~125	°C
67	Interlocking state of battery pack	Normal interior HVIL/ interior HVIL fault/ invalid	-
68	Level of BMS discharge fault	Normal/warning/power deduction/ limp home/ power off/ emergency shutdown	-
69	State of interior high-voltage interlocking source	Normal generation/ stop generation	-
70	State of exterior high-voltage interlocking source	Normal generation/ stop generation	-
71	VCU mode control	No request/ close main relay/ disconnect main relay/ emergency on	-
72	link+ side voltage	0-600	V
73	link- side voltage	0-600	V
74	Collision output state	Prior level/ left/right/rear	-
75	ECU supply voltage	0~24	V
76	Speed	0~200	km-h
77	Total distance	0~1048574	km
78	Outer voltage charging main relay	0~600	V
79	Average temperature	-40~120	°C
80	Maximum SOC	0~100	%
81	Minimum SOC	0~100	%
82	High voltage interlocking state of main circuit	0~3	-
83	High voltage interlocking state of fast charge circuit	0~3	-
84	Outer voltage of main circuit at high voltage interlocking state	0~5000	mV
85	Inner voltage of main circuit at high voltage interlocking state	0~5000	mV
86	Outer voltage of fast charge circuit at high voltage interlocking state	0~5000	mV

Serial No.	Description of DID	Physical value range	Unit
87	Inner voltage of fast charge circuit at high voltage interlocking state	0~5000	mV
88	Insulation value of positive pole	0~65534	K
89	Insulation value of negative pole	0~65534	K
90	Key signal	0~12000	mV
91	Voltage of fast-charge wake-up source	0~12000	mV
92	CC2 voltage value	0~5000	mV
93	CRM00 time-out sign	0~1	-
94	CRMAA time-out sign	0~1	-
95	CTS or CML time-out sign	0~1	-
96	CRO time-out	0~1	-
97	CCS time-out	0~1	-
98	CST received (not manual stop)	0~1	-
99	Maximum output voltage of charging pile	0~750	V
100	Minimum output voltage	0~750	V
101	CCS output current value	0~500	A
102	CCS output voltage value	0~600	V
103	Temperature of power socket	-40~125	°C
104	Temperature of water outlet	-40~125	°C
105	Maximum PCB temperature	-40~125	°C
106	Times to force disconnect relay	0~255	-

### 2.2.6.9 BMS communication fault

#### 1. DTC description:

Diagnostic Trouble Code	Description
U347287	Power CAN bus data loss
U006488	Power CAN BUS OFF
U150087	SCAN current message loss
U150187	Current collector bus fault
U111487	Lost communication with complete vehicle controller
U111587	Lost communication with high and low voltage charging system

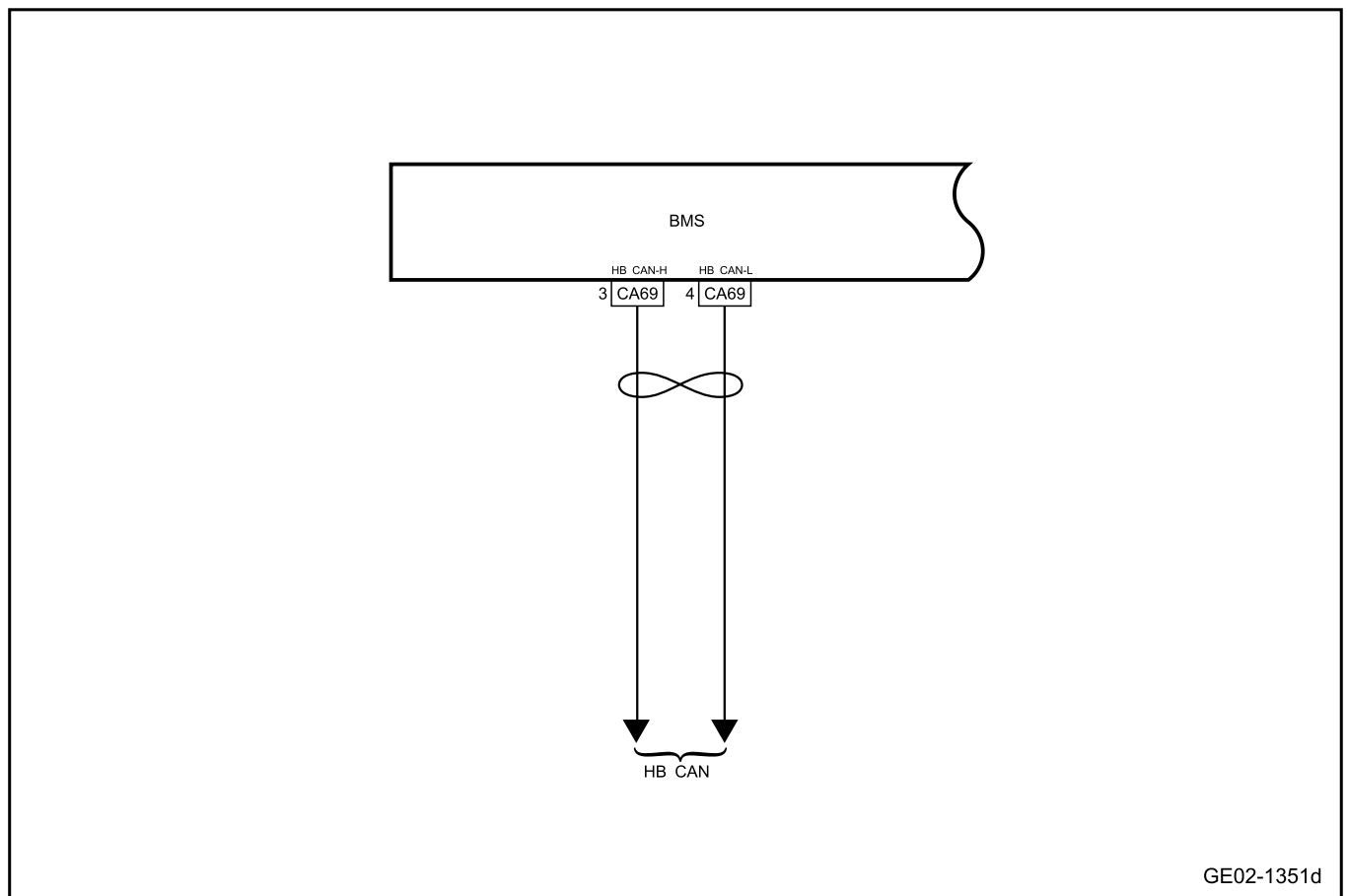
Diagnostic Trouble Code	Description
U011087	Lost communication with electric motor controller
U247281	Message checksum error for VCU instruction

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U347287	BMU lost communication with ACAN (BMU analysis), ACAN identification information not received, time > 2000milliseconds (calibrated)	1. BMS wake-up lasts for 3 seconds 2. The supply voltage is 9V16V. 3. No bus disconnection occurs	1. Circuit 2. BMS 3. Diagnostic interface
U006488	After ACANBusoff 10 (calibrated) fast recovery, enter slow recovery. Treatment	4. Bus disconnection recovers in the last 1 second 5. KL15 active or AC charging or DC charging	
U150087	Scanning fails to receive 0x3C2 message scan analysis	1. BMS has been powered on 2. BMU relay diagnostic function operation 3. BMU current monitor function operates normally 4. The current sensor can normally send the current value to the BMU through the CAN bus	
U150187	BMU scan missing BMU check	1. BMS wake-up lasts for 3 seconds 2. The supply voltage is 9V16V. 3. No bus disconnection occurs 4. Bus disconnection recovers in the last 1 second 5. KL15 active or AC charging or DC charging	
U111487	This frame message of VCU_Command is lost for 250ms		
U111587	1. During AC charging; The OBC_STS frame message is lost for 500ms, and the fault is mature 2. OBC_CURR this frame message 0x221 is lost for 500ms; The discharge fault level is only detected during OBC discharge		
U011087	This frame message of IPU_TrqSpd is lost for 250ms, and the fault is mature		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U247281	Every time the VCU_ Command message appears, checksum error; Counter plus 1; each occurrence of the VCU_ Command message checksum right, counter minus 1; Counter > 10; and the fault is mature		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check the ECM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the integrity of the HB-CAN bus.

- A. Perform HB-CAN network integrity check, refer to [HB-CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

**Step 4** Replacement of BMS.

- A. Check whether the power supply or grounding harness of BMS is normal. Refer to [BMS power failure](#)
- B. Replace BMS, refer to [Replacement of BMS](#)

Next Step

**Step 5** Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 2.2.6.10 BMS power failure

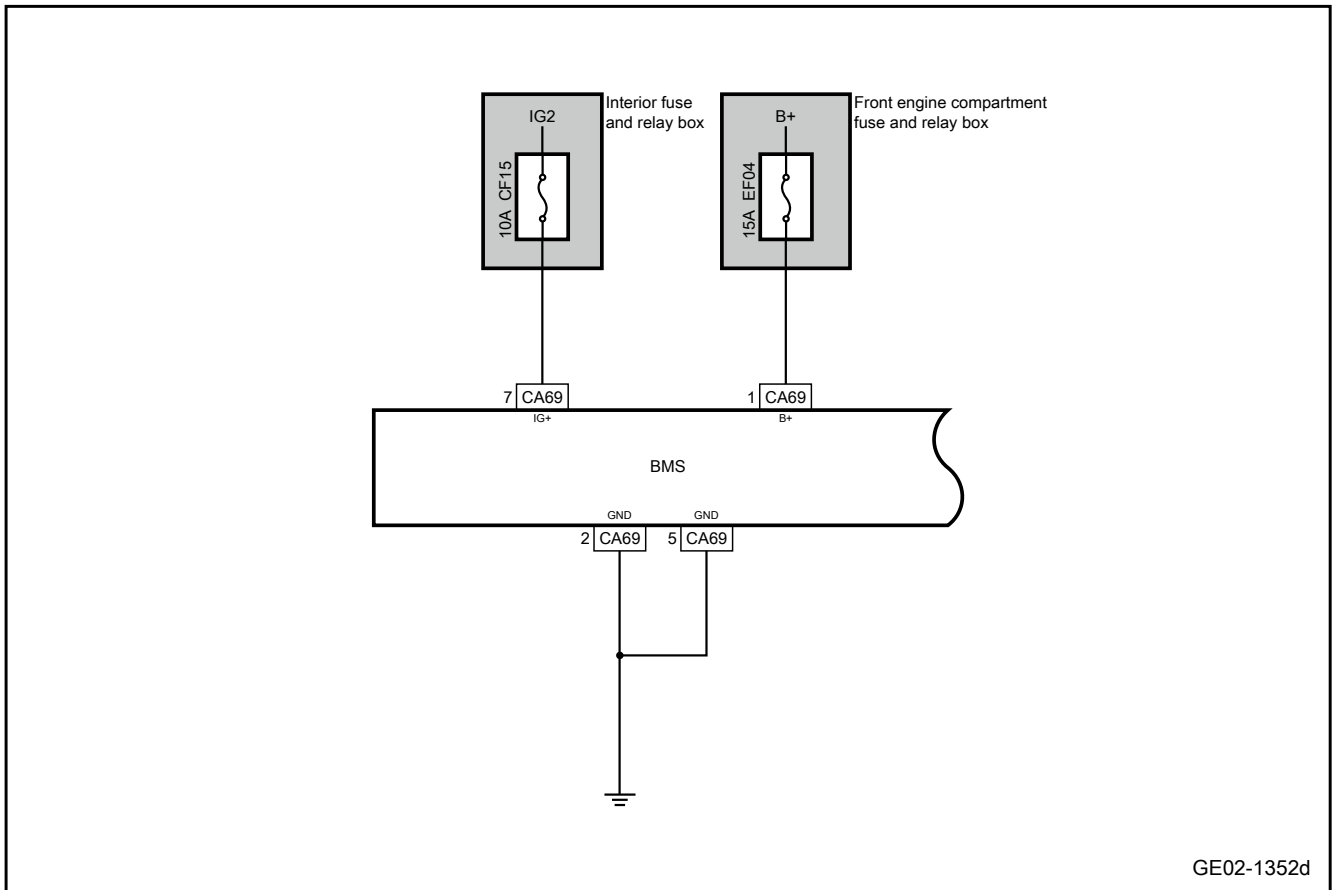
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller supply voltage is low.
U300617	Controller supply voltage is high.
U300629	Lead-acid voltage is invalid during high voltage application

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The 12V supply voltage of BMS is less than or equal to 9V, and the time is greater than or equal to 4s. (Calibrable)	1.BMS wakeup	1. Battery 2. Circuit 3. Fuse 4.BMS
U300617	The 12V supply voltage of BMS is greater than or equal to 16V, and the time is greater than or equal to 4s. (Calibrable)		
U300629	1. Lead-acid voltage sampling is invalid 2. Lead acid voltage higher than 16V or lower than 9V	1. BMS has been powered on 2. BMS try to apply high voltage	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check the ECM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Inspect the fuse.

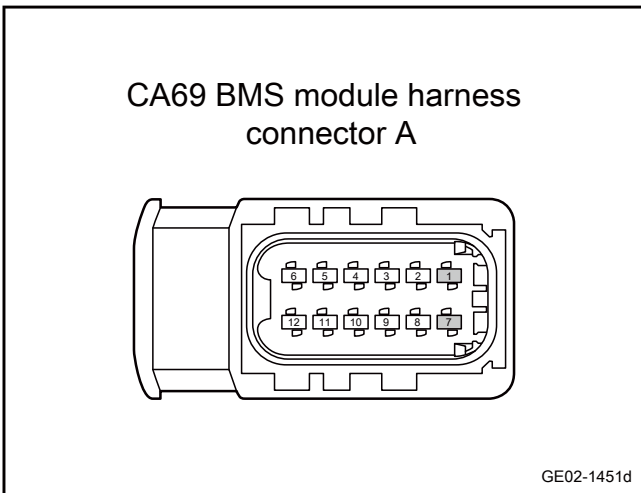
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF15 and check whether the fuse CF15 is blown.  
  
Rated fuse capacity: 10A
- C. Pull out the fuse EF04 of the front engine bay. Check whether the fuse EF04 is blown.  
  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the BMS power supply circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BMS harness connector CA69.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA69(7)		

- E. Confirm whether the measured value meets the standard.

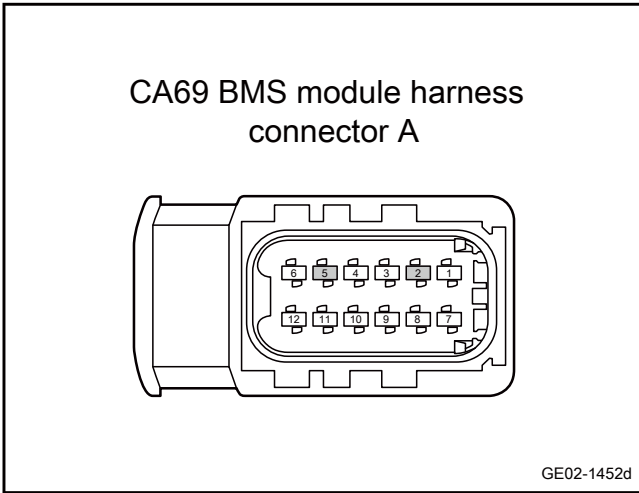
No

Repair or replace the harness.

Yes

**Step 5** Check the BMS grounding circuit.





- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BMS harness connector CA69.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA69(5)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replacement of BMS.

- A. Replace BMS, refer to [Replacement of BMS](#)

Next Step

**Step 7** Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 2.2.6.11 Internal fault of BMS

#### 1. DTC description:

DTC	Trouble description
P152216	Monomer undervoltage level 1
P157017	Monomer overpressure level 2
P157016	Monomer undervoltage level 2
P152409	Total current sampling failure
P152617	Battery pack total voltage overvoltage
P152616	Battery pack total voltage undervoltage
P152901	Reason for balanced stopping: Balanced loop fault
P152917	Single voltage difference is too large
P152B21	Battery low-temperature level 1
P152B98	Battery overtemperature level 1
P152C98	Battery overtemperature level 2
P15E300	Battery low-temperature level 2
P152D00	Battery temperature difference is too large
P152F1D	Invalid current sampling
P153722	Excessive precharge current
P153729	Precharge current reverse
P153763	Precharge time is too long
P15371E	Short circuit of precharge
P153901	Main positive or precharge relay adhesion fault
P153907	Failure to close main positive relay
P153900	Electrical adhesion fault under main positive or main negative relay
P153A01	Main positive or negative relay adhesion fault
P154100	On the premise of high voltage relay closing, insulation failure (serious)
P154300	On the premise of disconnection of high voltage relay, insulation failure (serious)
P154C00	Unexpected power failure of battery management system
P155E16	Battery cell limit undervoltage
P155E17	Limit overvoltage of battery cell
P156609	Fault of temperature sensor (serious)
P156709	Battery temperature sensor failure
P156722	Inlet temperature is too high during heating
P156721	Inlet temperature is too low during cooling
P158002	Adhesion fault of DC charging relay

DTC	Trouble description
P158007	Failure to close DC charge relay
P158107	Failure to close discharge precharge relay
P158219	Discharge overcurrent level 1
P158319	Discharge overcurrent level 2
P158419	Discharge overcurrent level 3
P158519	Charge overcurrent level 1
P158619	Charge overcurrent level 2
P158719	Charge overcurrent level 3
P158819	Recharge overcurrent level 1
P158919	Recharge overcurrent level 2
P158A19	Recharge overcurrent level 3
P158B19	Monomer undervoltage level 3
P158C19	Monomer overpressure level 3
P158D01	High voltage interlock fault of main circuit
P158F01	High voltage interlock fault of fast charging circuit
P159013	Open circuit of high voltage circuit
P159113	Cell voltage sampling line dropped
P15918F	Reason for balanced stopping: CMC PCB onboard temperature is too high
P159298	Battery overtemperature level 3
P159321	Battery low-temperature level 3
P159421	Battery aging: battery health status is too low (alarm level)
P159521	Battery aging: Battery health status is too low (fault level)
P159600	Voltage sensor fault
P159729	The high voltage outside the relay is greater than the high voltage inside
P159801	Excessive zero drift fault of current sensor
P159901	Thermal management failure: inlet temperature sensor fault
P15D494	The VCU did not shutdown 90 seconds after the BMS had a Level 3 failure
P15D519	When charging, the discharge current is greater than 40A
P15D694	The VCU did not send a shutdown 5s after the BMS had a Level 4 failure
P15D729	Fault of link voltage sampling during high voltage uploading
P15D829	Fault of pack sampling during high voltage uploading
P15D967	The IPU priming completion flag has not been received after priming
P15DA67	Daisy Chain's failure to update
P15DB94	BMU unexpected restart fault
P15DC28	Low temperature outliers
P15DD64	Unreasonable SOC
P15E101	Thermal management fault, outlet temperature sensor fault
P15E201	Thermal management fault, temperature difference is too large at the end of thermal management

DTC	Trouble description
P15E319	During power-down, the relay disconnect current is greater than 1A
P15E404	ROM self-test failed
P15E500	Unexpected vehicle stop intelligent power supply
P152104	Thermal runaway fault
P155342	Battery management system motherboard RAM verification failed
P15E898	CSU overtemperature level 1
P15E798	CSU overtemperature level 2
P15E698	CSU overtemperature level 3
P159F01	Ineffective temperature fault of balanced plate

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P152216	$V_{min} \leq 2.8V (T_{min} > 0^{\circ}C)$ $V_{min} \leq 2.5V (20^{\circ}C < T_{min} \leq 0^{\circ}C)$ $V_{min} \leq 2.0V (T_{min} \leq 20^{\circ}C)$	BMS powered on 2. CSC monomer voltage monitoring function works normally 3. The CSCCAN bus between BMU and CSCs works normally 4. Maximum and minimum cell voltage valid	1. BMS
P157017	$V_{max} \geq 4.3V$ (calibrated)		
P157016	$V_{min} \leq 2.5V (T_{min} > 0^{\circ}C)$ $V_{min} \leq 2.2V (20^{\circ}C < T_{min} \leq 0^{\circ}C)$ $V_{min} \leq 1.8V (T_{min} \leq 20^{\circ}C)$		
P152409	1. Current value is invalid or out of range [15001500] A, time >2000ms (calibrated) 2. Stream sense MIB SPI communication error		
P152617	$U_{sum} \geq 438.6V$		
P152616	$U_{sum} \leq 285.6V (T_{min} > 0^{\circ}C)$ $U_{sum} \leq 255V (T_{min} \leq 0^{\circ}C)$		
P152901	BMU read CMC equalization loop fault flag or equalization temperature invalid		
P152917	$\Delta(SOC\_Max SOC\_Min) \geq 30\%$		
P152B21	The lowest battery temperature is less than $20^{\circ}C$ , and the duration is greater than or equal to 4S		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P152B98	The highest battery temperature is greater than 50°C, and the duration is greater than or equal to 4S		
P152C98	The highest battery temperature is greater than 53°C, and the duration is greater than or equal to 4S		
P15E300	The lowest battery temperature is less than 30°C, and the duration is greater than or equal to 4S		
P152D00	The temperature difference is too large, greater than or equal to 25°C, and the time is greater than or equal to 60s.		
P152F1D	The current validity flag bit is in an invalid state		
P153722	Current greater than 2A, time greater than or equal to 300ms (calibrable)		
P153729	During the precharge period, the current direction is charging, and $I > 5A$ , the time is greater than 50ms (50 is a calibrable value)		
P153763	The precharge time is longer than the maximum time x required for precharge (x is a calibrable value, the initial value of x is 600ms, and the range is 0-600ms)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15371E	1. The outer high voltage is less than 0.4 times Upack (0.4 is a calibrable value) and the current is greater than or equal to 0.6 times HV_in/ precharge resistance value (0.6 can be calibrated) 2 The precharge time is 70ms longer than the precharge short circuit time (70 is scalable quantity) 3. The above two conditions are met at the same time and appear twice in a row		
P153901	When the main positive relay is on, BMS requests clsoe, but turns off before the request, counter > 0 (calibrated)		
P153907	The BMS requests that the main relay be turned off when it is on, but still on, counter > 0 (calibrated)		
P153900	BMS requests main relay to turn on when off, but still off, counter > 0 (calibrated)		
P153A01	When the main negative relay is turned on, the BMS requests the main negative relay from clsoe, but turns it off before the request, d, counter > 0 (calibrated)		
P154100	Insulation impedance value is less than 500Ω/V (fast charge is less than 100Ω/V, (this value can be calibrated) (when high voltage relay is closed), and the time is greater than or equal to 20S		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P154300	Insulation impedance value is less than 500Ω/V (fast charge is less than 100Ω/V, (this value can be calibrated) (when high voltage relay is closed), and the time is greater than or equal to 20S		
P154C00	Unexpected power-down of BMU, greater than 0 times		
P155E16	The lowest monomer voltage is less than or equal to 1.5V for 4s		
P155E17	The highest monomer voltage is greater than or equal to 4.36V for 4s		
P156609	At low-temperature outlier temperature point, or temperature point exceeding 40 ~ 120°C, a single CMC appears > 1 for 20		
P156709	20 low temperature outlier temperature point, or temperature point exceeding 40-120°C, a single CMC appears = 1 for 20		
P156722	The water inlet temperature is greater than or equal to 58°C		
P156721	The water inlet temperature is less than or equal to 10°C		
P158002	1. Before DC charging closes the charging relay, the closed state of the charging relay is detected 2. Charge positive adhesion fault detected in stored discharge mode		
P158007	The BMS requests that the DC charge relay be turned off when it is on, but it is still on, counter > 0 (calibrated)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P158107	The BMS requests that the main relay be turned off when it is on, but still on, counter > 0 (calibrated)		
P158219	Main loop current $I \geq 1.1^* \text{Table\_value} + 1\text{A}$		
P158319	Main loop current $I \geq 1.2^* \text{Table\_value} + 1\text{A}$		
P158419	Main loop current $I \geq 550\text{A}$		
P158519	$I \geq \text{Min} [( \text{Request } I * 1.05 ) \& ( \text{Request } I + 1\text{A} )]$ ( $T_{\text{min}} \leq 5^{\circ}\text{C}$ ) $I \geq \text{Min} [( \text{Request } I * 1.05 ) \& ( \text{Request } I + 1\text{A} )] + 1$ ( $T_{\text{min}} > 5^{\circ}\text{C}$ )		
P158619	$I \geq \text{Min} [( \text{Request } I * 1.1 + 2\text{A} ) \text{ and } ( \text{Request } I + 2\text{A} )]$		
P158719	Main loop current $I \geq 447.4\text{A}$		
P158819	$I \geq \text{Min} [( \text{Table\_Value} * 1.05 ) \text{ and } ( \text{Table\_Value} + 1\text{A} )]$		
P158919	$I \geq \text{Min} [( \text{Table\_Value} * 1.1 + 2\text{A} ) \text{ and } ( \text{Table\_Value} + 2\text{A} )]$		
P158A19	$I \geq \text{Min} (430\text{A}, 1.2^* \text{lookup value} + 2\text{A})$ , lasting 2s		
P158B19	$V_{\text{min}} \leq 2.3\text{V}$ ( $T_{\text{min}} > 0^{\circ}\text{C}$ ) $V_{\text{min}} \leq 2.0\text{V}$ ( $20^{\circ}\text{C} < T_{\text{min}} \leq 0^{\circ}\text{C}$ ) $V_{\text{min}} \leq 1.6\text{V}$ ( $T_{\text{min}} \leq 20^{\circ}\text{C}$ )		
P158C19	$V_{\text{max}} \geq 4.35\text{V}$ (calibrated)		
P158D01	BMU Detect HVIL Open Line, Counter > 0 (calibrated)		
P158F01	BMU Detect HVIL Open Line, Counter > 0 (calibrated)		
P159013	High voltage circuit breaker, $\text{BatUin} < 30\text{V}$		
P159113	The BMU receive that hardware detection sampling line drop flag bit is valid for 5S		
P15918F	PCB on-board temperature > $90^{\circ}\text{C}$ for 5s		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159298	The highest battery temperature is greater than 56°C, and the duration is greater than or equal to 4S		
P159321	The lowest battery temperature is less than 40°C, and the duration is greater than or equal to 4S		
P159421	SOH ≤ 80% (calibration), continuous energization, count ≥ 40 (calibrated)		
P159521	SOH ≤ 70% (calibration), continuous energization, count ≥ 40 (calibrated)		
P159600	Single voltage value is invalid or overrun, lasting for 5s		
P159729	The high voltage on the outer side of the relay is greater than 1.05 times the high voltage on the inner side (before power-on) and lasts for 50ms		
P159801	When the relay is not stuck, disconnecting the relay detects that the absolute value of the current sensor sampling current is greater than 2A for 1S (calibrable)		
P159901	The inflow temperature ≤ 40°C for 5s (calibrable) or the temperature ≥ 100°C for 5s (calibrable)		
P15D494	The VCU did not send 90 seconds after the BMS had a level 3 fault		
P15D519	When charging, the discharge current is greater than 40A for 2s		
P15D694	The VCU did not send 100ms after the BMS had a level 4 fault		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15D729	During high voltage uploading: The high-voltage sampling value outside the main positive relay is invalid. When starting at high voltage for 50ms: The high voltage sampling value outside the main positive relay is invalid, 2s		
P15D829	During high voltage uploading: Pack high voltage sampling value is invalid. When starting at high voltage for 50ms: Pack high voltage sample value is invalid, 2s		
P15D967	In the process of high voltage, the IPU priming success flag was not detected within the longest priming time of 600ms		
P15DA67	After receiving the daisy chain uploaded from the bottom layer, the flag bit is not updated for 5s		
P15DB94	Unexpected reboots of BMU, greater than 0 times		
P15DC28	The difference between low temperature and average temperature is $\geq 20$ degrees Celsius, and the duration is 10s		
P15DD64	Power-up read SOC value in EEPROM $> 100\%$		
P15E101	The effluent temperature $\leq 40^{\circ}\text{C}$ for 5s (calibrable) or the temperature $\geq 100^{\circ}\text{C}$ for 5s (calibrable)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15E201	At the end of cooling, the temperature difference of the battery cell exceeds 10°C, and 0s confirms. At the end of heating, the temperature difference of the battery cell exceeds 15°C, and 0s confirms.		
P15E319	After receiving the shutdown sent by the VCU, the current is greater than 1A and lasts for 2s		
P15E404	RAM self-test of BMU failed more than 0 times		
P15E500	In the process of intelligent power supply, the system fault level is less than or equal to level 5, and does not meet other conditions for stopping intelligent power supply, but receives the command of stopping intelligent power supply sent by VCU		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P152104	<p>When any of the following conditions are met, the thermal runaway fault is reported</p> <ol style="list-style-type: none"> <li>1. <math>V_{min} &lt; 2.1V (0.5s) \&amp; &gt; 67^{\circ}C</math> (2s)</li> <li>2. <math>V_{min} 3^{\circ}C/s</math> (2s)</li> <li>3. <math>V_{min} &lt; 2.1V(0.5s) \&amp; &gt; 30^{\circ}C</math> (2s)</li> <li>4. The number of voltage sampling open circuit faults <math>&gt; = 1 (5s) \&amp; \&amp; T_{max} &gt; 67^{\circ}C</math> (2s)</li> <li>5. The number of voltage sampling open circuit faults <math>&gt; = 1 (5s) \&amp; \&amp; dt/dt &gt; 3^{\circ}C/s</math> (2s)</li> <li>6. The number of voltage sampling open circuit faults <math>&gt; = 1 (5s) \&amp; \&amp; T_{max}T_{min} &gt; 30^{\circ}C</math> (2s)</li> <li>7. The number of voltage sampling open circuit faults <math>&gt; = 1 (5s) \&amp; \&amp; \text{all NTC failures in the same module}</math> (20s)</li> <li>8. (FPC + HVIL) open circuit signal <math>\&amp; \&amp; T_{max} &gt; 67^{\circ}C</math> (2s)</li> <li>9. (FPC + HVIL) open circuit signal <math>\&amp; \&amp; dT/dt &gt; 3^{\circ}C/s</math> (2s)</li> <li>10. (FPC + HVIL) open circuit signal <math>\&amp; &gt; 30^{\circ}C</math> (2s)</li> <li>11. (FPC + HVIL) open circuit signal <math>\&amp; \&amp; V_{min} &lt; 2.1V (0.5s)</math></li> <li>12. (FPC + HVIL) open circuit signal <math>\&amp; &gt; = 1 (5s)</math></li> <li>13. (FPC + HVIL) Open circuit signal <math>\&amp; \&amp; \text{all NTC in the same module fail}</math> (20s)</li> <li>14. (FPC + HVIL) Open Circuit Signal <math>\&amp; \&amp; \text{CSC Communication Loss}</math></li> </ol>		
P155342	RAM self-test of BMU failed more than 0 times	Data in RAM is stored correctly before power-down	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
		After the BMS is powered up, it successfully enters initialization before running the application software	
P15E898	The current sensor temperature is greater than or equal to 95°C	BMS has been powered on	
P15E798	The current sensor temperature is greater than or equal to 105°C		
P15E698	The current sensor temperature is greater than or equal to 115°C		
P159F01	The equilibrium temperature of CMC is invalid under the condition of daisy chain renewal	Daisy chain update	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check the ECM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replacement of BMS.

- A. Check whether the power supply or grounding harness of BMS is normal. Refer to [BMS power failure](#)
- B. Replacement of BMS. Refer to [Replacement of BMS](#)

Next Step

Step 5 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

2.2.6.12 Collision signal failure

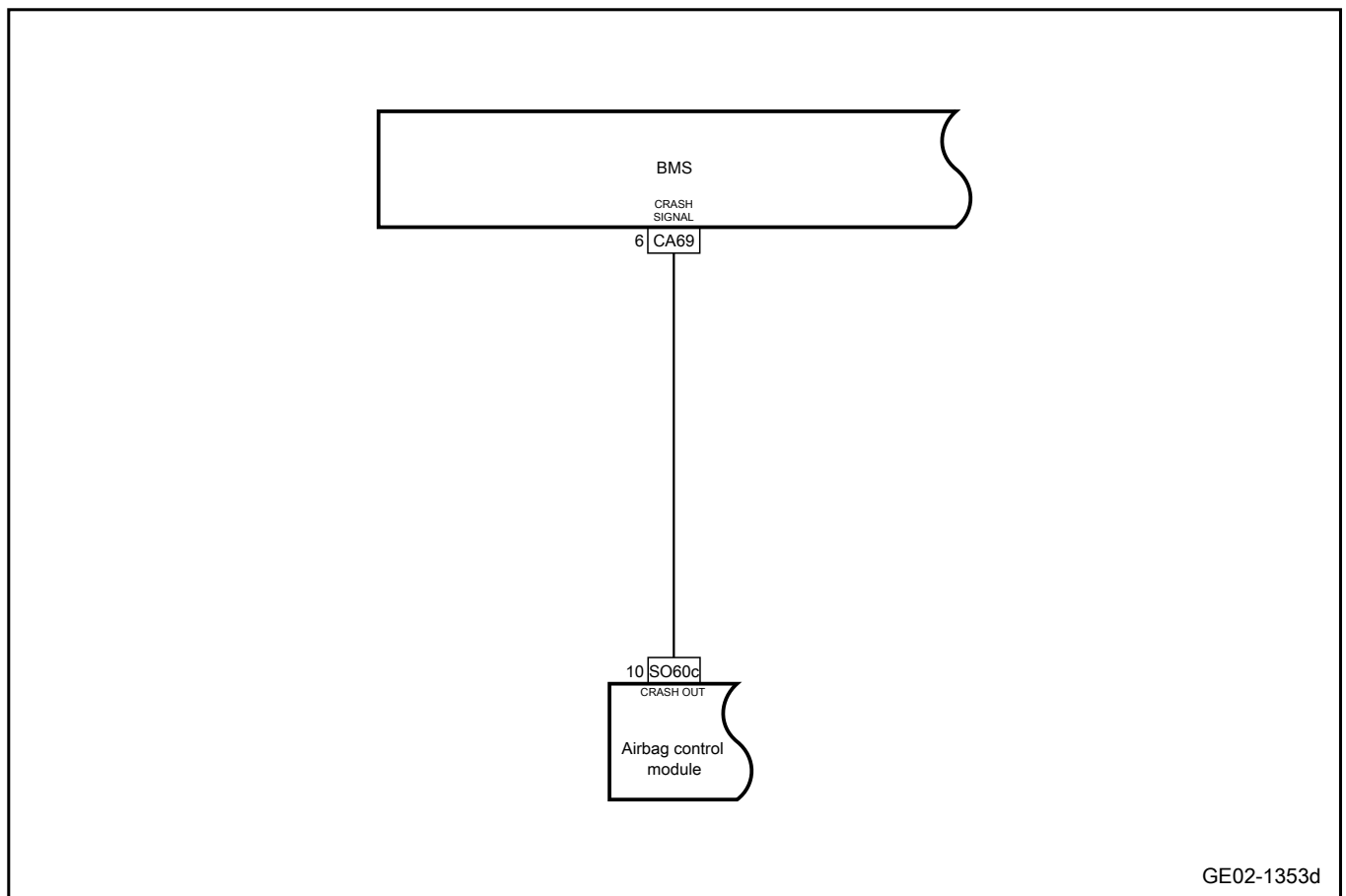
1. DTC description:

Diagnostic Trouble Code	Description
P153E08	Crash signal generated (ACAN signal only)
P153F12	Crash signal generated (Hardwire PWM)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P153E08	BMS receives collision signal from VCU via ACAN, counter > 0 (calibrated)	1. BMS has been powered on 2. The BMU can receive "crash signal" from the VCU through the ACAN	1. Supplementary restraint system
P153F12	BMS receives crash signal from hardware crash signal, counter >3 (calibrated) check	1. BMS has been powered on 2. that BMU may receive hardware signal from the airbag	2. Circuit 3.BMS

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the airbag control module and BMS for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

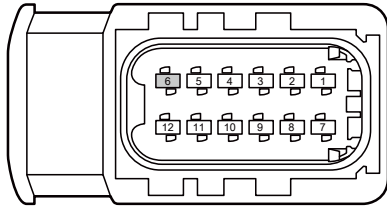
Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between airbag control module and BMS is open.

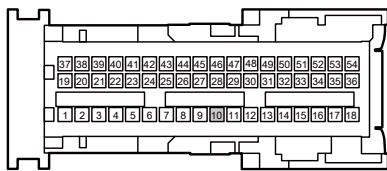


CA69 BMS module harness connector A



GE02-1453d

SO60c airbag control module harness connector A



GE02-1454d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BMS harness connector CA69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(6)	SO60c(10)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

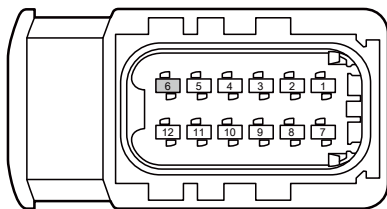
No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between airbag control module and BMS is short to power supply.

CA69 BMS module harness connector A



GE02-1455d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BMS harness connector CA69.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(6)	Vehicle body is grounded.	Standard voltage: 0V

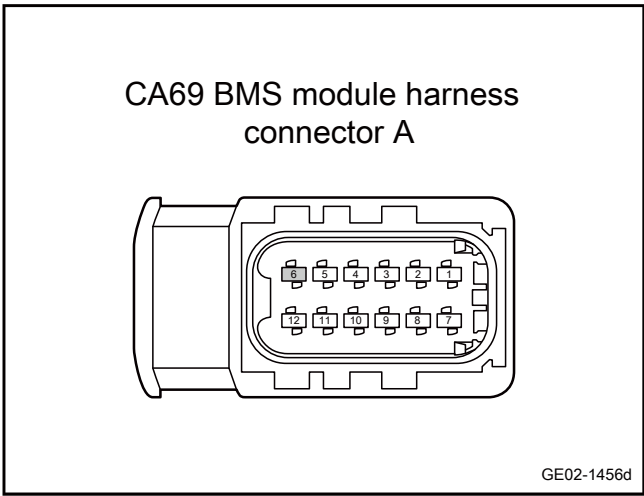
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between airbag control module and BMS is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BMS harness connector CA69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module, refer to [Replacement of airbag control module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replacement of BMS.

- A. Check the BMS power supply and grounding harness. Refer to [BMS power failure](#)
- B. Replacement of BMS. Refer to [Replacement of BMS](#)

Next Step

**Step 8** Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 2.2.6.13 Fault of Fast Charging Port Temperature Sensor\

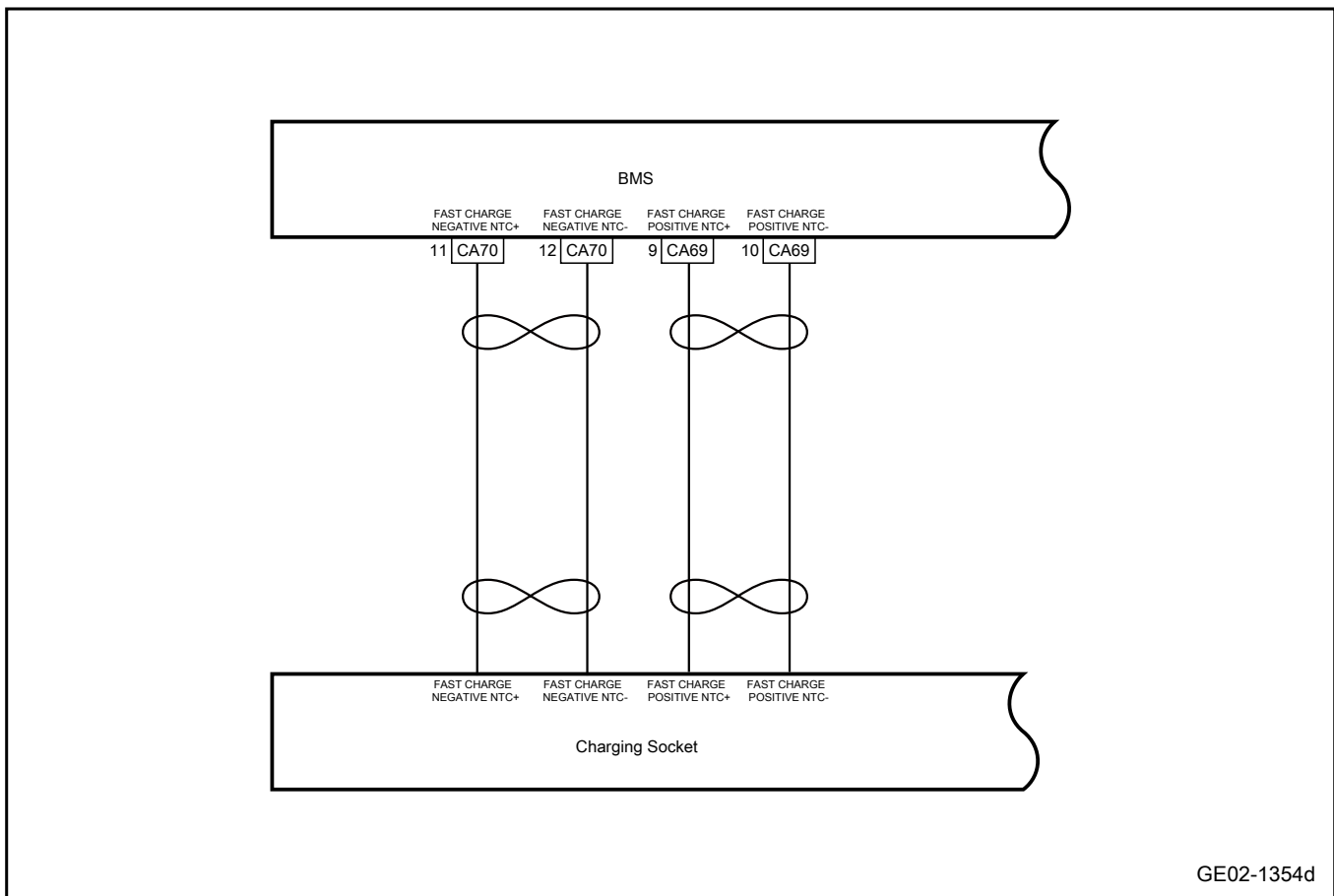
1. DTC description:

Diagnostic Trouble Code	Description
P159A01	Chargeing port temperature sensor fault
P159B22	Charging port overtemperature

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159A01	The charging port temperature exceeds 40-201°C	1. BMS has been powered on	1. Charging socket 2. Circuit 3.BMS
P159B22	The charging port temperature is effective, and the temperature is greater than or equal to 100°C	1. BMS has been powered on 2. In the process of DC charging	

3. Schematic circuit diagram:



GE02-1354d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

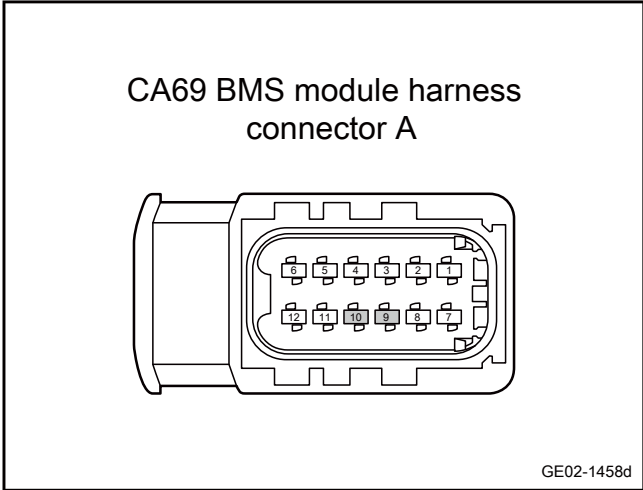
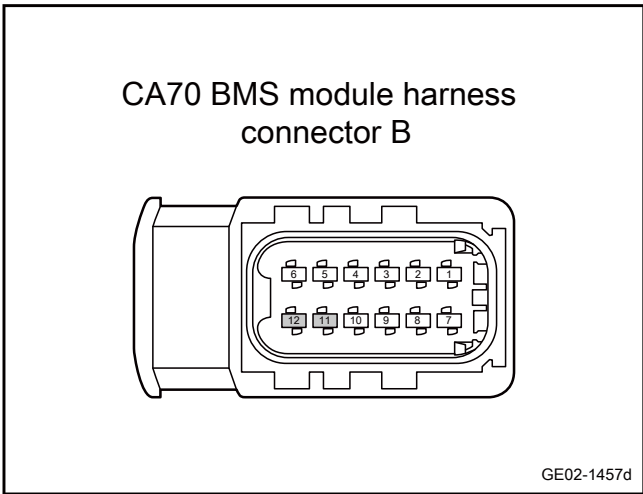
- A. Check the charging socket, BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check the charging socket, BMS harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the harness between the charging switch and BMS is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect BMS harness connectors CA69 and CA70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	Charging socket end	Standard resistance: less than 1Ω
CA70(12)	Charging socket end	
CA69(9)	Charging socket end	
CA69(10)	Charging socket end	

- E. Confirm whether the measured value meets the standard.

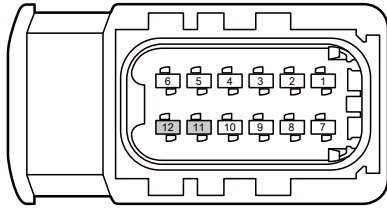
No

Repair or replace the harness.

Yes

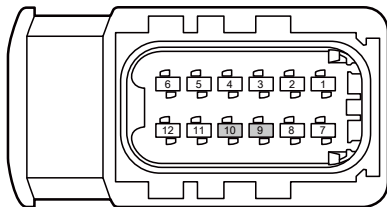
**Step 4** Check whether the harness between the charging switch and BMS is short-circuited to power supply.

CA70 BMS module harness connector B



GE02-1459d

CA69 BMS module harness connector A



GE02-1460d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect BMS harness connectors CA69 and CA70.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	Vehicle body is grounded.	Standard voltage: 0V
CA70(12)		
CA69(9)		
CA69(10)		

- F. Confirm whether the measured value meets the standard.

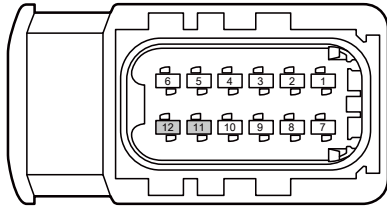
No

Repair or replace the harness.

Yes

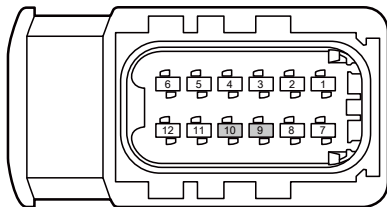
Step 5 | Check whether the harness between the charging socket and BMS is short to GND.

CA70 BMS module harness connector B



GE02-1461d

CA69 BMS module harness connector A



GE02-1462d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect BMS harness connectors CA69 and CA70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA70(12)		
CA69(9)		
CA69(10)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replace the charging socket.

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 | Replacement of BMS.

- A. Check the BMS power supply and grounding harness. Refer to [BMS power failure](#)
- B. Replacement of BMS. Refer to [Replacement of BMS](#)

Next Step

Step 8 | Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 2.2.6.14 Fast charging port signal trouble

#### 1. DTC description:

Diagnostic Trouble Code	Description
P159C00	Fast charging precharge failed
P159D01	Charging fault: Fast charging equipment failed
P159E01	Charging fault: HLV Charging System failed
P15DE67	Charging failed, since CC2 hardware signal is abnormal
P15DF67	Charging failed, since the quick charging wake-up source is abnormal
P15E094	Charging failed, abnormal termination of charging of fast charging equipment
P15D294	Unexpected complete vehicle charging stop
P15D383	Power mismatch between high and low voltage charging system and BMS (unable to charge)

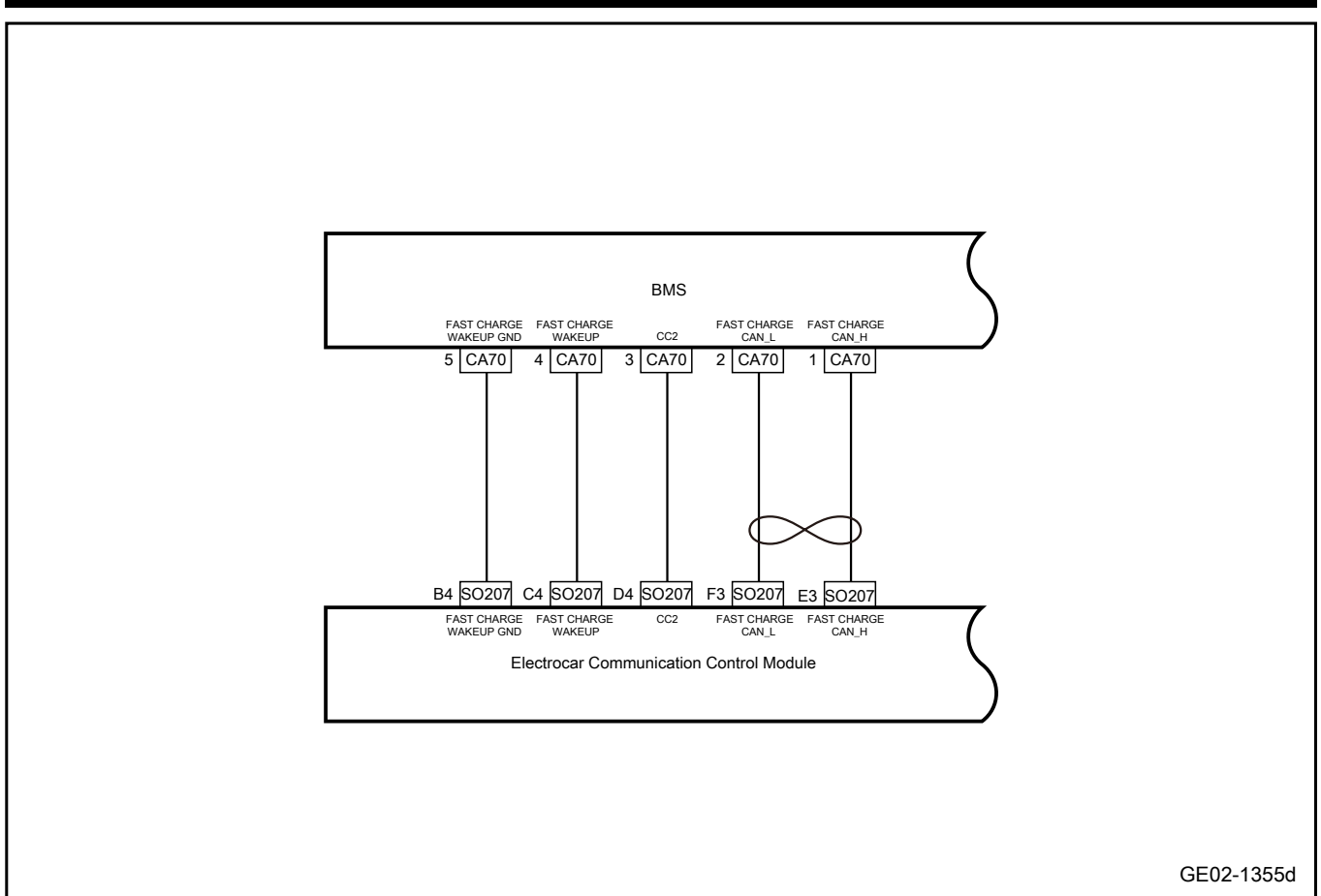
#### 2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159C00	The difference between inner and outer voltages is greater than a certain value and lasts for a certain time 1, greater than 80% lasts for 120ms 2, greater than 50% lasts for 250ms 3, and greater than 10V lasts for 500ms	1. BMS has been powered on 2. DC positive precharge relay closed	
P159D01	Fast charging timeout includes: 1. CRM00 not received in 30s (new) or 60s (old) 2. CRMA not received in 5s 3. CTS\CML message not received in 5s 4. CRO message not received in 5s 5. CRO=0xAA message not received in 60s 6. CCS message not received in 5s	1. BMS has been powered on	1. Electric vehicle communication control module 2. Circuit
P159E01	Any of the following conditions shall be met during slow charging: 1. CCU has a level 6 fault 2. Communication with CCU is lost 3. CCU is in charging pause mode for more than 5 minutes 4. CCU in Shutdown for 1s	2. The quick charging gun has been inserted 3. The TCAN controller module of BMU and high and low voltage charging system works normally	3.BMS
P15DE67	There is a wake-up source, but no active CC2 signal is detected for 10s		
P15DF67	Quickly charge the gun into charging, CC2 is detected but the correct wake-up source voltage is not detected for 60s		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15E094	Fast charging: charging is terminated after receiving CST message and the high and low voltage charging system fails or fails to stop charging		
P15D294	During the charging process, the system fault level is less than or equal to level 2, and other charging stop conditions are not met, but the VCU disconnects the relay command or prohibits charging command is received	<ol style="list-style-type: none"> <li>1. BMS has been powered on</li> <li>2. BMS is charging</li> </ol>	
P15D383	The maximum output voltage of the high and low voltage charging system is less than the current pack voltage or the minimum output voltage of the high and low voltage charging system is greater than the current pack voltage	<ol style="list-style-type: none"> <li>1. BMS has been powered on</li> <li>2. The fast charging gun has been plugged in and the communication is normal</li> </ol>	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

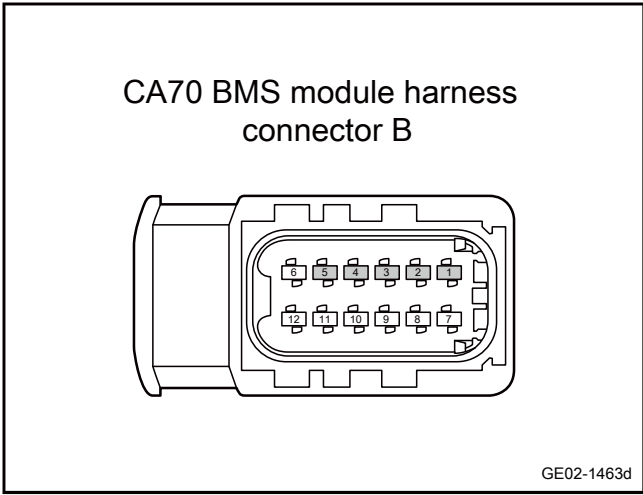
- A. Check the electric vehicle communication control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the electric vehicle communication control module, harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

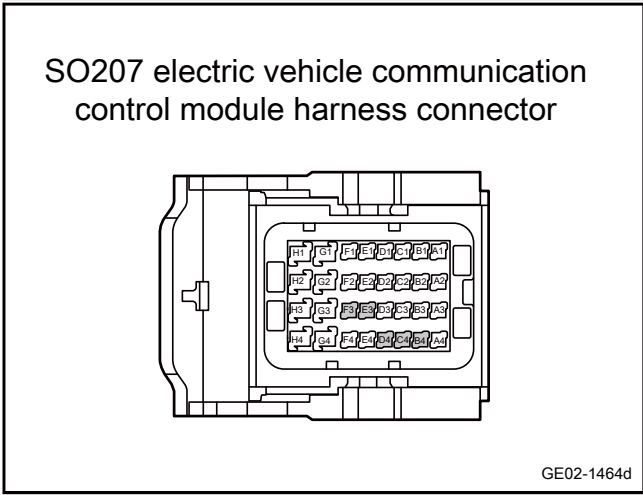
Yes

**Step 3** Check whether the LIN line between electric vehicle communication control module and BMS is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector SO207 of electric vehicle communication control module.
- C. Disconnect the BMS harness connector CA70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(1)	SO207(E3)	Standard resistance: less than 1Ω
CA70(2)	SO207(F3)	
CA70(3)	SO207(D4)	
CA70(4)	SO207(C4)	
CA70(5)	SO207(B4)	



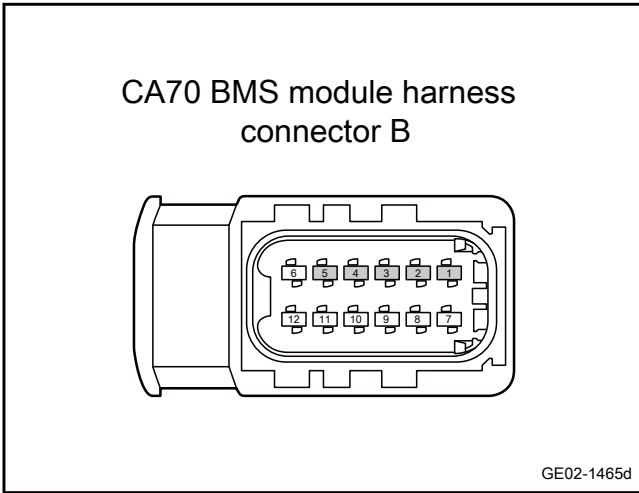
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between electric vehicle communication control module and BMS is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector SO207 of electric vehicle communication control module.
- C. Disconnect the BMS harness connector CA70.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(1)	Vehicle body is grounded.	Standard voltage: 0V
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		

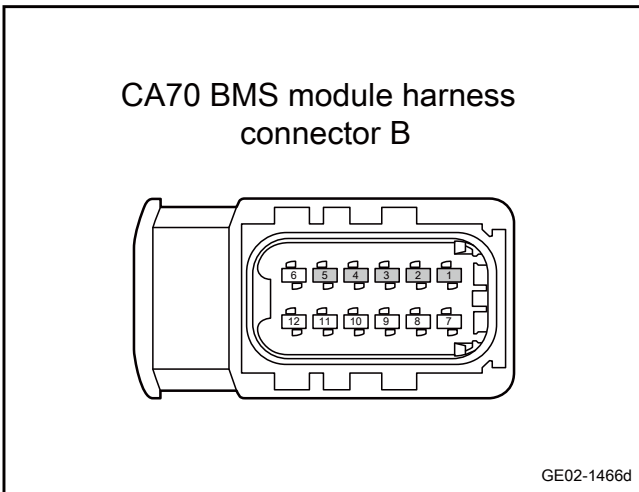
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between electric vehicle communication control module and BMS is short to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector SO207 of electric vehicle communication control module.
- C. Disconnect the BMS harness connector CA70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the electric vehicle communication control module.
--------	--

- A. Replace the electric vehicle communication control module, refer to the [Replacement of Electric Vehicle Communication Control Module](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7	Replacement of BMS.
--------	---------------------

- A. Check the BMS power supply and grounding harness. Refer to [BMS power failure](#)
- B. Replacement of BMS. Refer to [Replacement of BMS](#)

Next Step

Step 8	Reprogram and reset the BMS.
--------	------------------------------

- A. Reprogram and reset the BMS. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

## 2.2.6.15 Power Battery Control Module Reset

### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the main interface of the relevant vehicle diagnostic instrument to scan the entire vehicle.
--------	--

Next Step

Step 3	Select the controller to be diagnosed.
--------	--

Next Step

Step 4	Click the secondary menu "ECU Reset".
--------	---------------------------------------

Next Step

Step 5	Select Software Reset or Hardware Reset.
--------	--

Next Step

Step 6	Start the diagnostic tool.
--------	----------------------------

Next Step

Step 7	Enter extended mode.
--------	----------------------

Next Step

Step 8	Perform a software reset.
--------	---------------------------

Next Step

Step 9	Perform a hardware reset.
--------	---------------------------

Next Step

Step 10	Prompt reset successful.
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Next Step

Step 11	Exit extended mode.
---------	---------------------

2.2.6.16 Intermittent fault check

Descriptions:

1. Clear DTC.
2. Perform a simulation test.
3. Check and shake the harness, joints, and terminals.

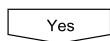
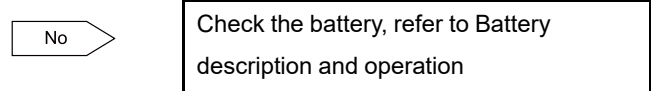
When the fault cannot be confirmed through the DTC check, the symptom only appears occasionally in use. All circuits and components that may cause faults should be confirmed. In many cases, by performing the basic check shown in the flowchart below, the fault can be found quickly and effectively. Especially for faults such as poor contact of the harness connector. Fault definition: The fault does not currently occur, but the historical fault diagnosis code record indicates that the fault has occurred. Or the distributor reported the fault for repair, but because the fault is not related to the fault diagnosis code, the fault symptoms cannot be reproduced currently.

1. Diagnosis steps:

Step 1	Check whether the battery voltage is normal?
--------	--

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Measure the battery voltage.
- c. According to the measured value, enter the corresponding diagnosis steps.

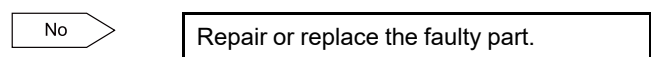
Results:	Go to Step
≥11 V	Yes
<11 V	No



Step 2	Visual physical check.
--------	------------------------

Performing this step is an important means to initially determine the fault location:

- a. Check whether the harness is damaged, whether there are symptoms such as wear and tear.
- b. Check the harness for improper arrangement. It is strictly forbidden for the harness to approach the following high-voltage or high-current devices:
- c. Check whether the positive and negative cables of the battery are connected reliably and whether there is any looseness, oxidation, corrosion, etc.





Yes

Step 3 Check of harnesses and connectors.

- a. Many intermittent faults are caused by vibration, twisting, uneven roads, or movement of harnesses and connectors caused by the component operation.
- b. If the circuit resistance is too large, the part does not operate. Use the fault diagnosis instrument to force the actuator to drive. If it does not operate, check whether the related circuit has circuit faults such as excessive resistance.

No

Repair or replace the harnesses and the connectors.

Yes

Step 4 Reproduce the fault and record the data of the control unit with the an instrument.

- a. Connect the vehicle fault diagnosis instrument and use the data recording function of the fault diagnosis instrument to record the data when the intermittent fault occurs on the vehicle for a road test. After the button of the vehicle data recorder is pressed down, the control module data can be recorded when intermittent faults occur, and this data can be used to find out the fault location.
- b. Another diagnostic method is to connect the digital multimeter to the suspicious circuit while the vehicle is driving. The abnormal reading value of the digital multimeter may indicate the fault location.

Next Step

Step 5 The fault indicator lights up intermittently, but the system has not set the fault code.

The following conditions may cause the fault indicator to light up intermittently, but the system will not set the fault diagnosis code:

- a. Electromagnetic interference caused by malfunctioning relays, solenoid valves, or switches controlled by the control module.
- b. Non-original or after-sales accessories, for example: car phones, alarms, car lights, or radio equipment, are installed incorrectly.
- c. The fault indicator control circuit is intermittently shorted to GND.
- d. The grounding point of the control module is loose.

Next Step

Step 6	Other checks.
--------	---------------

- a. Check the charging system for the following conditions:
  - Whether the output voltage of low voltage power supply of high and low voltage charging system is correct. If the DCDC output voltage is lower than 13.7V or higher than 14.5V, repair the charging system.

Next Step

Step 7	Enter the fault symptom table.
--------	--------------------------------

## 2.2.7 Removal and installation

### 2.2.7.1 Power Battery Assembly Replacement

#### Removal procedure

##### Warning

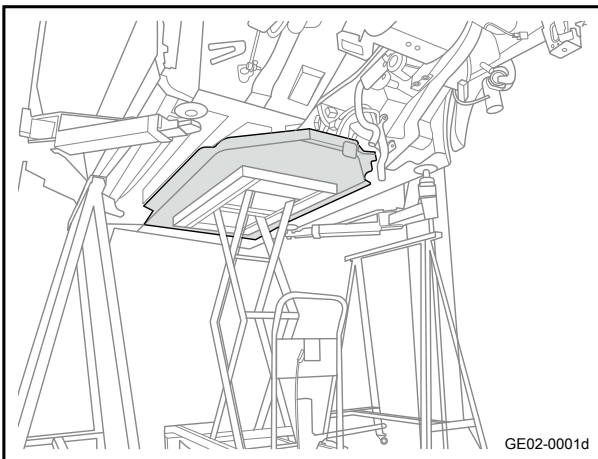
When removing the power battery assembly, wear insulating gloves as specified.

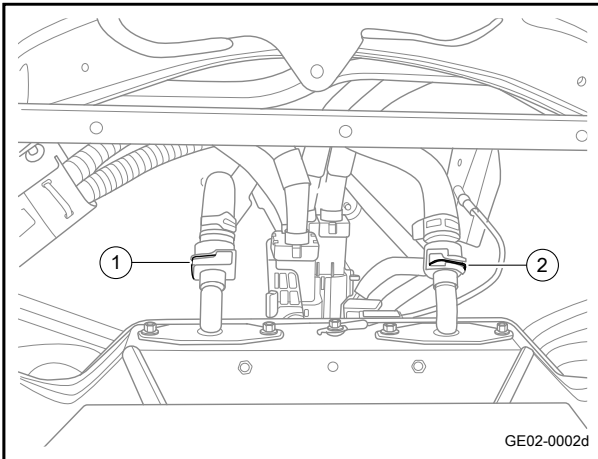
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#).
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 5 Remove the power harness cover assembly. See [Replacement of power harness cover assembly](#)
- 6 Remove the battery base protection module. Refer to the [Replacement of Battery Bottom Guard](#)
- 7 Place the platform truck under the vehicle and use the platform truck to support the power battery assembly.

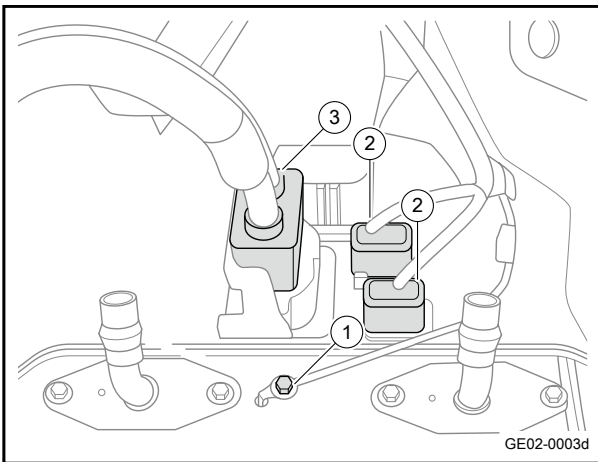




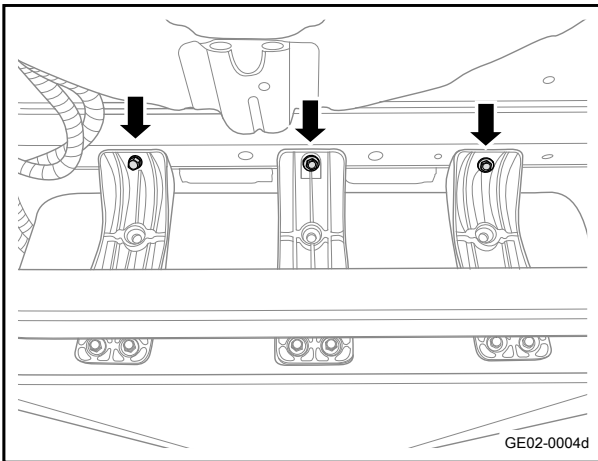
- 8 Pull the circlip 1 of the power battery inlet pipe outward.
- 9 Pull the circlip 2 of the battery outlet pipe outward.
- 10 Pull off the power battery water inlet and outlet pipes.

#### Caution

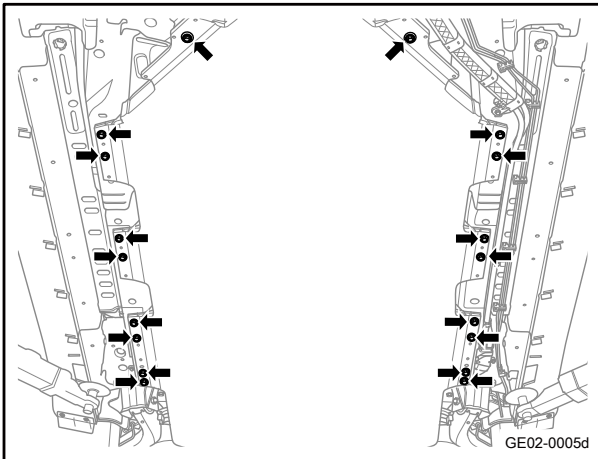
Before pulling off the battery inlet and outlet pipes, prepare a container for waste liquid and place it at the joint of the battery inlet and outlet pipes to prevent the battery coolant from overflowing.



- 11 Remove 1 fixing bolt 1 of power battery earth wire.
- 12 Disconnect the harness connector 2 of front engine compartment.
- 13 Disconnect the power battery high-voltage wiring harness connector 3.



- 14 Remove the 3 fixing bolts of the power battery pack rear mounting bracket.

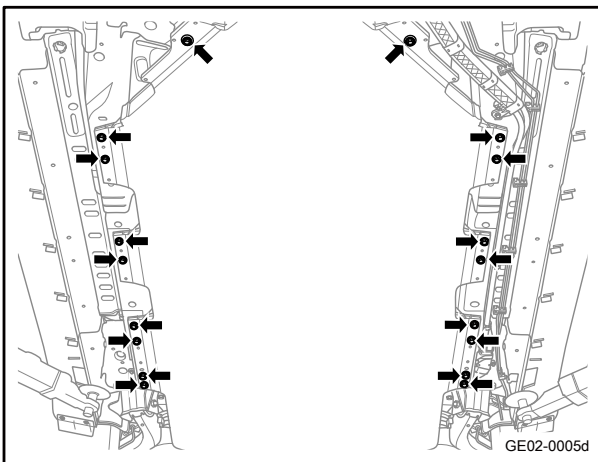


- 15 Remove the 18 fixing bolts at the bottom of the power battery assembly.
- 16 Slowly lower the platform truck and take out the power battery assembly.

#### Caution

Platform truck moves forward slowly during the lowering of the power battery, which can avoid interference between the power battery and the rear suspension.

#### Installation procedure

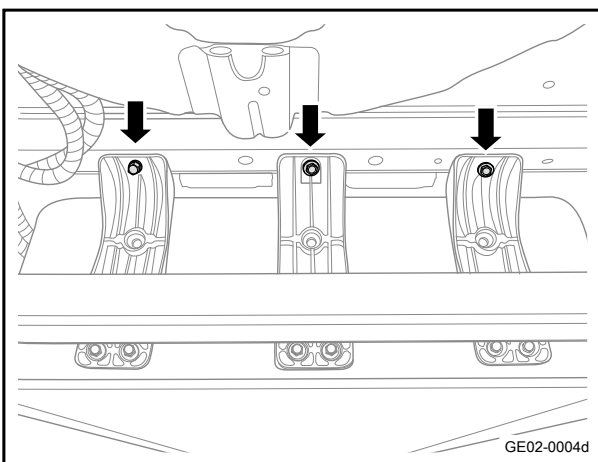


- 1 Move the power battery to the platform truck, slowly lift the platform truck, adjust the position of the platform truck, so that the mounting hole on the power battery assembly is aligned with the corresponding mounting nut on the body.
- 2 Install the 18 fixing bolts at the bottom of the power battery assembly.

Torque: 78N·m (metric system) 57.6 lb-ft (imperial system)

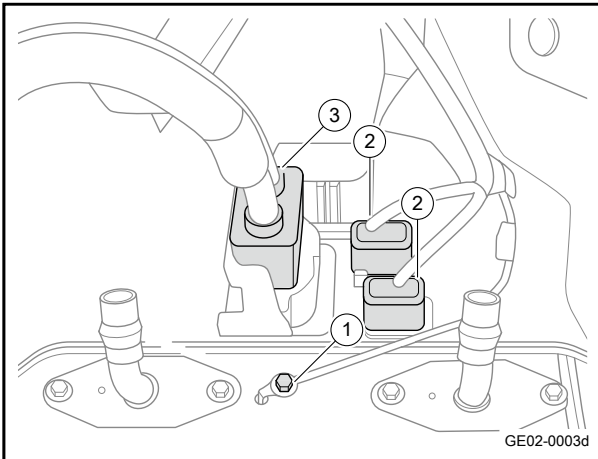
#### Caution

The lifting platform is slowly moved backward during the lifting process of the power battery, which can avoid interference between the power battery and the body.

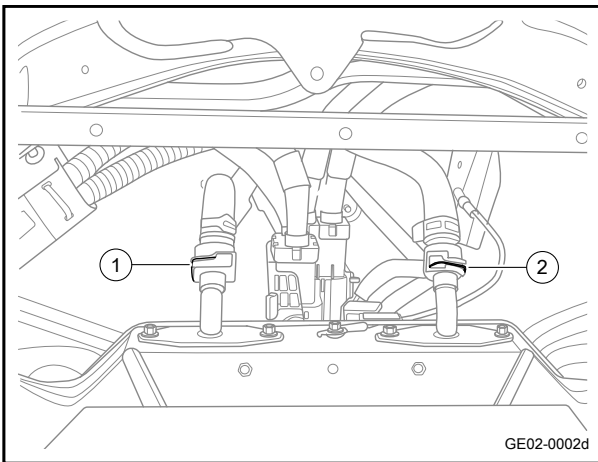


- 3 Install the 3 fixing bolts of the power battery pack rear mounting bracket.

Torque: 78N·m (metric system) 57.6 lb-ft (imperial system)



- 4 Install the power battery high-voltage wiring harness connector 3.
- 5 Connect the power battery to the harness connector 2 of the front engine compartment wiring harness.
- 6 Install power battery earth wire fixing bolt 1.  
Torque: 9N·m (metric system) 6.6 lb-ft (Imperial system)



- 7 Move the battery water inlet pipe and battery water outlet pipe to the installation position.
- 8 Install the battery outlet pipe hoop 2.
- 9 Install the power battery inlet pipe hoop 1.

- 10 Mount the battery base protection module.
- 11 Install the power harness cover assembly.
- 12 Fill power battery coolant.
- 13 Connect the DC bus assembly.
- 14 Lower the vehicle.
- 15 Connect the negative cable of battery.

### 2.2.7.2 Replacement of Power Battery Pack Rear Mounting Bracket

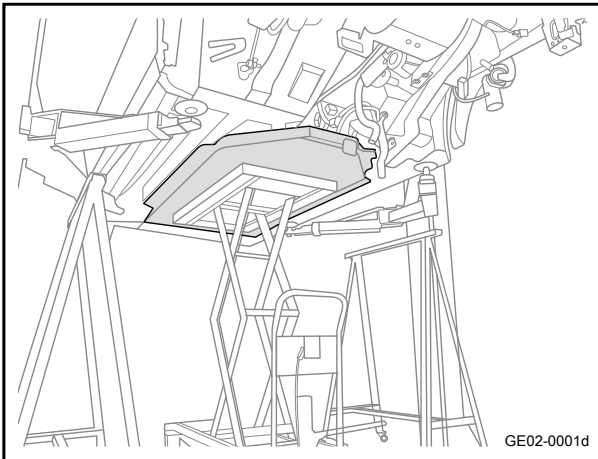
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

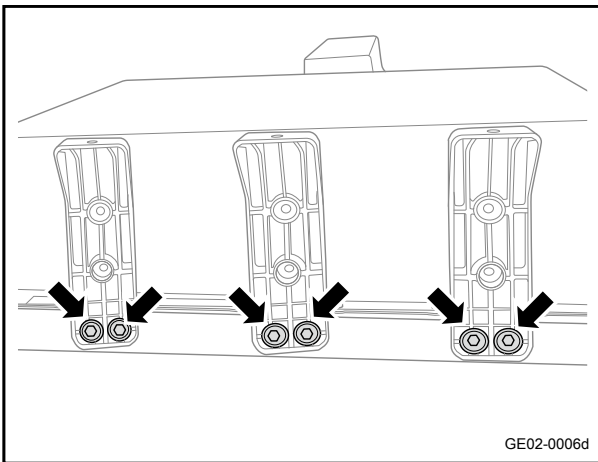
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

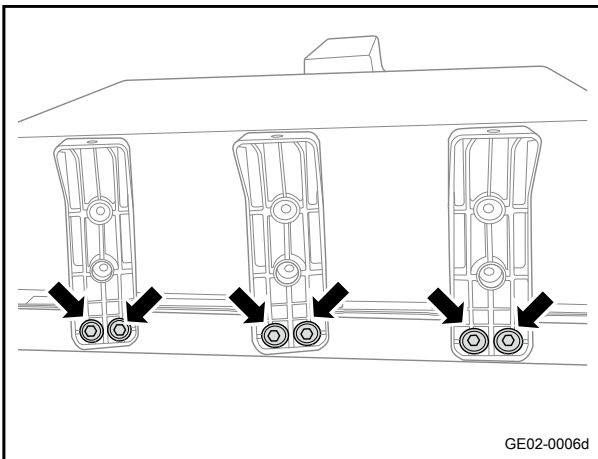
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)



- 3 Place the platform truck under the vehicle and use the platform truck to support the power battery assembly.



- 4 Remove the 6 fixing bolts of the power battery pack rear mounting bracket.
- 5 Remove the power battery pack rear mounting bracket.



#### Installation procedure

- 1 Move the power battery pack rear mounting bracket to the installation position.
- 2 Install the 6 fixing bolts of the power battery pack rear mounting bracket.  
Torque: 45N·m (metric system) 41.0lb-ft (Imperial system)

- 3 Slowly move the platform truck.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

### 2.2.7.3 Replacement of Power Battery Compartment Lid

#### Removal procedure

### Caution

Air tightness test shall be carried out after installation

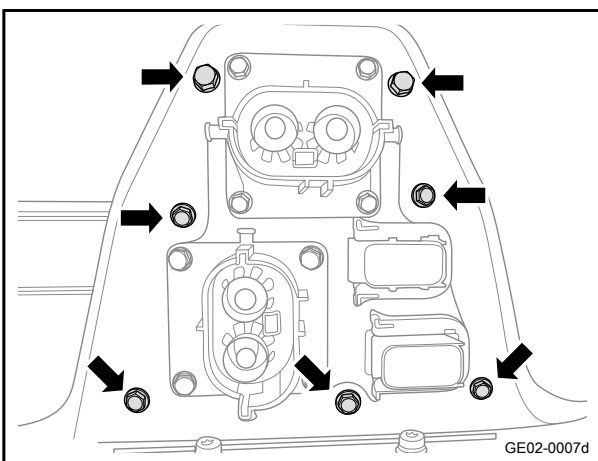
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

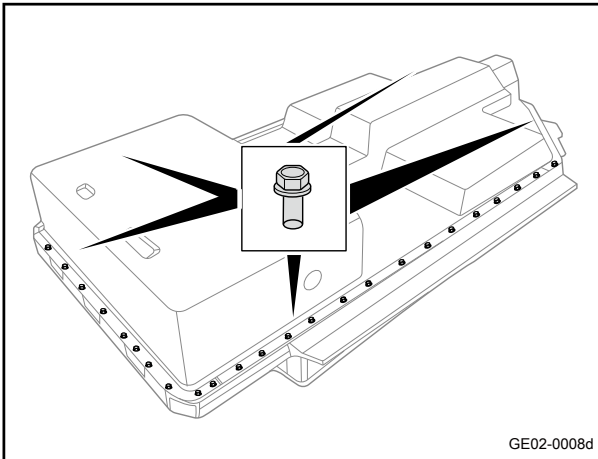
### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

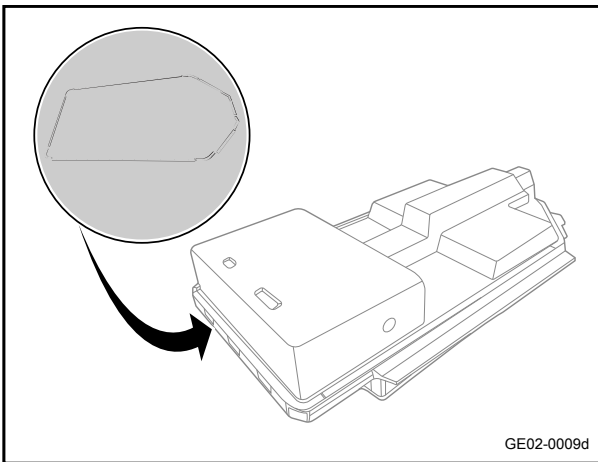
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 5 Dismount the power battery assembly. Refer to the [Power Battery Assembly Replacement](#)
- 6 Remove the 7 fixing bolts of the front sealing pressing plate.
- 7 Remove front sealing pressing plate.



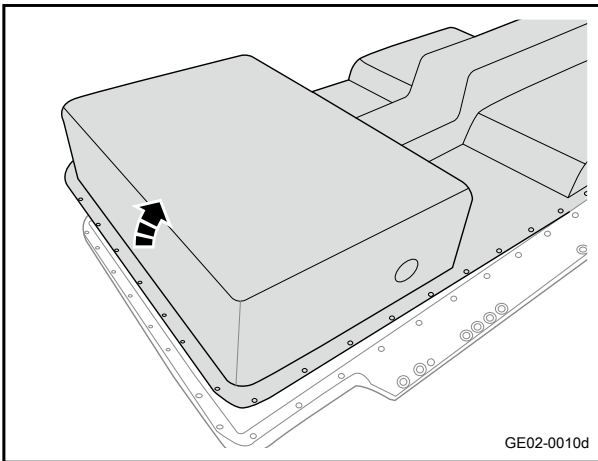




8 Remove the 54 fixing bolts at the upper lid molding.

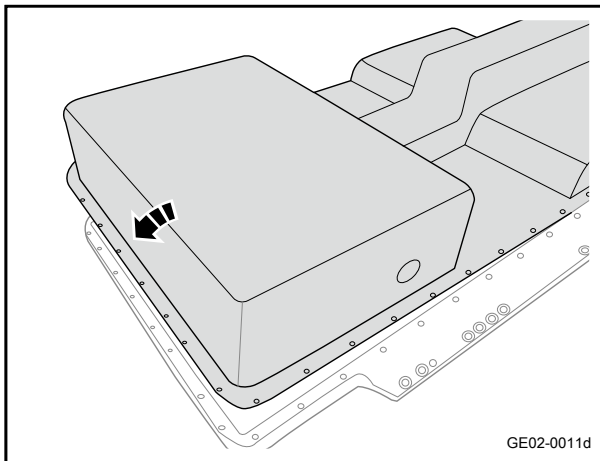


9 Remove the upper lid molding of battery compartment lid.

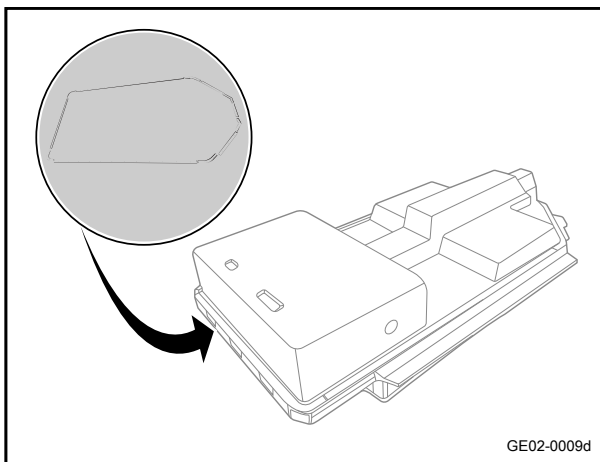


10 Lift the rear end of the power battery compartment lid, move the power battery compartment lid forward, and then remove the power battery compartment lid.

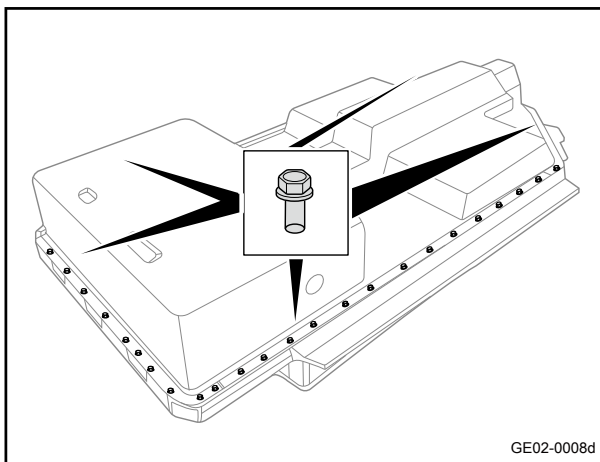
Installation procedure



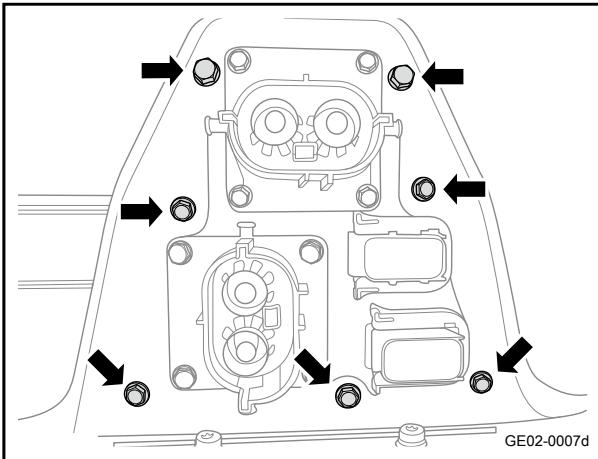
- 1 After moving the front end of the power battery compartment lid to the installation position, lower the rear end of the power battery compartment lid and adjust the installation position so that the installation holes are aligned.



- 2 Install the upper lid molding of battery compartment lid.



- 3 Install the 54 bolts at the upper lid molding.  
Torque: 10N·m (metric system) 7.4 lb·ft (Imperial system)



- 4 Install the 7 fixing bolts of the front sealing pressing plate.  
Torque: 6N·m (metric system) 4.4 lb-ft (Imperial system)

- 5 Mount the power battery assembly.
- 6 Fill power battery coolant.
- 7 Connect the DC bus assembly.
- 8 Lower the vehicle.
- 9 Connect the negative cable of battery.

#### 2.2.7.4 Replacement of Explosion-Proof Valve

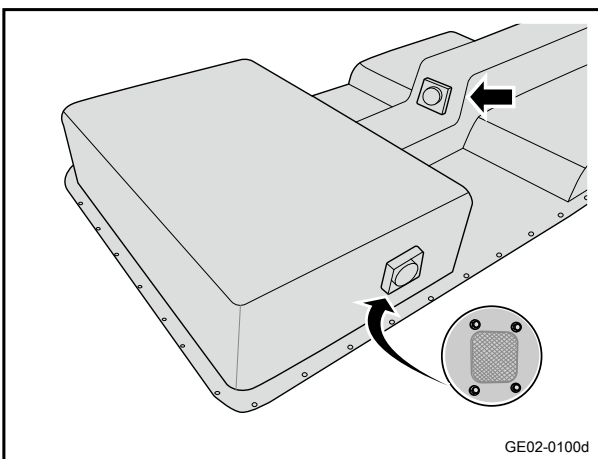
##### Removal procedure

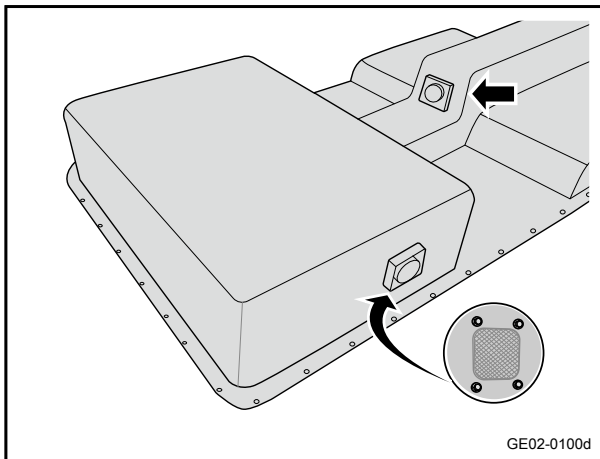
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the power battery compartment lid Refer to the [Replacement of Power Battery Compartment Lid](#)
- 5 Remove the 4 fixing bolts of the explosion-proof valve from the inside of the battery compartment lid.
- 6 Remove the explosion-proof valve.





#### Installation procedure

- 1 Move the explosion-proof valve to installation position.
- 2 Install the 4 fixing bolts of explosion-proof valve.  
Torque: 6N·m (metric system) 4.4 lb-ft (Imperial system)

- 3 Install the power battery compartment lid.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

#### 2.2.7.5 Replacement of Fuse

##### Removal procedure

##### Caution

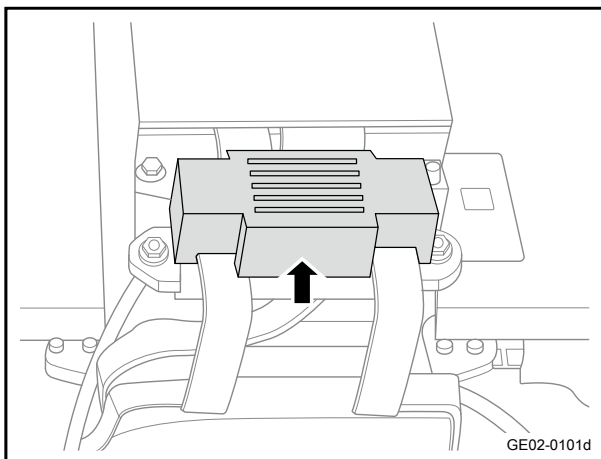
Wrap the harness connector of soft copper bar with insulating tape to prevent mutual contact.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

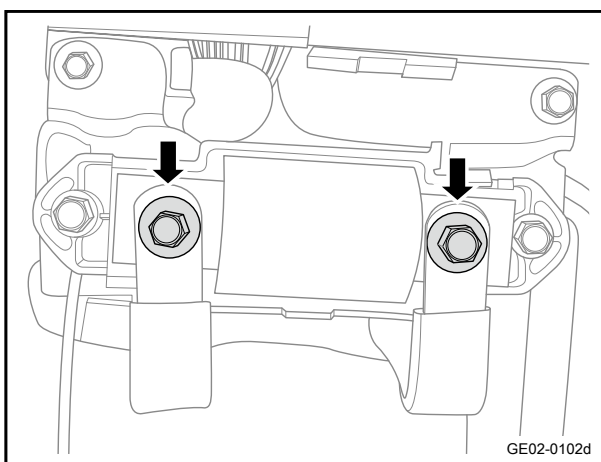
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the power battery compartment lid Refer to the [Replacement of Power Battery Compartment Lid](#)



5 Remove fuse cover.



6 Remove the 2 fixing nuts of fuse.

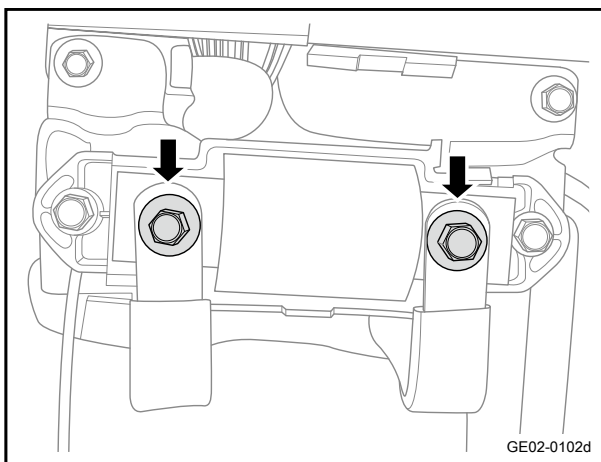
7 Remove the fuse.

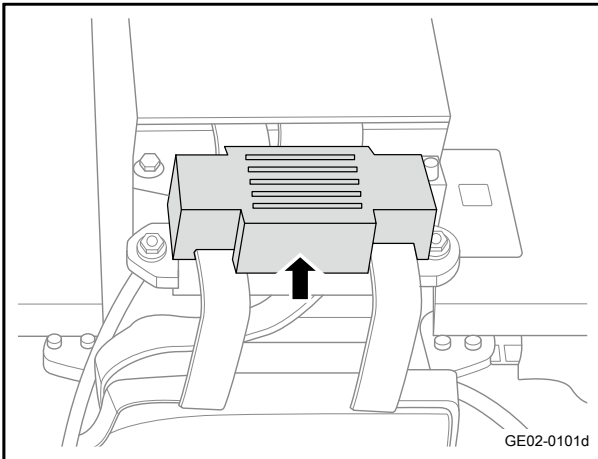
#### Installation procedure

1 Move the fuse to installation position.

2 Install the 2 fixing nuts of fuse.

Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)





3 Install fuse cover.

- 4 Install the power battery compartment lid.
- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the negative cable of battery.

### 2.2.7.6 Replacement of Fuse Box Holder.

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

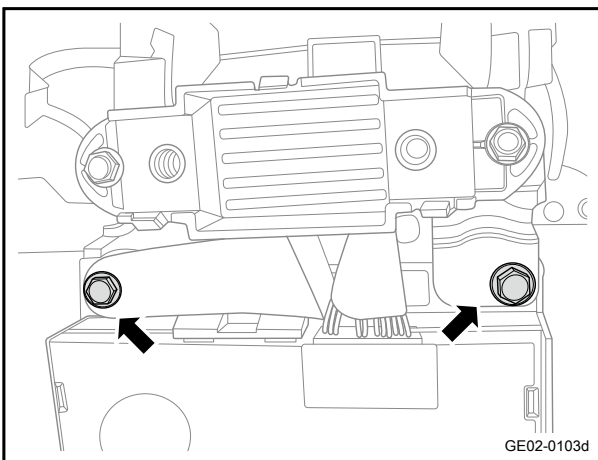
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse. Refer to the [Replacement of Fuse](#).
- 5 Remove the 2 fixing nuts of fuse box holder.

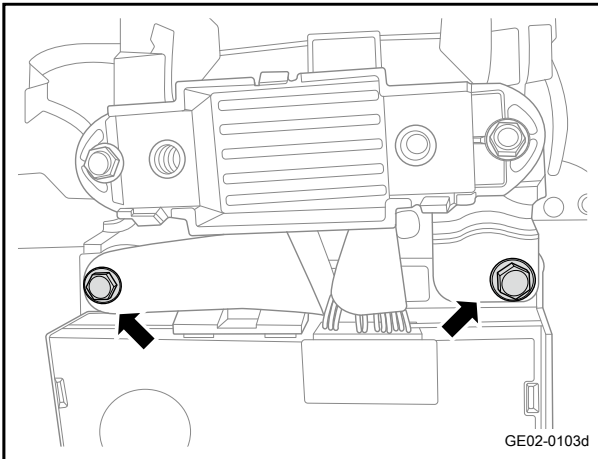
#### Caution

In the figure, when the right nut is removed, pay attention to the gasket under the fuse box to prevent it from falling off.

- 6 Remove the fuse box holder.



#### Installation procedure



- 1 Move the fuse box holder to installation position.
- 2 Install the 2 fixing nuts of fuse box holder.

#### Caution

During installation, pay attention to place the washer at the right nut position first, then place the fuse box holder and install the nut.

Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)

- 3 Install fuse.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

### 2.2.7.7 Replacement of BMS

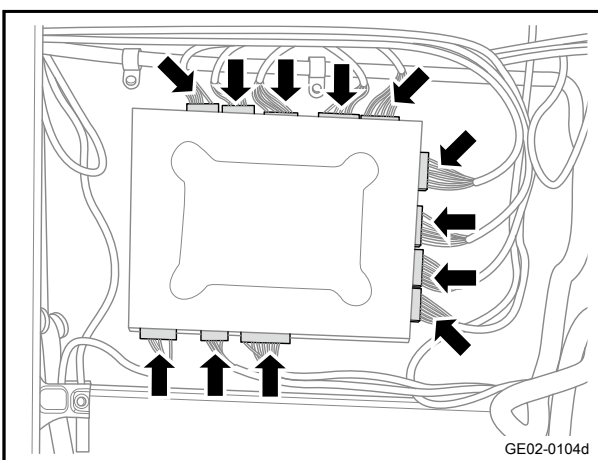
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

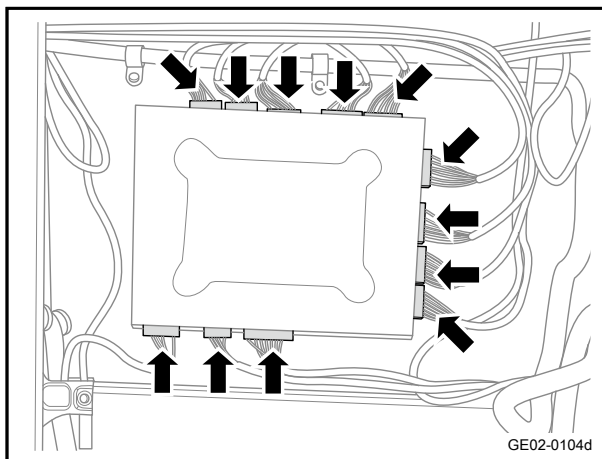
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse. Refer to the [Replacement of Fuse](#).
- 5 Disconnect the BMS harness connector 1.
- 6 Remove the BMS 4 fixing bolts 2.
- 7 Take out the BMS.



#### Installation procedure



- 1 Move the BMS to installation position.
- 2 Install the BMS 4 fixing bolts 2.  
Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)
- 3 Connect the BMS harness connector 1.

- 4 Install fuse.
- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the negative cable of battery.

### 2.2.7.8 Replacement of High-Voltage Box

#### Removal procedure

##### Caution

When operating inside the high-voltage box, insulating protective gloves must be worn to prevent the risk of electric shock.

Wrap the harness connector with insulating tape to prevent mutual contact.

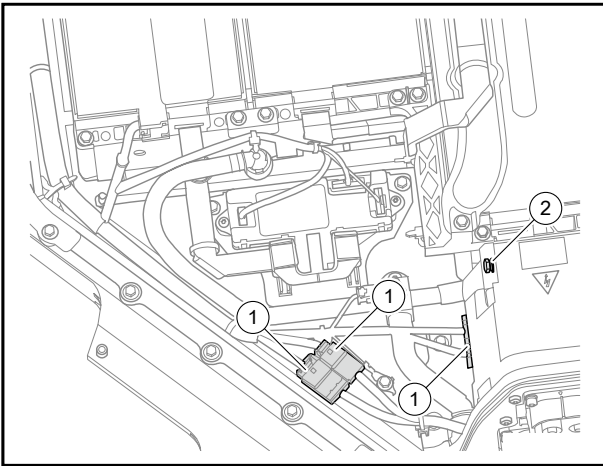
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

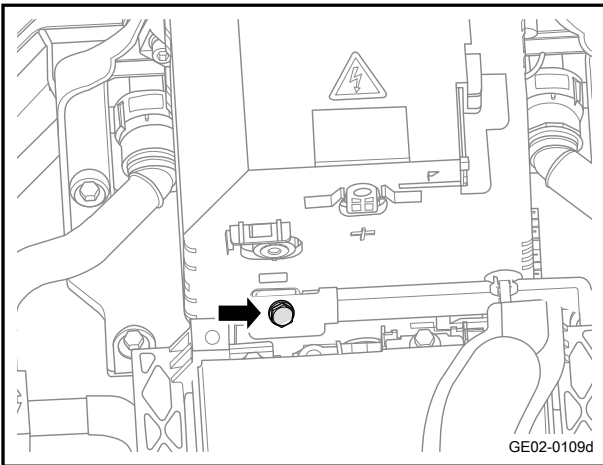
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse. Refer to the [Replacement of Fuse](#).
- 5 Remove the CSU (shunt). Refer to the [Replacement of CSU \(Shunt\)](#)

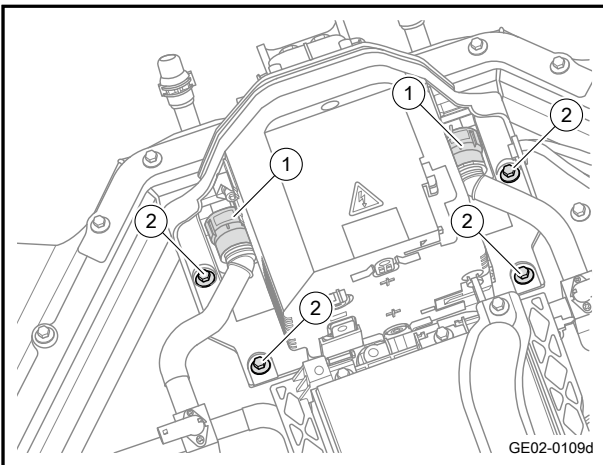




- 6 Disconnect the high-voltage box harness connector 1.
- 7 Lift the upper side copper bar of the high-voltage box and remove the upper side copper bar fixing bolt 2 of the high-voltage box.

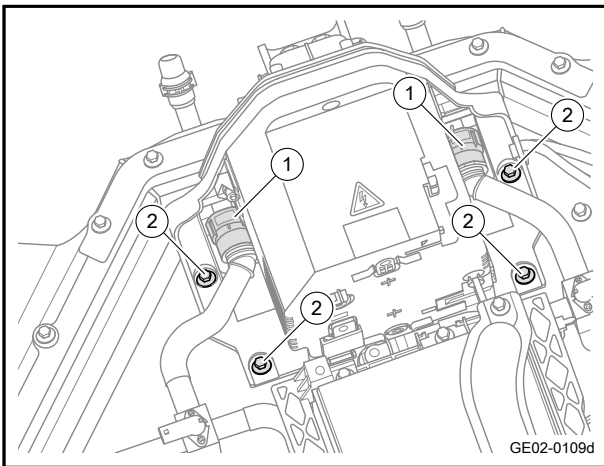


- 8 Lift the copper bar on the lower side of the high-voltage box and remove the copper bar fixing bolts.

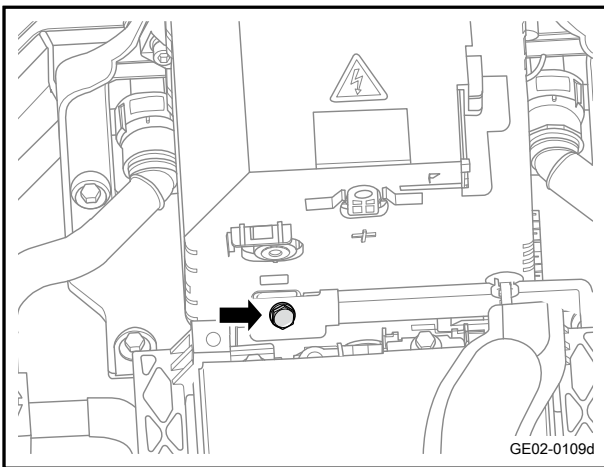


- 9 Disconnect the power battery inlet and outlet water pipe 1.
- 10 Remove the 4 fixing bolts 2 of the high-voltage box.
- 11 Remove the high-voltage box.

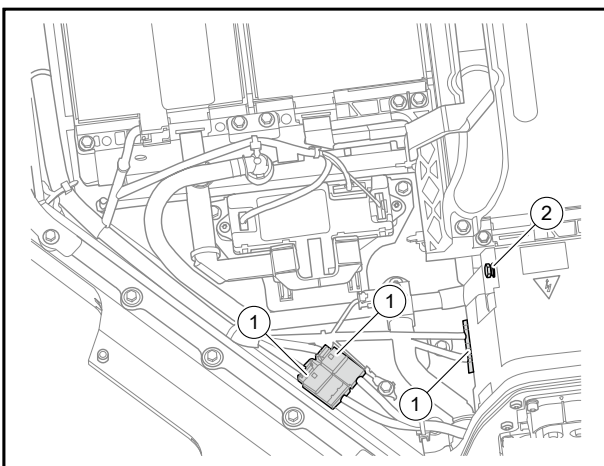
Installation procedure



- 1 Move the high-voltage box to installation position.
- 2 Install the 4 fixing bolts 2 of the high-voltage box.
- 3 Connect the power battery inlet and outlet water pipe 1.



- 4 Install the lower copper bar fixing bolt 1 of the fuse box, and install the lower copper bar of the high-voltage box.  
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 5 Install the upper copper bar fixing bolt 2 of the high-voltage box, and install the upper copper bar of the high-voltage box.  
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 6 Connect the high-voltage box harness connector 1.

- 7 Install the CSU (shunt).
- 8 Install fuse.
- 9 Fill power battery coolant.
- 10 Connect the DC bus (the side of power battery).
- 11 Connect the negative cable of battery.

### 2.2.7.9 Replacement of CSU (Shunt)

Removal procedure

**Caution**

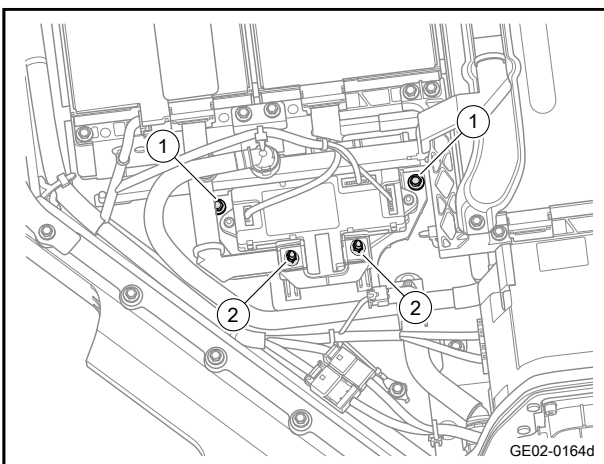
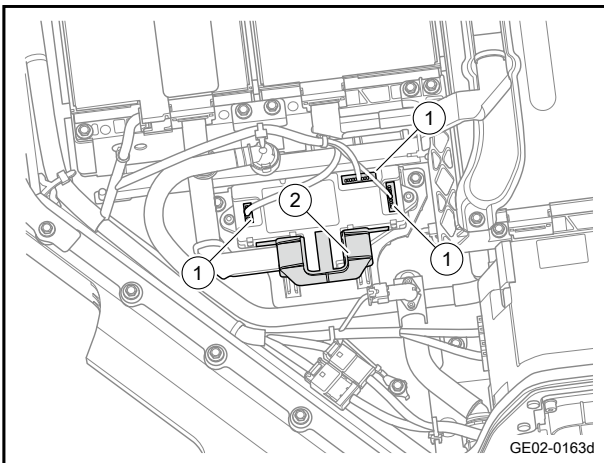
When operating inside the high-voltage box, insulating protective gloves must be worn to prevent the risk of electric shock.

- 1 Open the front engine compartment hood.
- 2 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 3 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 4 Drain the power battery coolant. [Refer to the Coolant Replacement Procedure](#)
- 5 Remove fuse. [Replacement of Fuse](#)
- 6 Disconnect the 3 harness connectors 1 of the CSU (shunt)
- 7 Remove the copper bar protective cover 2.

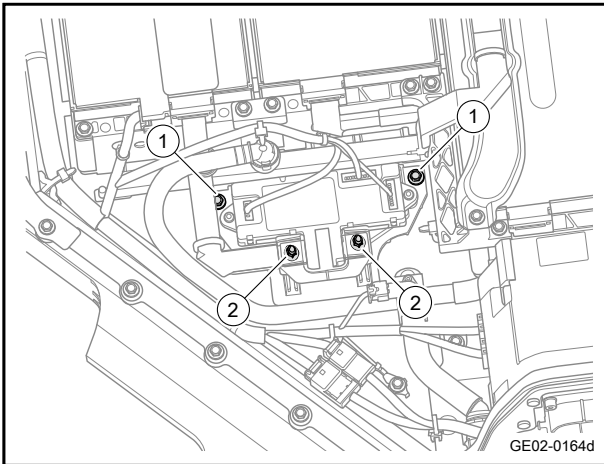


- 8 Remove the 2 fixing bolts 1 of the CSU (shunt)
- 9 Remove the 2 fixing nuts 2 of the CSU (shunt)
- 10 Remove the CSU (shunt).

**Caution**

Wrap the harness connector with insulating tape to prevent mutual contact.

Installation procedure

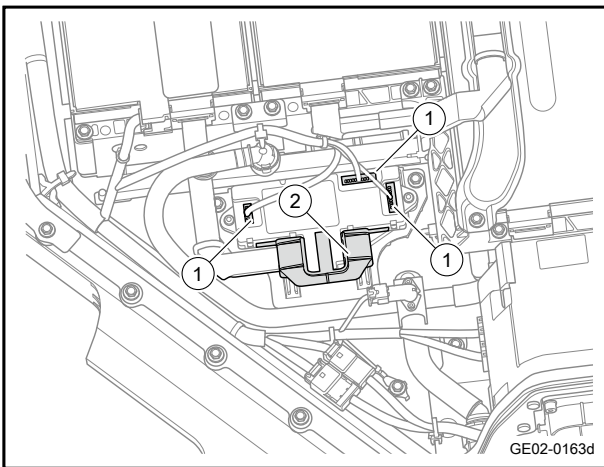


- 1 Move the CSU (shunt) to installation position.
- 2 Install the 2 fixing nuts 2 of the CSU (shunt)  
Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)

#### Caution

Fixing nuts need to be coated with thread glue for installation.

- 3 Install 2 fixing bolts 1 of the CSU (shunt)  
Torque: 3N·m (metric system) 2.2 lb-ft (Imperial system)



- 4 Install the copper bar protective cover 2.
- 5 Connect the 3 harness connectors 1 of the CSU (shunt)

- 6 Install fuse.
- 7 Fill power battery coolant.
- 8 Connect the DC bus (the side of power battery).
- 9 Connect the negative cable of battery.
- 10 Close the front engine compartment hood.

### 2.2.7.10 Replacement of soft copper bar

Removal procedure

### Caution

The disassembly and assembly process of the soft copper bar is roughly the same. Here, the soft copper bar on the bottom layer at the back is illustrated as an example.

There are differences in the shape and connection position of the soft copper bar. Please pay attention to the installation sequence to avoid installation errors.

1. Wrap the harness connector with insulating tape to prevent mutual contact.

2. There are differences in the shape and connection position of the soft copper bar. The disassembly sequence shall be recorded during disassembly to avoid installation errors.

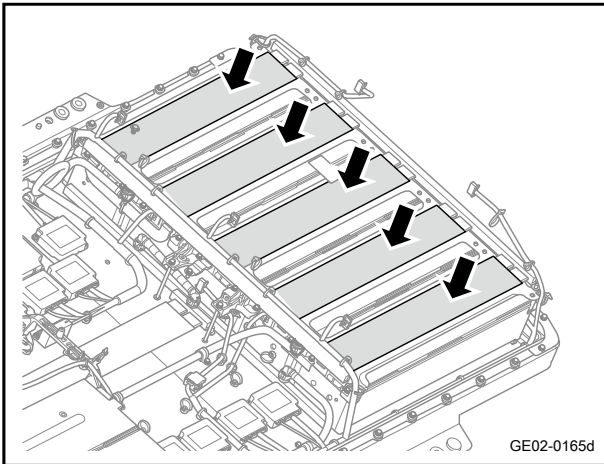
There are differences in the shape and connection position of the soft copper bar. Please pay attention to the installation sequence to avoid installation errors.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

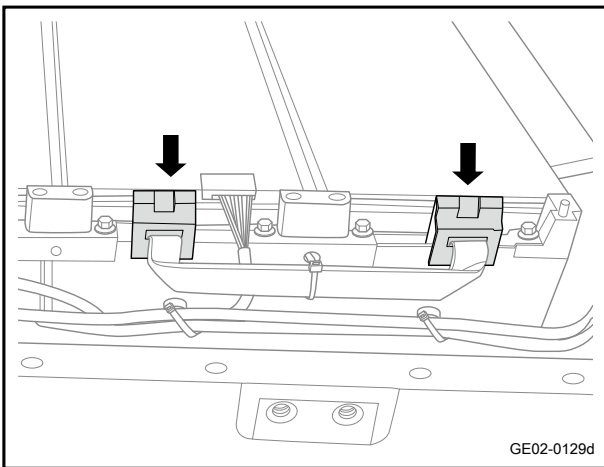
### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

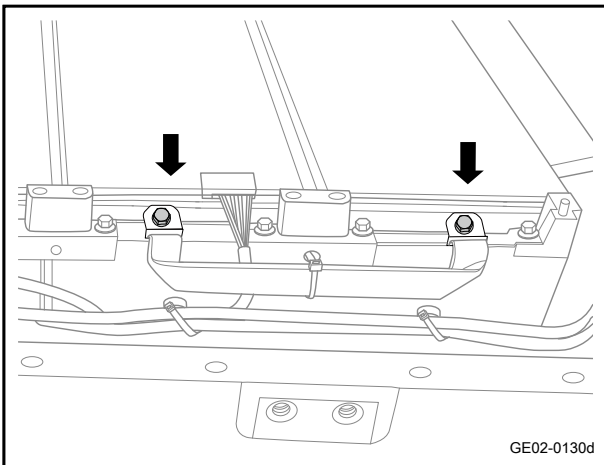
- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse. Refer to the [Replacement of Fuse](#).
- 5 Remove the rear upper battery module. Refer to the [Replacement of Rear Upper Battery Module](#).
- 6 Remove the rear upper water cooled panel and support. Refer to the [Replacement of Rear Upper Water Cooled Panel](#)



7 Remove the rear upper copper bar.



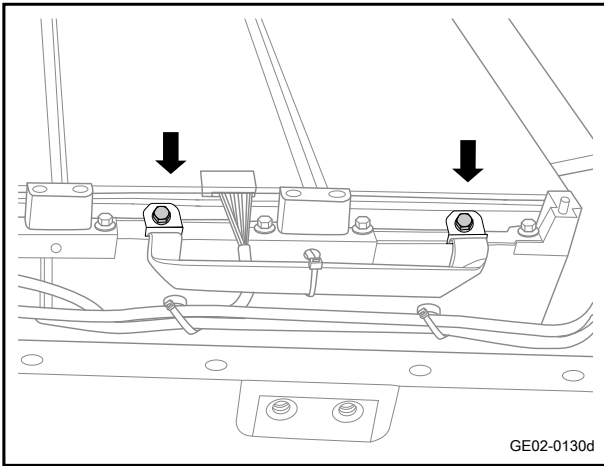
8 Pry open the cover at the connection between the soft copper bar and the battery module.



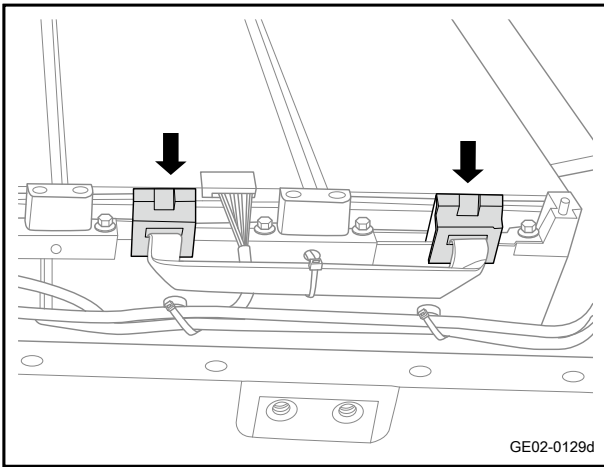
9 Remove the 2 fixing bolts connecting the soft copper bar to the battery module.

10 Remove the soft copper bar.

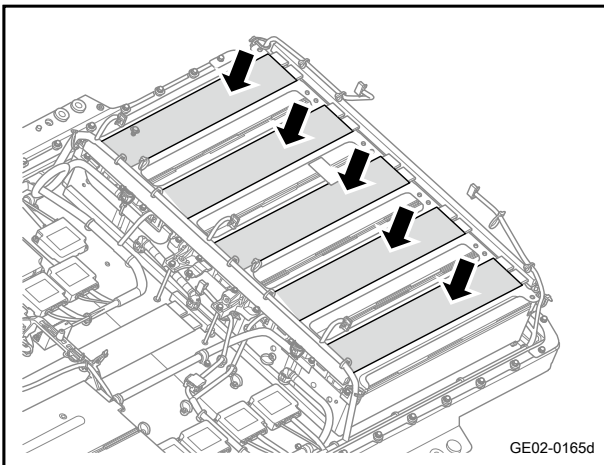
Installation procedure



- 1 Move the soft copper bar to installation position.
- 2 Install the 2 fixing bolts of soft copper bar.  
Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)



- 3 Install the cover at the connection between the soft copper bar and the battery module.



- 4 Install rear upper copper bar.

- 5 Install rear upper water cooled panel and bracket.
- 6 Install the rear upper battery module.
- 7 Install fuse.
- 8 Fill power battery coolant.
- 9 Connect the DC bus (the side of power battery).
- 10 Connect the negative cable of battery.

### 2.2.7.11 Replacement of Front Battery Module

Removal procedure

**Caution**

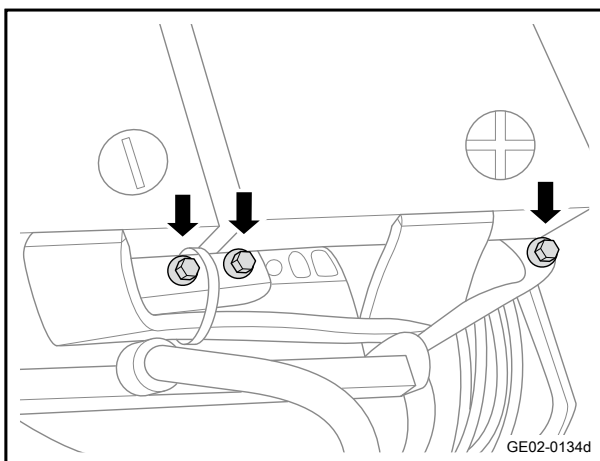
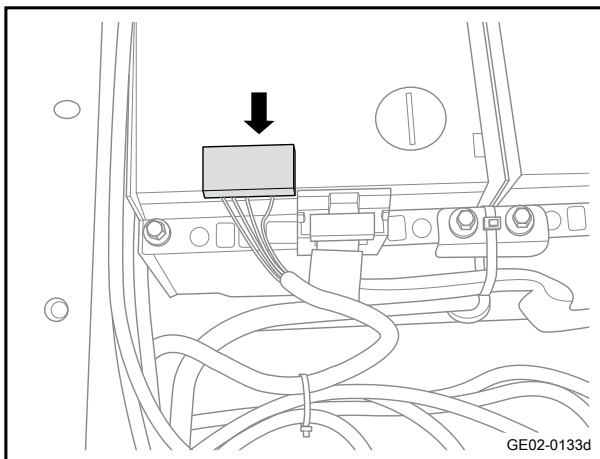
The disassembly and assembly steps of the front battery module are illustrated here with an example of M13 battery module.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

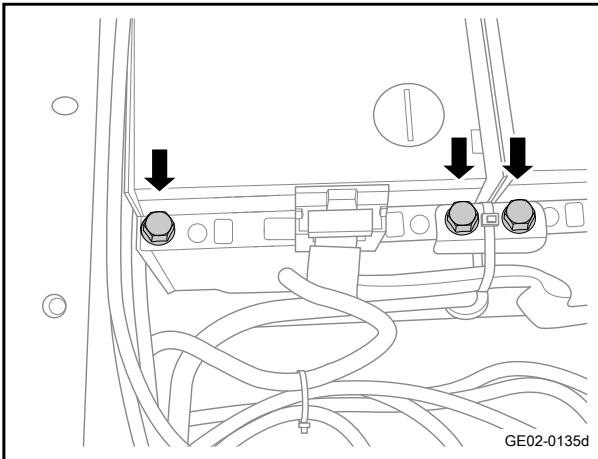
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Disconnect the M13 battery module harness connector.



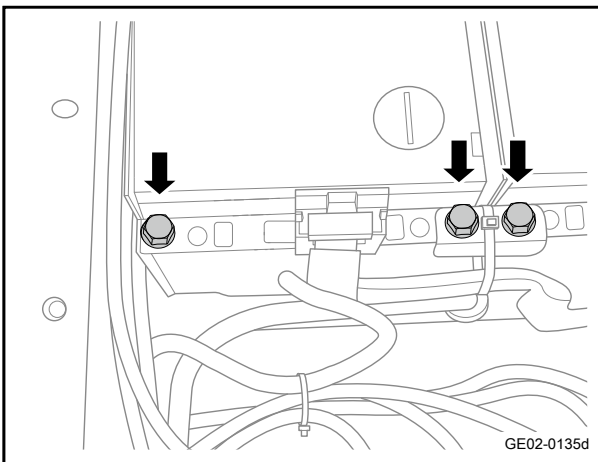
- 5 Remove the 3 fixing bolts at the front of the battery module.
- 6 Remove fixing bracket.



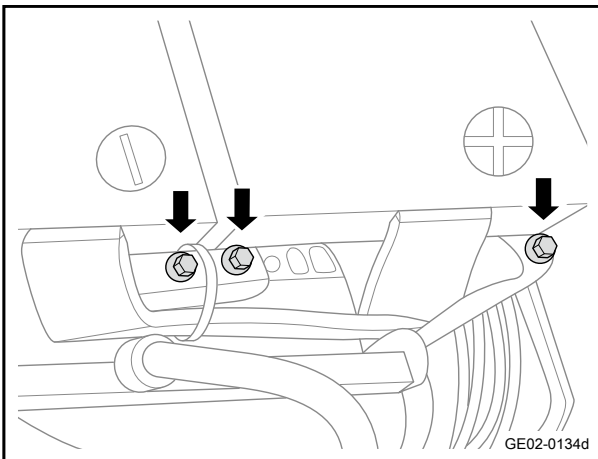


- 7 Remove the 3 fixing bolts at the rear of the battery module.
- 8 Remove the M13 battery module after removing the fixing bracket.

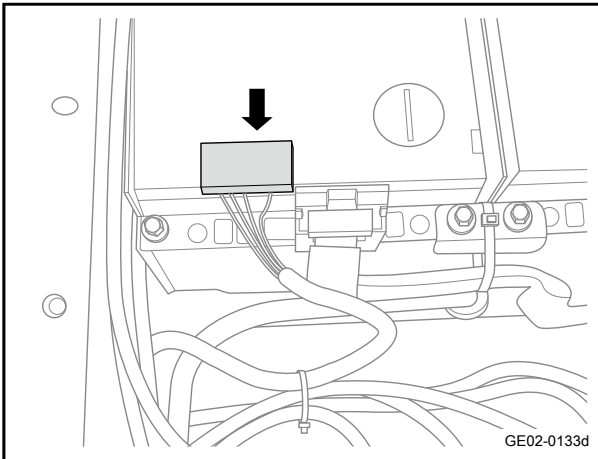
#### Installation procedure



- 1 Move battery module to installation position.
- 2 Install the 3 fixing bolts of the rear fixing bracket of the battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 3 Install the 3 fixing bolts of the front fixing bracket of the battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 4 Connect the M13 battery module harness connector.

- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the negative cable of battery.

### 2.2.7.12 Replacement of Rear Upper Battery Module

#### Removal procedure

##### Caution

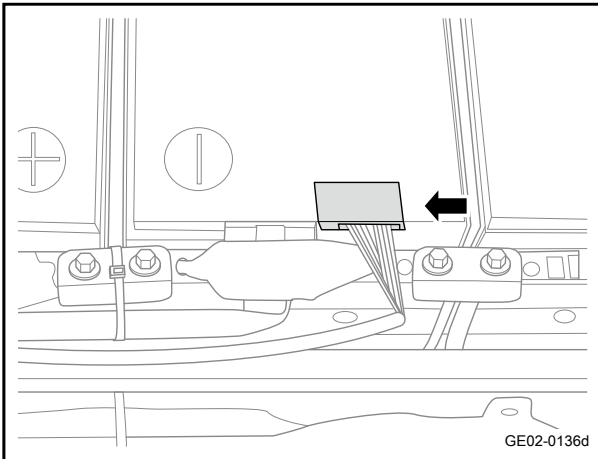
The disassembly and assembly process of the rear upper module is roughly the same, which is illustrated by M8 as an example herein.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

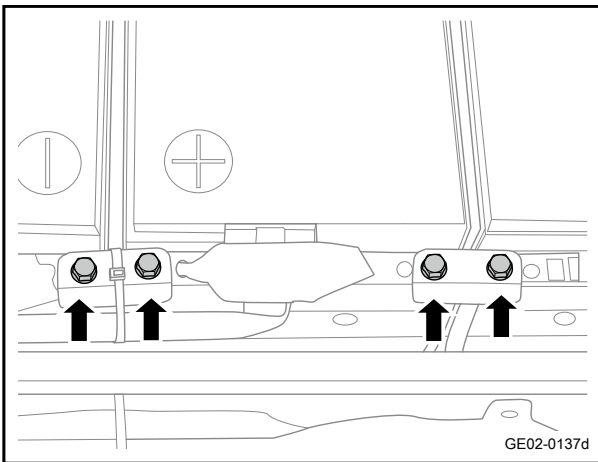
##### Warning

Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

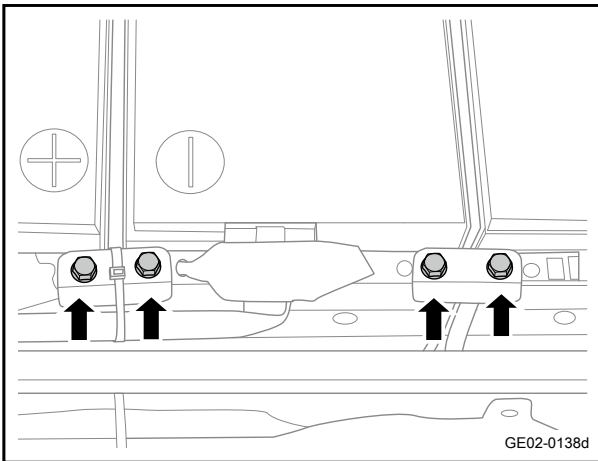
- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the soft copper bar. Refer to the [Replacement of Soft Copper Bar](#)



- 5 Disconnect the harness connectors at both ends of the rear upper battery module.

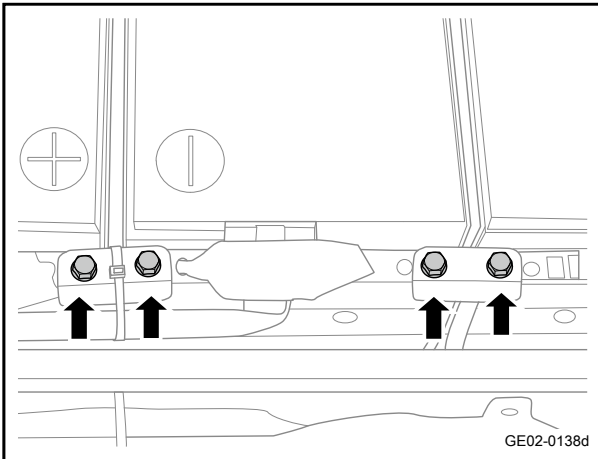


- 6 Remove the 4 fixing bolts of the front fixing bracket of the battery module and remove the fixing bracket.

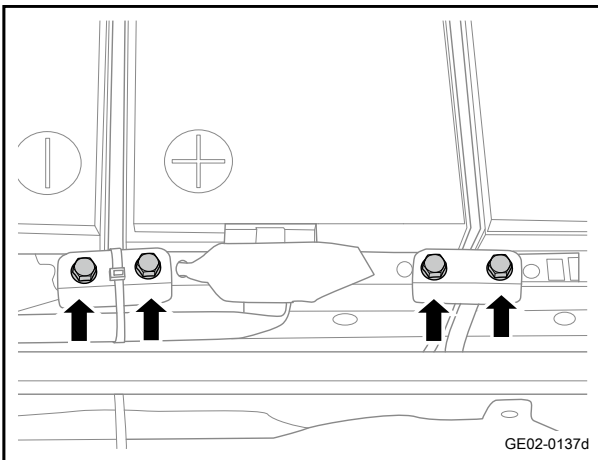


- 7 Remove the 4 fixing bolts of the rear fixing bracket of the battery module.
- 8 Remove the rear upper battery module.

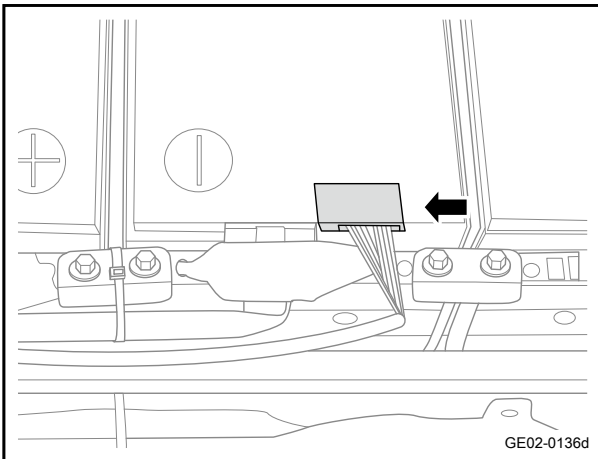
Installation procedure



- 1 Move the rear upper battery module to the installation position.
- 2 Install the 4 fixing bolts of the rear fixing bracket of the battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 3 Install the 4 fixing bolts of the fixing bracket of rear upper battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 4 Connect the harness connectors at both ends of the rear upper battery module.

- 5 Install the soft copper bar.
- 6 Fill power battery coolant.
- 7 Connect the DC bus (the side of power battery).
- 8 Connect the negative cable of battery.

### 2.2.7.13 Replacement of Rear Lower Battery Module

Removal procedure

**Caution**

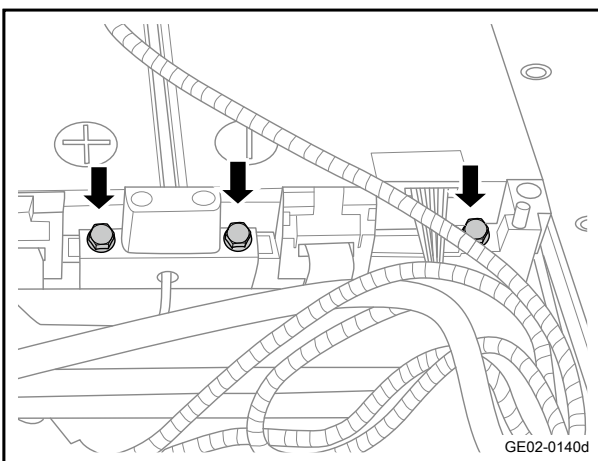
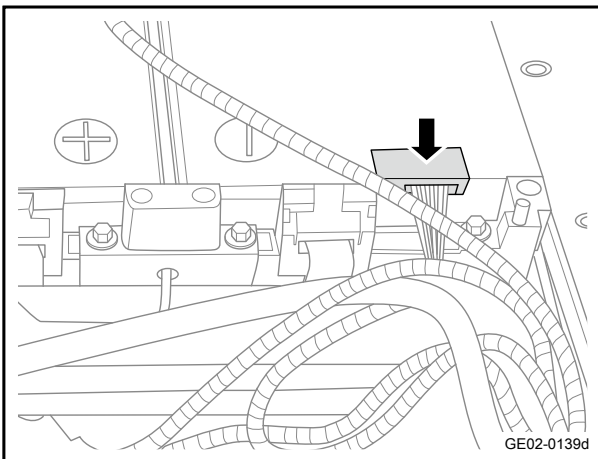
The disassembly and assembly process of the rear lower module is roughly the same, which is illustrated by M5 as an example herein.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

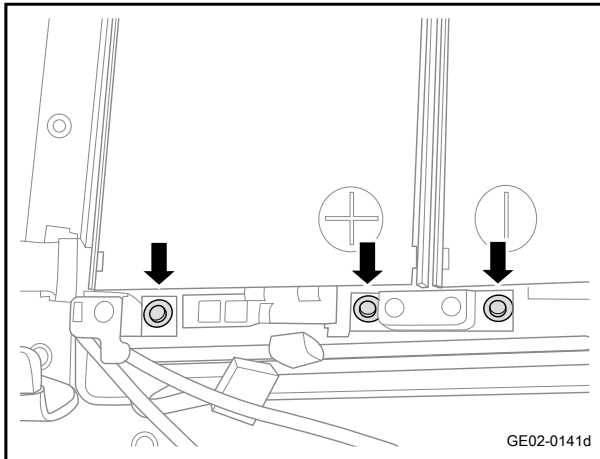
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Remove fuse. Refer to the [Replacement of Fuse](#).
- 4 Remove the rear upper battery module. Refer to the [Replacement of Rear Upper Battery Module](#).
- 5 Remove the rear upper water cooled panel and support. Refer to the [Replacement of Rear Upper Water Cooled Panel](#)
- 6 Disconnect the rear lower battery module harness connector.

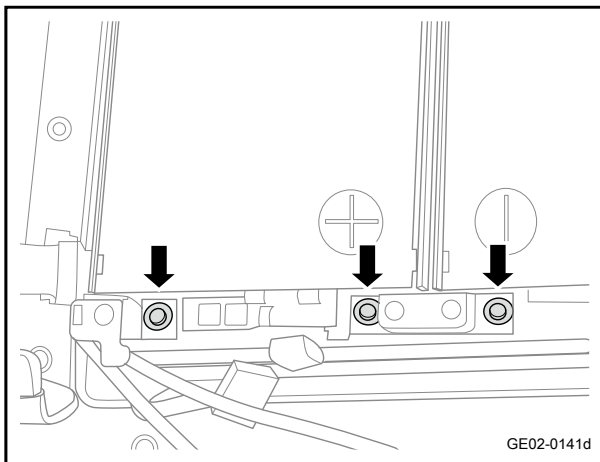


- 7 Remove the 3 fixing bolts at the front of rear lower battery module.
- 8 Remove fixing bracket.

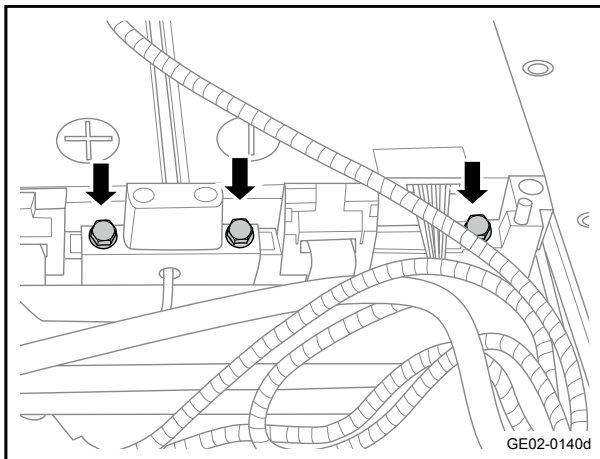


- 9 Remove the 3 fixing bolts at the rear of the rear lower battery module.
- 10 Remove the battery module after removing the fixing bracket.

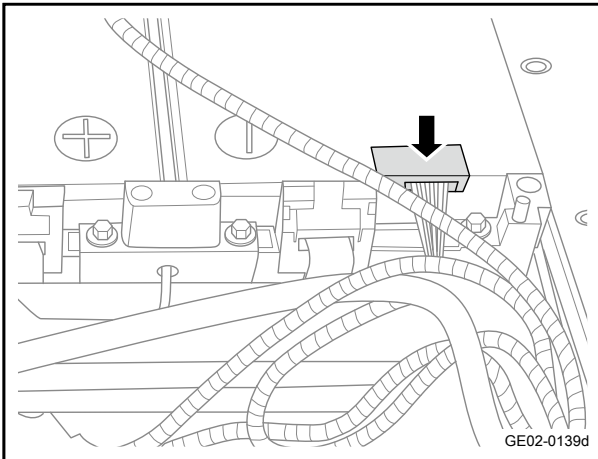
#### Installation procedure



- 1 Move the rear lower battery module to the installation position.
- 2 Install the 3 fixing bolts at the rear fixing bracket of the rear lower battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 3 Install the 3 fixing bolts at the front fixing bracket of the rear lower battery module.  
Torque: 15N·m (metric system) 11.1 lb-ft (Imperial system)



- 4 Connect the rear lower battery module harness connector.

- 5 Install rear upper water cooled panel and bracket.
- 6 Install the rear upper battery module.
- 7 Install fuse.
- 8 Connect the DC bus (the side of power battery).
- 9 Connect the negative cable of battery.

#### 2.2.7.14 Replacement of Rear Upper Water Cooled Panel

##### Removal procedure

##### Caution

Air tightness test shall be carried out after installation

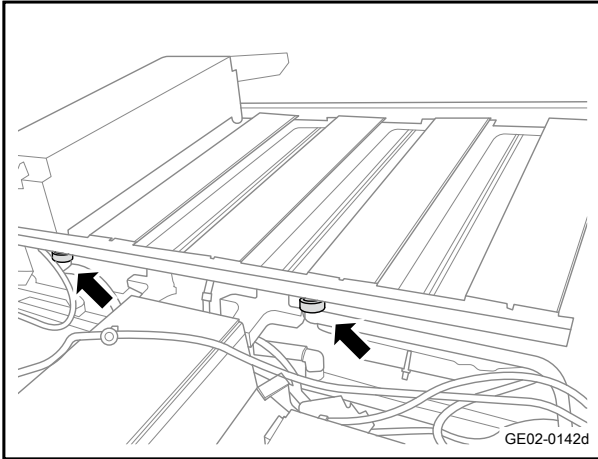
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

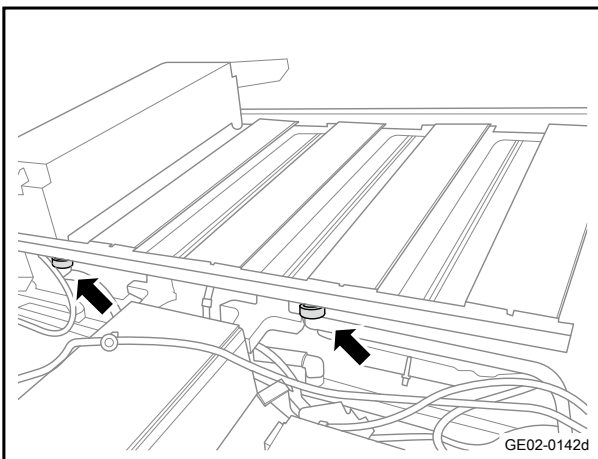
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)



- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the rear upper battery module. Refer to the [Replacement of Rear Upper Battery Module](#).
- 5 Disconnect the clips on the upper water cooled panel.
- 6 Take down water-cooled panels



#### Installation procedure

- 1 Move the upper water-cooled panel to the installation position.
- 2 Install the clips at the connection.

- 3 Install the rear upper resistance module.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

### 2.2.7.15 Replacement of Rear Lower Water Cooled Panel

#### Removal procedure



### Caution

Air tightness test shall be carried out after installation

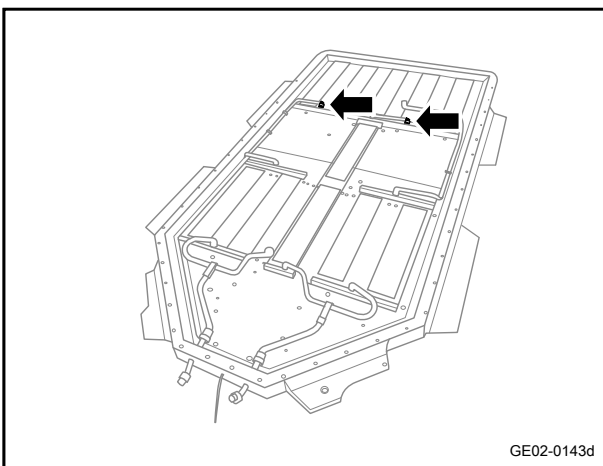
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

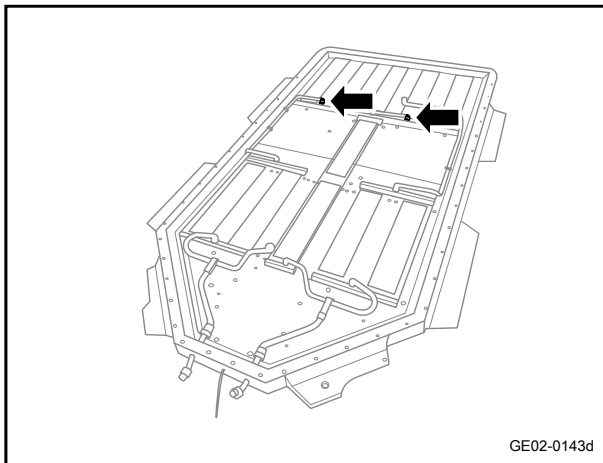
### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the rear upper water cooled panel. Refer to the [Replacement of Rear Upper Water Cooled Panel](#)
- 5 Disconnect the clamp at the connection between the rear lower water-cooled panel and the water-cooled pipe.
- 6 Take down water-cooled panels



Installation procedure



- 1 Move the upper water-cooled panel to the installation position.
- 2 Connect the clamp at the connection between the rear lower water-cooled panel and the water-cooled pipe.

- 3 Install the rear lower battery module.
- 4 Install rear upper water cooled panel.
- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the battery negative cable.

### 2.2.7.16 Replacement of M15 Water Cooled Panel

#### Removal procedure

##### Caution

Air tightness test shall be carried out after installation

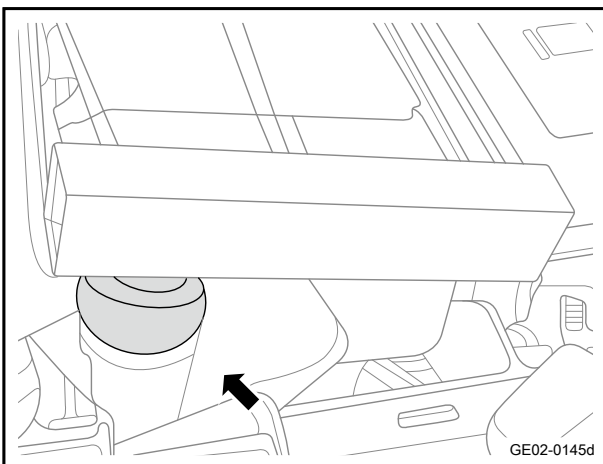
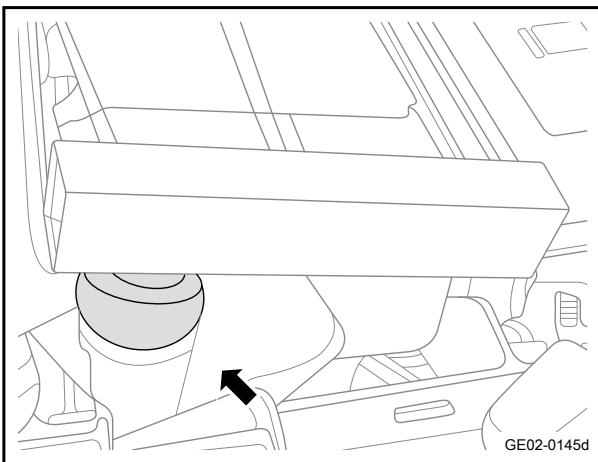
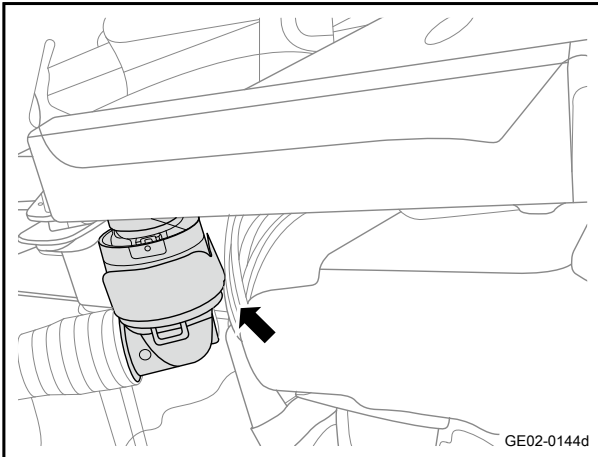
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

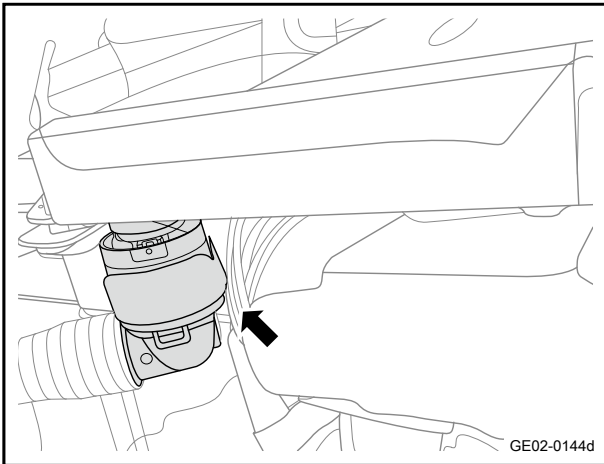
- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)



- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Disconnect the buckle connecting the front part of the water cooled panel of the M15 battery module with the water pipe.
- 5 Disconnect the buckle connecting the rear part of the water cooled panel of the M15 battery module with the water pipe.
- 6 Remove the water cooled panel of M15 battery module .

#### Installation procedure

- 1 Move the water cooled panel of M15 battery module to the installation position.
- 2 A buckle connecting the rear part of the water cooled panel of the M15 battery module with the water pipe.



- 3 Buckle connecting the front part of the water cooled panel of M15 battery module to the water pipe.

- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

### 2.2.7.17 Replacement of M1 and M2 Water Cooled Panel

#### Removal procedure

##### Caution

Air tightness test shall be carried out after installation

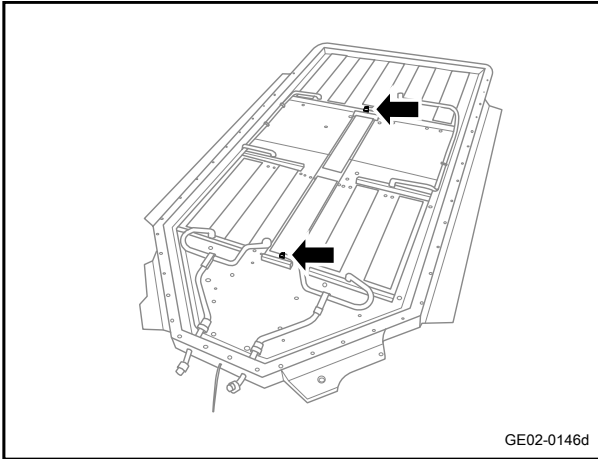
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

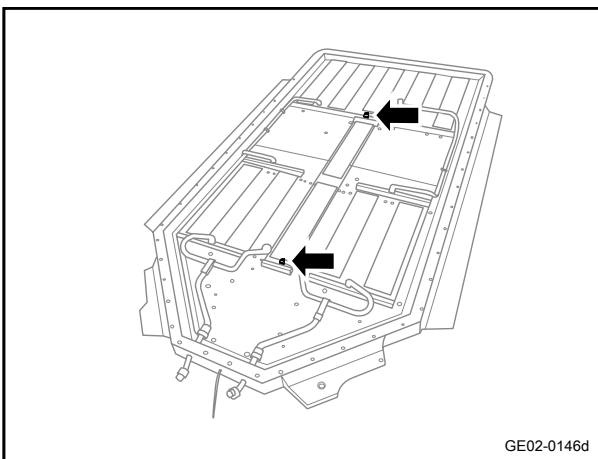
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 4 Remove the front lower battery module. Refer to the [Replacement of Front Lower Battery Module](#)
- 5 Remove the rear lower battery module. Refer to the [Replacement of Rear Lower Battery Module](#)
- 6 Disconnect the 2 buckles at the connection between M1 and M2 water cooled panels and water cooled pipes.
- 7 Remove M1 and M2 water cooled panels.



#### Installation procedure

- 1 Move M1 and M2 water cooled panels to installation position.
- 2 Install the 2 buckles at the connection.

- 3 Install the rear lower battery module.
- 4 Install the front lower battery module.
- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the negative cable of battery.

### 2.2.7.18 Replacement of M13 and M14 Water Cooled Panel

#### Removal procedure

### Caution

Air tightness test shall be carried out after installation

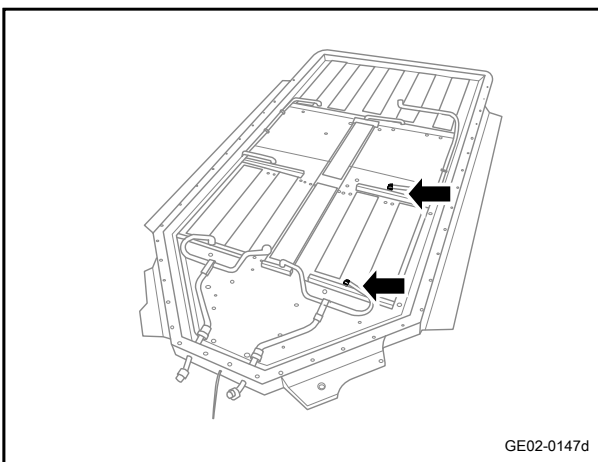
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

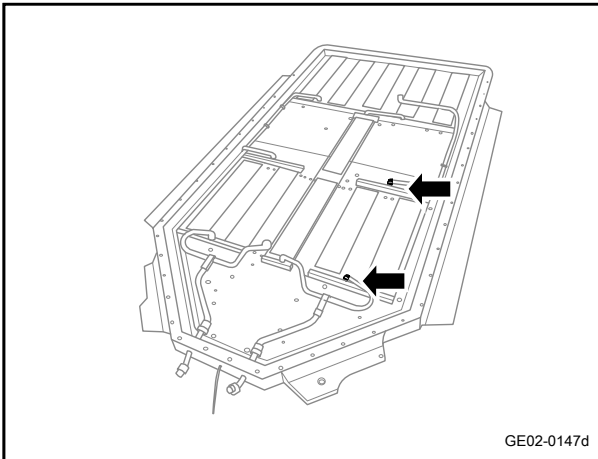
### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#).
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the front lower battery module. Refer to the [Replacement of Front Lower Battery Module](#)
- 5 Disconnect the 2 clamps at the connection between M13 and M14 water cooled panels and water cooled pipes.
- 6 Remove M13 and M14 water cooled panels.



Installation procedure



- 1 Move M13 and M14 water cooled panels to installation position.
- 2 Install the 2 clamps at the connection.

- 3 Install the front lower battery module.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

### 2.2.7.19 Replacement of M16 and M17 Water Cooled Panel

#### Removal procedure

##### Caution

Air tightness test shall be carried out after installation

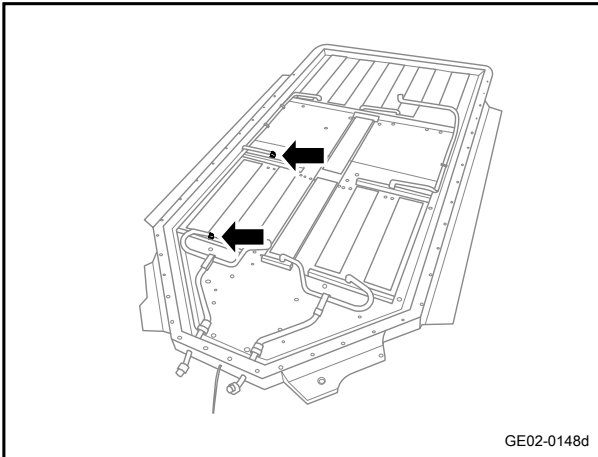
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

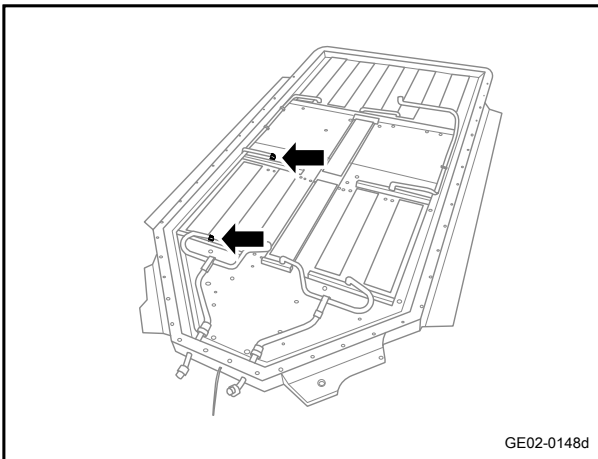
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 4 Remove the front lower battery module. Refer to the [Replacement of Front Lower Battery Module](#)
- 5 Disconnect the 2 clamps at the connection between M16 and M17 water cooled panels and water cooled pipes.
- 6 Remove M16 and M17 water cooled panels.

#### Installation procedure



- 1 Move M16 and M17 water cooled panels to installation position.
- 2 Install the 2 clamps at the connection.

- 3 Install the front lower battery module.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

### 2.2.7.20 Replacement of Water Cooled Connecting Pipe

#### Removal procedure



### Caution

Air tightness test shall be carried out after installation

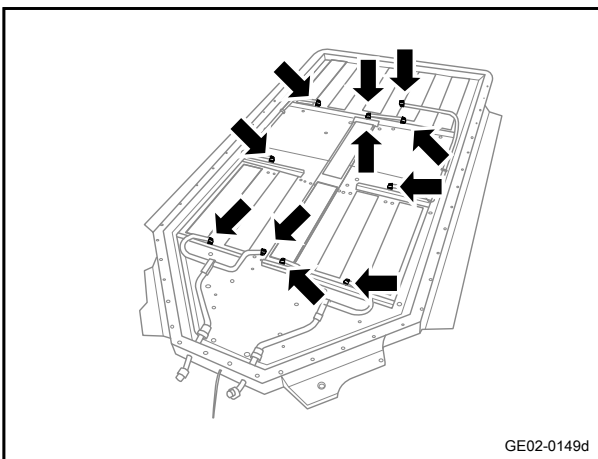
Operation steps: 1. Use water-cooled pipe tooling to block the water-cooled pipe orifice and detect the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Stabilize the pressure for 60s, and detect the air pressure of the water cooling system, ranging from 350-360kPa; 4. Test time 60s, range-75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

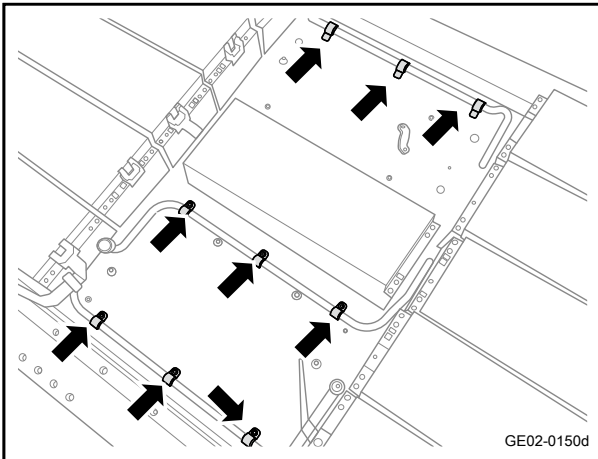
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

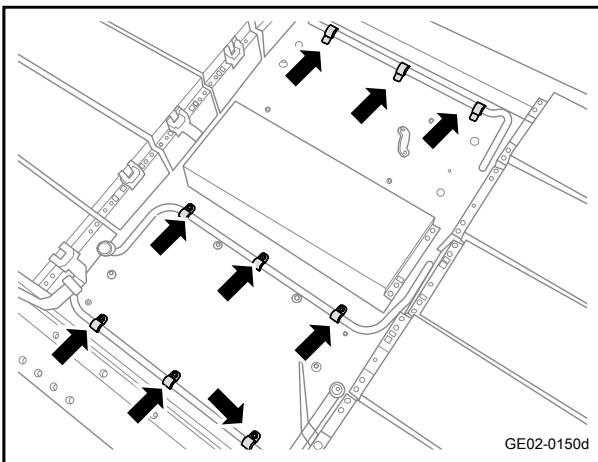
- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse box holder. Refer to the [Replacement of Fuse Box Holder](#).
- 5 Disconnect the clamps at both ends of the water cooled panel connecting pipe.



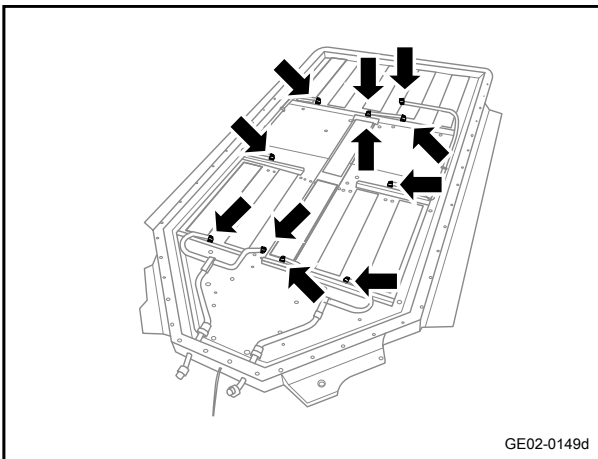


- 6 Disconnect the 9 fixing bolts fixed between the water cooled panel connecting pipe and the bottom plate (some water cooled connecting pipes have no fixing bolts).
- 7 Remove the water cooled panel connecting pipe.

#### Installation procedure



- 1 Move the water cooled panel connecting pipe to installation position.
- 2 Install 9 fixing bolts.  
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)



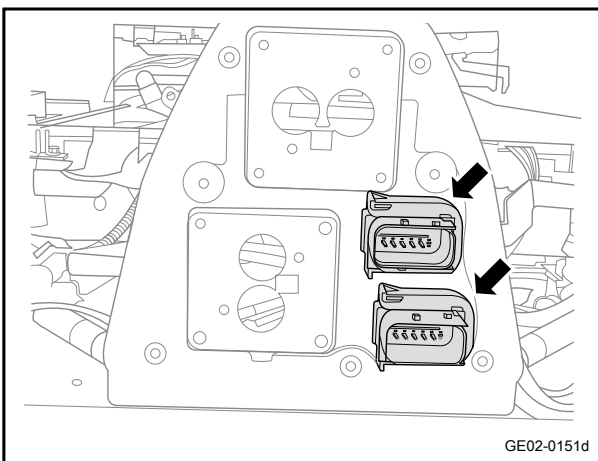
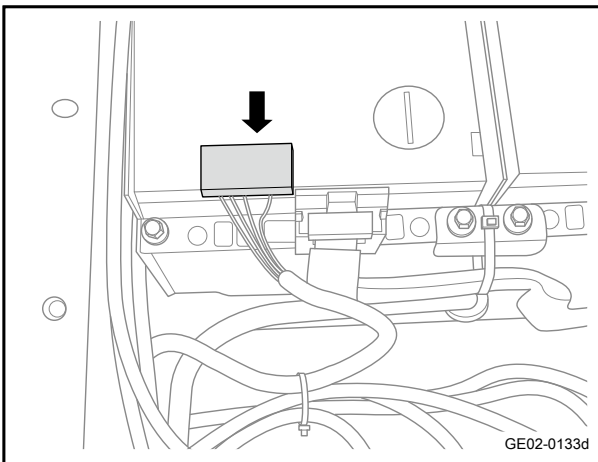
- 3 Install clamps at both ends of the water cooled panel connecting pipe.

- 4 Install fuse box holder.
- 5 Fill power battery coolant.
- 6 Connect the DC bus (the side of power battery).
- 7 Connect the negative cable of battery.

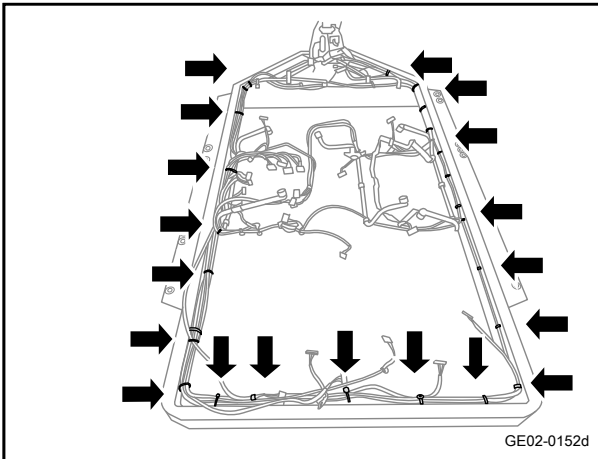
### 2.2.7.21 Replacement of Harness

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#).
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove fuse box holder. Refer to the [Replacement of Fuse Box Holder](#).
- 5 Remove BMS. Refer to [Replacement of BMS](#)
- 6 Disconnect the harness connector connecting the harness to each battery module, taking M13 as an example.

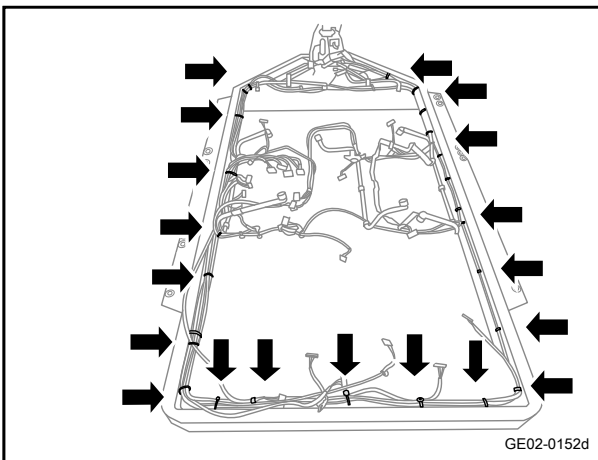


- 7 Remove the harness connector connecting the low voltage harness to the BDU.
- 8 Pull out harness.

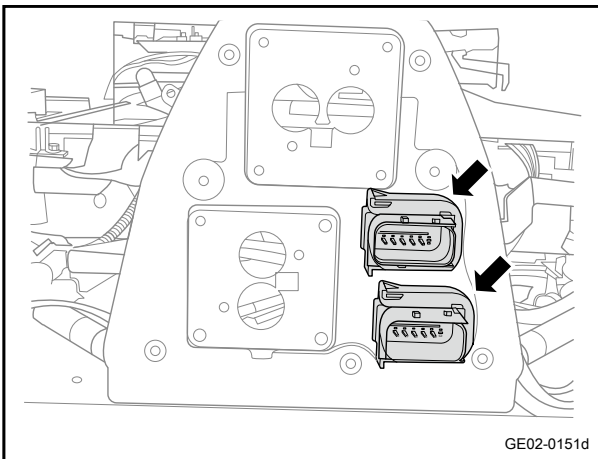


- 9 Disconnect the tie that secures the harness to the bottom of the battery pack.
- 10 Remove low voltage harness.

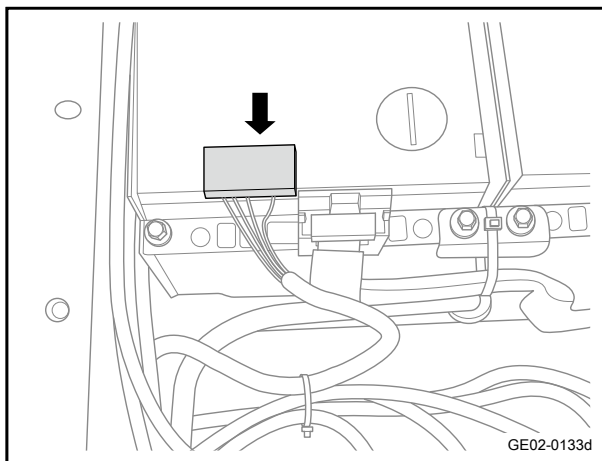
#### Installation procedure



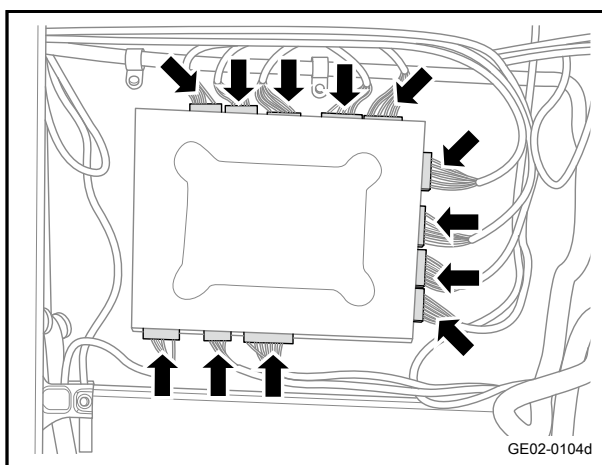
- 1 Move the harness to installation position.
- 2 Install the tie strap



- 3 Connect harness connector connecting the low voltage harness to the BDU.



- 4 Install the harness connector connecting the harness to each battery module



- 5 Install the harness connector connecting the harness to the BMS and tighten the tie strap.

- 6 Install fuse box holder.
- 7 Fill power battery coolant.
- 8 Connect the DC bus (the side of power battery).
- 9 Connect the negative cable of battery.

### 2.2.7.22 Replacement of Front Sealing Pressing Plate.

Removal procedure

### Caution

Air tightness test shall be carried out after installation.

When making air tightness test, it is required to plug the high voltage/low voltage wiring harness interface with professional tools (connector protection cover).

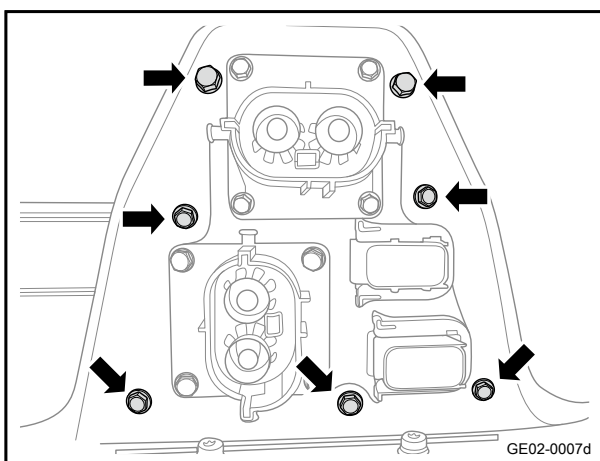
Specific steps: 1. Use explosion-proof valve tooling to block the hole position of explosion-proof valve, and use professional tools to install the front connector protective cover; 2. use 3.5 kPa air pressure to inflate that electric box, the inflation time is 450s, and the air pressure reaches 2.5 ~ 3.0 kPa; 3. The voltage stabilization lasts for 60s, and the air pressure in the detection box is 2.5 ~ 3.0 kPa; 4. Check the leakage rate in the electric box for 60s: flow rate < 20cc/min, pressure < 100Pa/min.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

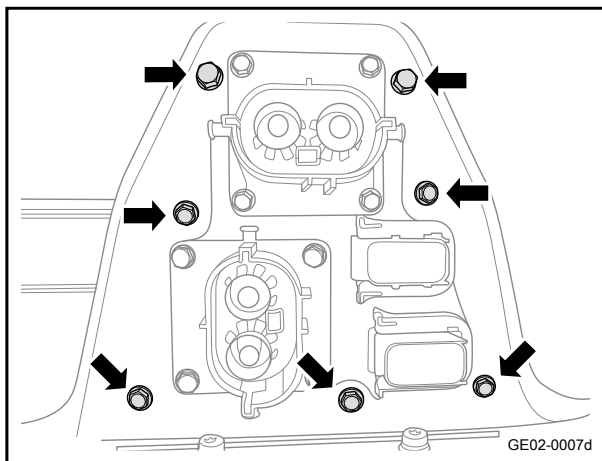
### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (the side of power battery). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Dismount the power battery assembly. Refer to the [Power Battery Assembly Replacement](#)
- 5 Remove the 7 fixing bolts of the front sealing pressing plate.
- 6 Remove front sealing pressing plate.



Installation procedure



- 1 Move the pressing plate of front seal cover to installation position.
- 2 Install the 7 fixing bolts of the front sealing pressing plate.  
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 3 Mount the power battery assembly.
- 4 Fill power battery coolant.
- 5 Connect the DC bus (the side of power battery).
- 6 Connect the negative cable of battery.

## 2.3 High voltage power distribution system

### 2.3.1 Description and operation

#### 2.3.1.1 Features

Pure electric vehicles have a high-voltage power supply system. The high-voltage power supply system uses power batteries to provide energy for high-voltage components such as electric drive integrated systems, electric compressors, PTC heaters, etc. In addition, the power battery also has a DC fast charging system and an AC slow charging system. All these high-voltage components are connected by a high-voltage distribution system to transmit electric energy.

#### 2.3.1.2 Component Description

The high-voltage distribution system mainly includes the following components: high and low voltage charging system, DC charging interface, AC charging interface and DC bus.

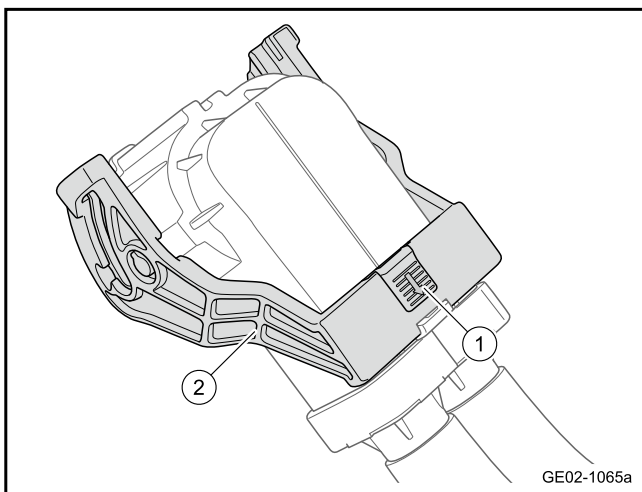
#### Caution

All high-voltage cables are orange. Do not touch these cables and components when the vehicle is powered on. Wrap the high-voltage cable connectors with insulating tape immediately after they are pulled out.

#### 2.3.1.3 Removal of High-Voltage Harness Connector

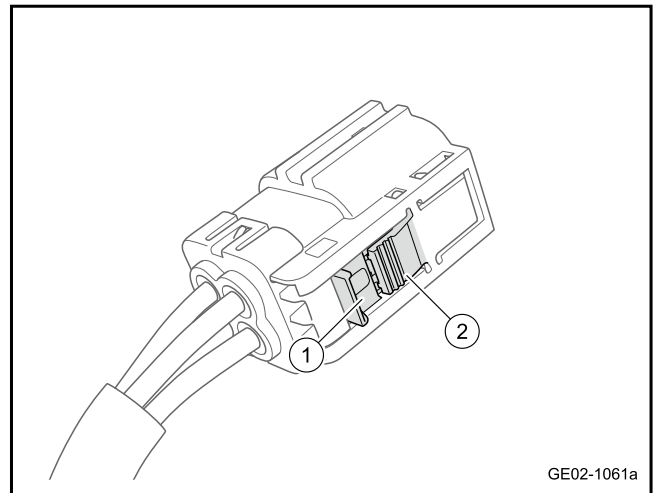
##### Type I high voltage connectors

1. Pull up the booster handle lock 1 by hand or screwdriver.
2. Push the booster handle 2 out of the lock, then slowly raise the booster handle upward, and the connector will slowly withdraw.
3. When the booster handle changes from the horizontal position to the vertical position, the connectors are all in the pulled-out state.



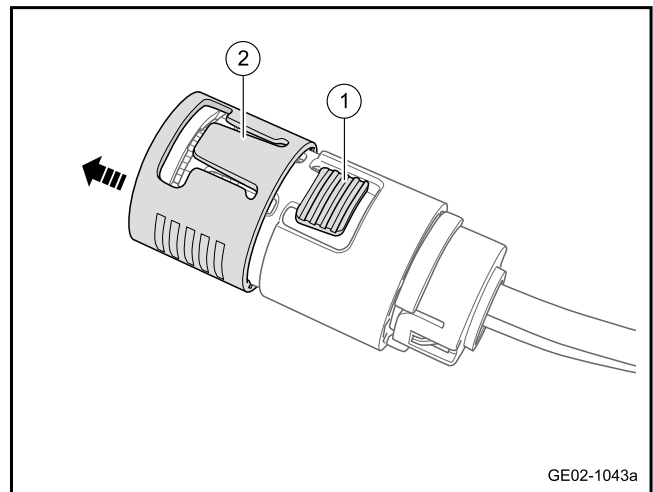
##### Type II High Voltage Connector

1. Pull the lock 1 down by hand or screwdriver.
2. After pressing button 2, pull out the connector.



##### Category III High Voltage Connector

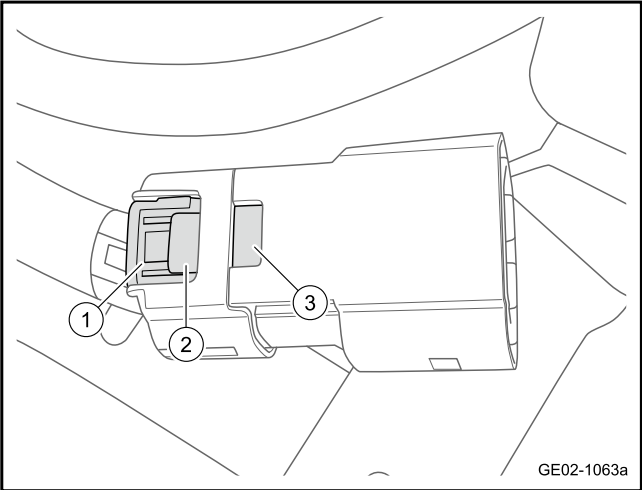
1. Press and hold the connector up and down buttons 1.
2. After pulling the lock 2, pull the connector outward.



##### Type IV High Voltage Connector

1. Pull the lock 1 by hand or screwdriver.
2. After pressing button 2, pull out the connector.
3. Press the lock 3 with your hand or screwdriver to pull out the connector.





### 2.3.2 How the system works

#### 2.3.2.1 System Working Principles

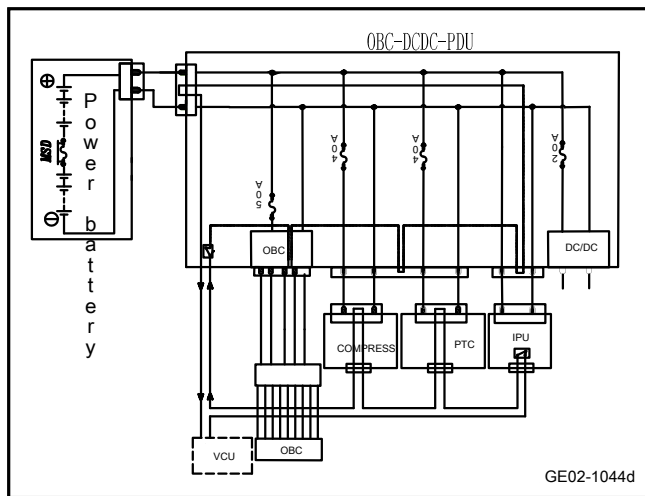
##### High and Low Voltage Charging System

The high- and low-voltage charging system can not only charge the power battery, but also include the distribution function of direct current output by the power battery, similar to the fuse box in the low voltage power supply system: it is responsible for the distribution of high voltage electric energy and the overload and short circuit protection of the high voltage circuit.

The high- and low-voltage charging system distributes the electric energy delivered by the power battery assembly to the electric motor controller, A/C compressor and PTC heater.

In the high- and low-voltage charging system, a 40A fuse is provided for the electric compressor circuit and PTC heater circuit respectively, and a 50A fuse is provided for the AC slow charging circuit of the 10kW on-board charger. The schematic diagram of high and low voltage charging system is as follows:

The schematic diagram of high and low voltage charging system is as follows:



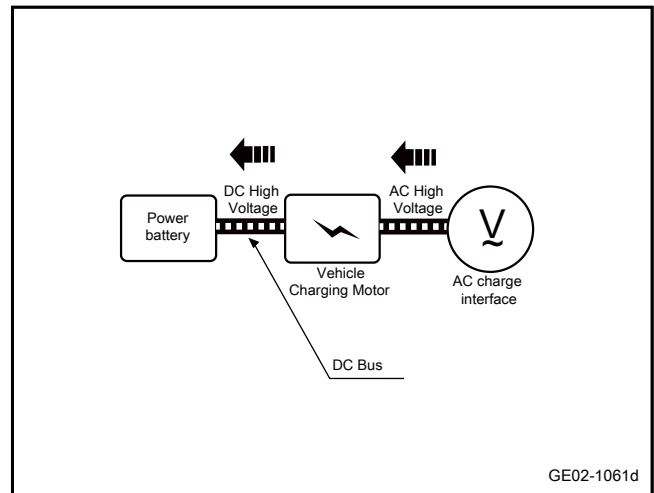
##### DC charging port

The DC charging interface can receive the electric energy by DC charging and transmit the electric energy to the power battery assembly through the high-voltage harness to charge it.

##### AC charging interface, DC bus

The AC charging interface can receive the electric energy by AC charging and transmit the electric energy to the high- and low-voltage charging system through the high-voltage harness. The high- and low-voltage charging system converts AC into DC and transmits it to the power battery through the DC bus to charge it.

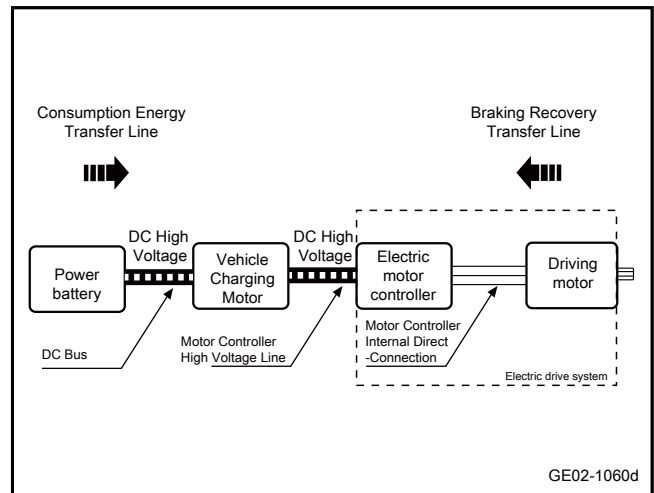
The energy transfer route is shown in the following figure:



##### Motor control

When the vehicle is running, the current passes through the DC bus, the high- and low-voltage charging system, the high voltage line of the electric motor controller, the motor controller and the internal direct connection of the motor controller from the power battery to supply power to the drive motor.

The energy transfer route is shown in the following figure: (the transfer route is opposite during energy recovery)

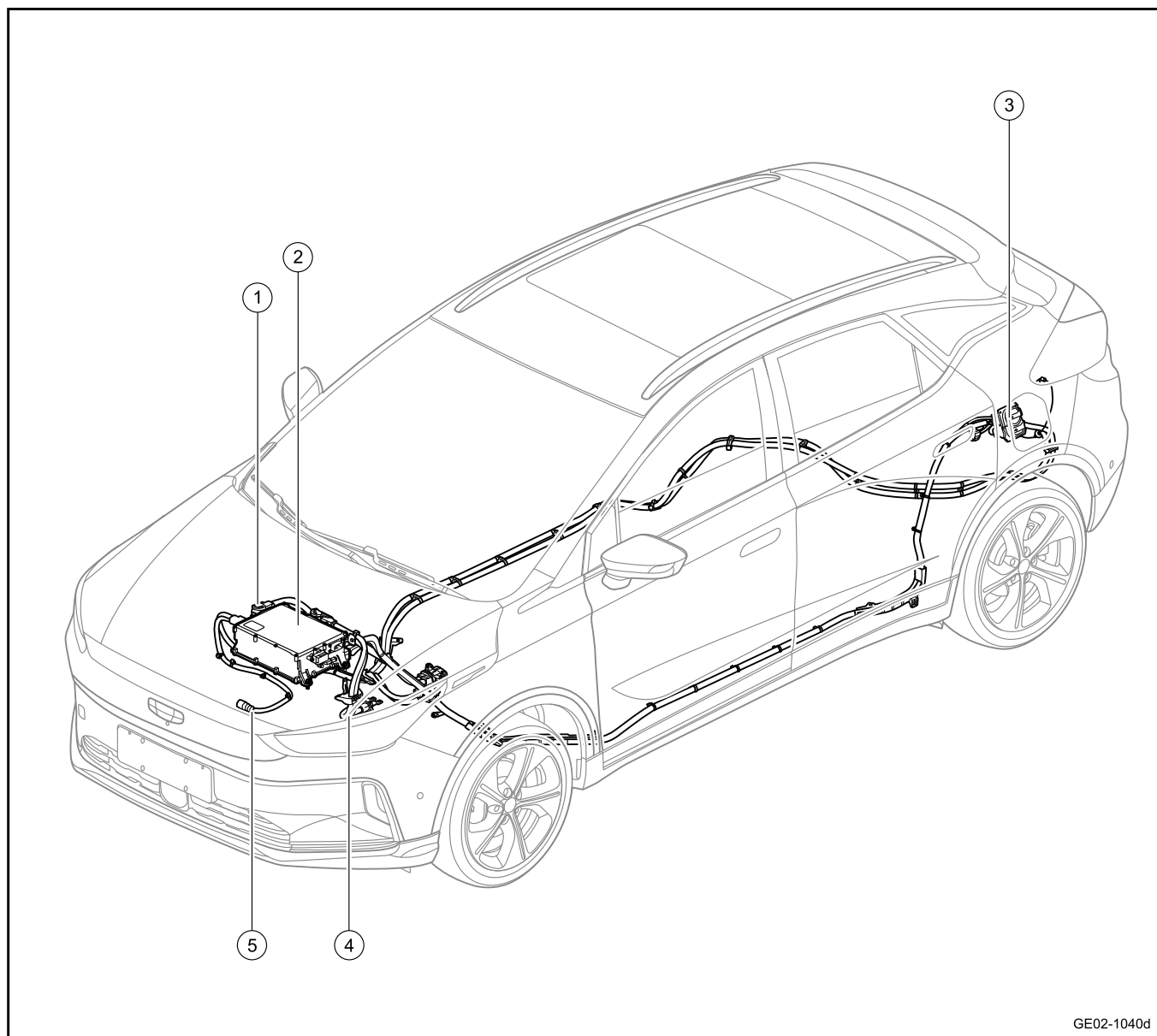


##### DC/DC

DC/DC is integrated in the high- and low-voltage charging system. Its function is to convert the high voltage power of the battery into low voltage power and provide power supply for the low voltage system of the complete vehicle.

### 2.3.3 Part location

#### 2.3.3.1 Part Position

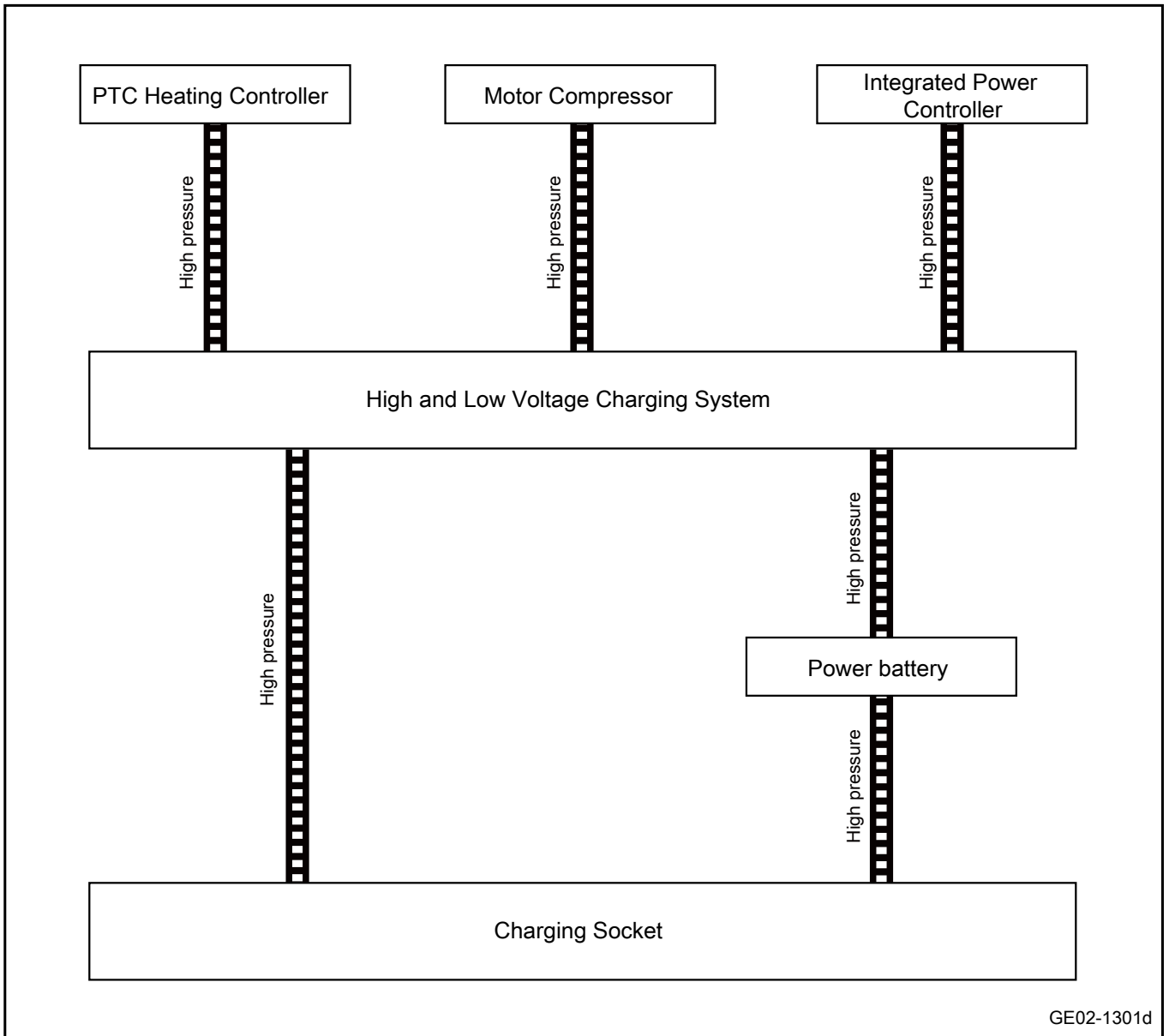


GE02-1040d

- |  |   |
|--|---|
| 1. DC bus assembly   | 4. PEU harness assembly                 |
| 2. High and Low Voltage Charging System  | 5. Electric compressor harness assembly |
| 3. AC charging interface (slow charging) (upper charging port), DC charging interface (fast charging) (upper and lower charging ports are used at the same time) |   |

2.3.4 Electrical block diagram

2.3.4.1 Electrical Schematic Diagram of High Voltage Distribution System



## 2.3.5 Diagnostic information and steps

### 2.3.5.1 Diagnosis Description

Before diagnosing high voltage distribution faults, refer to [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 2.3.5.2 Routine inspection

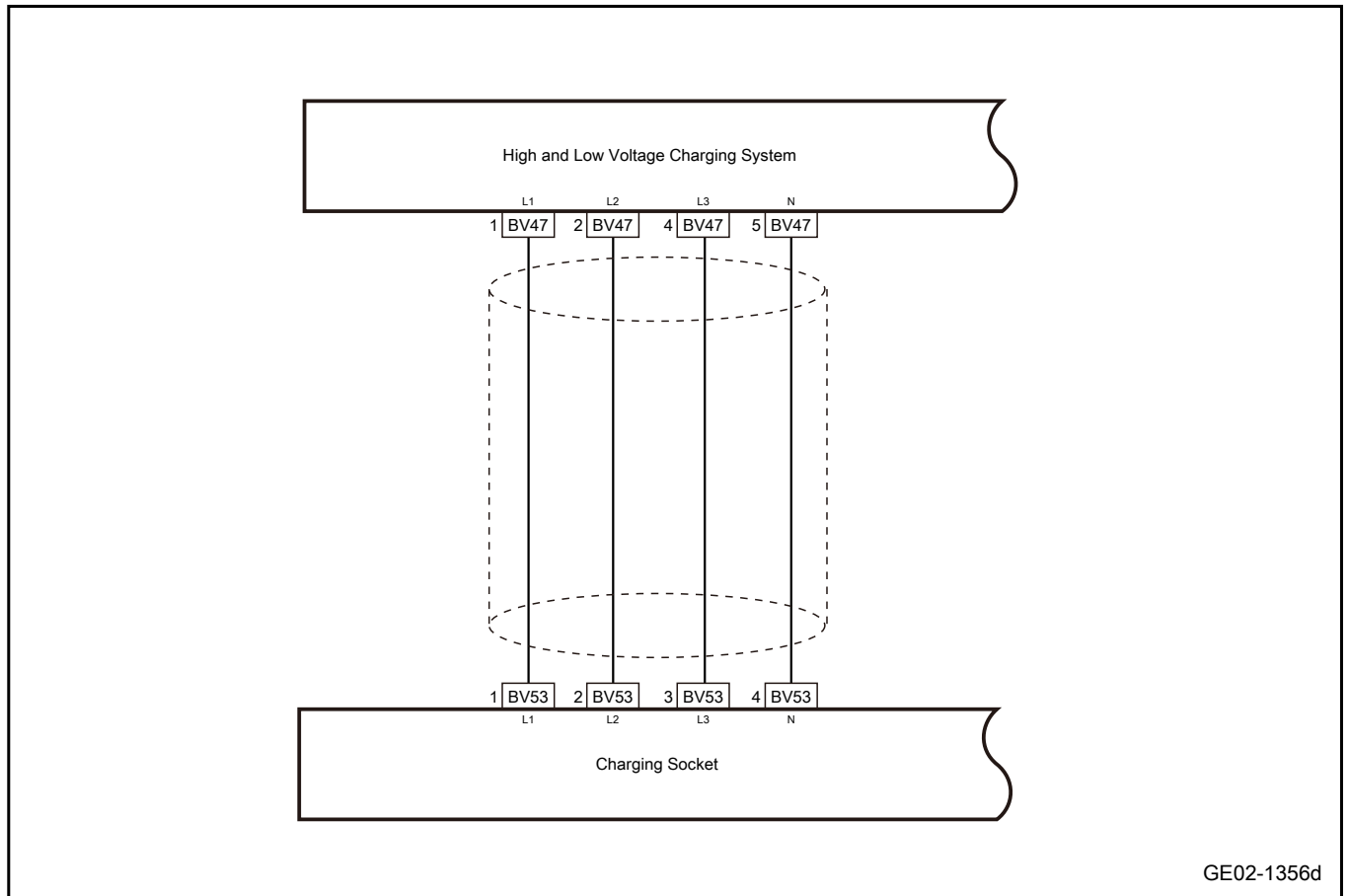
1. Check after-sales installations that may affect the high voltage distribution system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the high voltage distribution system.
4. Inspect the harness connectors of the high voltage distribution system for looseness and signs of rust inside.

### 2.3.5.3 Fault symptom table

Symptom	Suspected parts	Measures
AC charging circuit fault	1. AC charging socket	Refer to the <a href="#">AC Charging Circuit Fault</a>
	2. Circuit	
	3. High and low voltage charging system	
Power battery circuit fault	1. Power battery	Refer to the <a href="#">Power Battery Circuit Fault</a>
	2. Circuit	
	3. High and low voltage charging system	
DC charging loop fault	1. Power battery	Refer to the <a href="#">DC Charging Loop Fault</a>
	2. Circuit	
	3. Charging socket	
Electric compressor circuit fault	1. Electric compressor	Refer to the <a href="#">Electric Compressor Circuit Fault</a>
	2. Circuit	
	3. High and low voltage charging system	
PTC heater circuit fault	1. PTC heater	Refer to the <a href="#">PTC Heater Circuit Fault</a>
	2. Circuit	
	3. High and low voltage charging system	
Integrated power controller loop fault	1. Integrated power controller	Refer to the <a href="#">Integrated Power Controller Loop Fault</a>
	2. Circuit	
	3. High and low voltage charging system	

2.3.5.4 AC charging circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the charging socket and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the charging socket, high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

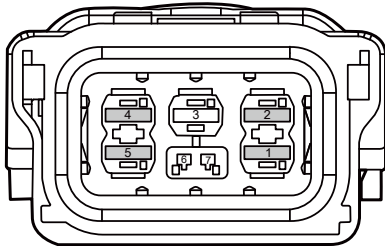
No

Repair or replace the faulty part.

Yes

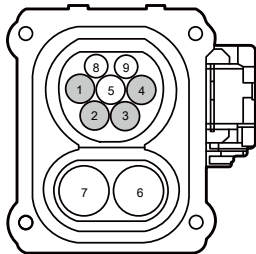
Step 2	Check the harness between the charging socket and the high and low voltage charging system for an open circuit.
--------	---

**BV47 High and Low Voltage Charging System Harness Connector 2**



GE02-1467d

**BV53 Charging Socket Harness Connector**



GE02-1468d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	BV53(1)	Standard resistance: less than 1Ω
BV47(2)	BV53(2)	
BV47(4)	BV53(3)	
BV47(5)	BV53(4)	

- E. Confirm whether the measured value meets the standard.

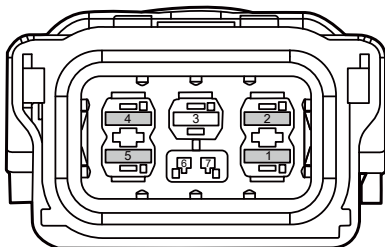
No

Repair or replace the harness.

Yes

**Step 3** Check whether the harness between the charging socket and the high and low voltage charging system is short circuit to each other.

**BV47 High and Low Voltage Charging System Harness Connector 2**



GE02-1469d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	BV47(2)	Standard resistance: greater than 10kΩ
BV47(1)	BV47(4)	
BV47(1)	BV47(5)	
BV47(2)	BV47(4)	
BV47(2)	BV47(5)	

Measure terminal 1	Measure terminal 2	Standard value
BV47(4)	BV47(5)	

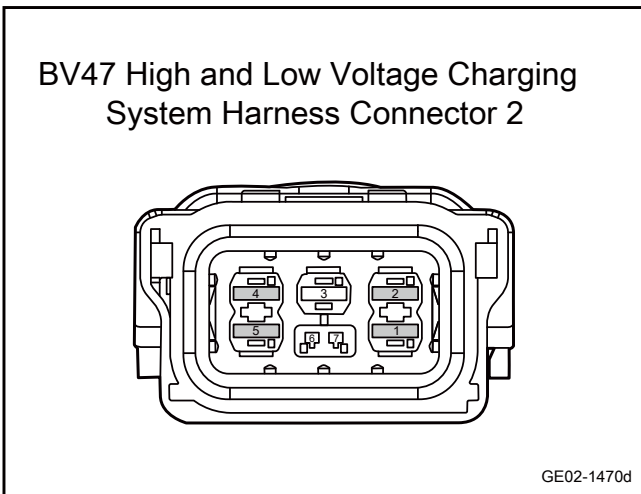
E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the wiring harness insulation between the charging socket and the high and low voltage charging system.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV47(2)		
BV47(4)		
BV47(5)		

F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the charging socket.

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the high and low voltage charging system.



- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7 Reprogram and reset the high-and-low voltage charging system.

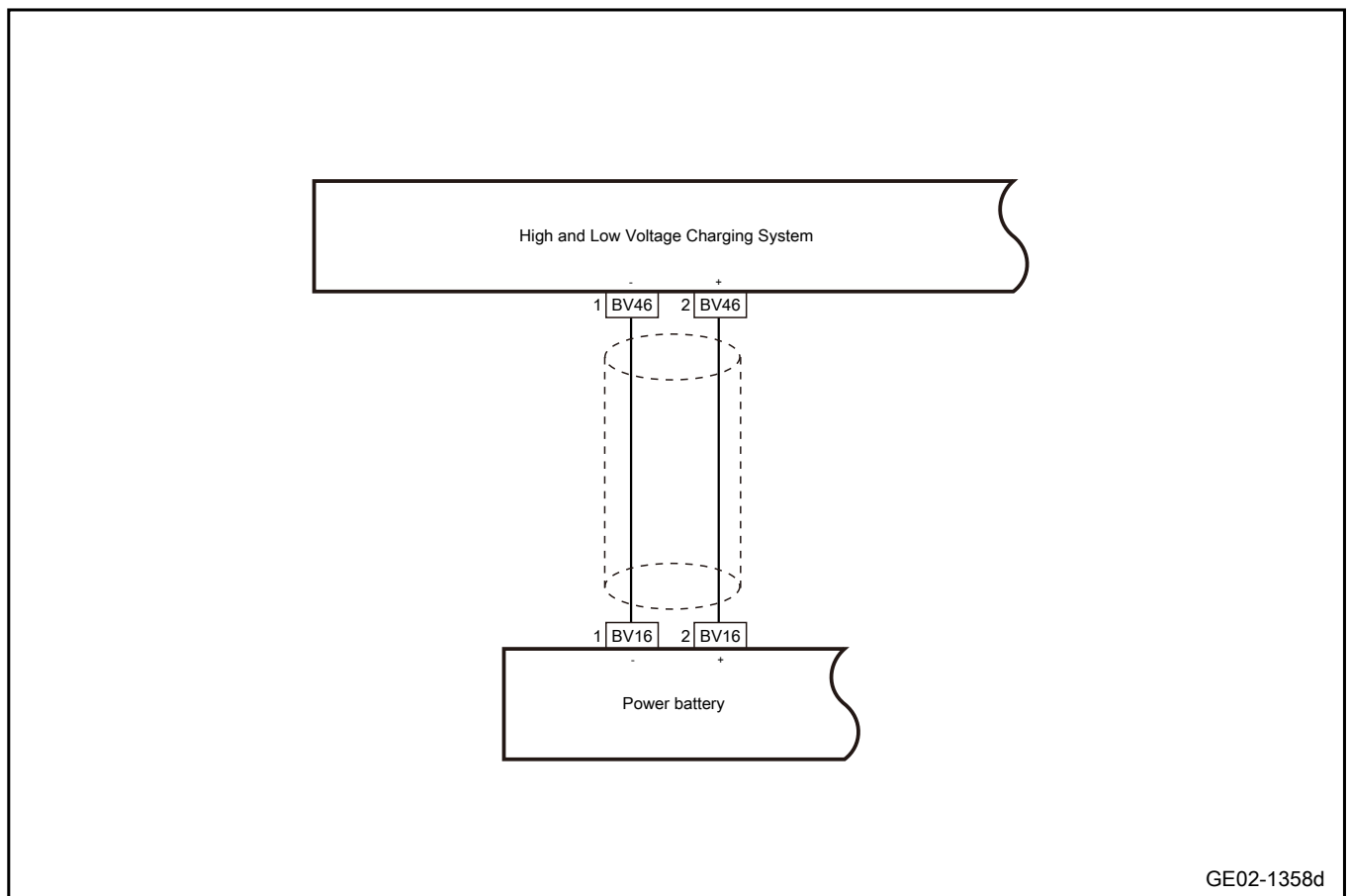
- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 System is normal.

### 2.3.5.5 Power battery circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

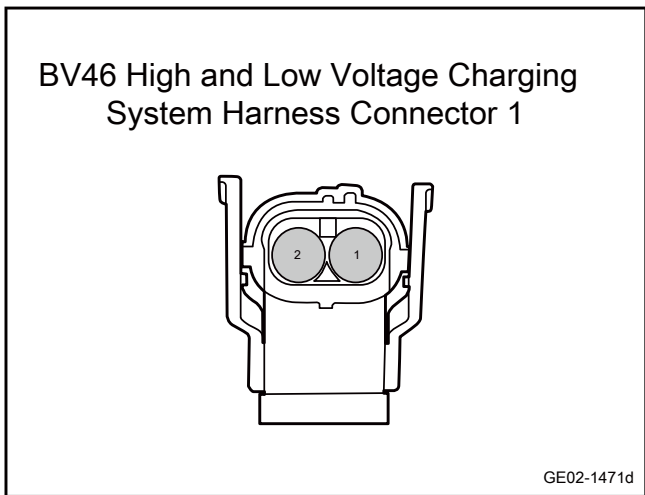
- A. Check the power battery and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the power battery, high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

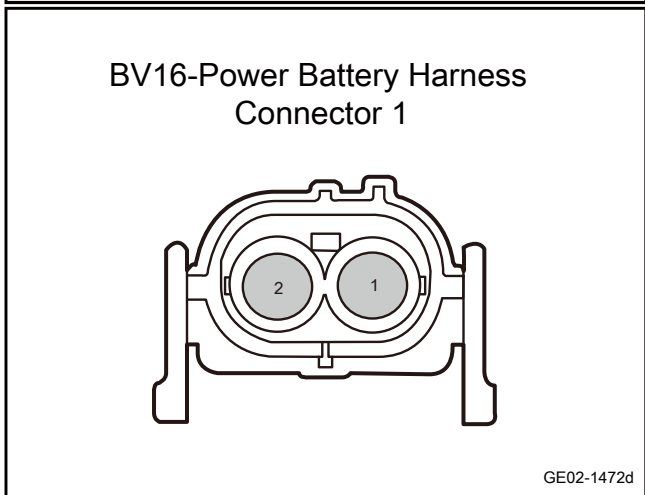
Step 2 Check the harness between the power battery and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the HV/LV charging system harness connector BV46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	BV16(1)	Standard resistance: less than 1Ω
BV46(2)	BV16(2)	

- E. Confirm whether the measured value meets the standard.

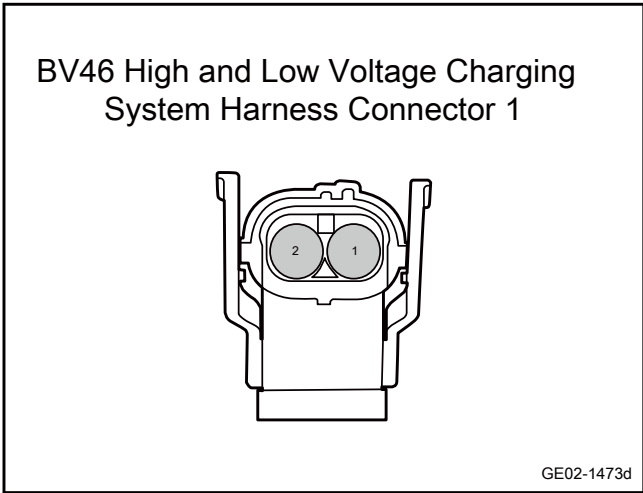


No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between the power battery and the high and low voltage charging system is short circuit to each other.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the HV/LV charging system harness connector BV46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	BV46(2)	Standard resistance: greater than 10kΩ

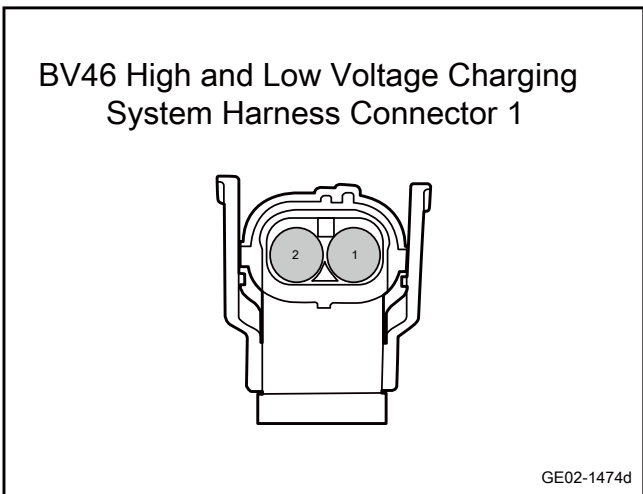
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the harness insulation between the power battery and the high and low voltage charging system.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the HV/LV charging system harness connector BV46.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV46(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the power battery.

- A. Replace the power battery, refer to [Power Battery Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7 Reprogram and reset the high-and-low voltage charging system.

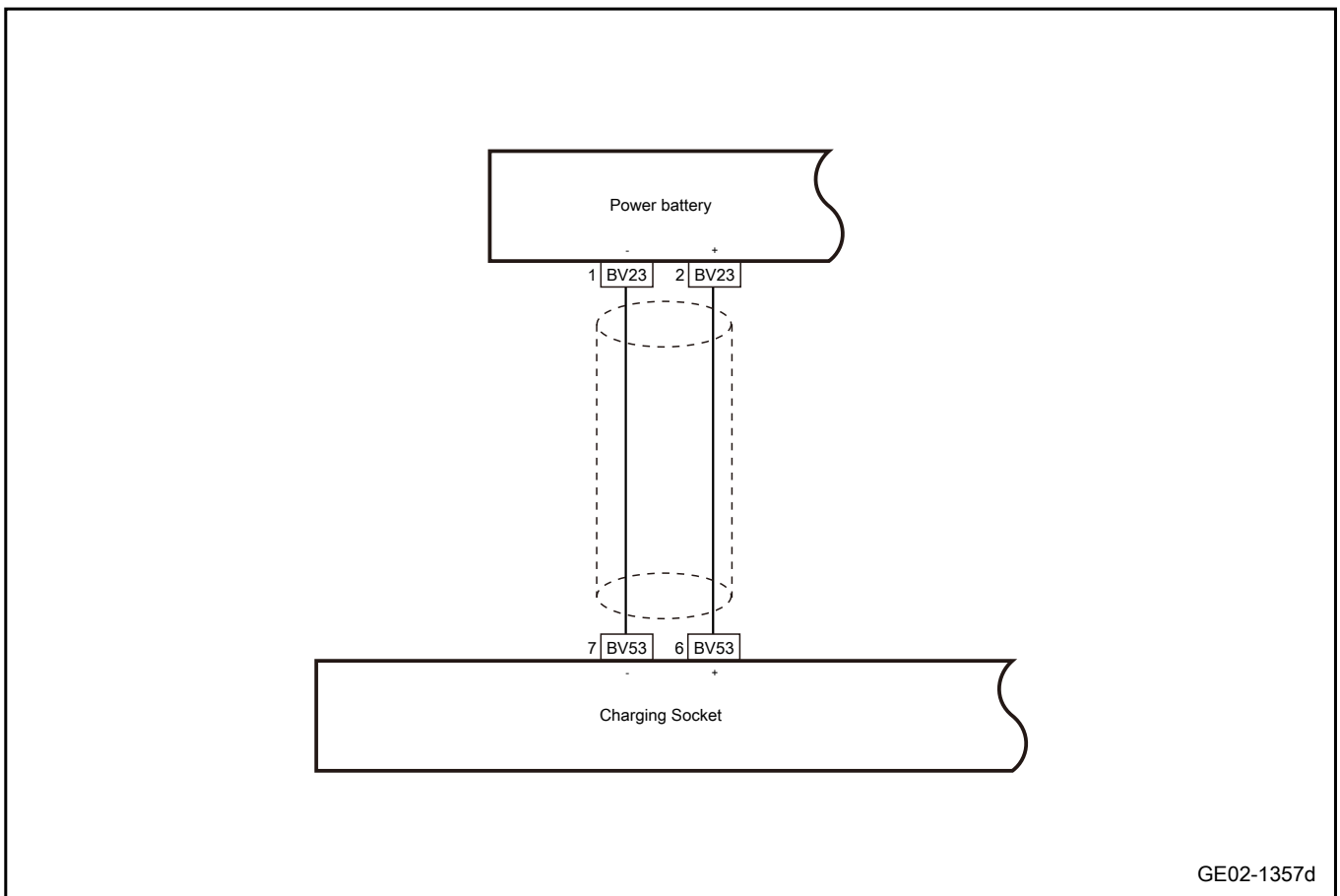
- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 System is normal.

### 2.3.5.6 DC charging loop fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the power battery and charging socket for signs of damage, deformation, stain, looseness, etc.
- B. Check the power battery, charging socket harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

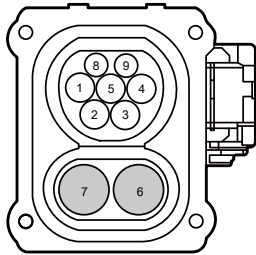
No

Repair or replace the faulty part.

Yes

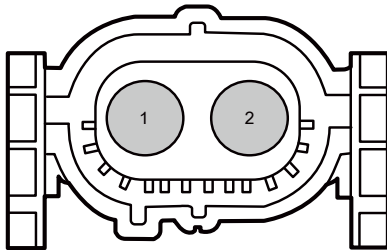
Step 2	Check the harness between the power battery and the charging socket for an open circuit.
--------	--

**BV53 Charging Socket Harness Connector**



GE02-1475d

**BV23-Power Battery Harness Connector 2**



GE02-1476d

Yes

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the charging socket harness connector BV53.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(7)	BV23(1)	Standard resistance: less than 1Ω
BV53(6)	BV23(2)	

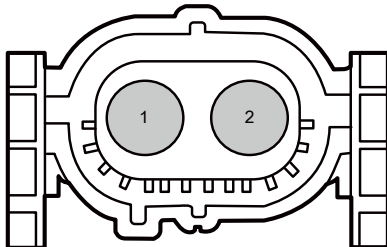
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 3** Check the harness between the power battery and the charging socket for short circuit to each other.

**BV23-Power Battery Harness Connector 2**



GE02-1477d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the charging socket harness connector BV53.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV23(1)	BV23(2)	Standard resistance: greater than 10kΩ

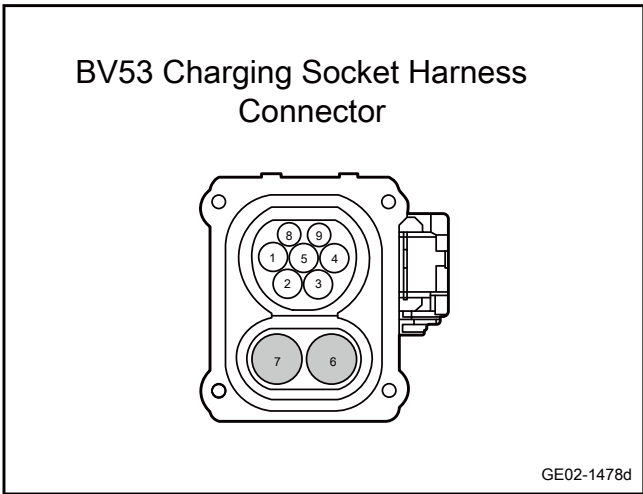
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the harness insulation between the power battery and the charging socket.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the charging socket harness connector BV53.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(6)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV53(7)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the power battery.

- A. Replace the power battery, refer to [Power Battery Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace the charging socket.

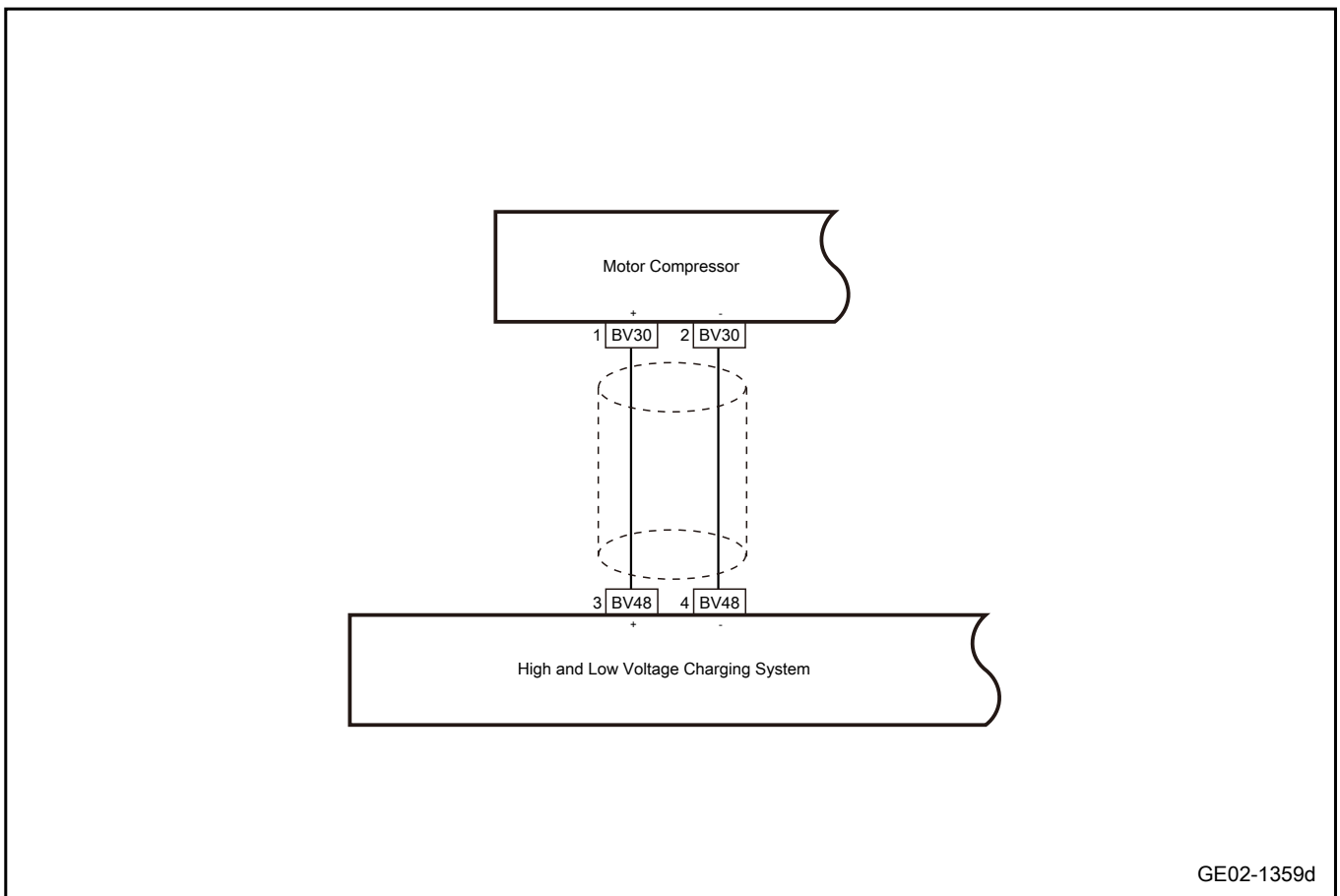
- A. Replace the charging socket. Refer to the [Charging Socket Replacement](#)

Next Step

**Step 7** System is normal.

### 2.3.5.7 Electric compressor circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the electric compressor and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the electric compressor, high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

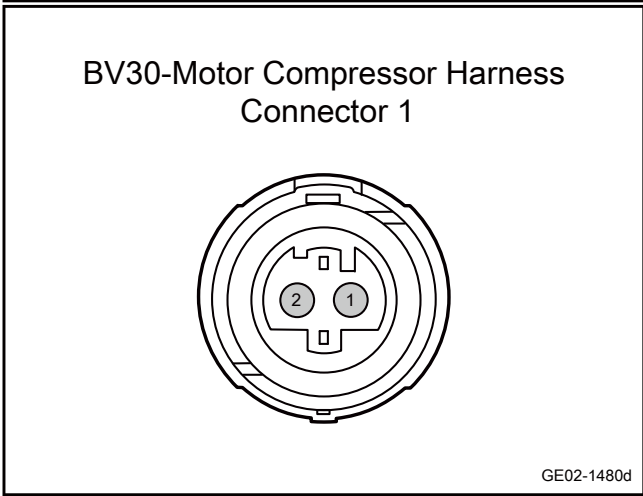
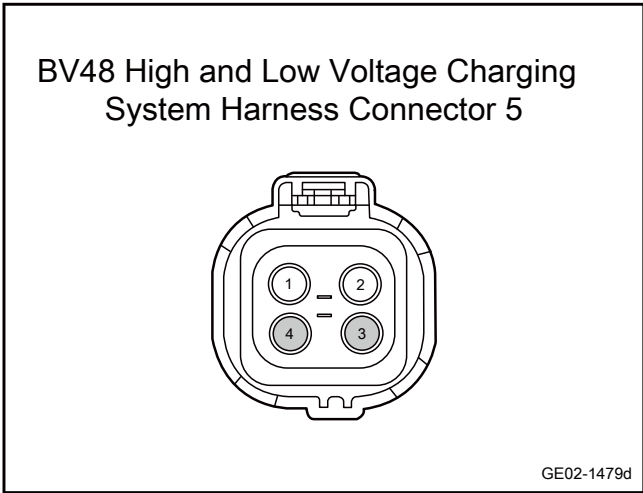
No

Repair or replace the faulty part.

Yes

Step 2	Check the harness between the electric compressor and the high and low voltage charging system for an open circuit.
--------	---





- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the electric compressor harness connector BV30.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48(3)	BV30(1)	Standard resistance: less than 1Ω
BV48(4)	BV30(2)	

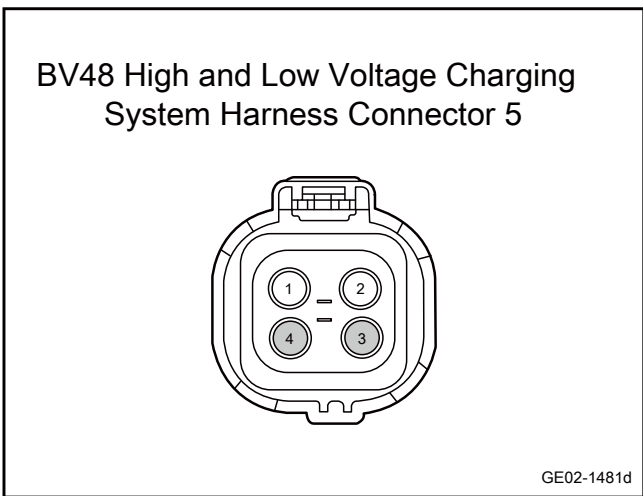
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Check the harness between the electric compressor and the high and low voltage charging system for short circuit to each other.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the electric compressor harness connector BV30.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48(3)	BV48(4)	Standard resistance: greater than 10kΩ

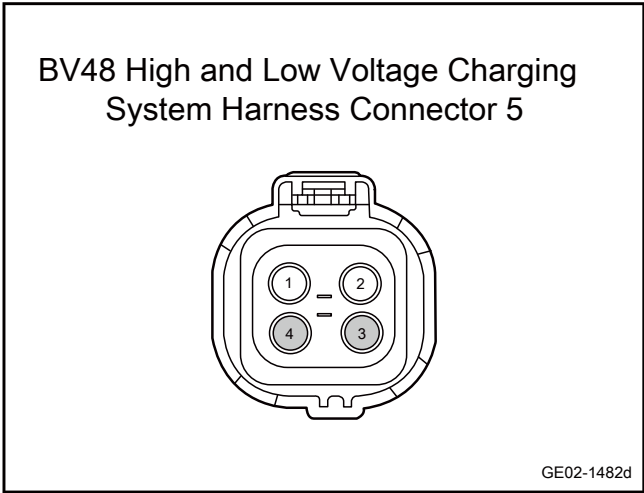
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the harness insulation between the electric compressor and the high and low voltage charging system.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the electric compressor harness connector BV30.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48(3)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV48(4)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the electric compressor.

- A. Replace the electric compressor, refer to [Electric Compressor Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7	Reprogram and reset the high-and-low voltage charging system.
--------	---

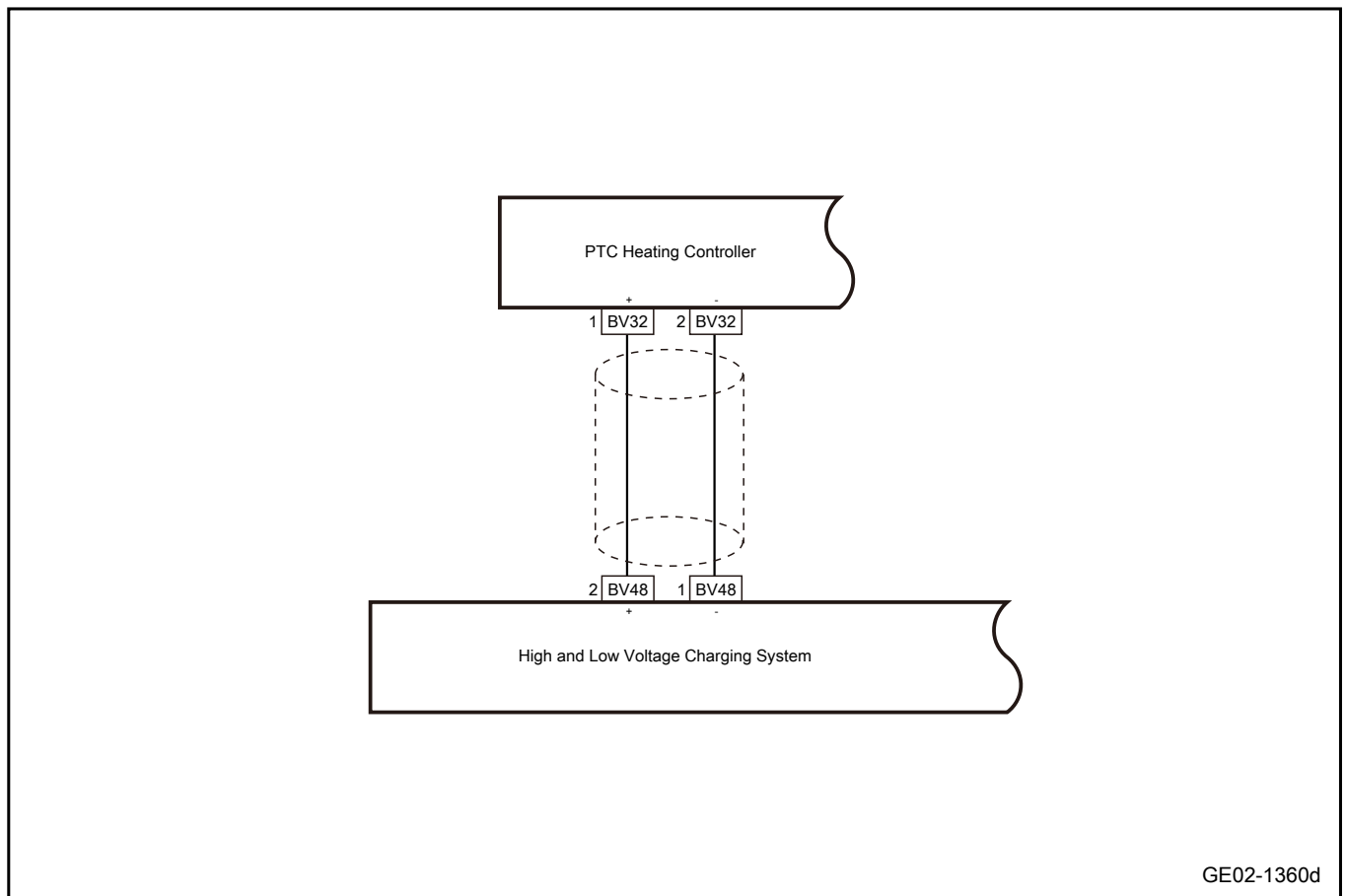
- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8	System is normal.
--------	-------------------

### 2.3.5.8 PTC heater circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

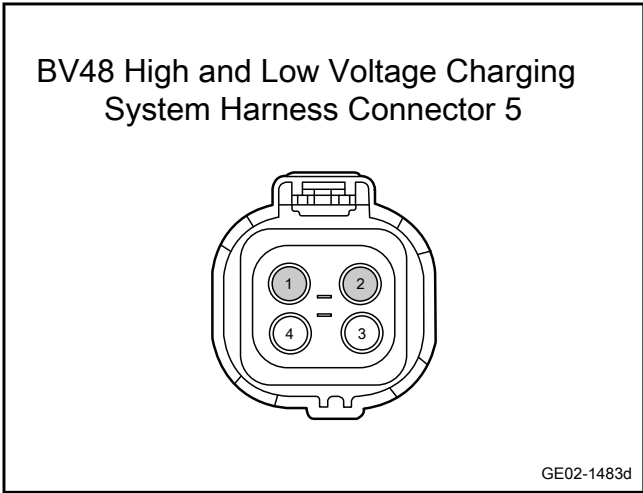
- A. Check PTC heating controller and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the PTC heating controller, high and low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

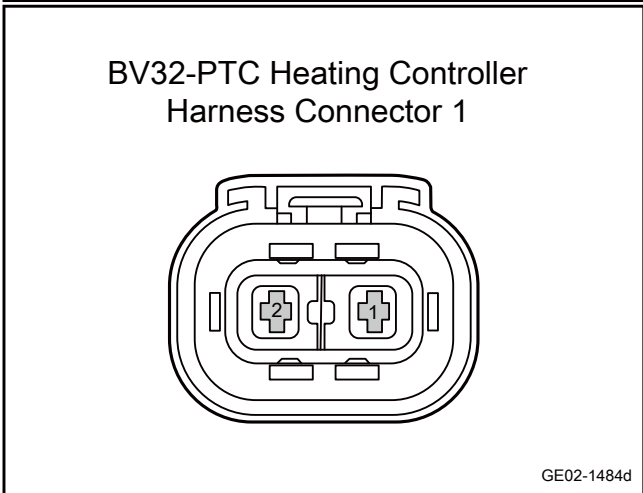
**Step 2** Check the harness between the PTC heating controller and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PTC heating controller harness connector BV32.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48(2)	BV32(1)	Standard resistance: less than 1Ω
BV48(1)	BV32(2)	

- E. Confirm whether the measured value meets the standard.

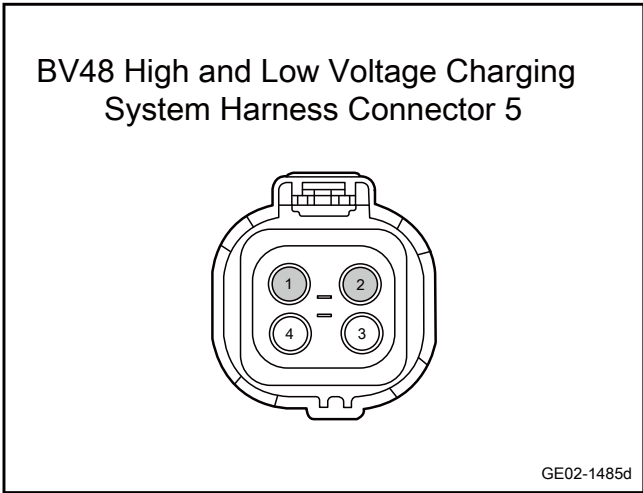


No

Repair or replace the harness.

Yes

**Step 3** Check the harness between the PTC heating controller and the high and low voltage charging system for a short circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PTC heating controller harness connector BV32.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Use a multimeter to measure each terminal according to the following table:

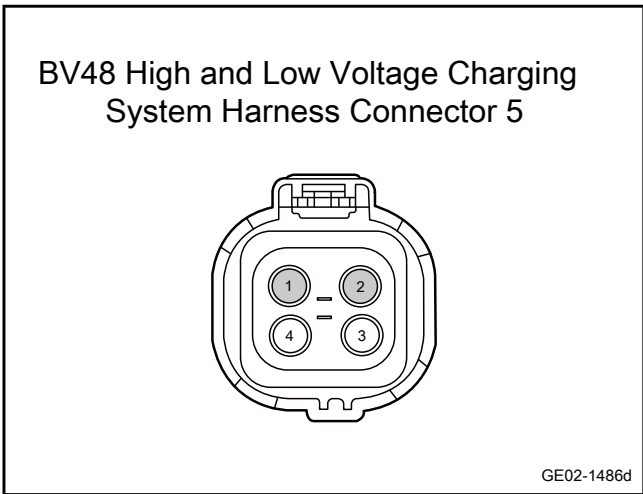
Measure terminal 1	Measure terminal 2	Standard value
BV48(2)	BV48(1)	Standard resistance: greater than 10kΩ

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** | Check the harness insulation between the PTC heating controller and the high and low voltage charging system.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PTC heating controller harness connector BV32.
- C. Disconnect the HV/LV charging system harness connector BV48.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48(2)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV48(1)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Replace the PTC heating controller.

- A. Replace the PTC heating controller, refer to the [PTC Heating Controller Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7 Reprogram and reset the high-and-low voltage charging system.

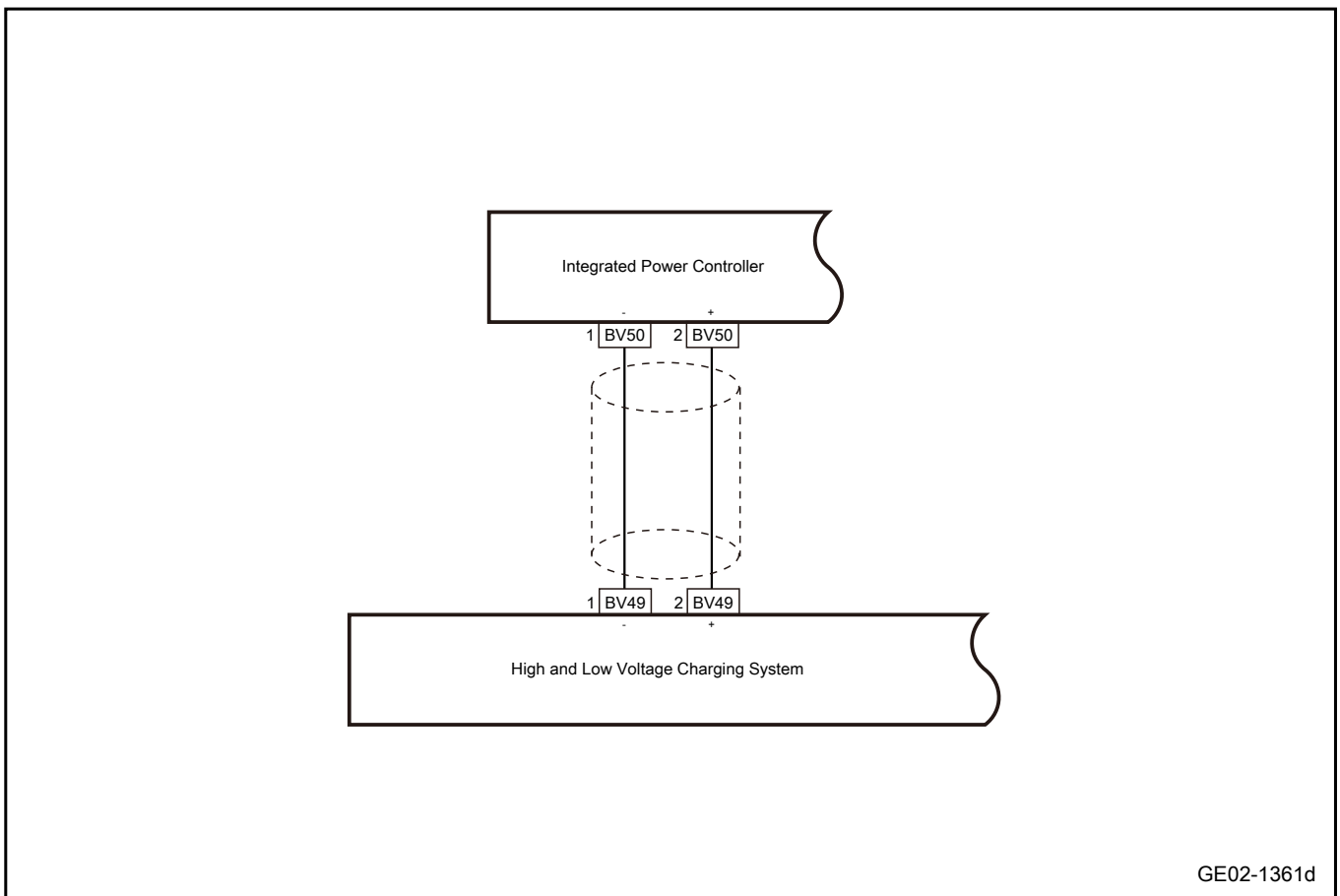
- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 System is normal.

### 2.3.5.9 Integrated power controller loop fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the integrated power controller and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the harness connectors of the integrated power controller and high and low voltage charging system for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

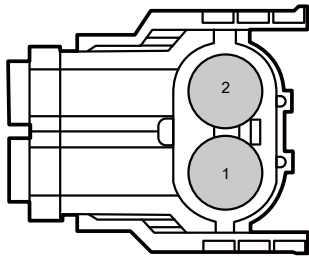
No

Repair or replace the faulty part.

Yes

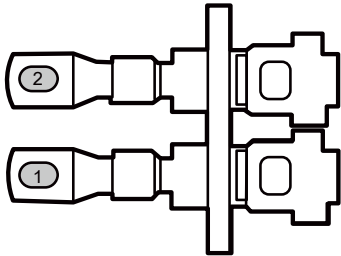
Step 2	Check the harness between the integrated power controller and the high and low voltage charging system for an open circuit.
--------	---

**BV49 High and Low Voltage Charging System Harness Connector 6**



GE02-1487d

**BV50 Integrated Power Controller Harness Connector 2**



GE02-1488d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the HV/LV charging system harness connector BV49.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	BV50(1)	Standard resistance: less than 1Ω
BV49(2)	BV50(2)	

- E. Confirm whether the measured value meets the standard.

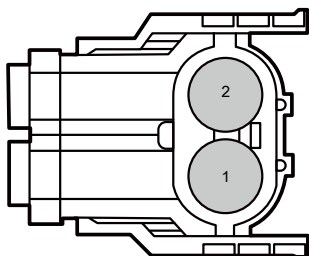
No

Repair or replace the harness.

Yes

**Step 3** Check the harness between the integrated power controller and the high and low voltage charging system for short circuit to each other.

**BV49 High and Low Voltage Charging System Harness Connector 6**



GE02-1489d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the HV/LV charging system harness connector BV49.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	BV49(2)	Standard resistance: greater than 10kΩ

- E. Confirm whether the measured value meets the standard.

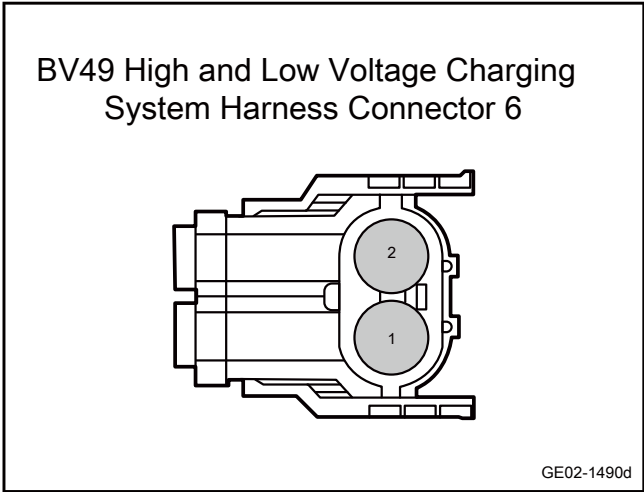


No

Repair or replace the harness.

Yes

**Step 4** Check the harness insulation between the integrated power controller and the high and low voltage charging system.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the HV/LV charging system harness connector BV49.
- D. Adjust the gear of the high voltage insulation tester to 1000V.
- E. Measure each terminal using the high voltage insulation tester according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV49(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the integrated power controller.

- A. Replace the integrated power controller, refer to [the Integrated Power Controller Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7	Reprogram and reset the high-and-low voltage charging system.
--------	---

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8	System is normal.
--------	-------------------

## 2.3.6 Removal and installation

### 2.3.6.1 Replacement of DC Bus Assembly

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

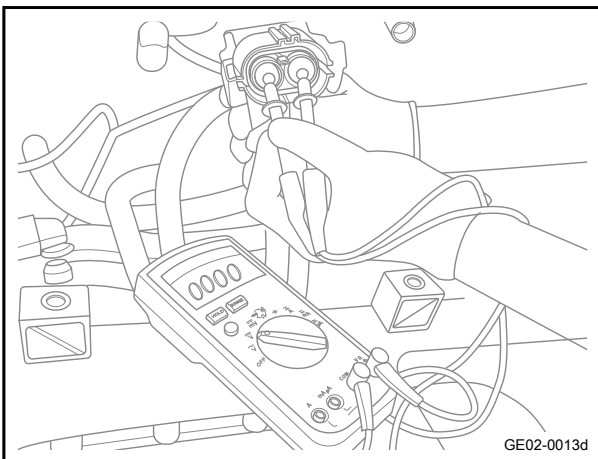
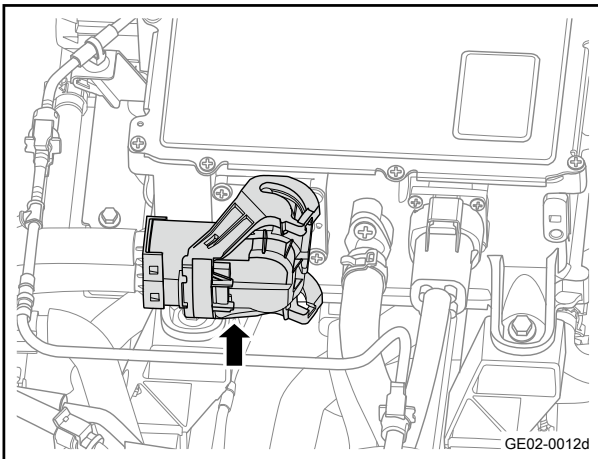
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the power harness cover assembly. See [Replacement of power harness cover assembly](#)
- 5 Disconnect the DC bus assembly harness connector (HV/LV charging system side).

#### Caution

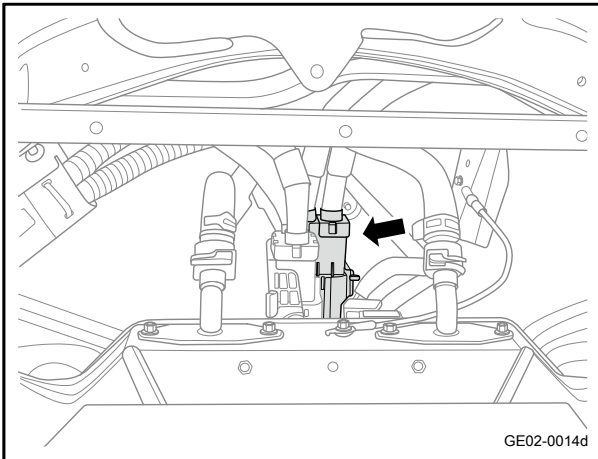
Insulation treatment is required; Avoid coolant splashing on the plug connection.



- 6 Use a multimeter to measure the bus voltage after standing still for 5 minutes.

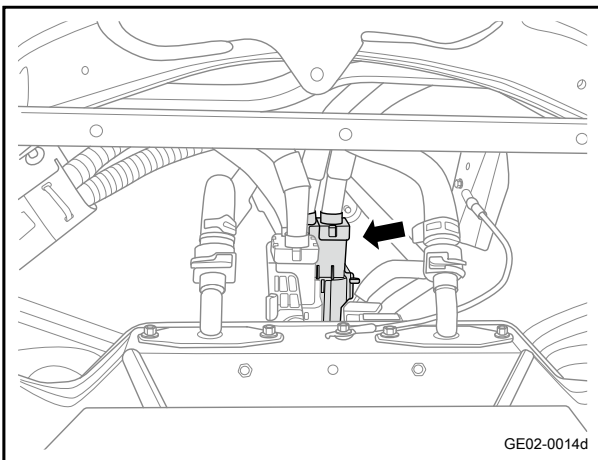
#### Caution

Subsequent steps can only be carried out if the bus voltage is lower than 36V.



- 7 Disconnect the DC bus assembly harness connector (the side of power battery).
- 8 Disengage the fixing buckle of the DC bus assembly and remove the DC bus assembly.

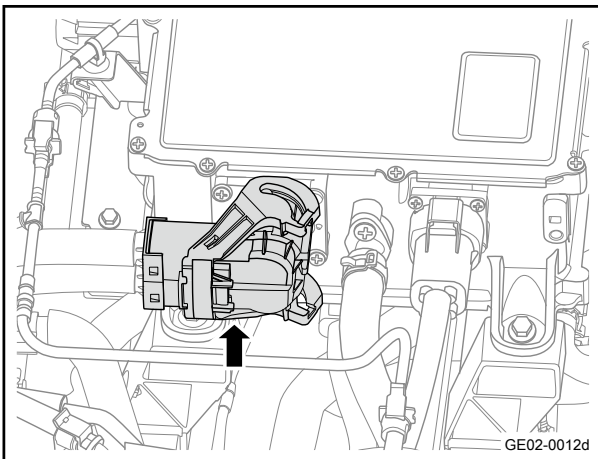
#### Installation procedure



- 1 Move the DC bus assembly to the installation position and install the wire harness buckle.
- 2 Connect the DC bus assembly harness connector (the side of power battery).

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.



- 3 Connect the DC bus assembly harness connector (HV/LV charging system side).

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 4 Install the power harness cover assembly.
- 5 Lower the vehicle.
- 6 Install the front cabin trim cover assembly.
- 7 Connect the negative cable of battery.

### 2.3.6.2 Replacement of Electric Compressor Harness Assembly

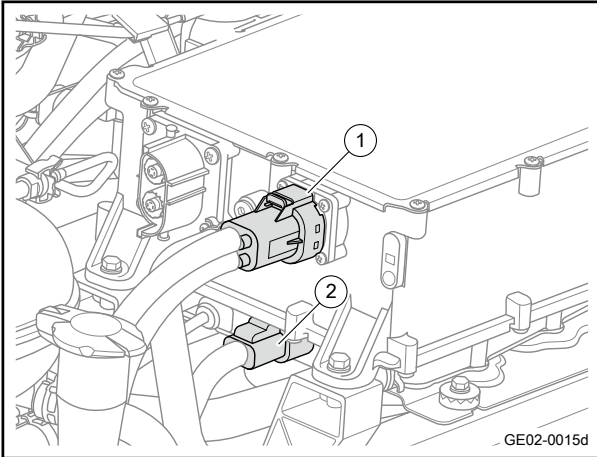
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

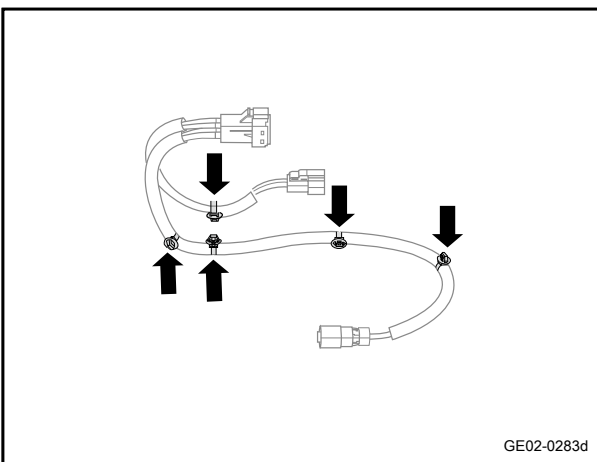
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

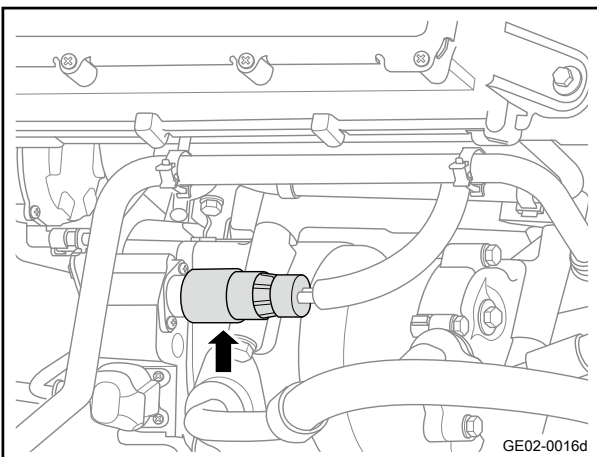
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly (HV/LV charging system side). Refer to the [Replacement of DC Bus Assembly](#).
- 4 Disconnect the harness connector 1 (high and low voltage charging system side) of power compressor harness assembly.
- 5 Disconnect the harness connector 2 (heater side) of power compressor harness assembly.

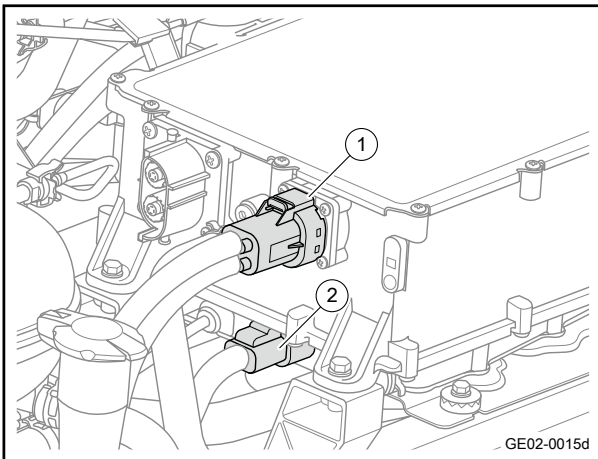
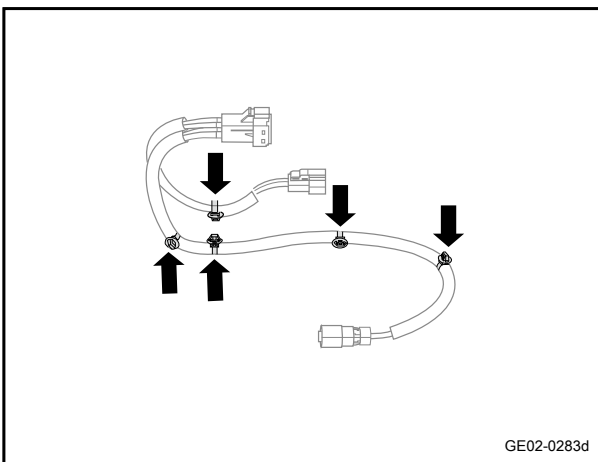
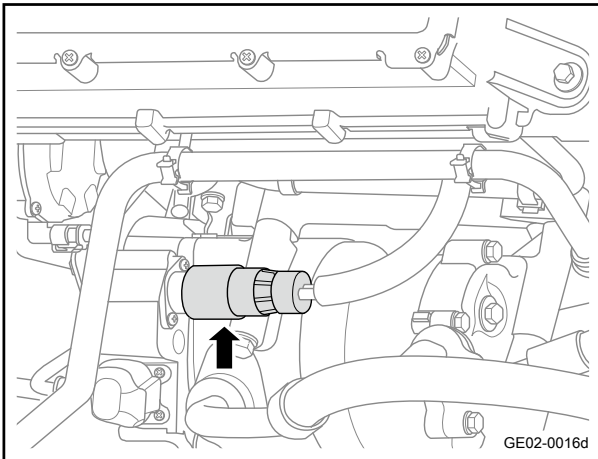


- 6 Remove the harness buckle on the electric compressor harness assembly.



- 7 Disconnect the harness connector (power compressor side) of power compressor harness assembly.
- 8 Remove the electric compressor harness assembly.





#### Installation procedure

- 1 Move the electric compressor harness assembly to the installation position.
- 2 Connect the harness connector (power compressor side) of power compressor harness assembly.

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 3 Install the harness bayonet on the electric compressor harness assembly.

- 4 Connect the harness connector 2 (heater side) of power compressor harness assembly.

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 5 Connect the harness connector 1 (high and low voltage charging system side) of power compressor harness assembly.

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 6 Connect the DC bus assembly.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

### 2.3.6.3 Replacement of PEU Harness Assembly

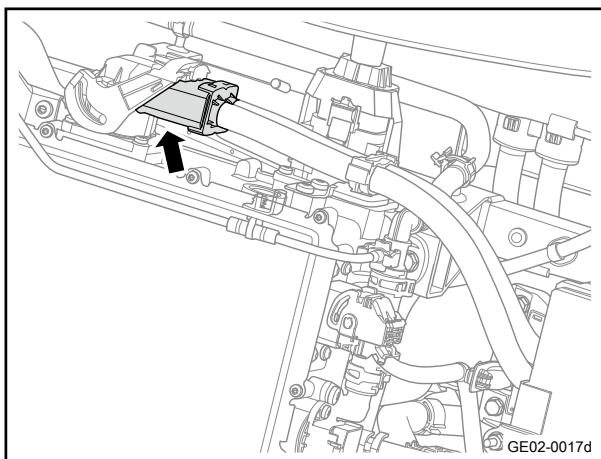
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

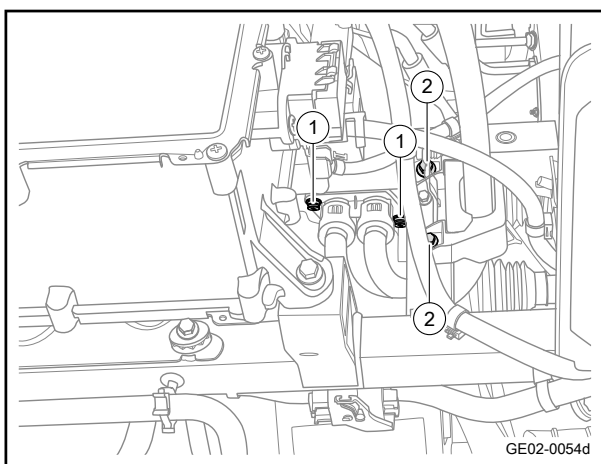
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

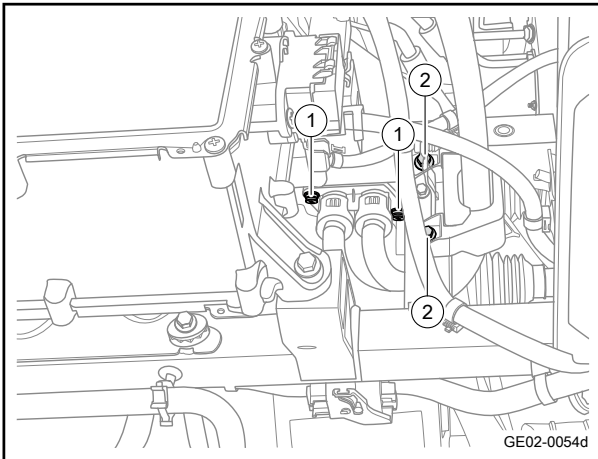
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Disconnect the harness connector (HLV charging system side) of PEU harness assembly .



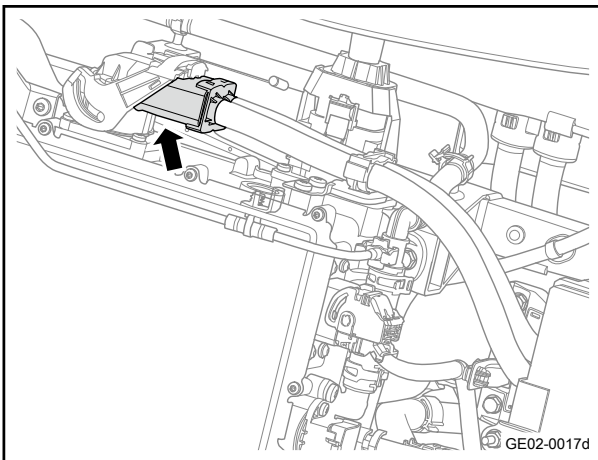
- 5 Remove the 2 fixing bolts 1 of the PEU harness assembly.
- 6 Remove the 2 fixing bolts 2 of the PEU wiring harness assembly bracket.
- 7 Remove the PEU harness assembly.



Installation procedure



- 1 Move the PEU wiring harness assembly to installation position.
- 2 Install the 2 fixing bolts 2 of the PEU harness assembly bracket.
- 3 Install the 2 fixing bolts 1 of the PEU harness assembly.



- 4 Connect the harness connector (HV/LV charging system side) of PEU harness assembly.

**Caution**

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 5 Install the DC bus assembly.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.



## 2.4 Electric drive system

### 2.4.1 Specification

#### 2.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (N·m)	British system (lb-ft)
Upper fixing bolts of left vibration isolation assembly	M12×50	117 - 143	86.3 - 105.5
Left fixing bolts of left vibration isolation assembly	M14×120	189 - 231	139.5 - 170.5
Upper fixing bolts of right vibration isolation assembly	M12×50	117 - 143	86.3 - 105.5
Right fixing bolts of right vibration isolation assembly	M14×120	189 - 231	139.5 - 170.5
Fixing bolt of left suspension bracket	M12×50	117 - 143	86.3 - 105.5
Fixing bolt of rear suspension bracket (front)	M12×50	117 - 143	86.3 - 105.5
Fixing bolt of rear suspension bracket (rear)	M14×120	220 - 260	162.4 - 191.9
Fixing bolt of driving motor controller	M8×25	16.2 - 19.8	12.0 - 14.6
Fixing bolt of driving motor controller	M8×35	16.2 - 19.8	12.0 - 14.6
Electronic oil pump fixing bolt	M6×25	7.2 - 8.8	5.3 - 6.4
Fixing bolt of vent cover plate	M6×10	7.2 - 8.8	5.3 - 6.4
Three-phase copper bar fixing bolt	M6×10	7.2 - 8.8	5.3 - 6.4
Reducer filling plug	-	30 - 39	22.1 - 28.8
Reducer drain plug	-	30 - 39	22.1 - 28.8
Electronic oil pump fixing bolt	M6×25	7.2 - 8.8	5.3 - 6.4
Oil cooler fixing bolts	M6×25	9 - 10	6.6 - 7.4
Fixing bolt of inverter to oil cooler water pipe bracket	M6×14	7.2 - 8.8	5.3 - 6.4
Fixing bolt of electronic water pump (20W)	M8×20	20 - 26	14.8 - 19.2
Intermediate shaft universal joint and mechanical steering gear fixing bolt	M8×36	36 - 42	26.6 - 31.0

Fastener name	Specification	Torque range	
		Metric system (N·m)	British system (lb-ft)
Fixing bolt of electronic selector and Auxiliary Instrument dashboard switch assembly	ST4.2×13	1.3 - 1.7	1 - 1.3
Accelerator pedal fixing bolt	M6×20	8.5 - 11.5	6.3 - 8.5

### 2.4.1.2 Parameters of electric drive system

Item	Specification	
	HP5SEE	LP5SEF
Rated power of drive motor (kw)	50	50
Driving motor peak power (kw)	150	150
Rated torque of driving motor (N·m)	135	135
Peak torque of driving motor (N·m)	310	310
Rated speed of driving motor (r/min)	3537	3537
Peak speed of driving motor (r/min)	15000	15000
Main reduction ratio of reducer	10.294:1	10.294:1
Type of battery	NCM and graphite	NCM and graphite
Rated voltage of battery pack (V)	268.8~417.6	285.6~443.7
Peak battery power (kw)	150	150
Rated battery power (kw)	70	70
Battery operating voltage range (V)	268.8~417.6	285.6~443.7
Battery capacity (Ah)	153	190

## 2.4.2 Description and operation

### 2.4.2.1 General

#### Features

The electric drive system assembly adopts an integrated three-in-one system, which consists of a motor, a reducer and a motor controller. The motor controller is arranged above the motor and the reducer. The motor and the reducer share a common shell, with a very high degree of integration from design to assembly.

Advantages of electric drive system assembly structure: small volume, light weight and low cost.

The electric drive system assembly mainly includes motor controller assembly, motor assembly, reducer assembly, oil pump assembly, water pipe, low-voltage wiring harness, bracket and other accessories.

### 2.4.3 How the system works

#### 2.4.3.1 System Working Principles

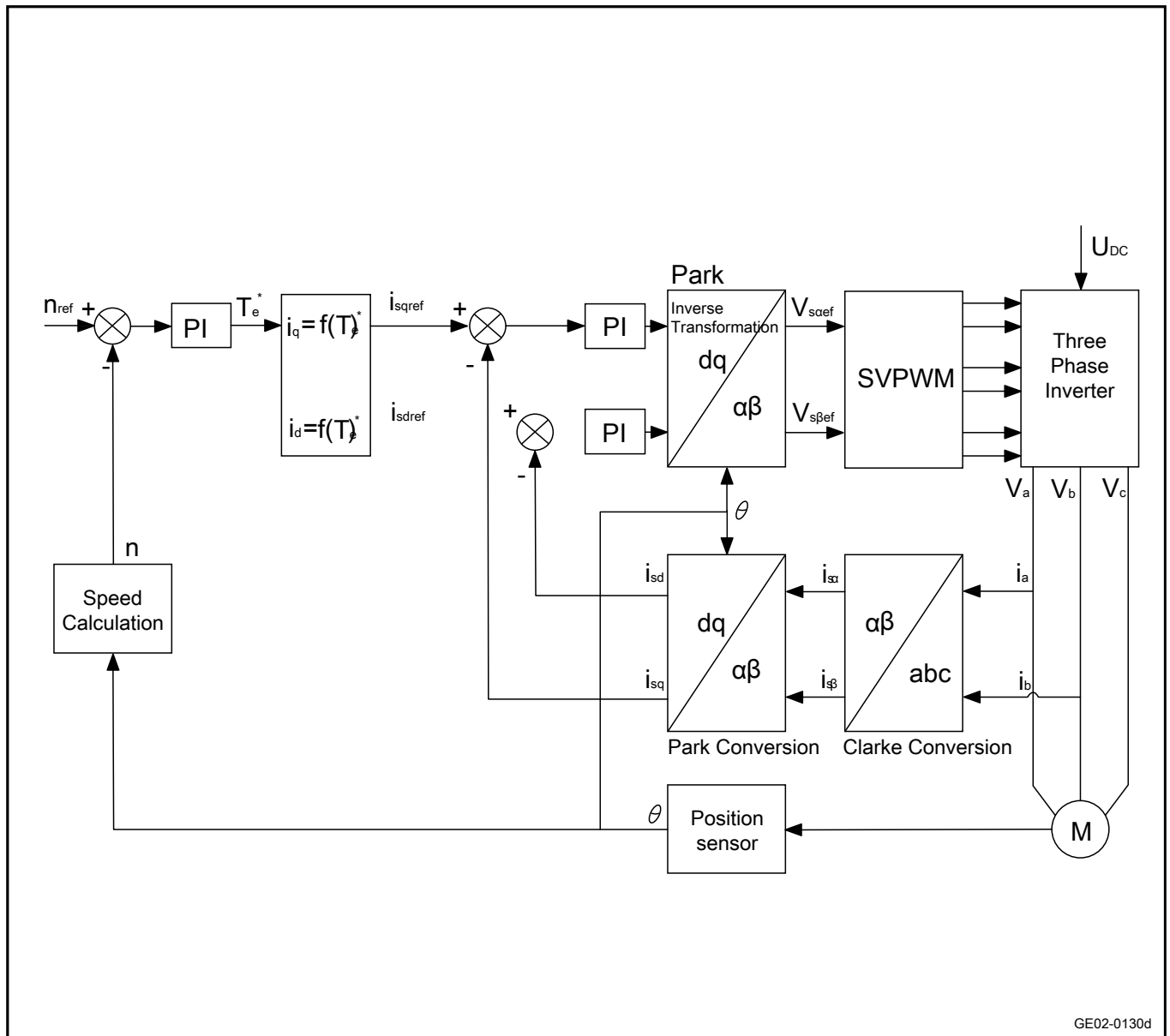
##### 1. Working Principle of Motor Controller

According to the detected motor speed and the input reference speed, the target torque is calculated by the speed regulator. The stator current reference input is obtained from the target torque of the motor by torque decoupling algorithm.

Stator phase currents  $i_a$  and  $i_b$  are detected by phase current detection circuit, and then converted into stator two-phase coordinate system by Clarke transform, and then converted into d-q rotating coordinate system by Park transform.

The current signals in the d-q coordinate system are compared with their reference inputs  $i_{sqref}$  and  $i_{sdref}$ , and the control quantities  $U_d$  and  $U_q$  are obtained by the current controller.

The control signal is then sent to SVPWM inverter through Park inverse transformation, thus obtaining the actual current of the three-phase symmetrical winding of the control stator.

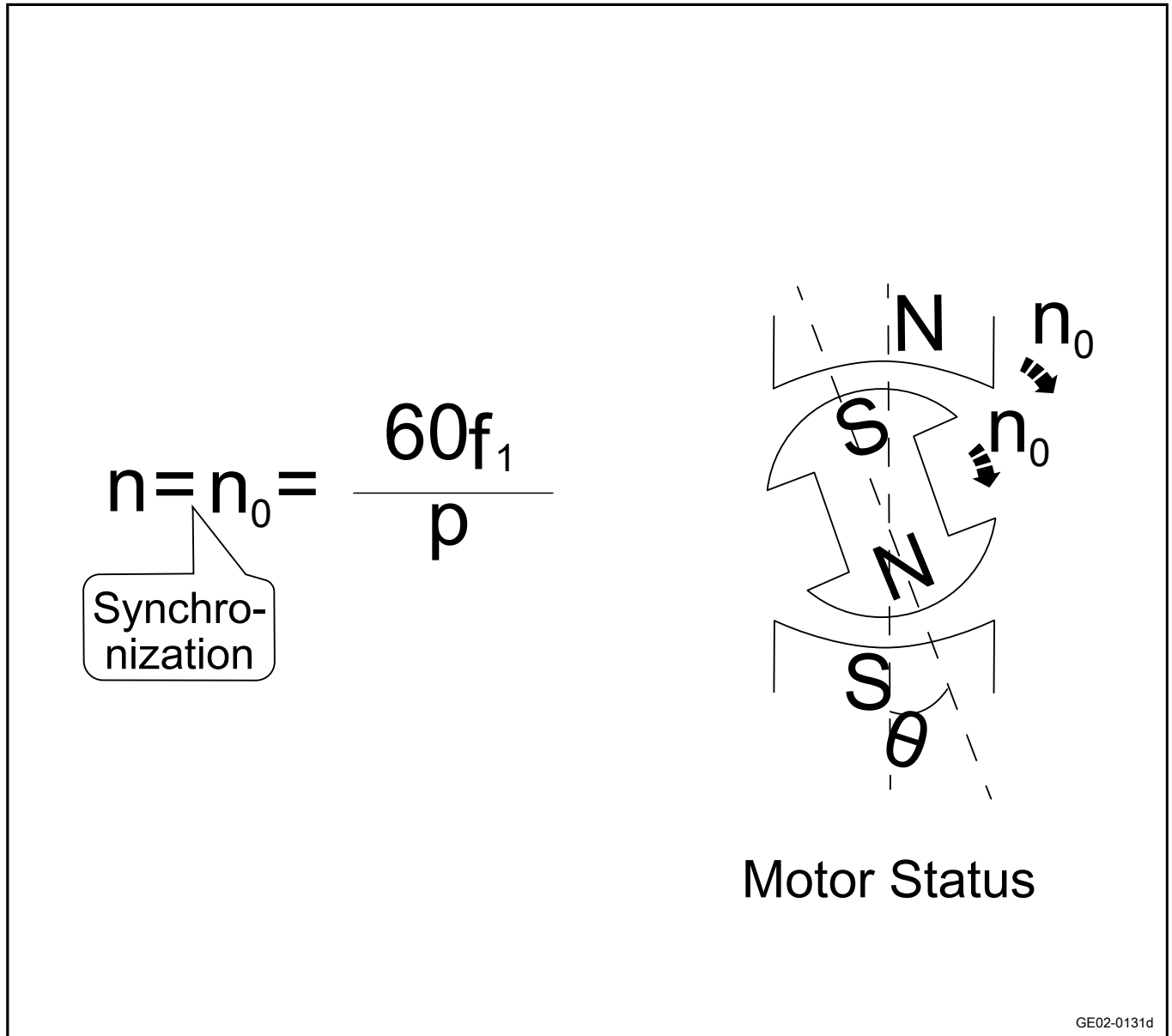


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## 2. Working Principle of Permanent Magnet Synchronous Motor

A rotating magnetic field is generated by connecting three-phase symmetrical alternating current into the three-phase winding of the stator of the motor.

According to the principle that the opposite magnetic poles attract each other and the same magnetic poles repel each other, regardless of the initial relative positions of the stator rotating magnetic poles and the permanent magnet magnetic poles, the stator rotating magnetic poles will always drag the rotor to rotate synchronously due to magnetic force.

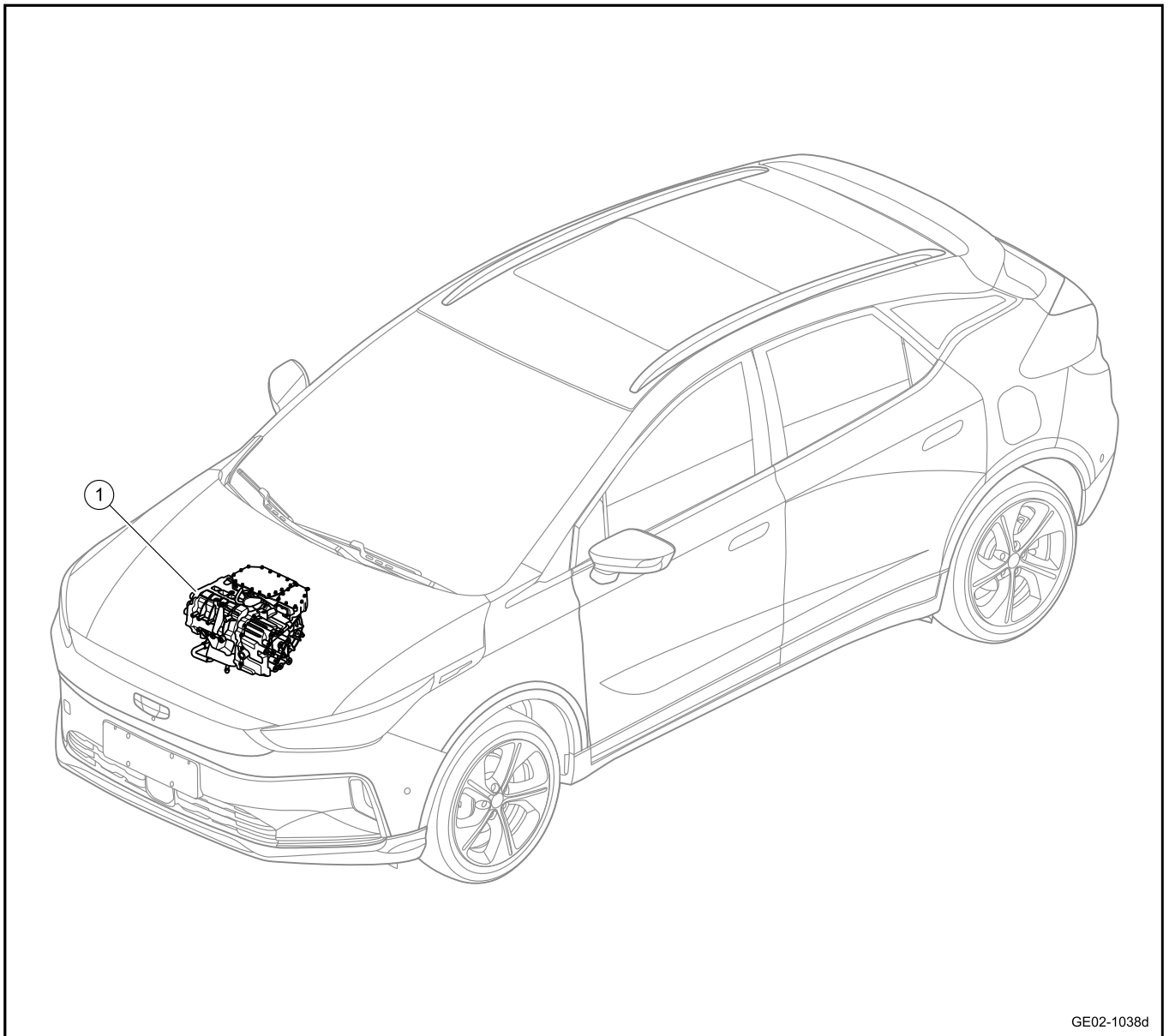


## 3. Working Principle of Reducer

The speed-torque characteristic of the motor is very suitable for the requirements of automobile drive. In pure electric mode, the drive system of the automobile no longer needs a multi-gear transmission, and the structure of the drive system is greatly simplified. The reducer is between the drive motor and the drive half shaft, and the power output shaft of the drive motor is coaxial with the input shaft of the reducer.

## 2.4.4 Part location

### 2.4.4.1 Part Position

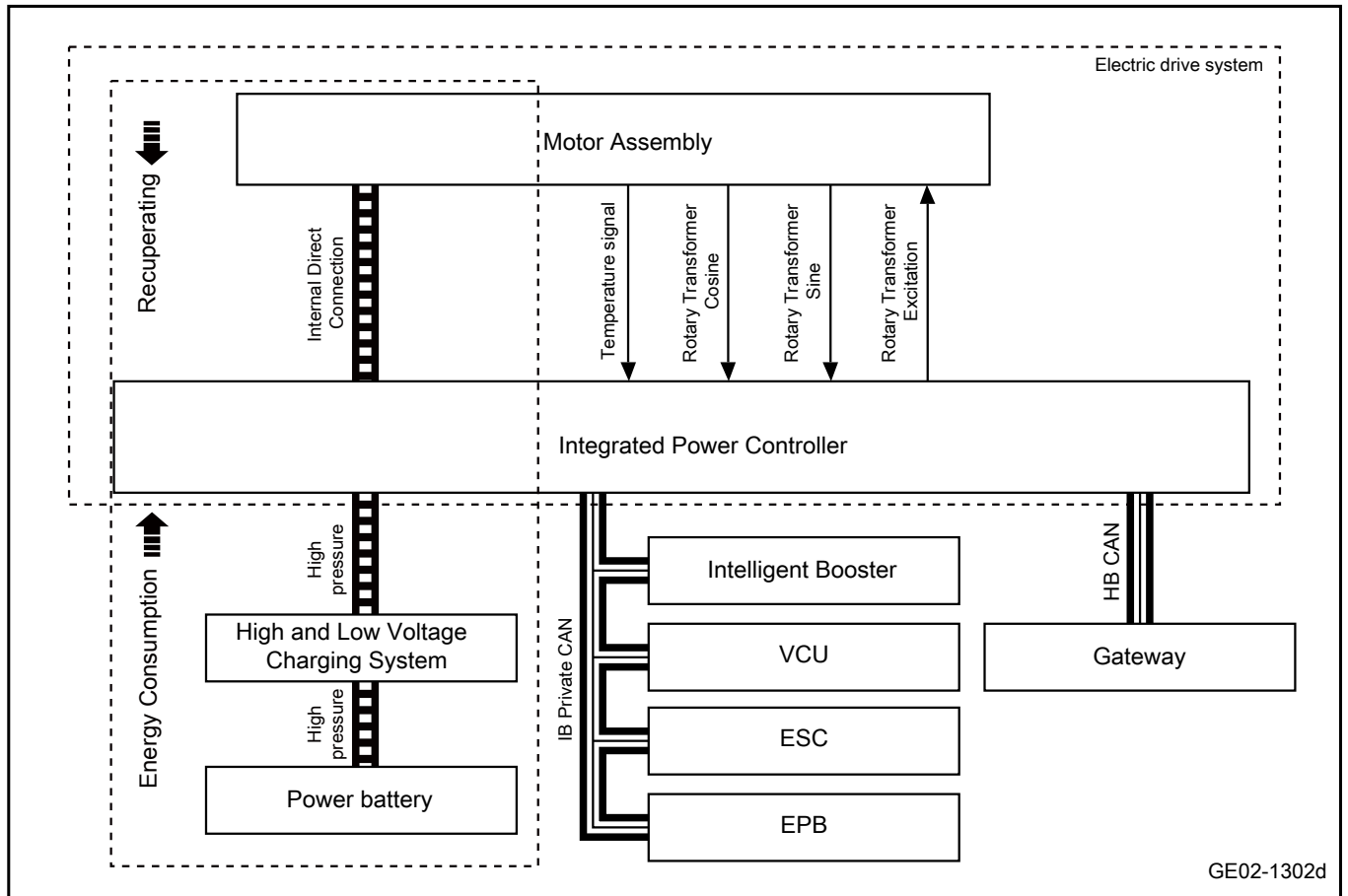


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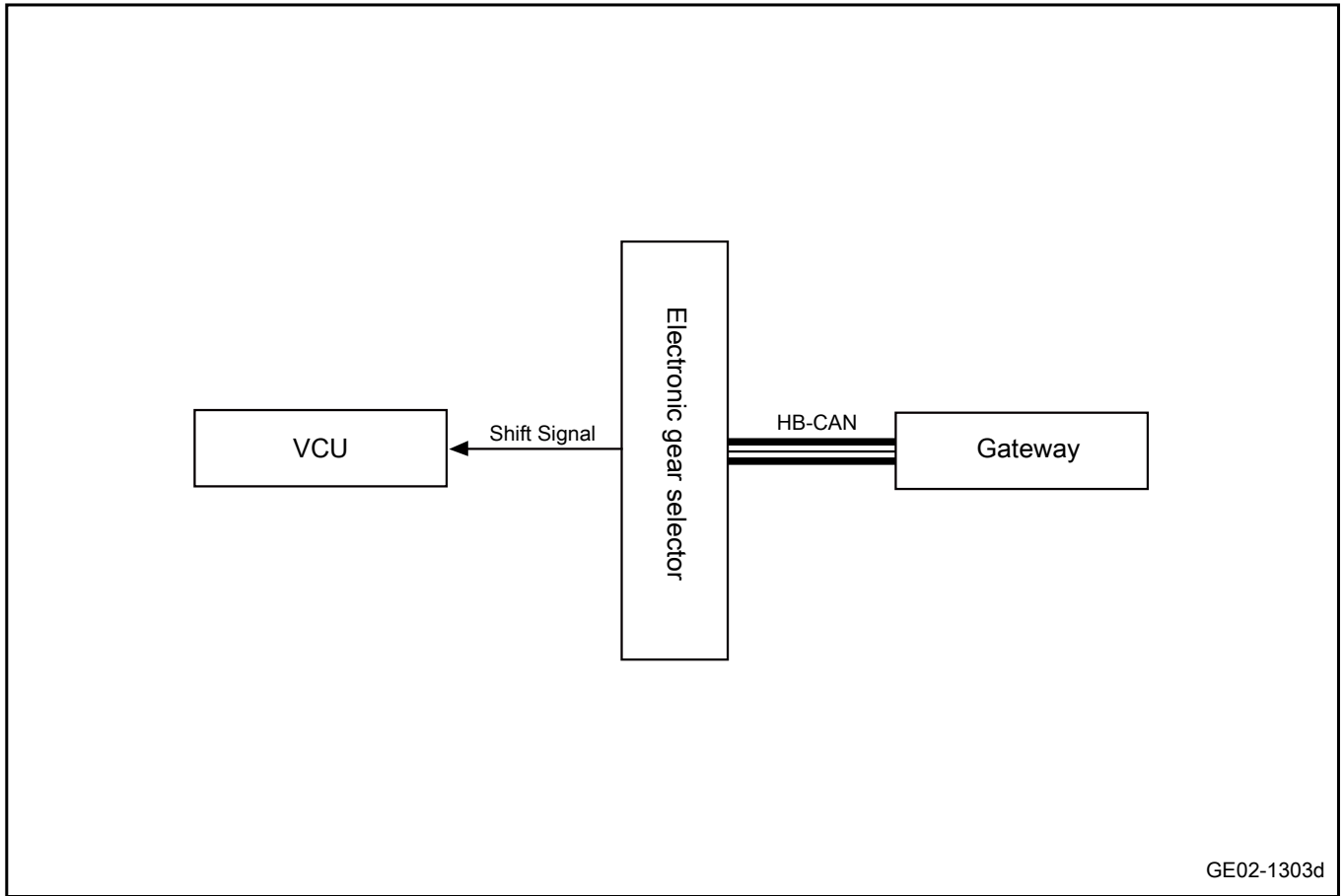
1. Electric drive system

2.4.5 Electrical block diagram

2.4.5.1 Electrical schematic diagram of electric motor controller System



2.4.5.2 Electrical schematic diagram of digital gear selector





## 2.4.6 Diagnostic information and steps

### 2.4.6.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

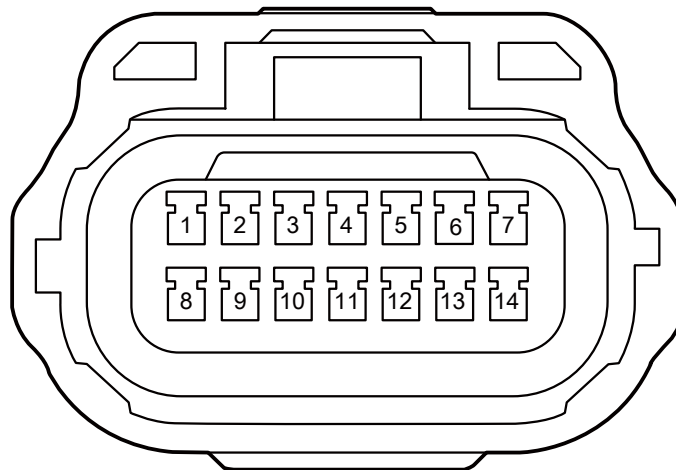
### 2.4.6.2 Routine inspection

1. Check after-sales installations that may affect the integrated power controller.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the integrated power controller.
4. Check the high voltage harness connector of the integrated power controller for looseness and signs of rust inside.

### 2.4.6.3 Terminal List

#### BV45 Integrated Power Controller Harness Connector 1

### BV45 Integrated Power Controller Harness Connector

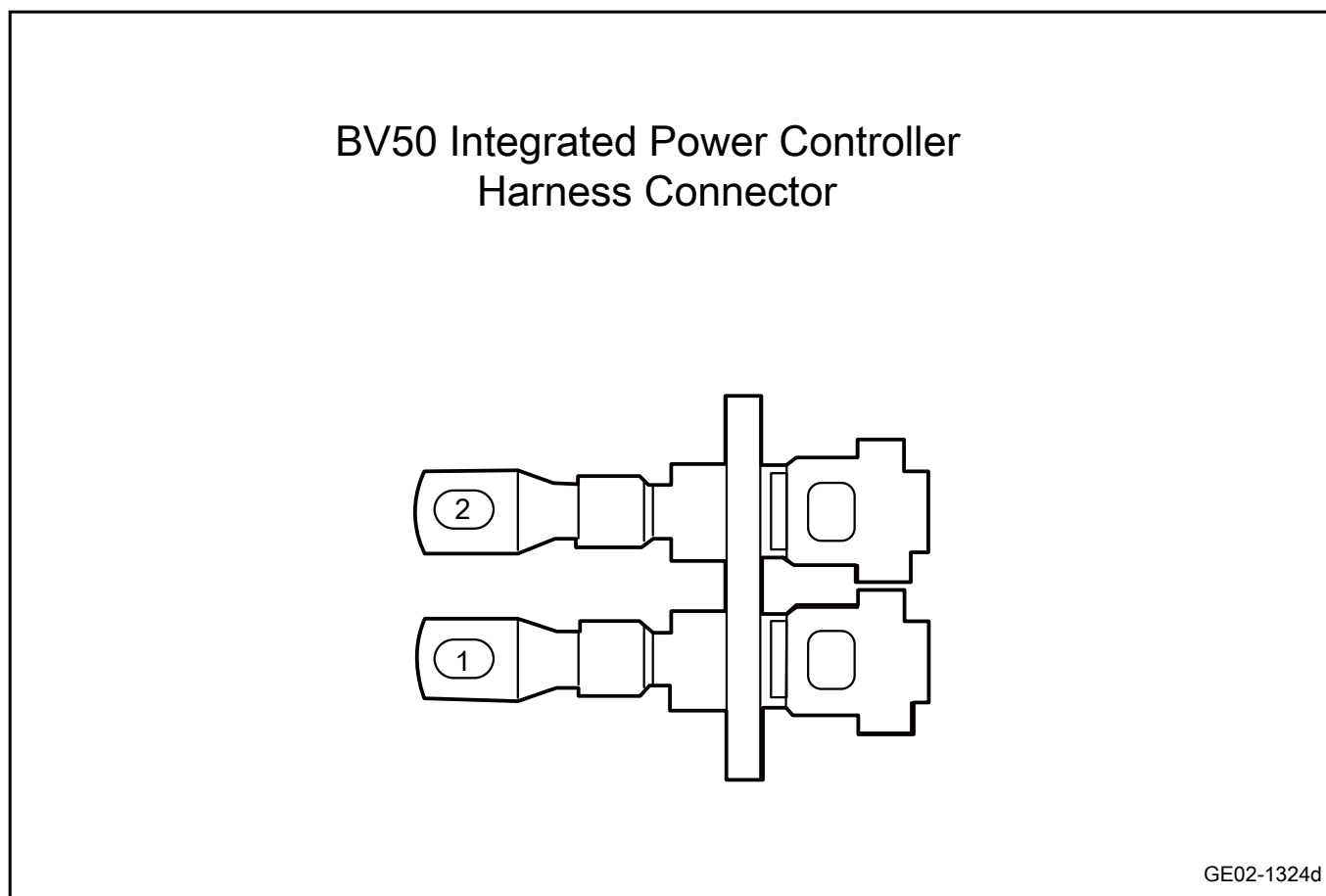


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Terminal No.	Terminal name	Terminal description
1	B+Power supply	Motor controller module battery power supply
2	Ground connection	Motor controller module ground circuit
3	-	-
4	-	-

Terminal No.	Terminal name	Terminal description
5	B+Power supply	Motor controller module battery power supply
6	Private CAN-H	Private CAN high line
7	HB CAN-H	Hybrid CAN high line
8	B+Power supply	Motor controller module battery power supply
9	Ground connection	Motor controller module ground circuit
10	-	-
11	IG1 power supply	Motor controller module ACC
12	Ground connection	Motor controller module ground circuit
13	Private CAN-L	Private CAN low line
14	HB CAN-L	Hybrid CAN low line

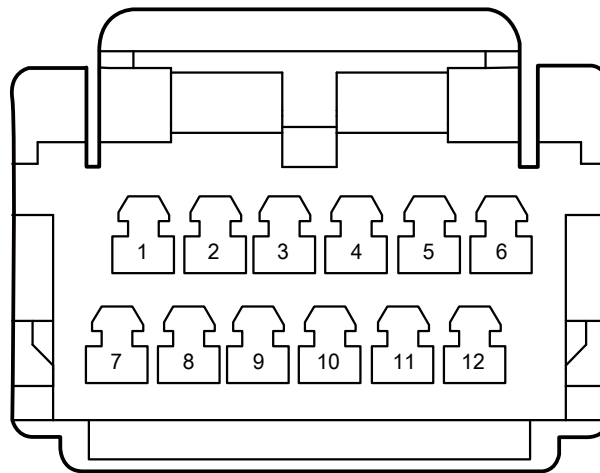
**BV50 Integrated Power Controller Harness Connector 2**



Terminal No.	Terminal name	Terminal description
1	Integrated power controller negative	High voltage negative input line of integrated power controller
2	Integrated power controller positive	High voltage positive input line of integrated power controller

IP185 electric gear selector harness connector

IP185 Electronic shifter harness connector



GE02-1325d

Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	B+Power supply	Electronic shifter battery power supply
4	Ground connection	Electronic shifter ground circuit
5	IG1 power supply	Electronic shifter ACC\ ON\ START power supply
6	-	-
7	-	-
8	-	-
9	Gear signal	Gear signal output
10	-	-
11	HB CAN-L	Hybrid CAN low line
12	HB CAN-H	Hybrid CAN high line

2.4.6.4 Fault symptom table

Symptom	Suspected parts	Measures
Integrated Power Controller Power Fault	1. Battery	Refer to the <a href="#">Integrated Power Controller Power Fault</a>
	2. Fuse	
	3. Circuit	
	3. Integrated power controller	

Symptom	Suspected parts	Measures
Communication fault of integrated power controller	1. Gateway	Refer to the <a href="#">Communication Fault of Integrated Power Controller</a>
	2. Integrated power controller	
	3. Circuit	
Internal Fault of Integrated Power Controller Loop	1. Integrated power controller	Refer to the <a href="#">Internal Fault of Integrated Power Controller Loop</a>
Electronic shifter power supply fault	1. Harness	Refer to the <a href="#">Electronic Shifter Power Supply Fault</a>
	2. Electronic shifter	
	3. Fuse	
Electronic shifter internal fault	1. Electronic shifter	Refer to the <a href="#">Electronic Shifter Internal Fault</a>
Electronic Shifter Communication Fault	1. Electronic shifter	Refer to the <a href="#">Electronic Shifter Communication Fault</a>
	2. CAN bus	

### 2.4.6.5 List of Diagnostic Trouble Codes (DTC)

Integrated power controller

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B1103	IPU (Integrated Power Controller) MCU core or peripheral fault	Refer to the <a href="#">Internal Fault of Integrated Power Controller Loop</a>
P1B102E	IPU (Integrated Power Controller) MCU data zone fault	
P1B102F	IPU (Integrated Power Controller) MCU data zone fault	
P1B108D	IPU (Integrated Power Controller) anti-theft verification result error	
P1B1053	Overspeed fault of driving motor	
P1B1105	IPU (Integrated Power Controller) IGBT driving circuit fault	
P1B1000	IPU (Integrated Power Controller) active discharge timeout	
P1B1127	IPU (Integrated Power Controller) internal power fault	
P1B112D	IPU (Integrated Power Controller) IGBT fault	
P1B1136	Control unit circuit fault on IPU (Integrated Power Controller) MCU board	
P1B1049	Undesired torque occurs in the driving motor	
P1B1050	Driving motor output torque deviation is too large	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B106B	IPU (Integrated Power Controller) cooled water level 1 or level 2 overtemperature fault	
P1B1077	IPU (Integrated Power Controller) IGBT module level 1 or level 2 overtemperature fault	
P1B6085	Crash signal Vehicle Crash system protection	
P1B7700	IPU (Integrated Power Controller) two-phase and above current sensor fault	
P1B7898	IPU (Integrated Power Controller) bus capacitor level 1 or level 2 overtemperature fault	
P1B794B	IPU (Integrated Power Controller) control panel ambient temperature overtemperature	
P1B7A29	FLT (IGBT Fault Signal) error when IPU (Integrated Power Controller) IGBT driving power ON	
P1B7B29	FLT (IGBT Fault) signal error when IPU (Integrated Power Controller) IGBT driving power OFF	
P1B7C00	The IPU (Integrated Power Controller) FLT (IGBT Error) control signal cannot turn off the IGBT	
P1B7D00	The IPU (Integrated Power Controller) PWM control signal cannot turn off the IGBT	
P1B8012	IPU (Integrated Power Controller) low voltage sensor short circuit to VCC (Power Positive)	
P1B8011	IPU (Integrated Power Controller) low voltage sensor short circuit to GND (Power Ground)	
P1B8115	IPU (Integrated Power Controller) control panel ambient temperature sensor short circuit to VCC (supply positive) or sensor open circuit	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B8111	IPU (Integrated Power Controller) control panel ambient temperature sensor short circuit to GND (Power Ground)	
P1B8215	IPU (Integrated Power Controller) bus capacitance temperature sensor short circuit to VCC (Power Positive) or sensor open circuit	
P1B8211	IPU (Integrated Power Controller) bus capacitance temperature sensor short circuit to GND (Power Ground)	
P1B8300	IPU (Integrated Power Controller) active discharge fault	
P1B8493	Driving motor oil pump start fault	
P1B8492	Driving motor oil pump operation fault	
U130055	F101 not configured	
P1B7200	F101 configured value out of range	
P1BFD00	KL15 status does not match VCU torque control request	
P1B108E	IPU (Integrated Power Controller) key not configured	
P1B108F	The IPU (Integrated Power Controller) did not receive a reply frame	
P1B103C	IPU (Integrated Power Controller) U-phase current sensor zero drift fault	
P1B1107	PU (Integrated Power Controller) U-phase current sensor open circuit	
P1B106E	IPU (Integrated Power Controller) U-phase IGBT temperature sensor short circuit to VCC (Power Positive)	
P1B106F	IPU (Integrated Power Controller) U-phase IGBT temperature sensor short circuit to GND (Power Ground)	
P1B103A	IPU (Integrated Power Controller) U-phase Current Overcurrent	
P1B7400	IPU (Integrated Power Controller) U-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B1041	IPU (Integrated Power Controller) V-phase current sensor zero drift fault	
P1B1108	IPU (Integrated Power Controller) V-phase current sensor open circuit	
P1B1071	IPU (Integrated Power Controller) V-phase IGBT temperature sensor short circuit to VCC (Power Positive)	
P1B1072	IPU (Integrated Power Controller) V-phase IGBT temperature sensor short circuit to GND (Power Ground)	
P1B103F	IPU (Integrated Power Controller) V-phase current overcurrent	
P1B7500	IPU (Integrated Power Controller) V-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)	
P1B1045	Zero drift fault of IPU (Integrated Power Controller) W-phase current sensor	
P1B1109	IPU (Integrated Power Controller) W-phase current sensor open circuit	
P1B1074	IPU (Integrated Power Controller) W-phase IGBT temperature sensor short circuit to VCC (Power Positive)	
P1B1075	IPU (Integrated Power Controller) W-phase IGBT temperature sensor short circuit to GND (Power Ground)	
P1B1043	IPU (Integrated Power Controller) W-phase current overcurrent	
P1B7600	IPU (Integrated Power Controller) W-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)	
P1B1038	IPU (Integrated Power Controller) U/V/W-phase hardware overcurrent fault	
P1B103D	The sum of three-phase currents of IPU (Integrated Power Controller) is too large	
P1B107F	IPU (Integrated Power Controller) DC bus overvoltage	
P1B107E	IPU (Integrated Power Controller) DC bus overvoltage (hardware detection)	

Diagnostic Trouble Code	Description	Fault location/elimination method	
P1B7F12	IPU (Integrated Power Controller) DC bus voltage sensor short circuit to VCC (Power Positive)		
P1B7F11	IPU (Integrated Power Controller) DC bus voltage sensor short circuit to GND (Power Ground)		
P1B1152	IPU (Integrated Power Controller) resolver signal fault		
P1B1078	Driving motor temperature sensor 1 short circuit to VCC (Power Positive) or sensor open circuit		
P1B1079	Driving motor motor temperature sensor 1 short circuit to GND (Power Ground)		
P1B117A	Driving motor temperature sensor 2 short circuit to VCC (Power Positive) or sensor open circuit		
P1B117B	Driving motor temperature sensor 2 short circuit to GND (Power Ground)		
P1B107A	Driving motor level 1 or level 2 overtemperature fault		
U300617	IPU (Integrated Power Controller) detects too high battery voltage		Refer to the <a href="#">Integrated Power Controller Power Fault</a>
U300616	IPU (Integrated Power Controller) detects too low battery voltage		
P1B1080	IPU (Integrated Power Controller) IGBT driving circuit power fault		
P1B1082	Power Failure of IPU (Integrated Power Controller) IGBT logic and current sensor		
P1B1176	IPU (Integrated Power Controller) CAN power supply fault		
P1B1058	VCU (ID0x0A0, ID0x160, ID0x161) message data error	Refer to the <a href="#">Communication Fault of Integrated Power Controller</a>	
U24A883	VCU (ID 0x162) message data error		
U241283	ESC (ID 0x062, ID 0x125) message error data error		
U247283	BMS (ID 0x0B0, ID 0x178) message data error		
U007300	IPU (Integrated Power Controller) CAN disabled		



Diagnostic Trouble Code	Description	Fault location/elimination method
U140481	VCU (ID 0x0A0, ID 0x161) communication error (checksum, alivecounter error)	
U111487	VCU (ID0x0A0, ID0x160, 0x161) communication lost	
U029300	Communication with VCU(0x162) is lost.	
U011287	BMS (ID0x0B0, 0x178) communication lost	
U041681	ESC (ID 0x062, ID 0x125) communication error (checksum, alivecounter error)	
U012287	ESC (ID0x062, ID0x125) communication lost	
U015587	IPK (ID0x3F0, ID0x3F1) communication lost	
U045281	ACU (ID 0x380) communication error (checksum, alivecounter Error)	
U015187	Communication with ACU(ID0x380) is lost.	

## Electronic shifter

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	System voltage is too low	Refer to the <a href="#">Electronic Shifter Power Supply Fault</a>
U300617	Too high system voltage	
U007300	CAN bus off	Refer to the <a href="#">Electronic Shifter Communication Fault</a>
U111487	Loss of communication with complete vehicle controller	
U014687	Communication with GW is lost	
P168200	Hall sensor fault	Refer to the <a href="#">Electronic Shifter Internal Fault</a>
P168371	Ball head gear P key is caught	
P16861C	Panel LED circuit fault	
U100044	RAM fault	
U100145	Flash ROM fault	
U100347	Watchdog fault	

## 2.4.6.6 Diagnosis system

## 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 2.4.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 2.4.6.8 Data stream list

#### IPU

Serial No.	DID description	Physical value range	Unit
1	12V battery voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Feedback: For snapshot, only one set is supported for storage	0-999999	Km
4	Real time	0-60	Second
5	Real time	0-60	Minute
6	Real time	0-24	Hour
7	Real time	0-30	Day
8	Real time	0-12	Year
9	Real time	-	Year
10	Coolant flow rate	0-51.5	L/Min
11	CIDD coolant temperature	-40-214	°C
12	A-phase instantaneous current	-753-753	A

Serial No.	DID description	Physical value range	Unit
13	B-phase instantaneous current	-753-753	A
14	B-phase instantaneous current	-753-753	A
15	IGBT switching tube status	-	-
16	Voltage of high-voltage battery	0-600	V
17	Body temperature of electric motor	-40-250	°C
18	Rotational speed of electric motor	-20000-20000	rpm
19	Operating mode of electric motor	0-7	-
20	VCU Request Motor Mode	0-7	-
21	IPU Controller Temperature	-40-250	°C
22	Three-phase current rms	0-800	A
23	Requested torque	-1200-1200	NM
24	DC bus current value	-1024-1022	A
25	Electric motor torque	-1200-1200	NM
26	Maximum limit of electric motor power	0-511	KW
27	Minimum limit of electric motor power	-511-0	KW
28	High voltage bus voltage from BMS	0-600	V
29	IPU detected high voltage bus voltage	0-511	V

## EGSM

Serial No.	DID description	Physical value range	Unit
1	ECU voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Fault times	0-255	time
4	The first fault mileage	0-999999	Km
5	The latest fault mileage	0-999999	Km
6	DTC confirmed cycle counter	0-255	-

## 2.4.6.9 Integrated Power Controller Power Fault

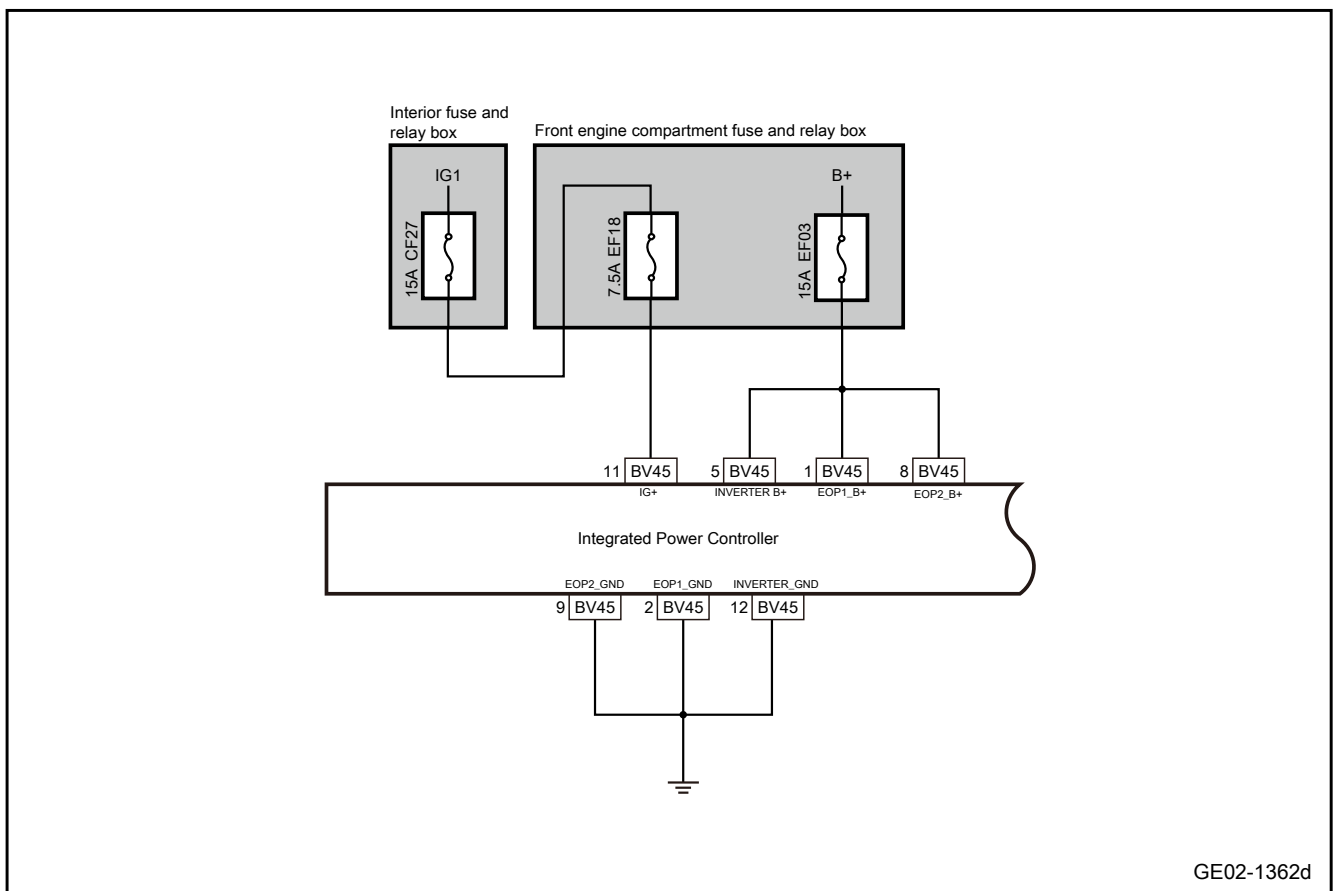
1. DTC description:

Diagnostic Trouble Code	Description
U300617	IPU (Integrated Power Controller) detects too high battery voltage
U300616	IPU (Integrated Power Controller) detects too low battery voltage
P1B1080	IPU (Integrated Power Controller) IGBT driving circuit power fault
P1B1082	Power Failure of IPU (Integrated Power Controller) IGBT logic and current sensor
P1B1176	IPU (Integrated Power Controller) CAN power supply fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	$KL30 \geq 17.1V$	Low voltage sensor fault not detected	1. Battery 2. Circuit 3. Fuse 4. Integrated power controller
U300616	$KL30 \leq 7.8V$		
P1B1080	Flyback voltage $< 17.53V$ or $> 24.12V$	-	
P1B1082	Sensor supply voltage $\leq 4.74V$ or $\geq 5.26V$		
P1B1176	CAN supply voltage $\leq 4.72V$ or $\geq 5.29V$		

3. Schematic circuit diagram:



GE02-1362d

## 4. Diagnosis steps

Step 1	Primary check.
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- A. Check the integrated power controller for signs of damage, distortion, stains, loosening, etc.
- B. Check the ntegrated power controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

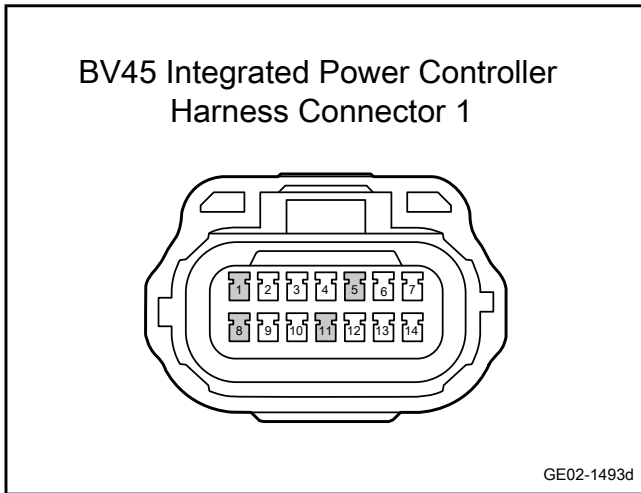
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF27 and check whether the fuse CF27 is blown.  
Rated fuse capacity: 15A
- C. Pull out the fuse EF03 of the front engine bay. Check whether the fuse EF03 is blown.  
Rated fuse capacity: 15A
- D. Pull out the fuse EF18 of the front engine bay. Check whether the fuse EF18 is blown.  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check whether the integrated power controller power supply circuit is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the integrated power controller harness connector BV45.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

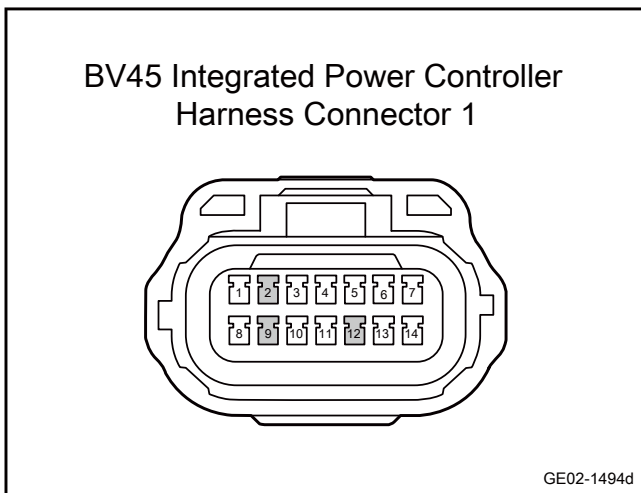
Measure terminal 1	Measure terminal 2	Standard value
BV45(1)	Vehicle body is grounded.	Standard voltage: 11-14V
BV45(5)		
BV45(8)		
BV45(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check the integrated power controller ground circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the integrated power controller harness connector BV45.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV45(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
BV45(9)		
BV45(12)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the integrated power controller.

- A. Replace the integrated power controller, refer to [the Integrated Power Controller Replacement](#)

Next Step

**Step 7** Re-program and set the integrated power controller.

- A. Re-program and set the integrated power controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 9** System is normal.

### 2.4.6.10 Internal Fault of Integrated Power Controller Loop

1. DTC description:

DTC	Trouble description
P1B1103	IPU (Integrated Power Controller) MCU core or peripheral fault
P1B102E	IPU (Integrated Power Controller) MCU data zone fault
P1B102F	IPU (Integrated Power Controller) MCU data zone fault
P1B108D	IPU (Integrated Power Controller) anti-theft verification result error
P1B1053	Overspeed fault of driving motor
P1B1105	IPU (Integrated Power Controller) IGBT driving circuit fault
P1B1000	IPU (Integrated Power Controller) active discharge timeout
P1B1127	IPU (Integrated Power Controller) internal power fault
P1B112D	IPU (Integrated Power Controller) IGBT fault

DTC	Trouble description
P1B1136	Control unit circuit fault on IPU (Integrated Power Controller) MCU board
P1B1049	Undesired torque occurs in the driving motor
P1B1050	Driving motor output torque deviation is too large
P1B106B	IPU (Integrated Power Controller) cooled water level 1 or level 2 overtemperature fault
P1B1077	IPU (Integrated Power Controller) IGBT module level 1 or level 2 overtemperature fault
P1B6085	Crash signal Vehicle Crash system protection
P1B7700	IPU (Integrated Power Controller) two-phase and above current sensor fault
P1B7898	IPU (Integrated Power Controller) bus capacitor level 1 or level 2 overtemperature fault
P1B794B	IPU (Integrated Power Controller) control panel ambient temperature overtemperature
P1B7A29	FLT (IGBT Fault Signal) error when IPU (Integrated Power Controller) IGBT driving power ON
P1B7B29	FLT (IGBT Fault) signal error when IPU (Integrated Power Controller) IGBT driving power OFF
P1B7C00	The IPU (Integrated Power Controller) FLT (IGBT Error) control signal cannot turn off the IGBT
P1B7D00	The IPU (Integrated Power Controller) PWM control signal cannot turn off the IGBT
P1B8012	IPU (Integrated Power Controller) low voltage sensor short circuit to VCC (Power Positive)
P1B8011	IPU (Integrated Power Controller) low voltage sensor short circuit to GND (Power Ground)
P1B8115	IPU (Integrated Power Controller) control panel ambient temperature sensor short circuit to VCC (supply positive) or sensor open circuit
P1B8111	IPU (Integrated Power Controller) control panel ambient temperature sensor short circuit to GND (Power Ground)
P1B8215	IPU (Integrated Power Controller) bus capacitance temperature sensor short circuit to VCC (Power Positive) or sensor open circuit
P1B8211	IPU (Integrated Power Controller) bus capacitance temperature sensor short circuit to GND (Power Ground)
P1B8300	IPU (Integrated Power Controller) active discharge fault
P1B8493	Driving motor oil pump start fault
P1B8492	Driving motor oil pump operation fault
U130055	F101 not configured
P1B7200	F101 configured value out of range
P1BFD00	KL15 status does not match VCU torque control request
P1B108E	IPU (Integrated Power Controller) key not configured
P1B108F	The IPU (Integrated Power Controller) did not receive a reply frame
P1B103C	IPU (Integrated Power Controller) U-phase current sensor zero drift fault
P1B1107	PU (Integrated Power Controller) U-phase current sensor open circuit
P1B106E	IPU (Integrated Power Controller) U-phase IGBT temperature sensor short circuit to VCC (Power Positive)
P1B106F	IPU (Integrated Power Controller) U-phase IGBT temperature sensor short circuit to GND (Power Ground)
P1B103A	IPU (Integrated Power Controller) U-phase Current Overcurrent
P1B7400	IPU (Integrated Power Controller) U-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)



DTC	Trouble description
P1B1041	IPU (Integrated Power Controller) V-phase current sensor zero drift fault
P1B1108	IPU (Integrated Power Controller) V-phase current sensor open circuit
P1B1071	IPU (Integrated Power Controller) V-phase IGBT temperature sensor short circuit to VCC (Power Positive)
P1B1072	IPU (Integrated Power Controller) V-phase IGBT temperature sensor short circuit to GND (Power Ground)
P1B103F	IPU (Integrated Power Controller) V-phase current overcurrent
P1B7500	IPU (Integrated Power Controller) V-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)
P1B1045	Zero drift fault of IPU (Integrated Power Controller) W-phase current sensor
P1B1109	IPU (Integrated Power Controller) W-phase current sensor open circuit
P1B1074	IPU (Integrated Power Controller) W-phase IGBT temperature sensor short circuit to VCC (Power Positive)
P1B1075	IPU (Integrated Power Controller) W-phase IGBT temperature sensor short circuit to GND (Power Ground)
P1B1043	IPU (Integrated Power Controller) W-phase current overcurrent
P1B7600	IPU (Integrated Power Controller) W-phase current sensor short circuit to VCC (Supply Positive) or GND (Power Ground)
P1B1038	IPU (Integrated Power Controller) U/V/W-phase hardware overcurrent fault
P1B103D	The sum of three-phase currents of IPU (Integrated Power Controller) is too large
P1B107F	IPU (Integrated Power Controller) DC bus overvoltage
P1B107E	IPU (Integrated Power Controller) DC bus overvoltage (hardware detection)
P1B7F12	IPU (Integrated Power Controller) DC bus voltage sensor short circuit to VCC (Power Positive)
P1B7F11	IPU (Integrated Power Controller) DC bus voltage sensor short circuit to GND (Power Ground)
P1B1152	IPU (Integrated Power Controller) resolver signal fault
P1B1078	Driving motor temperature sensor 1 short circuit to VCC (Power Positive) or sensor open circuit
P1B1079	Driving motor motor temperature sensor 1 short circuit to GND (Power Ground)
P1B117A	Driving motor temperature sensor 2 short circuit to VCC (Power Positive) or sensor open circuit
P1B117B	Driving motor temperature sensor 2 short circuit to GND (Power Ground)
P1B107A	Driving motor level 1 or level 2 overtemperature fault

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1103	MCU core or peripheral fault	-	1. Integrated power controller
P1B102E	Data flash read fault (control area)		
P1B102F	Data flash write fault Data flash read fault (diagnostic area)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B108D	The anti-theft authentication result is wrong for two consecutive times		
P1B1053	Motor speed >15500rpm (power reduction interval [15000rpm, 15500rpm])		
P1B1105	Id_ref=-20A number &&  Id U act-Id U ref  >10A number	Standby diagnostic phase, i. e., the state in which the pulse width modulation output interlock function is disabled	
P1B1000	HV > 60V	Other faults include undetected IGBT drive faults. The high pressure is between 60[V] and 500[V]. IPUúU Moderate = Release	
P1B1127	Internal boost voltage >18.702V or <9.792V	8.44V≤KL30≤16.9V	
P1B112D	Set IGBT fault signal	-	
P1B1136	On-board controller error	-	
P1B1049	Torque requirements-actual torque ≥30Nm	When phase current fault and angle fault do not occur, and torque requirement = 0 Nm	
P1B1050	Torque requirements-actual torque ≥60Nm	When phase current fault and angle fault do not occur	
P1B106B	Level1: Level 2 qhen the motor temperature is at [69.5°C, 83°C];: When the motor temperature is at [83°C, 95°C] (power reduction interval [65°C, 95°C])		
P1B1077	Level1: Level 2 when the module temperature is [146.5°C, 151°C]: When the module temperature is at [151°C, 155°C] (power reduction interval [145°C, 155°C])	-	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B6085	A collision occurred, that is, any bit from bit1 to bit4 of ACU_CrashOutputSts (ID 0x380) is not 0.		
P1B7700	In case of fault of any 2-phase or 3-phase current sensor (short to VCC, short to GND, zero drift fault)		
P1B7898	Level1: Level 2 when the capacitor temperature is [110.75°C, 113°C]: When the capacitor temperature is [113°C, 115°C] (power reduction interval [110°C, 115°C])		
P1B794B	PCB ambient temperature >120°C		
P1B7A29	IGBT Drive Supply ON & FLT Fault True	Power supply state of IGBT driving circuit in initial diagnosis phase	
P1B7B29	IGBT drive supply OFF&FLT fault True	In the initial diagnosis phase, the IGBT driveing circuit is not powered	
P1B7C00	PWN control signal ==ON && FLT control signal ==OFF && Id_ref==-43A &&  Id_act ≥33A	In the standby diagnosis stage, the status of the output of the pwm is interlocked by the IGBT fault signal	
P1B7D00	PWN control signal ==OFF && FLT control signal ==ON && Id_ref==-43A &&  Id_act ≥33A	In the standby diagnosis stage, the pwm output is interlocked by the interlocking signal of the single chip microcomputer	
P1B8012	Or B condition A and KL30≥18.202V internal power supply boost voltage ≤16.0V condition B internal boost voltage ≥20.990 V KL30≤16.0V	-	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B8011	Condition A or B Condition A and KL30 $\leq 1.208$ V Internal power supply boost voltage $\geq 9.0$ V Condition B Internal boost voltage $\leq 3.983$ V KL30 $\geq 9.0$ V		
P1B8115	Control PCB temperature $\geq 4.95$ V	The IGBT temperature exceeds 25°C, and the required torque exceeds 0 Nm and is kept for 5000 ms	
P1B8111	Control PCB temperature $\leq 0.05$ V	IGBT temperature is lower than 65°C, and the required torque is 0 Nm, which is kept for 5000 ms	
P1B8215	Thin film capacitor temperature $\geq 4.95$ V	-	
P1B8211	Thin film capacitor temperature $\leq 0.05$ V		
P1B8300	d-axis command-d-axis current $> 10$ a	Other faults include undetected IGBT drive faults. The high pressure is between 60 [V] and 500 [V]. IPUúU Moderate = Release	
P1B8493	The working state of the oil pump is below 5% and above 95%	The required speed of DCU for oil pump is greater than 500 rpm	
P1B8492	Pump Request Speed-Pump Speed $\geq 619$ [rpm]	The fuel pump request speed from DCU exceeds 500 [rpm]. PWM frequency of oil pump is normal	
U130055	The value for F101 is the factory default	-	
P1B7200	The value of F101 is not any of GE12A, GE12B and GE11AB		
P1BFD00	KL15=off&& mode request = TqCtrl		
P1B108E	1. No ESK written ever 2. ESK has been written, but not written again after erasing		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B108F	IMMOCode of PEPS has not been received for 3 consecutive times		
P1B103C	Actual current drift of phase U >47.24A	Initial diagnostic phase, offset learning flag = on	
P1B1107	$I_{umax} \leq 47.24A$	Intelligent target $\geq 100A$ & motor speed $\geq 1000rpm$	
P1B106E	IGBT temperature sensor U <sub>ad</sub> $\geq 4.95V$	IGBT temperature sensors V and W are normal and kept for 1000ms	
P1B106F	IGBT temperature sensor U <sub>ad</sub> $\leq 0.05V$	The IGBT temperature sensor V and W exceed 65°C and hold for 1000 milliseconds	
P1B103A	$ I_u  > 770.69A$		
P1B7400	U-phase current AD value >4.9V or U-phase current AD value <0.1V	-	
P1B1041	Actual current drift of phase V >47.24A	Initial diagnostic phase, offset learning flag = on	
P1B1108	$ I_{vmax}  \leq 47.24A$	Intelligent target $\geq 100A$ & motor speed $\geq 1000rpm$	
P1B1071	IGBT temperature sensor V <sub>ad</sub> $\geq 4.95V$	IGBT temperature sensors U and W are normal and kept for 1000ms	
P1B1072	IGBT temperature sensor V <sub>ad</sub> $\leq 0.05V$	The IGBT temperature sensor U and W exceed 65°C and hold for 1000 milliseconds	
P1B103F	$ I_v  > 770.69A$		
P1B7500	V phase current AD value >4.9V or V-phase current AD value <0.1V	-	
P1B1045	Phase W actual current drift >47.24A	Initial diagnostic phase, offset learning flag = on	
P1B1109	$ I_{wmax}  \leq 47.24A$	Intelligent target $\geq 100A$ & motor speed $\geq 1000rpm$	
P1B1074	IGBT temperature sensor W <sub>ad</sub> $\geq 4.95V$	IGBT temperature sensors U and V are normal and kept for 1000ms	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1075	IGBT temperature sensor $W_{ad} \leq 0.05V$	The IGBT temperature sensor U and V exceed $65^{\circ}C$ and hold for 1000 milliseconds	
P1B1043	$ I_w  > 770.69A$	-	
P1B7600	W phase current AD value $> 4.9V$ or W phase current AD value $< 0.1V$		
P1B1038	Detect U (or V, W) phase hardware overcurrent diagnostic flag bit (800A) (T. B.D.)		
P1B103D	$ I_u + I_v + I_w  \geq 80A$	Failure does not occur when the phase current sensor fails	
P1B107F	$U_{dc} > 480V$ (power reduction range [470V, 480V])	High voltage sensor fault not detected	
P1B107E	Detect hardware overvoltage diagnostic flag bit (540V)	High voltage sensor fault not detected	
P1B7F12	High voltage ad value $> 4.76V$ (DC $> 537.38V$ )	Electric motor controller U battery voltage $\leq 450[V]$ , main relay closed	
P1B7F11	High voltage ad $< 1.39V$ (VDC $< 116.71V$ )	Electric motor controller U battery voltage $\leq 450[V]$ , main relay closed	
P1B1152	Because SIN single open or COS, SIN signal is unbalanced or (sum of squares) or R/D conversion is faulty	Angle sensor fault signal set and held for 2ms	
P1B1078	Electric motor temperature sensor 1_ad $\geq 4.95V$	Electric motor temperature sensor 2 exceeds $65^{\circ}C$ and is kept for 1000ms	
P1B1079	Electric motor temperature sensor 1_ad $\leq 0.05V$	Electric motor temperature sensor 2 is between $-40$ to $200^{\circ}C$ for 1000 milliseconds	
P1B117A	Electric motor temperature sensor 2_ad $\geq 4.95V$	Electric motor temperature sensor 1 exceeds $65^{\circ}C$ and is kept for 1000ms	
P1B117B	Electric motor temperature sensor 2_ad $\leq 0.05V$	Electric motor temperature sensor 1 is between $-40$ to $200^{\circ}C$ for 1000 milliseconds	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B107A	Level1: Level 2 qhen the motor temperature is at [183°C, 192°C].: When the motor temperature is at [192°C, 200°C] (power reduction interval [180°C, 200°C])	-	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the integrated power controller for signs of damage, distortion, stains, loosening, etc.
- B. Check the ntegrated power controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Re-program and set the integrated power controller.
--------	---

- A. Re-program and set the integrated power controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the integrated power controller.
--------	--

- A. Check whether the power supply and the grounding harness of the integrated power controller are normal. Refer to the [Integrated Power Controller Power Fault](#)
- B. Replace the integrated power controller. Refer to the [Integrated Power Controller Replacement](#)

Next Step

Step 5	Re-program and set the integrated power controller.
--------	---

- A. Re-program and set the integrated power controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 7	System is normal.
--------	-------------------

### 2.4.6.11 Communication fault of integrated power controller

1. DTC description:



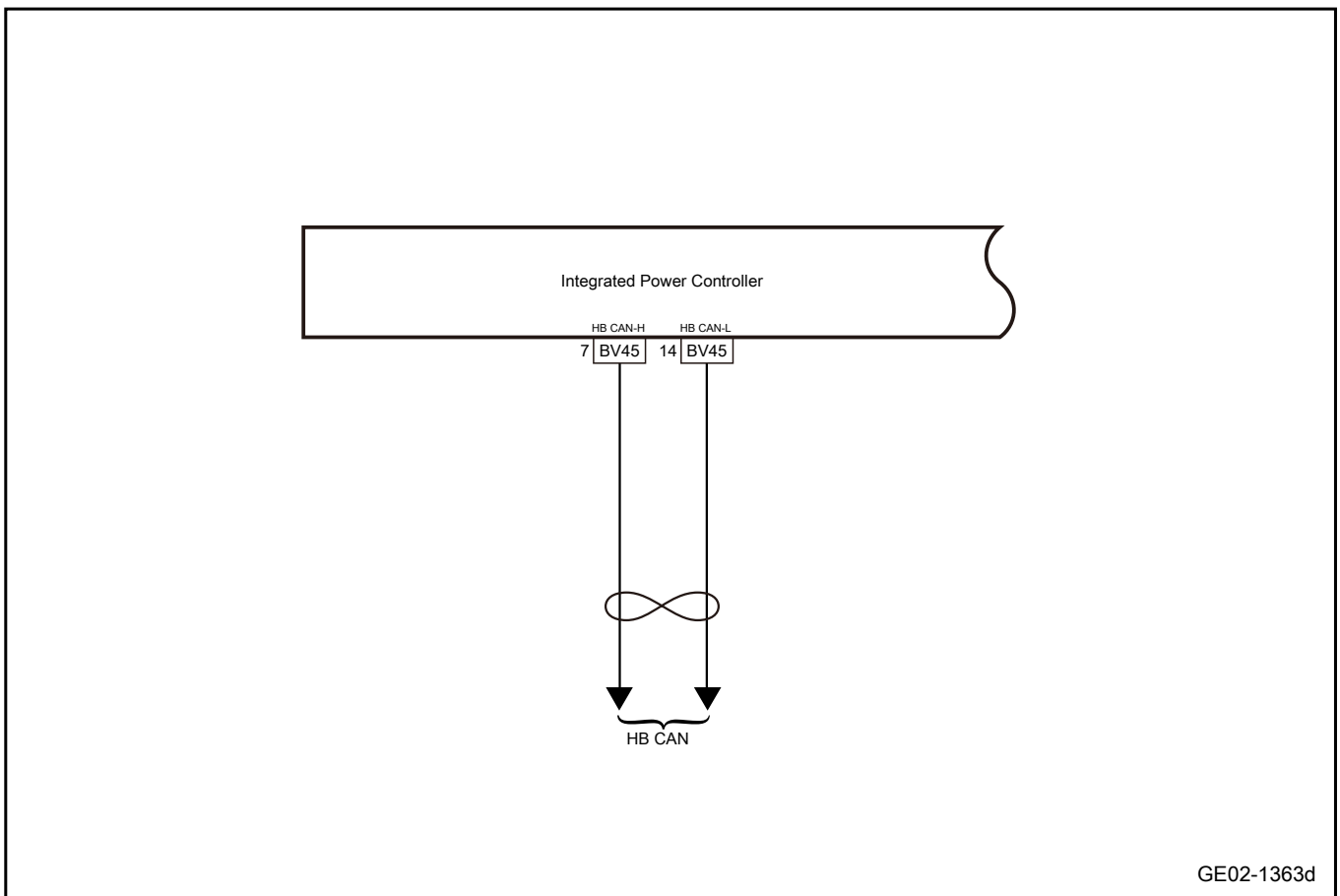
Diagnostic Trouble Code	Description
P1B1058	VCU (ID0x0A0, ID0x160, ID0x161) message data error
U24A883	VCU (ID 0x162) message data error
U241283	ESC (ID 0x062, ID 0x125) message error data error
U247283	BMS (ID 0x0B0, ID 0x178) message data error
U007300	IPU (Integrated Power Controller) CAN disabled
U140481	VCU (ID 0x0A0, ID 0x161) communication error (checksum, alivecounter error)
U111487	VCU (ID0x0A0, ID0x160, 0x161) communication lost
U029300	Communication with VCU(0x162) is lost.
U011287	BMS (ID0x0B0, 0x178) communication lost
U041681	ESC (ID 0x062, ID 0x125) communication error (checksum, alivecounter error)
U012287	ESC (ID0x062, ID0x125) communication lost
U015587	IPK (ID0x3F0, ID0x3F1) communication lost
U045281	ACU (ID 0x380) communication error (checksum, alivecounter Error)
U015187	Communication with ACU(ID0x380) is lost.

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1058	Signal value is beyond the specified range	-	1. Circuit 2. Integrated power controller 3. Diagnostic interface
U24A883	Signal value is beyond the specified range		
U241283	Signal value is beyond the specified range		
U247283	Signal value is beyond the specified range		
U007300	Busoff occurs and still bosoff after trying to recover		
U140481	1. Alivecounter error: An alivecounter error occurred 2. Data link connector length error 3. Checksum and error: Checksum and error occurred		
U111487	Timeout for VCU CAN message (ID 0x0A0, ID 0x160, 0x161)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U029300	VCU CAN message (0x162) timed out or invalid frame		
U011287	BMS CAN message (ID 0x0B0, 0x178) timed out or invalid frame		
U041681	1. Alivecounter error: An alivecounter error occurred 2. DLC size error 3. Checksum and error: Checksum and error occurred		
U012287	The ESC CAN message (ID 0x062, ID 0x125) timed out		
U015587	IPK CAN message (ID 0x3F0, 0x3F1) timed out or invalid frame		
U045281	1. Alivecounter error: An alivecounter error occurred 2. Data link connector length error 3. Checksum and error: Checksum and error occurred		
U015187	ACU CAN message (ID 0x380) timed out		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the integrated power controller for signs of damage, distortion, stains, loosening, etc.
- B. Check the ntegrated power controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the HB-CAN bus.

- A. Perform HB-CAN network integrity check, refer to [HB-CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the integrated power controller.

- A. Check whether the power supply and the grounding harness of the integrated power controller are normal. Refer to the [Integrated Power Controller Power Fault](#)
- B. Replace the integrated power controller, refer to [the Integrated Power Controller Replacement](#)

Next Step

Step 5 Re-program and set the integrated power controller.

- A. Re-program and set the integrated power controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

### 2.4.6.12 Electronic shifter power supply fault

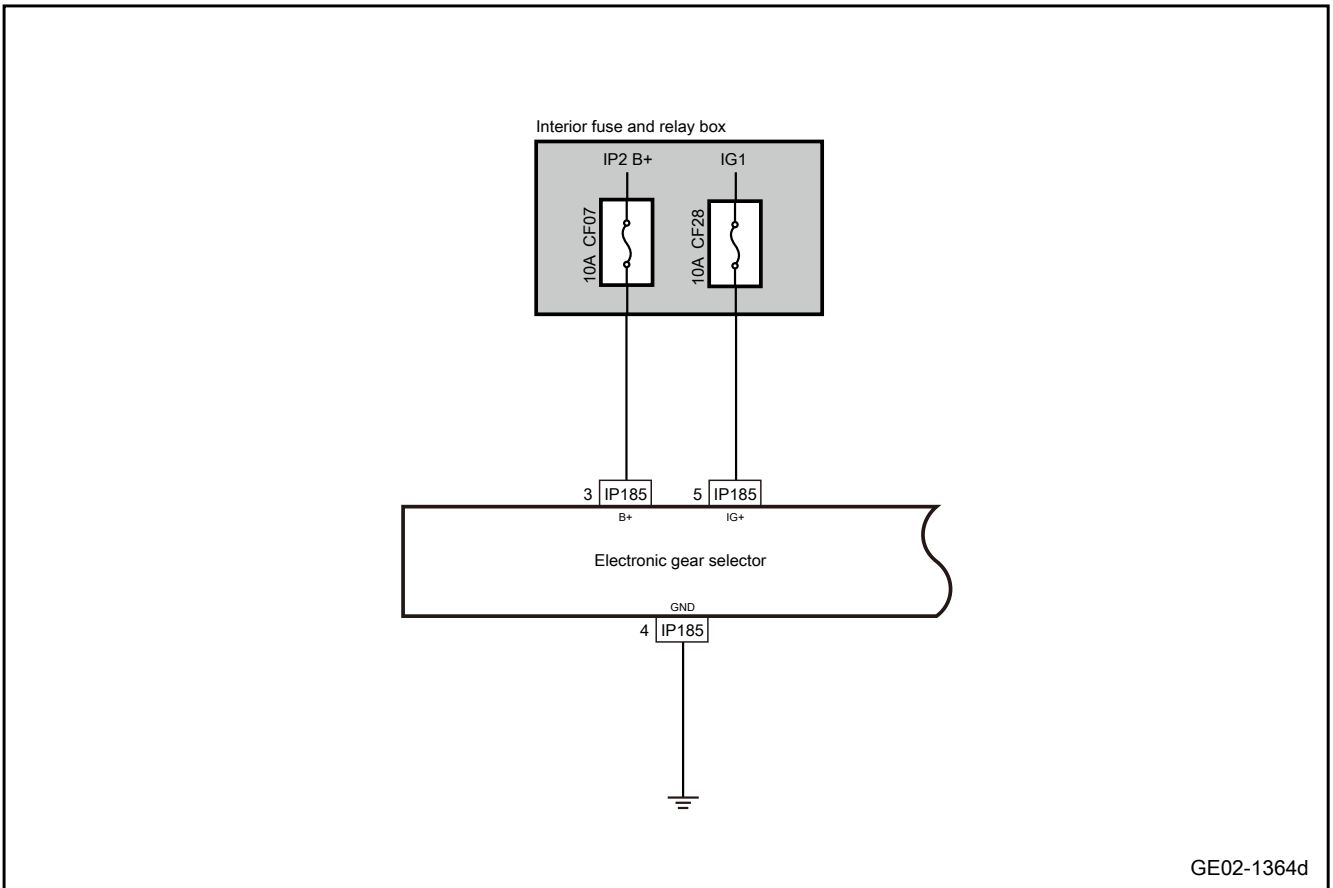
1. DTC description:

Diagnostic Trouble Code	Description
U300616	System voltage is too low
U300617	Too high system voltage

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The voltage is lower than 9V	1. The communication of the electronic control unit of the tester is normal	1. Battery 2. Circuit 3. Fuse 4. Electronic shifter
U300617	The voltage is higher than 16V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the electronic gear selector for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic gear selector harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

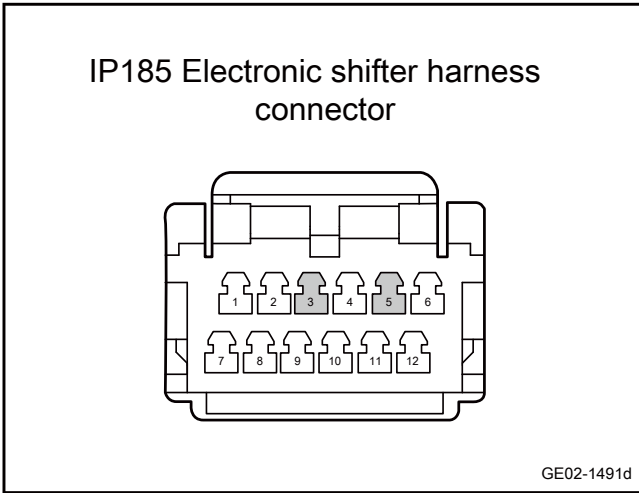
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF07 and check whether the fuse CF07 is blown.  
Rated fuse capacity: 10A
- C. Pull off the interior fuse CF28 and check whether the fuse CF28 is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the electronic shifter power supply circuit.
--------	--



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector IP185 of the electronic gear selector.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP185(3)	Vehicle body is grounded.	Standard voltage: 11-14V
IP185(5)		

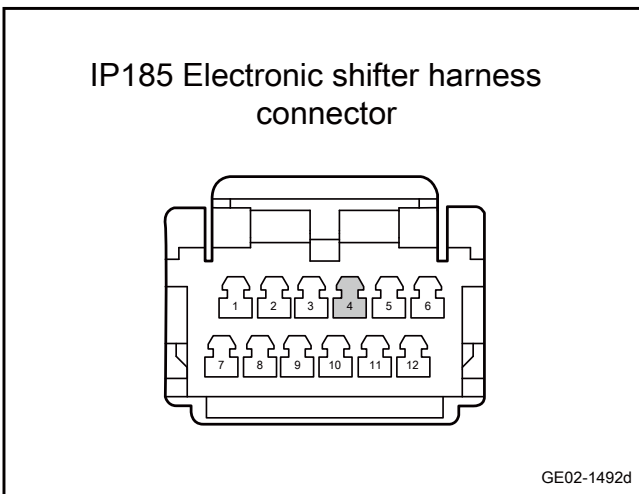
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the electronic shifter ground circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector IP185 of the electronic gear selector.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP185(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the electronic gear selector.

- A. Replace the electronic gear selector, refer to [Replacement of electronic gear selector](#)

Next Step

**Step 7** Reprogramme and reset the electronic gear selector.

- A. Reprogramme and reset the electronic gear selector. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 9** System is normal.

### 2.4.6.13 Electronic shifter internal fault

1. DTC description:

DTC	Trouble description
P168200	Hall sensor fault
P168371	Ball head gear P key is caught
P16861C	Panel LED circuit fault
U100044	RAM fault
U100145	Flash ROM fault
U100347	Watchdog fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P168200	Hall sensor fault	1. The communication of the electronic control unit of the tester is normal 2. Normal working voltage 3. No overvoltage or undervoltage	1. Electronic gear selector
P168371	Park switch jammed		
P16861C	1. The LED goes out when it should be turned on 2. LED lights up when it should be turned off		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	RAM hardware fault		
U100145	Flash memory hardware failure		
U100347	Task delayed, program run out		

## 3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the electronic gear selector for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic gear selector harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogramme and reset the electronic gear selector.
--------	---

- A. Reprogramme and reset the electronic gear selector.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the electronic gear selector.

- A. Check whether the electronic shifter power supply and the grounding harness are normal. Refer to the [Electronic Shifter Power Supply Fault](#)
- B. Replace the electronic gear selector, refer to [Replacement of electronic gear selector](#)

Next Step

Step 5 Reprogramme and reset the electronic gear selector.

- A. Reprogramme and reset the electronic gear selector. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 2.4.6.14 Electronic Shifter Communication Fault

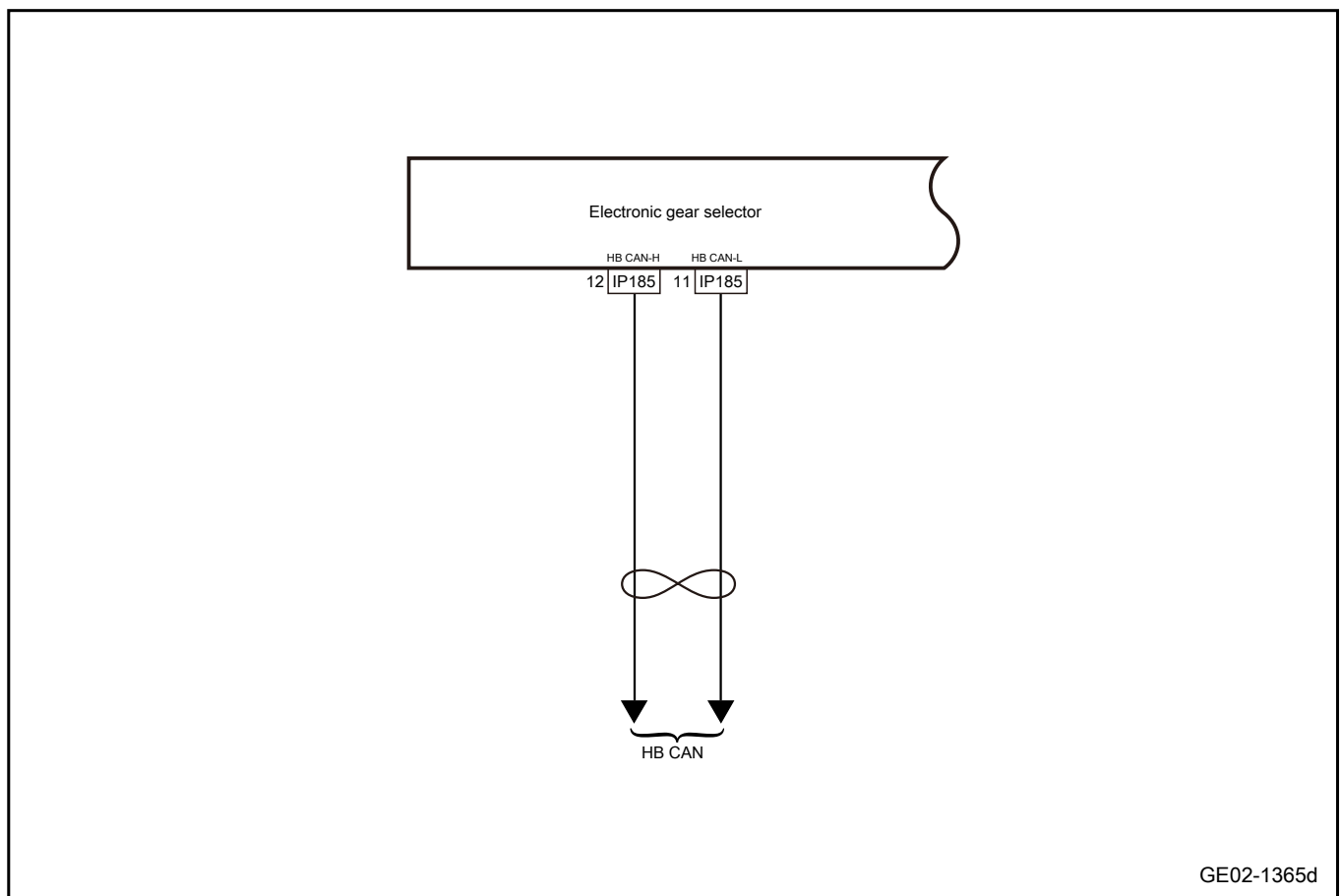
1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U111487	Loss of communication with complete vehicle controller
U014687	Communication with GW is lost

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus off fault	1. The communication of the electronic control unit of the tester is normal 2. Normal working voltage 3. Be able to communicate 4. No overvoltage or undervoltage	1. Circuit 2. Electronic shifter 3. Diagnostic interface
U111487	VCU is not received	1. The communication of the electronic control unit of the tester is normal 2. Normal working voltage 3. Be able to communicate 4. No overvoltage or undervoltage	
U014687	No signal from the gateway	1. The communication of the electronic control unit of the tester is normal 2. Normal working voltage 3. Be able to communicate 4. No overvoltage or undervoltage 5. The CAN bus is not turned off	

3. Schematic circuit diagram:



GE02-1365d

4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the electronic gear selector for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic gear selector harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the HB-CAN bus.

- A. Perform HB-CAN network integrity check, refer to [HB-CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the electronic gear selector.

- A. Check whether the electronic shifter power supply and the grounding harness are normal. Refer to the [Electronic Shifter Power Supply Fault](#)
- B. Replace the electronic gear selector, refer to [Replacement of electronic gear selector](#)

Next Step

Step 5 Reprogramme and reset the electronic gear selector.

- A. Reprogramme and reset the electronic gear selector. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 7** System is normal.

### 2.4.6.15 IPU Self-Learning

#### 1. Diagnosis steps

**Step 1** Brand selection, vehicle identification.

Next Step

**Step 2** Enter the first-level menu "Special Mileage" and select the second-level menu "Self-Learning".

Next Step

**Step 3** Click 'OK' to enter the first prompt interface.

Next Step

**Step 4** Click "Next" to control VCU to enter maintenance mode.

Next Step

**Step 5** The equipment prompts "Failed to enter maintenance mode".

Next Step

---

Step 6	Click "Confirm".
--------	------------------

Next Step

Step 7	The equipment prompts "Maintenance mode has been entered, please apply the brake and press the start switch".
--------	---

Next Step

Step 8	After the operator sees the prompt "Maintenance mode has been entered, please step on the brake and press the start switch", step on the brake and press the start switch.
--------	--

Next Step

Step 9	The equipment personnel click "Next".
--------	---------------------------------------

Next Step

Step 10	After 1s, the device performs subsequent instructions.
---------	--

Next Step

Step 11	Click next and VCU exits maintenance mode.
---------	--

Next Step

Step 12	Click "Confirm"
---------	-----------------

## 2.4.7 Removal and installation

### 2.4.7.1 Replacement of Electric Drive System Assembly

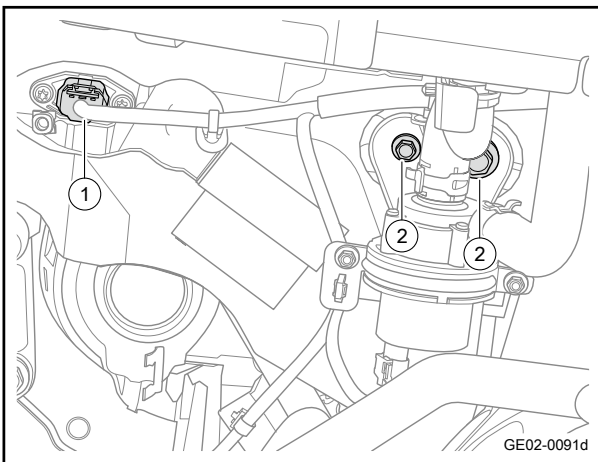
#### Removal procedure

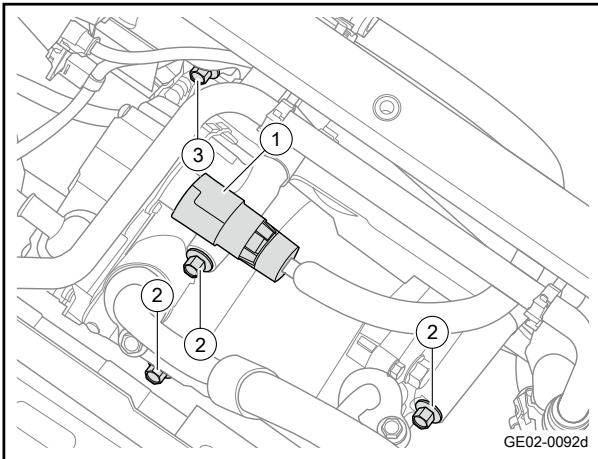
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

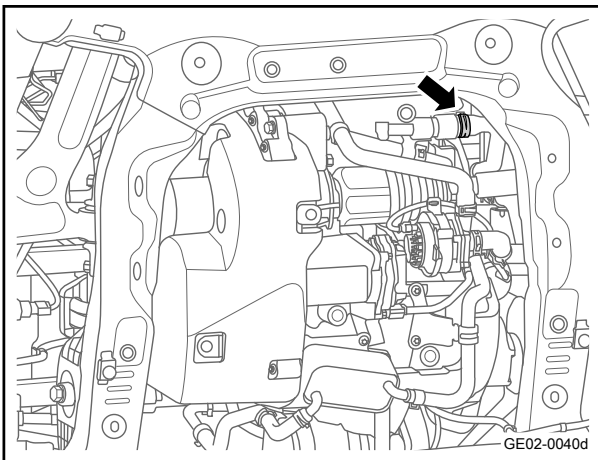
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Drain reducer oil. Refer to the [Reducer Oil Filling and Drainage](#)
- 5 Remove the left front constant speed drive shaft. Refer to the [Replacement of Left Front Constant Speed Drive Shaft](#)
- 6 Remove the right front constant speed drive shaft. Refer to the [Replacement of Right Front Constant Speed Drive Shaft](#)
- 7 Disconnect the harness connector 1 of electric drive system.
- 8 Remove the 2 fixing bolts 2 of the electronic water pump (20W).

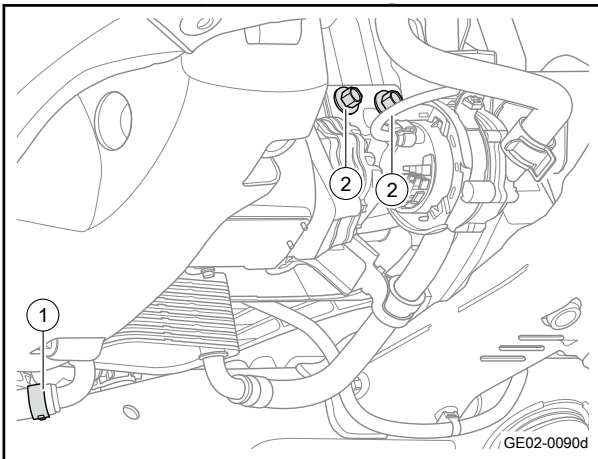




- 9 Disconnect the electric compressor harness 1.
- 10 Remove the 3 fixing bolts 2 of the electric compressor.
- 11 Remove the 1 ground bolt 3 of electric drive system.

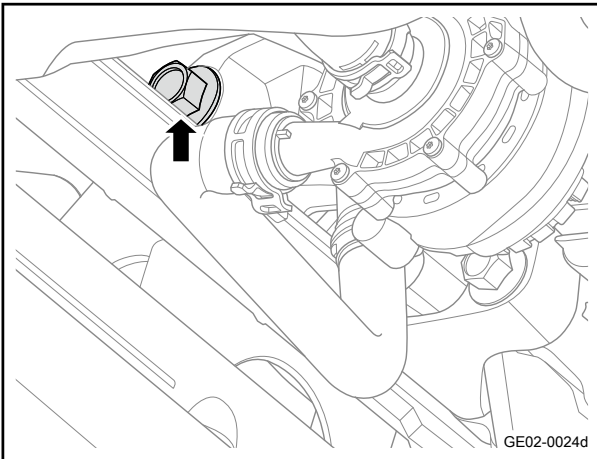


- 12 Disconnect the motor controller water inlet.

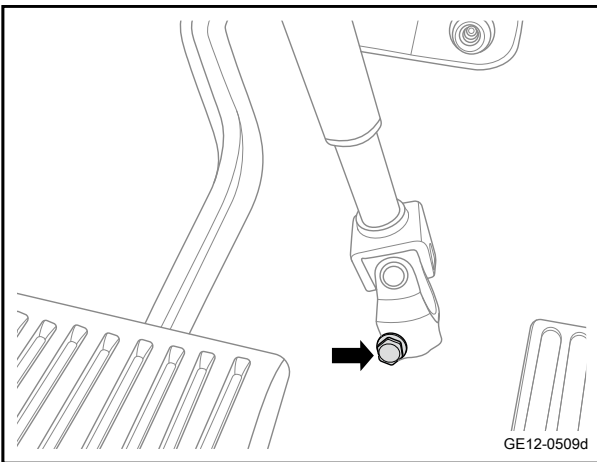


- 13 Disconnect the electric motor controller outlet 1.
- 14 Remove the 2 fixing bolts 2 of electronic water pump (70W)

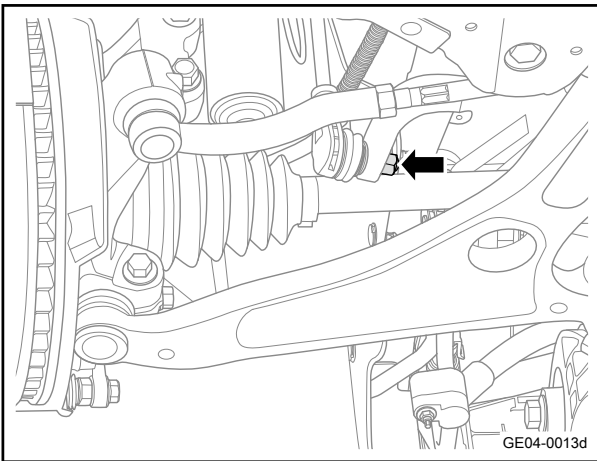




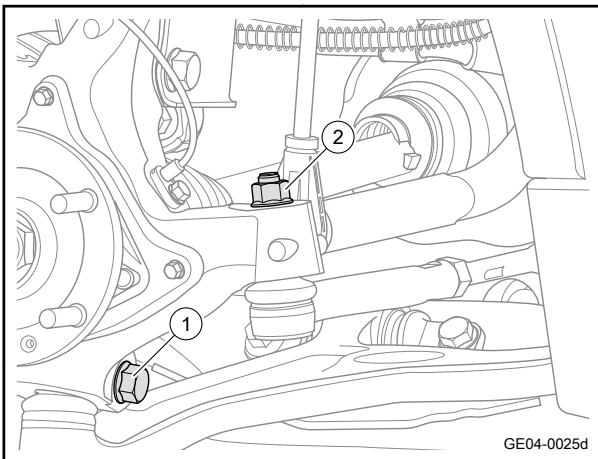
- 15 Remove the 1 bolt attaching the rear isolation pad to the subframe.



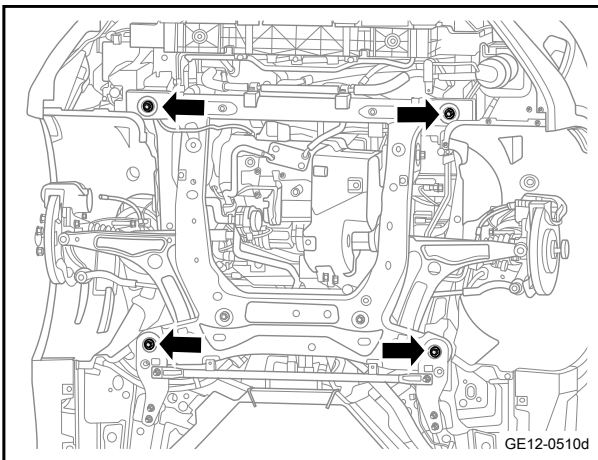
- 16 Remove the 1 fixing bolt connecting the intermediate shaft universal joint to the mechanical steering gear, and disconnect the intermediate shaft universal joint from the mechanical steering gear.



- 17 Remove the 1 fixing nut connecting the left and right front stabilizer connecting bars to the stabilizer bar, and remove the connecting bar.



- 18 Remove the 1 fixing bolt 1 on each side of the ball joint of the left and right lower swing arms.
- 19 Remove the 1 fixing nut 2 on the left and right sides of the ball joint of the tie rod of the left and right steering gear, and remove the tie rod.

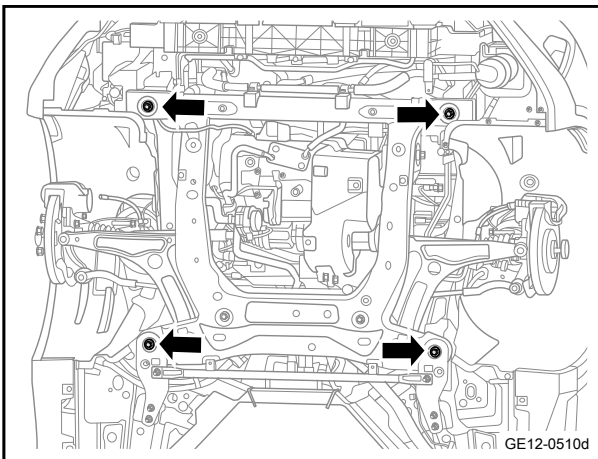


- 20 Support the subframe with a jack.
- 21 Remove the 4 fixing bolts securing the subframe.

#### Warning

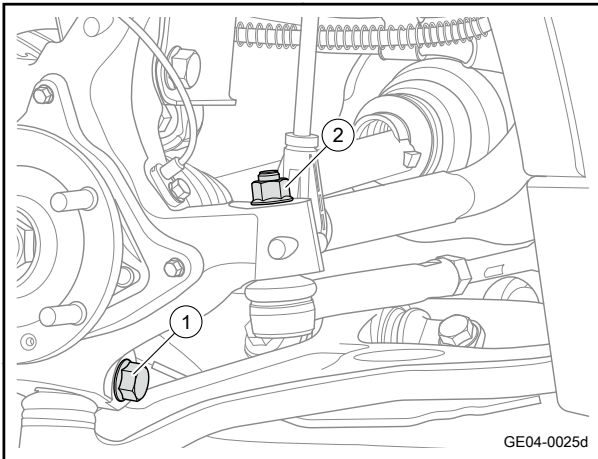
Replace a new fixing bolt for each removal.

- 22 Remove the electric drive system with subframe assembly.

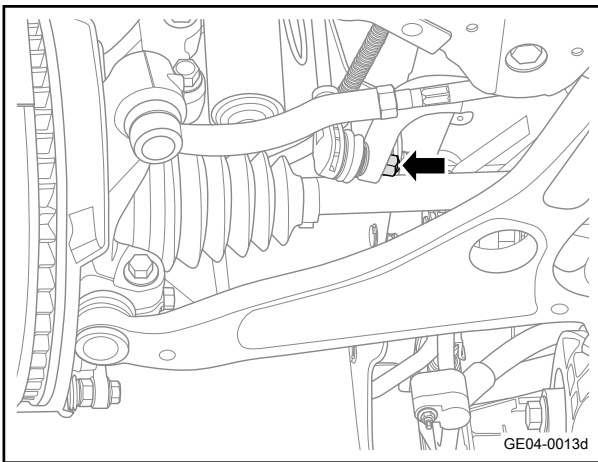


#### Installation procedure

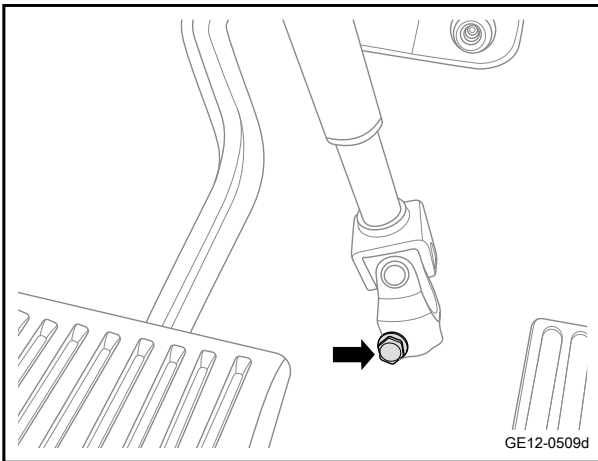
- 1 Move the electric drive system with subframe assembly to the installation position.
- 2 Support the subframe with a jack.
- 3 Install the 4 fixing bolts of the subframe.  
Torque: 120N·m+90° (metric) 88.6lb-ft+90° (imperial system)



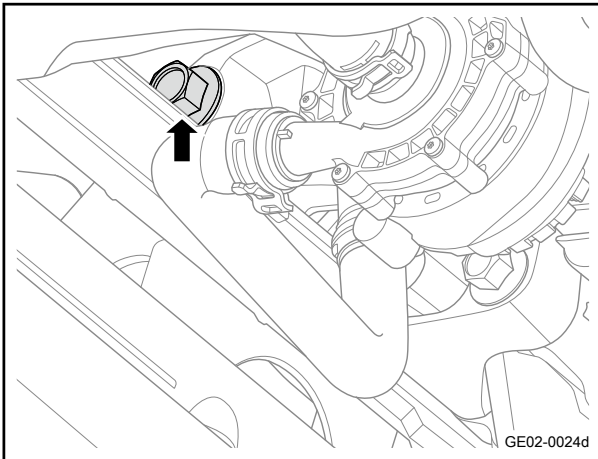
- 4 Install the 1 fixing nut 2 on the left and right sides of the tie rod ball joint of the left and right steering gear.
- 5 Install the 1 fixing bolt on each side of the ball joint of the left and right lower swing arms.



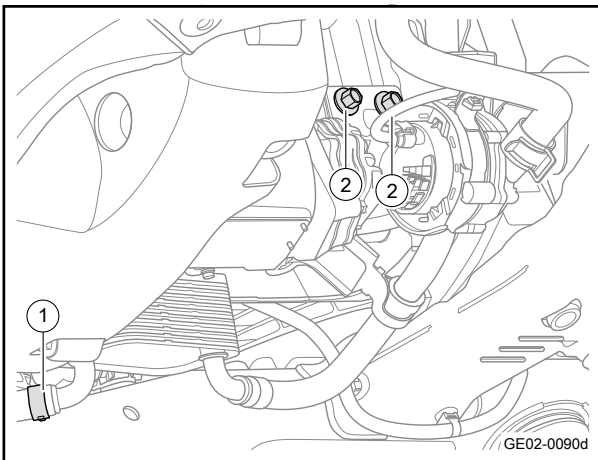
- 6 Install the 1 fixing nut connecting the left and right front stabilizer connecting rods to the stabilizer bar.



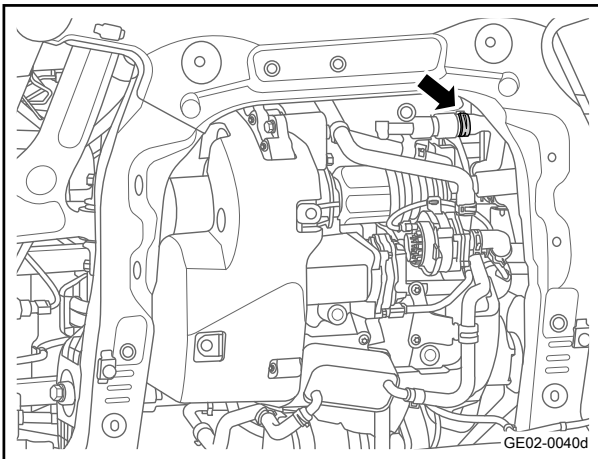
- 7 Install the 1 fixing bolt connecting the intermediate shaft universal joint to the mechanical steering gear.  
Torque: 39N·m (metric) 28.8lb-ft (imperial system)



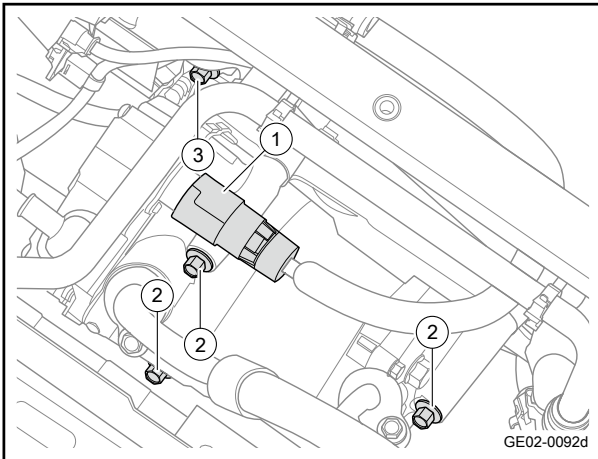
- 8 Install one bolt attaching the rear isolation pad to the subframe.



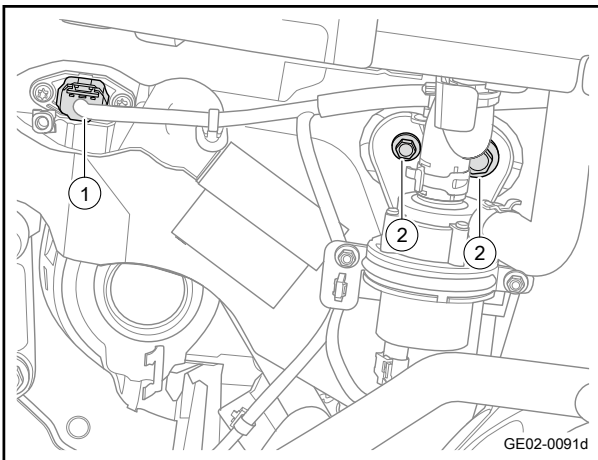
- 9 Install the 2 fixing bolts 2 of the electronic water pump (70W)  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)
- 10 Install the electric motor controller outlet 1.



- 11 Install the electric motor controller inlet pipe.



- 12 Install the 1 ground bolt 3 of the electric drive system.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)
- 13 Install 3 fixing bolts 2 of the electric compressor.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)
- 14 Connect the electric compressor harness 1.



- 15 Install the 2 fixing bolts 2 of the electronic water pump (20W).  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)
- 16 Connect the harness connector 1 of electric drive system.

- 17 Install the front right constant velocity drive shaft.
- 18 Install the front left constant velocity drive shaft.
- 19 Fill in reducer oil.
- 20 Lower the vehicle.
- 21 Connect the DC bus assembly.
- 22 Connect the negative cable of battery.
- 23 Carry out air tightness test of controller cavity and motor cavity, insulation and withstand voltage test of controller.
- 24 Use the scan tool to update the controller software and write the vehicle configuration word, immobiliser code, motor resolver angle.

### 2.4.7.2 Replacement of left vibration isolator assembly

#### Removal procedure

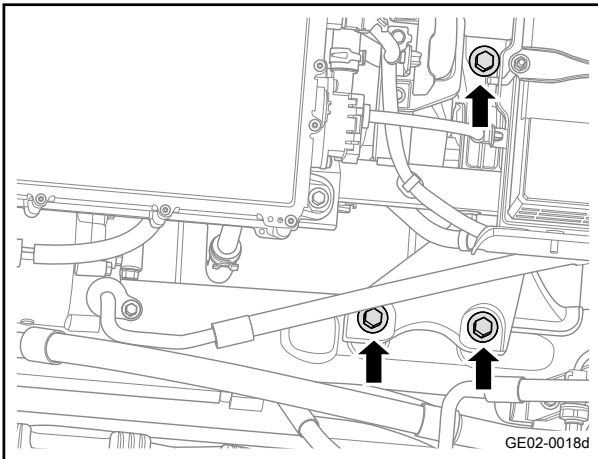
- 1 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 2 Remove the front fender liner. Refer to [Replacement of front fender liner](#)
- 3 拆卸前机舱底部护板。参见 [前机舱底部护板的更换](#)

- The electric drive system is supported by a jack.

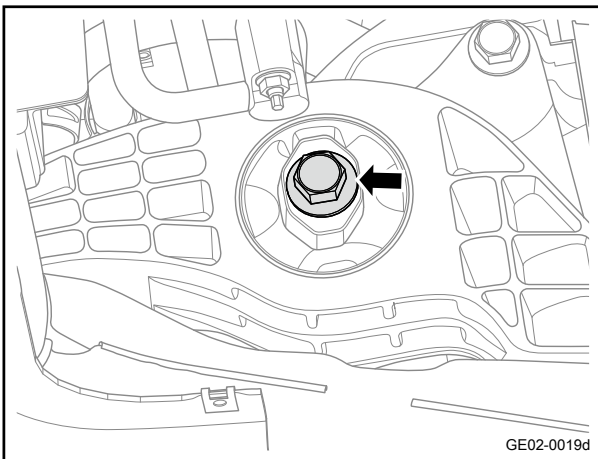
**Caution**

Before supporting, place a wooden block between the jack and the reducer to prevent sliding.

- Remove the upper 3 fixing bolts of left vibration isolator assembly.



- Remove the left 1 fixing bolts of left vibration isolator assembly.

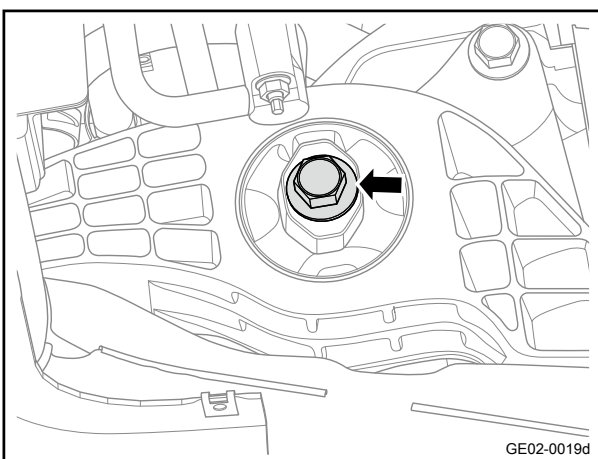


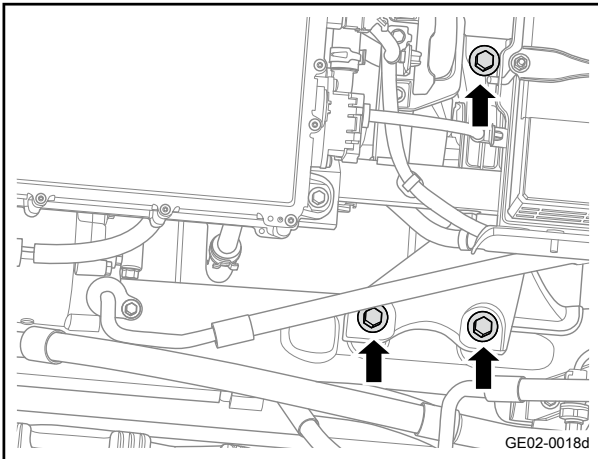
- Take off the left vibration isolator assembly.

**Installation procedure**

- Move the left isolator assembly to the installation position.
- Install one fixing bolt on the left side of the left vibration isolation pad assembly.

Torque: 210N·m (metric) 155lb-ft (imperial system)





- 3 Install the three fixing bolts on the upper part of the left vibration isolation pad assembly.  
Torque: 130N·m (metric) 95.9 lb·ft (imperial system)

- 4 Release the jack.
- 5 安装前机舱底部护板。
- 6 Install the front fender liner.
- 7 Install the front cabin trim cover assembly.

### 2.4.7.3 Replacement of Right Vibration Insulator Assembly

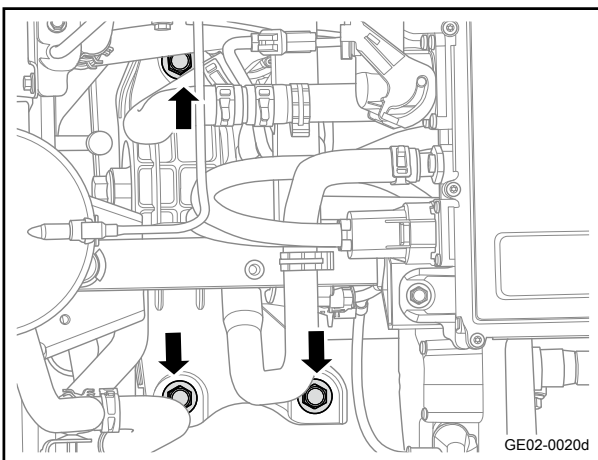
#### Removal procedure

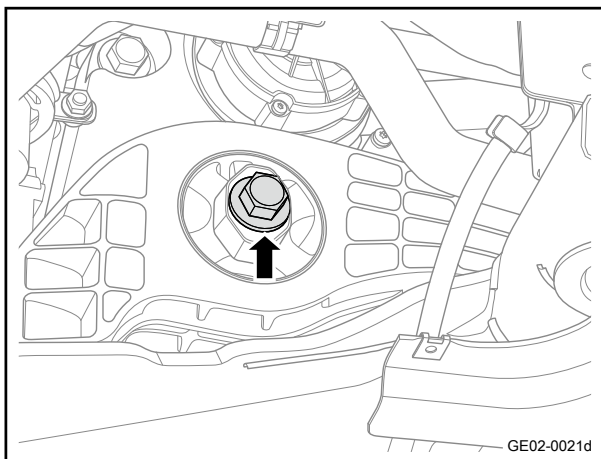
- 1 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 2 Remove the front fender liner. Refer to [Replacement of front fender liner](#)
- 3 拆卸前机舱底部护板。参见 [前机舱底部护板的更换](#)
- 4 The electric drive system is supported by a jack.

#### Caution

Before supporting, place a wooden block between the jack and the reducer to prevent sliding.

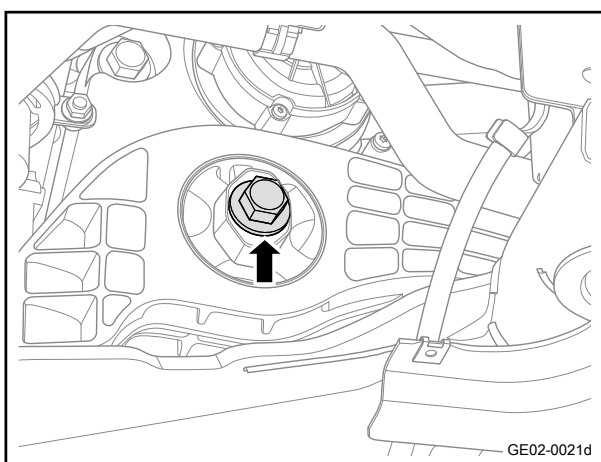
- 5 Remove upper 3 fixing bolts of right vibration isolator assembly.



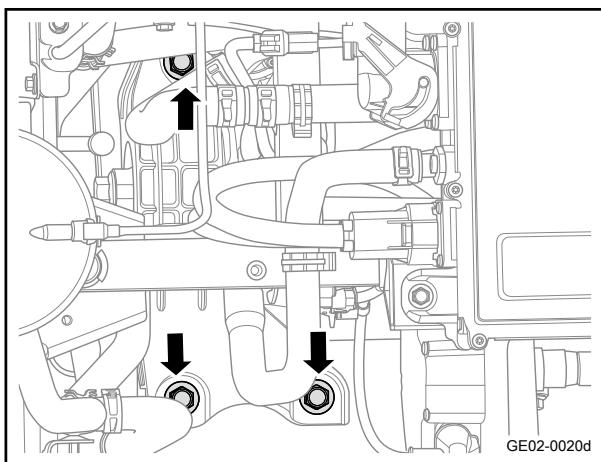


- 6 Remove the right 1 fixing bolts of right vibration isolator assembly.
- 7 Take down right vibration isolator assembly.

#### Installation procedure



- 1 Move the right isolation pad assembly to the installation position.
- 2 Install the 1 fixing bolt on the right side of the right vibration isolation pad assembly.  
Torque: 210N·m (metric) 155 lb-ft (imperial system)



- 3 Install the 3 fixing bolts on the upper part of the right vibration isolation pad assembly.  
Torque: 130N·m (metric) 95.9 lb-ft (imperial system)

- 4 Release the jack.
- 5 安装前机舱底部护板。
- 6 Install the front fender liner.
- 7 Install the front cabin trim cover assembly.

#### 2.4.7.4 Replacement of left suspension bracket

##### Removal procedure



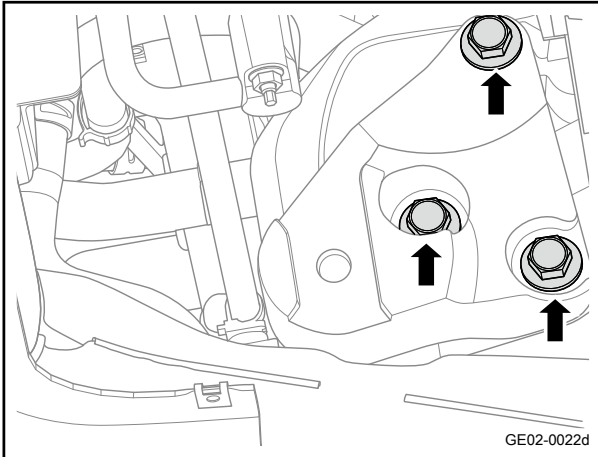
- 1 Remove the left vibration isolator assembly. Refer to [Replacement of left vibration isolator assembly](#)

- 2 The electric drive system is supported by a jack.

#### Caution

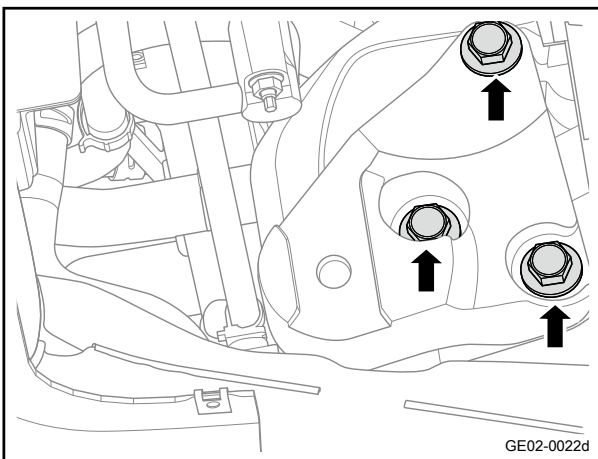
Before supporting, place a wooden block between the jack and the reducer to prevent sliding.

- 3 Remove the 3 fixing bolts of the left mount bracket.
- 4 Remove left mount bracket.



#### Installation procedure

- 1 Move left mount bracket to installation position.
- 2 Install the 3 fixing bolts of the left mount bracket.  
Torque: 130N·m (metric) 95.9 lb-ft (imperial system)



- 3 Release the jack.
- 4 Install the left vibration isolator assembly.

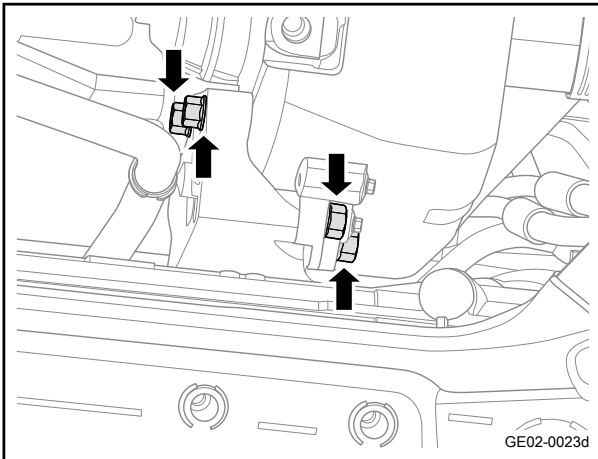
### 2.4.7.5 Replacement of rear suspension bracket

#### Removal procedure

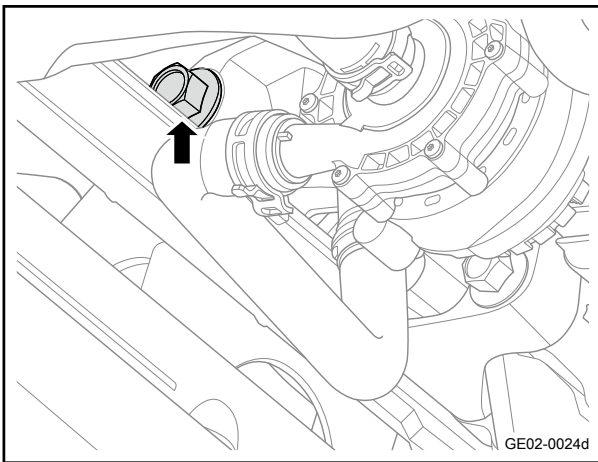
- 1 拆卸前机舱底部护板。参见 [前机舱底部护板的更换](#)
- 2 The electric drive system is supported by a jack.

#### Caution

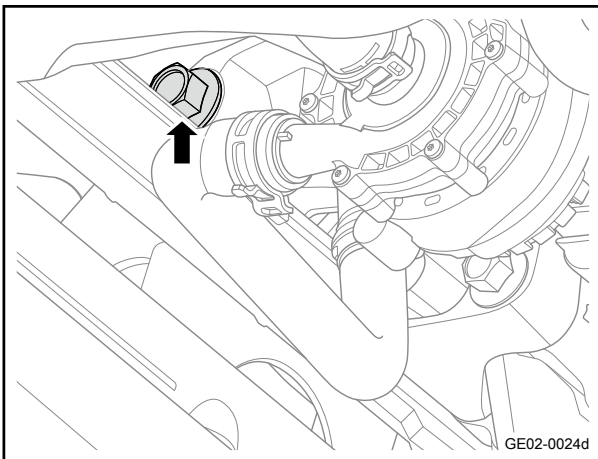
Before supporting, place a wooden block between the jack and the reducer to prevent sliding.



- 3 Remove the 4 fixing bolts at the front of rear suspension bracket.

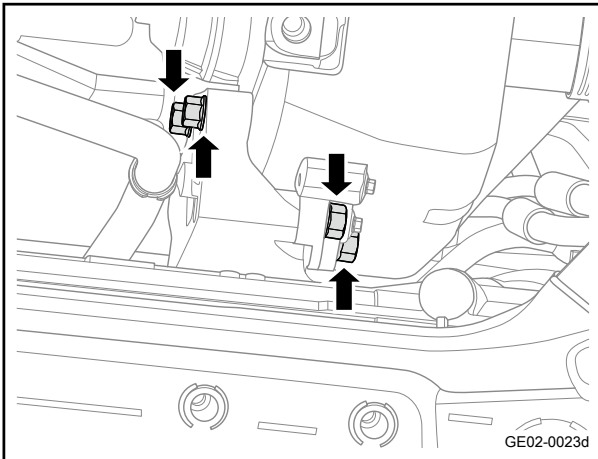


- 4 Remove the 1 fixing bolt at the rear of the rear suspension bracket.
- 5 Remove rear suspension bracket.



#### Installation procedure

- 1 Move rear suspension bracket to installation position.
  - 2 Install the 1 fixing bolt at the rear of the rear suspension bracket.
- Torque: 240N·m (metric) 177.1 lb-ft (imperial system)



- 3 Install the 4 fixing bolts at the front of rear suspension bracket  
Torque: 130N·m (metric) 95.9 lb·ft (imperial system)

- 4 Release the jack.
- 5 安装前机舱底部护板。

### 2.4.7.6 Replacement of driving motor controller

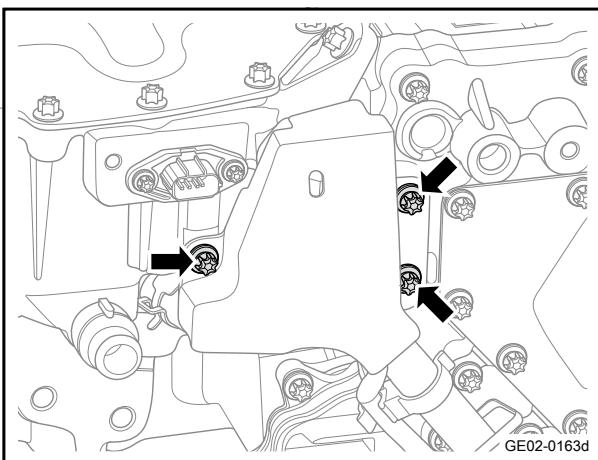
#### Removal procedure

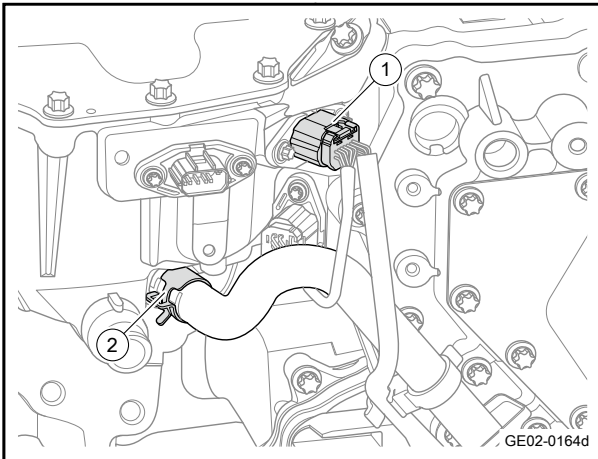
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

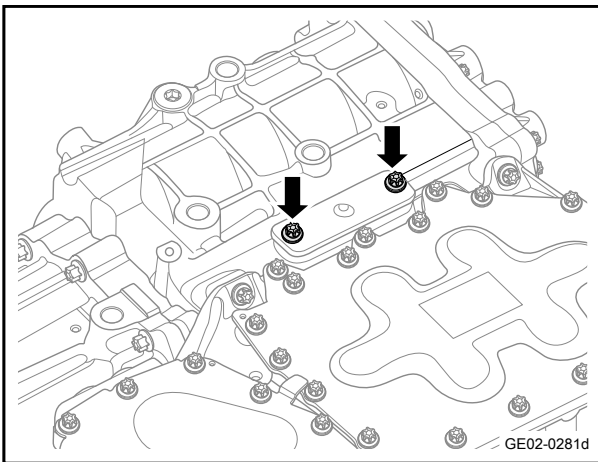
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Drain reducer oil. Refer to the [Reducer Lubricating Oil Filling and Drainage](#)
- 5 Remove the electric drive system. Refer to the [Replacement of Electric Drive System](#)
- 6 Remove the 3 fixing bolts of the power harness cover plate.
- 7 Remove power harness cover plate.

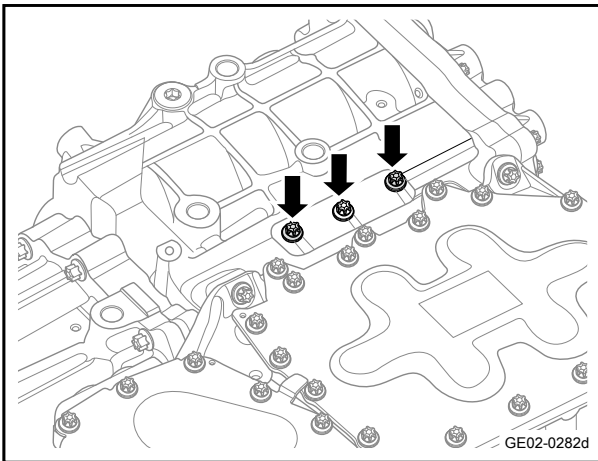




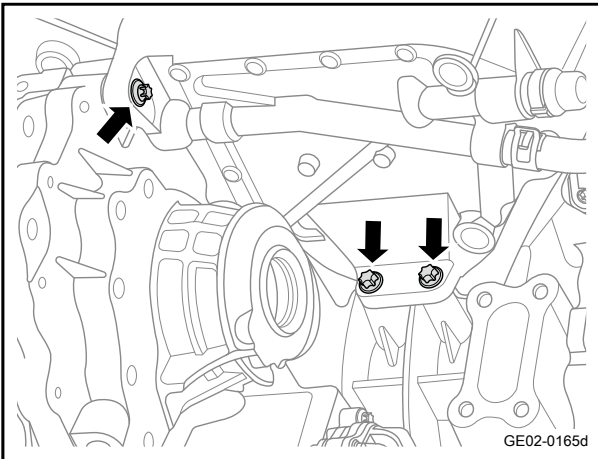
- 8 Disconnect the 1 harness connectors 1 of driving motor controller.
- 9 Remove the inverter to oil cooler water pipe clamp 2 and disconnect the inverter to oil cooler water pipe and electric drive motor controller.



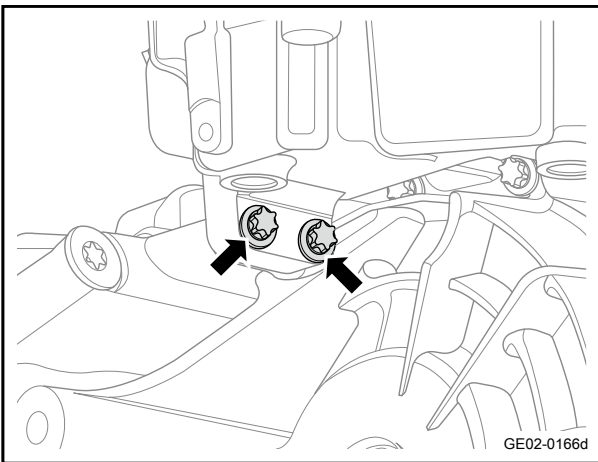
- 10 Remove 2 fixing bolts of ventilation cover plate, and take off the ventilation cover plate.



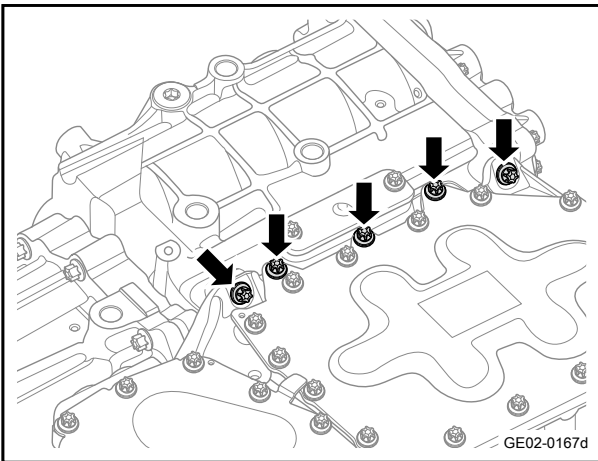
- 11 Remove the three fixing bolts of the three-phase copper bar in the ventilation cover plate.



- 12 Remove the 3 fixing bolts under the driving motor controller.

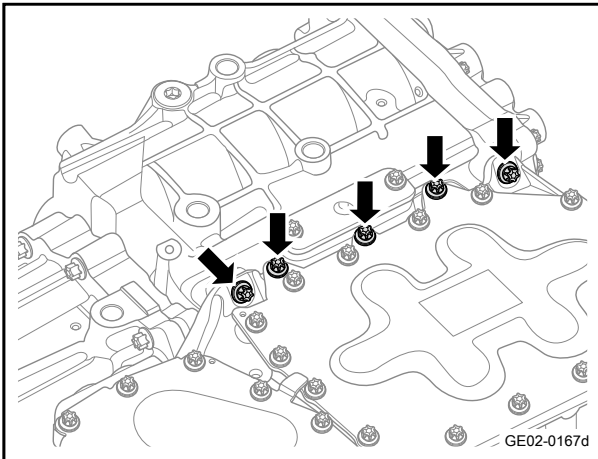


- 13 Remove the 2 fixing bolts under the driving motor controller.

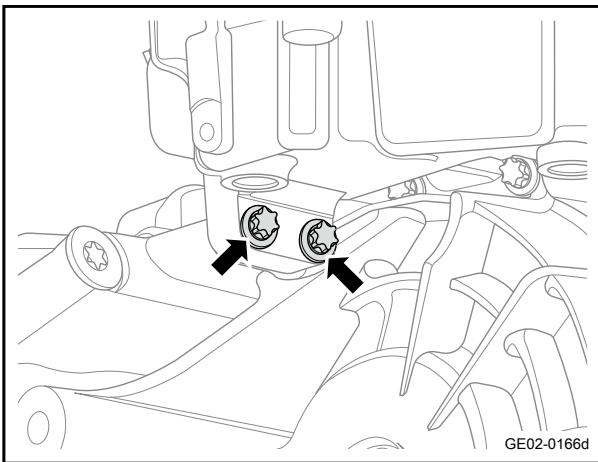


- 14 Remove the 5 fixing bolts above the driving motor controller.
- 15 Remove driving motor controller.

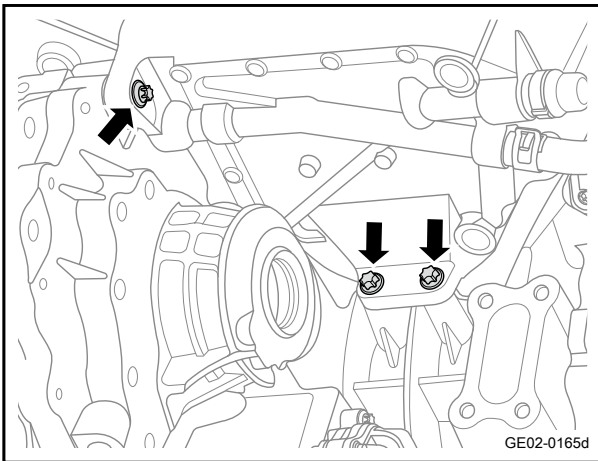
Installation procedure



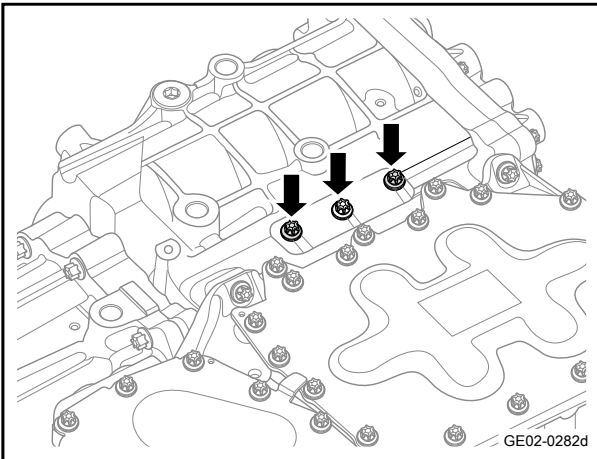
- 1 Move driving motor controller to installation position.
- 2 Install the 5 fixing bolts above the driving motor controller.  
Torque: 18N·m (metric) 13.3lb-ft (imperial system)



- 3 Install the 2 fixing bolts under the driving motor controller.  
Torque: 18N·m (metric) 13.3lb-ft (imperial system)

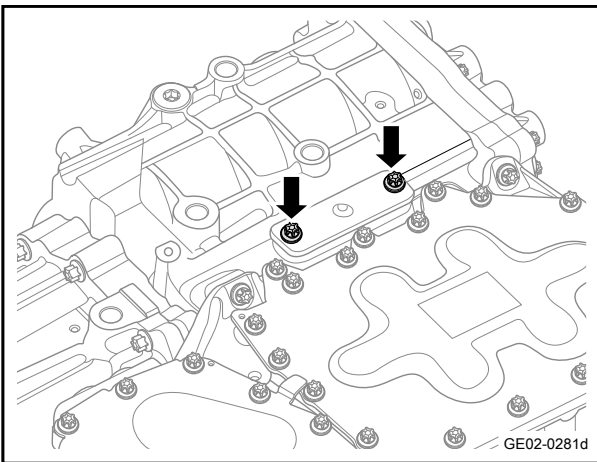


- 4 Install the 3 fixing bolts under the driving motor controller.  
Torque: 18N·m (metric) 13.3lb-ft (imperial system)



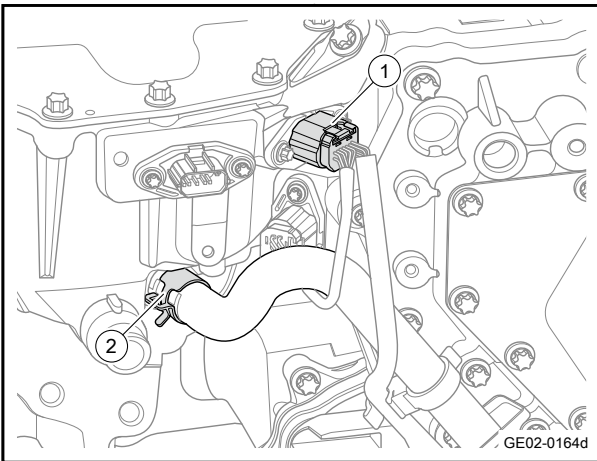
- 5 Install the 3 fixing bolts of the three-phase copper bar in the ventilation cover plate.

Torque: 8N·m (metric) 5.9lb-ft (imperial system)

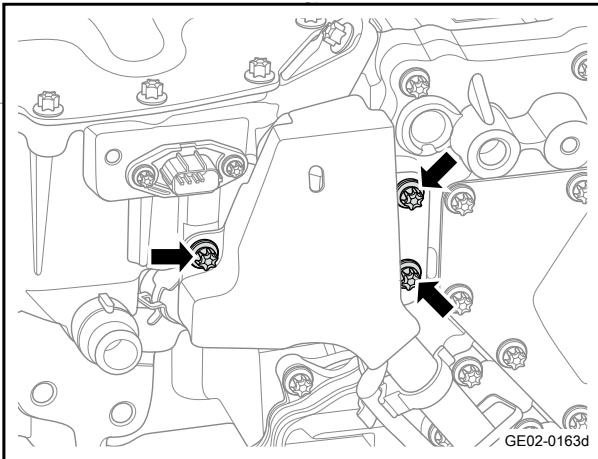


- 6 Clean the mounting surface and evenly apply sealant to the mounting surface of the ventilation cover plate. Move the vent cover plate to the installation position, and install the 2 fixing bolts of the vent cover plate.

Torque: 8N·m (metric) 5.9lb-ft (imperial system)

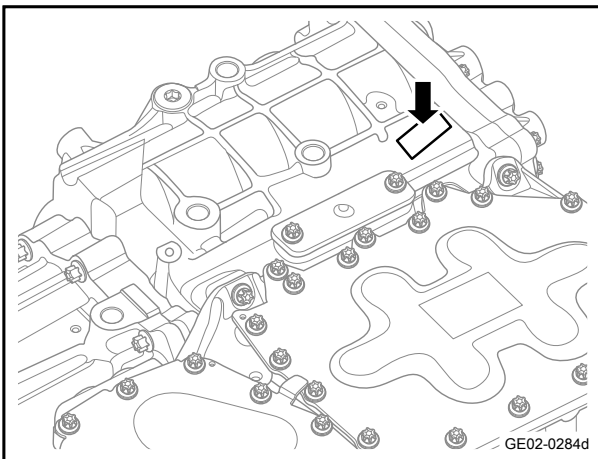


- 7 Connect the inverter to oil cooler water pipe and install the inverter to oil cooler water pipe clamp 2.
- 8 Connect the 1 harness connectors 1 of the driving motor controller.

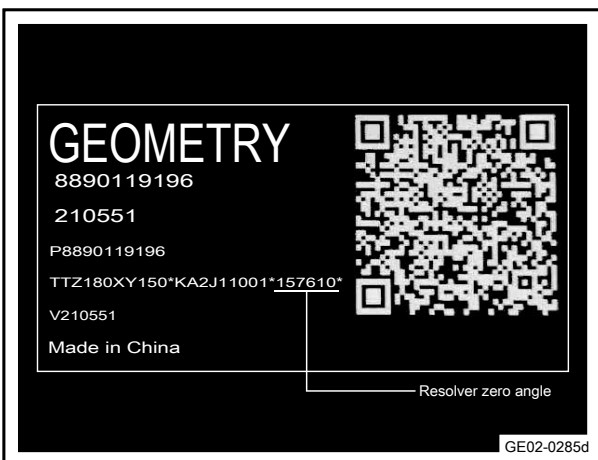


- 9 Move power harness cover to installation position.
- 10 Install the 3 fixing bolts of the power harness cover plate.  
Torque: 8N·m (metric) 5.9lb-ft (imperial system)

- 11 Carry out air tightness test of controller cavity and motor cavity, insulation and withstand voltage test of controller.
- 12 Install the electric drive system.
- 13 Fill in reducer oil.
- 14 Lower the vehicle.
- 15 Connect the DC bus assembly.
- 16 Connect the negative cable of battery.
- 17 Update the controller software through the diagnostic tool, and write the vehicle type configuration word, anti-theft code and motor resolver zero angle (nameplate position is shown in the figure).



- 18 Enter the IPU with a scan tool and select motor angle to write 157.610.



- 19 After successful writing, power down for more than 30s and power up again.

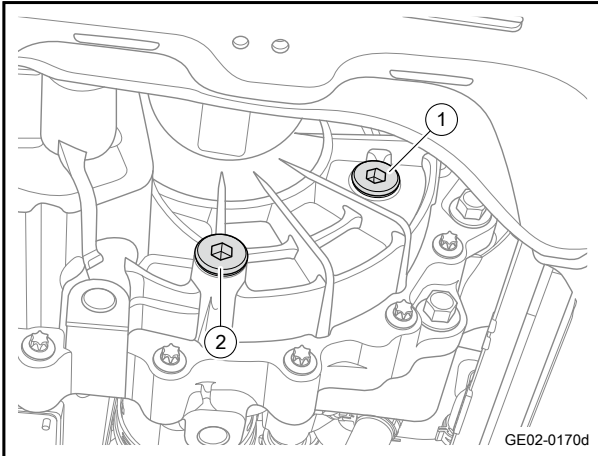


### 2.4.7.7 减速器润滑油的排放与加注

- 1 拆卸前机舱底部护板。参见 [前机舱底部护板的更换](#)
- 2 将润滑油收集器置于减速器放油螺栓下方。
- 3 拆卸减速器注油螺塞及垫片1。
- 4 拆卸减速器放油油螺塞及垫片2，排空减速器润滑油。

#### Caution

润滑油排出结束后，将注油口、放油口清洁干净。

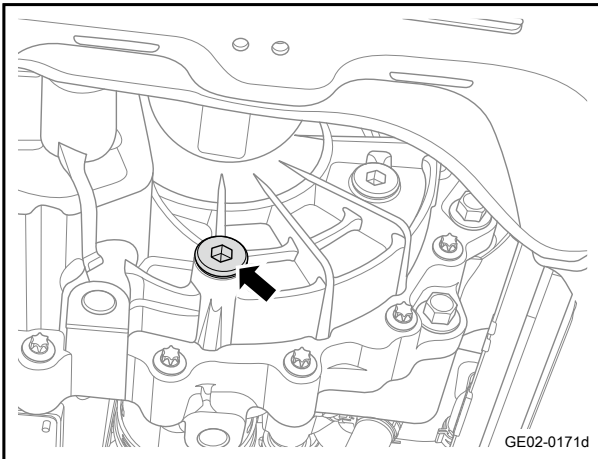


- 5 安装减速器放油螺塞及垫片。

Torque: 34.5N·m (metric) 25.4lb-ft (imperial system)

#### Caution

安装放油螺塞并使用一个新垫圈，若仍使用之前的，必须清洁垫圈上的脏污并擦拭干净。



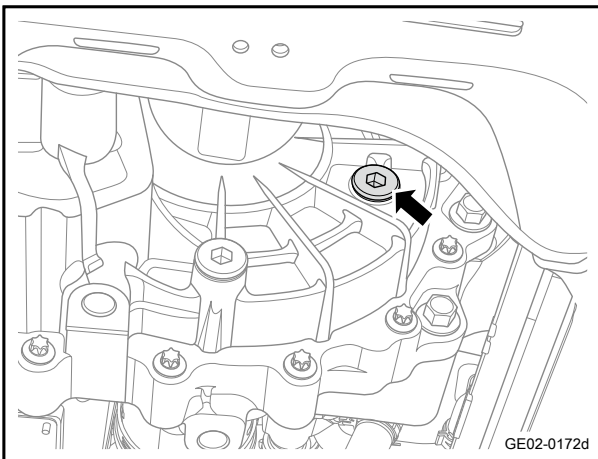
- 6 从注油口处加注减速器润滑油。
- 7 从注油口注入润滑油，直到润滑油溢出为止，并安装减速器注油螺塞及垫片。

Torque: 34.5N·m (metric) 25.4lb-ft (imperial system)

#### Caution

安装放油螺塞并使用一个新垫圈，若仍使用之前的，必须清洁垫圈上的脏污并擦拭干净。

将注油螺塞、放油螺塞以及周围区域擦拭干净，检查是否有润滑油泄漏。

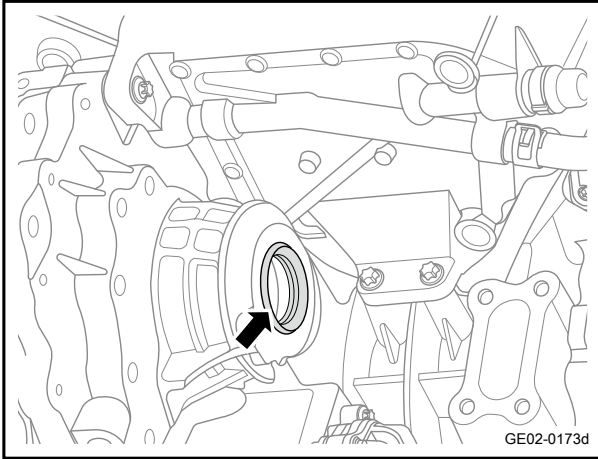


- 8 Start the vehicle and run the electric drive for 3 minutes to check for oil leaks.
- 9 安装前机舱底部护板。

### 2.4.7.8 Replacement of reducer oil seal

Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain reducer oil. Refer to the [Reducer Lubricating Oil Drainage and Filling](#)
- 3 Remove the front constant velocity drive shaft. Refer to the Replacement of Front Constant Speed Drive Shaft
- 4 Use a slotted screwdriver to pry up the outer lips of the oil seal. Remove the reducer oil seal.



#### Caution

When using a slotted screwdriver or crowbar to pry up the oil seal, give special notice to avoid damaging the reducer housing or the oil seal.

#### Caution

The removal methods of left and right side reducer oil seals are similar.

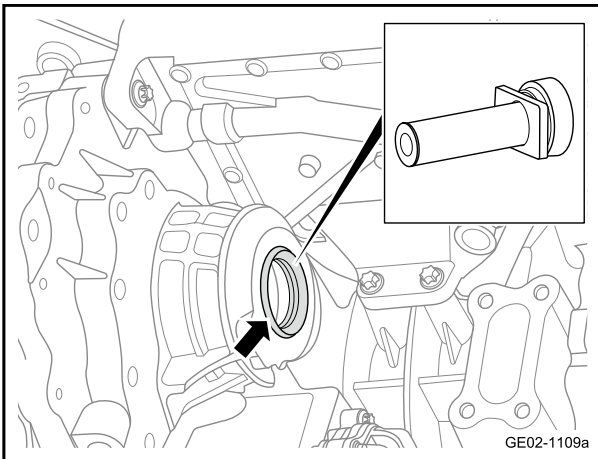
#### Installation procedure

- 1 Pre-coat reducer lubricating oil on the outside of the new oil seal, and add sealing grease on the inside of the oil seal.

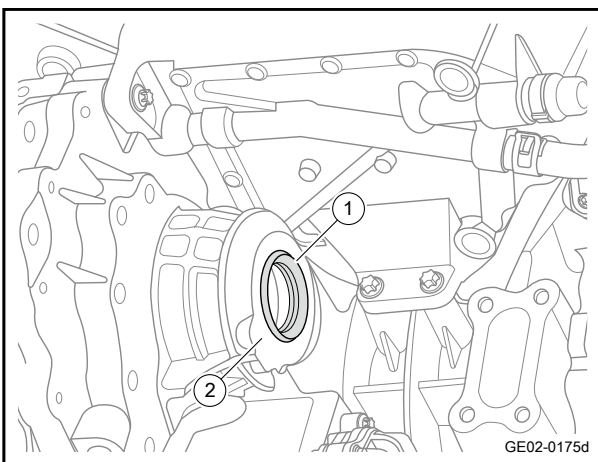
#### Caution

Check the new oil seal for damage such as damage and distortion.

- 2 Press two new oil seals into the reducer housing and the drive motor housing respectively, with a pressing force range of 0.35-5.0kN.



- 3 Measure the height between the oil seal 1 of the reducer and the reference surface 2 of the reducer. The normal height is 3.5-5.0mm.



- 4 Install the front constant velocity drive shaft.

- 5 Fill in reducer oil.
- 6 Lower the vehicle.

### 2.4.7.9 Replacement of electric oil pump

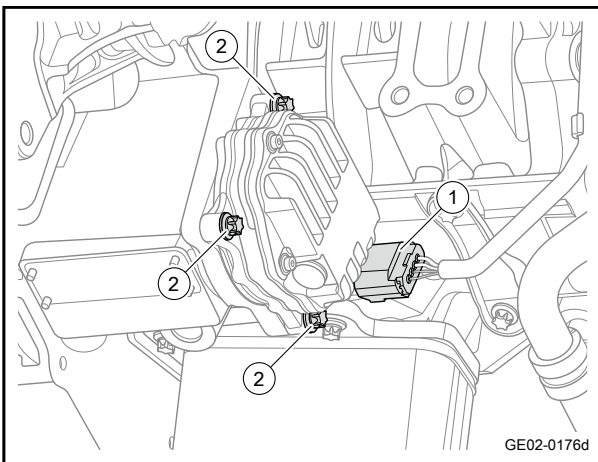
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

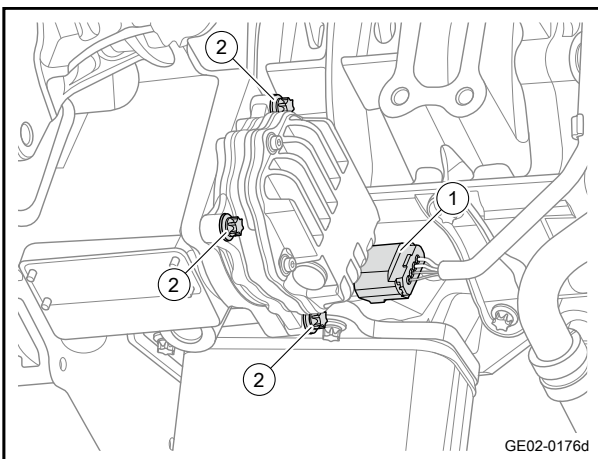
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain reducer oil. Refer to the [Reducer Lubricating Oil Filling and Drainage](#)
- 4 Disconnect the harness connector 1 of the electric oil pump.
- 5 Remove the 3 fixing bolts 2 of electronic oil pump.
- 6 Take off the electronic oil pump



#### Installation procedure

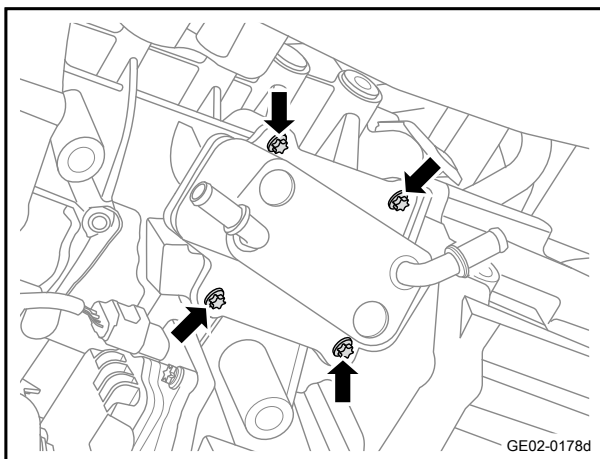
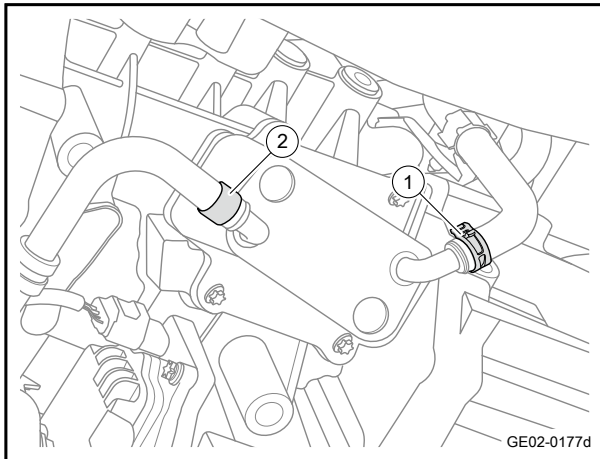
- 1 Move electronic oil pump to installation position.
- 2 Install the 3 fixing bolts 2 of the electronic oil pump.  
Torque: 8N·m (metric) 5.9lb-ft (imperial system)
- 3 Connect the harness connector 1 of electric oil pump.



- 4 Fill in reducer oil.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

### 2.4.7.10 Replacement of oil cooler assembly

#### Removal procedure

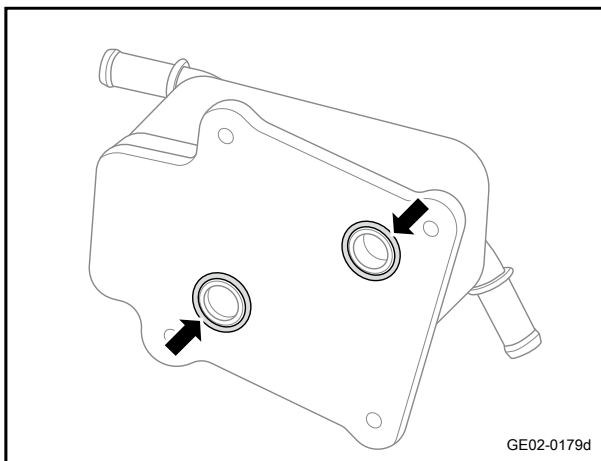


- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain reducer oil. Refer to the [Reducer Lubricating Oil Filling and Drainage](#)
- 3 Discharge of coolant. Refer to the [Coolant Filling and Drainage](#)
- 4 Remove the outlet pipe clamp 1 of electric motor controller and disconnect the electric motor controller outlet pipe from the oil cooler.
- 5 Remove the water pipe clamp 2 between inverter to oil cooler and disconnect the inverter to oil cooler water pipe from the oil cooler.
- 6 Remove 4 fixing screws of oil cooler assembly.
- 7 Remove the oil cooler assembly.

#### Caution

In order to ensure that the coolant and lubricating oil in the oil cooler do not mix, the oil cooler should be kept parallel to the ground.

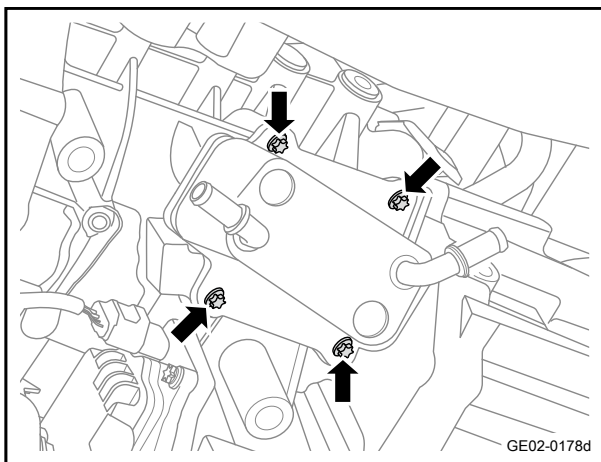
Installation procedure



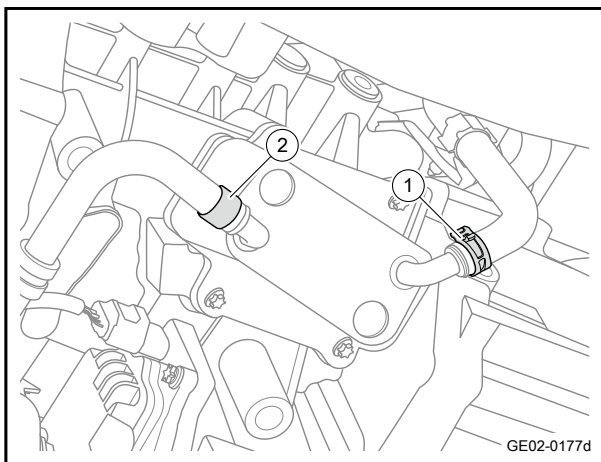
- 1 Replace with new oil cooler O-rings

#### Caution

Before this, clean up the oil stains and dirt on the installation surface of the oil cooler and the oil cooler of the drive motor housing.



- 2 Move the oil cooler assembly to the installation position.
- 3 Install the 4 fixing bolts of the oil cooler assembly.  
Torque: 9.5N·m (metric) 7.0lb-ft (imperial system)



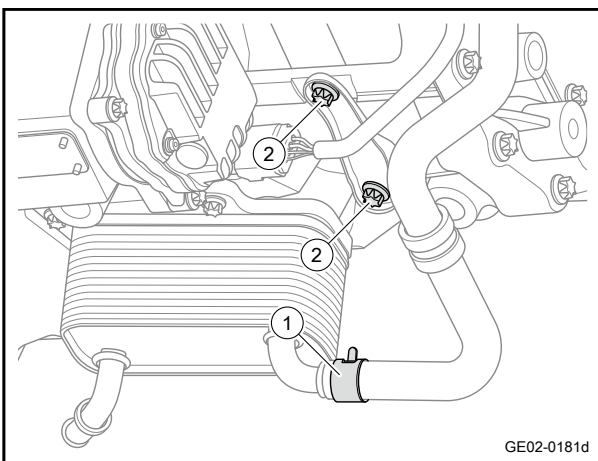
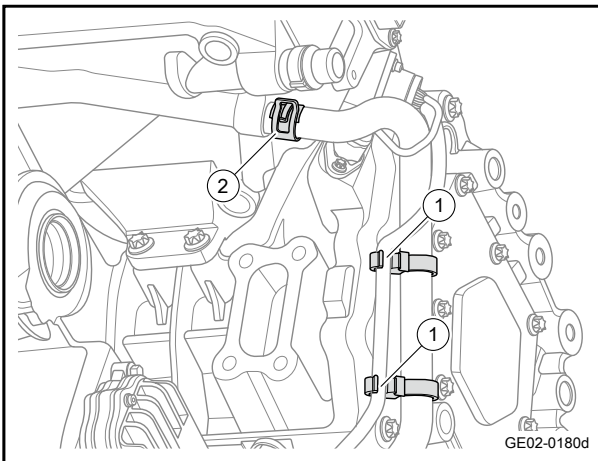
- 4 Connect the motor controller outlet pipe and install the outlet pipe clamp 1 of electric motor controller.
- 5 Connect the inverter to oil cooler water pipe and install the inverter to oil cooler water pipe clamp 2.

- 6 Fill the coolant.
- 7 Fill in reducer oil.
- 8 Lower the vehicle.

### 2.4.7.11 Replacement of Water Pipe from Inverter to Oil Cooler

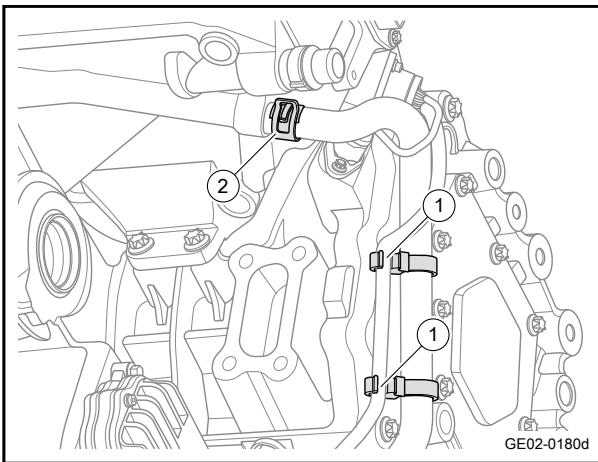
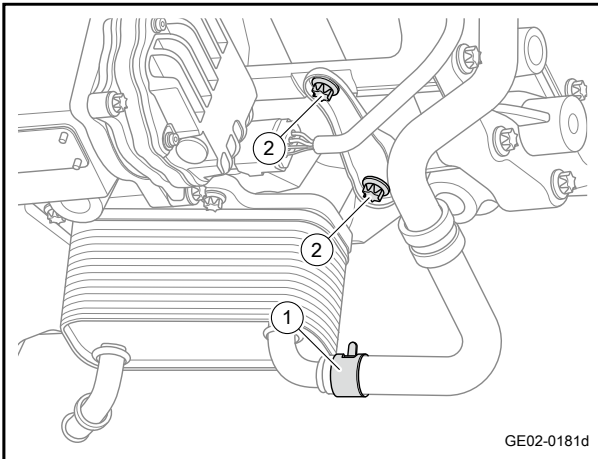
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Remove the front fender liner. Refer to [Replacement of front fender liner](#)
- 5 Remove the power harness cover. Refer to the [Replacement of Driving Motor Controller](#)
- 6 Disengage the harness buckle 1 on the water pipe.
- 7 Remove the inverter to oil cooler water pipe clamp 2 and disconnect the inverter to oil cooler water pipe and electric drive motor controller.



- 8 Remove the water pipe clamp 1 between inverter to oil cooler and disconnect the inverter to oil cooler water pipe from the oil cooler.
- 9 Remove the 2 fixing bolts 2 from the inverter to the oil cooler water pipe bracket.
- 10 Remove water pipe from inverter to oil cooler.

Installation procedure



- 1 Move water pipe from inverter to oil cooler to installation position.
- 2 Install the inverter to the 2 fixing bolts 2 of oil cooler water pipe bracket.  
Torque: 8N·m (metric) 5.9lb-ft (imperial system)
- 3 Connect the inverter to oil cooler water pipe to the oil cooler, and install the inverter to oil cooler water pipe clamp 1.
- 4 Connect the inverter to oil cooler water pipe and install the inverter to oil cooler water pipe clamp 2.
- 5 Install the wire harness buckle 1 on the water pipe.
- 6 Install power harness cover.
- 7 Install the front fender liner.
- 8 Connect the DC bus assembly.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

#### 2.4.7.12 Replacement of electric shifter

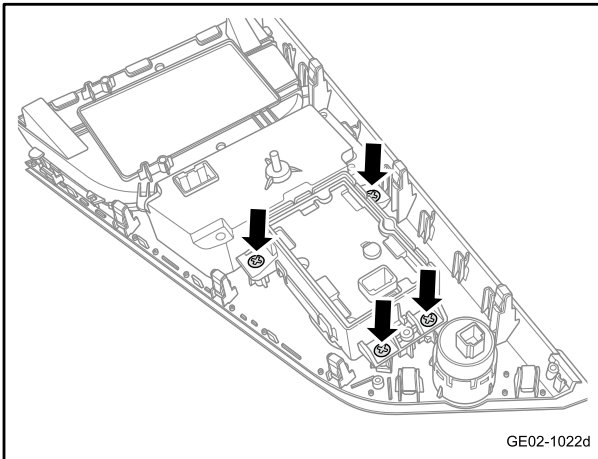
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

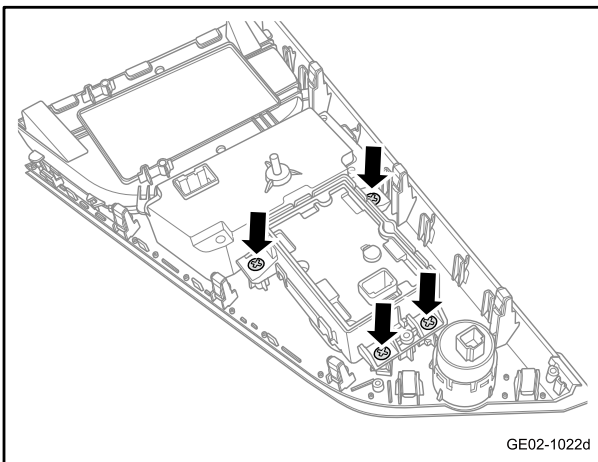
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)



- 3 Remove the 4 fixing bolts of the electronic shifter to the secondary instrument switch set.
- 4 Remove electronic shifter.

#### Installation procedure



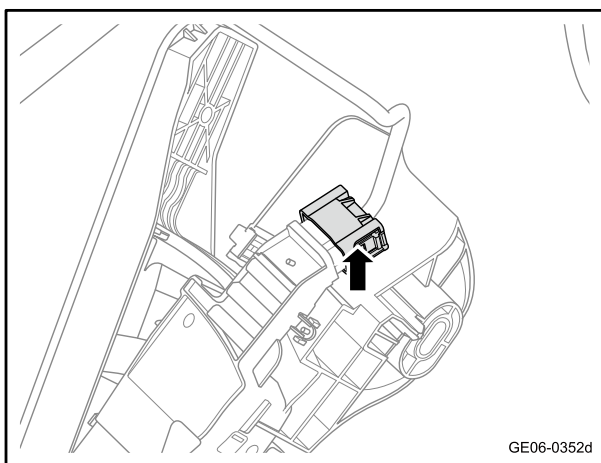
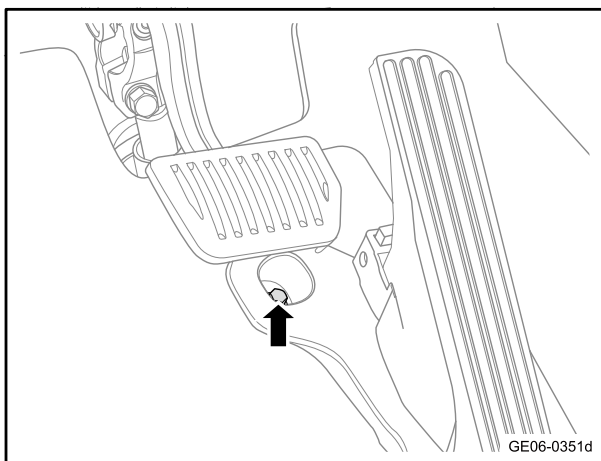
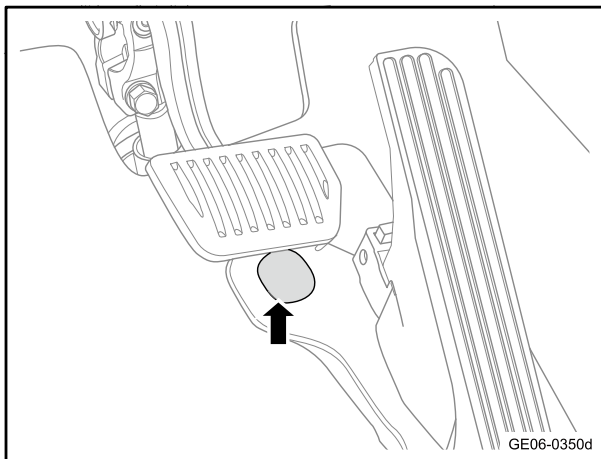
- 1 Move electronic shifter to installation position.
- 2 Install the 4 fixing bolts of the electronic shifter to the sub-instrument switch set.  
Torque: 1.5 N·m (metric system) 1.1 lb-ft (Imperial system)

- 3 Install the auxiliary instrument switch pack.
- 4 Connect the negative cable of battery.

### 2.4.7.13 Replacement of Accelerator Pedal

#### Removal procedure





- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the 1 fixing cover for the accelerator pedal.

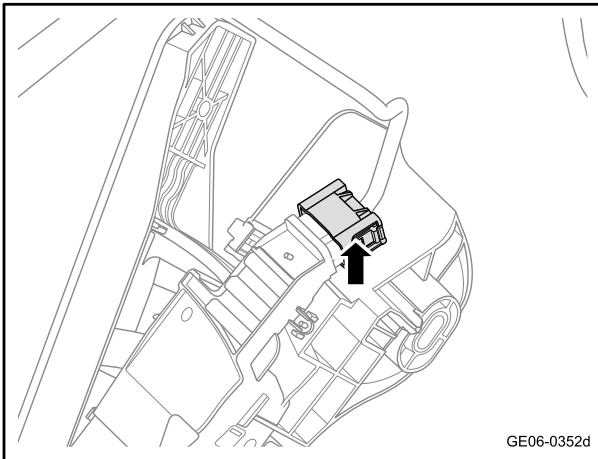
- 3 Remove the 1 fixing bolt for the accelerator pedal.

- 4 Dismount the accelerator pedal.

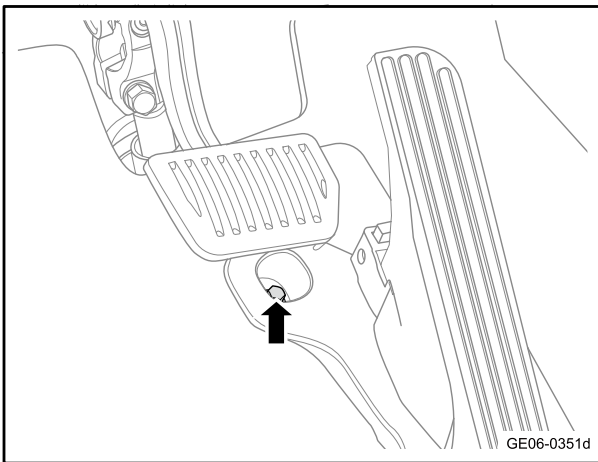
- 5 Disconnect the 1 harness connector for the accelerator pedal.

- 6 Take off the accelerator pedal.

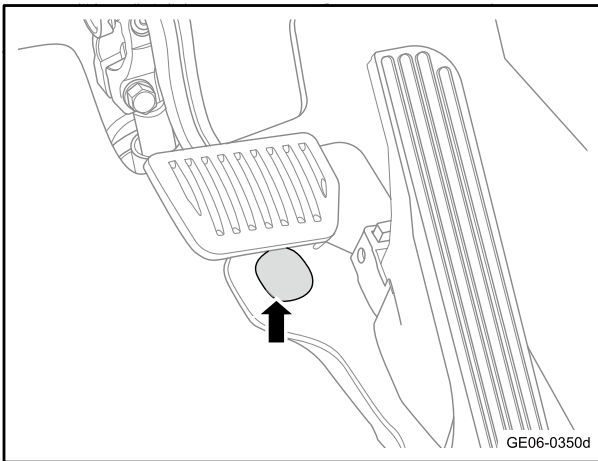
Installation procedure



- 1 Move accelerator pedal to installation position.
- 2 Connect the 1 harness connector for the accelerator pedal.



- 3 Mount the accelerator pedal.
- 4 Install and tighten the 1 fixing bolt for the accelerator pedal.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 5 Install the 1 fixing cover for the accelerator pedal.

- 6 Connect the negative cable of battery.

## 2.5 Cooling system

### 2.5.1 Specification

#### 2.5.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of motor electronic water pump	M6×16	8 - 10	5.9 - 7.4
Fixing bolt of battery electronic water pump	M10×20	35 - 45	25.8 - 33.2
Fixing bolt of air intake grille assembly	M6×25	5 - 7	3.7 - 5.2
Fixing bolt for connecting compressor exhaust hose to exterior heat exchanger	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of three-way solenoid assembly	M6×20	8.5 - 11.5	6.3 - 8.5
Cooling module fixing bolt	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing bolt of exterior heat exchanger	M6×16	8 - 10	5.9 - 7.4
Radiator assembly fixing bolt	M6×16	8 - 10	5.9 - 7.4
Expansion tube assembly (side mounted) fixing bolt	M6×20	5 - 7	3.7 - 5.2
Driving motor ground bolt	M8×18	20 - 26	14.8 - 19.2
Electric compressor fixing bolt	M8×95	20 - 28	14.8 - 20.7

#### 2.5.1.2 Cooling fan specifications

Item	Parameter	Unit
Rated voltage	13.5	V
Rated current (high gear)	≤18	A
Rated current (low gear)	≤14	A
Rated speed (high gear)	1850±100	r/min
Rated speed (low gear)	1200±100	r/min
Rated noise	With cooling module, noise ≤ 67	dB
Rated air volume	Static pressure 100Pa, air volume ≥ 2100	M <sup>3</sup> /h
Assembly fan remaining unbalance	≤20	g.mm

---

### 2.5.1.3 Cooling water pump specification

Item	Parameters (70W)	Parameters (30W)	Unit
Rated voltage	13	13	V
Rated current	2.3	1.61	A
Peak voltage	16	16	V
Peak current	4.5	2	A
Speed regulation mode	PWM signal	PWM signal	-

---

## 2.5.2 Description and operation

### 2.5.2.1 General

#### 1. System composition

The cooling system of this vehicle includes power battery cooling and electric drive system cooling, which consists of the following components:

- Power battery
- Electric drive system (electric motor controller, electric drive system)
- High and Low Voltage Charging System
- Cooling water pump
- Expansion tank
- Radiator
- Radiator fan
- Intelligent variable intake grille motor

#### 2. Function introduction

In the electric drive system, the high-speed rotation of the electric motor rotor will produce high temperature, and the heat will be transmitted through the body. If the temperature is not lowered, the electric drive system cannot work normally, so the electric drive system is equipped with a coolant channel to exchange heat with the outside through the circulation of coolant. In this way, the working temperature of electric drive system can be kept within a certain range, and the electric drive system can be prevented from overheating.

When the high-voltage and low-voltage charging system works, it converts high-voltage alternating current into high-voltage direct current, and a large amount of heat will be generated in the conversion process. Therefore, there is also a coolant channel inside the high-voltage and low-voltage charging system, which reduces the working temperature of the high-voltage and low-voltage charging system through the circulation of coolant.

Electric motor controller not only controls the high-voltage three-phase power supply of the electric drive system, but also converts the high-voltage DC power of the power battery into low-voltage DC power to charge the lead-acid battery. In this process, heat will be generated, which needs to be dissipated by cooling liquid circulation.

Heat will be generated during the charging and discharging process of the power battery, and the charging and discharging ability of the battery will be affected if the temperature is too high. At this time, coolant circulation is needed to dissipate heat to ensure the working temperature of the battery.

## 2.5.3 How the system works

### 2.5.3.1 System Working Principles

#### 1. Overview

The cooling system of this vehicle includes power battery cooling system and electric drive system cooling. The components include power battery cooling system, electric drive system (electric motor controller, electric drive system), high and low voltage charging system, heat exchange integrated module, electric water pump, expansion tank, radiator and radiator fan.

#### 2. Power battery cooling system

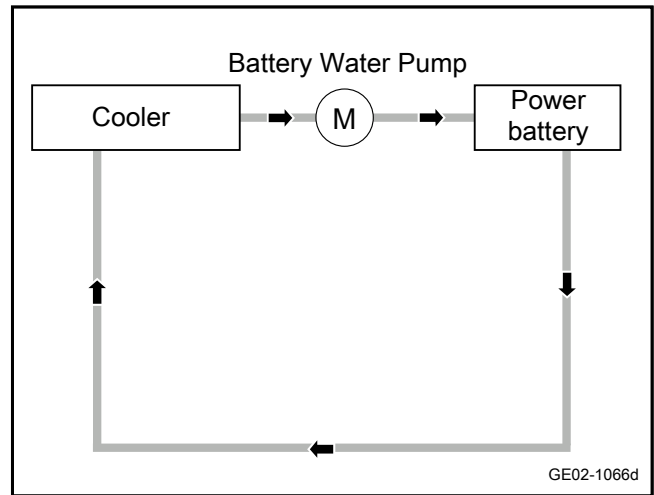
The power battery on the vehicle is always charging and discharging constantly, which will release heat in this thermodynamic process, which will lead to the accumulation of heat generated by it. When the temperature of the power battery is too high, besides aging, the most important thing is that the resistance on the relevant conductor will increase, which will cause the electric energy not to be converted into work, but to be converted into heat and then consumed.

According to the characteristic requirements of the battery, the heat exchange inside and outside the battery pack is realized by water cooling. Through the battery radiator and heat exchange management module, the cooling and heating of the battery is achieved, to ensure that the battery can work normally and efficiently.

The function of cooling system is to dissipate heat for the power battery through cooling liquid circulation, and heat the power battery at an appropriate time through the heat exchange management module and the whole vehicle pipeline.

Battery pump is controlled by PWM sent by VCU, and different PWM corresponds to different speed control.

The flow direction of coolant in the pipeline driven by battery water pump is as follows:

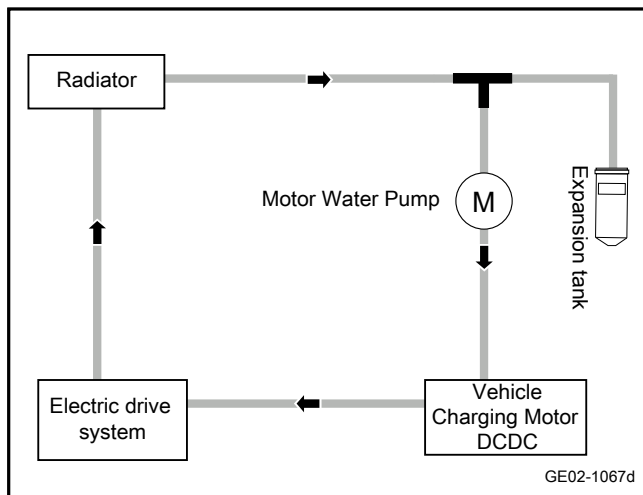


In the electric drive system, the high-speed rotation of the electric motor rotor will produce high temperature, and the heat will be transmitted through the body. If the temperature is not lowered, the electric drive system cannot work normally, so the electric drive system is equipped with a coolant channel to exchange heat with the outside through the circulation of coolant. In this way, the working temperature of electric drive system can be kept within a certain range, and the electric drive system can be prevented from overheating.

When the high-voltage and low-voltage charging system works, it converts high-voltage alternating current into high-voltage direct current, and a large amount of heat will be generated in the conversion process. Therefore, there is also a coolant channel inside the high-voltage and low-voltage charging system, which reduces the working temperature of the high-voltage and low-voltage charging system through the circulation of coolant.

The high and low voltage charging system also converts the high voltage DC of the power battery into low voltage DC to charge the lead-acid battery. In this process, heat will be generated, which needs to be dissipated by cooling liquid circulation.

The cooling of electric drive system is to dissipate heat for high and low voltage charging system (DCDC), electric motor controller, electric motor and radiator components through cooling liquid circulation. Driven by the motor water pump, the flow direction of coolant in the pipeline is as follows:



requests to control the battery inlet temperature to cool the battery.

### 3. Electric water pump

The cooling system of this vehicle contains two electric water pumps, which are cooled by battery water pump and motor water pump respectively, and are driven by low-voltage circuit to provide pressure for the circulation of coolant.

### 4. Expansion tank

The expansion tank assembly is a transparent plastic tank, similar to the front washer fluid tank. The expansion tank assembly is connected with the radiator through a water pipe.

It gradually increases and expands with the temperature of the coolant. Part of the coolant flows into the expansion tank assembly from the radiator and various devices due to expansion. The air trapped in the radiator and liquid passage is also drained into the expansion tank assembly.

After the vehicle stops, the coolant automatically cools and shrinks, and the previously discharged coolant is sucked back into the radiator. As a result, the coolant in the radiator is kept at a suitable level and the cooling efficiency is improved.

When the cooling system is cold, the coolant level should be maintained between the MIN (minimum) and MAX (maximum) marks on the expansion tank assembly.

### 5. Cooling fan

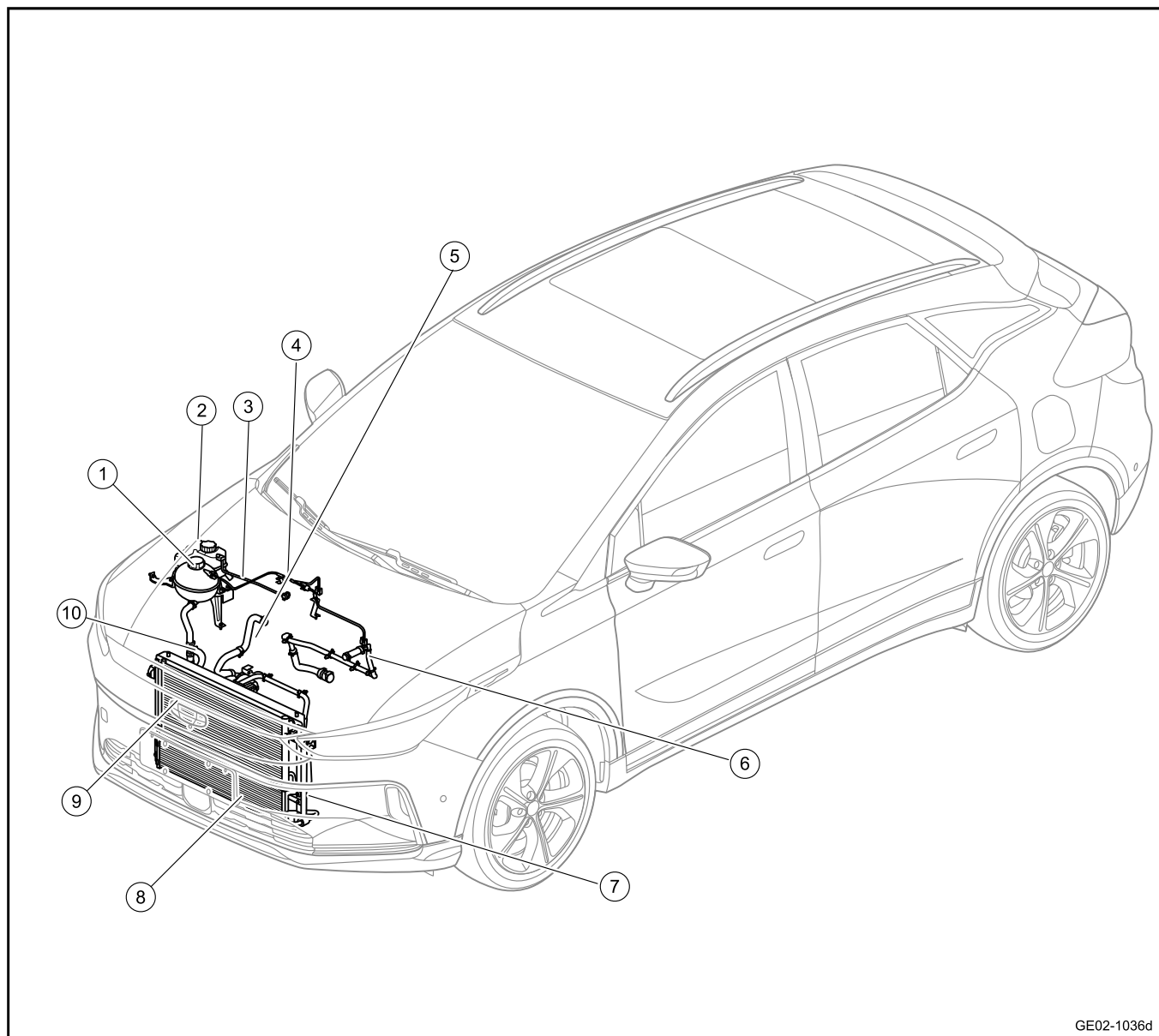
The cooling fan assembly is installed at the rear of the radiator in the engine compartment. It can increase the ventilation rate of the radiator and the air-conditioning condenser, thereby contributing to increase in the cooling speed of the vehicle at idle or low speed.

Through the control of VCU to the cooling fan, the cooling function of the cooling system of the electric drive circuit is realized.

When the electric motor circuit and the battery circuit are connected in series to cool the battery, the battery cooling fan

## 2.5.4 Part location

## 2.5.4.1 Component position (high configuration)



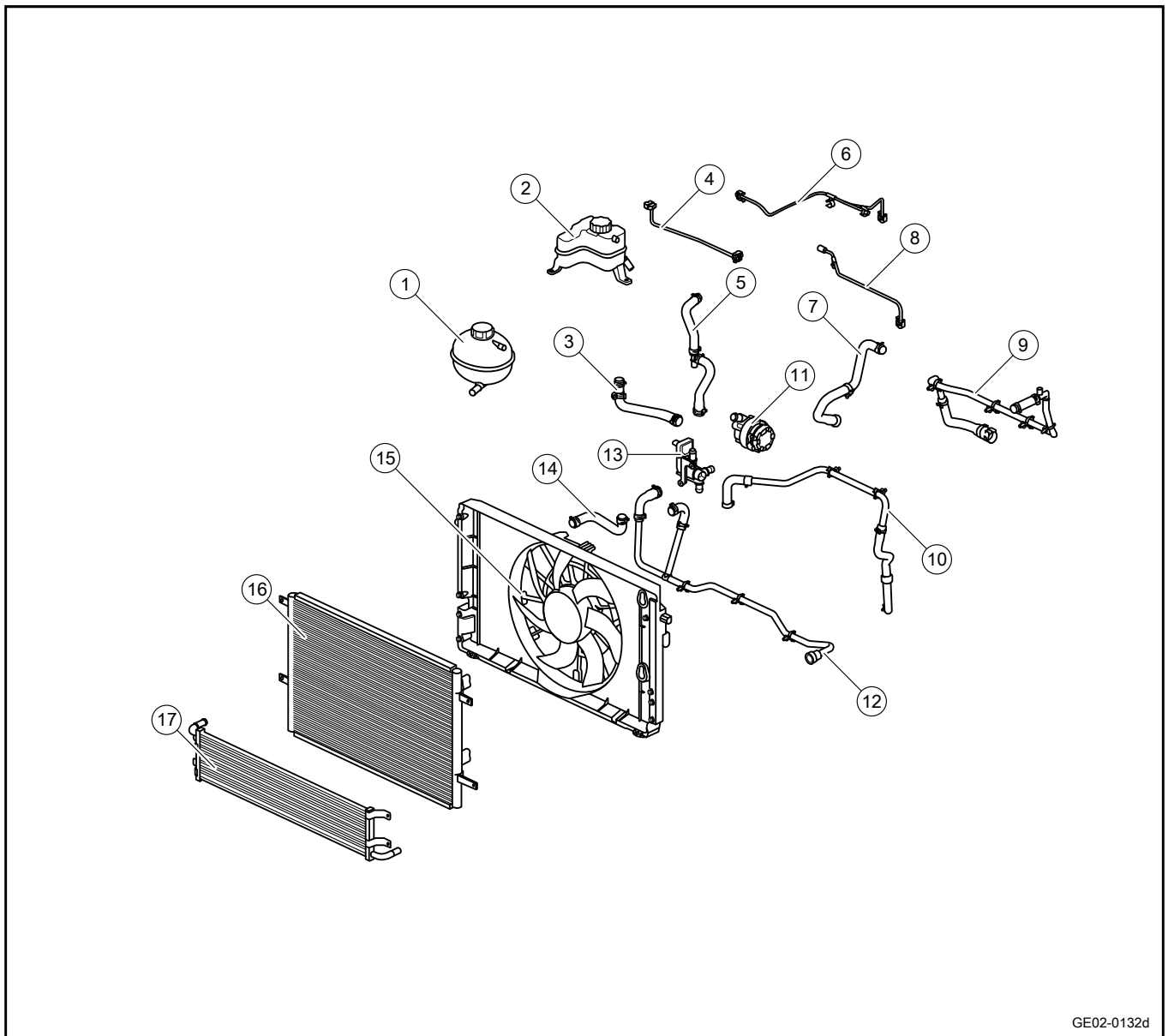
GE02-1036d

- |  |   |
|--|---|
| 1. Expansion tank (side-mounted)                       | 6. Charger outlet pipe                  |
| 2. Expansion tank (battery cooling)                    | 7. Radiator water outlet pipe           |
| 3. Electrically heated vent pipe                       | 8. Radiator assembly                    |
| 4. Driving motor cooling vent pipe                     | 9. External heat exchanger              |
| 5. Outlet pipe of electric motor electronic water pump | 10. Inlet pipe of electronic water pump |



## 2.5.5 Exploded view

## 2.5.5.1 Breakdown Drawing (High Configuration)

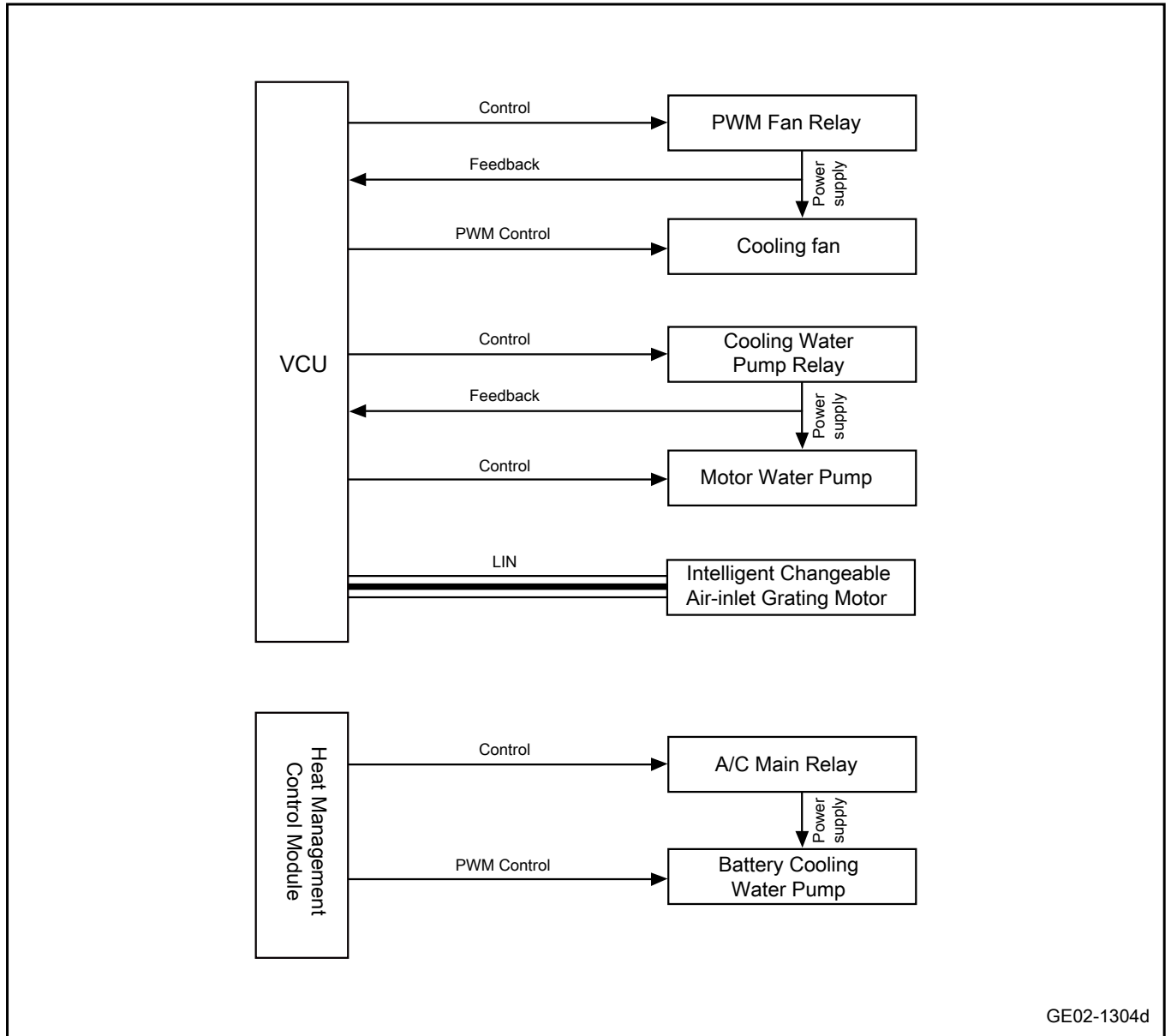


GE02-0132d

- |   |   |
|---|---|
| 1. Expansion tank (side-mounted)                            | 10. Water inlet pipe of electric heating three-way solenoid valve |
| 2. Expansion tank (battery cooling)                         | 11. Electric motor electronic water pump                          |
| 3. Inlet pipe of electronic water pump                      | 12. Radiator water outlet pipe                                    |
| 4. Electrically heated vent pipe                            | 13. Three-way solenoid valve assembly                             |
| 5. Water inlet pipe of electric motor electronic water pump | 14. Radiator water inlet pipe                                     |
| 6. Driving motor cooling vent pipe                          | 15. Cooling fan   |
| 7. Outlet pipe of electric motor electronic water pump      | 16. External heat exchanger                                       |
| 8. Radiator vent pipe                                       | 17. Radiator  |
| 9. Charger outlet pipe                                      |   |

2.5.6 Electrical block diagram

2.5.6.1 Electrical schematic diagram of cooling system



GE02-1304d

## 2.5.7 Diagnostic information and steps

### 2.5.7.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

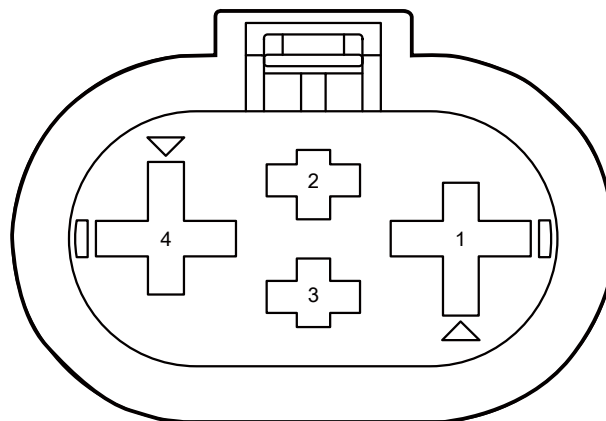
### 2.5.7.2 Routine inspection

1. Check after-sales installations that may affect the performance of the cooling system.
2. Check cooling system components and lines that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a fault.
3. Check the cooling system pipeline that is easy to be seen or can be seen to find out whether there is coolant leakage.
4. You can use the "function test" in the fault diagnostic instrument to force the cooling fan to run and check whether the fan can work normally to quickly determine the trouble.

### 2.5.7.3 Cooling System Terminal List

#### CA30 cooling fan harness connector

### CA30 Cooling fan harness connector



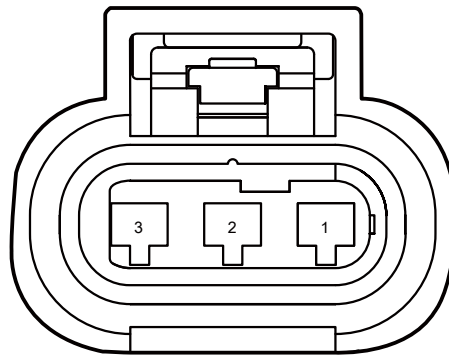
GE02-1326d

Terminal No.	Terminal name	Terminal description
1	ALT power supply	Cooling fan battery power supply
2	Relay power supply	Relay power input

Terminal No.	Terminal name	Terminal description
3	Fan control signal	PWM control signal of cooling fan
4	Ground connection	Cooling fan grounding circuit

### Harness Connector of BV14 Battery Cooling Water Pump

## BV14 Battery Cooling Water Pump Harness Connector

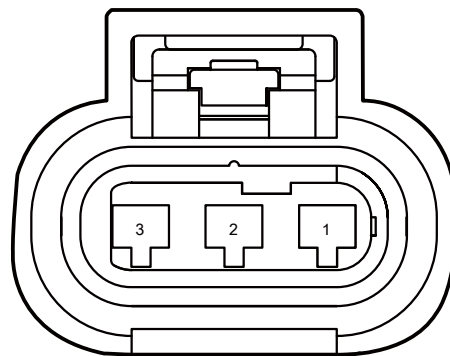


GE02-1327d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Grounding circuit of battery cooling water pump
2	Control signal	PWM control signal of battery cooling water pump
3	Power supply	Cattery power supply of battery cooling water pump

## BV09 motor-driven water pump harness connector

## BV09 Alternator water pump harness connector



GE02-1328d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Ground circuit of electric motor water pump
2	Control signal	Electric motor pump control signal
3	Power supply	Battery power supply of electric motor water pump

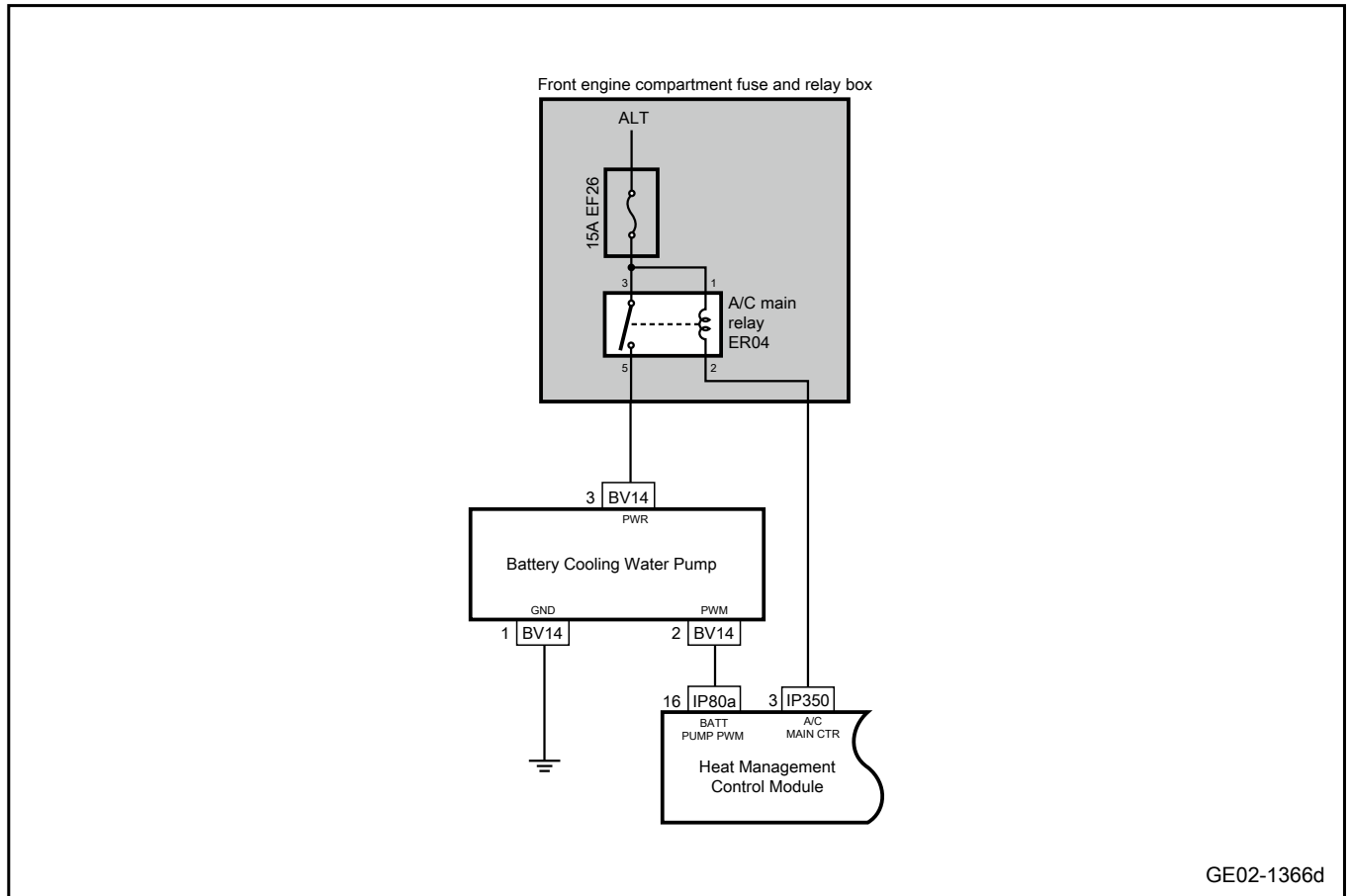
## 2.5.7.4 Fault symptom table

Symptom	Suspected parts	Measures
Inoperative cooling fan	1. Fuse	Refer to <a href="#">Inoperative cooling fan</a>
	2. Relay	
	3. Circuit	
	4. Cooling fan	
	5.VCU	
Electric motor water pump does not work	1. Relay	Refer to the <a href="#">Failed Operation of Electric Motor Water Pump</a>
	2. Circuit	
	3. Electric motor pump	
	4.VCU	
Battery cooling water pump does not work	1. Fuse	Refer to the <a href="#">Failed Operation of Battery Cooling Water Pump</a>
	2. Relay	
	3. Circuit	
	4. Battery cooling water pump	

Symptom	Suspected parts	Measures
	5. Thermal management control module	
Intelligent variable intake grille does not work	1. Fuse	Refer to the <a href="#">Failed Operation of Intelligent Variable Intake Grille</a>
	2. Circuit	
	3. Intelligent variable intake grille	
	4.VCU	

2.5.7.5 Battery cooling water pump does not work

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the battery cooling water pump for signs such as damage and falling off.
- B. Check the harness connector of battery cooling water pump and heat management control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** | Check the main relay ER04 of air conditioner.

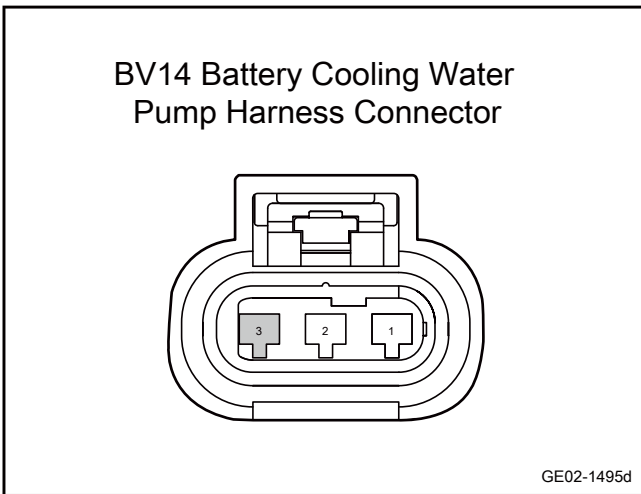
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 4** | Check the open circuit between the battery cooling water pump and the main relay of the air conditioner.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	ER04(5)	Standard resistance: less than 1Ω

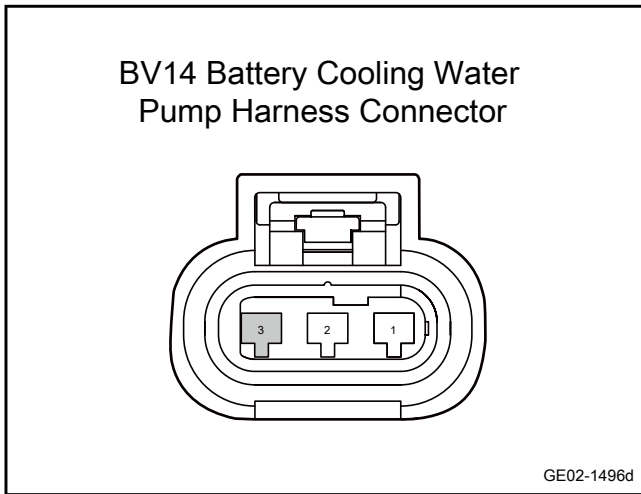
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the wiring between the battery cooling water pump and the main relay of the air conditioner for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

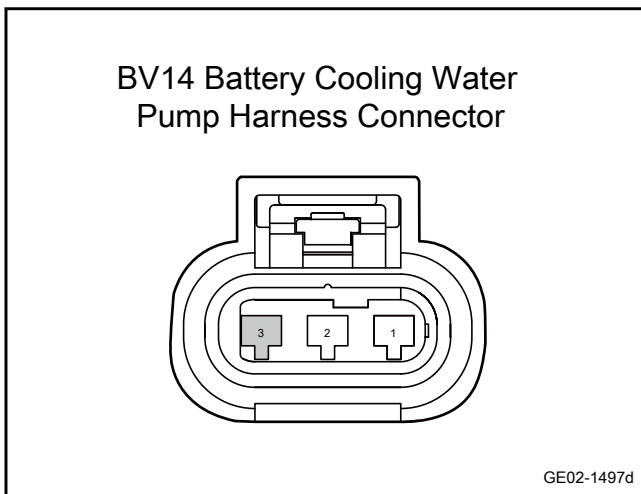
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the wiring between the battery cooling water pump and the main relay of the air conditioner for short circuit to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

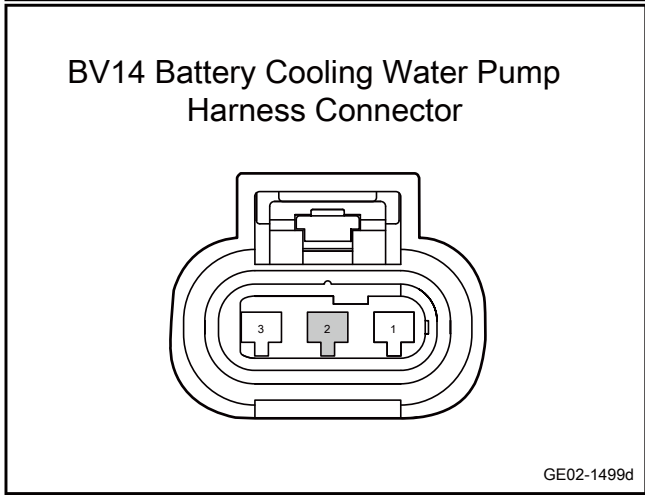
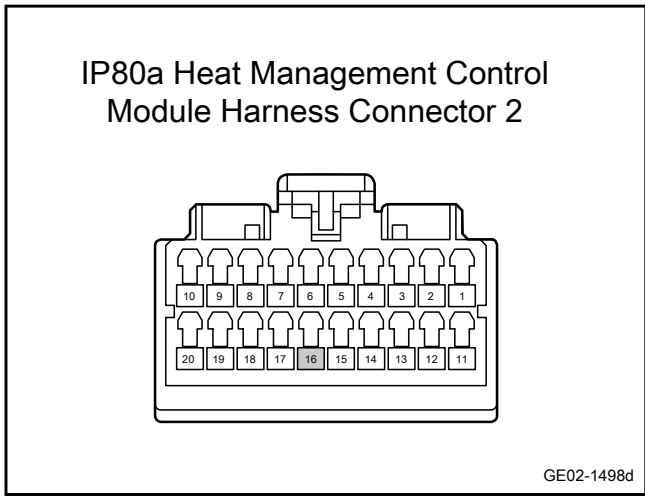
No

Repair or replace the harness.

Yes



**Step 7** Check the wiring between the battery cooling water pump and the thermal management control module for an open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	BV14(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

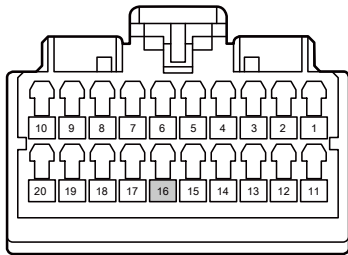
No

Repair or replace the harness.

Yes

**Step 8** Check the wiring between the battery cooling water pump and the thermal management control module for short circuit to ground.

IP80a Heat Management Control Module Harness Connector 2



GE02-1500d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

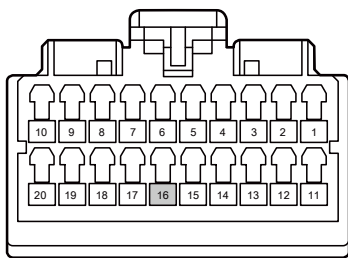
No

Repair or replace the harness.

Yes

**Step 9** Check the wiring between the battery cooling water pump and the thermal management control module for short circuit to the power supply.

IP80a Heat Management Control Module Harness Connector 2



GE02-1501d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

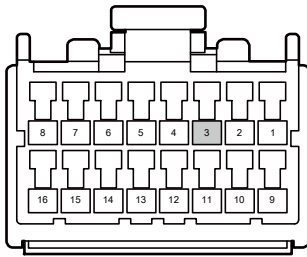
No

Repair or replace the harness.

Yes

**Step 10** Check the wiring between the air conditioner main relay and the thermal management control module or an open circuit.

IP350 Heat Management Control Module Harness Connector 4



GE02-1502d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the heat management control module harness connector IP350.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(3)	ER04(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

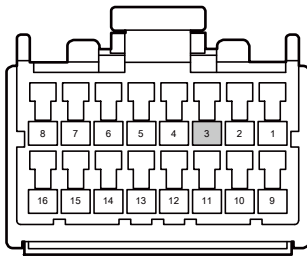
No

Repair or replace the harness.

Yes

**Step 11** Check the wiring between the main relay of the air conditioner and the thermal management control module for short circuit to ground.

IP350 Heat Management Control Module Harness Connector 4



GE02-1503d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the heat management control module harness connector IP350.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

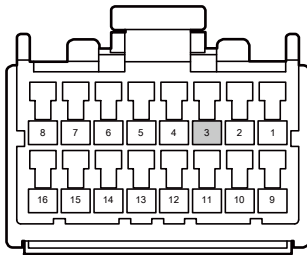
No

Repair or replace the harness.

Yes

**Step 12** Check the wiring between the main relay of the air conditioner and the thermal management control module for short circuit to the power supply.

IP350 Heat Management Control Module Harness Connector 4



GE02-1504d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the heat management control module harness connector IP350.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

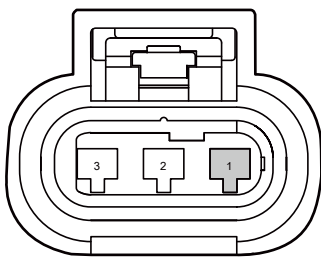
No

Repair or replace the harness.

Yes

Step 13	Check whether the battery cooling water pump ground wire is normal.
---------	---

BV14 Battery Cooling Water Pump Harness Connector



GE02-1505d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV14 of battery cooling water pump.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 14	Replace the battery cooling water pump.
---------	---

- A. Replace the battery cooling water pump, refer to the [Replacement of Battery Cooling Water Pump](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 15	Replace the thermal management control module.
------------	--

- A. Check whether the power supply and the grounding harness of heat management control module are normal. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module, see [Replacement of the Thermal Management Control Module](#)

Next Step

Step 16	Reprogram and reset heat management control module.
------------	---

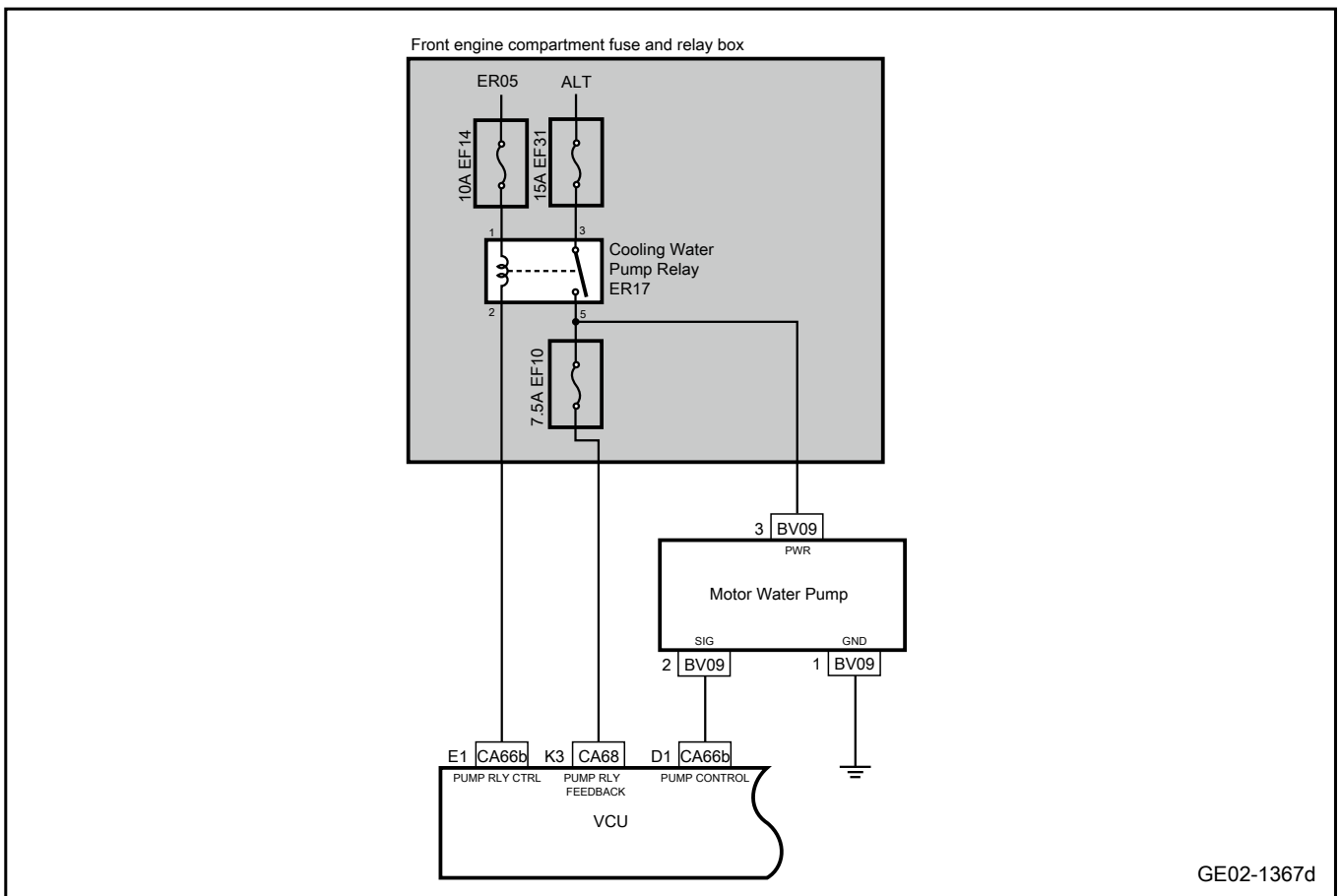
- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 17	System is normal.
------------	-------------------

### 2.5.7.6 Electric motor water pump does not work

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check whether the electric motor water pump is damaged or falls off.
- B. Check the motor-driven water pump, VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF14 of the front engine bay. Check whether the fuse EF14 is blown.  
  
Rated fuse capacity: 10A
- C. Pull out the fuse EF31 of the front engine bay. Check whether the fuse EF31 is blown.  
  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the cooling water pump relay ER17.

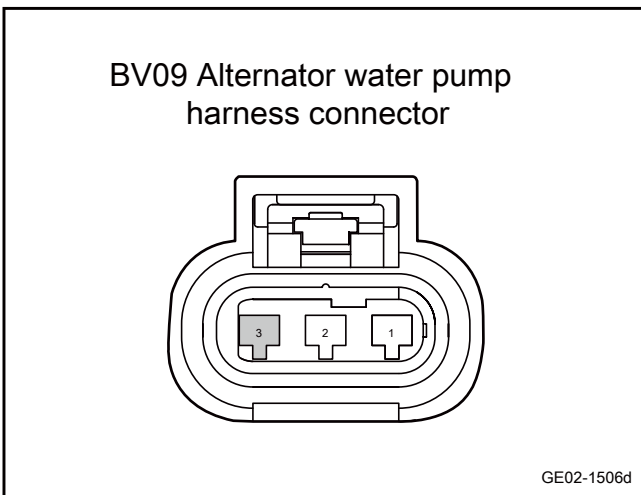
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the cooling water pump relay ER17 and replace the cooling water pump relay with a new relay of the same specifications.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 4** Check the wiring between the electric motor water pump and the cooling water pump relay for an open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(3)	ER17(5)	Standard resistance: less than 1Ω

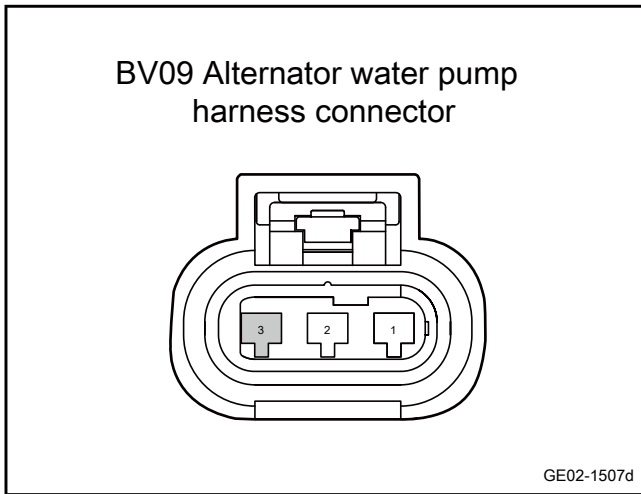
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the wiring between the electric motor water pump and the cooling water pump relay for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

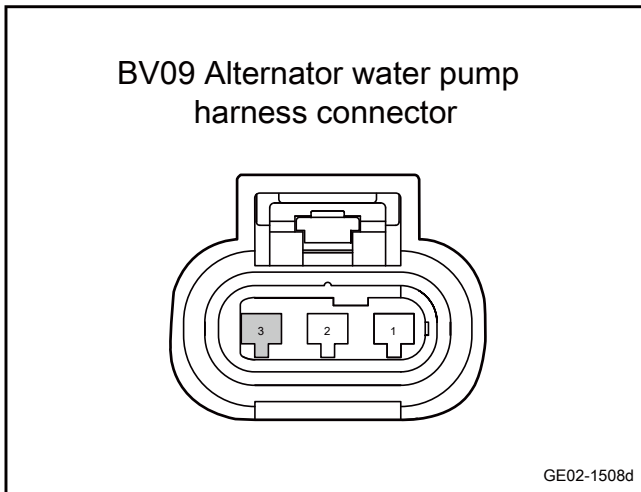
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the wiring between the electric motor water pump and the cooling water pump relay for short circuit to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

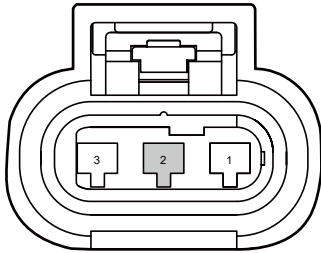
Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between motor-driven water pump and VCU is open.

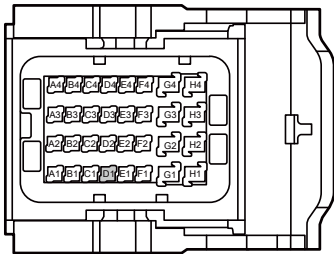


BV09 Alternator water pump harness connector



GE02-1509d

CA66b VCU module harness connector A



GE02-1510d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	CA66b(D1)	Standard resistance: less than 1Ω

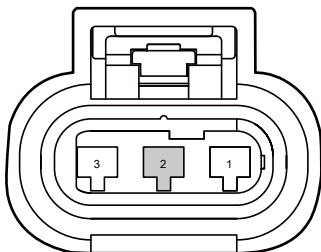
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 8 Check the wiring between electric motor water pump and VCU for short circuit to ground.

BV09 Alternator water pump harness connector



GE02-1511d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

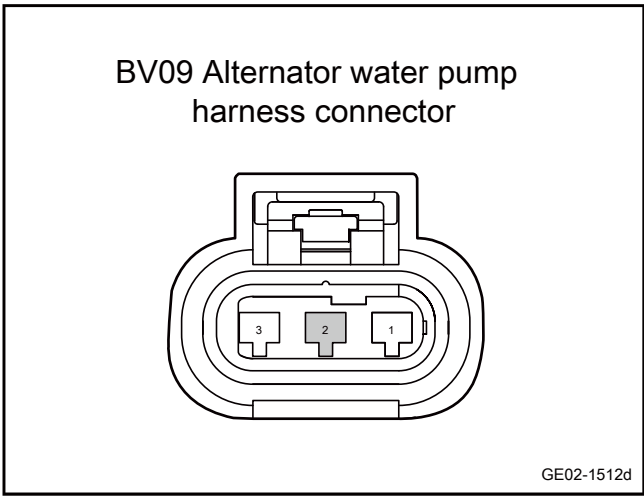
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check whether the circuit between the motor-driven water pump and VCU is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the harness connector BV09 of electric motor water pump.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

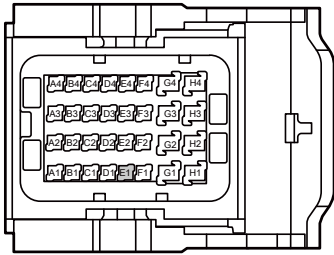
No

Repair or replace the harness.

Yes

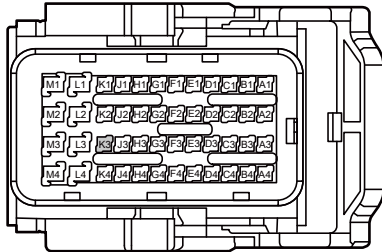
Step 10 Check whether the circuit between motor-driven water pump relay and VCU is open.

CA66b VCU module harness connector A



GE02-1513d

CA68 VCU module harness connector C



GE02-1514d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect VCU harness connector CA66b and CA68.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	ER17(2)	Standard resistance: less than 1Ω
CA68(K3)	ER17(5)	

- E. Confirm whether the measured value meets the standard.

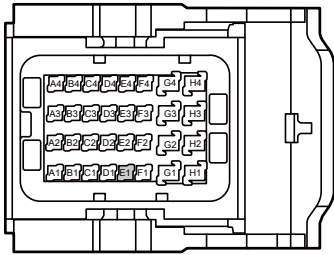
No

Repair or replace the harness.

Yes

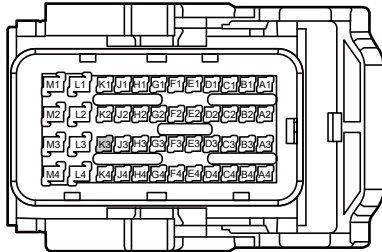
Step 11 | Check the wiring between the cooling water pump relay and VCU for short circuit to ground.

CA66b VCU module harness connector A



GE02-1515d

CA68 VCU module harness connector C



GE02-1516d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect VCU harness connector CA66b and CA68.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA68(K3)		

- E. Confirm whether the measured value meets the standard.

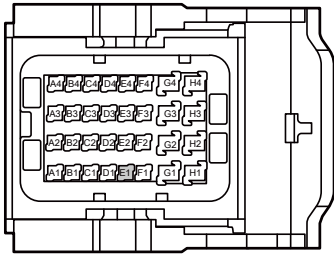
No

Repair or replace the harness.

Yes

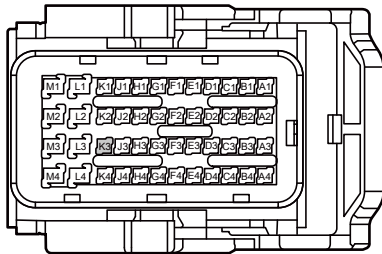
Step 12	Check whether the circuit between motor-driven water pump relay and VCU is short to the power supply.
---------	---

CA66b VCU module harness connector A



GE02-1517d

CA68 VCU module harness connector C



GE02-1518d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect VCU harness connector CA66b and CA68.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard voltage: 0V
CA68(K3)		

- F. Confirm whether the measured value meets the standard.

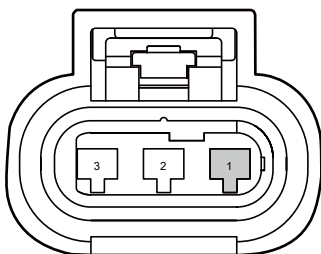
No

Repair or replace the harness.

Yes

Step 13 Check whether the motor-driven water pump grounding circuit is normal.

BV09 Alternator water pump harness connector



GE02-1519d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV09 of electric motor water pump.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 14	Replace the motor-driven water pump.
------------	--------------------------------------

- A. Replace motor water pump, refer to the [Replacement of Electric Motor Water Pump](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 15	Replace the VCU.
------------	------------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 16	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 17	System is normal.
------------	-------------------

### 2.5.7.7 Inoperative cooling fan

Refer to [Cooling fan fault](#)

### 2.5.7.8 Intelligent variable intake grille does not work

Refer to the [Failed Operation of Intelligent Variable Intake Grille](#)

## 2.5.8 Removal and installation

### 2.5.8.1 Replacement of Electric Motor Electronic Water Pump

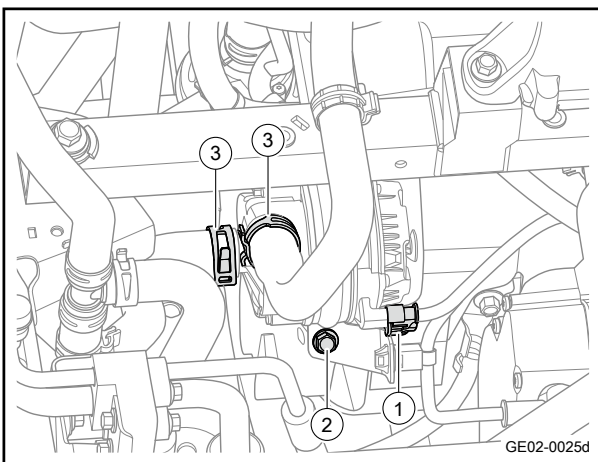
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 5 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 6 Disconnect the harness connector 1 of motor-driven electric oil pump.
- 7 Loosen the 2 fixing bolts 2 of electric motor motor electronic water pump.
- 8 Disengage 2 fixed clamps 3 of the electric motor electronic water pump inlet pipe and outlet pipe, disengage the electric motor electronic water pump inlet pipe and outlet pipe.
- 9 Remove the electric motor electronic water pump.

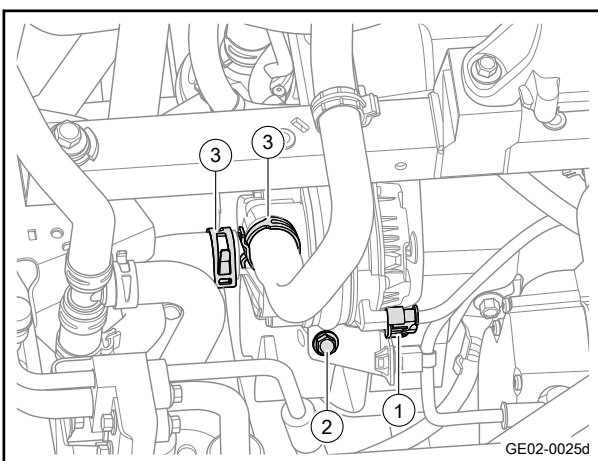


#### Installation procedure

- 1 Move the electric motor electronic water pump to the installation position.
- 2 Install the 2 fixing clamps 3 for inlet and outlet pipes of electric motor electronic water pump.
- 3 Install the 2 fixing bolts 2 for electric motor electronic water pump.  
Torque: 9N·m (metric) 6.6 lb-ft (imperial system)
- 4 Connect the harness connector 1 of motor-driven electric oil pump.

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

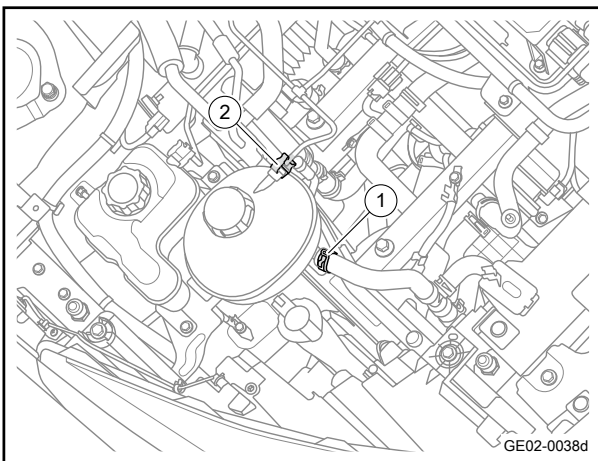


- 5 Fill power battery coolant.
- 6 Install the front engine bilge guard.
- 7 Lower the vehicle.
- 8 Install the front cabin trim cover assembly.
- 9 Connect the negative cable of battery.

### 2.5.8.2 Replacement of Expansion Tank Assembly

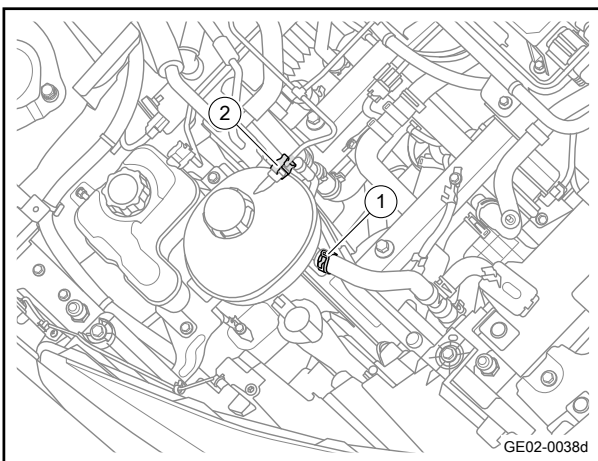
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove front engine compartment hood. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the fixing clamp 1 of electronic water pump inlet pipe and disconnect the electronic water pump inlet pipe.
- 5 Disconnect the expansion tank assembly (side) from the drive motor cooling vent pipe 2.
- 6 Take out the expansion tank assembly (side mounted).



#### Installation procedure

- 1 Move the expansion tank assembly (side) to the installation position.
- 2 Connect the expansion tank assembly (side) to the drive motor cooling vent pipe 2.
- 3 Install electronic water pump inlet pipe fixing clamp 1.



- 4 Fill power battery coolant.
- 5 Install the front cabin trim cover assembly.
- 6 Connect the negative cable of battery.



### 2.5.8.3 Replacement of Charger Outlet Pipe

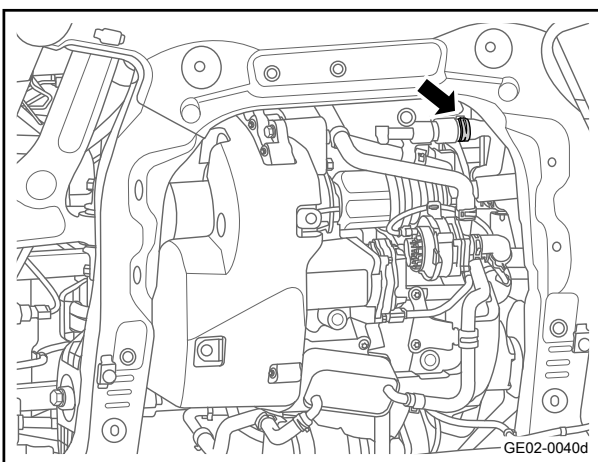
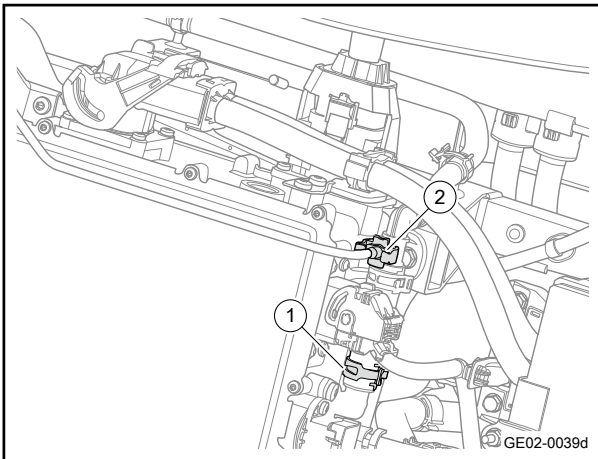
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

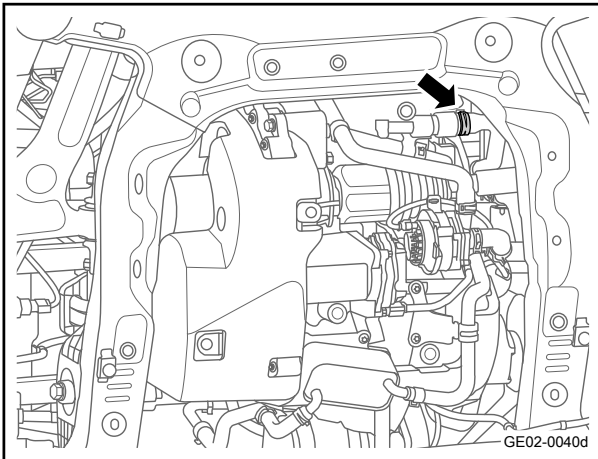
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 5 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 6 Remove fixing clamp 1 (high and low voltage charging system assembly side) of charger outlet pipe and disconnect charger outlet pipe.
- 7 Disconnect the cooling vent pipe 2 of electric drive motor.

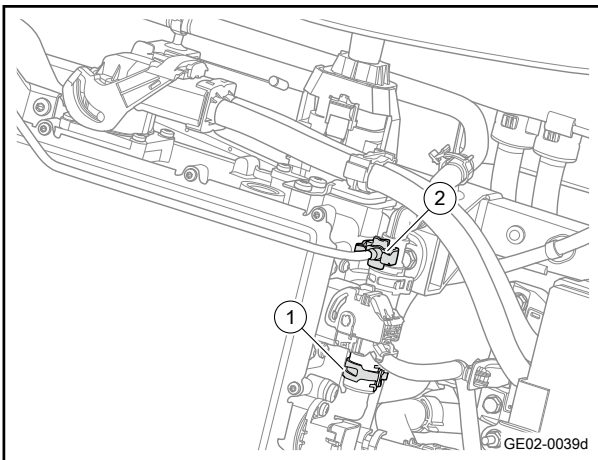


- 8 Disconnect the quick plug connector of the charger outlet pipe. (Electric drive system side)
- 9 Release the charger outlet pipe tie and remove the charger outlet pipe.

#### Installation procedure



- 1 Move the charger outlet pipe to the installation position.
- 2 Install quick plug-in connector for charger outlet pipe.  
(Electric drive system side)



- 3 Install cooling vent pipe 2 of electric drive motor
- 4 Install the fixing clamp 1 (high and low voltage charging system assembly side) of charger outlet pipe.

- 5 Install the front engine bilge guard.
- 6 Fill power battery coolant.
- 7 Lower the vehicle.
- 8 Install the front cabin trim cover assembly.
- 9 Connect the negative cable of battery.

### 2.5.8.4 Replacement of Exterior Heat Exchanger

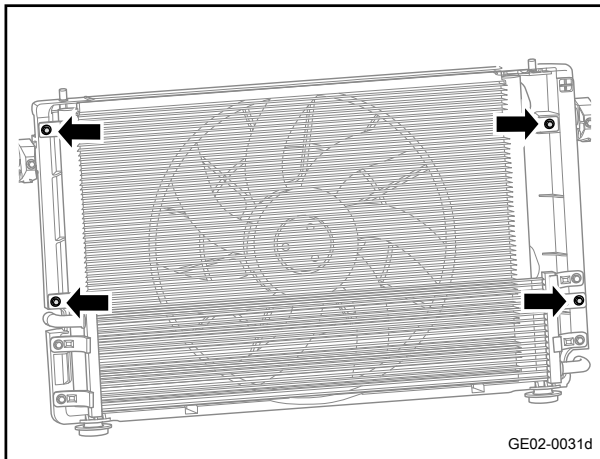
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

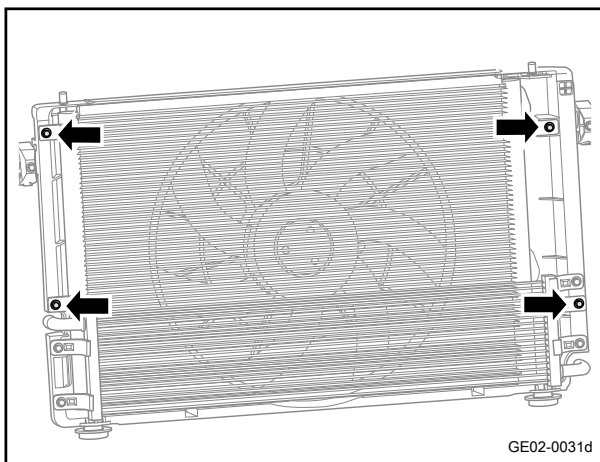
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 4 Disassemble the radiator assembly. Refer to [Replacement of radiator assembly](#)
- 5 Remove the 4 fixing bolts of the exterior heat exchanger.
- 6 Separate the exterior heat exchanger and cooling fan assembly.

#### Installation procedure



- 1 Move the exterior heat exchanger to the installation position.
- 2 Install 4 fixing bolts of exterior heat exchanger.  
Torque: 9N·m (metric) 6.6 lb-ft (imperial system)

- 3 Install the radiator assembly
- 4 Fill power battery coolant.
- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

### 2.5.8.5 Replacement of Three-Way Solenoid Valve Assembly

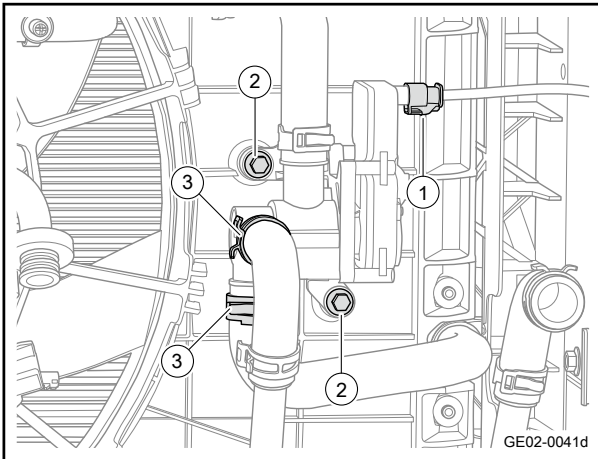
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

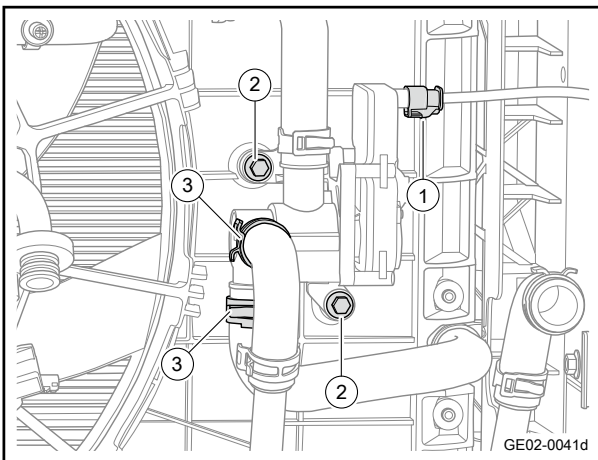
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 4 Disconnect the three-way solenoid assembly harness connector 1.
- 5 Remove the three-way solenoid valve assembly 2 fixing bolts 2.
- 6 Remove the fixing clamp 3 of the radiator inlet and outlet pipes, and disconnect the radiator inlet and outlet pipes and the water inlet pipe of electric heating three-way solenoid valve.
- 7 Remove the three-way solenoid valve assembly.

#### Installation procedure



- 1 Move the three-way solenoid valve assembly to the installation position.
- 2 Connect the inlet and outlet pipes of radiator, the inlet pipe of electric heating three-way solenoid valve, and install the fixing clamp 3 of the inlet and outlet pipes of radiator.
- 3 Install the 2 fixing bolts 2 of three-way solenoid valve assembly.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 4 Connect the harness connector 1 of three-way solenoid assembly.
- 5 Fill power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.6 Replacement of Water Inlet Pipe of Electric Heating Three-Way Solenoid Valve

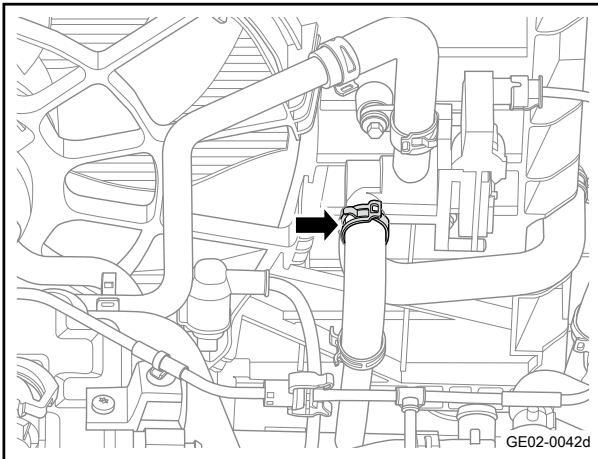
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

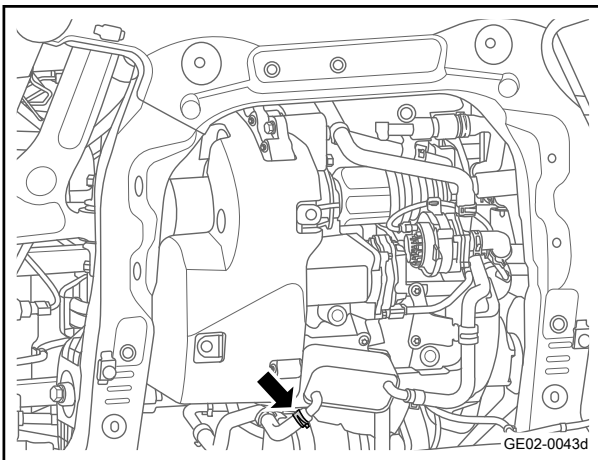
#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)

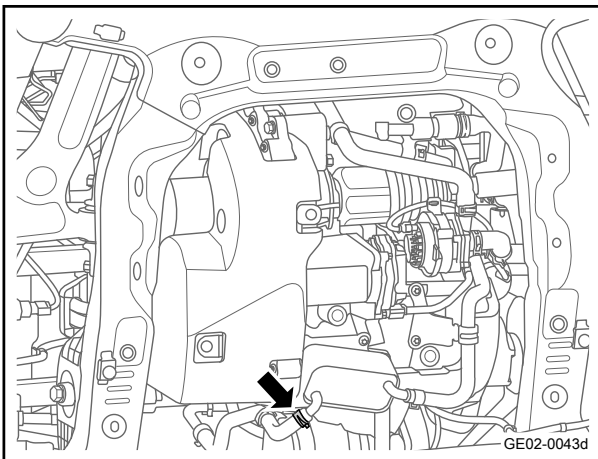


- 5 Remove the fixing clamp on the valve inlet pipe of electric heating three-way solenoid (electric heating three-way solenoid valve side), and disconnect the electric heating three-way solenoid valve inlet pipe (electric heating three-way solenoid valve side).

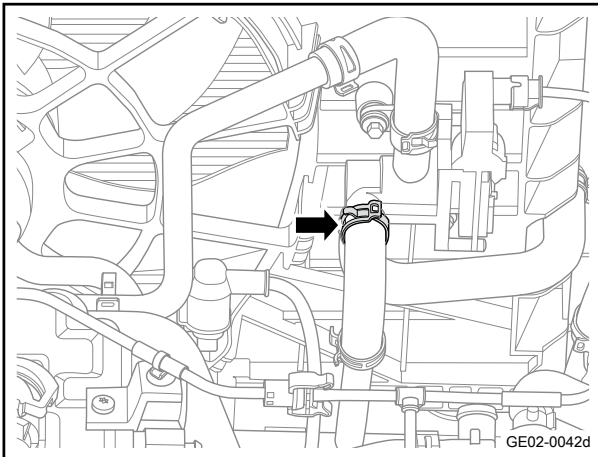


- 6 Remove the fixing clamp on the water inlet pipe (electric drive system side) of the electric heating three-way solenoid valve, and disconnect the water inlet pipe (electric drive system side) of electric heating three-way solenoid valve.
- 7 Remove the water inlet pipe of the electric heating three-way solenoid valve.

#### Installation procedure



- 1 Move the water inlet pipe of the electric heating three-way solenoid valve to the installation position.
- 2 Install fixing clamp on the water inlet pipe (electric drive system side) of electric heating three-way solenoid valve.



- 3 Install fixing clamp on the water inlet pipe (electric heating tee solenoid valve side) of electric heating tee solenoid valve.

- 4 Install the front engine bilge guard.
- 5 Fill power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.7 Replacement of Expansion Tank Assembly (battery cooling)

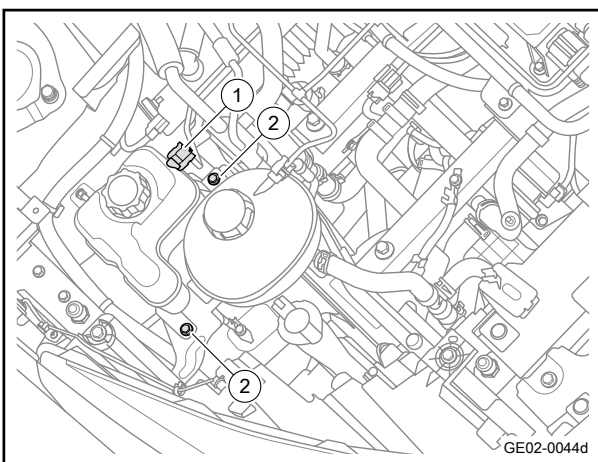
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

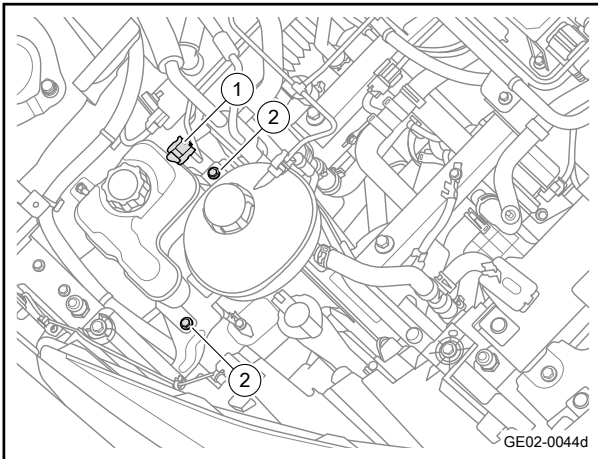
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Disengage the electric heating ventilation pipe clamp 1.
- 5 Remove the 2 fixing bolts 2 of expansion tank assembly (battery cooling).
- 6 Remove the fixing clamp 3 of electric heating water pump front water hose and disengage the front water hose of electric heating water pump.
- 7 Remove the expansion tank assembly (battery cooling).



#### Installation procedure



- 1 Move the expansion tank assembly (battery cooling) to the installation position.
- 2 Install the fixing clamp 3 of electric heating water pump front water hose.
- 3 Install the 2 fixing bolts 2 of expansion tank assembly (battery cooling).  
Torque: 6N·m (metric) 4.4 lb-ft (imperial system)
- 4 Install electrically heated vent pipe buckle 1.

- 5 Fill power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.8 Replacement of Battery Electronic Water Pump

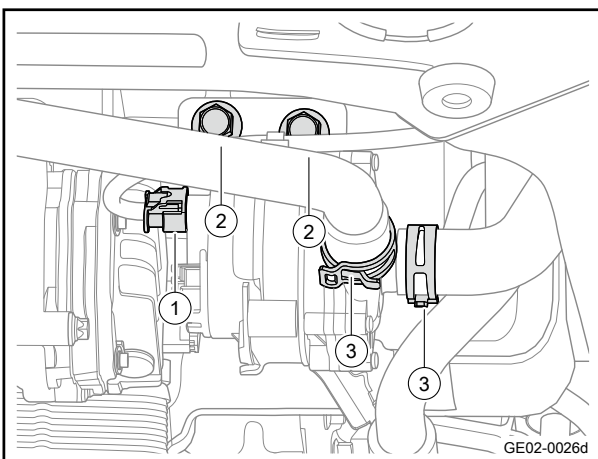
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

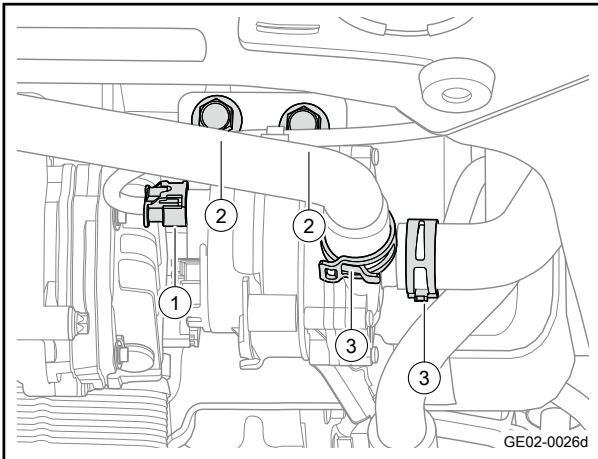
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 5 Disconnect the harness connector 1 of battery-driven electric oil pump.
- 6 Loosen the 2 fixing bolts 2 of battery electronic water pump.
- 7 Remove the 2 fixing clamps 3 of the battery electronic water pump inlet pipe and outlet pipe.
- 8 Remove the battery electronic water pump.



#### Installation procedure



- 1 Move the battery electronic water pump to the installation position.
- 2 Install 2 fixing clamps 3 for battery electronic water pump inlet pipe and outlet pipe.
- 3 Install 2 fixing bolts 2 for battery electronic water pump.  
Torque: 40N·m (metric) 28 lb-ft (imperial system)
- 4 Connect the harness connector 1 of battery-driven electric oil pump.

#### Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 5 Install the front engine bilge guard.
- 6 Fill power battery coolant.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

### 2.5.8.9 Replacement of Intake Grille Assembly

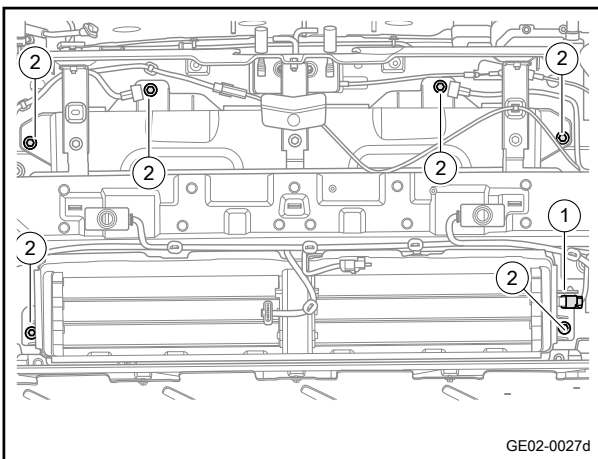
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

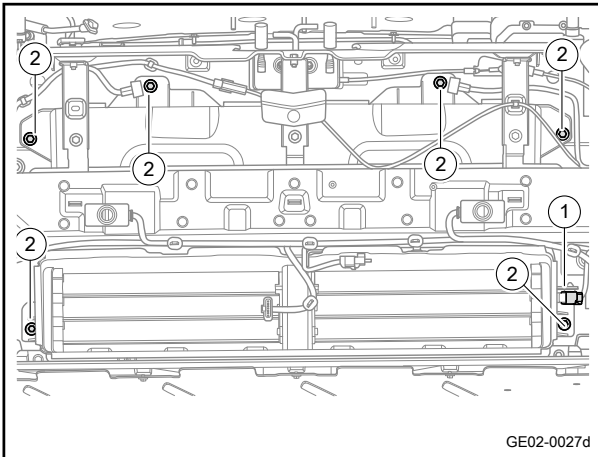
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the pedestrian leg protection bracket. Refer to [Replacement of the leg protection bracket for pedestrians](#)
- 4 Disconnect the harness connector 1 of intake grille assembly.
- 5 Remove the 6 fixing bolts 2 of intake grille assembly.
- 6 Remove intake grille assembly.



#### Installation procedure





- 1 Move intake grille assembly to installation position.
- 2 Install the 6 fixing bolts of the intake grille assembly.  
Torque: 6N·m (metric) 4.4 lb-ft (imperial system)
- 3 Connect the harness connector 1 of intake grille assembly.

- 4 Install the pedestrian leg protection bracket.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

### 2.5.8.10 Replacement of Cooling Module

#### Removal procedure

##### Caution

Special hoop pliers should be used when removing or installing water pipe hoop.

Before the water pipe is disconnected, please place a container at the bottom of the vehicle to catch antifreeze, so as not to pollute the ground.

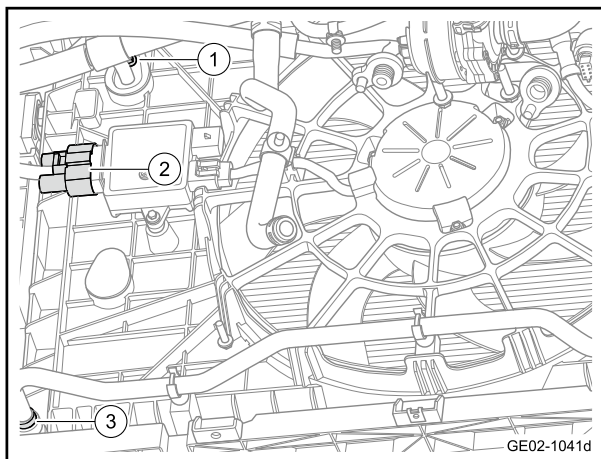
After the pipeline is disconnected, bandage the pipeline in time to prevent foreign matter from entering the pipeline.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

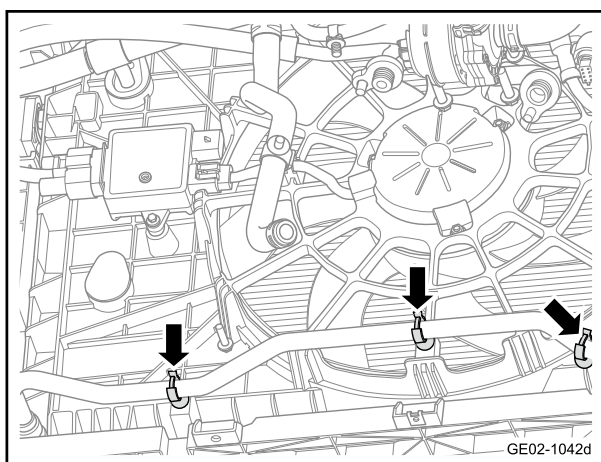
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

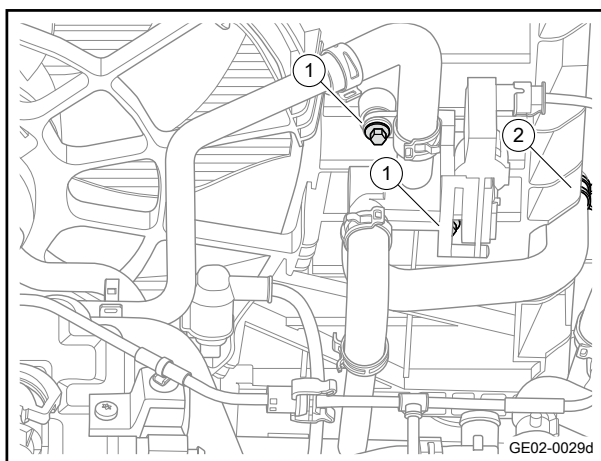
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 5 Remove intake grille assembly. Refer to [Replacement of Intake Grille Assembly](#)



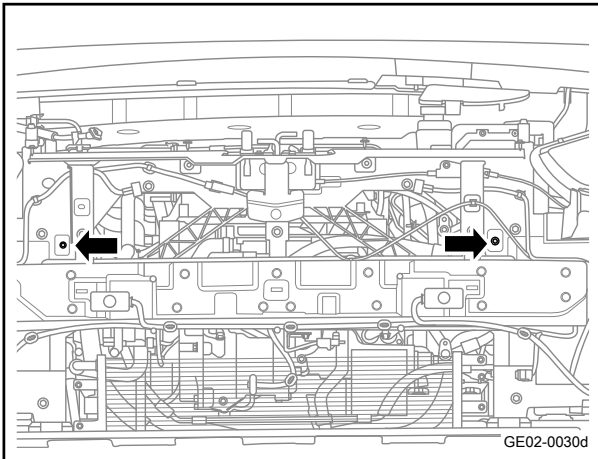
- 6 Remove the 1 fixing bolt 1 connecting compressor exhaust hose to exterior heat exchanger.
- 7 Disconnect the 1 harness connector 2 of the cooling fan.
- 8 Dismount the 1 fixing hoop 3 of radiator water outlet pipe.



- 9 Disengage the 3 fixing buckles of the radiator outlet pipe.

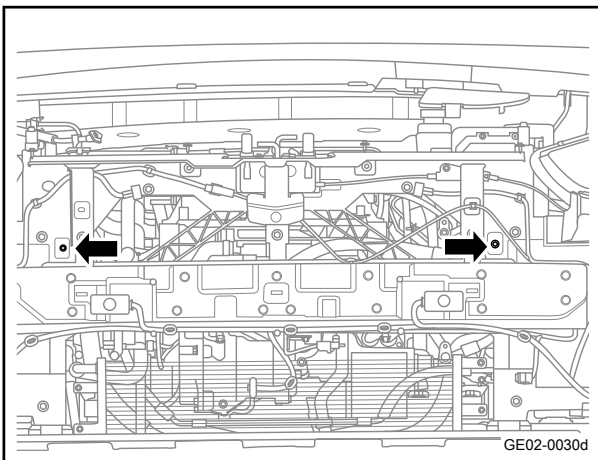


- 10 Remove the 2 fixing bolts 1 of the three-way solenoid valve.
- 11 Disengage the 1 fixing clamp 2 of radiator inlet pipe.

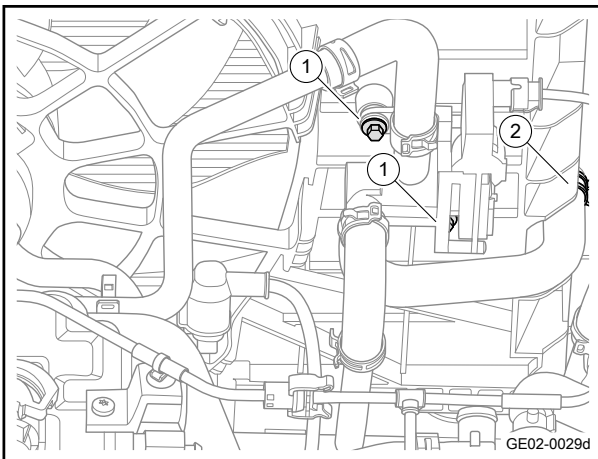


- 12 Remove the 2 fixing bolts of cooling module.
- 13 Remove cooling module.

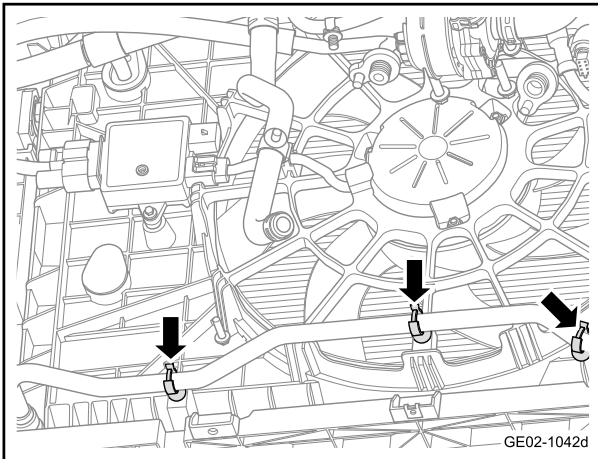
#### Installation procedure



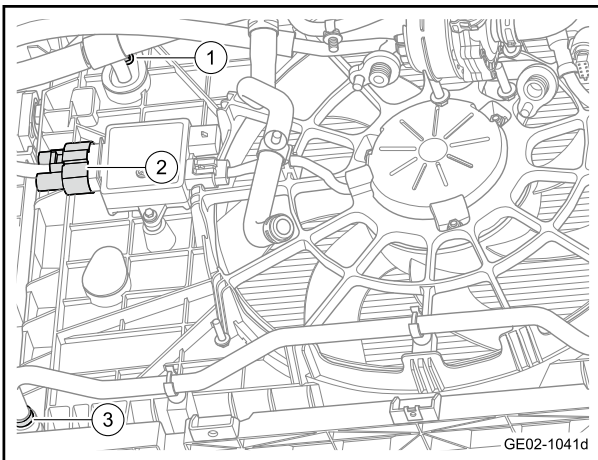
- 1 Move the cooling module to the installation position.
- 2 Install the 2 fixing bolts for the cooling module.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 3 Install the 1 fixing clamp 2 for radiator inlet pipe.
- 4 Install the 2 fixing bolts 1 for three-way solenoid valve.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 5 Install the 3 fixing buckles for radiator outlet pipe.



- 6 Mount the 1 fixing hoop 3 of radiator water outlet pipe.
- 7 Connect the 1 harness connector 2 of the cooling fan.

#### Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 8 Install 1 fixing bolt 1 of the compressor exhaust hose.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

#### Caution

When installing, replace the new sealing ring and apply some lubricating oil. Install intake grille assembly.

- 9 Install intake grille assembly.
- 10 Refill air conditioner refrigerant.
- 11 Fill power battery coolant.
- 12 Lower the vehicle.
- 13 Connect the negative cable of battery.

### 2.5.8.11 Replacement of Cooling Fan Assembly

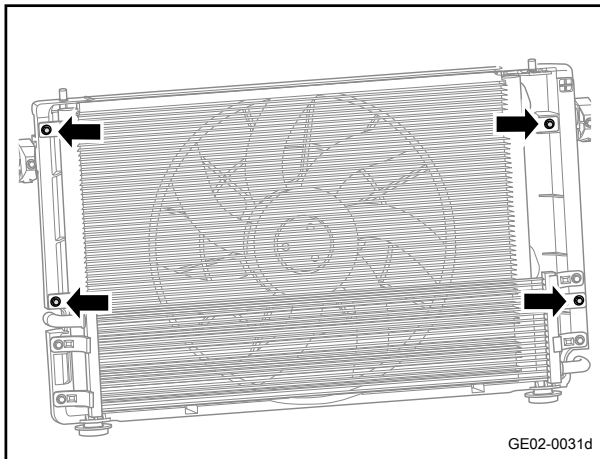
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

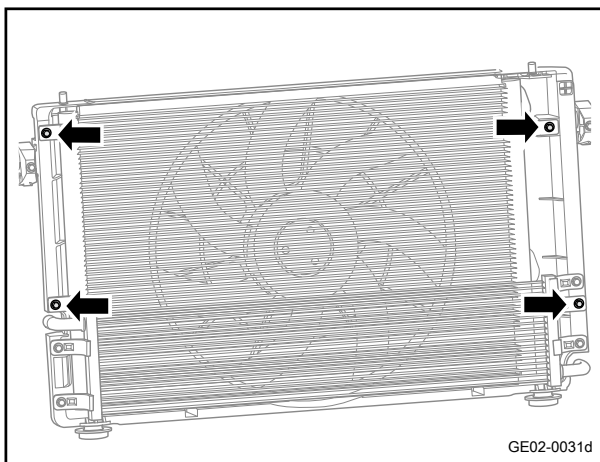
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 5 Disassemble the radiator assembly. Refer to [Replacement of radiator assembly](#)
- 6 Remove the 4 fixing bolts of the exterior heat exchanger.
- 7 Separate the exterior heat exchanger from the cooling fan assembly and remove the cooling fan assembly.

#### Installation procedure



- 1 Move the cooling fan assembly to the installation position.
- 2 Install 4 fixing bolts of exterior heat exchanger.  
Torque: 9N·m (metric) 6.6 lb-ft (imperial system)

- 3 Install the radiator assembly
- 4 Fill power battery coolant.
- 5 Refill air conditioner refrigerant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.12 Replacement of radiator assembly

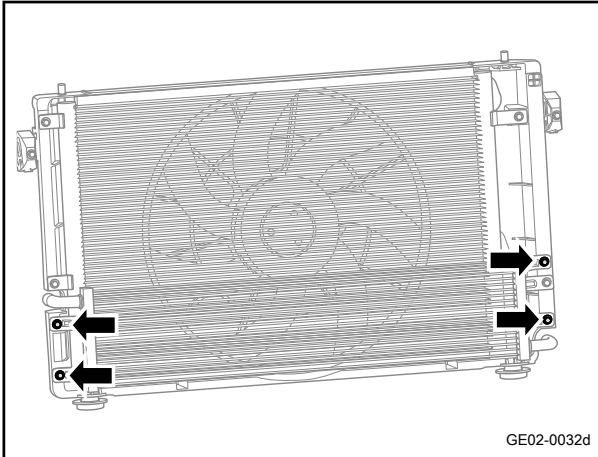
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

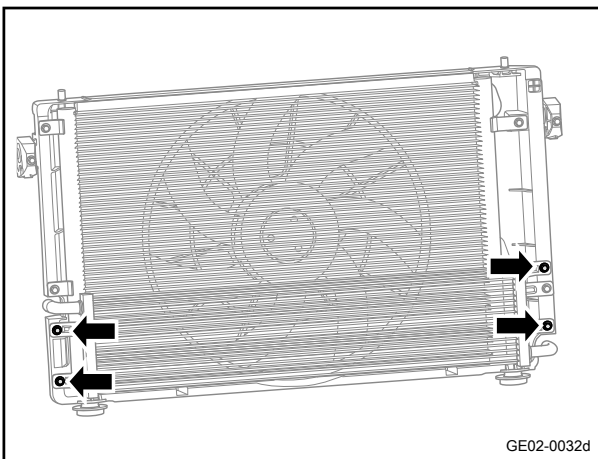
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



- 4 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 5 Remove cooling module. Refer to [Cooling Module Replacement](#)
- 6 Remove 4 fixing bolts of the radiator assembly.
- 7 Take off the radiator assembly.



#### Installation procedure

- 1 Move the radiator assembly to the installation position.
- 2 Install the 4 fixing bolts of the radiator assembly.  
Torque: 9N·m (metric) 6.6 lb-ft (imperial system)

- 3 Install cooling module.
- 4 Refill air conditioner refrigerant.
- 5 Fill power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.13 Replacement of water outlet hose radiator

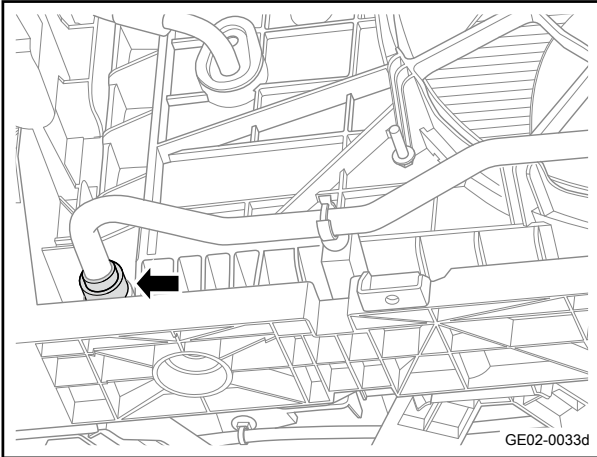
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

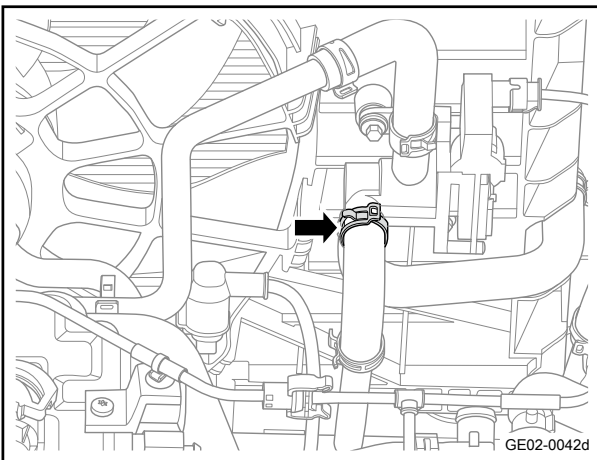
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

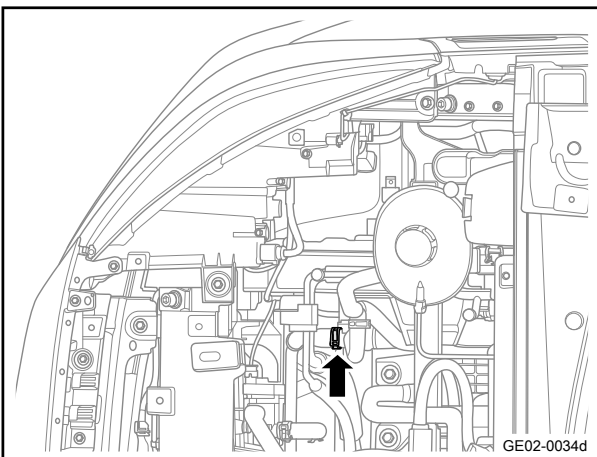
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Disconnect the radiator outlet pipe and the cooling module.



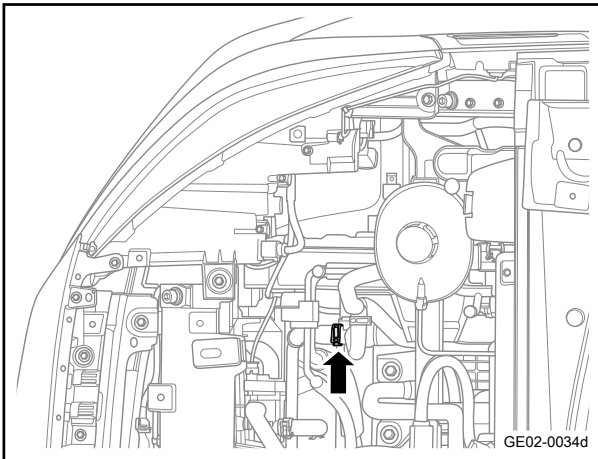
- 5 Disengage the fixing clamp connecting the radiator outlet pipe with the three-way solenoid valve.



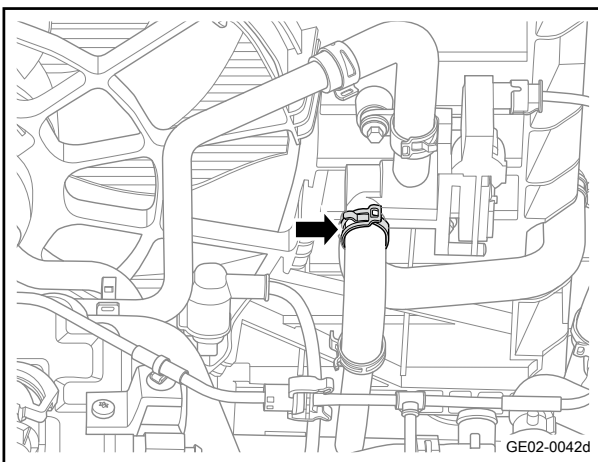
- 6 Disengage the fixing clamp connecting radiator outlet pipe and four-way valve.
- 7 Remove the fixing pipe clamp on the radiator outlet pipe and remove the radiator outlet pipe.



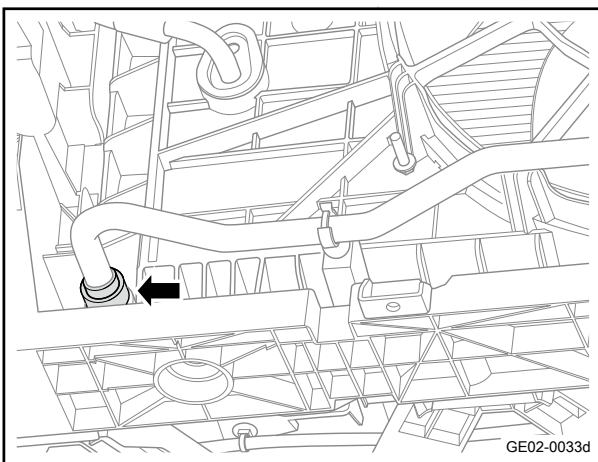
## Installation procedure



- 1 Move the radiator outlet pipe to the installation position and install the retaining pipe clamp on the radiator outlet pipe.
- 2 Install fixing clamps connecting radiator outlet pipe to four-way valve.



- 3 Install fixing clamps connecting radiator outlet pipe to three-way solenoid valve.



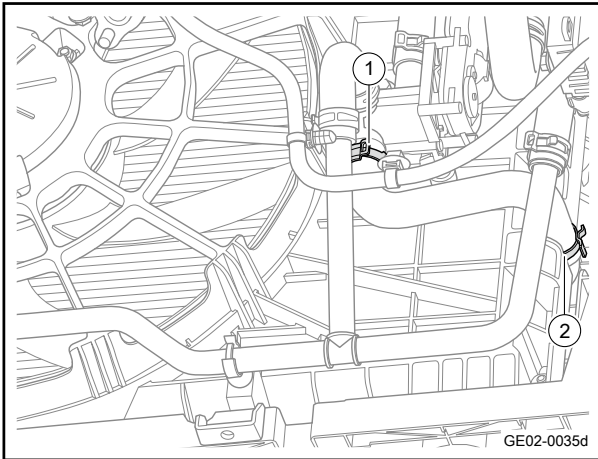
- 4 Connect the radiator outlet pipe to the cooling module.

- 5 Fill power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

### 2.5.8.14 Replacement of water inlet hose of radiator

## Removal procedure





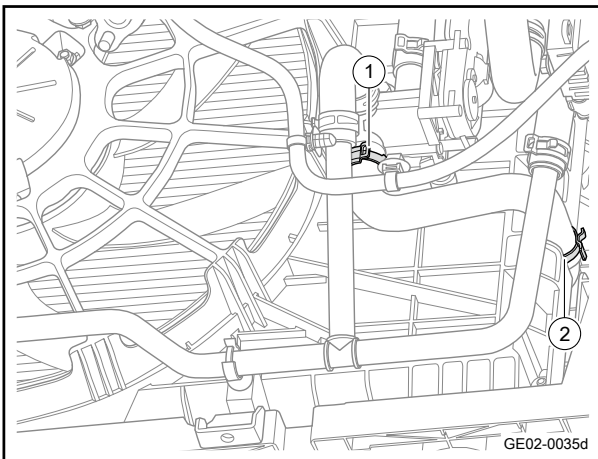
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 4 Disengage the fixing clamp 1 connecting the radiator inlet pipe with the three-way solenoid valve.
- 5 Release the fixing clamp 2 connecting the radiator inlet pipe to the cooling module.
- 6 Take down water inlet hose of radiator.

#### Installation procedure



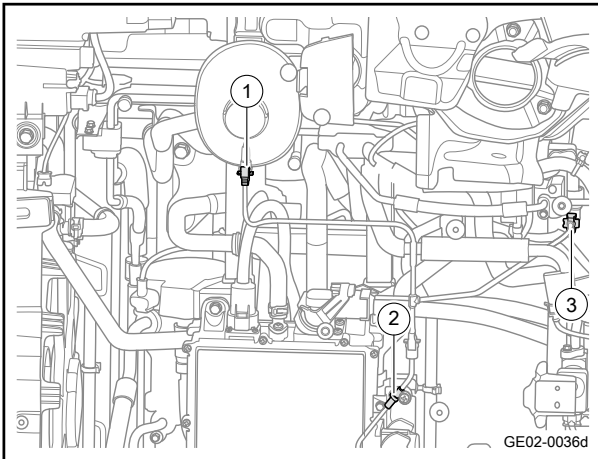
- 1 Move the radiator inlet pipe to the installation position.
- 2 Install fixing clamp 2 connecting radiator inlet pipe to cooling module.
- 3 Install fixing clamp 1 connecting radiator inlet pipe to three-way solenoid valve.

- 4 Fill power battery coolant.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

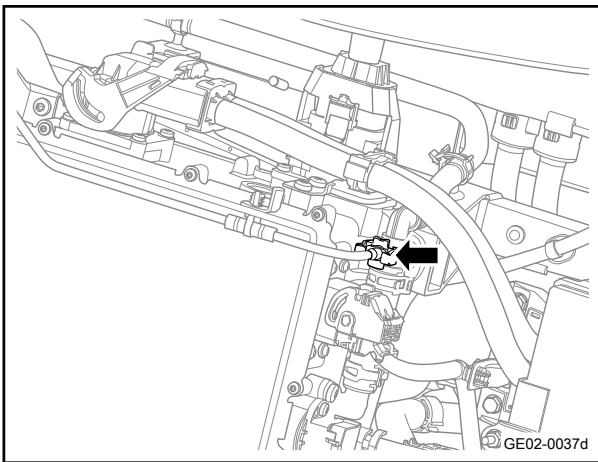
### 2.5.8.15 Replacement of Cooling Vent Pipe for Driving Motor

#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)



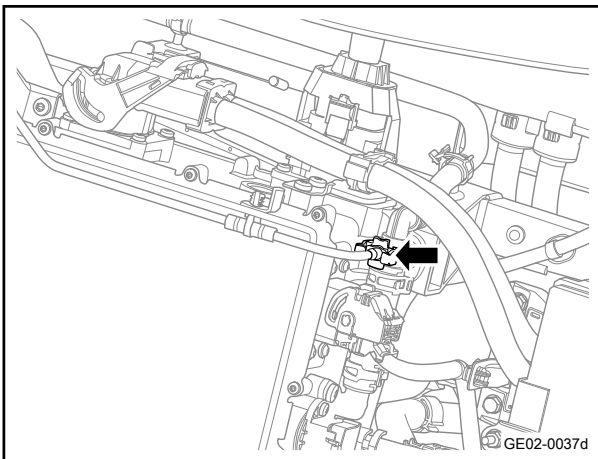
- 3 Disconnect the cooling vent pipe of driving motor from the expansion tank assembly (side-mounted) 1.
- 4 Disconnect the fixing clip 2 of driving motor cooling vent pipe.
- 5 Disconnect the cooling vent pipe of driving motor from the heat exchanger assembly 3.

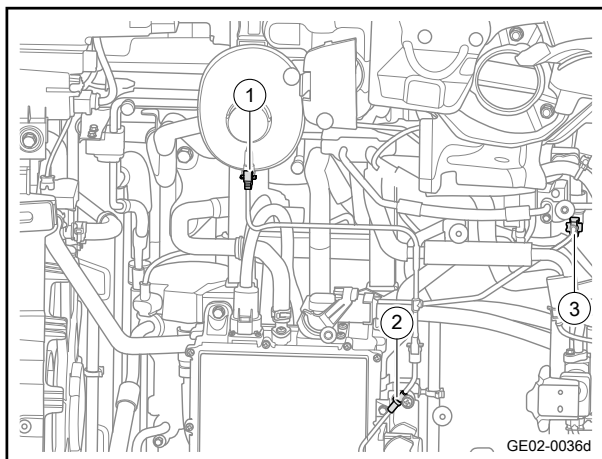


- 6 Disconnect the cooling vent pipe of driving motor from the outlet pipe of the charger.
- 7 Remove the cooling vent pipe of driving motor.

#### Installation procedure

- 1 Move the cooling vent pipe of driving motor to the installation position.
- 2 Connect the cooling vent pipe of driving motor with the outlet pipe of the charger.





- 3 Connect the cooling vent pipe of driving motor to the heat exchanger assembly 3.
- 4 Install fixing clip 3 for cooling vent pipe of driving motor.
- 5 Connect the cooling vent pipe of driving motor to the expansion tank assembly (side-mounted) 1.

- 6 Fill power battery coolant.
- 7 Lower the vehicle.

## 2.6 Charging system

### 2.6.1 Specification

#### 2.6.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of high and low voltage charging system assembly	M8×25	20 - 28	14.8 - 20.7
Fixing bolt of high and low voltage charging system assembly	M8	22 - 24	16.2 - 17.7
Fixing nut of power battery clamp plate	M6	5 - 7	3.7 - 5.2
Fixing bolt of combined charging socket wiring harness assembly	M6×20	8.5 - 11.5	6.3 - 8.5
Fixing nut of combined charging socket wiring harness assembly	M6	8.5 - 11.5	6.3 - 8.5
Fixing nut for ground wiring harness of combined charging socket wiring harness assembly	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing screw of combined charging socket wiring harness assembly	M6×16	8.5 - 11.5	6.3 - 8.5
Fixed nut connecting the combined charging socket harness assembly and the filter bracket	M6	—	—
Filter bracket fixing bolt	M8×20	—	—

#### 2.6.1.2 Specification for High and Low Voltage Charging Systems

10kW

Item	Parameter	Unit
Input voltage range	304-456 (three-phase)/85-265 (single-phase)	Vac
Output voltage range	250-500	Vdc
Maximum input current	Three-phase 16A (per phase)/single-phase 32A	A
Maximum output current	33	A
Output power	10	KW

Operating efficiency	$\geq 94\%$	-
Weight (wireless beam) (kg)	14	-
Operating ambient temperature (°C)	-40~85	°C
Protection grade	IP67/IP6K9K	-
Input impulse current (per phase)	$\leq 48$	A
Communication	CAN	-

## 2.6.2 Description and operation

### 2.6.2.1 General

#### 1. Overview

Three-in-one charging system: OBC, DCDC and PDU are deeply integrated.

Charging system can be divided into external charging system and internal charging system. External charging system includes fast charging and slow charging; The internal charging system includes low-voltage power charging, intelligent charging and braking energy feedback.

The AC charging port and the DC charging port are installed on the left rear side of the vehicle body. When charging, connect the AC charging plug or DC charging plug to the corresponding charging socket according to the selected charging type, and start charging after the connection is correct. After the charging port is connected, a detection loop is formed. When the connection fault occurs, the system can detect the fault.

#### 2. Charging port cap switch

The charging port cap adopts two-stage unlocking, one is electric unlocking (synchronized with the door), and the other is mechanical unlocking. Push-push pressing type is adopted, which can be opened by pressing the right side of the charging port cap, then open the charging port cap on the socket, select the appropriate charging equipment, and insert the charging gun into the charging socket.

#### 3. AC charging status indication

The charging status indicator lamps are located on the front left and right fenders of the vehicle to indicate different charging statuses. The definition of the charging status indicator lamp is as follows:

Status	Description
Breath, frequency of once 2 seconds	Charging, power is less than or equal to 50%
Breath, frequency of once 4 seconds	Charging, the battery is greater than 50%
Turns off after 2 minutes	Charging finished
Flash (on for 2 seconds, off for 2 seconds)	Charging heating

### 2.6.3 How the system works

#### 2.6.3.1 System Working Principles

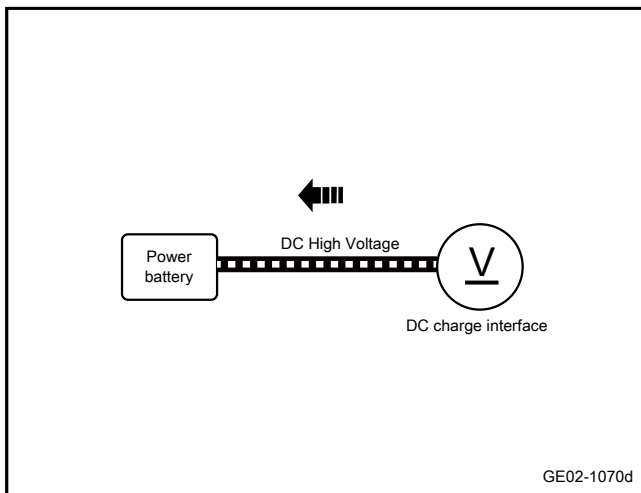
##### 1. Fast charging (DC charging)

When the charging gun is connected to the DC charging socket of the complete vehicle, the DC charging equipment sends a charging wake-up signal to the BMS, and the BMS starts to work and carry out self-inspection. If there is no abnormality found in the self-inspection, the BMS receives the charging connection confirmation signal and charging message at the same time, and the BMS closes the fast charging relay and the main and negative relays before starting charging. After charging is completed, BMS sends a charging stop instruction to the charging pile. After the charging pile stops charging, BMS cuts off the fast charging relay and the main and negative relays, and the charging is finished.

Charging time: 153Ah battery can charge 30%-80% in 0.5 h.

Charging time: 190Ah battery can charge 30%-80% in 35min.

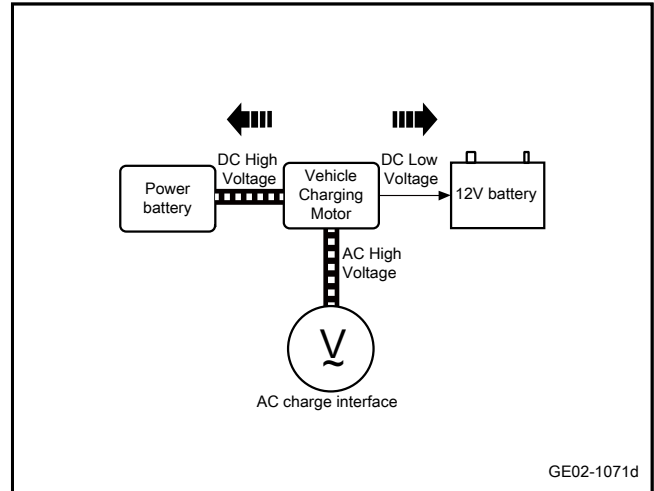
The DC charging flow transfer route is as follows:



##### 2. Slow charging (AC charging)

VCU is initiated by OBC. When receiving AC charging connection confirmation signal (CC, CP) sent by OBC, high voltage interlock state sent by BMS is closed, SOC < 100% and EPB or P gear of vehicle is locked, VCU sends charging permission signal to BMS, and then BMS closes main positive relay and main negative relay at the same time to start charging. After charging starts, when OBC receives the AC charging command from VCU, the internal DC/DC starts to work to charge the battery. After charging, VCU stops DC/DC operation, and then sends a command to disconnect the main relay to BMS. Charging is finished.

The AC charging flow transfer route is as follows



##### 3. Charging lock function

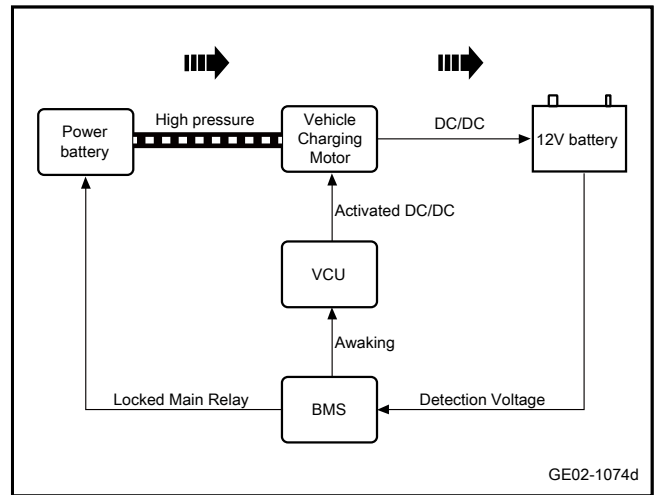
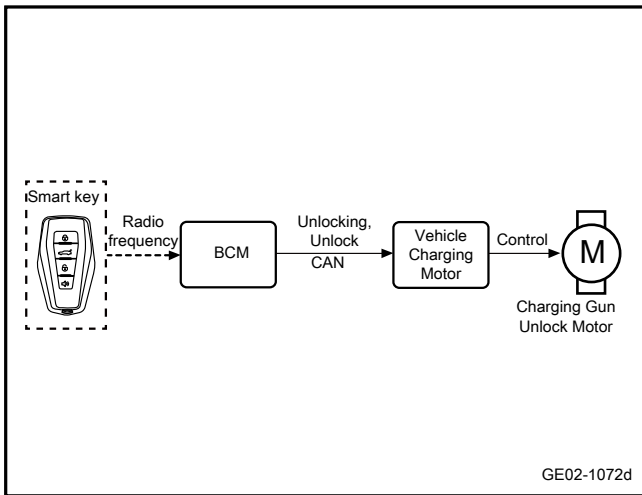
This vehicle has the function of electronic locking when charging, which can prevent charging robbery when plugging and unplugging, and at the same time play the role of anti-theft of charging gun. Electronic lock is installed on the charging socket, and the locking and unlocking functions are realized by controlling the expansion and contraction of the cylindrical lock rod.

Lock: Insert the charging gun and lock it after receiving the BMS charging instruction.

Unlocking: 1. On the premise that the complete vehicle is in OFF gear, press the remote control key unlock button to realize unlocking; 2. When the complete vehicle is in ON and READY gears, it can also be unlocked through the central control lock; 3. When the key fails to unlock, it can be unlocked by pulling the unlocking steel wire.

In case of AC charging, the charging gun is unlocked when receiving the unlocking signal sent by BCM/PEPS, and the charging gun is locked when receiving the locking instruction sent by BCM/PEPS. When the AC charging gun is unlocked, the high and low voltage charging system is still in the charging state, and the output power is 0kW; after the electronic lock is locked, the high and low voltage charging system resumes full power charging. When the electronic lock has any unlocking or locking fault, the high and low voltage charging system accepts the charging process of BMS, and the input current of each phase of alternating current does not exceed 5A for charging.

In case of AC charging, OBC locks the charging gun after receiving the permission of charging sent by BMS.

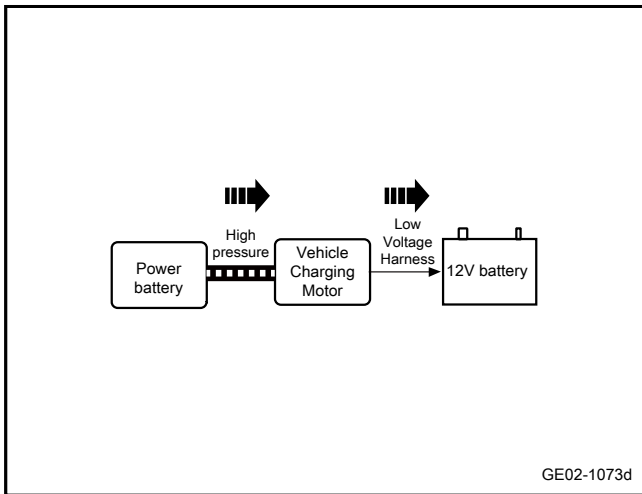


4. Low voltage charging

Before high-voltage power-on, the low-voltage circuit system relies on 12V lead-acid battery for power supply. After high-voltage power-on, the high-voltage and low-voltage charging system has built-in DC/DC to convert the high-voltage DC output from the power battery into low-voltage DC to charge the 12V lead-acid battery and act as an auxiliary low-voltage power supply.

6. Energy feedback

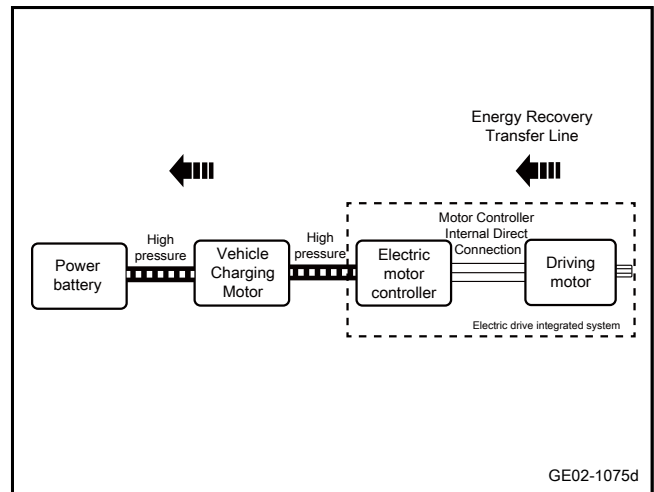
When the vehicle is sliding or braking, VCU calculates the required braking torque through state data acquisition and sends it to the motor controller. At this time, the motor switches from the working mode to the power generation mode to charge the battery pack. The braking energy recovery and transmission route is opposite to the energy consumption, as shown in the following figure:



In the process of braking energy recovery, the electric motor consumes the kinetic energy of wheel rotation and outputs alternating current to the motor controller, which converts alternating current into direct current to charge the power battery.

5. Intelligent charging

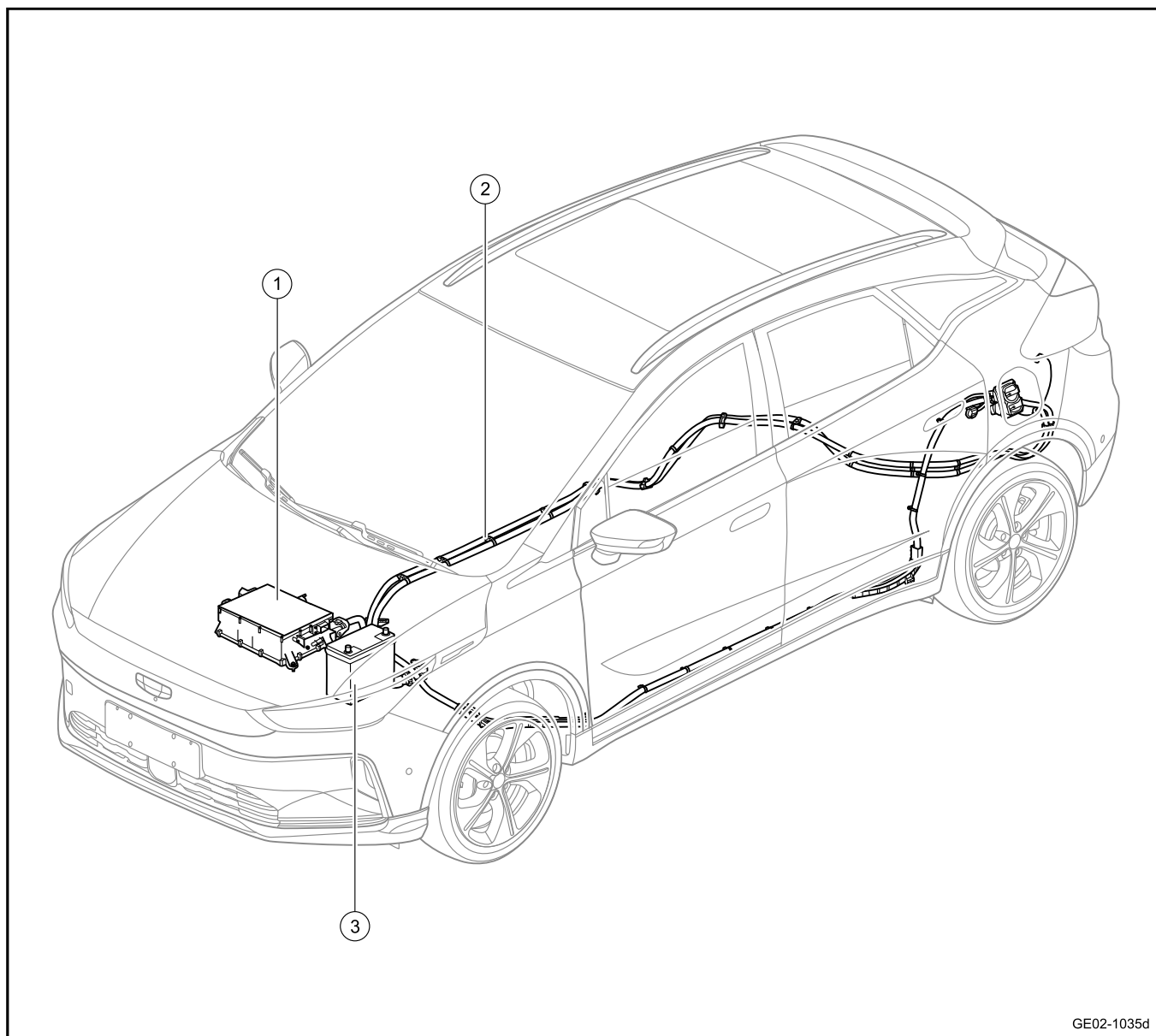
Long-term parking vehicles are easy to cause low-voltage battery feeding, and when the low-voltage battery is seriously fed, the vehicle cannot be started and powered on. To avoid this problem, this vehicle has intelligent charging function. When the battery voltage is lower than the set value, BMS sends an intelligent power supply request to VCU. At this time, if VCU receives the power supply gear OFF and judges that the four doors and two covers are in a closed state, it sends an instruction to close the main relay to BMS. After the main positive and main negative relays are closed, DC/DC starts charging the battery.





## 2.6.4 Part location

### 2.6.4.1 Part Position

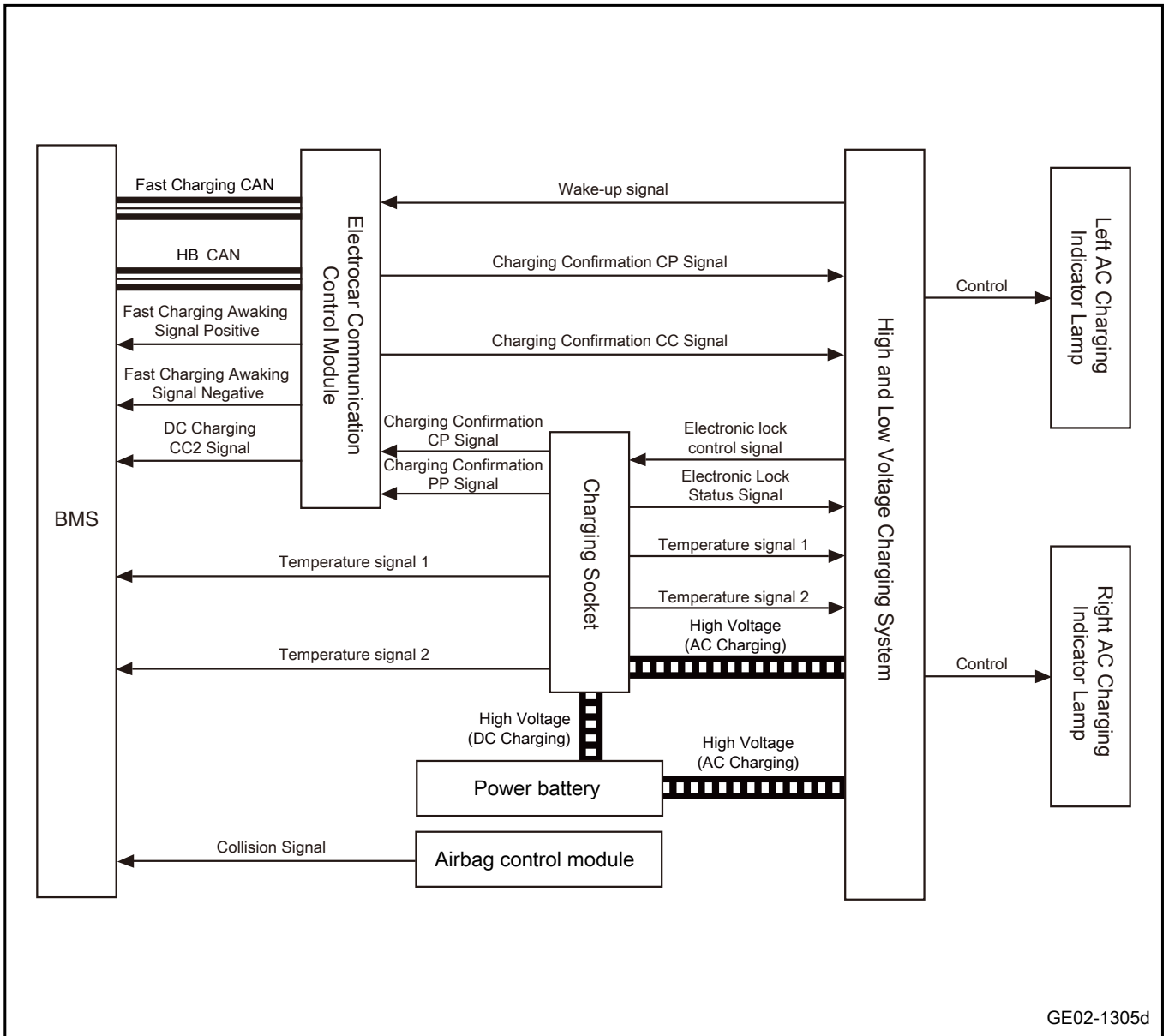


GE02-1035d

- |  |                     |
|--|---------------------|
| 1. High and low voltage charging system assembly | 3. Battery assembly |
| 2. Combined charging socket harness assembly     |                     |

2.6.5 Electrical block diagram

2.6.5.1 Electrical schematic diagram of charging system



## 2.6.6 Diagnostic information and steps

### 2.6.6.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 2.6.6.2 Routine inspection

1. Check after-sales installations that may affect the operation of charging system.

#### Caution

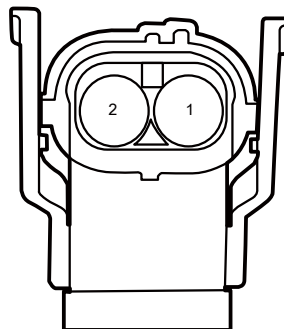
It is forbidden to modify or disassemble charging cables, charging sockets and charging plugs.

2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there are foreign bodies such as water or dust inside the charging socket and charging plug.
4. Check whether the connection between charging socket and charging plug is loose and whether there are signs of corrosion inside.

### 2.6.6.3 List of charging system terminals

#### Harness Connector 1 of BV46 High and Low Voltage Charging System

### BV46 High and Low Voltage Charging System Harness Connector 1

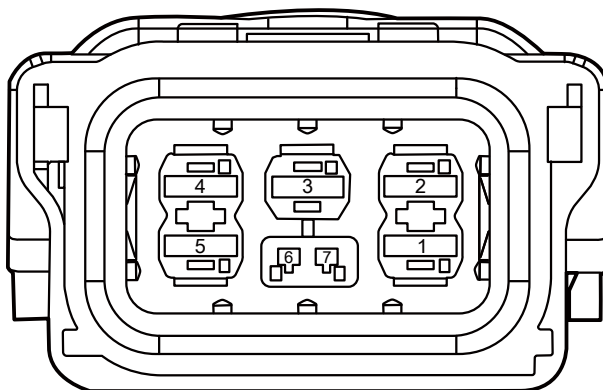


GE02-1330d

Terminal No.	Terminal name	Terminal description
1	Power battery negative	High voltage negative harness of power battery
2	Power battery positive	High voltage positive harness of power battery

### Harness Connector 2 of BV47 High and Low Voltage Charging System

## BV47 High and Low Voltage Charging System Harness Connector 2

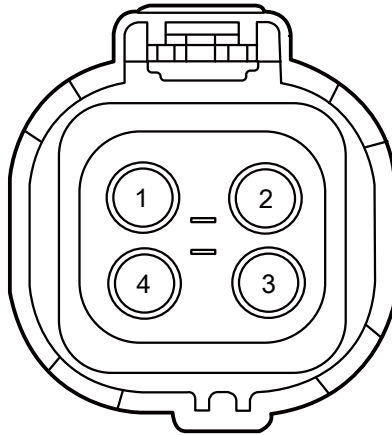


GE02-1329d

Terminal No.	Terminal name	Terminal description
1	AC charging live line L1	AC charging input live line L1
2	AC charging live line L2	AC charging input live line L2
3	-	-
4	AC charging live line L3	AC charging input live line L3
5	AC charging null line N	AC charging input null line N
6	-	-
7	-	-

## Harness Connector 5 of BV48 High and Low Voltage Charging System

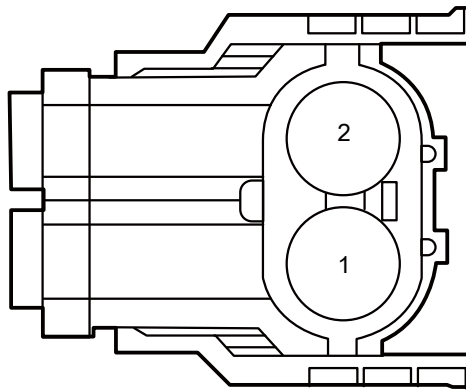
### BV48 High and Low Voltage Charging System Harness Connector 5



GE02-1332d

Terminal No.	Terminal name	Terminal description
1	PTC heater negative	High pressure negative output line of PTC heater
2	PTC heater positive	High pressure positive output line of PTC heater
3	Electric compressor positive	High pressure positive output line of electric compressor
4	Electric compressor negative	High pressure negative output line of electric compressor

## Harness Connector 6 of BV49 High and Low Voltage Charging System

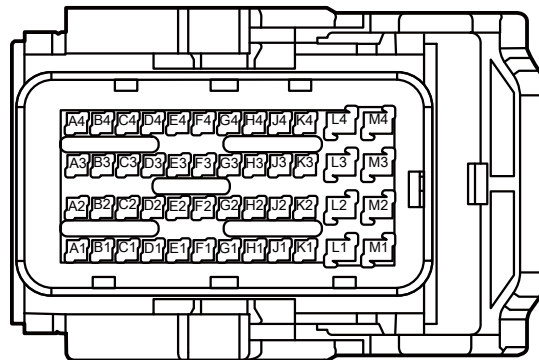
BV49 High and Low Voltage Charging  
System Harness Connector 6

GE02-1331d

Terminal No.	Terminal name	Terminal description
1	Integrated power controller negative	High voltage negative output line of integrated power controller
2	Integrated power controller positive	High voltage positive output line of integrated power controller

Harness Connector 3 of CA272 High and Low Voltage Charging System

CA272 High and Low Voltage Charging System Harness Connector 3



GE02-1334d

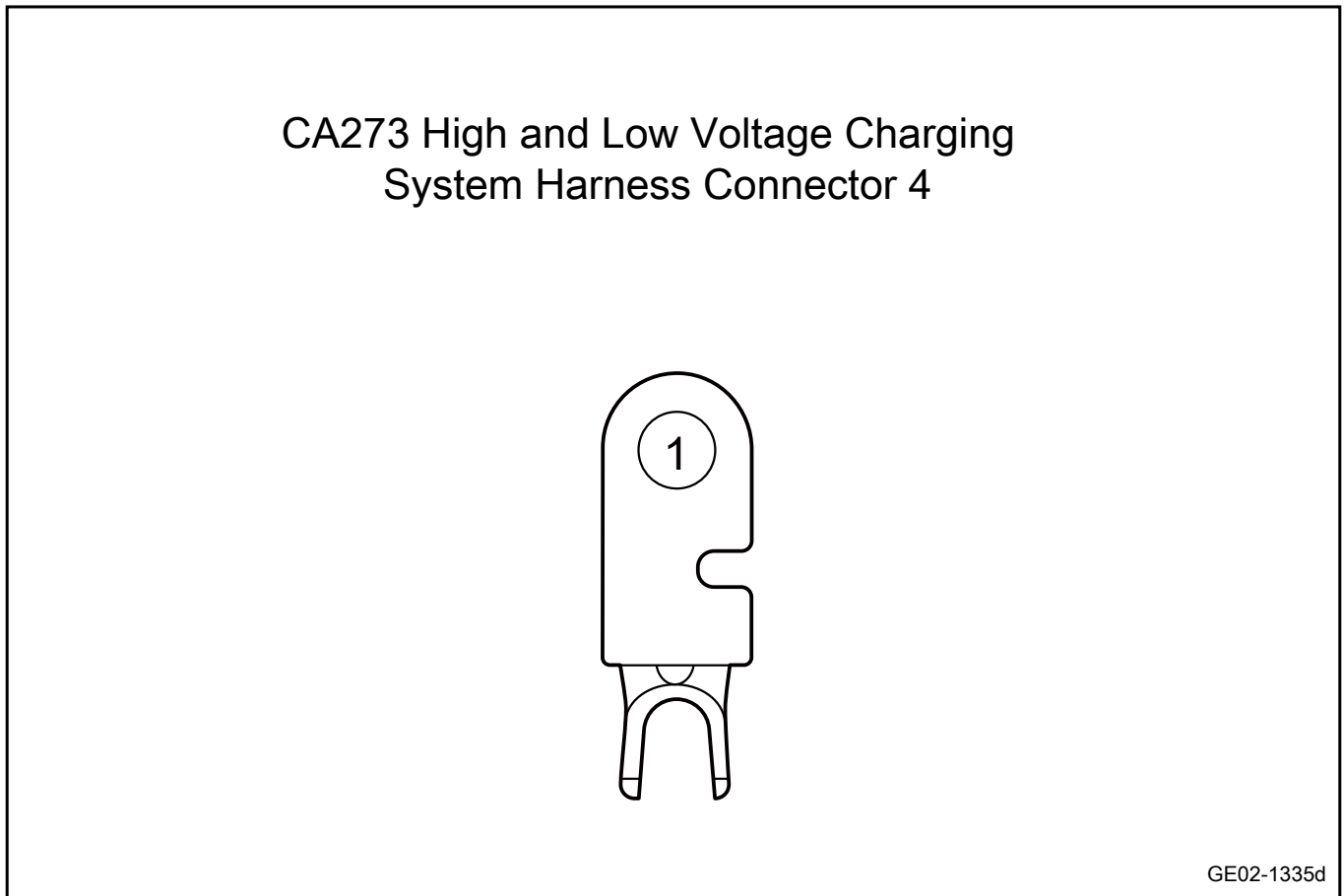
Terminal No.	Terminal name	Terminal description
A1	AC charging confirmation CP Signal	AC charge control confirmation CP signal
A2	AC charging confirmation CC Signal	AC charging connection confirmation CC signal
A3	-	-
A4	-	-
B1	HB CAN-H	Hybrid CAN high line
B2	HB CAN-L	Hybrid CAN low line
B3	-	-
B4	-	-
C1	-	-
C2	-	-
C3	-	-
C4	-	-
D1	-	-
D2	-	-
D3	-	-
D4	-	-

Terminal No.	Terminal name	Terminal description
E1	High voltage interlock output signal	High voltage interlock output signal
E2	High voltage interlock input signal	High voltage interlock input signal
E3	-	-
E4	-	-
F1	-	-
F2	-	-
F3	-	-
F4	-	-
G1	L1 temperature sensor positive	Sensor input (positive signal) of charging socket L1 temperature
G2	L1 temperature sensor negative	Sensor input (negative signal) of charging socket L1 temperature
G3	N temperature sensor positive	Sensor input (positive signal) of charging socket N temperature
G4	N temperature sensor negative	Sensor input (negative signal) of charging socket N temperature
H1	-	-
H2	-	-
H3	Electronic lock sensor positive	Sensor input (positive signal) of charging socket electronic lock
H4	Electronic lock sensor negative	Sensor input (negative signal) of charging socket electronic lock
J1	-	-
J2	IG1 power supply	AC\ION\START power supply for high and low voltage charging system
J3	Charger wake-up signal	Charger wake-up signal input
J4	-	-
K1	-	-
K2	AC charging indicator driving signal	AC charging indicator driving control
K3	AC charging indicator driving signal	AC charging indicator driving control
K4	AC charging indicator driving signal	AC charging indicator driving control
L1	-	-
L2	-	-
L3	-	-
L4	-	-
M1	B+ Power supply	Battery power supply for high and low voltage charging system



Terminal No.	Terminal name	Terminal description
M2	Ground connection	Ground circuit of high and low voltage charging system
M3	Electronic lock locking positive	Charging cap status switch motor control (positive signal)
M4	Electronic lock locking negative	Electrical cap status switch motor control (negative signal)

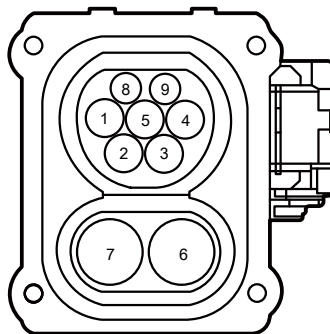
Harness Connector 4 of CA273 High and Low Voltage Charging System



Terminal No.	Terminal name	Terminal description
1	12V power output	High voltage conversion 12V power supply output

## Harness Connector of BV53 Charging Socket

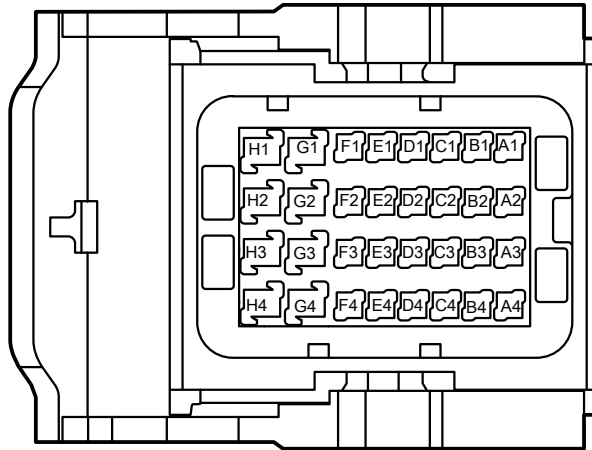
### BV53 Charging Socket Harness Connector



GE02-1333d

Terminal No.	Terminal name	Terminal description
1	AC charging live line L1	AC charging input live line L1
2	AC charging live line L2	AC charging input live line L2
3	AC charging live line L3	AC charging input live line L3
4	AC charging null line N	AC charging input null line N
5	Ground connection	Charging socket ground circuit
6	DC charging positive electrode	DC fast charging positive input
7	DC charging negative electrode	DC fast charge negative input
8	Charging socket PP signal	AC charging connection confirmation PP signal
9	Charging socket CP signal	AC charging connection confirmation CP signal

## SO207 electric vehicle communication control module harness connector

SO207 electric vehicle communication control  
module harness connector

GE02-1336d

Terminal No.	Terminal name	Terminal description
A1	-	-
A2	-	-
A3	B+ Power supply	Battery power supply of electric vehicle communication control module
A4	Ground connection	Ground connection
B1	-	-
B2	Charger wake-up signal	Charger wake-up signal input
B3	IG1 power supply	Communication control module for AC\ON\START power supply of electric vehicle
B4	Fast charging wake-up signal ground	Fast charging wake-up signal output (negative signal)
C1	-	-
C2	-	-
C3	CP signal of high and low voltage charging system	CP signal of high and low voltage charging system
C4	Fast-charging wake-up signal	Fast charging wake-up signal output (positive signal)
D1	-	-
D2	-	-

Terminal No.	Terminal name	Terminal description
D3	CC signal of high and low voltage charging system	CC signal input of high and low voltage charging system
D4	Charging connection confirmation CC2 signal	Charging connection confirmation CC2 signal output
E1	-	-
E2	Charging socket CP signal	Charging socket CP signal input
E3	Fast charging CAN-H	Fast charging CAN high bit line
E4	HB CAN-H	Hybrid CAN high line
F1	Ground connection	Electric vehicle communication control module grounding line.
F2	Charging socket PP signal	Charging socket PP signal input
F3	Fast charging CAN-L	Fast charging CAN low line
F4	HB CAN-L	Hybrid CAN low line
G1	-	-
G2	-	-
G3	-	-
G4	-	-
H1	-	-
H2	-	-
H3	-	-
H4	-	-

#### 2.6.6.4 Fault symptom table

Symptom	Suspected parts	Measures
High and Low Voltage Charging System Power Fault	1. Battery	Refer to the <a href="#">High and Low Voltage Charging System Power Fault</a>
	2. Fuse	
	3. Circuit	
	4. High and low voltage charging system	
Communication fault of high and low voltage charging system	1. Gateway	Refer to <a href="#">Communication Fault of High and Low Voltage Charging System</a>
	2. High and low voltage charging system	
	3. Circuit	
Internal Fault of High and Low Voltage Charging System	1. High and low voltage charging system	Refer to <a href="#">Internal Fault of High and Low Voltage Charging System</a>
CC signal failure	1. High and low voltage charging system	Refer to <a href="#">CC Signal Trouble</a>
	2. Charging socket	
	3. Circuit	
	4. Electric vehicle communication control module	

Symptom	Suspected parts	Measures
CP signal failure	1. Charging socket	Refer to <a href="#">CP Signal Trouble</a>
	2. High and low voltage charging system	
	3. Circuit	
	4. Electric vehicle communication control module	
AC input signal fault	1. Charging socket	Refer to <a href="#">AC Input Signal Fault</a>
	2. High and low voltage charging system	
	3. Circuit	
Charging port status switch fault	1. Charging socket	Refer to <a href="#">Charging Port Status Switch Fault</a>
	2. High and low voltage charging system	
	3. Circuit	
Excessive Temperature Fault of High and Low Voltage Charging System	1. Charging socket	Refer to <a href="#">Excessive Temperature Fault of High and Low Voltage Charging System</a>
	2. High and low voltage charging system	
	3. Circuit	
AC Charging Indicator Light Fault	1. AC charging indicator light	Refer to <a href="#">AC Charging Indicator Light Fault</a>
	2. High and low voltage charging system	
	3. Circuit	

### 2.6.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
P1A9F00	Unreasonable CC signal of on-board charger	Refer to <a href="#">CC Signal Trouble</a>
P1AA000	Unreasonable amplitude of CP signal of on-board charger is	Refer to <a href="#">CP Signal Trouble</a>
P1AA100	Unreasonable PWM frequency of CP signal of on-board charger	
P1AA200	Unreasonable PWM duty cycle of CP signal of on-board charger	
P1AA300	The CP signal of on-board charger is inconsistent with the control instruction of S2	
P1AA600	Overvoltage of on-board charger AC input software	Refer to <a href="#">AC Input Signal Fault</a>
P1AA700	Undervoltage of AC input software for on-board charger	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1AA800	Open circuit on AC input side of vehicle charger	
P1AA900	AC input frequency of on-board charger exceeds a certain range	
P1AB100	Electronic lock failed to unlock	Refer to <a href="#">Charging Port Status Switch Fault</a>
P1AA400	The charging gun temperature of vehicle charger is too high	Refer to <a href="#">Excessive Temperature Fault of High and Low Voltage Charging System</a>
P1AA500	On-board charger QUB temperature is too high	
P1AB200	FET temperature is too high	
P1AB300	DCDC safety switch temperature is too high	
P1A8998	Thermistor failure fault (charging port)	
P1AE900	The temperature signal of safety switch exceeds the lower limit	
P1AA496	Abnormal temperature of charging gun of vehicle charger	
P1A9800	On-board charger software restarts more than a certain number of times	Refer to <a href="#">HLV Charging System Hardware Faults</a>
P1A9900	Hardware protection of PFC output overvoltage of on-board charger	
P1A9A00	Hardware protection of PFC output overcurrent of vehicle charger	
P1A9B00	Hardware protection of LLC output overvoltage of on-board charger	
P1A9C00	Hardware protection of LLC input overcurrent of on-board charger	
P1A9D00	Hardware protection of LLC output overcurrent of vehicle charger	
P1A9E00	Hardware protection of VDD5 overvoltage of on-board charger	
P1AAA00	Software protection of PFC output overvoltage of on-board charger	
P1AAB00	Software protection of PFC output undervoltage of on-board charger	
P1AAC00	AC side software Overcurrent Protection	
P1AAD00	Software protection of LLC input overcurrent of on-board charger	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1AAE00	Software protection of high voltage DC side output overvoltage of vehicle charger	
P1AAF00	Software protection of high voltage DC side output undervoltage of vehicle charger	
P1AB000	Software protection of high voltage DC side output overcurrent of vehicle charger	
P1AB400	Hardware protection of DCC high voltage and overvoltage	
P1AB500	Hardware protection of DCDC high voltage overcurrent	
P1AB600	Hardware protection for DCDC low voltage and overvoltage	
P1AB700	Hardware protection of DCDC low voltage reverse overcurrent	
P1AB800	SplyHw undervoltage hardware protection	
P1AB900	Software protection of DCDC high voltage and overvoltage	
P1ABA00	Software protection of DCDC high voltage and undervoltage	
P1ABB00	Software Protection of DCDC low voltage and overvoltage	
P1ABC00	Software Protection of DCDC low voltage and undervoltage	
P1ABD00	DCDC low pressure long time overvoltage	
P1ABE00	DCDC restarts more than a certain number of times	
P1AC100	Verification of PFC current rationality	
P1AC500	DC link voltage rationality check (compared with OBC or BMS values)	
P1AC600	Water cooling temperature signal exceeds the lower limit	
P1AC900	Internal relay does not conform to instructions	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1ACD00	PCB (printed circuit board) NTC (temperature detection) temperature sensor exceeds lower limit	
P1ACE00	PFC (power factor correction circuit) NTC (temperature detection) temperature sensor exceeds lower limit	
P1ACF00	LLC (power conversion circuit) temperature sensor exceeds lower limit	
P1AD100	AC voltage signal exceeds upper limit	
P1AD300	PFC (power factor correction circuit) voltage signal exceeds upper limit	
P1AD400	PFC (power factor correction circuit) current signal exceeds upper limit: U/V/W of any phase	
P1AD600	LLC (power conversion circuit) primary current signal exceeds upper limit (either phase A/B)	
P1AD700	Rationality check of two primary currents in LLC (power conversion circuit)	
P1AD800	HVDC (high voltage DC voltage) output signal exceeds upper limit	
P1ADA00	HVDC (high voltage dc voltage) output current signal exceeds upper limit) fast sampling or slow sampling	
P1ADC00	OBC side 2.5V out of range	
P1ADD00	OBC 13.5V power supply out of range	
P1ADE00	OBC side 21.5V out of range	
P1ADF00	DC link voltage sensor over upper limit	
P1AE100	lInk (bus capacitance current) current signal exceeds upper limit	
P1AE200	Check the rationality of bus current	
P1AE300	The voltage signal on the low voltage output side exceeds the upper limit	
P1AE500	Low voltage current signal exceeds upper limit	
P1AE700	Offset exceeds the threshold, check the deviation between the current read and the calibrated offset	



Diagnostic Trouble Code	Description	Fault location/elimination method	
P1AE800	DCDC MOS temperature signal exceeds lower limit		
P1AEA00	Buck mode diagnosis		
P1AEC00	Short circuit detection on low voltage output side		
P1AED00	DCDC 13.5V (internal drive power supply) power supply exceeds upper limit		
P1AEE00	DCDC 13.5V (internal drive power supply) power supply exceeds lower limit		
P1AF400	The OBC fails to output power normally when reported to be operating in output mode		
P1AF700	HV side insulation problem detected by LV MCU		
P1AF687	Loss of CAN communication within OBC		
P1AF681	Internal CAN communication error of OBC		
P1A1919	Low pressure side overcurrent		
P1AF649	The shutdown path becomes unavailable		
P1A8B49	The shutdown path becomes unavailable		
P1D2098	Water cooling overtemperature fault (OBC and DCDC water cooling)		
P1D2600	Phase locking fault on high voltage side		
P1D2700	Pre-charging fault of PFC on high voltage side		
P1A3E06	EEPROM read error		
P1A3D06	EEPROM write Error		
P1D241C	Hardware overvoltage protection		
P1AF000	KL30 undervoltage		Refer to the <a href="#">High and Low Voltage Charging System Power Fault</a>
P1AC700	Excessive deviation between KL30 voltage and low voltage side voltage		
U011287	Communication with BMSH is lost		Refer to <a href="#">Communication Fault of High and Low Voltage Charging System</a>
U041381	Error in communication with BMSH CAN		
U007300	CAN bus off		

Diagnostic Trouble Code	Description	Fault location/elimination method
U111487	Communication with VCU_HBCAN is lost	
U140481	Error in communication with VCU CAN	
U000100	FTTH internal QUN bus off	
U247283	Communication verification error	
U347282	Communication count error	
U24A883	Communication verification error	
U34A882	Communication count error	

### 2.6.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 2.6.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 2.6.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU supply voltage	0-25.4	V
2	Speed signal	0-460.6875	Km/H
3	Failed mileage	0-999999	Km

Serial No.	DID description	Physical value range	Unit
4	Charging gun connection detection	-	-
5	Charging power detection	-	-
6	Electronic lock motor status	-	-
7	Grid input current	(-410) -410	A
8	Grid input voltage	0-512	V
9	Charger output current	(-410) -410	A
10	Charger output voltage	0-512	V
11	Leading circuit voltage	0-16	V
12	Duty cycle of boot circuit	0-100	%
13	Guide circuit frequency	0-1100	Hz
14	OBC status	0	-
15	BMS request OBC status	0-12	-
16	BMS request OBC output voltage	0-6553.5	V
17	BMS request OBC output current	0-6553.5	A
18	Cooling water temperature	-40 - 215	°C
19	AC/DC temperature in OBC	-40 - 215	°C
20	DC/DC temperature in OBC	-40 - 215	°C
21	PCB temperature in OBC	-40 - 215	°C
22	Constant current charging operation state	0-8	-
23	KL15 signal level	0-1	-
24	KL15 mode	0-4	-
25	DCDC actual output voltage	-64-64	V
26	DCDC actual output current	-256-255	A
27	DCDC actual working mode	0-10	-
28	HCU requests DCDC mode	0-7	-
29	HCU transmits DCDC target output voltage	9-16	V
30	DCDC integrated module control mode	0-1	-
31	DCDC actual phase shift value	0-1	-
32	Why DCDC integrated module output is limited	0-27	-
33	DCDC input voltage	0-1024	V
34	DCDC input current	-256-255	A

Serial No.	DID description	Physical value range	Unit
35	DCDC LV MOSFET temperature	-256-255	°C
36	DCDC S9 MOSFET temperature	-256-255	°C

### 2.6.6.9 High and Low Voltage Charging System Power Fault

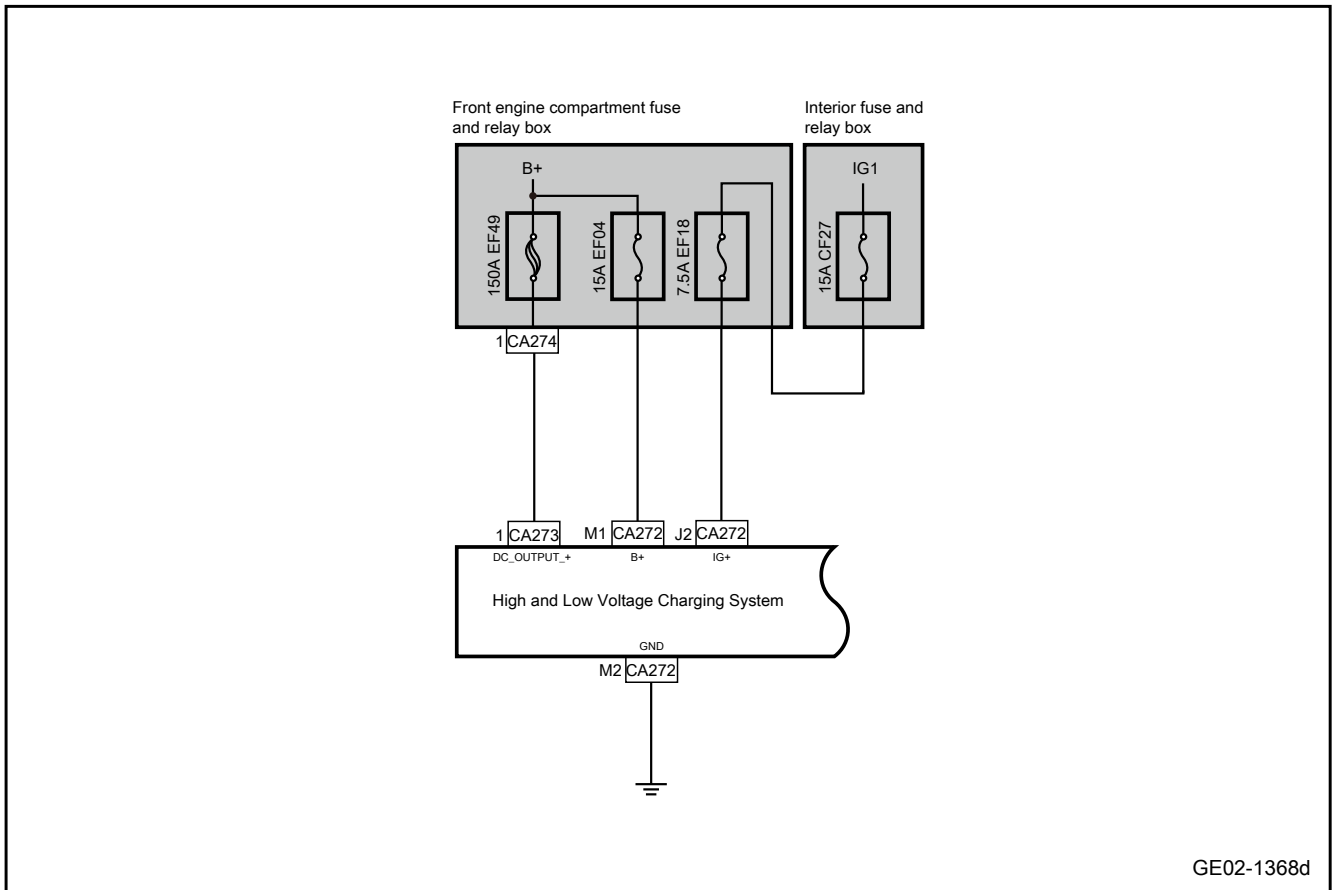
#### 1. DTC description:

Diagnostic Trouble Code	Description
P1AF000	KL30 undervoltage
P1AC700	Excessive deviation between KL30 voltage and low voltage side voltage

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AF000	Voltage < 6V for 500 milliseconds	DCDC is in Active, Inactive state	1. Battery 2. Circuit 3. Fuse 4. High and low voltage charging system
P1AC700	Voltage difference > 5V for 200ms		

#### 3. Schematic circuit diagram:



GE02-1368d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the high-and-low voltage charging system for signs of damage, deformation, stain, loosening, etc.
- B. Check the high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF04 of the front engine bay. Check whether the fuse EF04 is blown.  
Rated fuse capacity: 15A
- C. Pull out the fuse EF49 of the front engine bay. Check whether the fuse EF49 is blown.  
Rated fuse capacity: 150A
- D. Pull out the fuse EF18 of the front engine bay. Check whether the fuse EF18 is blown.  
Rated fuse capacity: 7.5A
- E. Pull off the interior fuse CF27 and check whether the fuse CF27 is blown.  
Rated fuse capacity: 15A

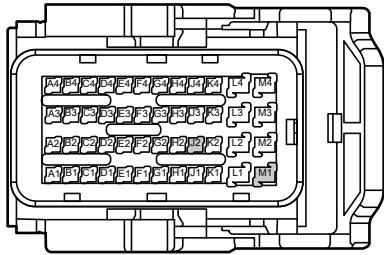
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

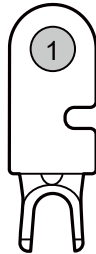
Step 4 Check whether the power supply circuit of high and low voltage charging system is normal.

CA272 High and Low Voltage Charging System Harness Connector 3



GE02-1544d

CA273 High and Low Voltage Charging System Harness Connector 4



GE02-1545d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the high and low voltage charging system harness connectors CA272, CA273.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA272(J2)		
CA273(1)		

- E. Confirm whether the measured value meets the standard.

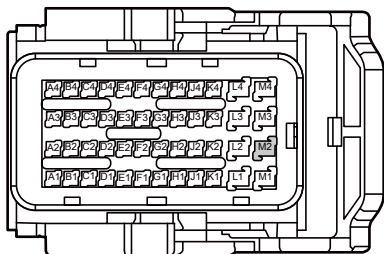
No

Repair or replace the harness.

Yes

Step 5 | Check the ground circuit of high and low voltage charging system.

CA272 High and Low Voltage Charging System Harness Connector 3



GE02-1546d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the HV/LV charging system harness connector CA272.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the high and low voltage charging system.

- A. Replace the high and low voltage charging system, refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 7 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 2.6.6.10 Communication fault of high and low voltage charging system

#### 1. DTC description:

Diagnostic Trouble Code	Description
U011287	Communication with BMSH is lost
U041381	Error in communication with BMSH CAN
U007300	CAN bus off
U111487	Communication with VCU_HBCAN is lost
U140481	Error in communication with VCU CAN
U000100	FTTH internal QUN bus off
U247283	Communication verification error



Diagnostic Trouble Code	Description
U347282	Communication count error
U24A883	Communication verification error
U34A882	Communication count error

## 2. Trouble code setting and fault location:

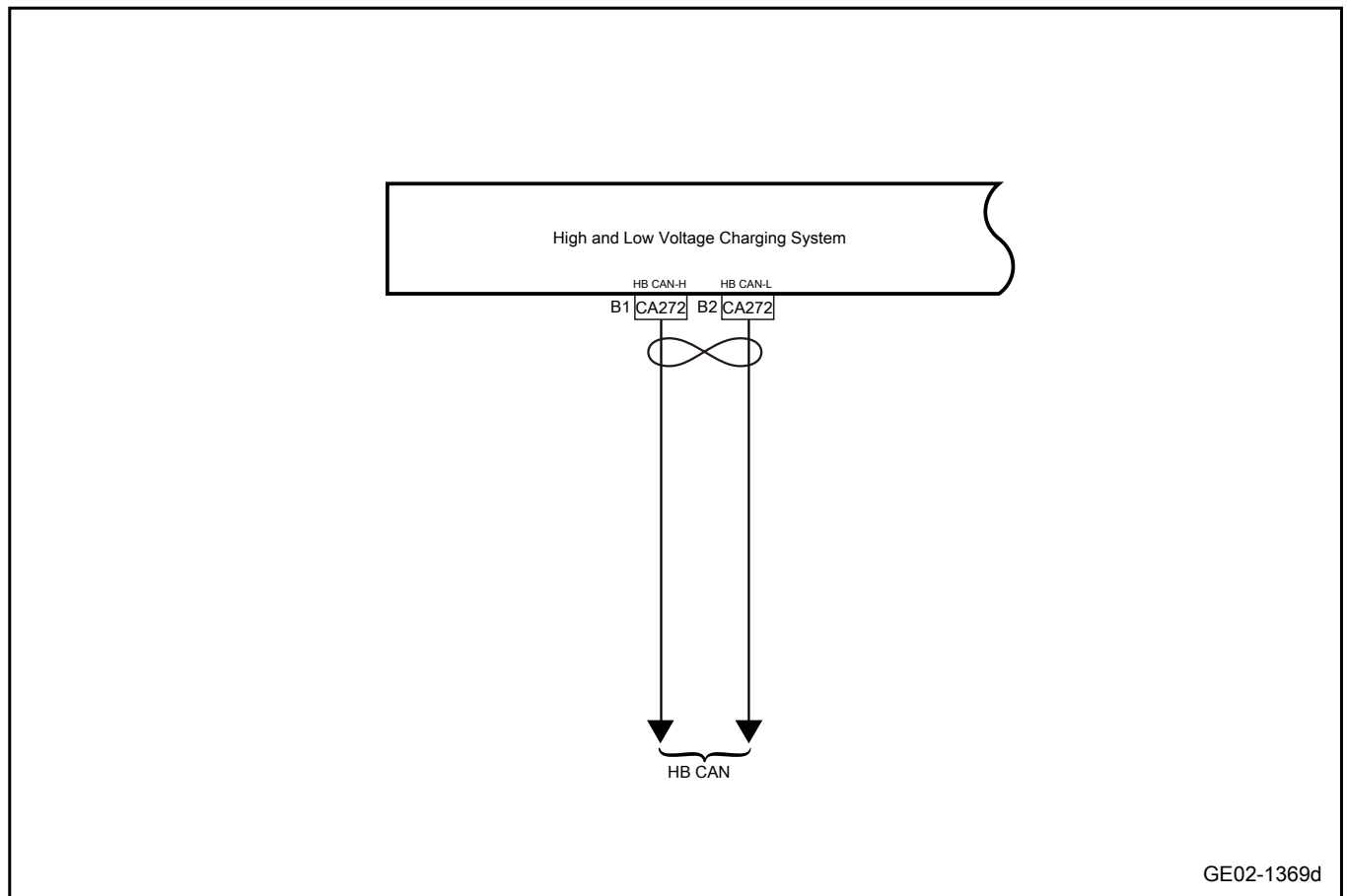
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	5T Lost BMSH (ID=0x211) Message	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. The TDiagenable condition is met</li> <li>3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection</li> <li>4. Ignition status is "Ignition ON".</li> <li>5. The DTC should be detected when the vehicle battery is charged</li> <li>6. F110 BMS. F110 byte 3-bit 3-bit 1</li> </ol>	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2. High and low voltage charging system</li> <li>3. Diagnostic interface</li> </ol>
U041381	Activity counter error or checksum error detected or DLC < 8 equals 10	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. The TDiagenable condition is met</li> <li>3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection</li> <li>4. Ignition status is "Ignition ON".</li> <li>5. Activity counter error or checksum error or DLC &lt; 8</li> <li>6. All received messages should be detected</li> </ol>	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. Bus disconnection is detected</li> <li>3. Ignition status is "Ignition ON".</li> </ol>	
U111487	Lost VCU (ID=0x161) information for 250 milliseconds	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. The TDiagenable condition is met</li> <li>3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection</li> <li>4. Ignition status is "Ignition ON".</li> <li>5. COMflgDiagActvF110VCU, F110 VCU, F110 byte 3-bit 5, 1</li> </ol>	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	Activity counter error or checksum error detected or DLC < 8 equals 10	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. The TDiagenable condition is met</li> <li>3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection</li> <li>4. Ignition status is "Ignition ON".</li> <li>5. Activity counter error or checksum error or DLC &lt; 8</li> <li>6. All received messages should be detected</li> </ol>	
U000100	The bus switching off counter cL1ToL2 equals to 10.	<ol style="list-style-type: none"> <li>1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage)</li> <li>2. Bus disconnection is detected</li> <li>3. Ignition status is "Ignition ON".</li> </ol>	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U247283	BMSH (ID=0x211) message, checksum error detected equal to 10	1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage ) 2. Satisfy the condition of TDiagEnable 3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection 4. KL15 in network mode 5. Activity counter error or checksum error or DLC < 8 6. All received messages should be detected	
U347282	BMSH (ID=0x211) message, detected activity counter error equal to 10		
U24A883	BMSH (ID=0x161) message, checksum error detected equal to 10		
U34A882	BMSH (ID=0x161) message, detected activity counter error equal to 10		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the high-and-low voltage charging system for signs of damage, deformation, stain, loosening, etc.
- B. Check the high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the HB-CAN bus.

- A. Perform HB-CAN network integrity check, refer to [HB-CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the high and low voltage charging system.

- A. Check whether the power supply and grounding harness of high and low voltage charging system are normal. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system, refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 5 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 2.6.6.11 Internal Fault of High and Low Voltage Charging System

#### 1. DTC description:

DTC	Trouble description
P1A9800	On-board charger software restarts more than a certain number of times
P1A9900	Hardware protection of PFC output overvoltage of on-board charger
P1A9A00	Hardware protection of PFC output overcurrent of vehicle charger
P1A9B00	Hardware protection of LLC output overvoltage of on-board charger
P1A9C00	Hardware protection of LLC input overcurrent of on-board charger
P1A9D00	Hardware protection of LLC output overcurrent of vehicle charger
P1A9E00	Hardware protection of VDD5 overvoltage of on-board charger
P1AAA00	Software protection of PFC output overvoltage of on-board charger
P1AAB00	Software protection of PFC output undervoltage of on-board charger
P1AAC00	AC side software Overcurrent Protection
P1AAD00	Software protection of LLC input overcurrent of on-board charger
P1AAE00	Software protection of high voltage DC side output overvoltage of vehicle charger
P1AAF00	Software protection of high voltage DC side output undervoltage of vehicle charger

DTC	Trouble description
P1AB000	Software protection of high voltage DC side output overcurrent of vehicle charger
P1AB400	Hardware protection of DCC high voltage and overvoltage
P1AB500	Hardware protection of DCDC high voltage overcurrent
P1AB600	Hardware protection for DCDC low voltage and overvoltage
P1AB700	Hardware protection of DCDC low voltage reverse overcurrent
P1AB800	SplyHw undervoltage hardware protection
P1AB900	Software protection of DCDC high voltage and overvoltage
P1ABA00	Software protection of DCDC high voltage and undervoltage
P1ABB00	Software Protection of DCDC low voltage and overvoltage
P1ABC00	Software Protection of DCDC low voltage and undervoltage
P1ABD00	DCDC low pressure long time overvoltage
P1ABE00	DCDC restarts more than a certain number of times
P1AC100	Verification of PFC current rationality
P1AC500	DC link voltage rationality check (compared with OBC or BMS values)
P1AC600	Water cooling temperature signal exceeds the lower limit
P1AC900	Internal relay does not conform to instructions
P1ACD00	PCB (printed circuit board) NTC (temperature detection) temperature sensor exceeds lower limit
P1ACE00	PFC (power factor correction circuit) NTC (temperature detection) temperature sensor exceeds lower limit
P1ACF00	LLC (power conversion circuit) temperature sensor exceeds lower limit
P1AD100	AC voltage signal exceeds upper limit
P1AD300	PFC (power factor correction circuit) voltage signal exceeds upper limit
P1AD400	PFC (power factor correction circuit) current signal exceeds upper limit: U/V/W of any phase
P1AD600	LLC (power conversion circuit) primary current signal exceeds upper limit (either phase A/B)
P1AD700	Rationality check of two primary currents in LLC (power conversion circuit)
P1AD800	HVDC (high voltage DC voltage) output signal exceeds upper limit
P1ADA00	HVDC (high voltage dc voltage) output current signal exceeds upper limit) fast sampling or slow sampling
P1ADC00	OBC side 2.5V out of range
P1ADD00	OBC 13.5V power supply out of range
P1ADE00	OBC side 21.5V out of range
P1ADF00	DC link voltage sensor over upper limit
P1AE100	llnk (bus capacitance current) current signal exceeds upper limit
P1AE200	Check the rationality of bus current
P1AE300	The voltage signal on the low voltage output side exceeds the upper limit
P1AE500	Low voltage current signal exceeds upper limit
P1AE700	Offset exceeds the threshold, check the deviation between the current read and the calibrated offset
P1AE800	DCDC MOS temperature signal exceeds lower limit
P1AEA00	Buck mode diagnosis

DTC	Trouble description
P1AEC00	Short circuit detection on low voltage output side
P1AED00	DCDC 13.5V (internal drive power supply) power supply exceeds upper limit
P1AEE00	DCDC 13.5V (internal drive power supply) power supply exceeds lower limit
P1AF400	The OBC fails to output power normally when reported to be operating in output mode
P1AF700	HV side insulation problem detected by LV MCU
P1AF687	Loss of CAN communication within OBC
P1AF681	Internal CAN communication error of OBC
P1A1919	Low pressure side overcurrent
P1AF649	The shutdown path becomes unavailable
P1A8B49	The shutdown path becomes unavailable
P1D2098	Water cooling overtemperature fault (OBC and DCDC water cooling)
P1D2600	Phase locking fault on high voltage side
P1D2700	Pre-charging fault of PFC on high voltage side
P1A3E06	EEPROM read error
P1A3D06	EEPROM write Error
P1D241C	Hardware overvoltage protection

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9800	OBC software restarts three times within 10s	OBC initialization, standby, normal, derating, heating, discharging, interruption	1. High and low voltage charging system
P1A9900	Within 60s, the PFC output voltage of OBC is greater than the hardware protection threshold of 873V, which occurs four times		
P1A9A00	Within 60s, the peak value of PFC output current of OBC is larger than the hardware protection threshold ( $>40A_{peak}$ or $<-40A_{peak}$ when charging, tbd $A_{peak}$ when discharging), and occurs four times.		
P1A9B00	Within 60s, the peak value of LLC output voltage of OBC is greater than the hardware protection threshold of 520V, which occurs four times		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9C00	Within 60s, the peak value of LLC input current of OBC is larger than the hardware protection threshold (21A <sub>peak</sub> when charging, tbd A <sub>peak</sub> when discharging), and occurs four times		
P1A9D00	Within 60s, the LLC output current of OBC is larger than the hardware protection threshold (single-phase charge/discharge >tbd A, three-phase charge >tbd A), which occurs four times		
P1A9E00	The VDD5 output voltage of OBC is greater than the hardware protection threshold within 60s, which appears four times		
P1AAA00	The PFC output voltage of OBC is greater than the diagnostic threshold and maintained for 10ms		
P1AAB00	The PFC output voltage of OBC is less than the diagnostic threshold and maintained for 10ms		
P1AAC00	The RMS of any phase of PFC current in OBC is greater than the diagnostic threshold and maintained for 100ms		
P1AAD00	The RMS value of any phase in the LLC input current of OBC is greater than the diagnostic threshold and maintained for 100ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AAE00	The output voltage of the HVDC side of the OBC is greater than the diagnostic threshold and maintained for 100ms		
P1AAF00	The output voltage of the HVDC side of the OBC is less than the diagnostic threshold and maintained for 100ms		
P1AB000	The output current of the HVDC side of the OBC is greater than the diagnostic threshold and maintained for 100ms		
P1AB400	The high voltage of DCDC is greater than the diagnostic threshold of hardware protection (550V), which occurs three times within 300ms	DCDC active, inactive	
P1AB500	The high voltage current of DCDC is greater than the diagnostic threshold of hardware protection (corresponding to the low voltage current of 220A, tbd), which occurs three times within 300ms		
P1AB600	The low voltage of DCDC is greater than the hardware protection diagnostic threshold (23V), which occurs three times within 300ms		
P1AB700	The low-voltage inverted current of DCDC is greater than the diagnostic threshold of hardware protection, which occurs three times within 90ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB800	The VDD5 voltage of DCDC is greater than 5.5 V or less than 4.5 V, which occurs three times within 300ms		
P1AB900	The high voltage of DCDC is greater than the diagnostic threshold of software protection and maintained for 200ms		
P1ABA00	The high voltage of DCDC is less than the diagnostic threshold of software protection and maintained for 200ms		
P1ABB00	The low voltage of DCDC is greater than 17V and maintained for 150ms		
P1ABC00	The low voltage of DCDC is less than 6V and maintained for 200ms		
P1ABD00	The low voltage of DCDC is 16.5-17V and maintained for 1000ms		
P1ABE00	DCDC software restarts more than three times in a certain period of time		
P1AC100	Three-phase current: the current difference between two phases exceeds tbd Arms for 200ms		
P1AC500	30V for 150ms	DCDC: Activated, Inactive	
P1AC600	The AD value corresponds to the voltage value $< 5V \times 3\%$ and lasts for 150ms	OBC: initialization, standby, normal, derating, heating, discharging, interruption	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AC900	When internal Relay is off, the voltage should be tbd V. When the internal Relay is in a defined intermediate state, the voltage should be tbd V. When the internal Relay is closed, the voltage should be tbd V. Fault confirmation time is 1000ms, i.e. Relay status does not conform to the instruction, report to this DFC		
P1ACD00	AD: < 5V*3%, for 200ms. AD value corresponding to voltage value <5V*3% for 200ms		
P1ACE00	Voltage value corresponding to AD value <5V*3% for 200ms		
P1ACF00	Voltage value corresponding to AD value <5V*3% for 200ms		
P1AD100	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		
P1AD300	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		
P1AD400	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		
P1AD600	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		
P1AD700	The current phase difference exceeds tbd A for 200ms		
P1AD800	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		
P1ADA00	The AD value corresponds to the voltage value 5V*97% and lasts for 200ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1ADC00	2.6V<2.4V for tbd ms (to be calibrated) 2.6V or <2.4V for tbd ms		
P1ADD00	<12V for 150ms (follow-up calibration)		
P1ADE00	23V < 19V for tbd ms (to be calibrated) 23V or < 19V for tbd ms (subsequent calibration)		
P1ADF00	The AD value corresponds to 5V*97% and lasts for 150ms	DCDC active, inactive	
P1AE100	The AD value corresponds to 5V*97% and lasts for 150ms		
P1AE200	3A for 150ms		
P1AE300	The AD value corresponds to the voltage value 5V*97% and lasts for 150ms		
P1AE500	The AD value corresponds to the voltage value 5V*97% and lasts for 150ms		
P1AE700	Calibration value +/-15A for 150ms		
P1AE800	The AD value corresponds to the voltage value < 5V*3% and lasts for 150ms		
P1AEA00	Low voltage actual value-low voltage target value 0.6V, high voltage current 3A or low voltage current 10A; duration 2000ms		
P1AEC00	Current loop: UBnet < 3V for 30ms; current loop: low voltage output side voltage <3V for 30ms		
P1AED00	<15V for 150ms		
P1AEE00	Diagnosis only when KI30 > 6.15V: <12V for 150ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AF400	When the OBC charging mode is reported, if the actual output current is less than tbd A or there is no corresponding jump in the internal feedback of the high voltage side, it will last for 5s		
P1AF700	Insulation resistance < safety threshold (TBD), immediately (KL30 suppression or adjustment of response level should be considered in case of false alarm)		
P1AF687	-		
P1AF681	Detected activity counter error or checksum error or DLC < 8 and equals 10		
P1A1919	1000ms actual current over (limit + 10A)	DCDC status: Buck	
P1AF649	Level 3 closing path test failed	OBC: Initialization, DCDC: Initialization	
P1A8B49	DCDC closing path test failed	DCDC: initialization	
P1D2098	OBC stops charging: Charging mode $\geq 86\text{degC}$ for 1s; discharge mode $\geq 86\text{degC}$ for 1s	OBC: initialization, standby, normal, derating, heating, discharging, interruption, shutdown, DCDC: initialization, standby, step-down, discharging, failure	
P1D2600	Phase lock failure, out of 43-67Hz for 4 Times; phase lock failure four times three phase: wait for two power frequency cycles (calibrable) during phase lock, and judge phase lock failure if it is still unsuccessful	Normal, derating, heating	
P1D2700	Debounce 2s after AC Error is detected	Normal, derating, at the beginning of heating	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A3E06	Error reading data from EEPROM	DCDC status: initialization, standby, step-down, discharge, fault	
P1A3D06	Error report during writing EEPROM		
P1D241C	Charging mode: Set HI_VAC_POVP_REF to full duty cycle and HI_VAC_NOVP_REF to 0 duty, so that the hardware OVP cannot report the discharge mode: >275V for 4 times (catch the false-> true process of hardware failure after reset) in 60s	OBC: initialization, standby, normal, derating, heating, shutdown, interrupt	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the high-and-low voltage charging system for signs of damage, deformation, stain, loosening, etc.
- B. Check the high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the high and low voltage charging system.

- A. Check whether the power supply and grounding harness of high and low voltage charging system are normal. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 5 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 7 System is normal.

2.6.6.12 CC signal failure

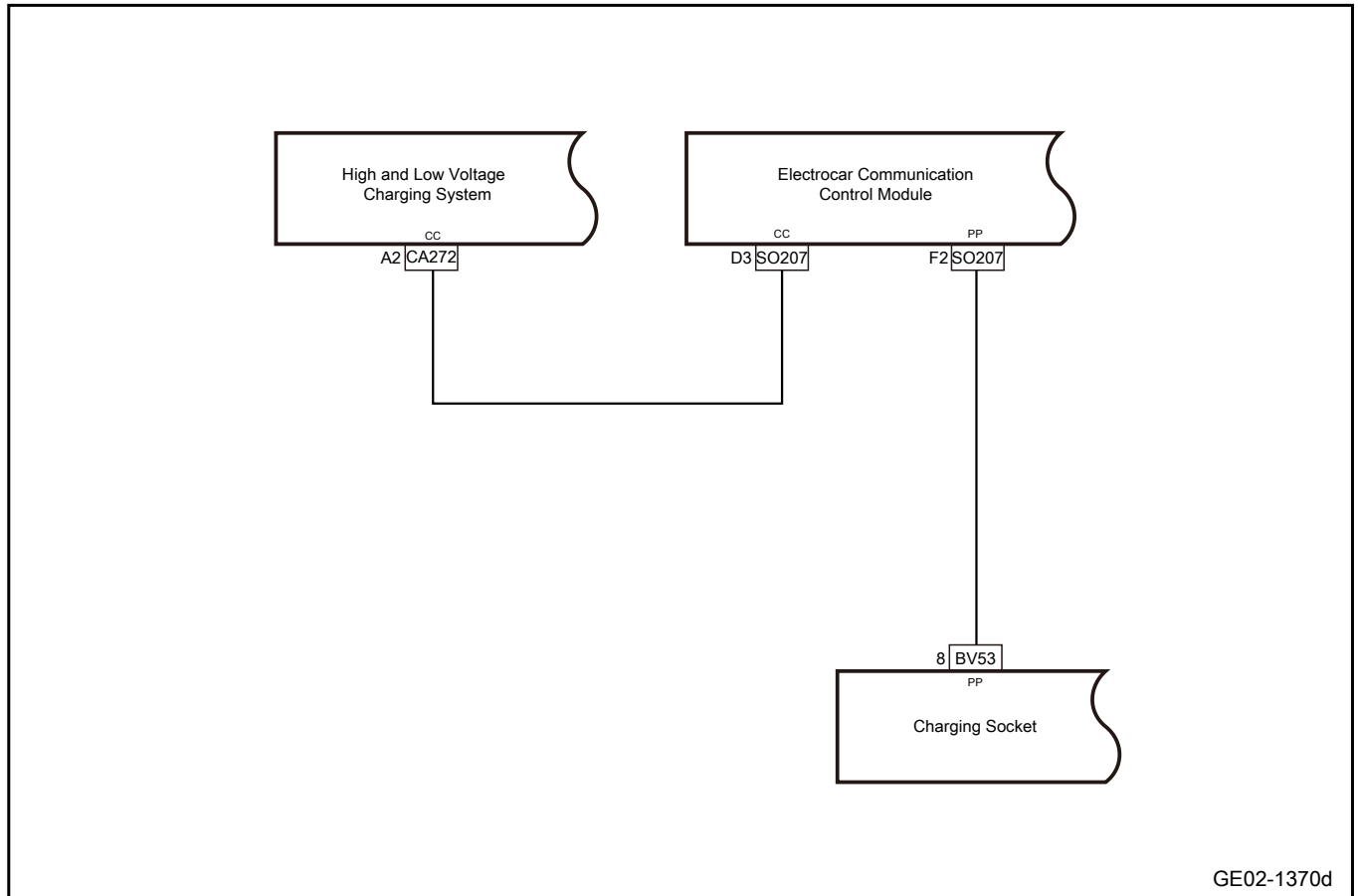
1. DTC description:

Diagnostic Trouble Code	Description
P1A9F00	Unreasonable CC signal of on-board charger

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9F00	'out of range of ( $\pm 20\%$ of typical value within 1k  $\pm 8\%$ of typical values over 1k  disconnect) Debounce: 1000ms	OBC initialization, standby, normal, derating, heating, discharging, interruption; OBC: initialization, standby, normal, derating, heating, primary charge, interruption	1. Charging socket 2. Circuit 3. High and low voltage charging system 4. Electric vehicle communication control module

3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check whether the charging socket, high and low voltage charging system and electric vehicle communication control module are damaged, deformed, stained, loose and other signs.
- B. Check the charging socket, high-and-low voltage charging system and electric vehicle communication control module harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

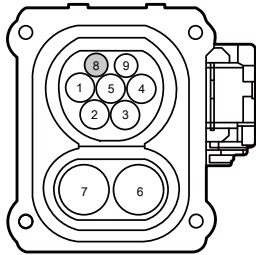
No

Repair or replace the faulty part.

Yes

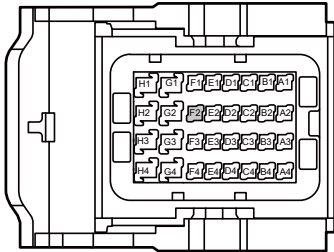
Step 3	Check whether the signal harness between the charging socket and the communication control module of the electric vehicle is normal.
--------	--

**BV53 Charging Socket Harness Connector**



GE02-1520d

**SO207 electric vehicle communication control module harness connector**



GE02-1521d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect harness connector SO207 of electric vehicle communication control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(8)	SO207(F2)	Standard resistance: less than 1Ω
BV53(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(8)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

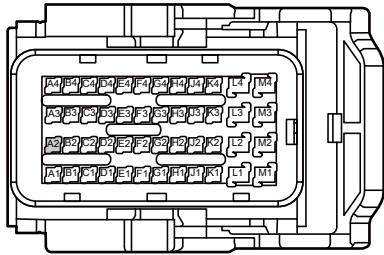
No

Repair or replace the harness.

Yes

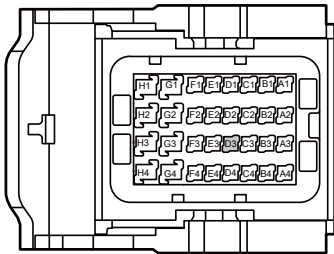
<b>Step 4</b>	Check whether the CC signal harness between the high and low voltage charging system and the communication control module of the electric vehicle is normal.
---------------	--

CA272 High and Low Voltage Charging System Harness Connector 3



GE02-1522d

SO207 electric vehicle communication control module harness connector



GE02-1523d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector SO207 of electric vehicle communication control module.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(A2)	SO207(D3)	Standard resistance: less than 1Ω
CA272(A2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(A2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the charging socket.

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the electric vehicle communication control module.

- A. Replace the electric vehicle communication control module, refer to the [Replacement of Electric Vehicle Communication Control Module](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

**Step 8** Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 2.6.6.13 CP signal failure

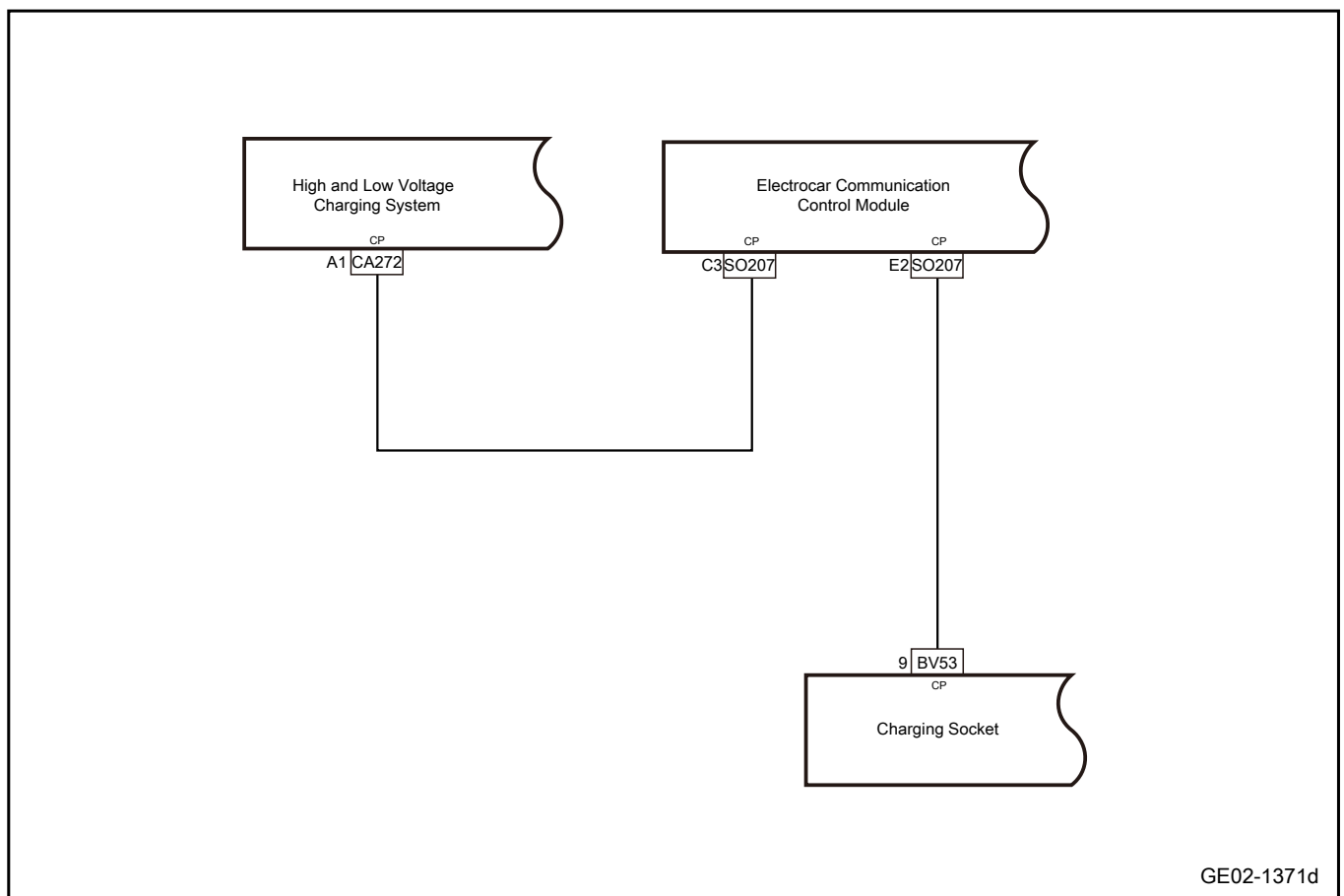
#### 1. DTC description:

Diagnostic Trouble Code	Description
P1AA000	Unreasonable amplitude of CP signal of on-board charger is
P1AA100	Unreasonable PWM frequency of CP signal of on-board charger
P1AA200	Unreasonable PWM duty cycle of CP signal of on-board charger
P1AA300	The CP signal of on-board charger is inconsistent with the control instruction of S2

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA000	The RMS value of any phase of OBC AC input voltage is greater than the protection threshold of 273Vrms for 5 consecutive times; the AC voltage is higher than the protection threshold of 220Vrms + 3% for 5 consecutive times when discharging	OBC initialization, standby, normal, derating, heating, discharging, interruption; OBC: initialization, standby, normal, derating, heating, primary charge, interruption	1. AC charging socket 2. Circuit 3. High and low voltage charging system
P1AA100	The RMS value of any phase of AC input voltage is less than the protection threshold for 5 consecutive times		
P1AA200	When OBC is charged in single phase, the AC input voltage within 10ms is less than the diagnostic threshold (30Vdc); or for three-phase charging, the AC voltage of any phase within 10ms is less than the diagnostic threshold (30Vdc) and maintained for 10ms		
P1AA300	The AC input frequency of OBC is less than 45Hz or more than 66Hz for 16 consecutive cycles		

#### 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check whether the charging socket, high and low voltage charging system and electric vehicle communication control module are damaged, deformed, stained, loose and other signs.
- B. Check the charging socket, high-and-low voltage charging system and electric vehicle communication control module harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

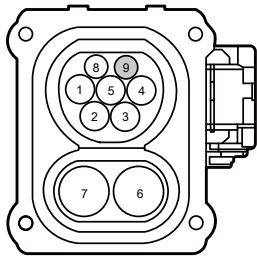
No

Repair or replace the faulty part.

Yes

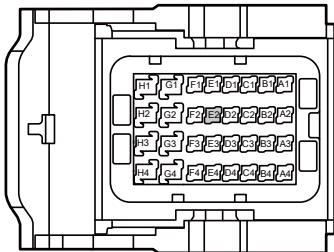
**Step 3** Check whether the CP signal harness between the charging socket and the communication control module of the electric vehicle is normal.

**BV53 Charging Socket Harness Connector**



GE02-1524d

**SO207 electric vehicle communication control module harness connector**



GE02-1525d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect harness connector SO207 of electric vehicle communication control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(9)	SO207(E2)	Standard resistance: less than 1Ω
BV53(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV53(9)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

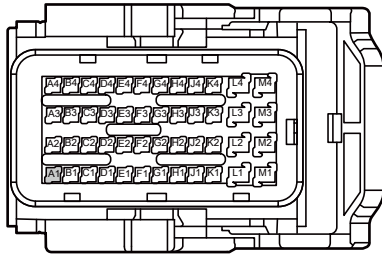
Repair or replace the harness.

Yes

**Step 4** Check whether the CP signal harness between the high and low voltage charging system and the communication control module of the electric vehicle is normal.

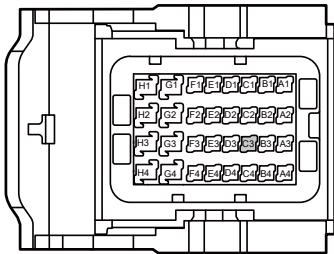


CA272 High and Low Voltage Charging System Harness Connector 3



GE02-1526d

SO207 electric vehicle communication control module harness connector



GE02-1527d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector SO207 of electric vehicle communication control module.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(A1)	SO207(C3)	Standard resistance: less than 1Ω
CA272(A1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(A1)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the charging socket.

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the electric vehicle communication control module.

- A. Replace the electric vehicle communication control module, refer to the [Replacement of Electric Vehicle Communication Control Module](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 8 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 2.6.6.14 AC input signal fault

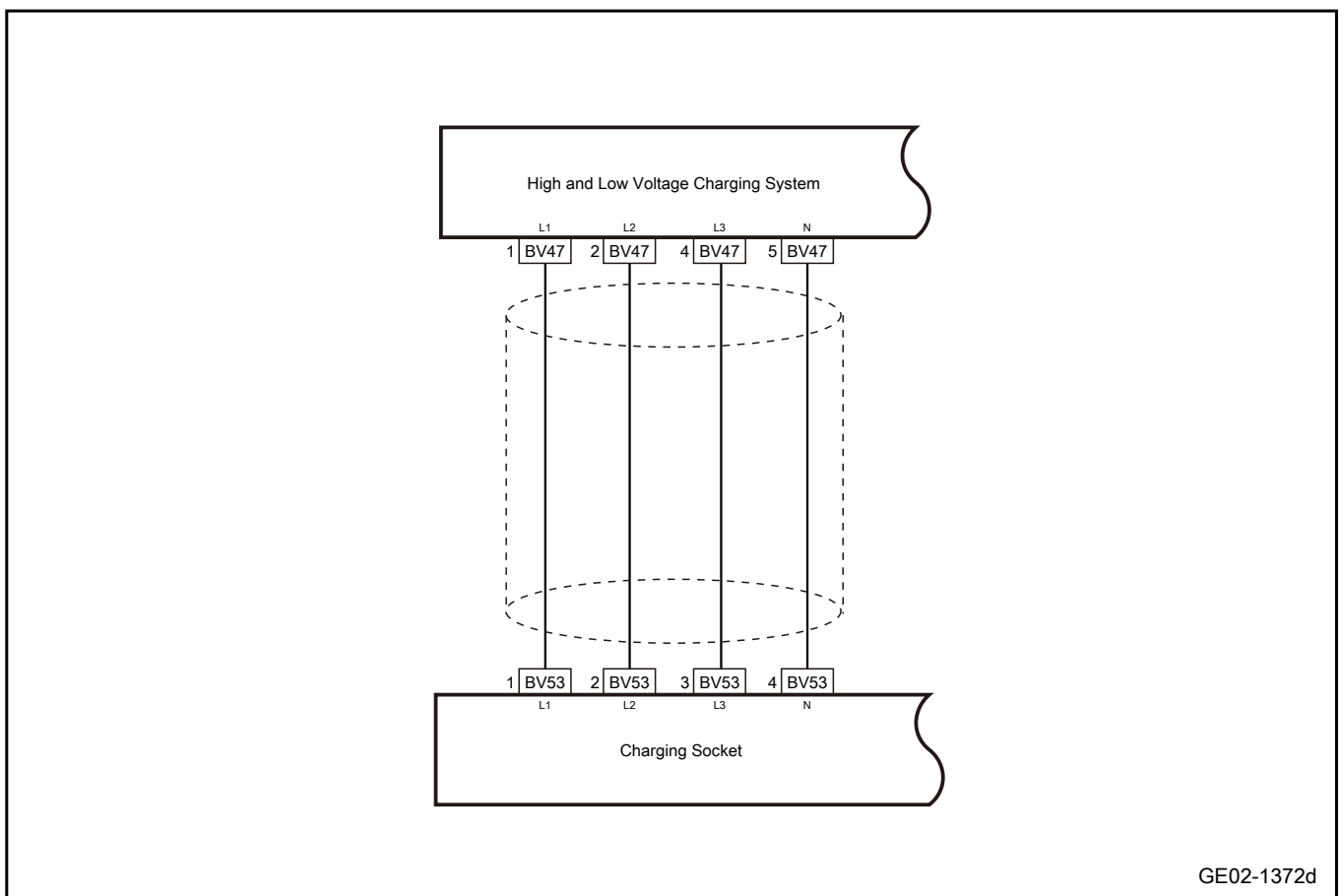
#### 1. DTC description:

Diagnostic Trouble Code	Description
P1AA600	Overvoltage of on-board charger AC input software
P1AA700	Undervoltage of AC input software for on-board charger
P1AA800	Open circuit on AC input side of vehicle charger
P1AA900	AC input frequency of on-board charger exceeds a certain range

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA600	Beyond the normal range of 4.2V-10.8V and 0-0.5V for 1000ms	OBC initialization, standby, normal, derating, heating, discharging, interruption; OBC: initialization, standby, normal, derating, heating, primary charge, interruption	1. Charging socket 2. Circuit 3. High and low voltage charging system
P1AA700	The PWM frequency of CP signal of OBC exceeds 900-1100Hz and maintains for 1000ms		
P1AA800	Beyond the duty cycle range of 8%-90%, 0% and 100% for 1000ms		
P1AA900	It is required that the amplitude of CP should be 4.2V-7.5V when S2 is closed. It is required that the CP amplitude should be 7.6V-10.8V when S2 is disconnected. If the state of S2 does not match the CP command and lasts for 1000ms, this fault will be reported		

#### 3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

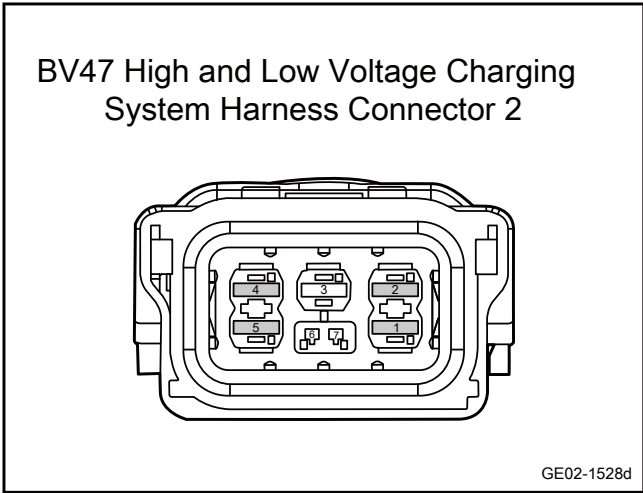
- A. Check the charging socket and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the charging socket, high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

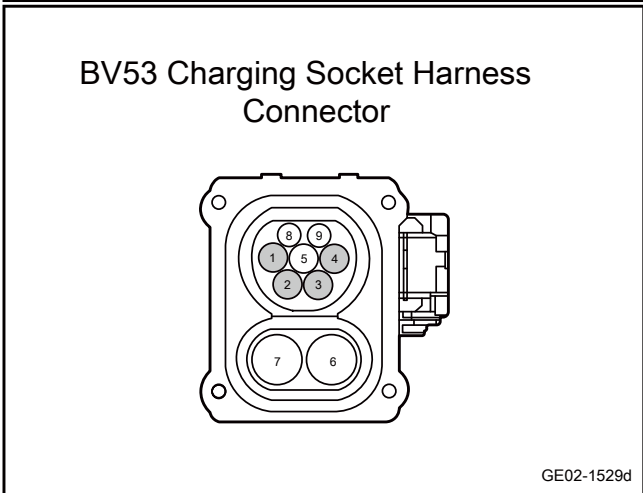
**Step 3** Check the harness between the charging socket and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	BV53(1)	Standard resistance: less than 1Ω
BV47(2)	BV53(2)	
BV47(4)	BV53(3)	
BV47(5)	BV53(4)	

- E. Confirm whether the measured value meets the standard.

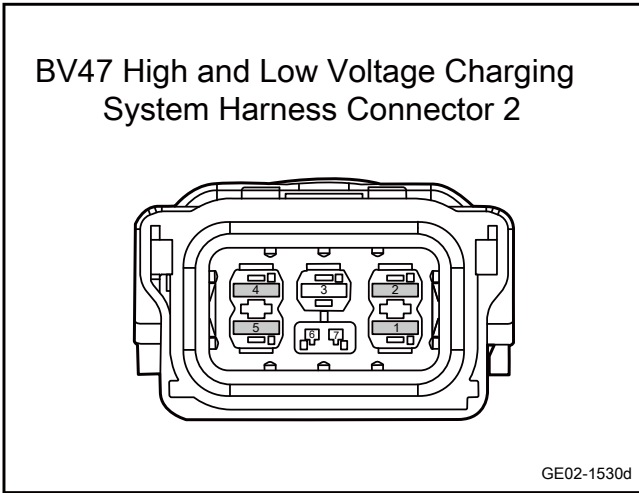


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the charging socket and the high and low voltage charging system is short-circuited to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	Vehicle body is grounded.	Standard voltage: 0V
BV47(2)		
BV47(4)		
BV47(5)		

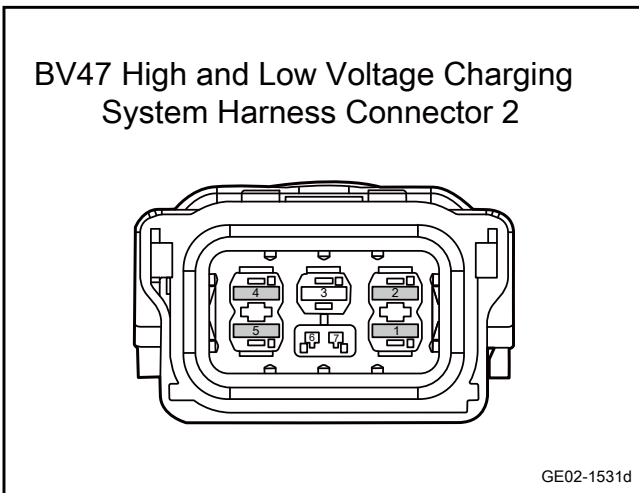
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the harness between the charging socket and the high and low voltage charging system for short circuit to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the charging socket harness connector BV53.
- C. Disconnect the HV/LV charging system harness connector BV47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
BV47(2)		
BV47(4)		
BV47(5)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the charging socket.
--------	------------------------------

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7	Replace the high and low voltage charging system.
--------	---

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 8	Reprogram and reset the high-and-low voltage charging system.
--------	---

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

2.6.6.15 Charging port status switch fault

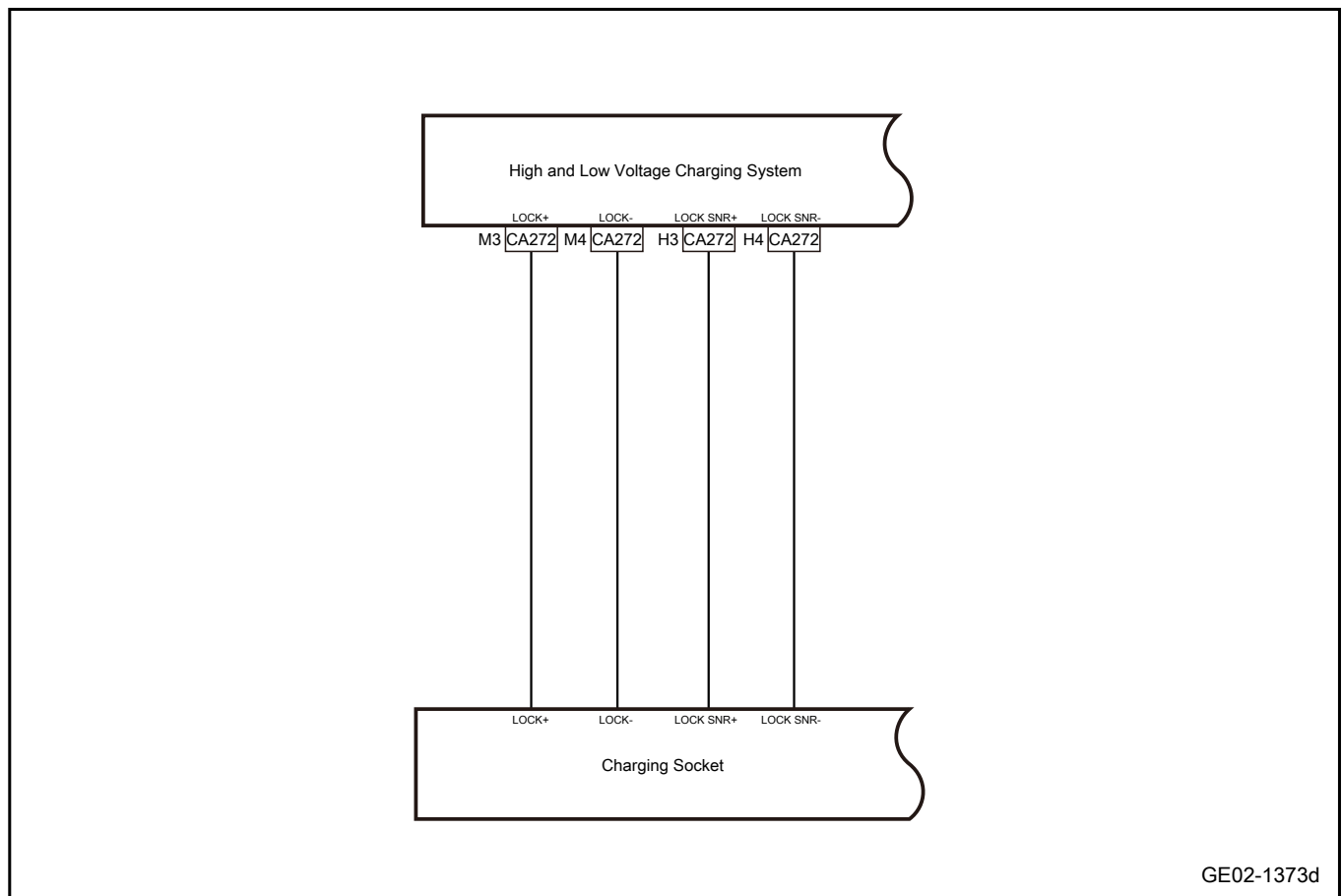
1. DTC description:

Diagnostic Trouble Code	Description
P1AB100	Electronic lock failed to unlock

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB100	When the electronic lock is required to be locked, the electronic lock voltage signal exceeds the voltage range of the lock state	OBC initialization, standby, normal, derating, heating, discharging, interruption; OBC: initialization, standby, normal, derating, heating, primary charge, interruption	1. Charging socket (charging cap status switch) 2. Circuit 3. High and low voltage charging system

3. Schematic circuit diagram:



GE02-1373d

4. Diagnosis steps



**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

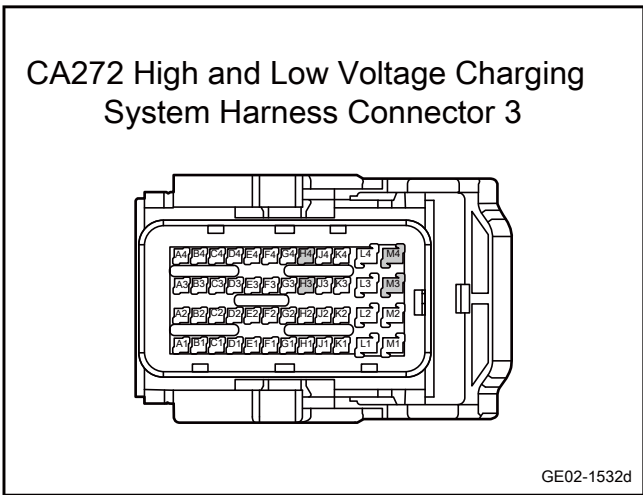
- A. Check the charging socket (charging cap status switch) and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the charging socket (charging cap status switch) and harness connector of high and low voltage charging system for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the harness between the charging socket (charging cap status switch) and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of the charging socket (charging cap status switch).
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M3)	Charging socket (charging cap status switch) end	Standard resistance: less than 1Ω
CA272(M4)		
CA272(H3)		
CA272(H4)		

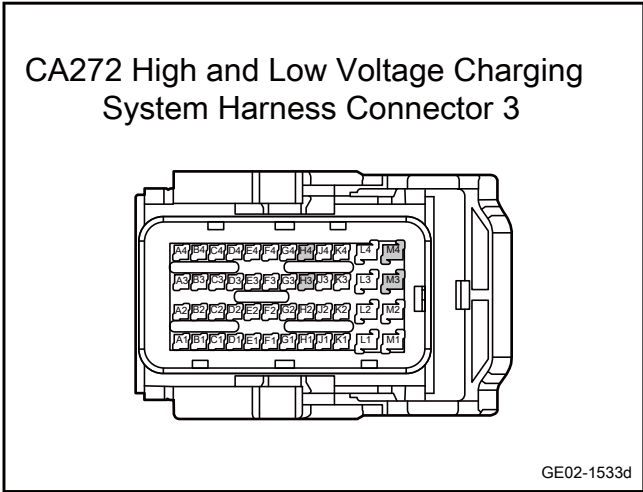
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the charging socket (charging cap status switch) and the high and low voltage charging system is short-circuited to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of the charging socket (charging cap status switch).
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M3)	Vehicle body is grounded.	Standard voltage: 0V
CA272(M4)		
CA272(H3)		
CA272(H4)		

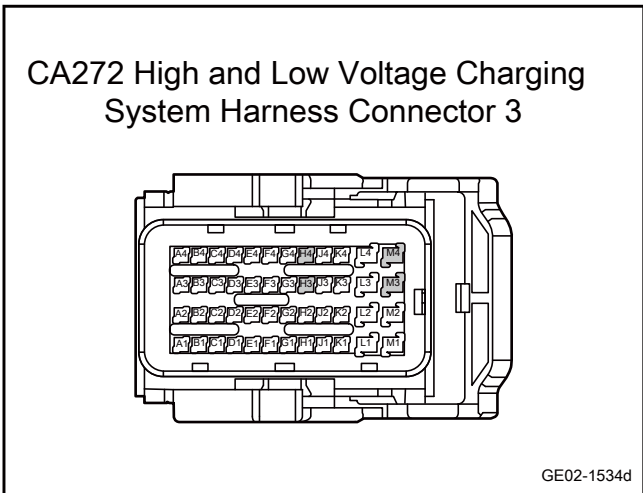
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the charging socket (charging cap status switch) and the high and low voltage charging system is short-circuited to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of the charging socket (charging cap status switch).
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272(M4)		
CA272(H3)		

Measure terminal 1	Measure terminal 2	Standard value
CA272(H4)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the charging socket (charging cap status switch).

A. Replace charging socket (charging cap status switch), refer to [Replacement of Charging Socket \(Charging Cap Status Switch\)](#)

B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replace the high and low voltage charging system.

A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)

B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

**Step 8** Reprogram and reset the high-and-low voltage charging system.

A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 2.6.6.16 Excessive Temperature Fault of High and Low Voltage Charging System

1. DTC description:

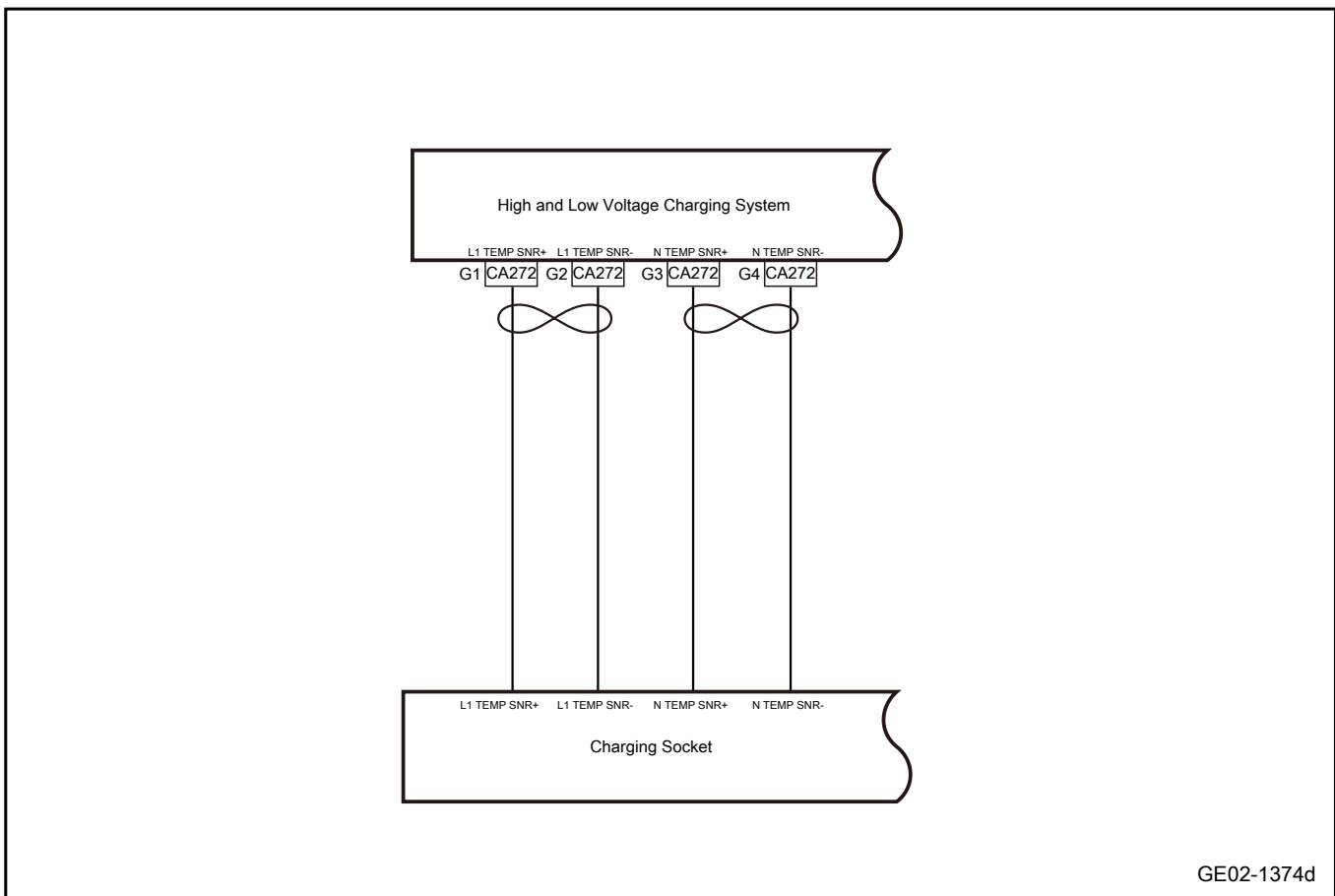
Diagnostic Trouble Code	Description
P1AA400	The charging gun temperature of vehicle charger is too high
P1AA500	On-board charger QUB temperature is too high
P1AB200	FET temperature is too high
P1AB300	DCDC safety switch temperature is too high
P1A8998	Thermistor failure fault (charging port)
P1AE900	The temperature signal of safety switch exceeds the lower limit
P1AA496	Abnormal temperature of charging gun of vehicle charger

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA400	Since this temperature range has exceeded the NTC effective range, it is unified with the response of socket fault (SktHiRng/SktLoRng) as an unrecoverable fault	OBC initialization, standby, normal, derating, heating, discharging, interruption;	1. Charging socket 2. Circuit 3. High and low voltage charging system
P1AA500	The PCB temperature of OBC, or PFC temperature, or LLC temperature reaches the corresponding diagnostic threshold of 500ms	OBC: initialization, standby, normal, derating, heating, primary charge, interruption	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB200	DCDC MOSFET temperature is greater than diagnostic threshold and maintained 1500ms	DCDC active, inactive	
P1AB300	The S9 safety switch temperature of DCDC is greater than the diagnostic threshold and maintained for 1500ms		
P1A8998	$T > 200^{\circ}\text{C} \parallel T < -40^{\circ}\text{C}$	Communication is normal, no overvoltage/undervoltage CC connection	
P1AE900	AD: $39 < 111$ or $> 3912$ , for 200ms, AD value $< 111$ or $> 3912$ , for 200 ms	DCDC: initialization, standby, step-down, discharge, fault	
P1AA496	Emergency shutdown: less than $-40^{\circ}\text{C}$ for 1 second	OBC is in initialization, standby, normal, derating, heating, discharging, interrupting, shutdown state	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

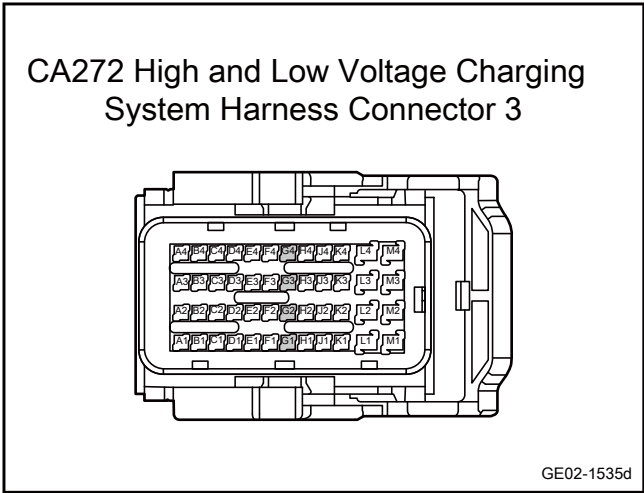
- A. Check the charging socket and high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check the charging socket, high-and-low voltage charging system harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the harness between the charging socket and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(G1)	Charging socket end	Standard resistance: less than 1Ω
CA272(G2)		
CA272(G3)		
CA272(G4)		

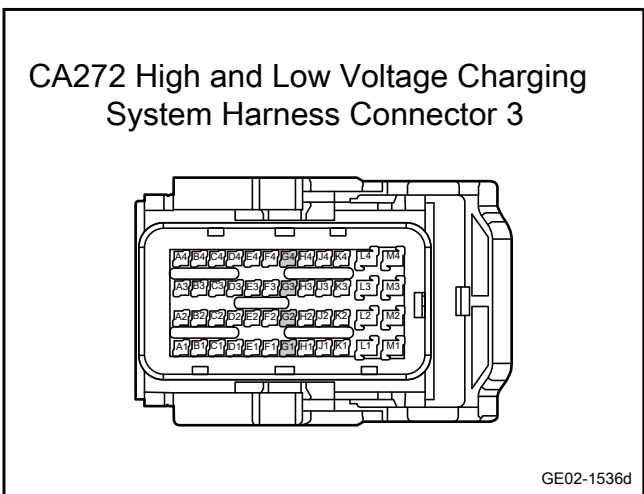
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the charging socket and the high and low voltage charging system is short-circuited to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(G1)	Vehicle body is grounded.	Standard voltage: 0V
CA272(G2)		
CA272(G3)		

Measure terminal 1	Measure terminal 2	Standard value
CA272(G4)		

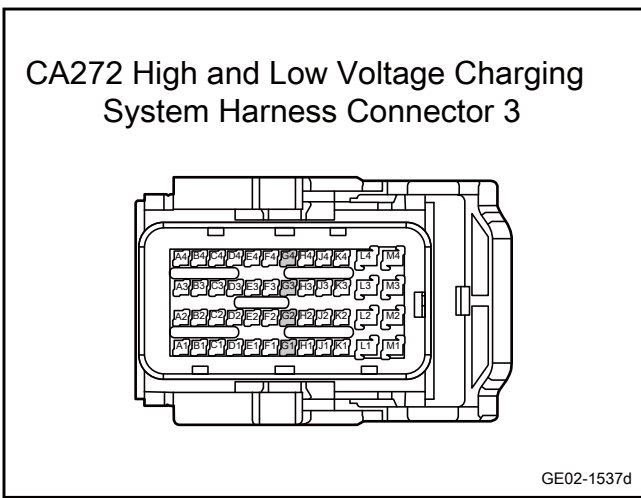
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the harness between the charging socket and the high and low voltage charging system for short circuit to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of charging socket.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(G1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272(G2)		
CA272(G3)		
CA272(G4)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the charging socket.

- A. Replace the charging socket, refer to the [Charging Socket Replacement](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replace the high and low voltage charging system.



- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 8	Reprogram and reset the high-and-low voltage charging system.
--------	---

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

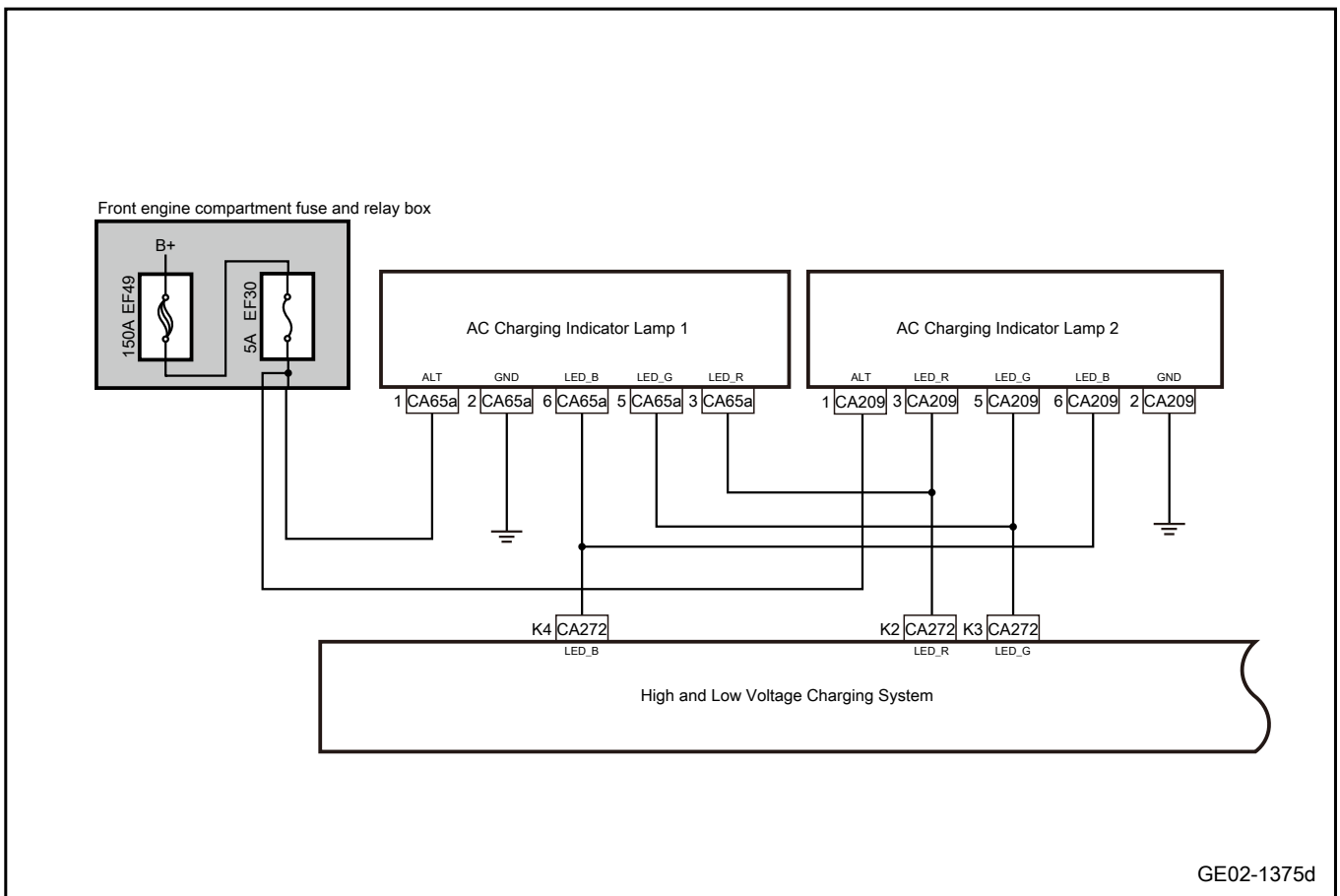
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 2.6.6.17 AC Charging Indicator Light Fault

1. Schematic circuit diagram:



GE02-1375d

2. Diagnosis steps

Caution

This manual only provides fault diagnosis for AC charging indicator light 1, and the diagnosis method of AC charging indicator light 2 is similar to that of AC charging indicator light 1.

Step 1	Primary check.
--------	----------------

- A. Check the AC charging indicator light 1, high and low voltage charging system for signs of damage, deformation, stain, looseness, etc.
- B. Check AC charging indicator light 1, HV and LV charging system harness connector for signs of damage, deformation, stain, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF30 of the front engine bay. Check whether the fuse EF30 is blown.

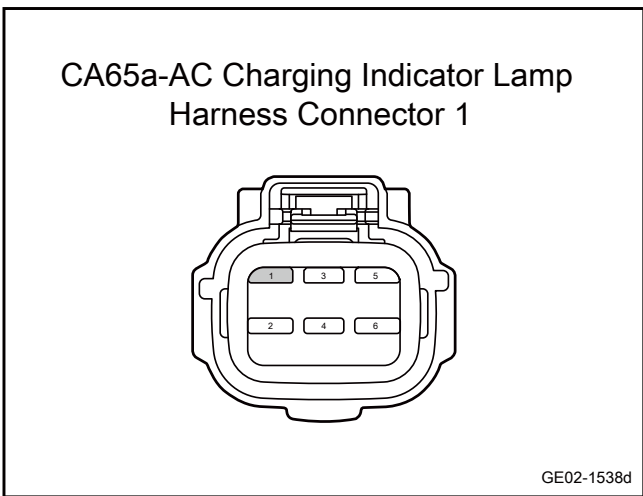
Rated fuse capacity: 5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the AC indicator light 1 power supply circuit is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA65a of AC Indicator light 1.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

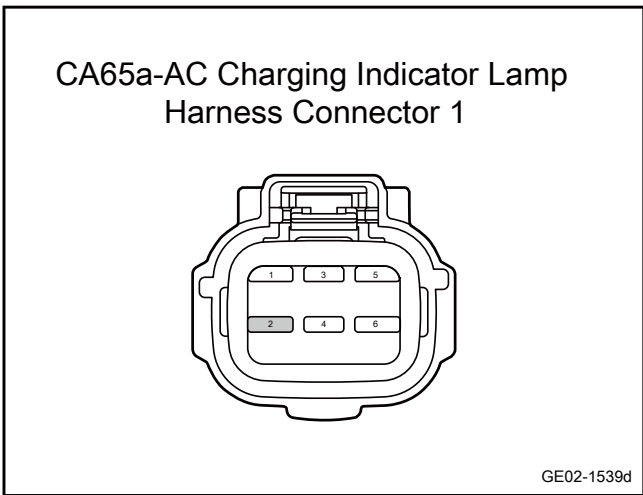
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the ground circuit of AC indicator light 1.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA65a of AC Indicator light 1.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

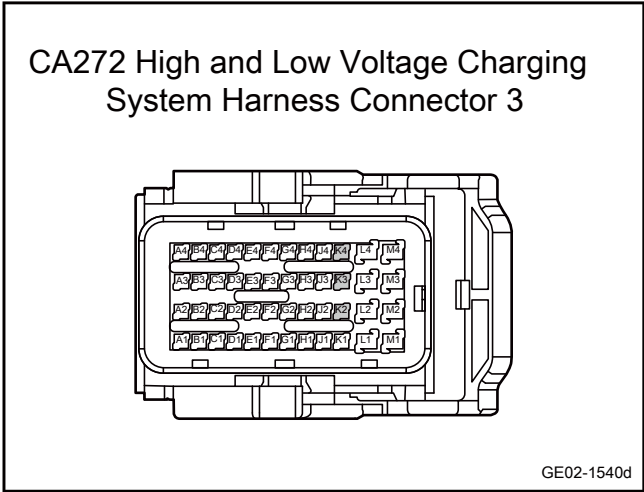
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

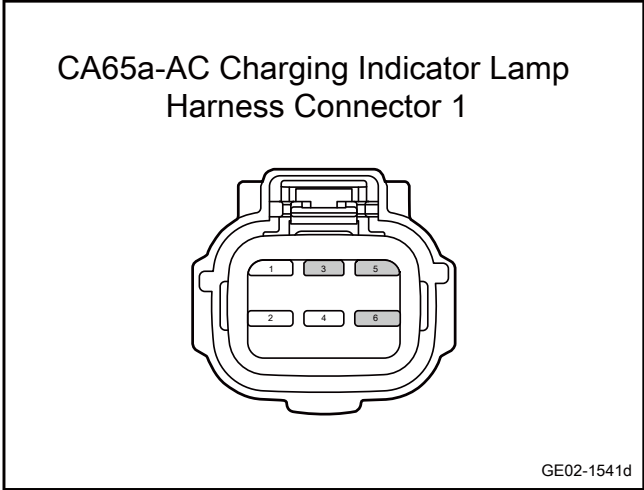
Yes

**Step 5** Check the harness between AC charging indicator light 1 and the high and low voltage charging system for an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA65a of AC charging indicator light 1.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(K2)	CA65a(3)	Standard resistance: less than 1Ω
CA272(K3)	CA65a(5)	
CA272(K4)	CA65a(6)	



- E. Confirm whether the measured value meets the standard.

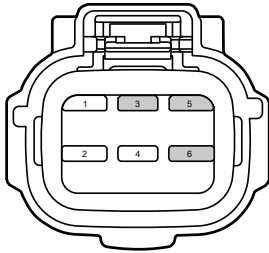
No

Repair or replace the harness.

Yes

**Step 6** Check the harness between charging indicator light 1 and the high and low voltage charging system for short circuit to the power supply.

CA65a-AC Charging Indicator Lamp  
Harness Connector 1



GE02-1542d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA65a of AC charging indicator light 1.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(3)	Vehicle body is grounded.	Standard voltage: 0V
CA65a(5)		
CA65a(6)		

- F. Confirm whether the measured value meets the standard.

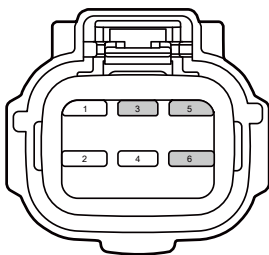
No

Repair or replace the harness.

Yes

**Step 7** Check the harness between AC charging indicator light 1 and the high and low voltage charging system for short circuit to ground.

CA65a-AC Charging Indicator Lamp  
Harness Connector 1



GE02-1543d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA65a of AC charging indicator light 1.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA65a(5)		
CA65a(6)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace AC charging indicator light 1.

- A. Replace AC Charging indicator light1, refer to [Replacement of AC Charging Indicator Light 1](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9 Replace the high and low voltage charging system.

- A. Check the power supply and grounding harness of high and low voltage charging system. Refer to the [High and Low Voltage Charging System Power Fault](#)
- B. Replace the high and low voltage charging system. Refer to the [Replacement of High and Low Voltage Charging System](#)

Next Step

Step 10 Reprogram and reset the high-and-low voltage charging system.

- A. Reprogram and reset the high-and-low voltage charging system. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

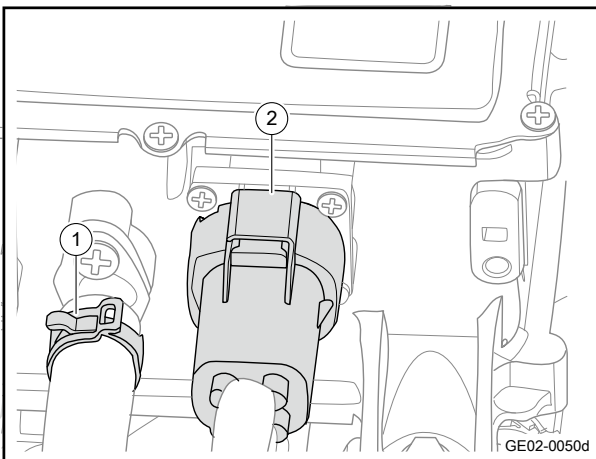
Step 11 System is normal.

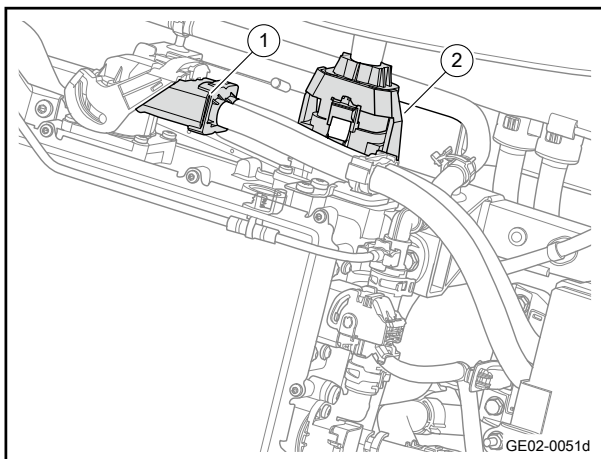
## 2.6.7 Removal and installation

### 2.6.7.1 Replacement of High and Low Voltage Charging System Assembly

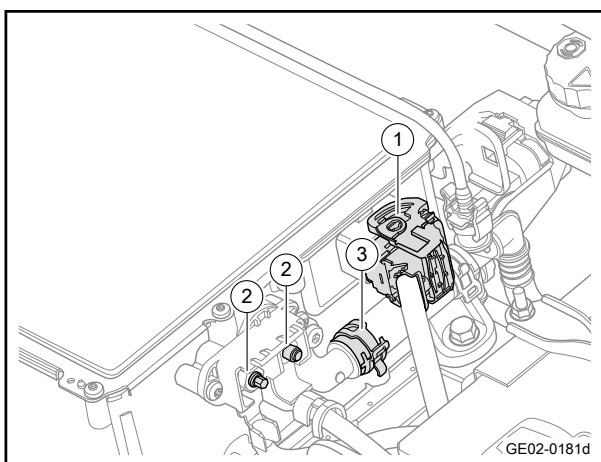
#### Disassembly procedure

- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Drain the power battery coolant. Refer to the [Coolant Replacement Procedure](#)
- 5 Disengage the 4 fixed buckles of the combined charging socket harness assembly from the bracket.
- 6 Disengage the 3 fixed buckles of the combined charging socket harness assembly from the bracket.
- 7 Remove the 4 fixing nuts 2 connecting the combined charging socket harness assembly and the filter bracket.
- 8 Remove the combined charging socket harness assembly.
- 9 Remove the 4 fixing bolts of the filter bracket.
- 10 Remove the filter bracket.
- 11 Remove the fixing clamp 1 of the electronic water pump outlet pipe and disconnect the electronic water pump outlet pipe.
- 12 Disconnect the harness connector 2 of electric compressor harness assembly.

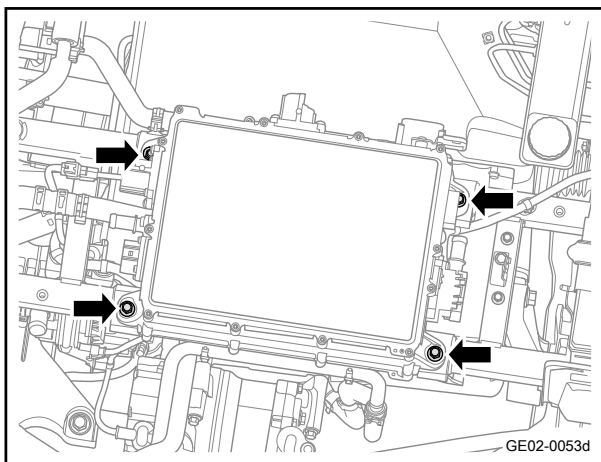




- 13 Disconnect the harness connector 1 of IPU harness assembly.
- 14 Disconnect the 2 harness connectors of combined charging socket harness assembly.



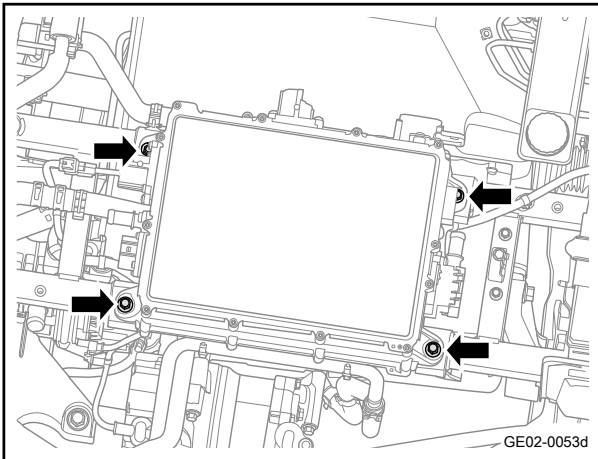
- 15 Disconnect the harness connector 1 of front engine compartment.
- 16 Remove 2 ground nuts 2 of high and low voltage charging system assembly.
- 17 Disengage the fixing clamp 3 of charger outlet pipe.



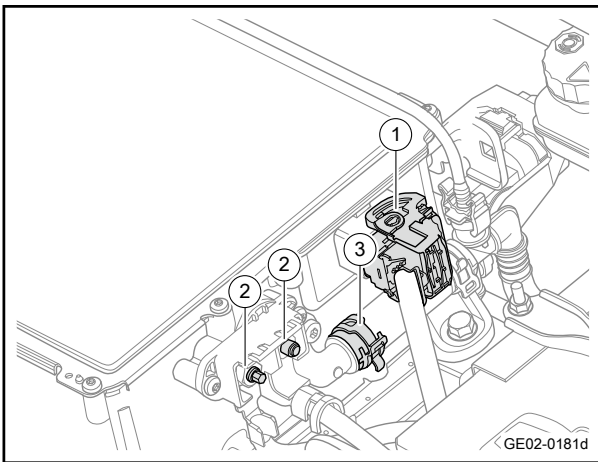
- 18 Remove the 4 fixing bolts of high and low voltage charging system assembly.
- 19 Remove the high and low voltage charging system assembly.

Installation procedure

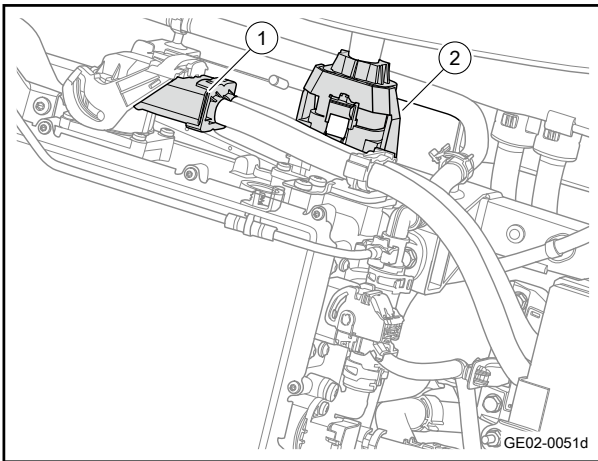




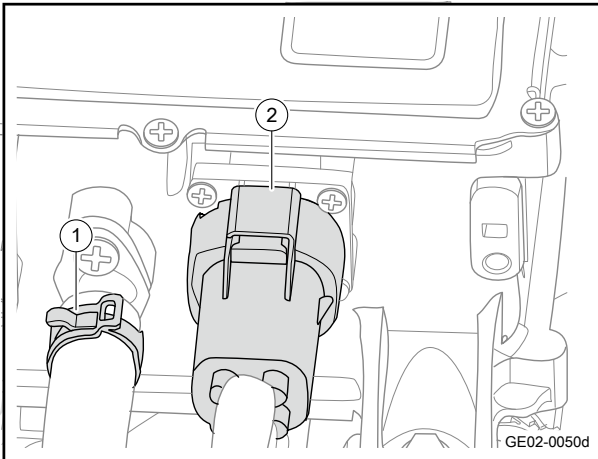
- 1 Move the high and low voltage charging system assembly to the installation position.
- 2 Install the 4 fixing bolts of high and low voltage charging system assembly.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)



- 3 Install the fixing clamp 3 of charger outlet line.
- 4 Install 2 ground nuts 2 for high and low voltage charging system assembly.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)
- 5 Connect the harness connector 1 of front engine compartment.



- 6 Connect 1 harness connector of combined charging socket harness assembly.
- 7 Connect the harness connector 1 of IPU harness assembly.



- 8 Connect the harness connector 2 of electric compressor harness assembly.
- 9 Install the fixing clamp 1 of electronic water pump outlet pipe.

- 10 Move the filter bracket to the installation position.
- 11 Install the 4 fixing bolts of the filter bracket.  
Torque: Nm ( metric system ) lb-ft ( imperial system )
- 12 Install the 4 fixing nuts 2 connecting the combined charging socket harness assembly and the filter bracket.  
Torque: Nm ( metric system ) lb-ft ( imperial system )
- 13 Install the 3 fixing clip 1 of combined charging socket wiring harness assembly.

#### Caution

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

- 14 Install the 4 fixing clip of combined charging socket wiring harness assembly.
- 15 Fill power battery coolant.
- 16 Connect the DC bus assembly.
- 17 Lower the vehicle.
- 18 Connect the battery negative cable.

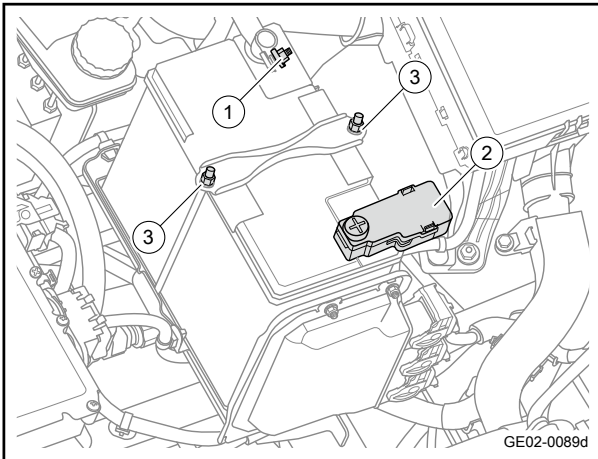
### 2.6.7.2 Replacement of Battery Assembly

#### Removal procedure

#### Warning

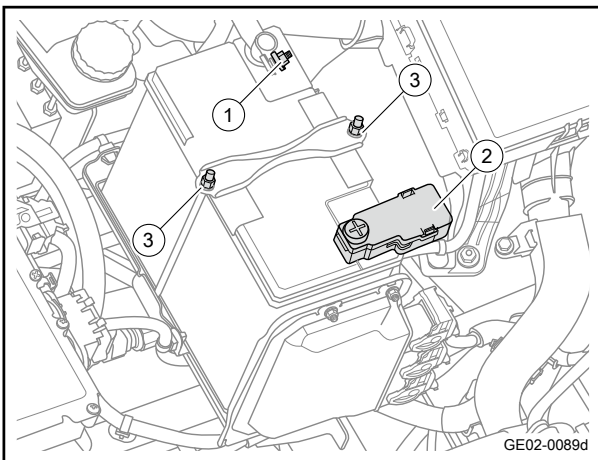
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 1 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 2 Operate the start-and-stop switch to place the power supply in mode "OFF".



- 3 Loosen the fixing nut 1 of battery negative cable and disconnect the battery negative cable.
- 4 Open the protection cover 2 of battery positive cable and loosen the fixing nut of battery positive cable.
- 5 Disconnect the battery positive cable.
- 6 Remove the 2 fixing nuts 3 of the battery layering and take out the battery moulding.
- 7 Take off the battery assembly.

#### Installation procedure

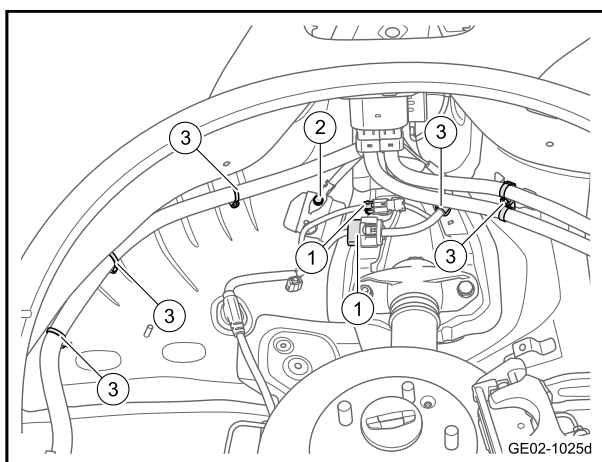
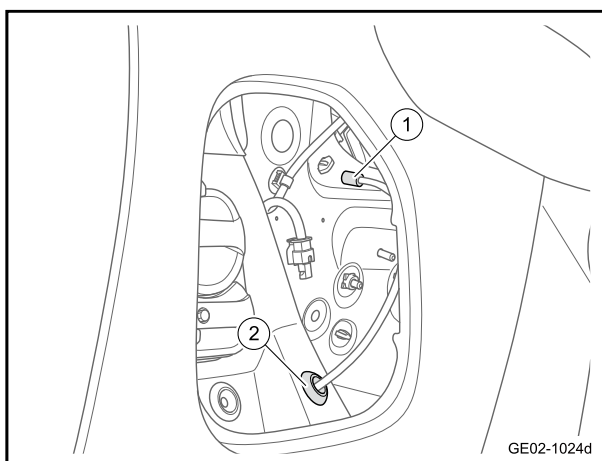
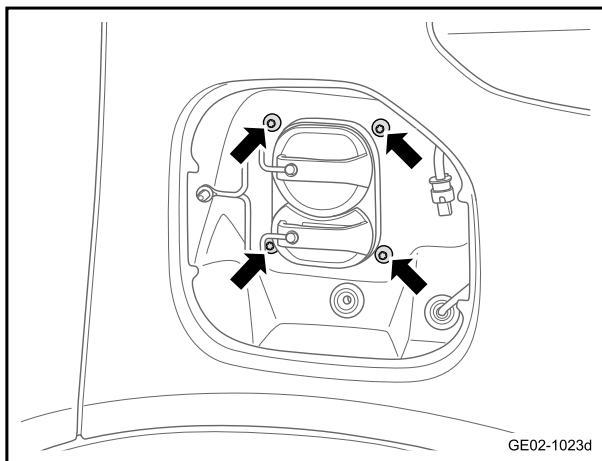


- 1 Move the battery assembly to the installation position.
- 2 Install the 2 fixing nuts of the battery depression bar.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Install the battery positive cable, tighten the battery positive cable fixing nut, and close the protection cover 2 of battery positive cable.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 4 Install the fixing nut 1 of battery negative cable and tighten the battery negative cable.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 5 Install the front cabin trim cover assembly.

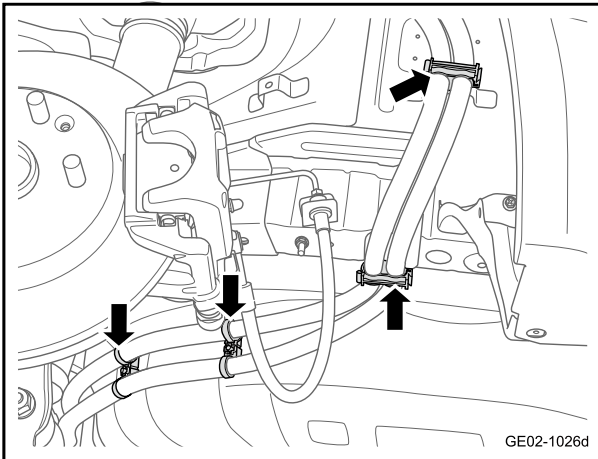
### 2.6.7.3 Replacement of Harness Assembly of Combined Charging Socket

#### Disassembly procedure

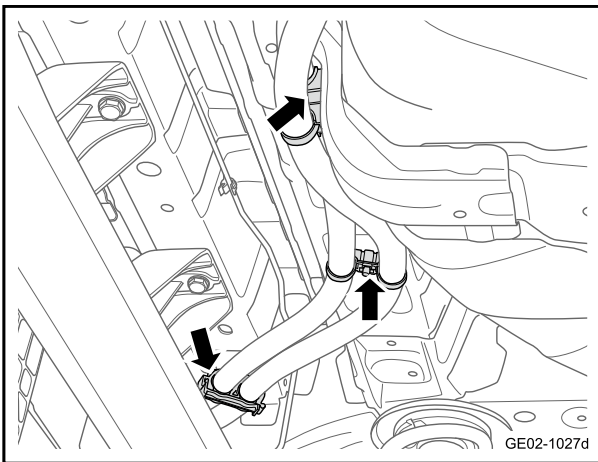
- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to the [Replacement of DC Bus Assembly](#).
- 4 Remove the left rear fender liner. Refer to [Replacement of left rear fender liner](#)
- 5 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)



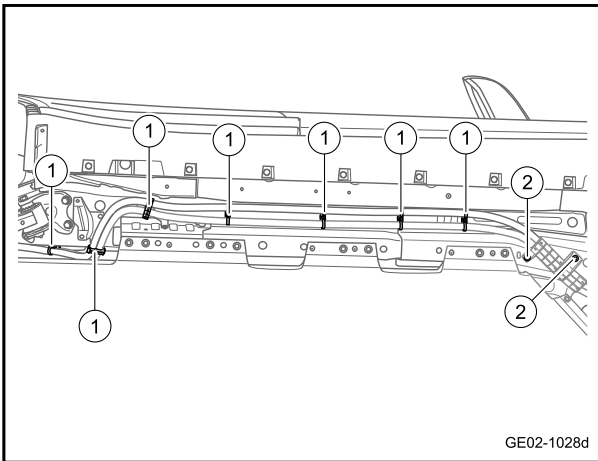
- 6 Remove the battery base protection module. Refer to the [Replacement of Battery Bottom Guard](#)
- 7 Remove the luggage compartment bottom guard assembly. Refer to [Replacement of Luggage Compartment Bottom Guard Assembly](#)
- 8 Remove the charging port cap assembly. Refer to [Replacement of Charging Port Cap Assembly](#)
- 9 Remove the 4 fixing screws of combined charging socket harness assembly.
- 10 Remove 1 fixing clip 1 for the emergency cable of the modular charging socket harness assembly.
- 11 Remove 1 fixing plug 2 of combined charging socket harness assembly.
- 12 Disconnect the 2 harness connectors 1 of combined charging socket harness assembly.
- 13 Remove 1 fixing bolt 2 for the ground harness of modular charging socket harness assembly.
- 14 Disengage the 5 fixing clips 3 of combined charging socket harness assembly from the body.



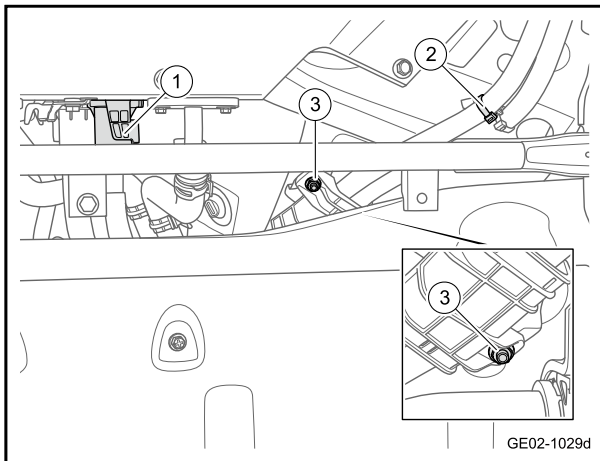
- 15 Disengage the 4 fixing clips 3 of combined charging socket harness assembly from the body.



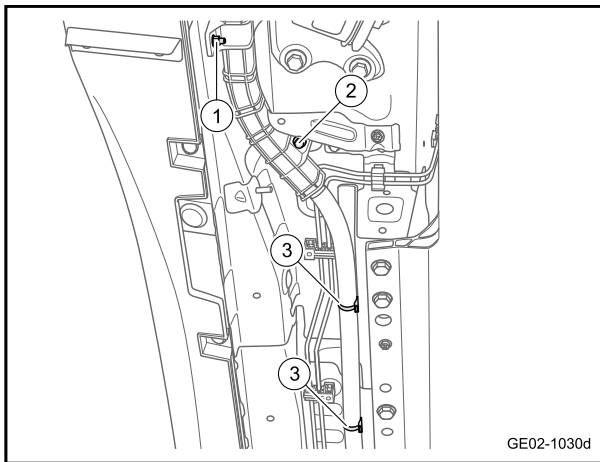
- 16 Disengage the 3 fixing clips 3 of combined charging socket harness assembly from the body.



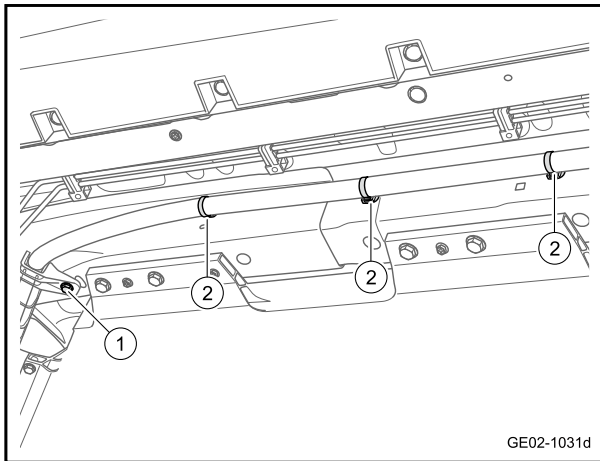
- 17 Disengage the 7 fixing clips 1 of combined charging socket harness assembly from the body.
- 18 Remove the 2 fixing bolts 2 of combined charging socket harness assembly.



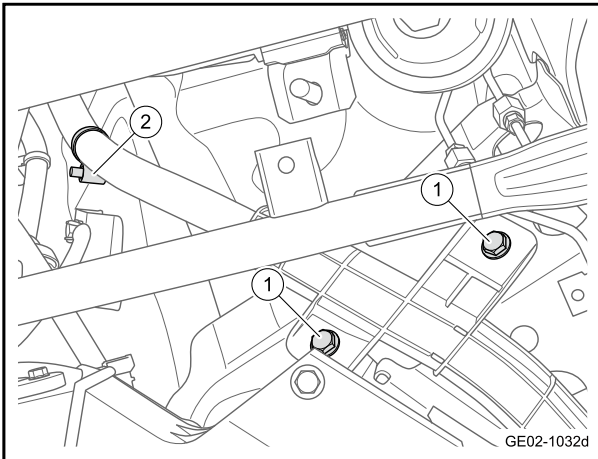
- 19 Disconnect the 1 harness connectors 1 of combined charging socket harness assembly.
- 20 Disengage the 1 fixing clips 2 of combined charging socket harness assembly from the body.
- 21 Remove the 2 fixing nuts 3 of combined charging socket harness assembly.



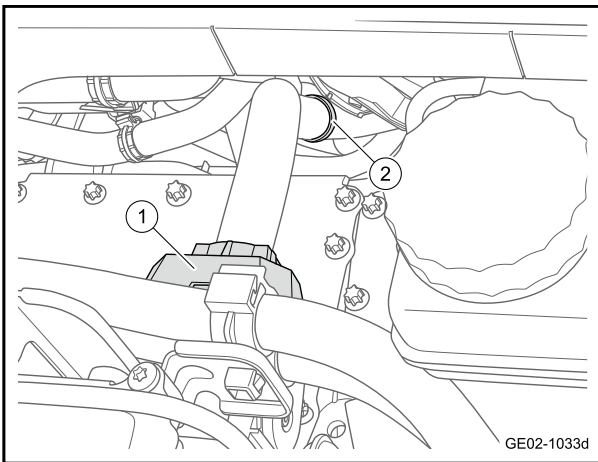
- 22 Remove the 1 fixing nuts 1 of combined charging socket harness assembly.
- 23 Remove the 2 fixing bolts 2 of combined charging socket harness assembly.
- 24 Disengage the 2 fixing clips 3 of combined charging socket harness assembly from the body.



- 25 Remove the 1 fixing bolts 1 of combined charging socket harness assembly.
- 26 Disengage the 3 fixing clips 2 of combined charging socket harness assembly from the body.



- 27 Remove the 2 fixing bolts 2 of combined charging socket harness assembly.
- 28 Disengage the 1 fixing clips 2 of combined charging socket harness assembly from the body.



- 29 Disconnect the 1 harness connectors 1 of combined charging socket harness assembly.

#### Caution

Insulation treatment is required; Avoid coolant splashing on the plug connection.

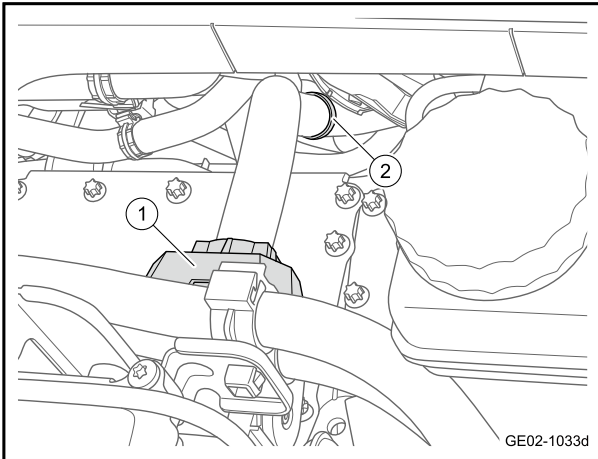
- 30 Disengage the 4 fixed buckles of the combined charging socket harness assembly from the bracket.
- 31 Disengage the 3 fixed buckles of the combined charging socket harness assembly from the bracket.
- 32 Remove the 4 fixing nuts 2 connecting the combined charging socket harness assembly and the filter bracket.
- 33 Remove the combined charging socket harness assembly.

#### Installation procedure

- 1 Move the modular charging socket harness assembly to the installation position.
- 2 Install the 4 fixing nuts 2 connecting the combined charging socket harness assembly and the filter bracket.  
Torque: Nm ( metric system ) lb-ft ( imperial system )
- 3 Install the 3 fixing clip 1 of combined charging socket wiring harness assembly.

#### Caution

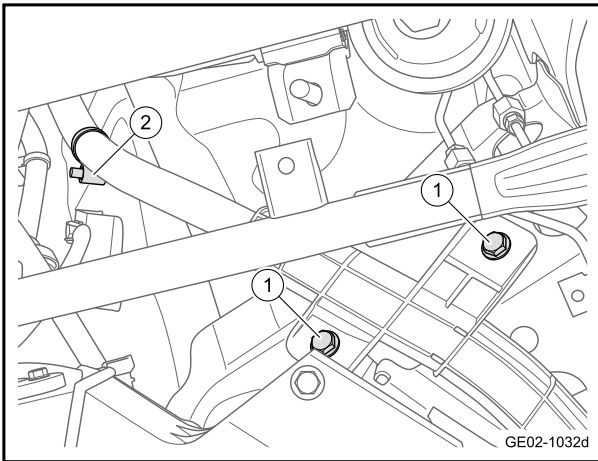
After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.



- 4 Install the 4 fixing clip 2 of combined charging socket wiring harness assembly.
- 5 Connect 1 harness connector 1 of combined charging socket harness assembly.

**Caution**

The wiring harness is connected firmly in accordance with the principles of 'step 1: plugging; step 2: beep; step 3: confirmation'.



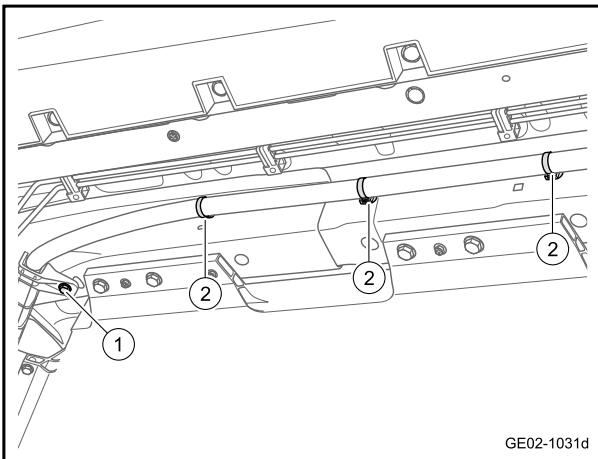
- 6 Install the 1 fixing clip 2 of combined charging socket wiring harness assembly.

**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

- 7 Install the 2 fixing bolts 1 of combined charging socket harness assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 8 Install the 3 fixing clip 2 of combined charging socket wiring harness assembly.

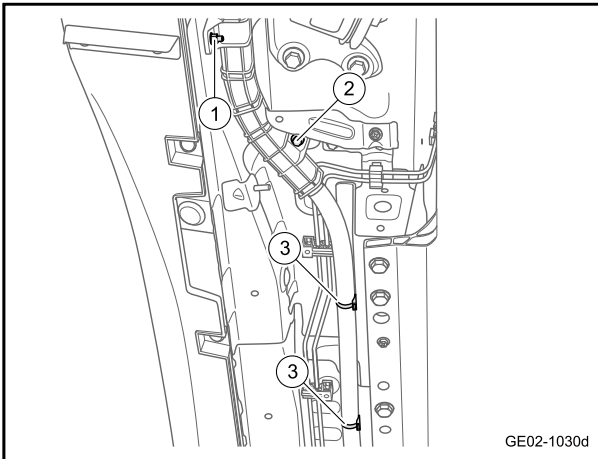
**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

- 9 Install the 1 fixing bolts 1 of combined charging socket harness assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)





- 10 Install the 2 fixing clip 3 of combined charging socket wiring harness assembly.

**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

- 11 Install the 1 fixing bolts 2 of combined charging socket harness assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

- 12 Install the 1 fixing nut 1 of combined charging socket harness assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

- 13 Install the 1 fixing nut 1 of combined charging socket harness assembly.

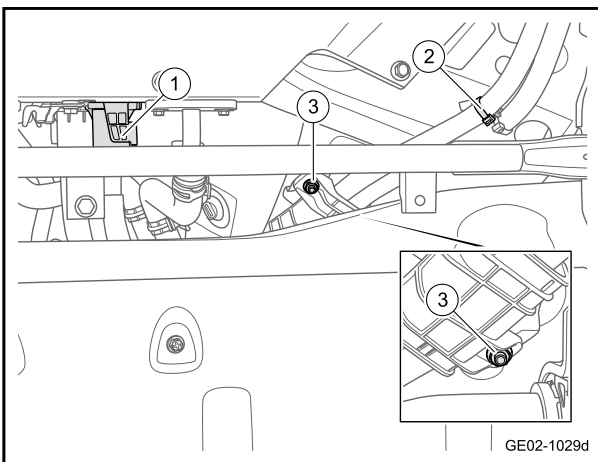
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

- 14 Install the 1 fixing clip 2 of combined charging socket wiring harness assembly.

**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

- 15 Connect 1 harness connector 1 of combined charging socket harness assembly.



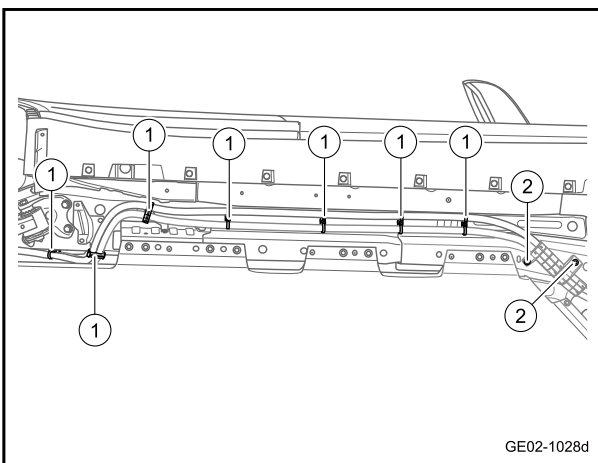
- 16 Install the 2 fixing bolts 2 of combined charging socket harness assembly.

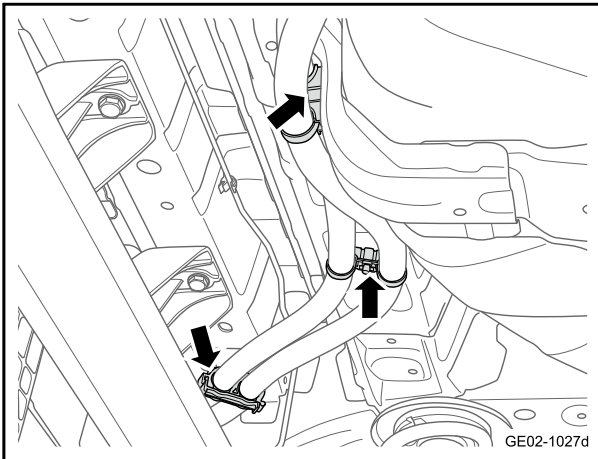
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

- 17 Install the 7 fixing clip 1 of combined charging socket wiring harness assembly.

**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

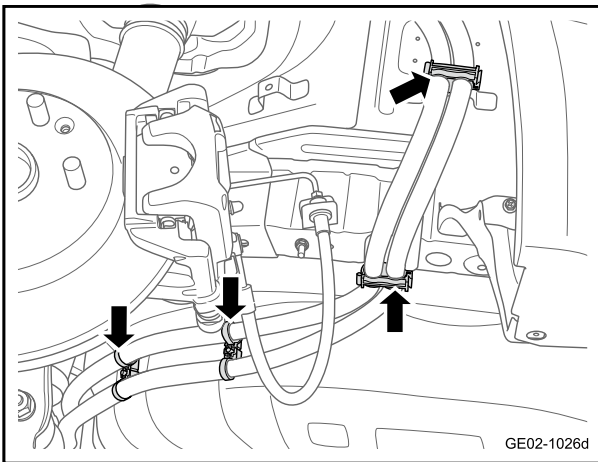




- 18 Install the 3 fixing clip 2 of combined charging socket wiring harness assembly.

**Caution**

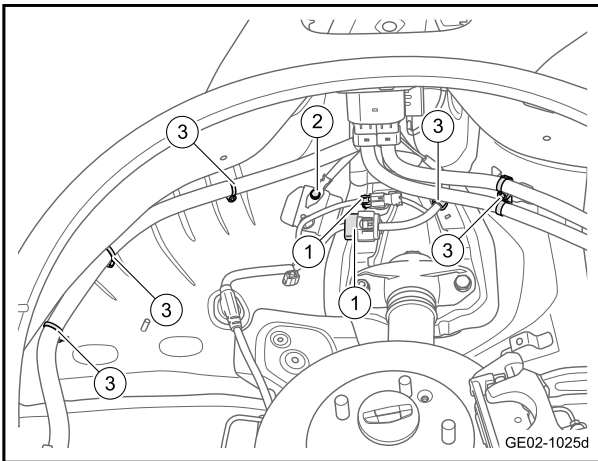
After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.



- 19 Install the 4 fixing clip 2 of combined charging socket wiring harness assembly.

**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.



- 20 Install the 5 fixing clip 3 of combined charging socket wiring harness assembly.

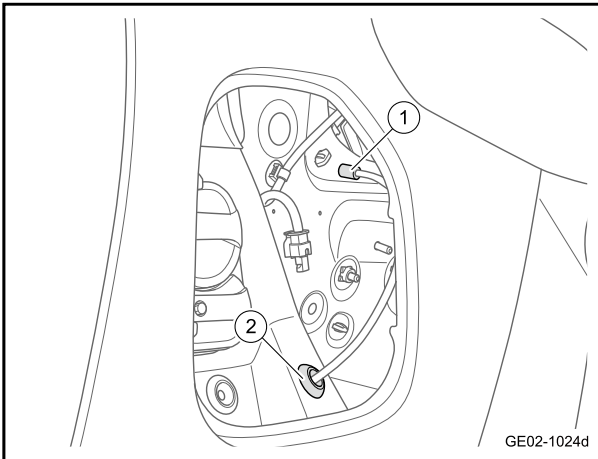
**Caution**

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.

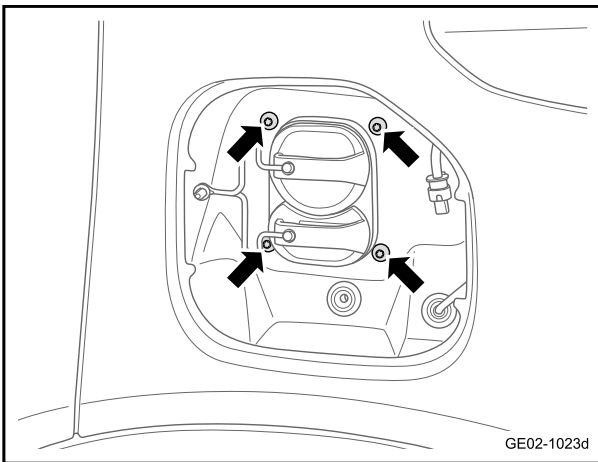
- 21 Install the 1 fixing bolt 2 of ground harness of the combined charging socket harness assembly.

Torque: 10N·m (metric) 7.4lb·ft (imperial system)

- 22 Connect 1 harness connector 1 of combined charging socket harness assembly.



- 23 Install the 1 fixing plug 2 for the combined charging socket wiring harness assembly.
- 24 Install the 1 fixing clip 1 for emergency cable of combined charging socket harness assembly.



- 25 Install the 4 fixing screws for the combined charging socket harness assembly.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

- 26 Install the charging port cover assembly.
- 27 Install the luggage compartment bottom guard assembly.
- 28 Mount the battery base protection module.
- 29 Install the front engine bilge guard.
- 30 Install the left rear fender liner.
- 31 Connect the DC bus assembly.
- 32 Lower the vehicle.
- 33 Connect the battery negative cable.



## Suspension System

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## 3.1 Warnings and Precautions

### 3.1.1 Warnings and Precautions

#### 3.1.1.1 Warnings and Precautions

Warning regarding assistant driving

##### Warning

When the technician is checking the fault parts reported for repair, the vehicle should be driven by the assistant. Otherwise, it may lead to personal injury.

Warnings regarding battery disconnection

##### Warning

Before maintaining any electrical components, the start and stop button must be in the OFF position, and all electrical loads must be "OFF" unless otherwise stated in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warnings regarding road test

##### Warning

Road test should be conducted under the premise of ensuring safety and observing all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions can cause serious personal injury and damage the vehicle.

## 3.2 Front suspension

### 3.2.1 Specification

#### 3.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt for front suspension lower left control arm assembly to steering knuckle	M12×60	81+70° ~ 99+80°	59.3+70° ~ 73+80°
Front fixing bolt of front suspension lower left control arm assembly	M12×35	81+85° ~ 99+95°	59.3+85° ~ 73+95°
Rear fixing bolt of front suspension lower left control arm assembly	M14×90	108+85° ~ 132+95°	79.6+85° ~ 97.3+95°
Rear fixing bolt of front suspension lower left control arm assembly	M14	108+85° ~ 132+95°	79.6+85° ~ 97.3+95°
Fixing nut of left front slide column assembly	M10	72 - 88	53.1 - 64.9
Fixing nut at top of left front slide column assembly	M10	70 - 80	51.6 - 59
Lower bolt-nut assembly of left front strut assembly-nut	M14	183 - 213	135.1 - 157.2
Lower bolt-nut assembly of left front strut assembly-bolt	M14×58	183 - 213	135.1 - 157.2
Stabilizer bar link lower fixing nut	M10	67 - 83	49.4 - 61.2
Stabilizer bar link upper fixing nut	M10	67 - 83	49.4 - 61.2
Fixing bolt of front stabilizer bar assembly	M10×60	63 - 77	46.5 - 56.8
Connecting bolt of steering knuckle to front shock absorber	M14×58	183 - 213	135.1 - 157.2
Connecting bolt and nut of steering knuckle to front shock absorber	M14	183 - 213	135.1 - 157.2
Fixing bolt of steering tie rod ball joint.	M12	50 - 60	36.9 - 44.3



Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Lower swing arm ball joint fixing bolt	M12	99 - 121	73.1 - 89.3
Outer lockup nut of the drive shaft	M22	260 - 280	191.9 - 206.6

### 3.2.1.2 General Specification

Trafficability	Minimum turning diameter	$\leq 10.7\text{m}$
	Minimum ground clearance (full vehicle)	$\geq 140\text{mm}$
	Approach angle	$17^\circ$
	Departure angle	$27.8^\circ$

## 3.2.2 Description and operation

### 3.2.2.1 Instructions and Operations

The function of front suspension system of the vehicle is to maximize the friction between tyres and roads in order to provide good directional control ability and stability, thus ensuring the comfort level of customer. It can absorb the energy of vertical acceleration wheels to free the frame and body from interruption while the wheels bounce up and down with the road. The front suspension used in this vehicle is a MacPherson independent suspension, including the following components: springs, shock absorbers and stabilizer bars.

### 3.2.3 How the system works

#### 3.2.3.1 Suspension system terminology

1. Sprung load:

- The sprung load refers to the weight of the vehicle supported by the spring.
- The sprung load should be greater than the non-sprung load to obtain normal handling performance.

Some examples of sprung load:

- a. Body and frame.
- b. Load or cargo.
- c. Power battery.

The sprung parts include:

- a. Frame (including the subframe).
- b. Body (including overall body).
- c. Power system.
- d. Steering gear.

2. Non-sprung load:

Non-sprung load refers to the load of the vehicle that is not supported by the spring.

The smaller the non-sprung load, the better; this helps to ensure normal handling and driving smoothness.

Some examples of non-sprung load:

- a. Wheels and tires
- b. Wheel bearings and hubs
- c. Axle and steering knuckle.
- d. Brake parts (parts on wheels)

The non-sprung parts include:

- a. Wheels/tires, ball joints, bearings, control arms, I-beams, beam bridges, integral drive axles, etc.
- b. Stabilizer rods, control rods, etc.
- c. Core axis, steering knuckles, brakes, etc.

d. The suspension responds well when the unsprung weight is low.

3. Parts between the sprung load and the non-sprung load

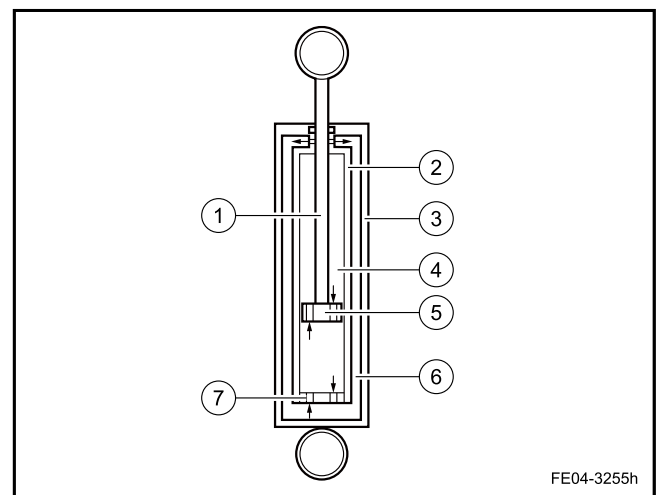
The steering rod, transmission shaft, stabilizer bar and other components are between the sprung and non-sprung components.

#### 3.2.3.2 Operating principle of suspension system components

Spring:

The rigidity of spring will affect the response of the sprung mass when the vehicle is running. The vehicle with a small spring rigidity can eliminate turbulence and provide a very smooth driving feeling, but at the same time, it is prone to dive and squat during braking and accelerating, and prone to roll and tumble when turning. Vehicles with excessive spring rigidity have less stability on bumpy roads, but its body moves very little, which means they can be driven fast even when turning. Although the spring itself may look simple, by designing and implementing these devices in the automobile, and balancing the passenger's comfort with the handling performance of the automobile, the spring alone cannot provide an extremely smooth ride. Because springs are excellent at absorbing energy but less so in terms of dissipation capacity. Therefore, the suspension system requires a kind of component called shock absorber. Without a damper structure, the spring will bounce off at an uncontrollable rate and release the jolting energy it absorbs, continuing to bounce off at its frequency until it has exhausted all the energy originally applied to it. The suspension, built on a spring, will itself allow the automobile to drive in a bouncing manner without being controlled.

Shock absorber:



- |                      |                          |
|----------------------|--------------------------|
| 1. Piston push rod   | 5. Piston and valve      |
| 2. Inner cylinder    | 6. Fluid reservoir       |
| 3. Outer cylinder    | 7. Inner cylinder bottom |
| 4. Hydraulic chamber | valve                    |

It controls the unwanted spring motion through a process called damping. Shock absorbers slow and reduce the magnitude of vibratory motion by converting the kinetic energy of suspension motion to heat energy that can be dissipated

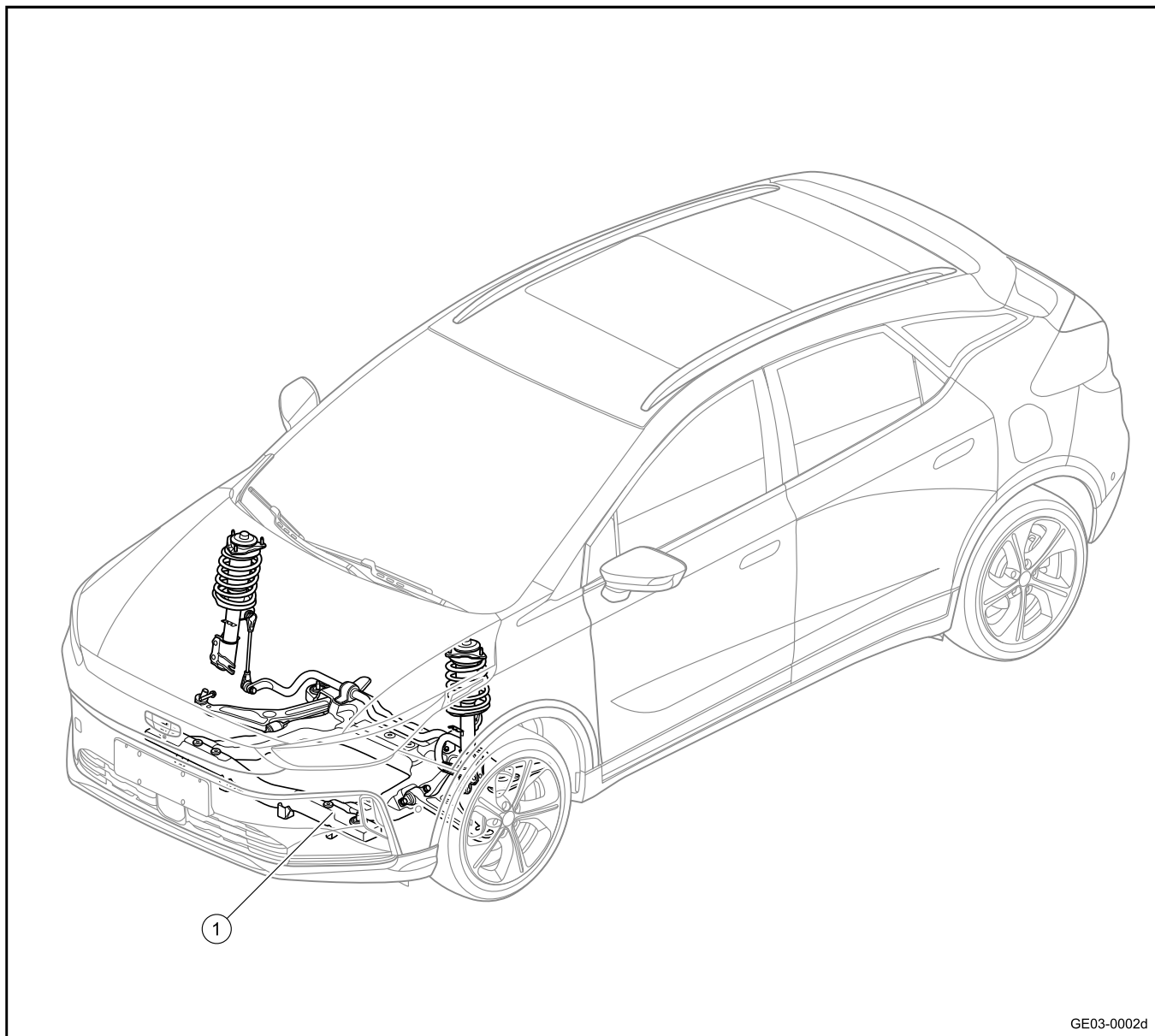
through hydraulic fluid. The upper support of the shock absorber is connected to the frame (namely sprung mass), and the lower support is connected to the shaft near the wheel (namely non-sprung mass). In double-cylinder design, one of the most common types of the shock absorber is the upper support connected to the piston rod, and the piston rod is connected to the piston, which is located in a cylinder filled with hydraulic oil. The inner cylinder is called pressure cylinder and the outer cylinder is called oil reservoir cylinder. The oil reservoir cylinder stores the excess hydraulic oil. When the wheel hits a bumpy road and causes spring compacts and stretches, the energy of spring is transferred to the shock absorber via the upper support and down to the piston via the piston rod. The piston has punched holes, through which hydraulic oil can leak out as the piston moves up and down in the pressure cylinder. Because these holes are so tiny that only very little hydraulic oil can pass through them under great pressure. This slows down the piston motion, thus slows down the spring. The operation of the shock absorber consists of two cycles - the compression cycle and the extension cycle. The compression cycle refers to compress the hydraulic oil below the piston when it moves downward. Extension cycle refers to the hydraulic oil above the piston as it moves upwards to the top of the pressure tank. For a typical automobile, the resistance of the extension cycle is greater than the resistance of the compression cycle. It should also be noticed that the compression cycle controls the movement of the unsprung mass of a vehicle, while the extension cycle controls the movement of the sprung mass which is relatively heavier. All modern shock absorbers have speed-sensing feature. The faster the suspension moves, the more resistance the shock absorber provides. It allows the shock absorber to adjust to road conditions and control any undesired movement that might occur in a moving vehicle, including bouncing, rolling, braking, diving, and accelerating into a crouch.

#### Stabilizer bar:

Used in conjunction with shock absorbers to provide additional stability to a moving automobile. The stabilizer bar is a metal rod that spans the entire vehicle shaft, which effectively connects the two sides of the suspension. As the suspension on one wheel moves up and down, the stabilizer bar will transmit the movement to the other wheels. This can make the ride smoother and reduce the inclination of the vehicle. In particular, it can offset the rollover tendency of the automobile on the suspension when turning.

3.2.4 Part location

3.2.4.1 Part Position

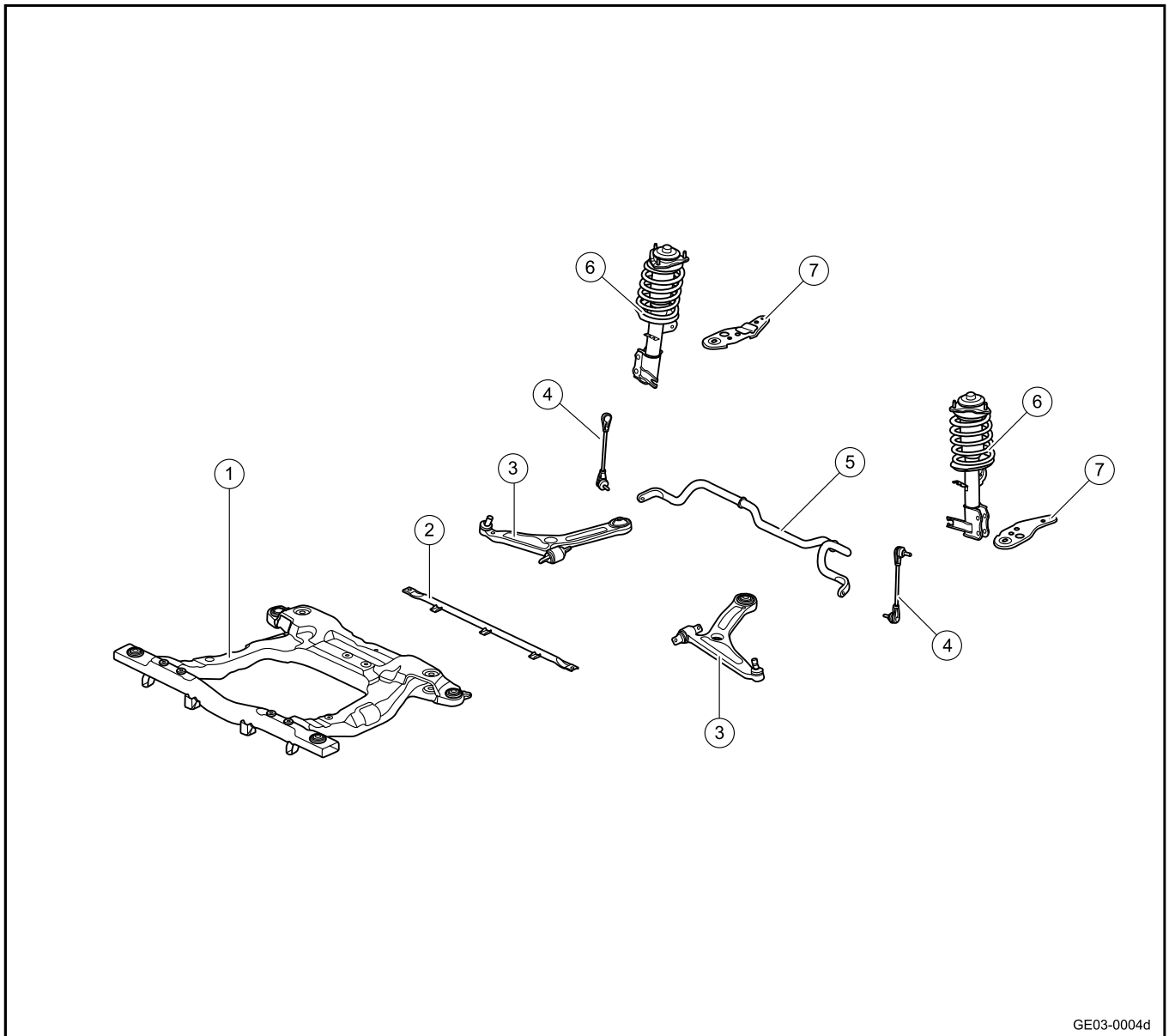


GE03-0002d

1. Front suspension assembly

## 3.2.5 Exploded view

## 3.2.5.1 Breakdown Drawing



1. Front subframe assembly
2. Battery base protection module mounting bracket
3. Lower swing arm assembly
4. Front stabilizer bar connecting rod.
5. Front stabilizer bar
6. Front shock absorber assembly
7. Rear reinforcement plate of front subframe

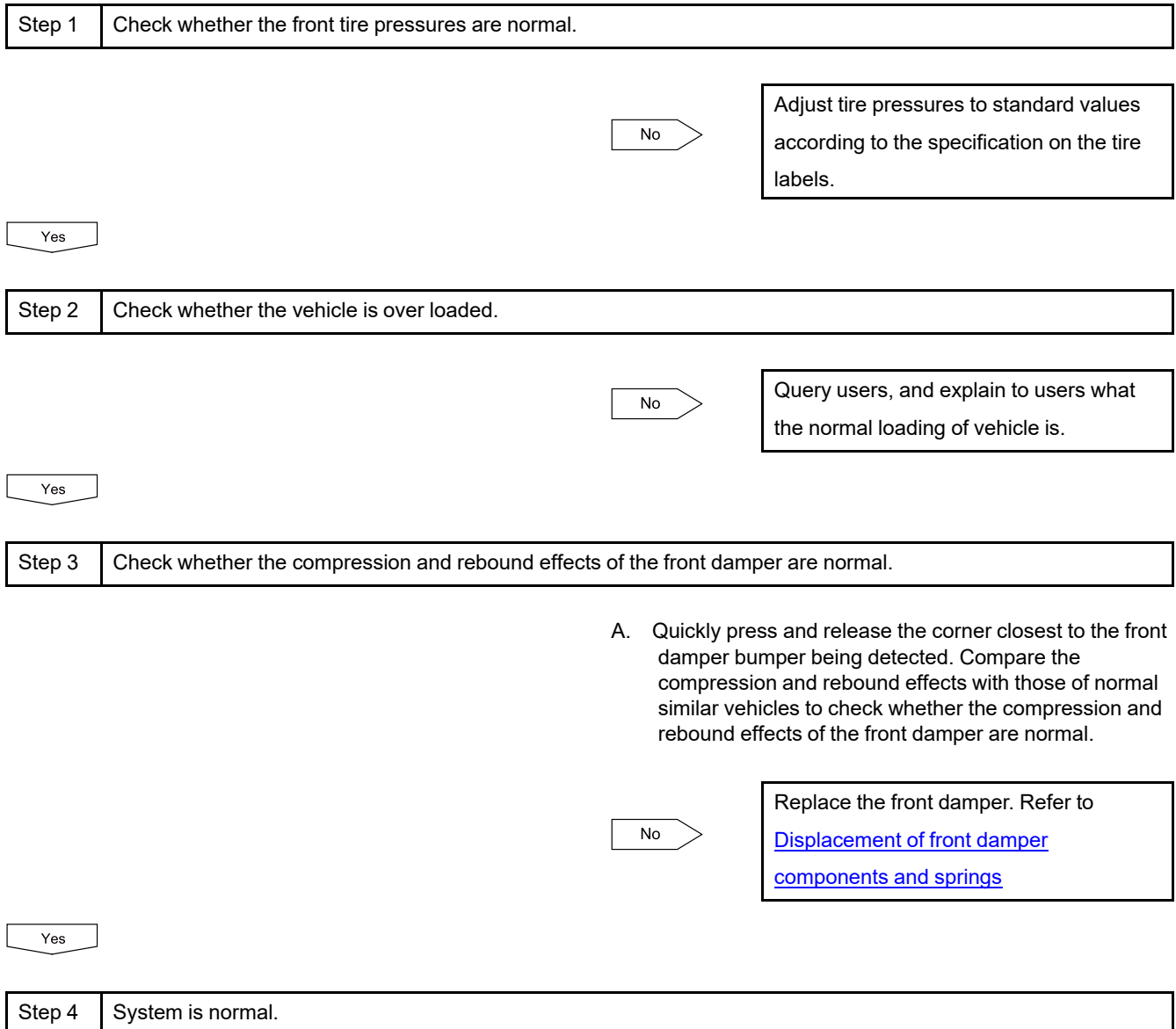
## 3.2.6 Diagnostic information and steps

### 3.2.6.1 Diagnosis Description

Before diagnosing the front suspension faults, refer to [Description and Operation](#). Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

### 3.2.6.2 Check of front damper

Front damper is too soft



The front damper is noisy

Step 1	Check whether the installation of front damper is normal and check whether all components of the front damper work normal. (No abnormal condition such as loosening is allowed.)
--------	--

No

Replace the front shock absorber if necessary. Refer to [Displacement of front damper components and springs](#)

Yes

Step 2	Check whether the compression and rebound effects of the front damper are normal.
--------	---

Quickly press and release the corner closest to the front damper bumper being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the front damper are normal.

No

Replace the front damper. Refer to [Displacement of front damper components and springs](#)

Yes

Step 3	System is normal.
--------	-------------------

There is oil leakage in the front damper

Step 1	Check whether the installation of front damper is normal and check whether all components of the front damper work normal. (No abnormal condition such as loosening is allowed.)
--------	--

Next Step

Step 2	Check the sealing condition of front damper when it is fully extended, and whether the dust cover is damaged, etc.
--------	--

No

Replace the front damper. Refer to [Displacement of front damper components and springs](#)

Yes

Step 3	Check whether there is too much fluid on the front damper.
--------	--

No

Replace the front damper. Refer to [Displacement of front damper components and springs](#)



Yes

Step 4 System is normal.

### 3.2.6.3 Check the ball pin and the steering knuckle

#### Warning

See “Warnings for vehicle lifting” in “Warnings and precautions”.

Step 1 Raise the front end of the vehicle and keep the front suspension in a freely suspended status.

Next Step

Step 2 Grab the top and bottom of the front tire and turn the top of the wheel inward and outward.

Next Step

Step 3 Note whether there is clearance and whether the steering knuckle moves horizontally relative to the control arm.

Next Step

Step 4 In case of the following situations, the ball head must be replaced.

- A. Ball joint is loose.
- B. Ball joint seal is broken.
- C. The ball bolt is disconnected from the steering knuckle.
- D. The ball bolt is loose on the steering knuckle.
- E. The ball bolt twists in the seat when it is pressed with a finger.

Next Step

Step 5 Conduct torque detection on fastening bolt torque detection. If the torque is loose, then tighten the torque.

Next Step

Step 6 If the ball pin and steering knuckle are loose, loosen the bolts first, and then tighten the bolts according to the specified torque.

Next Step

Step 7 Parts are normal.

### 3.2.6.4 Over-large friction check

Check whether the friction of front suspension is too large according to the following procedures:

Step 1	Raise the front bumper to raise the vehicle as high as possible.
--------	--

Next Step

Step 2	Gently put down the bumper to make the vehicle to restore its normal vehicle front end height.
--------	--

Next Step

Step 3	Measure the distance between ground and the center of bumper.
--------	---

Next Step

Step 4	Press the bumper and then slowly release it to make the vehicle to restore its normal vehicle front end height.
--------	---

Next Step

Step 5	Measure the distance between ground and the center of bumper.
--------	---

Next Step

Step 6	Difference between two measured values should be $<12.7$ mm (0.5 in). Where the distance exceeds this limit, it is needed to check whether the control arm, front damper and ball joint are damaged or worn.
--------	--

### 3.2.6.5 Ride performance diagnose (too soft or too hard)

Too soft

Step 1	Check whether the front damper is worn. Replace the front damper if necessary. Refer to <a href="#">Displacement of front damper components and springs</a>
--------	---

Next Step

Step 2	Check whether the front coil spring is fractured or loose. Replace the front coil spring if necessary. Refer to <a href="#">Displacement of front damper components and springs</a>
--------	---

Too hard

Step 1	Check whether the front damper is installed correctly and whether the front damper conforms to the model. Replace the front damper if necessary. Refer to <a href="#">Displacement of front damper components and springs</a>
--------	---

Next Step

Step 2	Check whether the front coil spring is installed correctly. Replace the front coil spring if necessary. Refer to <a href="#">Displacement of front damper components and springs</a>
--------	--

### 3.2.6.6 The body inclines or swings when the vehicle turns

Step 1	Check the connecting rod of the stabilizer bar link for loosening. Retighten the connecting nut of the connecting rod of the stabilizer bar link and the front strut assembly according to the prescribed torque.
--------	---

Next Step

Step 2	It is needed to check whether the front damper and the front bolt spring retainer wear. It is important to replace the front damper if necessary and re-fasten the fixing nut on the front damper.
--------	--

Next Step

Step 3	Check the vehicle for the overload and explain it to the user reasonably.
--------	---

Next Step

Step 4	Check the front coil spring for breaking off or loosening and replace it if necessary. Refer to <a href="#">Displacement of front damper components and springs</a>
--------	---

### 3.2.6.7 Noise diagnosis

Step 1	Check whether ball joints are not lubricated.
--------	---

Yes

Replacement of ball joints.
-----------------------------

No

Step 2	Check whether front suspension component is worn.
--------	---

Yes

Replace the damaged front suspension components.
--

No

Step 3	Check whether front suspension component is worn.
--------	---

Yes

Replace lower control arm bushing. Refer to <a href="#">Replacement of lower control arm assembly of front suspension</a>
---

No

Step 4	Check whether front stabilizer bar link is loose.
--------	---

Yes

Fasten fixing nut of the front stabilizer bar link.
---

No

Step 5	Check whether there is misplace in installment of front damper or front strut coil spring retainer vibration isolation cushion, whether there is damage etc.
--------	--

Yes

Replace the damaged components.

No

Step 6	Check whether there is misplace in the installment of the front strut coil spring.
--------	--

Yes

New installment of front coil spring.

No

Step 7	Check whether there is excess wearing in front stabilizer bar fixing bushing.
--------	---

Yes

Replace the front stabilizer bar. Refer to [Replacement of front stabilizer bar](#)

No

Step 8	Find a same model vehicle, and make a comprehensive assessment of whether the noise is normal working noise.
--------	--

Next Step

Step 9	Normal system components.
--------	---------------------------

### 3.2.6.8 Vehicle front end height is abnormal

Step 1	Check whether the coil springs in the front strut assembly are broken or loosening and replace them when necessary.
--------	---

Next Step

Step 2	Check whether the vehicle is overloaded, and explain the hazards of it to the user when necessary.
--------	--

Next Step

Step 3	Check whether the coil springs in the front strut assembly are correct or too soft. Replace the coil spring of Geely original factory.
--------	--

### 3.2.7 Removal and installation

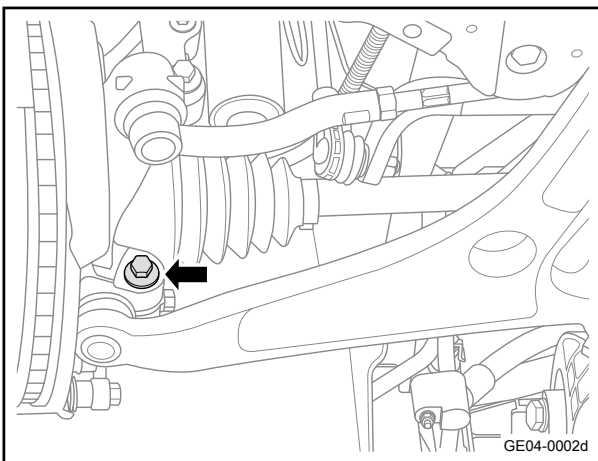
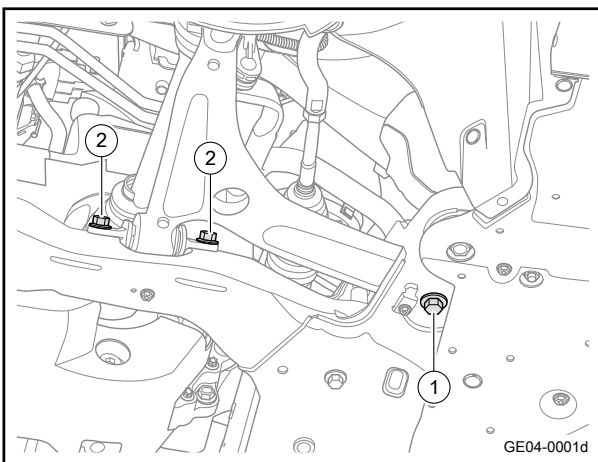
#### 3.2.7.1 Replacement of lower swing arm assembly of front suspension

##### Removal procedure

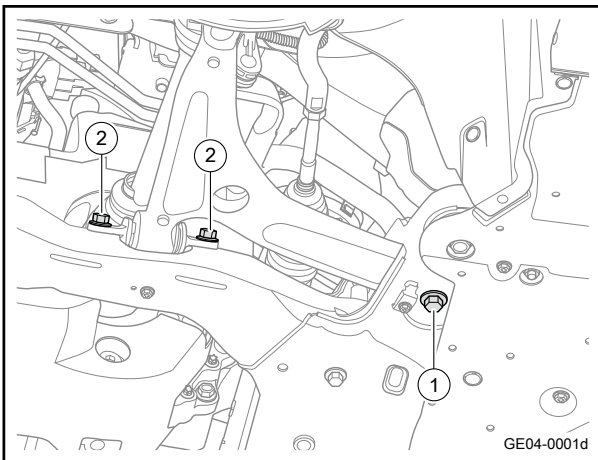
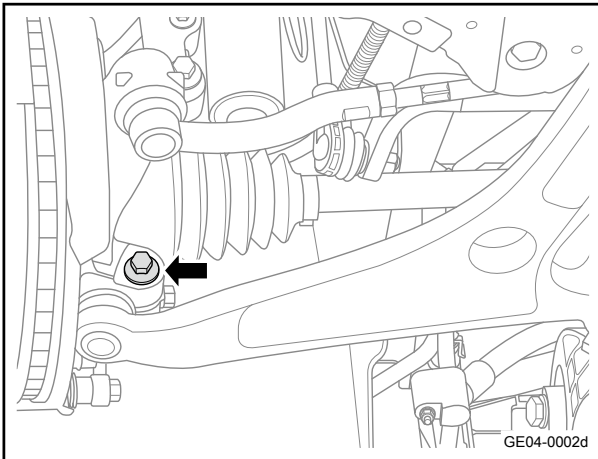
##### Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 4 Remove the one fixing bolt 1 at the rear of the left lower swing arm assembly of the front suspension.
- 5 Remove the two fixing bolts 2 at the front of the left lower swing arm assembly of the front suspension.
- 6 Remove the one fixing bolt connecting the left lower swing arm assembly of the front suspension and the steering knuckle.
- 7 Remove the left lower swing arm assembly of the front suspension.



##### Installation procedure



- 1 Move the left lower swing arm assembly of the front suspension to the installation position.
- 2 Install the one fixing bolt connecting the left lower swing arm assembly of the front suspension with the steering knuckle.

Torque:  $90+75^{\circ}\text{N}\cdot\text{m}$  (metric system)  $66.4+75^{\circ}\text{lb}\cdot\text{ft}$  (imperial system)

- 3 Install the two fixing bolts 2 at the front of the left lower swing arm assembly of the front suspension.

Torque:  $90\text{N}\cdot\text{m}+90^{\circ}$  (metric)  $66.4\text{lb}\cdot\text{ft}+90^{\circ}$  (imperial system)

- 4 Install the one fixing bolt 1 at the rear of the left lower swing arm assembly of the front suspension.

Torque:  $120+90^{\circ}\text{N}\cdot\text{m}$  (metric system)  $88.5+90^{\circ}\text{lb}\cdot\text{ft}$  (imperial system)

- 5 Install the front engine bilge guard.
- 6 Install the wheel.
- 7 Lower the vehicle.

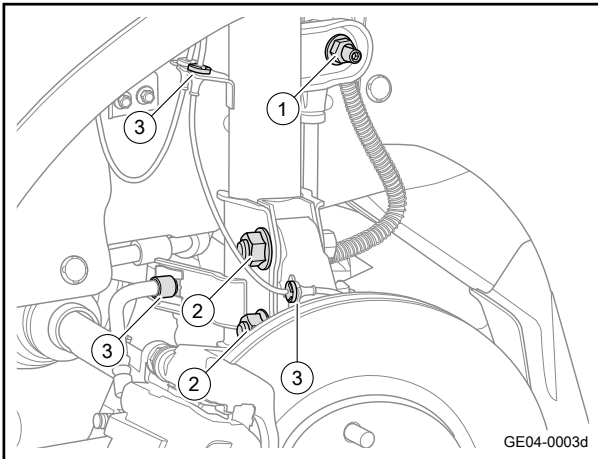
### 3.2.7.2 Replacement of the left front slide pillar assembly

#### Removal procedure

##### Caution

The removal method is the same for both sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove wheels. Refer to [Replacement of wheels](#)
- 4 Remove the front wiper arm. See [Replacement of left wiper arm assembly](#)
- 5 Dismount the cowl top cover. See [Replacement of vent cover assembly](#)

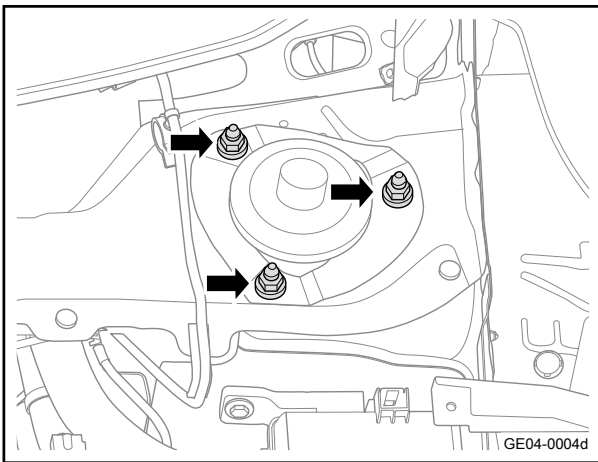


- 6 Remove the upper 1 fixing nut of the left front slide pillar assembly.
- 7 Remove the two bolt-nut assemblies 2 at the bottom of the left front slip pillar assembly.

**Caution**

When removing the bolt-assemblies, use a wrench to fix the nuts to prevent them from turning.

- 8 Disengage the three buckles 3 of the left front slide pillar assembly.

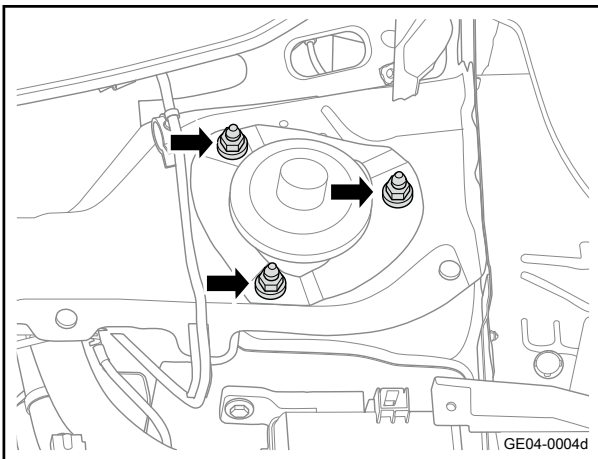


- 9 Remove the 3 fixing nuts of the left front slide pillar assembly.

**Caution**

When the last nut is removed, support the front pillar assembly to prevent personal injury or damage to the axle shaft dust cover.

- 10 Remove the left front slide pillar assembly.

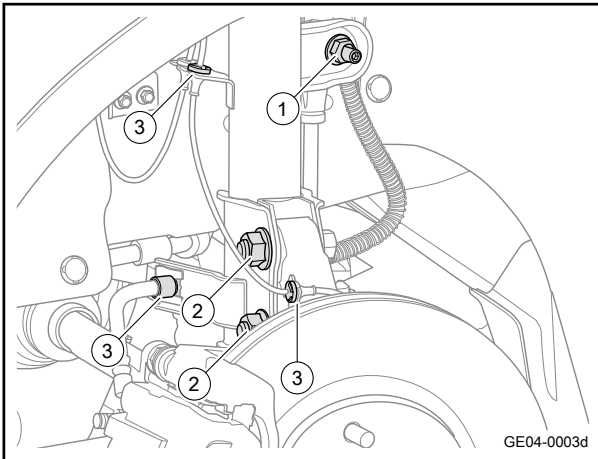


**Installation procedure**

- 1 Move the left front slide pillar assembly to the installation position.
- 2 Install 3 fixing nuts of the left front slide pillar assembly  
Torque: 80N·m (metric) 59.0lb-ft (imperial system)

**Caution**

Tighten the torque after the vehicle has been on the ground.



- 3 Install the three buckles 3 of the left front slide pillar assembly.
- 4 Install the two bolt-nut assemblies 2 at the lower part of the left front slide pillar assembly.  
Torque: 198N·m (metric) 146.1lb-ft (imperial system)
- 5 Install the upper 1 fixing nut of the left front slide pillar assembly.  
Torque: 75N·m (metric) 55.4lb-ft (imperial system)
- 6 Mount the cowl top cover.
- 7 Install the front wiper arm.
- 8 Install the wheel.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

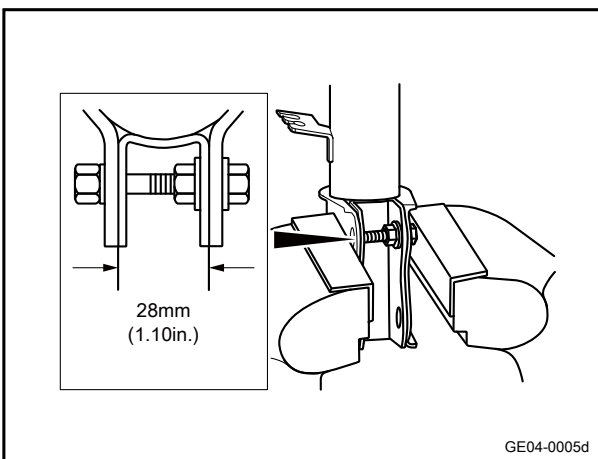
### 3.2.7.3 Replacement of front shock absorber parts and springs

#### Removal procedure

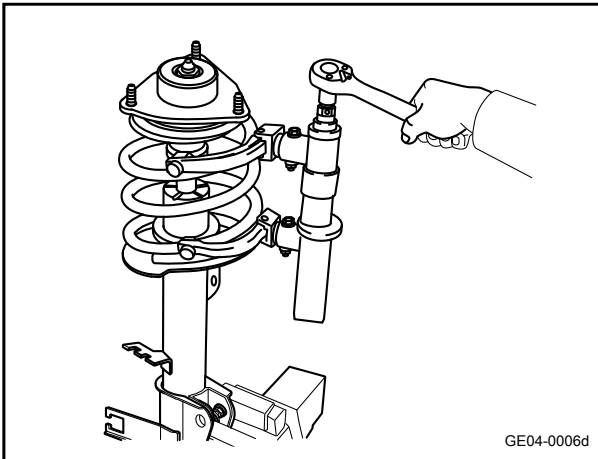
##### Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the wheels. Refer to [Replacement of wheels](#)
- 3 Remove the left front slide pillar assembly. Refer to [Replacement of left front slide pillar assembly](#)
- 4 Install 2 nuts and 1 bolt on the front shock absorber bracket and fix them on the bench vice.



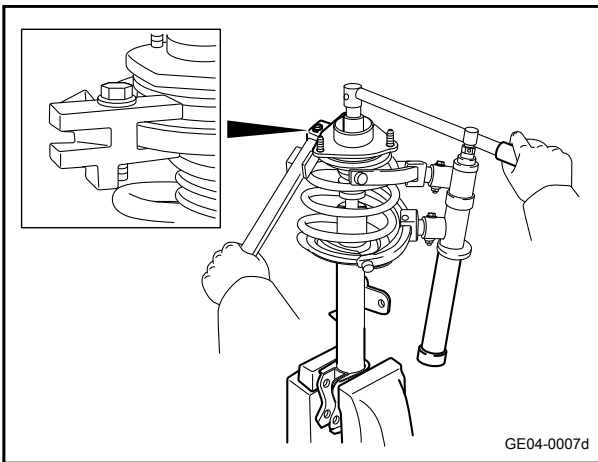




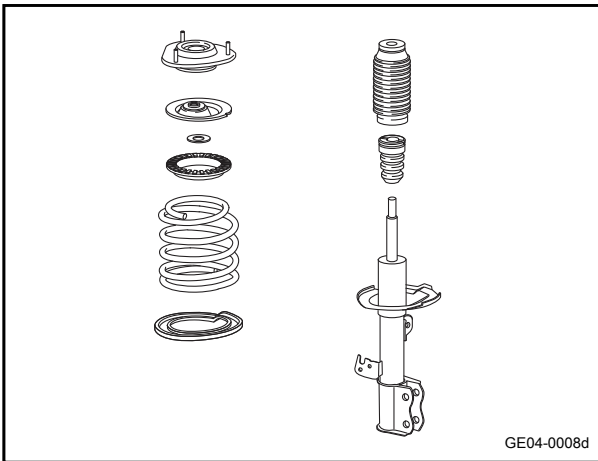
- 5 Use spring compression tools (4114720113) to the compress the coil spring.

**Caution**

Do not use an air-operated spanner, otherwise the compression tool will be damaged.

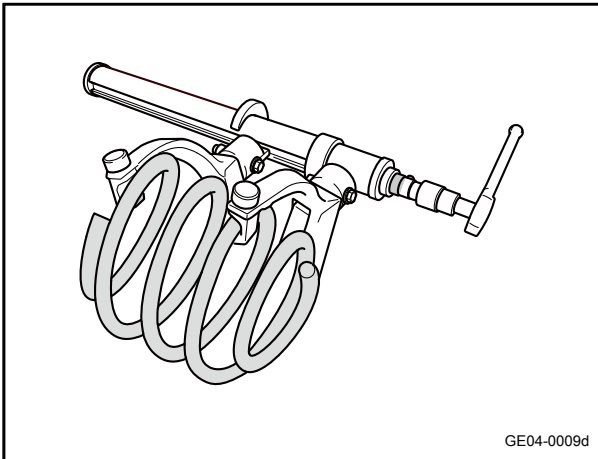


- 6 Remove the upper support dust cap of the front damper. Use special tools to fix spring retainer and remove the locknut.

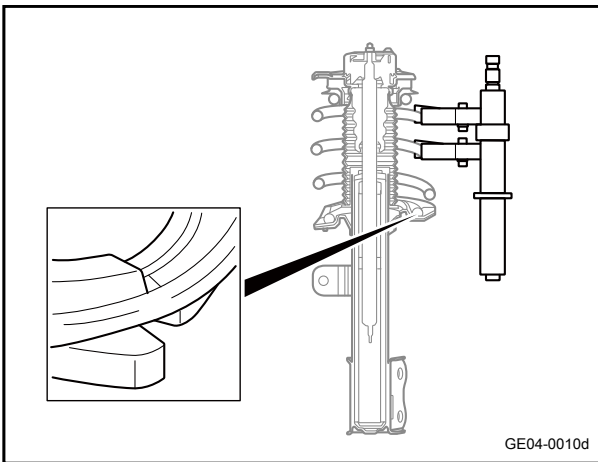


- 7 Remove the upper support assembly of front damper, upper support of front coil spring, upper vibration insulation cushion of front suspension coil spring, front suspension coil spring, front damper dust cap, front damper buffer block and the lower vibration insulation cushion of front coil spring.

Installation procedure



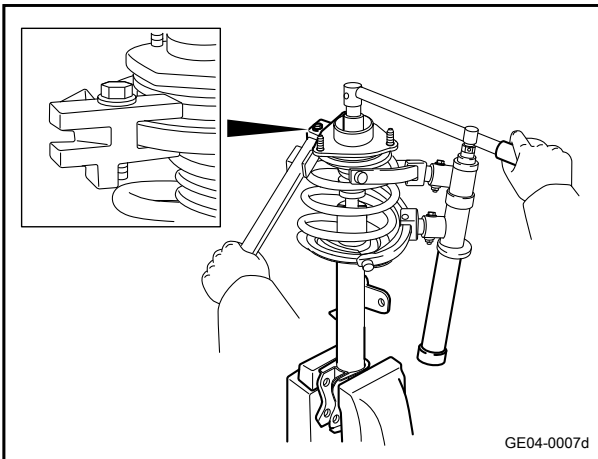
- 1 Use spring compression tools (4114720113) to the compress the coil spring.



- 2 On the damper bracket, install lower vibration insulation cushion of front coil spring, front damper buffer block, front damper dust cap, front suspension coil spring, upper vibration isolation cushion of front suspension coil spring, upper support of front coil spring, upper support assembly of front damper.

#### Caution

Put the lower end of coil spring into the recess area of damper spring plate.



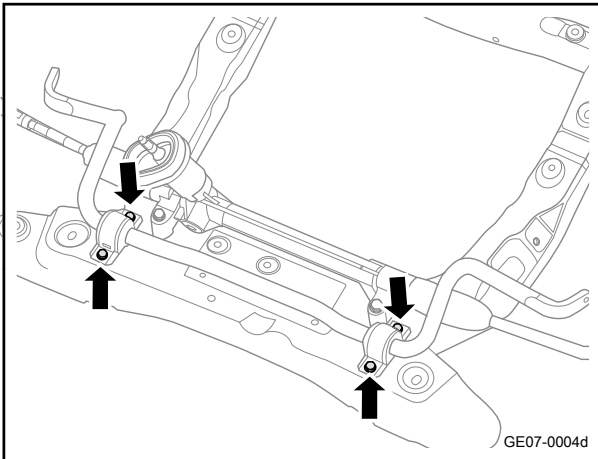
- 3 Use special tools to fix spring base. Install locknuts and replace the upper support dust cap of front damper.  
Torque: 70N·m (metric) 51.6lb-ft (imperial system)

- 4 Install the left front slide pillar assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

### 3.2.7.4 Replacement of front stabilizer bar assembly

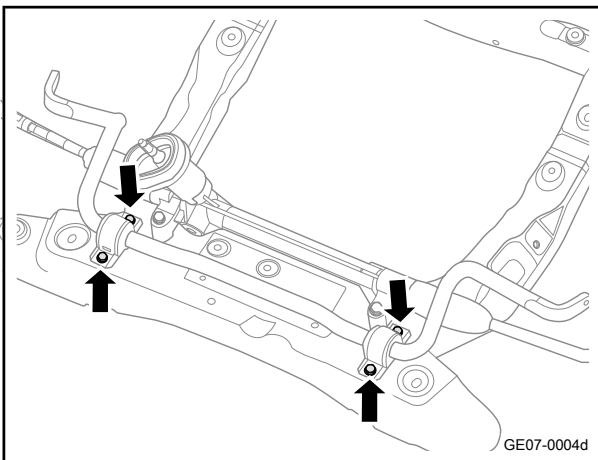
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Front subframe assembly See [Replacement of Front Sub-frame Assembly](#)



- 3 Remove the 4 fixing bolts of the front stabilizer bar assembly.
- 4 Remove the front stabilizer bar assembly.

#### Installation procedure



- 1 Move the front stabilizer bar assembly to the installation position.
- 2 Install the 4 fixing bolts of the front stabilizer bar assembly.  
Torque: 70N·m (metric) 51.7lb-ft (imperial system)

- 3 Install the front subframe assembly.
- 4 Lower the vehicle.

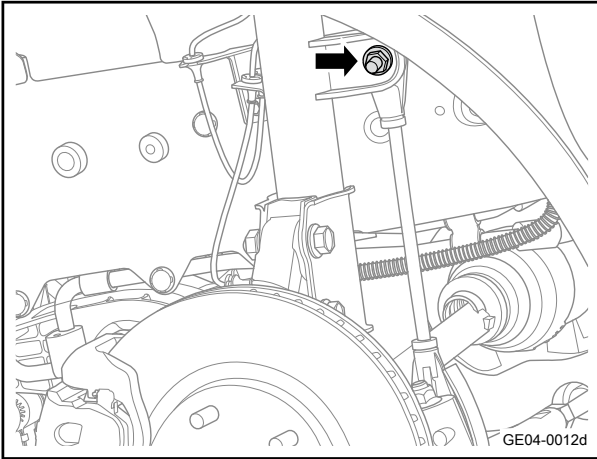
### 3.2.7.5 Replacement of stabilizer bar connecting rod

#### Removal procedure

##### Caution

The removal method is the same for both sides.

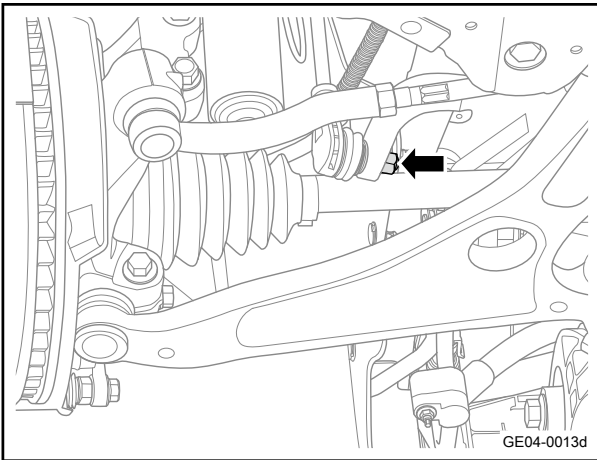
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)



- 3 Remove one fixing nut on the upper part of the stabilizer bar connecting rod.

**Caution**

When removing the fixing nut on the upper part of the stabilizer bar connecting rod, use a tool to fix the ball pin to prevent the ball pin from turning.



- 4 Remove 1 fixed nut at the lower part of the stabilizer bar connecting rod.

**Caution**

When removing the fixing nut at the lower part of the stabilizer bar connecting rod, use a tool to fix the ball pin to prevent the ball pin from turning.

- 5 Take out the stabilizer bar connecting rod.

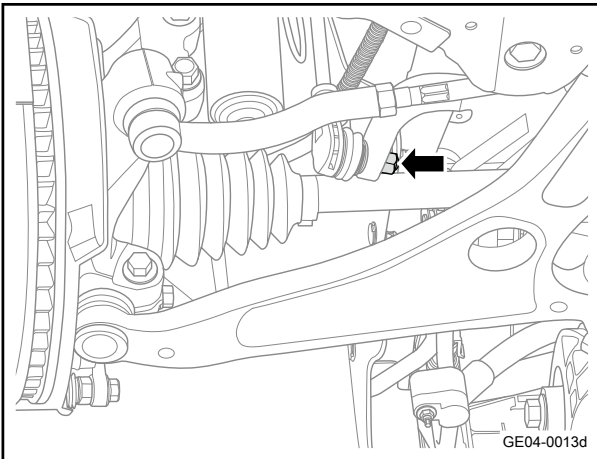
**Installation procedure**

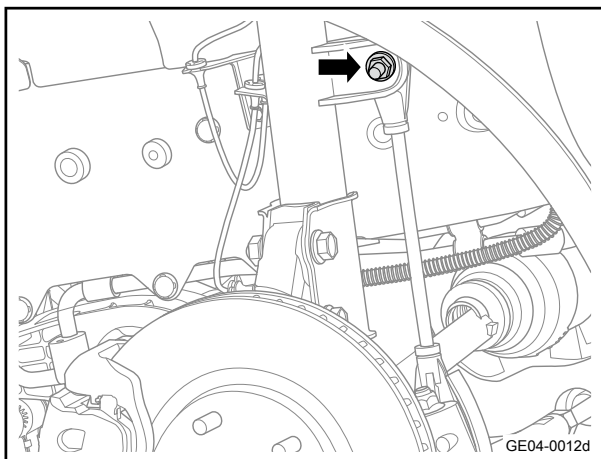
- 1 Move the stabilizer bar connecting rod to the installation position.
- 2 Install a fixing nut at the lower part of the stabilizer bar connecting rod.

**Caution**

When installing the fixing nut at the lower part of the stabilizer bar connecting rod, use a tool to fix the ball pin to prevent the ball pin from rotating.

Torque: 75N·m (metric) 55.4lb-ft (imperial system)





- 3 Install a fixing nut on the upper part of the stabilizer bar connecting rod.

#### Caution

When installing the fixing nut at the lower part of the stabilizer bar connecting rod, use a tool to fix the ball pin to prevent the ball pin from rotating.

Torque: 75N·m (metric) 55.4lb-ft (imperial system)

- 4 Install the wheel.
- 5 Lower the vehicle.

### 3.2.7.6 Replacement of left steering knuckle

#### Removal procedure

#### Caution

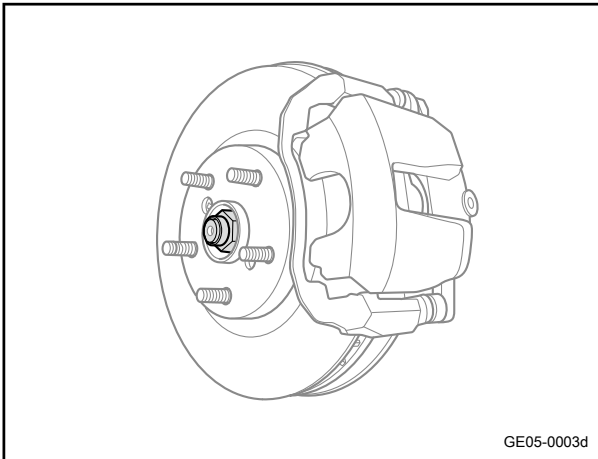
The removal method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

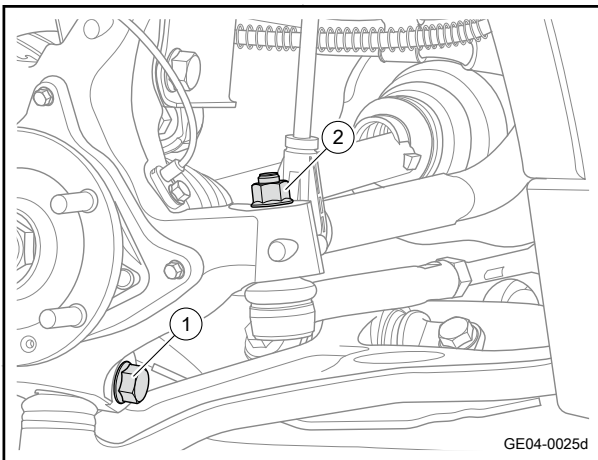
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove wheels. Refer to [Replacement of wheels](#)
- 4 Remove the front brake caliper assembly See [Replacement of Left Front Brake Caliper Assembly](#)
- 5 Remove the front brake disc. Refer to [Replacement of front brake disc](#)
- 6 Remove the dust cover of the front brake disc. Refer to [Replacement of brake disc dust cap](#)
- 7 Remove the front wheel speed sensors. Refer to [Replacement of front wheel speed sensor](#)



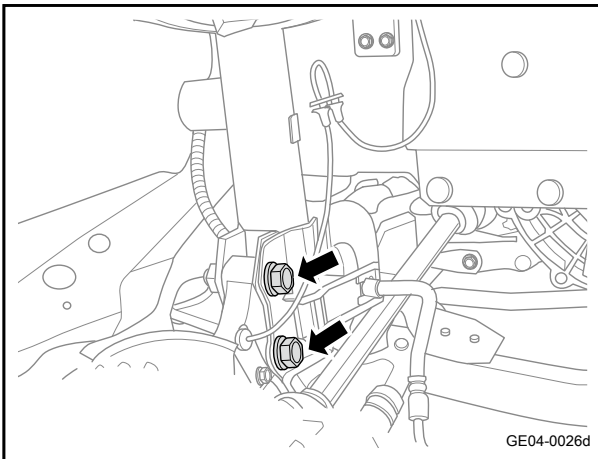
- 8 Remove the lock nut outside the drive shaft.

**Caution**

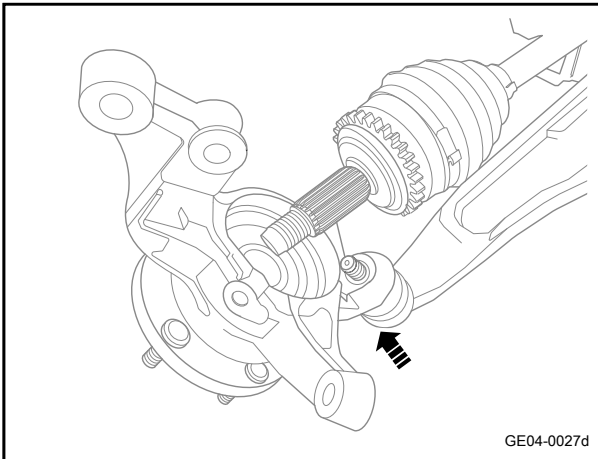
An assistant stepped on the brake pedal to prevent the drive shaft from turning.



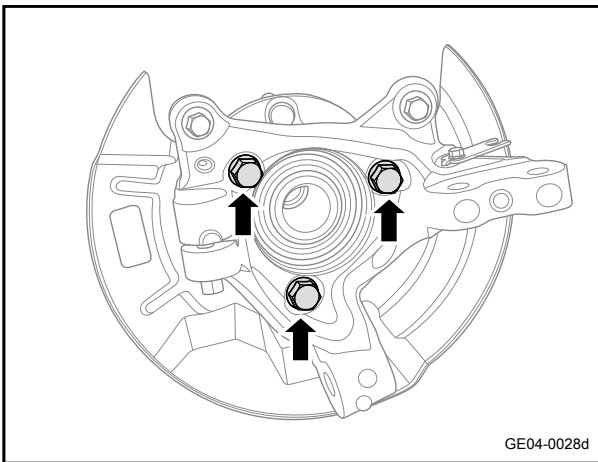
- 9 Remove the fixing bolt 1 of the lower swing arm ball joint assembly.
- 10 Remove the fixing nut 2 of the steering gear tie rod ball end.



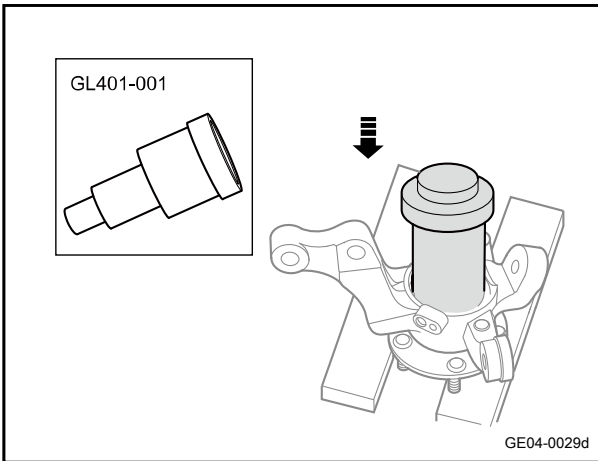
- 11 Remove the two bolt-and-nut assemblies connecting the steering knuckle and the front shock absorber.
- 12 Disengage the steering knuckle from the front shock absorber.



13 Take off the the steering knuckle c/w front hub.



14 Remove 3 fixing bolts of the front hub assembly.

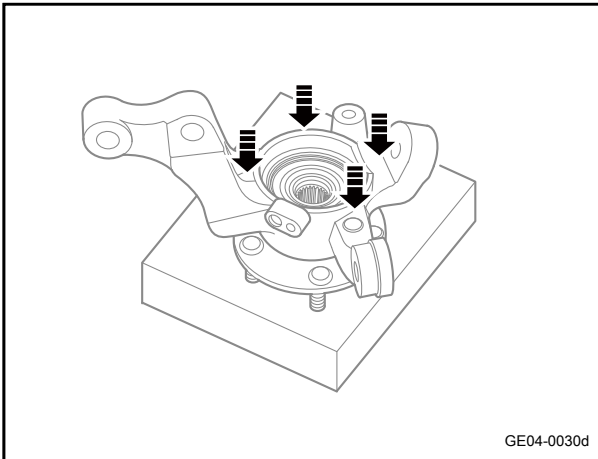


15 Remove the front hub assembly from the steering knuckle with the special tool GL401-001.

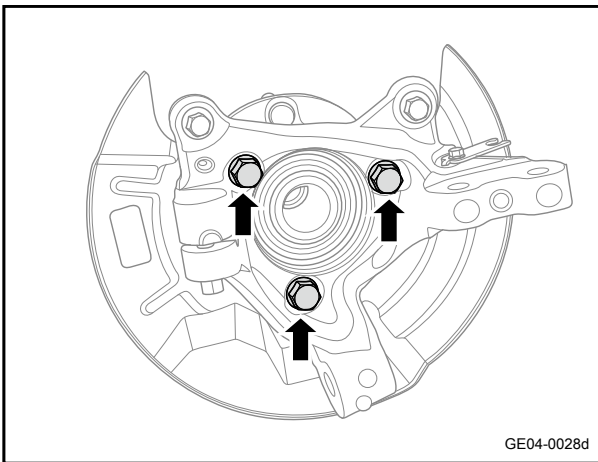
**Caution**

The hub bearing must be replaced after removing the hub assembly from the steering knuckle.

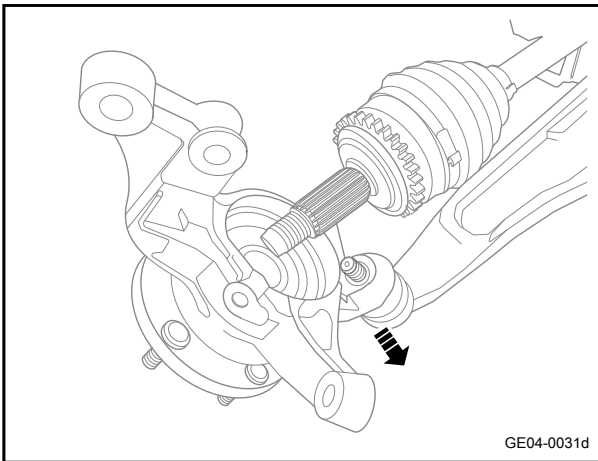
Installation procedure



- 1 Pad a block under the front hub and press the front hub into the front steering knuckle.

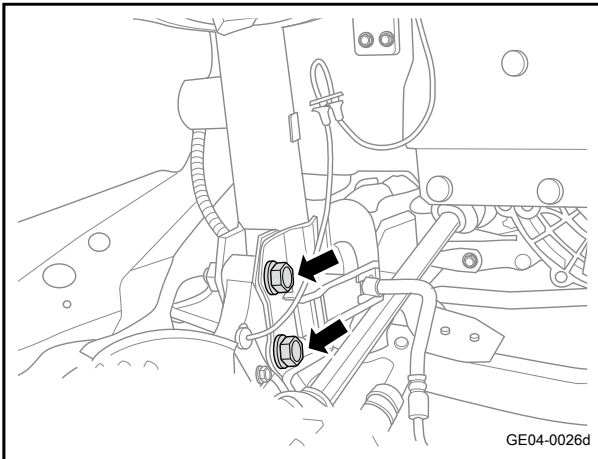


- 2 Install the 3 fixing bolts of the front wheel hub assembly.

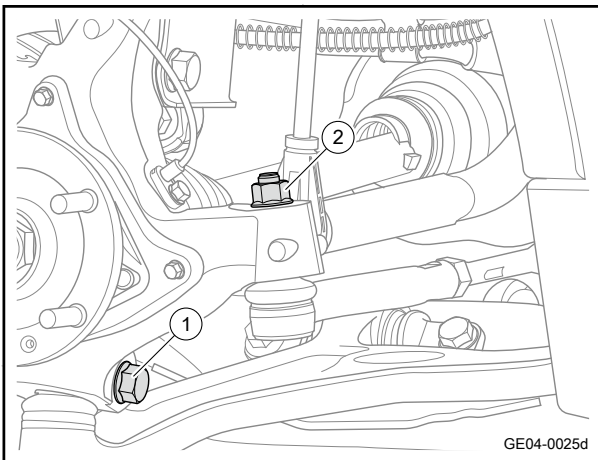


- 3 Install the steering knuckle c/w front hub assembly.

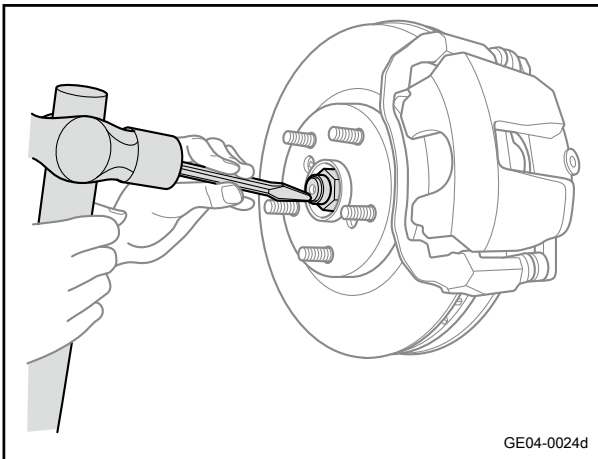




- 4 Install the two bolt-and-nut assemblies connecting the steering knuckle and the front shock absorber.  
Torque: 198N·m (metric) 146.1lb-ft (imperial system)



- 5 Install steering gear tie rod ball end fixing nut 2.  
Torque: 55N·m (metric) 40.6lb-ft (imperial system)
- 6 Install the lower swing arm ball joint fixing bolt 1.  
Torque: 110N·m (metric) 81.2lb-ft (imperial system)



- 7 Install and tighten the lock nut outside the drive shaft.  
Torque: 270N·m (metric) 199.3lb-ft (imperial system)

#### Caution

An assistant stepped on the brake pedal to prevent the drive shaft from turning.

- 8 Install the front wheel speed sensor.
- 9 Install the front brake disc dust cover.
- 10 Install the front brake disc.
- 11 Install the front brake caliper assembly.
- 12 Install the wheel.
- 13 Lower the vehicle.
- 14 Connect the negative cable of battery.

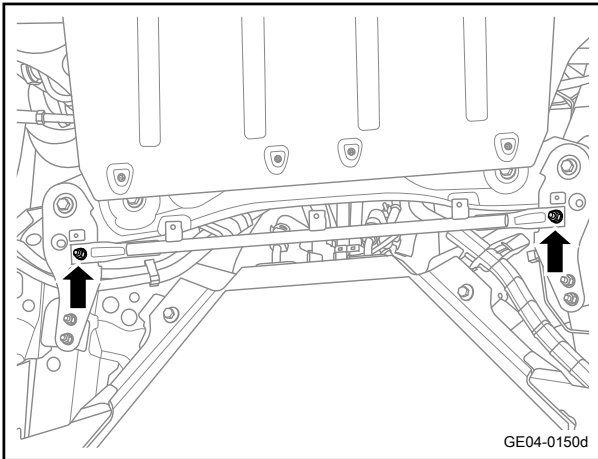
### 3.2.7.7 Replacement of front hub assembly

Refer to [Replacement of left steering knuckle](#)

### 3.2.7.8 Replacement of the Mounting Bracket of the Battery Base Protection Module

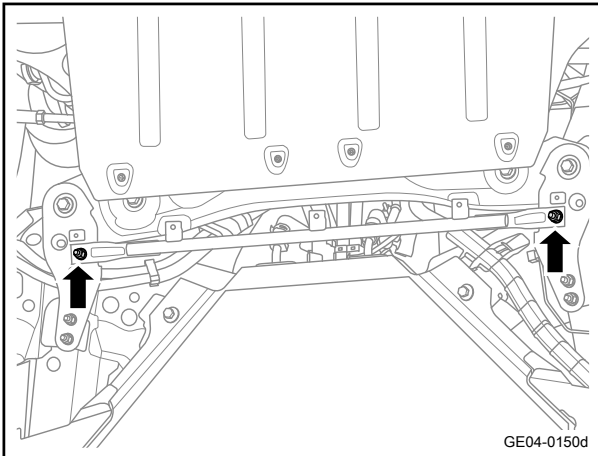
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the power battery harness cover assembly. See [Replacement of Power Battery Harness Cover Assembly](#)
- 3 Remove the 2 fixing nuts of the battery base protection module mounting bracket.
- 4 Remove the battery base protection module mounting bracket.



#### Installation procedure

- 1 Move the battery base protection module mounting bracket to the installation position.
- 2 Install the two fixing nuts of the battery base protection module mounting bracket.  
Torque: 75N·m (metric) 55.4lb-ft (imperial system)



- 3 Install the power battery harness cover assembly.
- 4 Lower the vehicle.

### 3.3 Rear suspension

#### 3.3.1 Specification

##### 3.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Bolt-nut assembly for rear shock absorber assembly to rear axle	M12×80	126 - 154	93 - 113.7
Fixing bolt in the upper end of rear shock absorber assembly	M10×25	72 - 88	53.1 - 64.9
Fixing nut in the upper end of rear shock absorber assembly	M10	72 - 88	53.1 - 64.9
Fixing bolt for installing rear hub unit	M10×25	67 - 83	49.4 - 61.3
Fixing bolt for connecting the rear axle assembly to the left and right rear axle mounting brackets	M14×120	First time 135~165 Second time 55°-65°	First time 99.6~121.7 Second time 55°-65°
Rear shock absorber assembly and rear axle fastening bolt	M12×80	126 - 154	93 - 113.7
Connecting nut for left rear shock absorber assembly to rear axle	M12	126 - 154	93 - 113.7

### 3.3.2 Description and operation

#### 3.3.2.1 Instructions and Operations

The rear suspension and the front suspension together provide excellent stability, operability and comfort for the vehicle. The main load-bearing parts and moving parts of the rear suspension can withstand the vertical force and torsion force to enhance the anti-roll ability of the rear suspension and the anti-nodding ability of the whole vehicle. The shock absorber accelerates the weakening of the vibration. Coil spring can support and transfer vertical load to diminish the shock of the road. Since then, the suspension mainly adopts torsion beam-type semi-independent suspension. The torsion beam-type semi-independent suspension includes: two shock absorbers, two coil springs, a rear suspension assembly and two rubber bushings. The axle support assembly is connected to the bottom of the vehicle body through a rubber bushing located on the front side of each control arm. The axle structure maintains the connection between the wheels and the vehicle body. A torsion beam balances the up and down movement of the left and right wheels to reduce vehicle shaking and thereby maintain the stability of the vehicle.

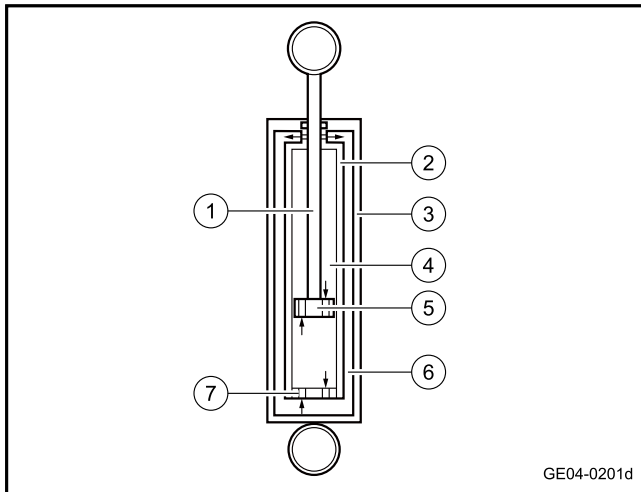
### 3.3.3 How the system works

#### 3.3.3.1 Operating principle of suspension system components

Springs:

The rigidity of spring will affect the response of the sprung mass when the vehicle is running. The vehicle with a small spring rigidity can eliminate turbulence and provide a very smooth driving feeling, but at the same time, it is prone to dive and squat during braking and accelerating, and prone to roll and tumble when turning. Vehicles with excessive spring rigidity have less stability on bumpy roads, but its body moves very little, which means they can be driven fast even when turning. Although the spring itself may look simple, by designing and implementing these devices in the automobile, and balancing the passenger's comfort with the handling performance of the automobile, the spring alone cannot provide an extremely smooth ride. Because springs are excellent at absorbing energy but less so in terms of dissipation capacity. Therefore, the suspension system requires a kind of component called shock absorber. Without a damper structure, the spring will bounce off at an uncontrollable rate and release the jolting energy it absorbs, continuing to bounce off at its frequency until it has exhausted all the energy originally applied to it. The suspension, built on a spring, will itself allow the automobile to drive in a bouncing manner without being controlled.

Shock absorber:



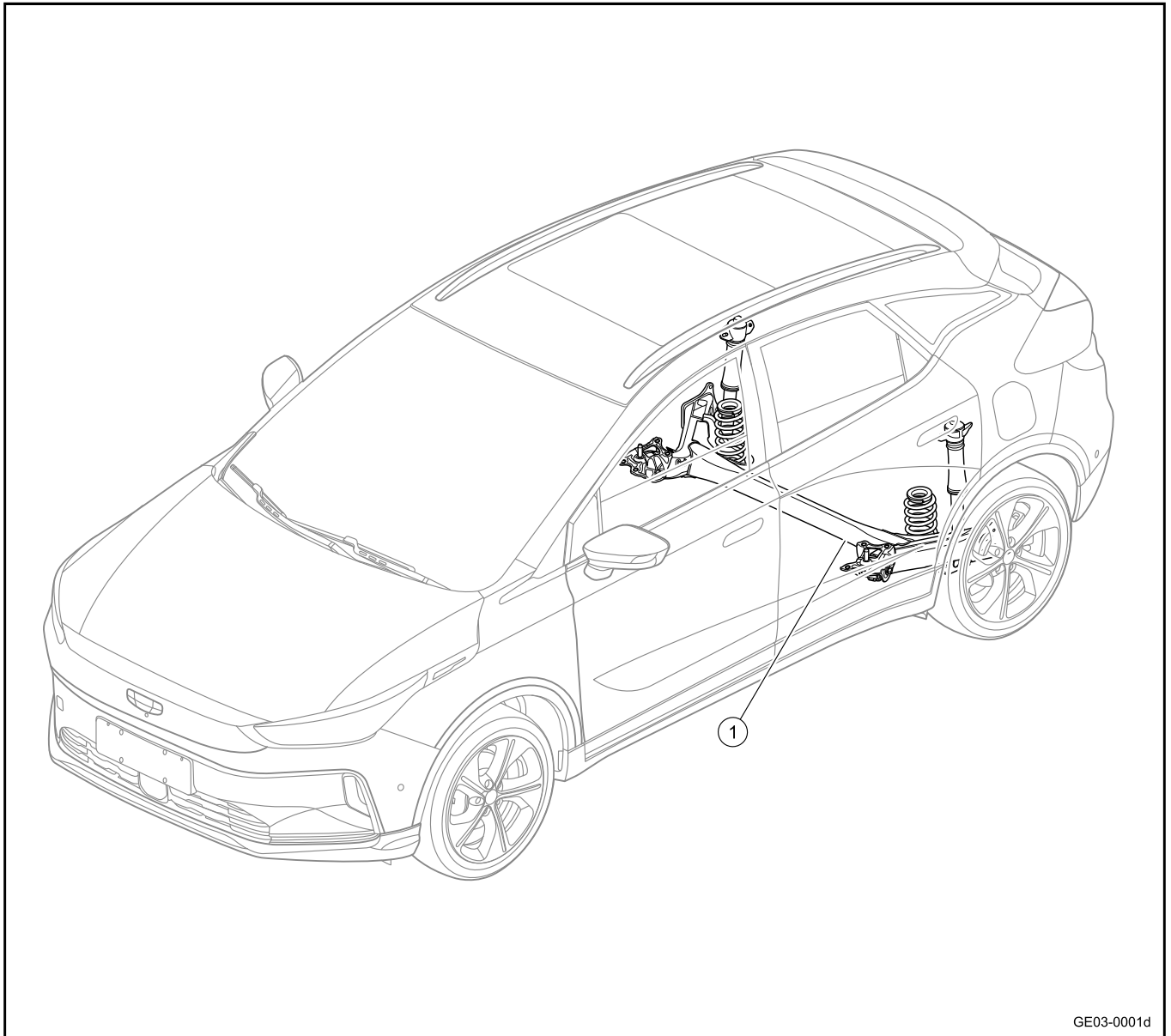
1. Piston push rod
2. Inner cylinder
3. Outer cylinder
4. Hydraulic chamber
5. Piston and valve
6. Fluid reservoir

7. Inner cylinder bottom valve

It controls the unwanted spring motion through a process called damping. Shock absorbers slow and reduce the magnitude of vibratory motion by converting the kinetic energy of suspension motion to heat energy that can be dissipated through hydraulic fluid. The upper support of the shock absorber is connected to the frame (namely sprung mass), and the lower support is connected to the shaft near the wheel (namely non-sprung mass). In double-cylinder design, one of the most common types of the shock absorber is the upper support connected to the piston rod, and the piston rod is connected to the piston, which is located in a cylinder filled with hydraulic oil. The inner cylinder is called pressure cylinder and the outer cylinder is called oil reservoir cylinder. The oil reservoir cylinder stores the excess hydraulic oil. When the wheel hits a bumpy road and causes spring compacts and stretches, the energy of spring is transferred to the shock absorber via the upper support and down to the piston via the piston rod. The piston has punched holes, through which hydraulic oil can leak out as the piston moves up and down in the pressure cylinder. Because these holes are so tiny that only very little hydraulic oil can pass through them under great pressure. This slows down the piston motion, thus slows down the spring. The operation of the shock absorber consists of two cycles - the compression cycle and the extension cycle. The compression cycle refers to compress the hydraulic oil below the piston when it moves downward. Extension cycle refers to the hydraulic oil above the piston as it moves upwards to the top of the pressure tank. For a typical automobile, the resistance of the extension cycle is greater than the resistance of the compression cycle. It should also be noticed that the compression cycle controls the movement of the unsprung mass of a vehicle, while the extension cycle controls the movement of the sprung mass which is relatively heavier. All modern shock absorbers have speed-sensing feature. The faster the suspension moves, the more resistance the shock absorber provides. It allows the shock absorber to adjust to road conditions and control any undesired movement that might occur in a moving vehicle, including bouncing, rolling, braking, diving, and accelerating into a crouch.

### 3.3.4 Part location

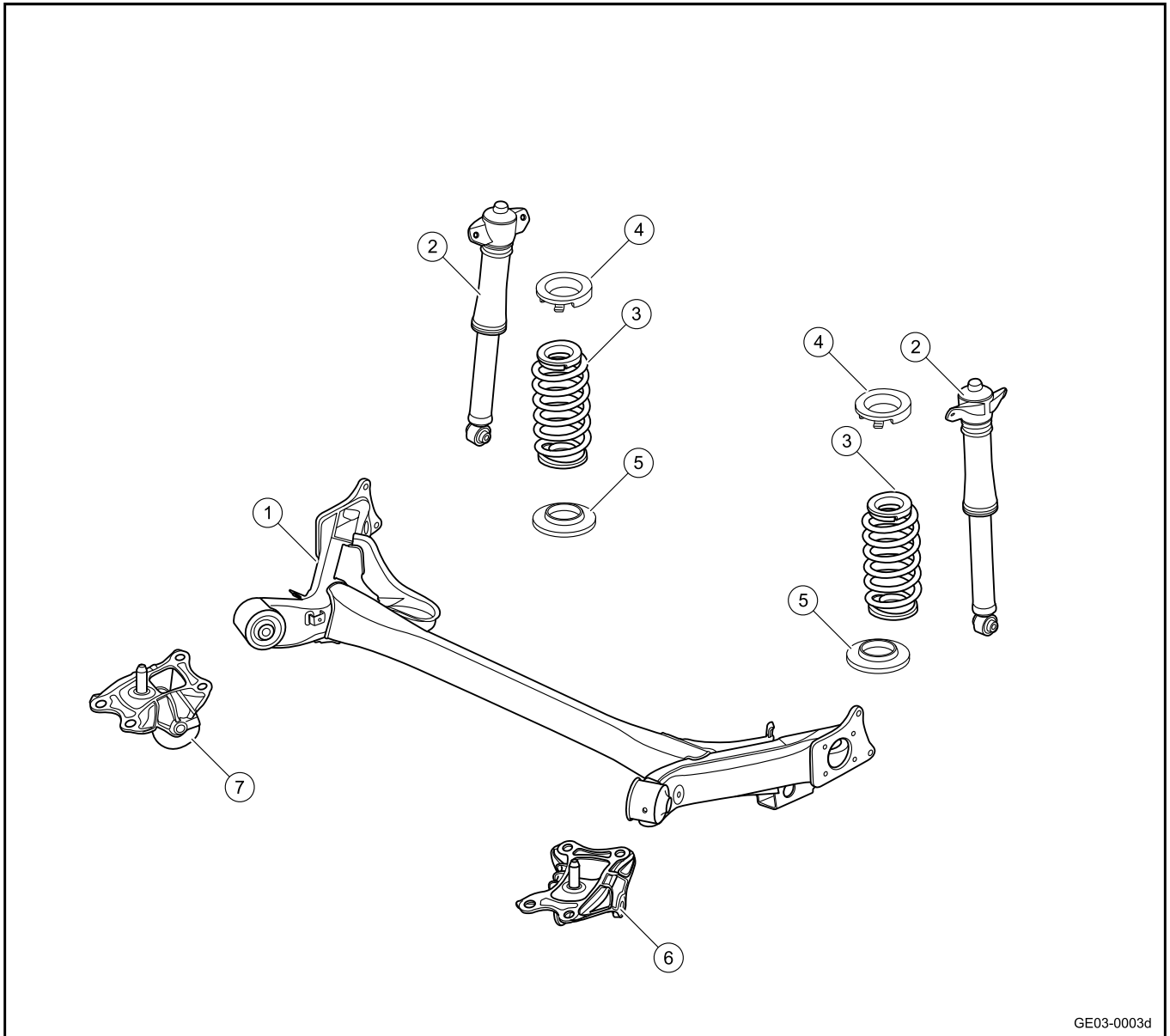
#### 3.3.4.1 Part Position



1. Rear suspension assembly

## 3.3.5 Exploded view

## 3.3.5.1 Breakdown Drawing



GE03-0003d

- |    |                                |    |   |
|----|--------------------------------|----|---|
| 1. | Rear axle assembly             | 5. | Rear coil spring lower washer               |
| 2. | Rear damper assembly           | 6. | Left mounting bracket of rear torsion beam  |
| 3. | Rear suspension helical spring | 7. | Right mounting bracket of rear torsion beam |
| 4. | Rear coil spring upper washer  |    |   |

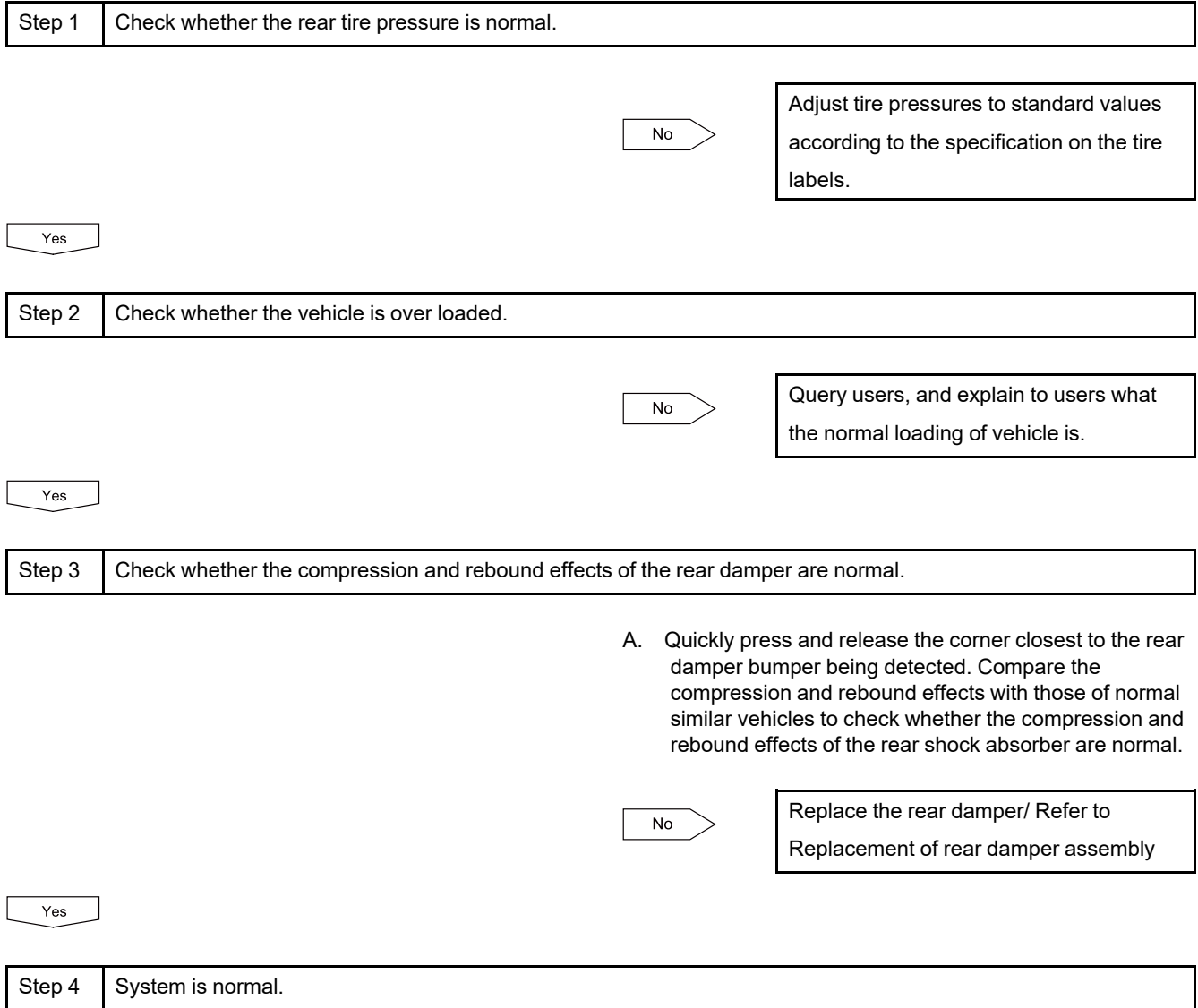
3.3.6 Diagnostic information and steps

3.3.6.1 Diagnosis Description

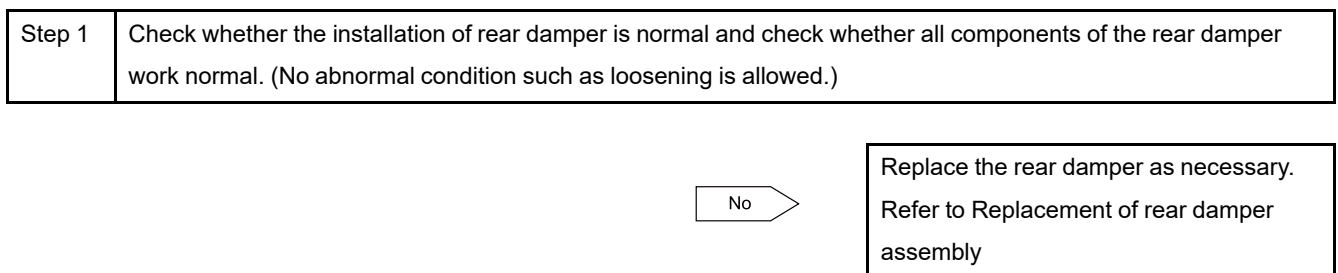
Before diagnosing the rear suspension faults, refer to [Description and Operation](#) and [System Working Principle](#). Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

3.3.6.2 Check of rear damper

Rear damper is too soft



The rear damper is noisy





Yes

**Step 2** Check whether the compression and rebound effects of the rear damper are normal.

- A. Quickly press and release the corner closest to the rear damper bumper being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the rear shock absorber are normal.

No

Replace the rear damper/ Refer to Replacement of rear damper assembly

Yes

**Step 3** System is normal.

There is oil leakage in the rear damper

**Step 1** Check whether the installation of rear damper is normal and check whether all components of the rear damper work normal. (No abnormal condition such as loosening is allowed.)

Next Step

**Step 2** Check the sealing condition of rear damper when it is fully extended, and whether the dust cover is damaged, etc.

Yes

Replace the rear damper/ Refer to Replacement of rear damper assembly

No

**Step 3** Check whether there is too much fluid on the rear damper.

Yes

Replace the rear damper/ Refer to Replacement of rear damper assembly

No

**Step 4** System is normal.

### 3.3.6.3 Over-large friction check

Check whether the friction of rear suspension is too high according to the following procedures:

Step 1	Lift the rear bumper and elevate the vehicle as much as possible.
--------	---

Next Step

Step 2	Gently put down the bumper to make the vehicle to restore its normal vehicle front end height.
--------	--

Next Step

Step 3	Measure the distance between ground and the center of bumper.
--------	---

Next Step

Step 4	Press the bumper and then slowly release it to make the vehicle to restore its normal vehicle front end height.
--------	---

Next Step

Step 5	Measure the distance between ground and the center of bumper.
--------	---

Next Step

Step 6	The difference between two measure values should $<12.7$ mm (0.5 in). If the distance is more than this limitation, check for the signs of damage or wearing of coil spring, rear damper, rubber bushing and rear suspension assembly.
--------	--

### 3.3.6.4 Ride performance diagnose (too soft or too hard)

Too soft

Step 1	Check whether the rear damper is worn. Replace the rear damper if necessary.
--------	--

Next Step

Step 2	Check whether the rear coil spring is snapped or loosed. Replace the rear coil spring if necessary.
--------	---

Too hard

Step 1	Check whether the rear damper is installed correctly and whether the rear damper conforms to the model. Replace the rear damper if necessary.
--------	--

Next Step

Step 2	Check whether the rear coil spring is installed correctly. Replace the rear coil spring if necessary.
--------	---

### 3.3.6.5 The body inclines or swings when the vehicle turns

Step 1	It is needed to check whether the rear damper and the rear bolt spring retainer wear. It is important to replace the rear damper if necessary and re-fasten the fixing nut on the rear damper.
--------	--

Next Step

Step 2	Check the vehicle for the overload and explain it to the user reasonably.
--------	---

Next Step

Step 3	It is important to check whether the rear coil spring is broken or loose. It is needed to replace it if necessary.
--------	--

### 3.3.6.6 Noise diagnosis

Step 1	Check whether the rear suspension components are worn.
--------	--

Yes

Replace the damaged rear suspension components.
---

No

Step 2	Check whether the rear stabilizer bar loosens.
--------	--

Yes

Tighten the fixing nut of the rear stabilizer bar.
--

No

Step 3	Check whether the installations of rear damper and the vibration isolator of coil spring seat are misplaced and whether they are damaged, etc.
--------	--

Yes

Replace the damaged components.
---------------------------------

No

Step 4	Check whether the installation of rear coil spring is misplaced.
--------	--

Yes

Re-install rear coil spring.
------------------------------

No

Step 5	Find a same model vehicle, and make a comprehensive assessment of whether the noise is normal working noise.
--------	--

Yes

Replace the damaged components.
---------------------------------

No

Step 6 System components are normal.

### 3.3.6.7 Abnormal tail height

Step 1 It is important to check whether the rear coil spring is broken or loose. It is needed to replace it if necessary.

Next Step

Step 2 Check whether the vehicle is overloaded, and explain the hazards of it to the user when necessary.

Next Step

Step 3 Check whether rear coil spring is correct or too soft. Replace with the coil spring originally produced by Geely.

### 3.3.7 Removal and installation

#### 3.3.7.1 Replacement of rear damper assembly

Removal procedure

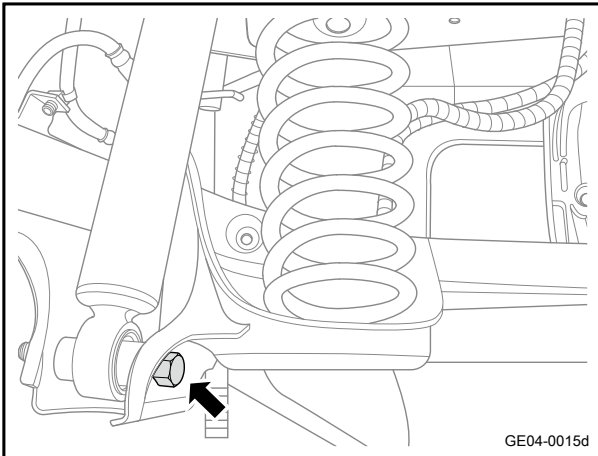
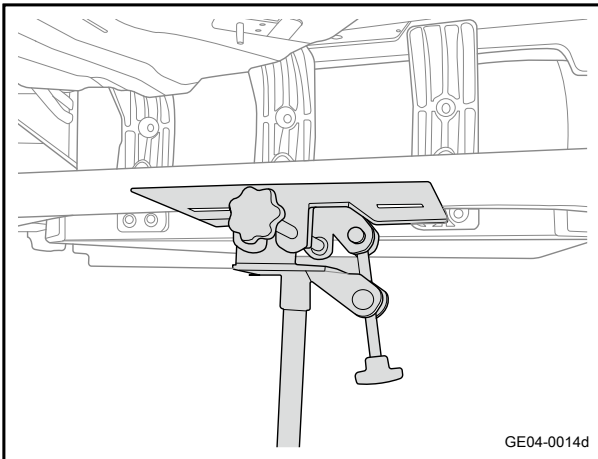
##### Caution

The removal method is the same for both sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the left and right rear fender liner plates. Refer to [Replacement of left rear fender liner](#)
- 4 Use a jack to support the rear axle.

##### Caution

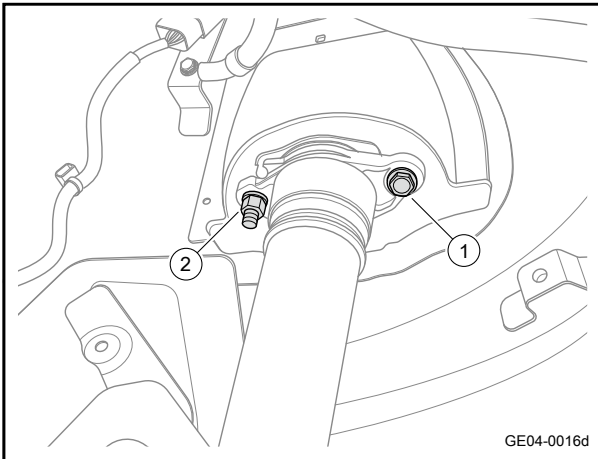
Do not jack up the vehicle too high in case the vehicle falls.



- 5 Remove the 1 bolt-and-nut assembly connecting the rear shock absorber assembly and the rear axle.

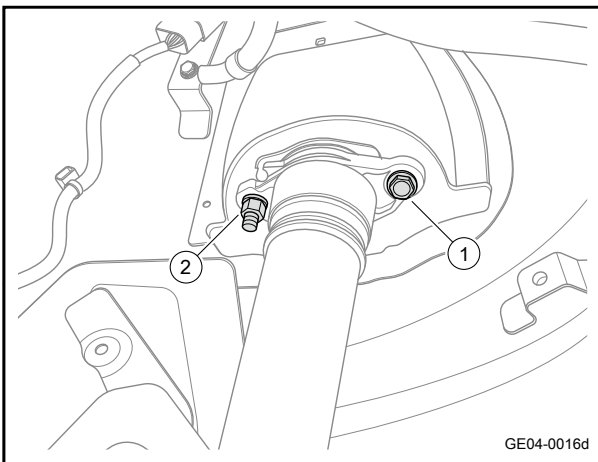
##### Caution

When disassembling the bolt-and-nut assembly, use a wrench to fix the nut to prevent it from turning.

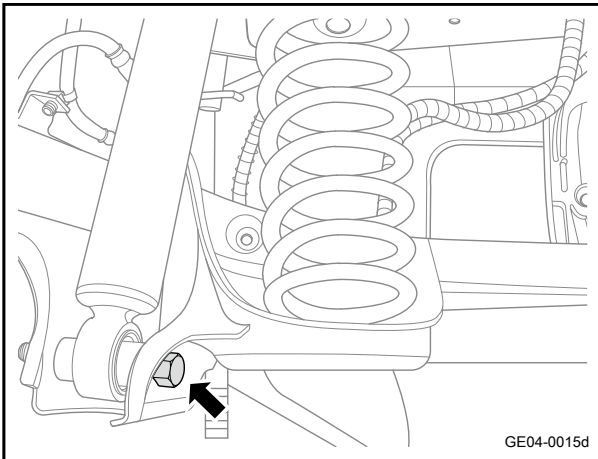


- 6 Remove the fixing bolt 1 and fixing nut 2 at the upper end of the rear shock absorber assembly.
- 7 Take down the rear damper assembly.

#### Installation procedure



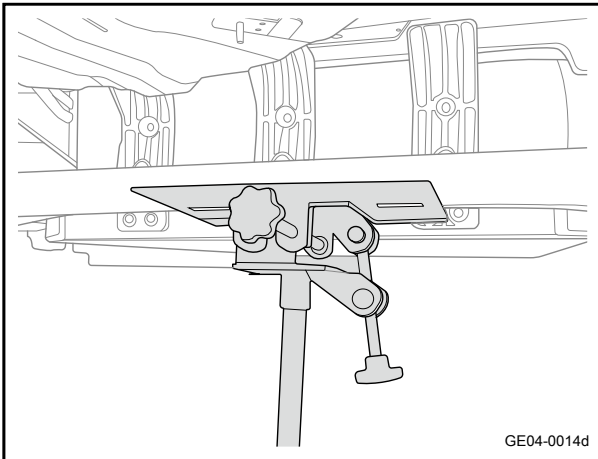
- 1 Move the rear shock absorber assembly to the installation position.
- 2 Mount the fixing bolt 1 and fixing nut 2 at the upper end of the rear shock absorber assembly.  
Torque: 80N·m (metric) 59.0lb-ft (imperial system)



- 3 Mount the 1 bolt-and-nut assembly connecting the rear shock absorber assembly and the rear axle.  
Torque: 140N·m (metric) 103.3lb-ft (imperial system)

#### Caution

When mounting the bolt-and-nut assembly, use a wrench to fix the nut to prevent it from turning.



4 Slowly lower the jack and move it out of the vehicle.

5 Install the left and right rear fender liner plates.

6 Install the wheel.

7 Lower the vehicle.

### 3.3.7.2 Replacement of coil spring rear suspension

#### Removal procedure

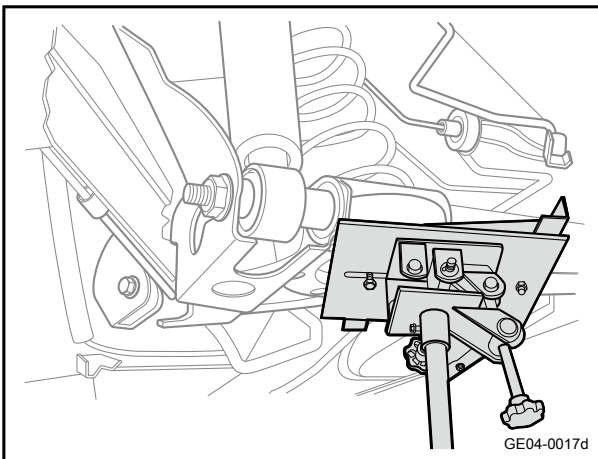
##### Caution

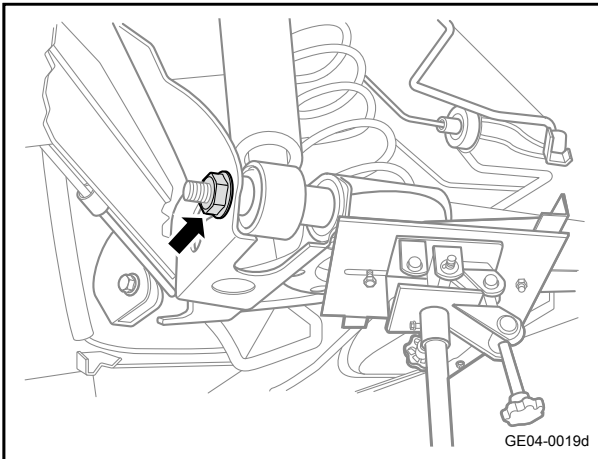
The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Use a jack to support the rear axle.

##### Caution

Do not jack up the vehicle too high in case the vehicle falls.

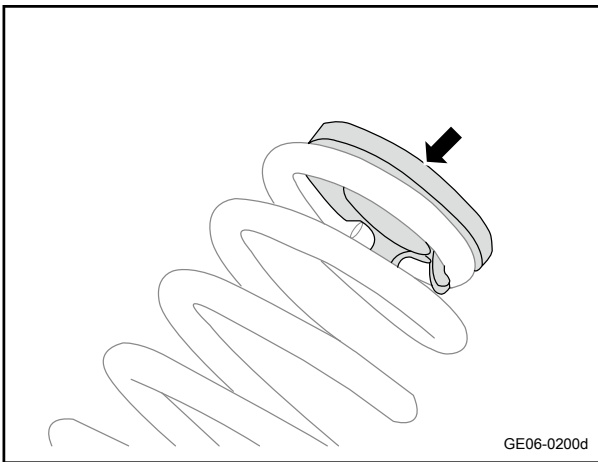




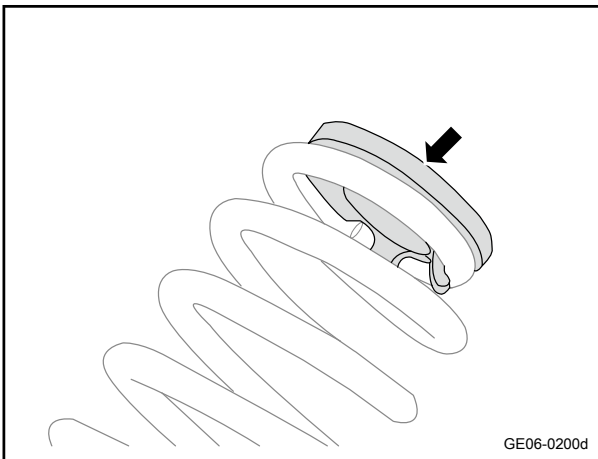
- 4 Remove the fixed 1 bolt-and-nut assembly of the left rear shock absorber assembly and the rear axle assembly.

**Caution**

When removing the bolt-assemblies, use a wrench to fix the nuts to prevent them from turning.



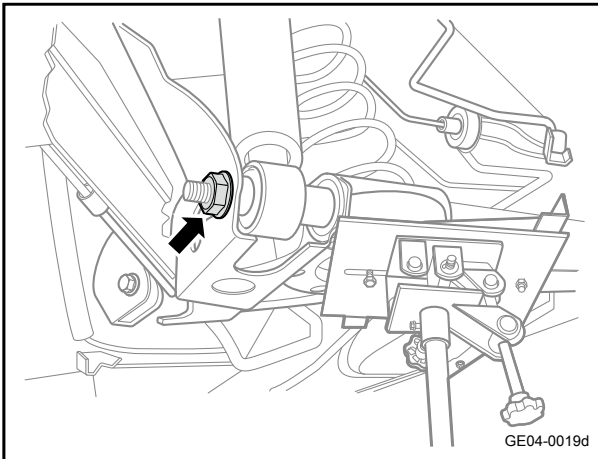
- 5 Slightly put down the jack and take out the coil spring rear suspension.
- 6 Remove the rubber gasket.



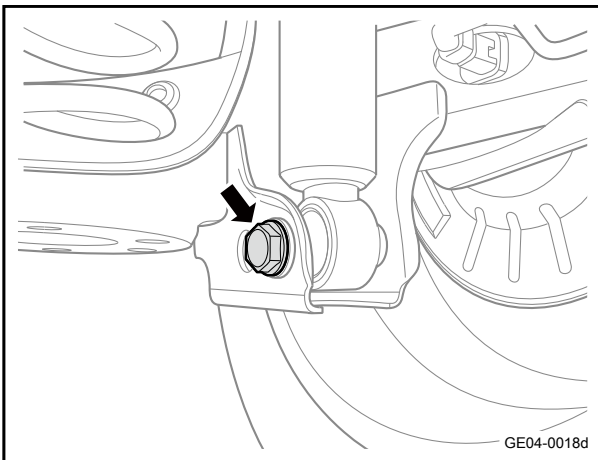
**Installation procedure**

- 1 Install the rubber gasket to the rear suspension coil spring.
- 2 Move the rear suspension coil spring to the installation position and slowly lift the jack.





- 3 Install one bolt-and-nut assembly connecting the left rear shock absorber assembly and the rear axle.  
Torque: 140N·m (metric) 103.3lb-ft (imperial system)



- 4 Install one bolt-and-nut assembly connecting the right rear shock absorber assembly and the rear axle, slowly lower the jack and move it out of the vehicle.  
Torque: 140N·m (metric) 103.3lb-ft (imperial system)

- 5 Install the wheel.
- 6 Lower the vehicle.

### 3.3.7.3 Replacement of rear hub

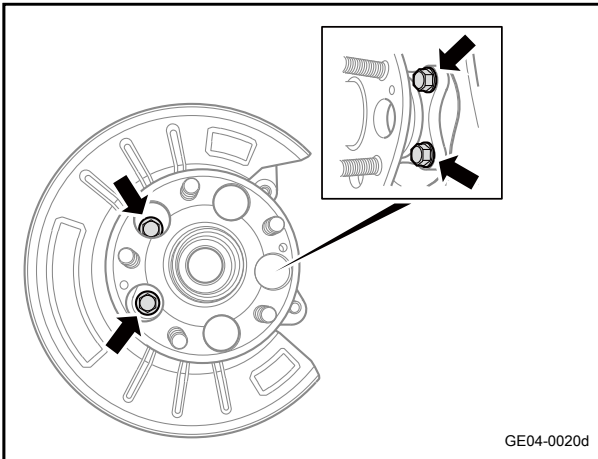
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

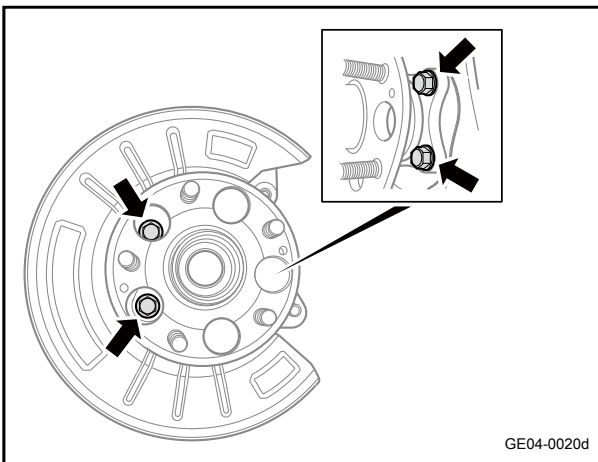
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove wheels. Refer to [Replacement of wheels](#)
- 4 Remove the rear brake caliper. Refer to [Replacement of brake caliper](#)
- 5 Remove the rear brake disc. Refer to [Replacement of rear brake disc](#)
- 6 Remove the rear wheel speed sensor. Refer to [Replacement of rear wheel speed sensor](#)



- 7 Remove 4 fixing bolts of rear hub unit.
- 8 Remove the rear hub unit and dust cover.

#### Installation procedure



- 1 Move the rear hub unit and dust cover to their installation positions.
- 2 Install 4 fixing bolts of rear hub unit.  
Torque: 75N·m (metric) 55.3lb-ft (imperial system)

- 3 Install the rear wheel speed sensor.
- 4 Install the rear brake disc.
- 5 Install the rear brake caliper.
- 6 Install the wheel.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

#### 3.3.7.4 Replacement of the rear axle assembly

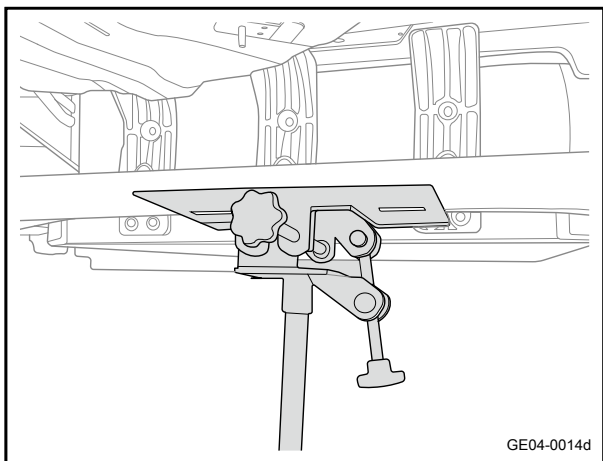
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

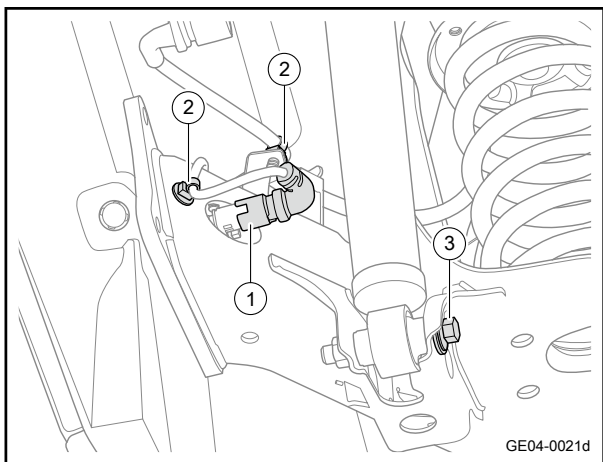
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove wheels. Refer to [Replacement of wheels](#)
- 4 Remove the rear hub. Refer to [Replacement of rear wheel hub assembly](#)



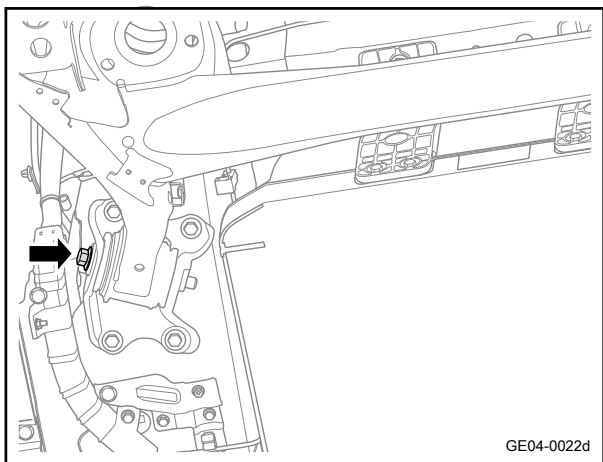
- 5 Use a jack to support the rear axle assembly.

**Caution**

Do not jack up the vehicle too high in case the vehicle falls.

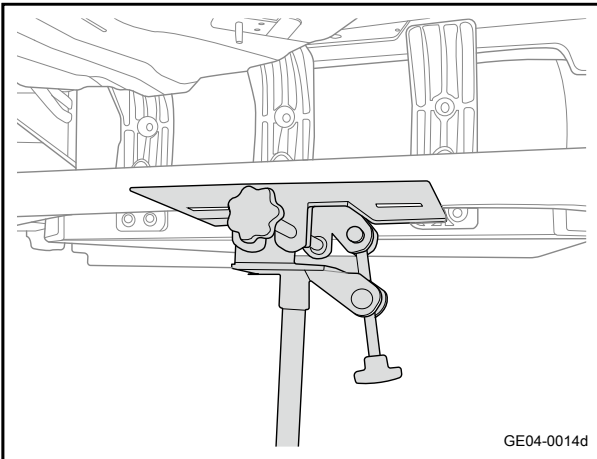


- 6 Disconnect the harness connector 1 between the left and right brake caliper motors.
- 7 Disengage the two wire harness buckles 2 of each of the left and right caliper motor harnesses.
- 8 Remove one bolt-and-nut assembly 3 from the lower part of the left and right rear shock absorbers.

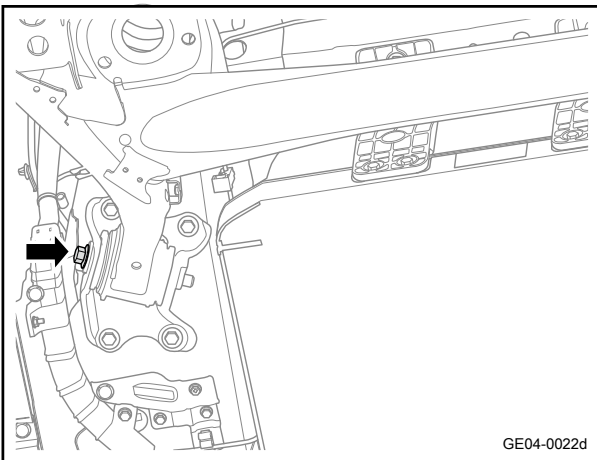


- 9 Remove one fixing bolt connecting the rear axle assembly and the left and right rear axle mounting brackets.
- 10 Slowly lower the jack and remove the rear axle assembly with the help of an assistant.

Installation procedure



- 1 With the assistance of the assistant, move the rear axle assembly onto the jack, and slowly raise the jack to connect it with the vehicle body.

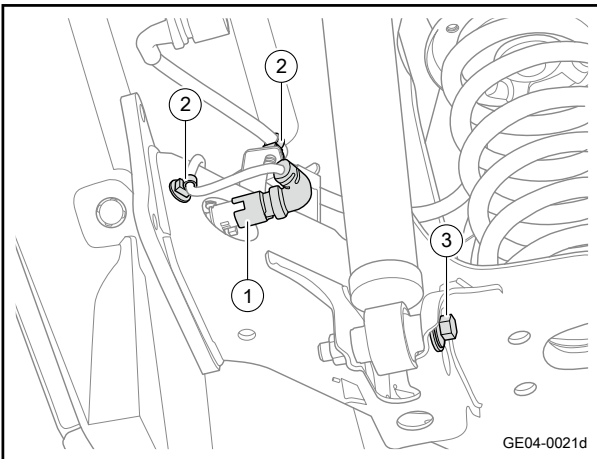


- 2 Install two fixing bolts, each connecting the rear axle assembly and the left and right rear axle mounting brackets.

Torque

First time: 150N·m (metric system) 110.6lb-ft (imperial system)

Second time: 60°



- 3 Install one bolt-and-nut assembly at the bottom of the left and right rear shock absorbers.

Torque: 140N·m (metric) 103.3lb-ft (imperial system)

- 4 Install two wire harness buckles 2 for each of the left and right caliper motor harnesses.

- 5 Install the left and right caliper motor harness connectors 1.

- 6 Install the rear hubs.

- 7 Install the wheel.

- 8 Lower the vehicle.

- 9 Connect the negative cable of battery.

## 3.4 Wheels and tires

### 3.4.1 Specification

#### 3.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Wheel nut	M12	117 - 143	86.3 - 105.5

#### 3.4.1.2 Tire specifications

Specification	Driving tires (Type I)	Driving tires (Type II)	Spare Tire
		225/50 R17	225/45 R18
Cold pressures of front wheels	240kPa (metric system) 34.8psi (imperial system)	250kPa (metric system) 36.3psi (imperial system)	420kPa (metric system) 60.9psi (imperial system)
Cold pressures of rear wheels	240kPa (metric system) 34.8psi (imperial system)	250kPa (metric system) 36.3psi (imperial system)	
Rim	17×7.5J	18×7.5J	17×4.0T

Inflation pressure conversion table					
kPa	psi	kPa	psi	kPa	psi
140	20	185	27	235	34
145	21	190	28	240	35
155	22	200	29	250	36
160	23	205	30	275	37
165	24	215	31	310	38
170	25	220	32	345	39
180	26	230	33	380	40

#### 3.4.1.3 Front Suspension positioning specification

##### Caution

The following parameters refer to the technical parameters of the complete vehicle under a prepared status.

Wheel alignment (no load)	Maximum turning angle of front wheel (inner/outer)	41.2°±2°/32.0°±2°
	Camber angle of front wheel	-30'±30'
	Kingpin inclination angle	12°±45'
	Kingpin caster angle	3.9°±30'
	Toe-in of front wheels	14'±10'

#### 3.4.1.4 Rear suspension positioning specifications

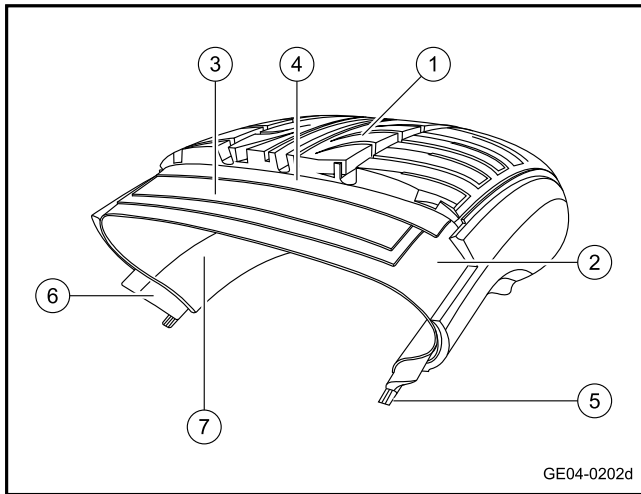
##### Caution

The following parameters refer to the technical parameters of the complete vehicle under a prepared status.

Wheel alignment (no load)	Camber angle of rear wheel	-1°19'±30'
	Toe-in of rear wheels	10'±30'

### 3.4.2 Description and operation

#### 3.4.2.1 Tie structure



##### 1. Tread

The part of the tyre in contact with the road allows driving, braking and other functions through friction. It should have good wear resistance, puncture resistance, impact resistance, heat dissipation and other performance.

##### 2. Carcass

Ply of tyre, and main load-bearing part, it has impact resistance and should have good flexural resistance while driving.

##### 3. Belt

A Steel wire ply between tread and carcass, it is intended to protect the carcass, inhibit tread deformation, maintain tread contact with the ground, and improve wear resistance and driving stability.

##### 4. Cap ply

A special ply above the belt, it is intended to restrain the movement of the belt while the tyre is running, prevent the belt from detaching at high speeds and maintain stability of tyre size at high speeds.

##### 5. Bead

Hanging rubber wire wrapped to a certain shape (four corners or hexagonal shape), used to attach the tyre to the rim to fix the tyre.

##### 6. Triangle strips

The filling material on top of the bead in a tyre to prevent bead dispersion, slow bead impact, and protect the bead from air ingress during molding.

##### 7. Inner liner

Part to maintain air tightness of tyre without tyre tube, made of special rubber and can perform the function of a tyre tube.

#### 3.4.2.2 Meaning and pressure instructions of tire side identifications of tires

Meanings of tire side identifications of tires

For examples: 205/55 R16 91 V

205— Nominal cross-section width (unit: mm)

55— Flatness ratio (depth-width ratio: %)

R— Radial structure

16— Nominal diameter of the rim

91— Load index

V— Speed rating (240 km/h)

Table of Common Speed Ratings:

Speed rating	Maximum speed (km/h)
S	180
T	190
H	210
V	240
W	270
Y	300
ZR	Above 240

##### Pressure instructions of tires

Tire pressures have a decisive influence on worn, fault, and damage of tires, thus, the normal pressure must be maintained and the pressure must be checked regularly to drive safely.

- Load capacity of tires corresponds to the inflation pressure. The reasonable pressure of the tire must be determined by the load condition of the tire. Changes in climates and seasons should not be reasons for tire pressure adjustments.

- At the beginning of the use of a new tire, the overall dimension of the tire will be changed for the heating of the yield movement and the tire pressure will be reduced. It is needed to check and adjust the pressure after 24 hours of use or driving for 2,000-3,000 km.

- The tire pressure should be increased by 10 %-15 % when driving at a high speed for a long time.

### 1. Harm of insufficient pressure

The insufficient pressure will lead to the aggravation of the tire side deformation and the increase of heat production, which will greatly reduce the tire service life and bring the following problems and safety risks:

- a. The tire shoulder position is excessively worn.
- b. Increase the possibility of tire bump and bulge.
- c. Delamination is caused by the decrease of adhesive force between various parts of the tire.
- d. Severely insufficient pressure leads to tire side rolling damages.
- e. Too large tire hops cause the abnormal worn between the bead and the road rim and damage the road rim.
- f. Rolling resistance increases and fuel consumption increases.

### 2. Harm of the excessive pressure

The excessive pressure will reduce the tread grounding area, increase the tire rigidity, and reduce the buffering effect, and will bring the following problems and safety risks:

- a. The tread center is excessively worn.
- b. Increases the risk that the tire broken or even burst when impacted by the external force.
- c. The reduced grounding area leads to reduced steering and controlling performance and risks of drifting and glissades will occur.
- d. Riding comfort is decreased.

e. Poor riding performance and the long-term driving at the excessive pressure are prone to cause damage to the vehicle chassis

### 3. Even tire pressures at the same suspension can cause:

- a. The brake force is uneven from left to right.
- b. The steering is running deviation.
- c. The steering and controlling performance are decreased.
- d. The deviation at speed up.
- e. The vehicle is running deviation when driving.

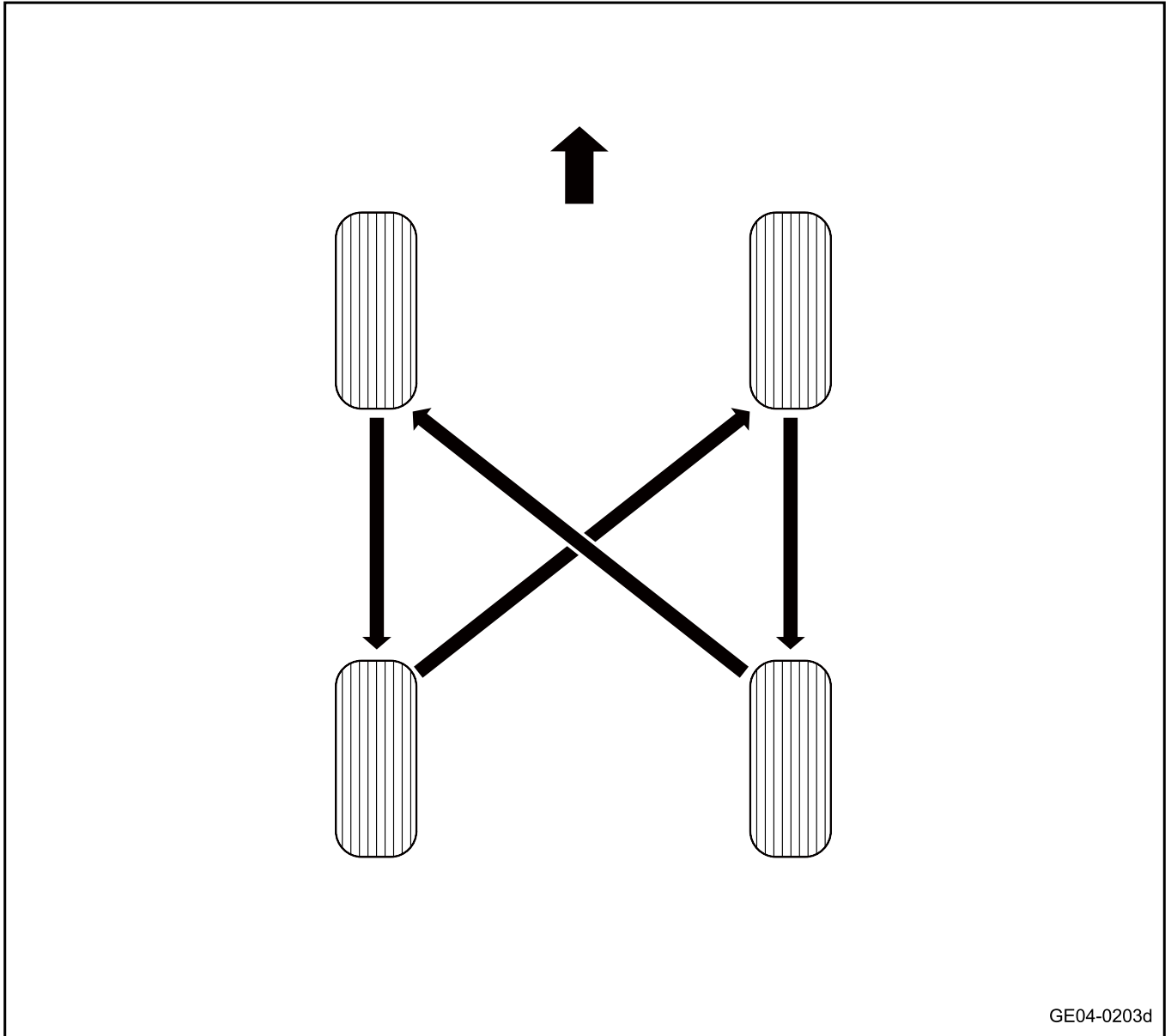
### 3.4.2.3 Tyre rotation

#### Tyre rotation

Because the front and rear wheels of the vehicle bear different loads during running, the wear conditions are also very different. Therefore, in order to prevent the tires from being worn in a single direction, regular and timely rotation can make the tires wear evenly and extend the service life of the tires. It is recommended to rotate every 5, 000-8, 000 km. The main purpose of tire rotation is to:

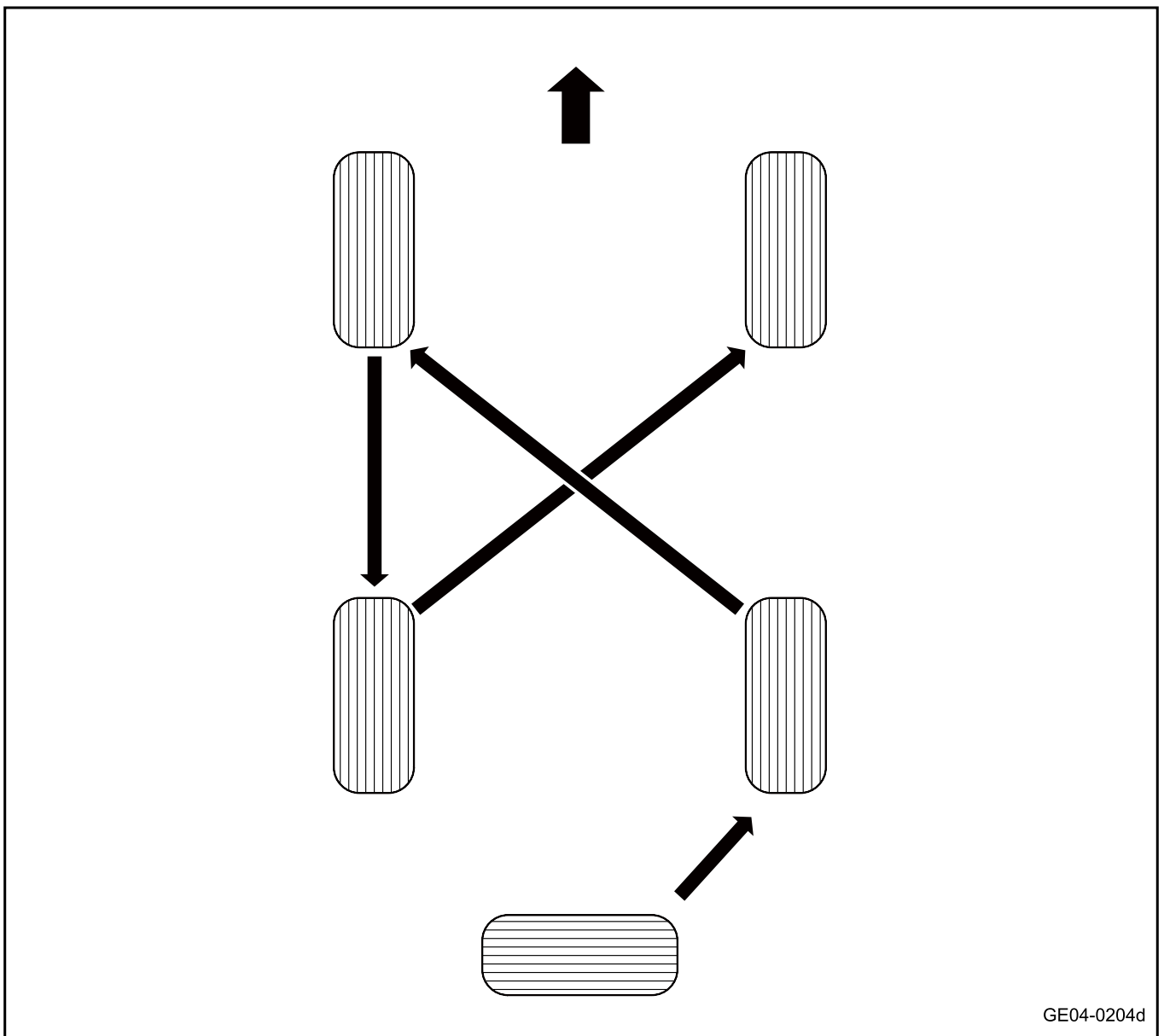
- a. Ensure uniform tire wear and average fatigue and thereby ensure stability and economy.
- b. Check the condition of the tires when changing positions, find the damage in time, and prevent accidents.

The tire rotation method is shown in the figure:



Enable the replacement of the spare tire (if equipped)





GE04-0204d

See [Tire Rotation Instructions](#) for parallel rotation and cross rotation methods.

### 3.4.3 How the system works

#### 3.4.3.1 Wheel alignment

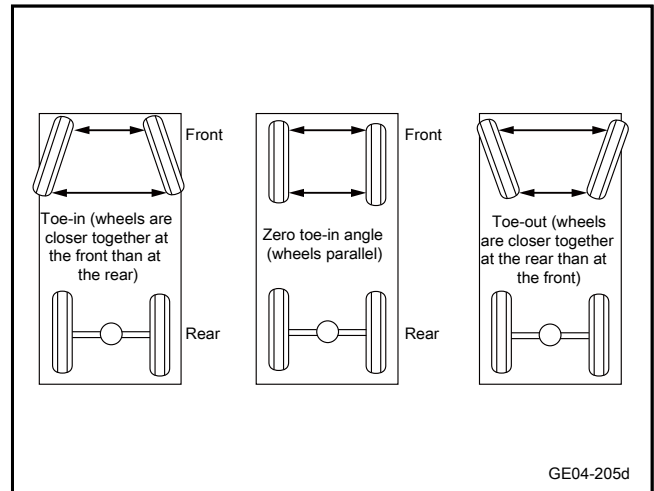
The driver turns the steering wheel to drive the vehicle in the required direction. But, while driving on a straight road, the driver needs to operate the steering wheel continuously to keep the vehicle running in a straight line, or at the turning, a lot of force is required to turn the vehicle. Then the driver will spend a lot of physical strength and endure mental stress. To solve the problem and prevent the early worn of the tires, the tires are installed at the vehicle (or the chassis) according to certain requirements and at certain angles. These angles are collectively known as “wheel alignment”. Alignment is a synthetic noun of angle relations between the front and rear axles, wheels, steering parts, and suspension parts.

If wheel alignment is correct, the steering is easy. While driving straight, the driver only needs to slightly adjust the steering wheel, and the vehicle will be put in a positive forward position and only a little strength is required to turn. That is to say, if all angle relationships that make up “wheel alignment” are adjusted correctly, the steering will be easy. But if any of them is not adjusted correctly, the following problems will occur: difficult steering, poor steering stability, poor steering return, and loss of tire service life.

The alignment angles of the vehicle include: toe-in, camber angles of the tires, kingpin caster angle, kingpin inclination, steering angle, included angle, thrust angle, grinding wheel radius, and others. The above angles and dimensions depend on the suspension system, the tire drive system (front-mounted engine, front-wheel drive or rear-engine, rear-wheel drive; two-wheel drive; or four-wheel drive), and the steering system. By adjusting these factors, driving performance and steering stability can achieve the optimum status. Besides, the service life of the parts can be extended.

Usually, the only angle recommended for adjustment during maintenance is the toe-in value.

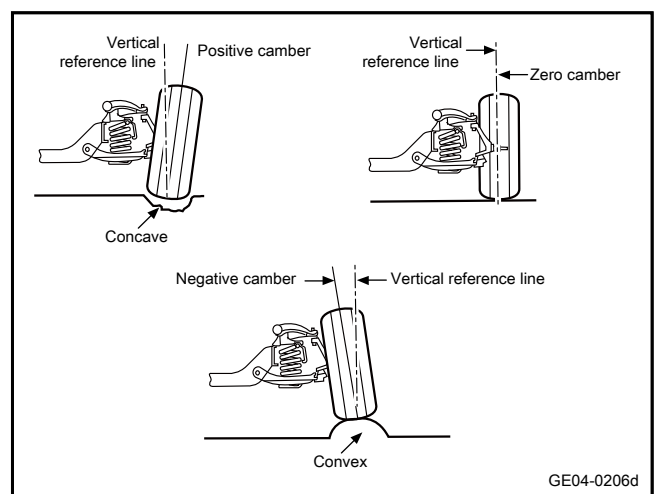
#### 1. Toe-in



The toe-in is used for measuring the distance of the wheels moving forward or off the center line of the vehicle. The toe-in can be understood as the comparison between the distance of the front part of two wheels and the rear part of the same wheels. If the wheels are completely parallel, the two measured values should be equivalent and the toe-in angle is zero. If the front wheels incline inward toward the center line, the toe-in angle is said to be positive. If the wheels incline outward, the toe-in angle is said to be negative. The positive and negative toe-in angles are commonly referred to as the toe-in and toe-out of the front wheels.

The toe-in is used for compensating the tendency of the tires to roll inward and outward due to the camber angle and surface resistance, so as to ensure the straight-line running of the vehicle.

#### 2. Camber angle



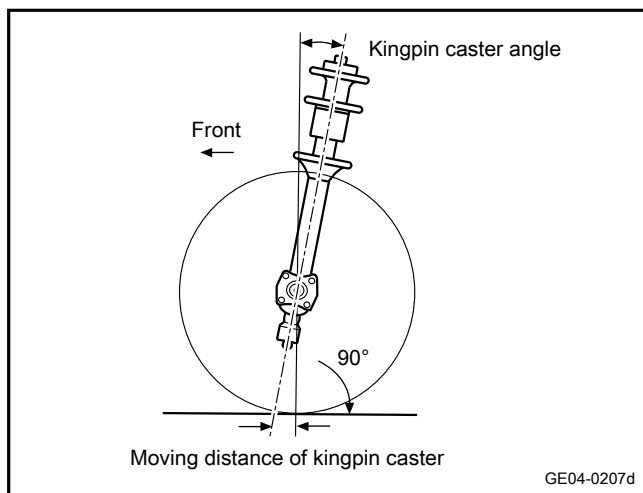
The camber angle is the angle of inclination of the tires relative to the vertical reference line. When the top of a tire inclines outward, the camber angle can be said to be positive. When the top of a tire inclines inward, the camber angle can be said to be negative. The setting of the camber angle may influence the control of the vehicle direction and tire wear.

The design of suspension and steering devices aims at reducing the tire tread wear and transferring the traction to the greatest extent by keeping the wheels perpendicular to the ground and driving in a straight line.

Inappropriate camber angle setting will cause excessive tire wear or uneven wear. Excessive positive camber angle will lead to wear on the outside wall of the tire tread. When the load on the outside wall of the tread is higher than that on the inside wall, uneven wear will occur.

Excessive negative camber angle will lead to wear on the inside wall of the tire tread. When the load on the inside wall of the tread is higher than that on the outside wall, uneven wear will occur.

### 3. Kingpin caster angle



The kingpin caster angle is the angle at which the kingpin axis slopes forward or backward. The kingpin caster angle is obtained by measuring the angle between the steering axis and the vertical line by observing from the side. Inclining backward from the vertical line is called a positive kingpin caster angle, and inclining forward is called a negative kingpin caster angle. The center line of the steering axis intersects with the ground at a point, and the tire has a central point of contact with the road, the distance between these two points is called scrub radius. The kingpin caster angle can produce the stability of driving in a straight line: If the vehicle is provided with a positive kingpin caster angle, when the wheel turns to the left, the left journal tends to sink. (This is due to the fact that the journal rotates along the steering axis, and

the axis is inclined.) But because the journal is fixed on the wheel assembly and the ground stops it moving downward. So the journal will not move downward, but the left steering knuckle is forced to move upward. The vehicle body is thus lifted slightly. Upon the completion of the steering and after releasing of the steering wheel, the lifted body weight forces the steering knuckle down again. The journal then returns to the original driving-forward position.

### 3.4.4 Diagnostic information and steps

#### 3.4.4.1 Diagnosis Description

Before diagnosing wheel and tire faults, refer to [Description and Operation](#) and [System Working Principle](#). Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

#### 3.4.4.2 Routine inspection

- Check the after-sale installations to confirm that these installations will not influence the normal operation of the wheels and tires.
- Checking system parts that are easily accessible or can be seen to guarantee that there is no obvious damage or situation that may cause a fault.
- Check for the following circumstances:
  - Obvious tire and wheel run-out.
  - Obvious drive axle run-out.
  - Incorrect tire pressure.
  - Incorrect vehicle front end height.
  - Wheel curve or damage.
  - Scarps on tires or wheels.
  - Abnormal or excessive tire wear.
  - Defects in tires, including tread distortion and separation caused the collision and slight indentation of tire side wall, are normal, which do not affect the driving quality.

In case of any of the above circumstance, please repair or replace the corresponding parts.

#### 3.4.4.3 Preliminary review before tire positioning

##### Caution

Before positioning the tire, the following check steps must be performed. Otherwise it may result in new faults due to inaccurate positioning.

Step 1	Check whether the tire inflation pressure and the tire wear is abnormal.
--------	--

Yes →

Adjust the tire pressure to the rated value. Replace the tire if necessary.
--

No

Step 2	Check whether the wheel bearing is loose.
--------	---

Yes →

Replace the wheel bearing if necessary. Refer to <a href="#">Replacement of front hub</a> . Refer to <a href="#">Replacement of rear hub</a>
---

No

Step 3	Check whether the lower swing arm ball joint and steering tie rod ball joint are loose.
--------	---

Fasten the nut. Replace the lower swing arm ball joint if necessary. Refer to [Replacement of lower control arm assembly of front suspension](#). Or the steering tie rod ball joint. Refer to [Replacement of steering tie rod and ball joint](#)

Yes

No

**Step 4** Check whether the tire and wheel run-out value are abnormal.

Yes

Measure and correct the wheel run-out value.

No

**Step 5** Check whether the vehicle front end height is abnormal.

Yes

Correct the vehicle front end before adjusting toe-in.

No

**Step 6** Check whether the pillar assembly installation is incorrect.

Yes

Replace the pillar assembly. Refer to Replacement of front pillar assembly. Refer to Replacement of rear damper assembly

No

**Step 7** Check whether the lower swing arm is loose.

Yes

Fasten and control the lower swing arm connecting bolt. Replace the lower swing arm bushing if necessary. Refer to [Replacement of lower control arm assembly of front suspension](#)

No

**Step 8** Check whether the vehicle curb weight is abnormal and whether overload exists.

Yes

Restore the vehicle to the factory curb weight condition.

No

Step 9 Perform the process of four-wheel alignment.

### 3.4.4.4 Wheel bearing diagnosis

#### Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. In case of violation of the above safety instructions, it may result in the serious accident to people and damage to the vehicle

Step 1 The trial run should be carried out on the road to confirm the fault phenomenon.

Prompt: If the sealed wheel bearing is damaged, the external impurity will enter the bearing internal and damage the bearing. When the bearing is rotated by the external force, it will make a buzzing sound similar to that of the airplane taking off. So the noise only occurs when the vehicle is driving. Noise is stable without fluctuation, and it increases with the increase of the vehicle speed.

Next Step

Step 2 Confirm whether the noise is from the wheel bearing. If it is uncertain to confirm whether the noise is from the wheel bearing during the trial run, lift and jack the vehicle.

#### Warning

To avoid vehicle damage, serious personal injury and even death, when the main components are removed from the vehicle, and the lifter is used for support, the jack should be used to support the vehicle part corresponding to the components to be removed.

Next Step

Step 3 Check whether the wheel is bent.

Yes

Replace the wheel. Refer to [Replacement of wheels](#)

No

Step 4 Check whether the wheel is imbalance.

Yes

Dynamic rebalance the wheel.

No

**Step 5** Rotate the tire and wheel assembly. Listen whether noise exists in the wheel bearing.

**Warning**

At the time of rotating the wheel with hand, the hand must hold the rotating tire. In case of an incorrect position, it may result in personal injury.

Yes

Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

No

**Step 6** Shake the wheel with hand to check whether the wheel bearing is loose.

**Caution**

The front wheel bearing is assembled into the steering knuckle. The rear wheel bearing is in the rear hub unit. If the retainer ring is separated from the wheel bearing, it may cause noise.

Yes

Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

No

**Step 7** Make a comprehensive comparison test with the same type and normal vehicle to confirm whether the noise belongs to the normal working noise.

Next Step

**Step 8** Diagnosis is completed.

**3.4.4.5 Wheel vibration diagnosis**

**Tire dynamic balancing**

Tire dynamic balancing is the easiest procedure to be checked. If the vehicle vibrates at high speeds, dynamic balance should be done first. First, double-sided dynamic balance is performed under the vehicle to correct the imbalance of the tire and wheel assemblies. The final balance on the vehicle can correct the imbalance of the brake disc or hubcap. If the balancing operation fails to eliminate the vibration at high speed, or if the vibration occurs at low speed, the run-out is probably the cause of vibration.

## Run-out

Tires, wheels, or the way the wheels are connected to the vehicle can cause a run-out. To detect the possibility of a wheel run-out, refer to [Inspection of wheels run-out](#)

## Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. In case of violation of the above safety instructions, it may result in the serious accident to people and damage to the vehicle

Step 1	Road test the vehicle to confirm fault symptoms and whether the vibration described by the distributor belongs to fault.
--------	--

No

Replace the wheel. Refer to [Replacement of wheels](#)

Yes

Step 2	Determine if the vehicle speed is above 65 km/h when vibration occurs.
--------	--

No

Go to Step 5.

Yes

Step 3	Perform tire dynamic balancing under the vehicle and vehicle road test to confirm whether the fault exists.
--------	---

No

Trouble is removed.

Yes

Step 4	Perform final balance on vehicle and vehicle road test to confirm whether the fault exists.
--------	---

No

Trouble is removed.

Yes

Step 5	Check the free end face and radial run-out value of the wheel (standard value: 1.0mm /0.0394 in) for whether they are conforming to the specified value.
--------	--

No

Go to Step 8.

Yes

Step 6	Check whether the vehicle transmission system is unbalancing.
--------	---

- A. Check thoroughly whether the drive axle and constant velocity universal joint are normal and without damage.



No

Replace the damaged components.

Yes

<b>Step 7</b>	Check the run-out of wheel hub flange (standard value:0.26mm/0.0102 in) for whether the run-out value is conforming to specified value.
---------------	---

No

Replace the wheel hub assembly. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

<b>Step 8</b>	Remove the wheel assembly to remove the tire from the assembly and measure the run-out value of wheel (standard value: 0.8mm/0.03 in) for whether it is conforming to the specified value.
---------------	--

No

Replace the wheel. Refer to replacement of the wheel

Yes

<b>Step 9</b>	Replace tire(s).
---------------	------------------

Next Step

<b>Step 10</b>	Confirm that the trouble is removed.
----------------	--------------------------------------

### 3.4.4.6 Check of wheel run-out

Use a dialgauge to measure the wheel run-out above and below the vehicle, but guarantee the installation surface correct. Measurement both with and without tires are available. Measure the radial and end face run-out inside and outside the wheel rim flange. Fix a dial indicator beside the wheel and tire assembly, and slowly rotate the wheel for a circle to record the dialgauge reading. In the case, the measured value is larger than the following specifications and the wheel balance cannot eliminate the vibration, replace the wheel.

- Aluminous wheel

Radial run-out: 0.8 mm (0.03 in)

End face run-out: 0.8 mm (0.03 in)

Free radial run-out: 1.5 mm (0.06 in)

### 3.4.4.7 Diagnosis of the abnormal tire wear

There are many reasons behind the abnormal or premature tire wear, including incorrect inflation pressure, no regular tire transposition, bad driving habits or incorrect wheel alignment. If readjustment of wheel alignment is needed due to tire wear, make sure to adjust toe-in to approach zero as long as the specification is permitted.

- If any of the following situations occurs, make transposition to tires:
  - Front tire wear is different from rear tire.

- There is difference in wear condition of front left and front right tires.
- There is difference in wear condition of rear left and rear right tires.
- If any of the following situations occurs, check wheel alignment:
  - There is difference in wear condition of front left and front right tires.
  - Tread of any of front tires is worn unevenly.
  - There is feather-shaped scratch on one side of the pattern strip or pattern block of front tire tread.
- Several typical tire wear conditions are shown as following:
  - Eccentric wear:

Reasons:

- a. Rotating parts such as axles or bearings are faulty.
- b. Brake System.
- c. Quick start and quick brake.
- d. Unevenness in wheel weight and center of gravity.
- e. There is discrepancy in size of tire and rim.
  - Tire side wall feather worn pattern:

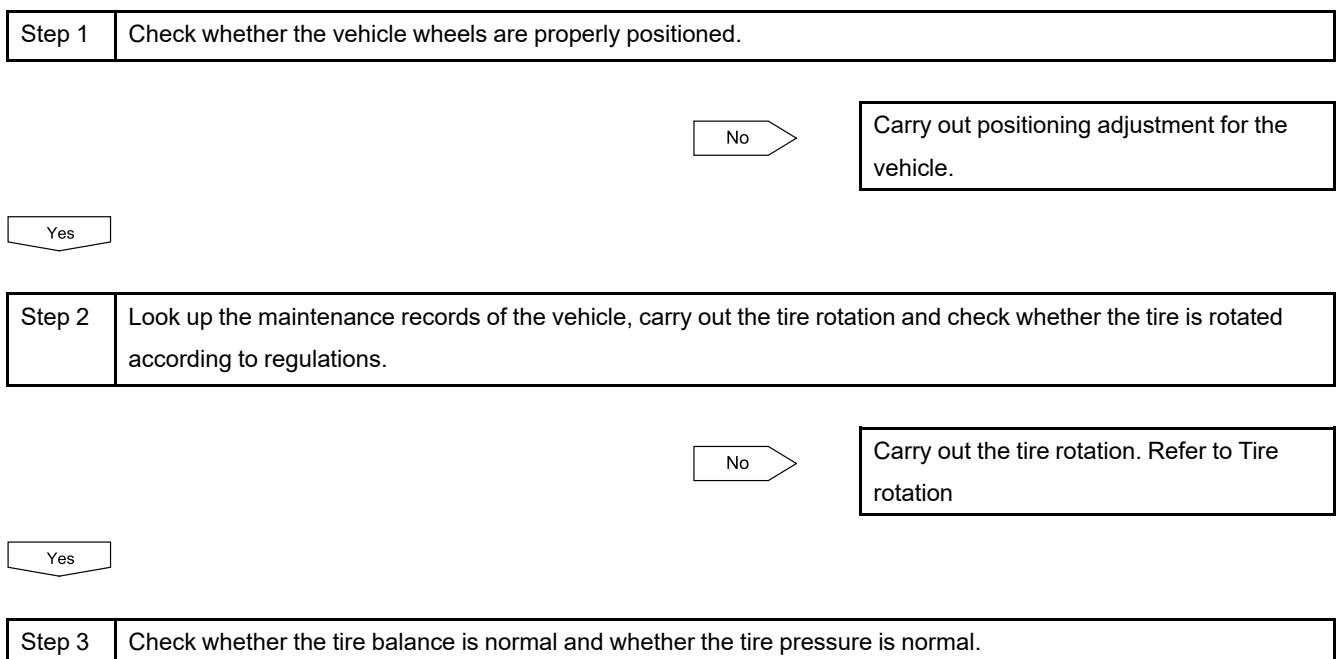
Reasons:

- a. Toe-in value is incorrect.
  - Abnormal wear:

Reasons:

- a. Camber is incorrect.
- b. Toe-in value is incorrect.
- c. Dynamic balance is incorrect.
- d. Four-wheel alignment is incorrect.

### 3.4.4.8 Diagnosis of excessive tire wear



No

Adjust the tire pressure to the standard value and balance the tire dynamically.

Yes

Step 4 Check that the vehicle is not overloaded.

No

Explain to the user the importance of maintaining a reasonable load.

Yes

Step 5 Check whether the coil spring is working properly.

No

Replace the coil spring. Refer to [Displacement of front damper components and springs](#)

Yes

Step 6 Check that the strut assembly is working properly.

No

Replace the faulty parts.

Yes

Step 7 Check whether the lower control arm is working properly. (There should be no bending, loosening and other faults)

No

Replace the lower control arm. Refer to [Replacement of lower control arm assembly of front suspension](#)

Yes

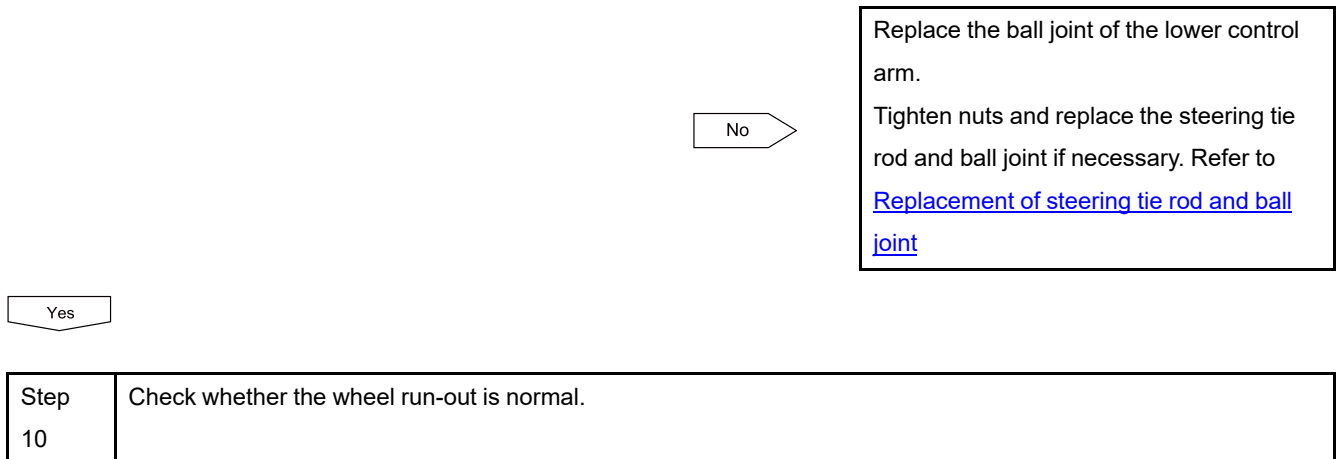
Step 8 Check whether the wheel bearing is working properly. (There should be no wear, looseness and other faults)

No

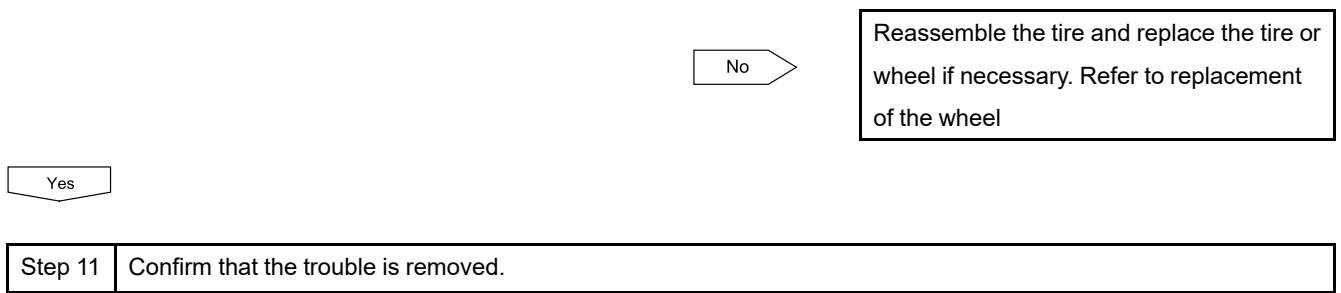
Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

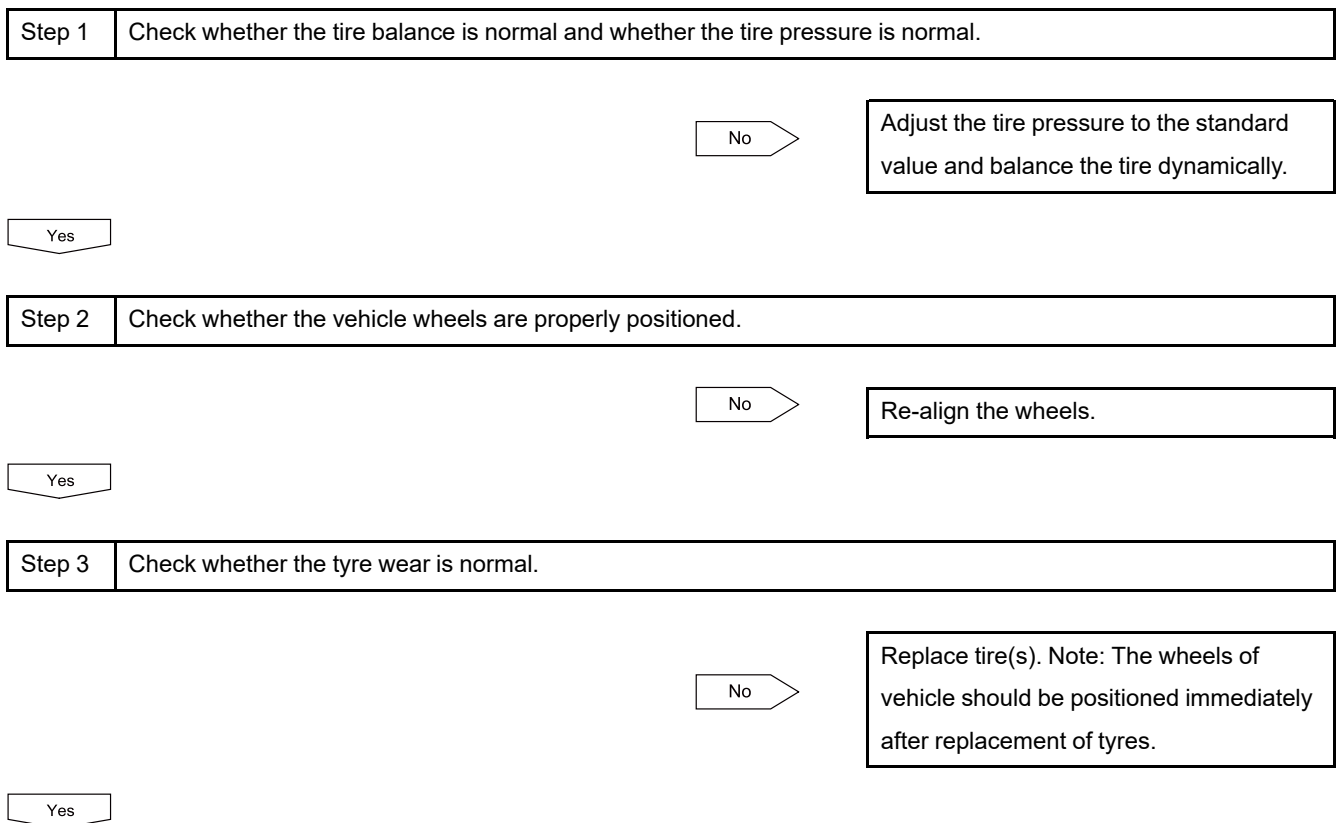
Step 9 Check whether the ball joint of the lower control arm and the ball joint of the steering tie rod work normally. (There should be no wear or looseness and other faults)



- A. Check the wheel run-out, check [Inspection of wheel run-out](#)
- B. Whether the wheel run-out is normal.



#### 3.4.4.9 Diagnosis of vehicle lateral runout while driving



Step 4	Check whether the hub runout is normal.
--------	---

No

Measure the hub flange runout and replace the hub if necessary. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

Step 5	Check whether the steering tie rod ball joint is functioning properly. (There should be no wear or looseness and other faults)
--------	--

No

Tighten the nut and replace the steering tie rod ball joint if necessary. Refer to [Replacement of steering tie rod and ball joint](#)

Yes

Step 6	Check whether the lower control arm ball joint is functioning properly. (There should be no wear or looseness and other faults)
--------	---

No

Fasten the nut. Replace the lower swing arm ball joint if necessary.

Yes

Step 7	Check for excessive wheel runout.
--------	-----------------------------------

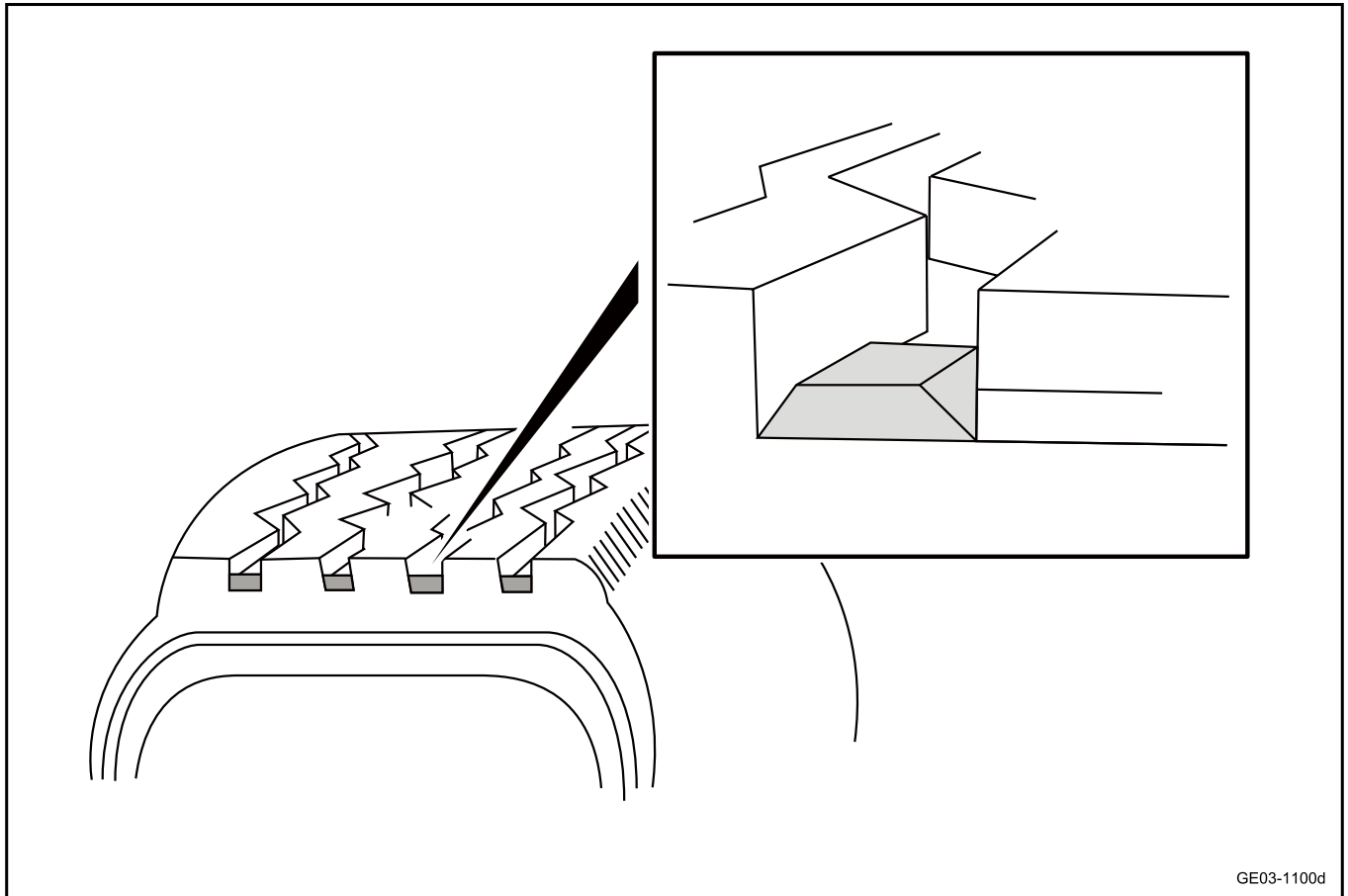
No

Measure wheel runout, reassemble wheels and tyres, and replace damaged parts if necessary.

Yes

Step 8	Confirm that the trouble is removed.
--------	--------------------------------------

### 3.4.4.10 Tire wear indicator



GE03-1100d

### 3.4.4.11 Calibration for radial tire running deviation

#### 1. Fault definition:

In the process of straight driving at a certain speed, the vehicle deviates from the original driving direction to the left or right without any external force on the steering wheel.

#### 2. Criteria for judging vehicle running deviation:

- When a vehicle is running in a straight line at a certain speed, in order to maintain its original driving direction, a force must be applied to the steering wheel to prevent it from rotating clockwise or counterclockwise.
- When the vehicle is running in a straight line at a certain speed, the vehicle deviates from the original driving direction to the left or right after releasing the steering wheel (usually refers to the situation where the vehicle is traveling 100 m (394.0 in) and deviates from the original driving direction by more than 1 m (39.4 in)).

#### Caution

Before calibration of the running deviation, the vehicle shall be inspected for basic items.

- Check the front and rear wheel brakes for dragging, etc.
- Check whether the tire wear degree of the same suspension differs too much.
- Check that the tire pressures of the same suspension differ too much.

Please adjust it to the normal state before vehicle for road test to confirm whether the fault is eliminated. If there is any abnormality in the above.

#### 3. Calibration procedures:

Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions may cause serious personal injury and damage the vehicle.

Step 1	Vehicle for road test to judge whether the vehicle deviates.
--------	--

No

Explain the definition of running deviation to customers. According to different road conditions, vehicles may have the illusion of running deviation in a short period of time.

Yes

Step 2	Check that the tire pressure is up to standard.
--------	---

No

Adjust the vehicle tires according to the vehicle tire pressure standard.

Yes

Step 3	Check that the front wheel toe-in values of the vehicle are correct.
--------	--

No

Re-adjust the front wheel toe-in value of the vehicle and make alignment adjustments if necessary. Refer to adjustment of front wheel toe-in

Yes

Step 4	Check that the wheel alignment of the vehicle meets the specified values.
--------	---

No

Go to Step 9.

Yes

Step 5	Check that all locating parameters of the vehicle conform to the specifications in comparison of the values in the specification table.
--------	---

No

Readjust all locating parameters of the vehicle and make alignment adjustments if necessary.

Yes

Step 6 | Conduct the left tire transposition procedure.

- A. Replace the front left wheel assembly with the rear left wheel assembly.
- B. Vehicle for road test.
- C. Whether the vehicle is still deviating.

No

System is normal.

Yes

Step 7 | Conduct the right tire transposition procedure.

- A. Replace the right front wheel assembly with the right rear wheel assembly.
- B. Vehicle for road test.
- C. Whether the vehicle is still deviating.

Yes

Go to Step 1

No

Step 8 | Check the vehicle frame and suspension system components for damage such as bending.

No

Go to Step 1

Yes

Step 9 | Correct the frame, replace the damaged parts if necessary, and confirm the faults.

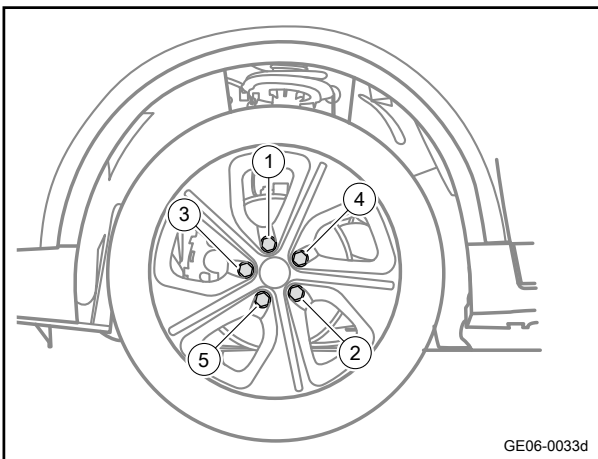
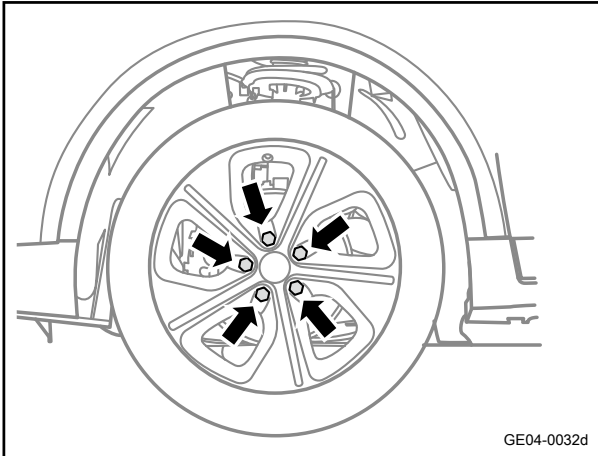


### 3.4.5 Removal and installation

#### 3.4.5.1 Replacement of wheels

##### Removal procedure

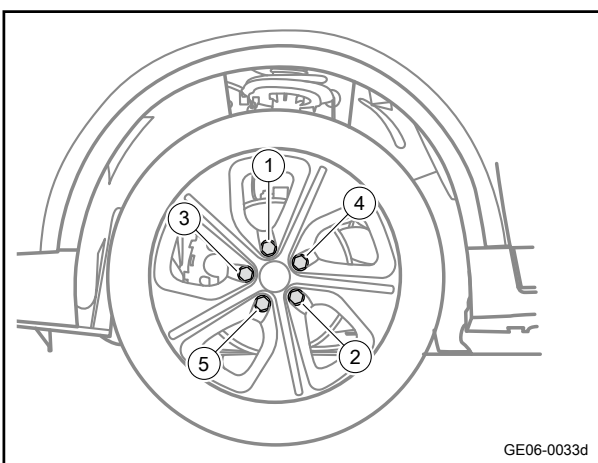
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the trim covers of wheel nuts.



- 3 Loosen the wheel nuts in the order 1-5 shown in the illustration.
- 4 Lift the vehicle and remove the wheel nuts in the sequence 1-5 as shown in the figure.
- 5 Remove the wheel.

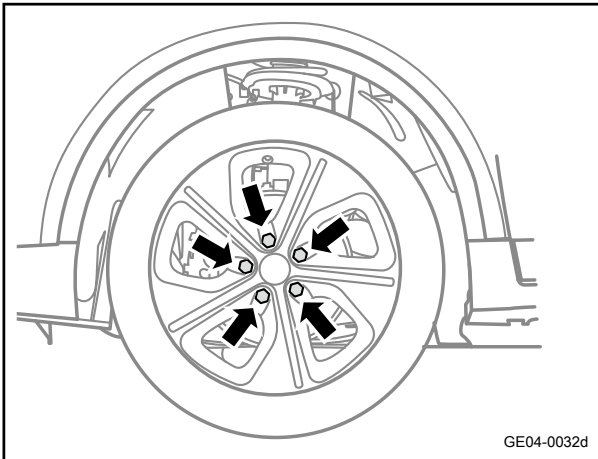
##### Installation procedure

- 1 Move the wheel to the installation position.
- 2 Tighten the wheel nuts in the order 1-5 shown in the illustration.



- 3 Lower the vehicle and tighten the wheel nuts in the sequence 1-5 as shown in the figure.

Torque: 130N·m (metric) 95.9lb-ft (imperial system)



- 4 Install the trim covers of wheel nuts.

- 5 Lower the vehicle.

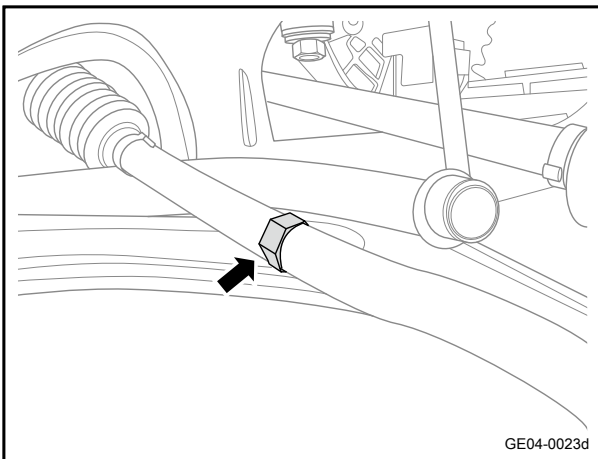
### 3.4.5.2 Toe-in adjustment of front wheels

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Adjust the air pressures in four wheels to the standard range.

#### Caution

**Equipment:** wheel alignment system.

- 3 Release fixing nuts at both left and right ends of the tie rod.



- 4 Rotate the tie rod clockwise or counter-clockwise to adjust front wheels toe-in values at both ends.
- 5 After adjusting the toe value of the front wheel to the standard range, tighten the fixing nuts at the left and right ends of the tie rod respectively.
- 6 Lower the vehicle.

---

## Driveline/shaft

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## 4.1 Warnings and Precautions

### 4.1.1 Warnings and Precautions

#### 4.1.1.1 Warnings and Precautions

Warning regarding assistant driving

##### Caution

When the technician is checking the fault parts reported for repair, the vehicle should be driven by the assistant. Otherwise, it may lead to personal injury.

Warnings regarding battery disconnection

##### Caution

Before maintaining any electrical components, the start and stop button must be in the OFF position, and all electrical loads must be "OFF" unless otherwise stated in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warnings regarding road test

##### Warning

Vehicles for road tests are carried out following all traffic laws and regulations while ensuring safety. Do not attempt any operation that may endanger vehicle control. Violation of the above safety instructions may result in serious personal injury and damage to the vehicle.

Attention to the lifting of electric drive system

##### Caution

When lifting or supporting the power synthesis box for whatever reason, do not hold the jack under the engine or any sheet metal parts or pipelines. Lifting engine in an incorrect way will cause damage to the components of the power synthesis box.

Attention to reducer lifting

##### Caution

When lifting or supporting the reducer for whatever reason, do not hold the jack under the reducer or any sheet metal parts. Lifting engine in an incorrect way will cause damage to the components of the reducer.

## 4.2 Drive shaft system

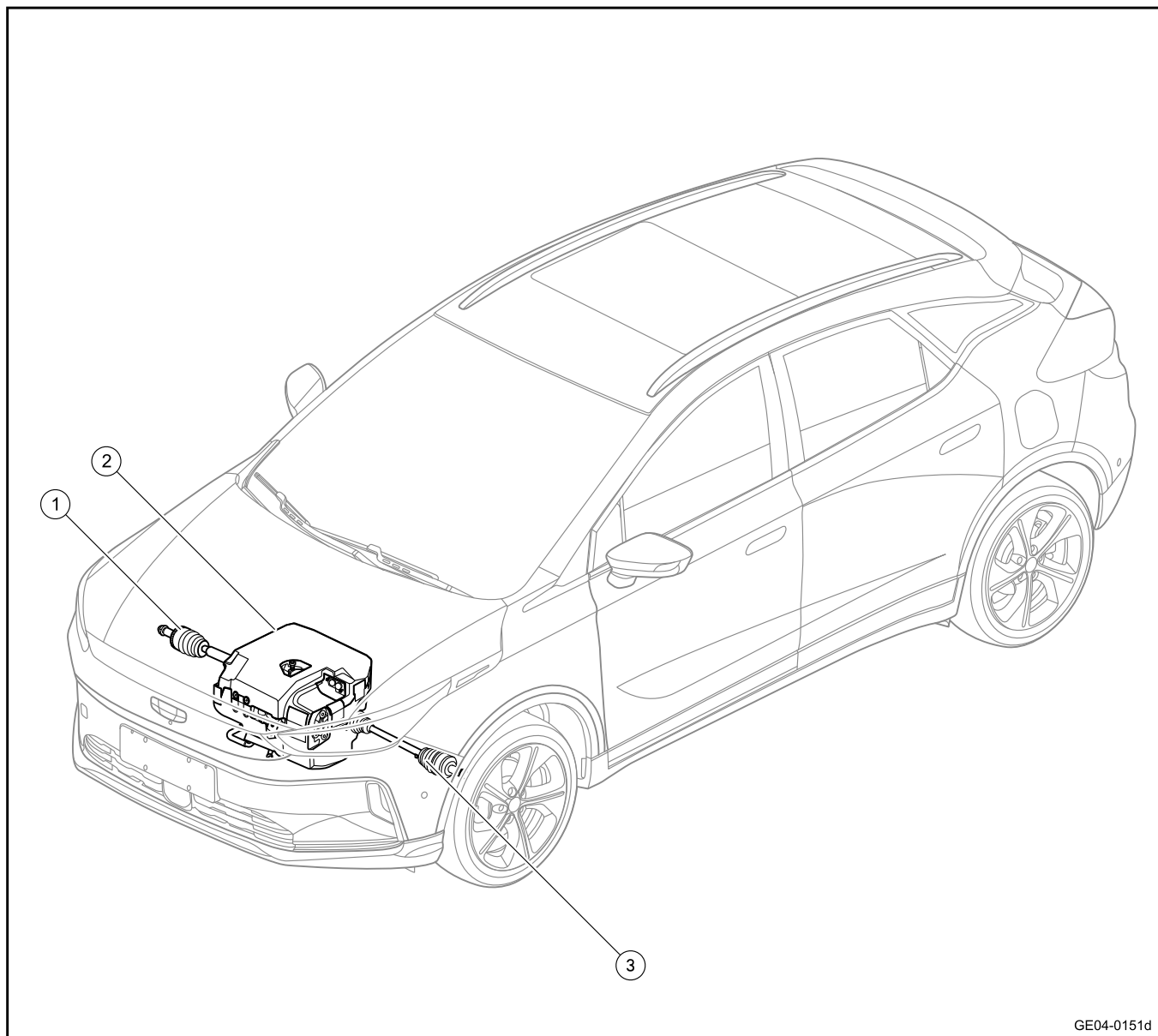
### 4.2.1 Specification

#### 4.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Left steering gear tie rod ball joint fixing nut	M12	50 - 60	36.9 - 44.3
Left lower swing arm ball joint fixing bolt	M12×130	99 - 121	81.2 - 95.9
Outer lockup nut of the left drive shaft	M22	260 - 280	191.6 - 206.6
Right steering gear tie rod ball joint fixing nut	M12	50 - 60	36.9 - 44.3
Right lower swing arm ball joint fixing bolt	M12×130	99 - 121	81.2 - 95.9
Outer lockup nut of the right drive shaft	M22	260 - 280	191.6 - 206.6

## 4.2.2 Parts location map

### 4.2.2.1 Part Position



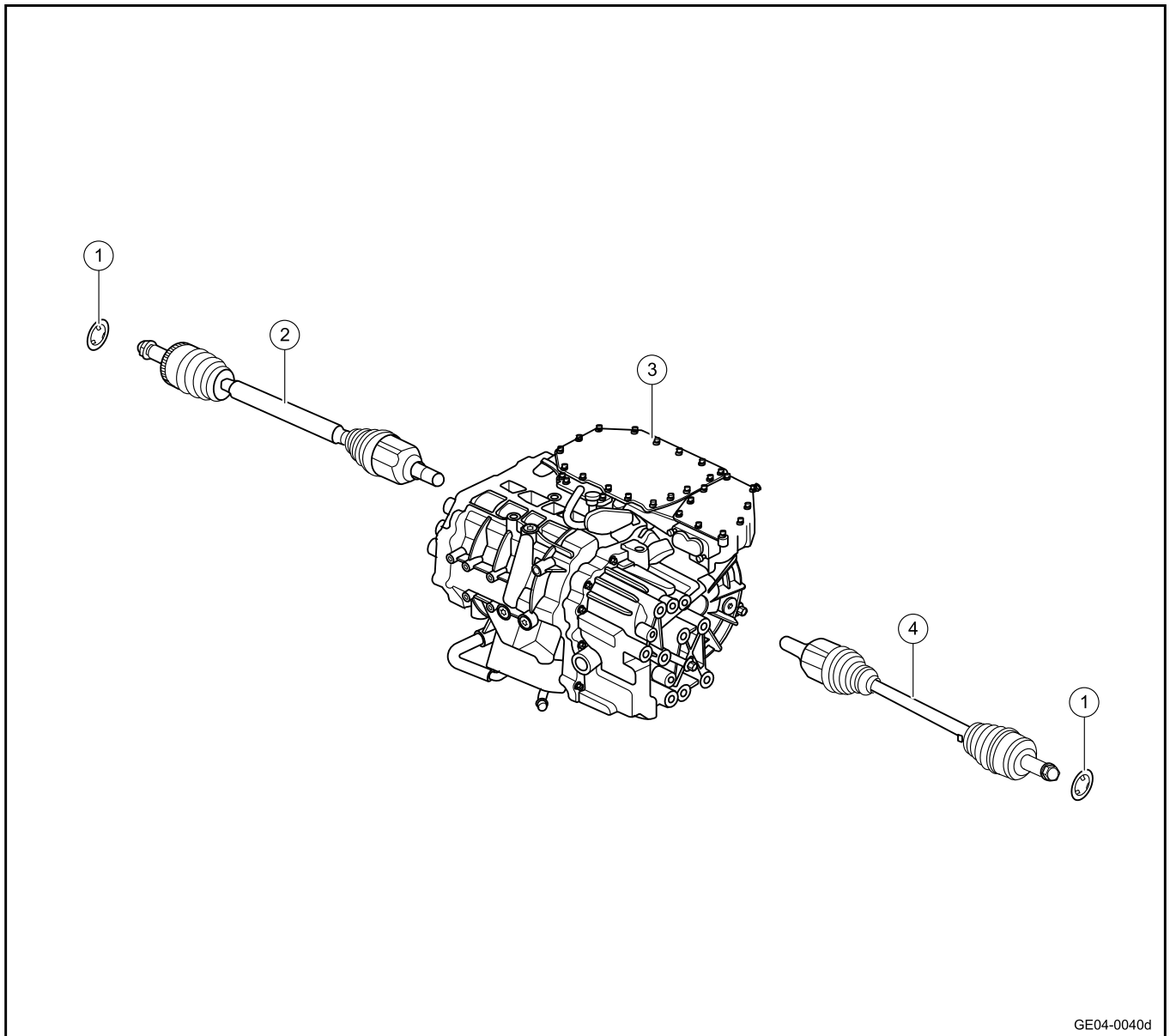
1. Front right constant velocity drive shaft

3. Front left constant velocity drive shaft

2. Electric drive system

4.2.3 Exploded view

4.2.3.1 Breakdown Drawing



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- |   |  |
|---|--|
| 1. Metal gasket                                 | 3. Electric drive system                       |
| 2. Right constant velocity drive shaft assembly | 4. Left constant velocity drive shaft assembly |



4.2.4 Diagnostic information and steps

4.2.4.1 Fault symptom table

Symptom	Suspected parts	Replacement
Noise	1. Fixed rzeppa constant velocity universal joint (wear) 2. Movable tripod constant velocity universal joint (wear) 3. Dust covers at both ends (whether the corrugation edges are squeezed and rubbed)	Refer to <a href="#">Replacement of drive shaft oil seal</a>
Oil leak	1. Fixed end dust cover (broken) 2. Collapsible end dust cover (broken)	
Abnormal sound from starting	1. Constant velocity drive shaft	See <a href="#">Abnormal Noise Inspection on the Faying Surface of the Axle Shaft and the Wheel Hub</a>

4.2.4.2 Abnormal noise inspection on the faying surface of the axle shaft and the wheel hub

Warning

Except for the axle nut, other surrounding standard parts cannot be moved during the whole process.

It is not allowed to completely pull out the axle shaft from the hub spline.

The interval between starting and reversing is about 3s. Don't quickly shift gears before and after the test drive, so as not to be confused with the abnormal noise of the gear selector.

Caution

The test driving conditions are only starting and reversing while going straight, which has nothing to do with steering, braking, and vehicle speed, and the interval between two gears must be 2–3s.

Step 1	Test drive to check abnormal noise. Test driving conditions: starting and reversing accelerator while going straight.
--------	---

Next Step

Step 2	Measure the residual torque of the axle nut and record it.
--------	--

Next Step

Step 3	Loosen the axle shaft nut by 30°.
--------	-----------------------------------

Loosen the axle shaft nut by 30°. See the [Replacement of the Front Left Constant Velocity Drive Shaft](#), [Replacement of the Front Right Constant Velocity Drive Shaft](#)

Next Step

Step 4	Test drive to confirm whether the abnormal noise is reduced. Test driving conditions: starting and reversing accelerator while going straight.
--------	--

No

It is judged as the abnormal noise from the faying surface between non-axle shaft and wheel hub, and check other parts.

Yes

Step 5	Loosen the axle shaft nut by 180°.
--------	------------------------------------

Loosen the axle shaft nut by 180°. See the [Replacement of the Front Left Constant Velocity Drive Shaft](#), [Replacement of the Front Right Constant Velocity Drive Shaft](#)

Next Step

Step 6	Test drive to confirm whether the abnormal noise disappears. Test driving conditions: starting and reversing accelerator while going straight.
--------	--

No

It is judged as the abnormal noise from the faying surface between non-axle shaft and wheel hub, and check other parts.

Yes

Step 7	It is judged as the abnormal noise from the faying surface between axle shaft and wheel hub.
--------	--

Depending on customer complaints, choose to apply molybdenum disulfide or replace the constant velocity drive shaft and front wheel hub. See [Replacement of the Front Left Constant Velocity Drive Shaft](#), [Replacement of the Front Right Constant Velocity Drive Shaft](#), [Replacement of Front Wheel Hub](#)

Next Step

Step 8	System is normal.
--------	-------------------

## 4.2.5 Removal and installation

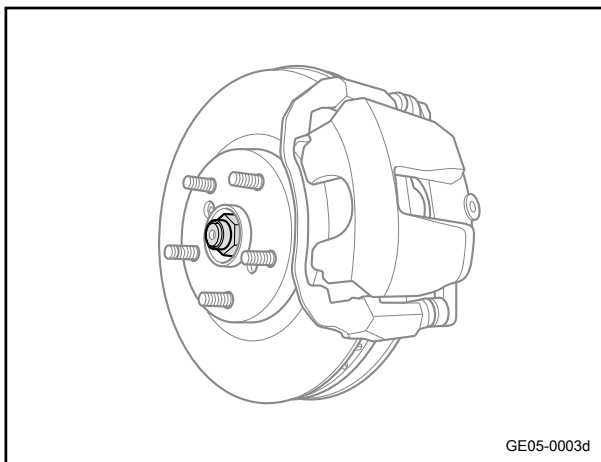
### 4.2.5.1 Replacement of the Front Left Constant Velocity Drive Shaft

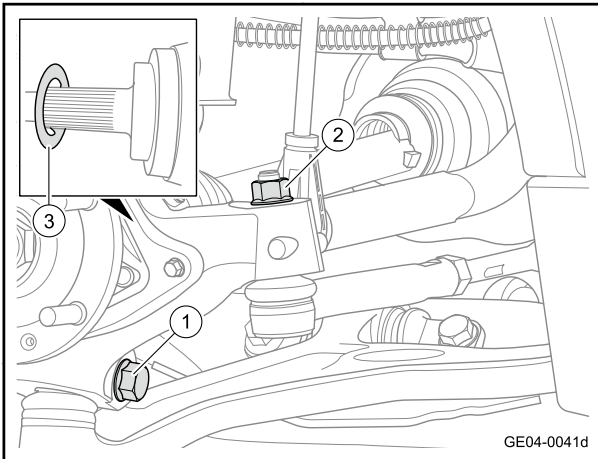
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 4 Drain reducer oil. See [Filling and Changing of Reducer Oil](#)
- 5 Remove the lock nut outside the drive shaft.

#### Caution

An assistant stepped on the brake pedal to prevent the drive shaft from turning.

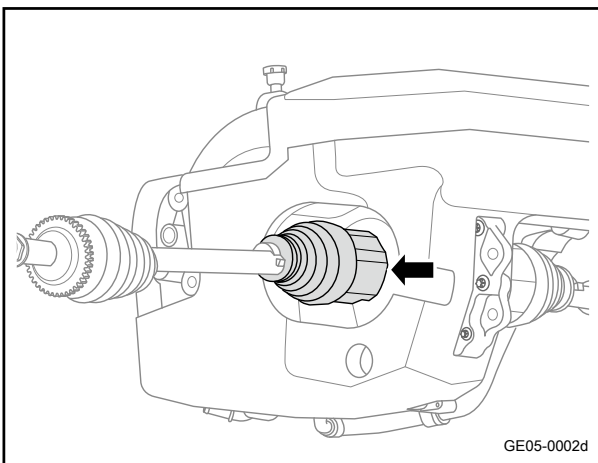




- 6 Remove the fixing bolt 1 of the lower swing arm ball joint assembly.
- 7 Remove the fixing nut 2 of the steering gear tie rod ball end.
- 8 Take out the outer end of the left front constant velocity drive shaft from the steering knuckle, and take out the metal gasket 3.

#### Caution

Ensure the axle shaft posture, pay attention to protecting the shaft, sheath and other parts to avoid secondary damage caused by bumps, scratches, and axle shaft detachment.



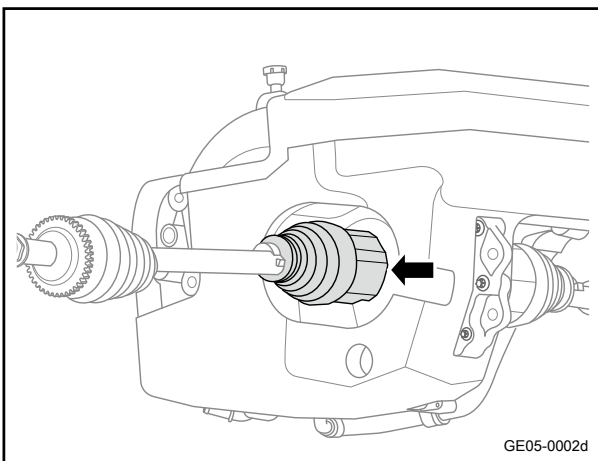
- 9 Use a suitable tool to remove the inner end of the drive shaft, and remove the left front constant velocity drive shaft.

#### Caution

Prevent damage to the reducer housing and oil seal-side contact end surface during disassembly.

#### Caution

The drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.



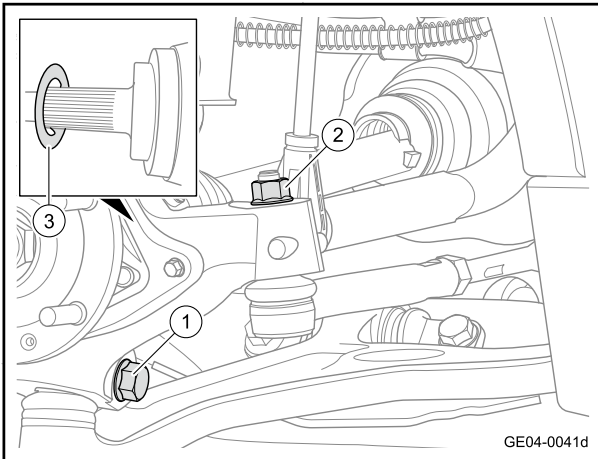
#### Installation procedure

- 1 Move the front left constant velocity drive shaft to the installation position.

#### Caution

During the installation process, protect the drive shaft assembly from falling, and protect the dust cover and oil seal from being damaged.

- 2 Lubricate the inner end of the left front constant velocity drive shaft with lubricating oil, put the inner end of the left front constant velocity drive shaft into the reducer, and check whether the drive shaft circlip is stuck.



- 3 Install the metal washer 3 on the left front constant velocity drive shaft, and put the outer end of the left front constant velocity drive shaft into the steering knuckle.

#### Caution

When installing the metal washer, confirm that the washer is coaxial with the spline shaft and push it to the end face of the drive shaft.

After assembling in place, confirm that the gasket will not be loose, and the surface of the gasket will not be scratched during the assembly process.

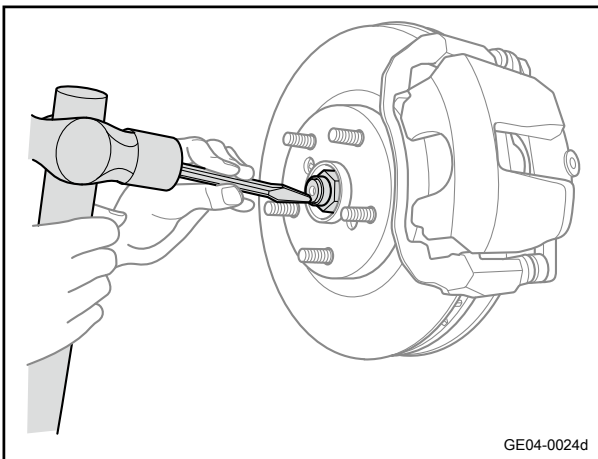
- 4 Install steering gear tie rod ball end fixing nut 2.  
Torque: 55N·m (metric) 40.6lb-ft (imperial system)
- 5 Install the lower swing arm ball joint fixing bolt 1.  
Torque: 110N·m (metric) 81.2lb-ft (imperial system)
- 6 Install and tighten the lock nut outside the drive shaft.  
Torque: 270N·m (metric) 199.3lb-ft (imperial system)

#### Caution

An assistant stepped on the brake pedal to prevent the drive shaft from turning.

#### Caution

The outer lock nut of the drive shaft cannot be reused. Please replace it with a new drive shaft nut after disassembly.

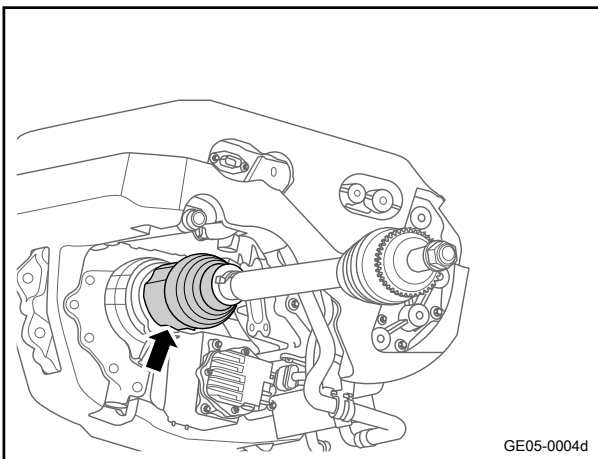
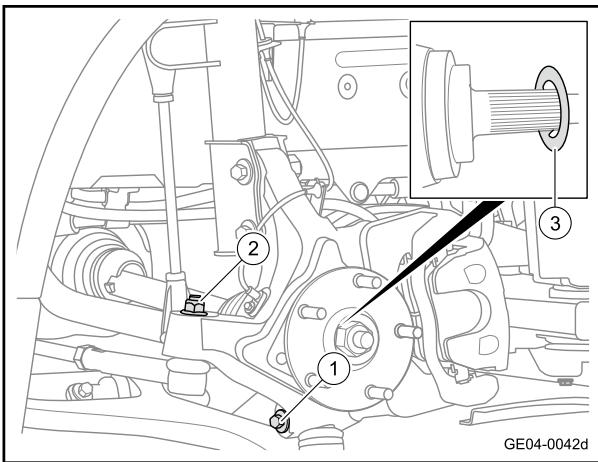
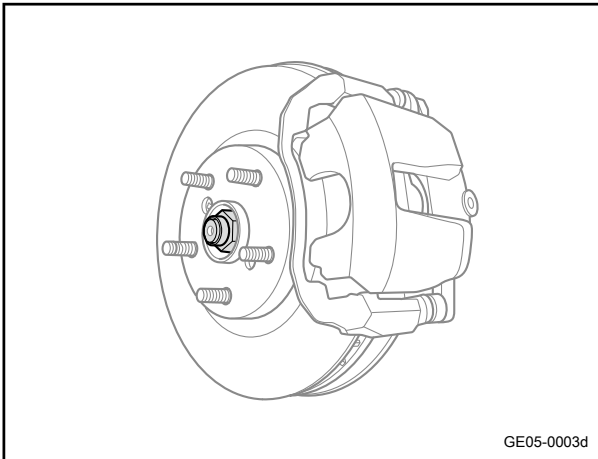


- 7 Fill in reducer oil.
- 8 Install the front engine bilge guard.
- 9 Install the wheel.
- 10 Lower the vehicle.

### 4.2.5.2 Replacement of the Front Right Constant Velocity Drive Shaft

#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 4 Drain reducer oil. See [Filling and Changing of Reducer Oil](#)



- 5 Remove the lock nut outside the drive shaft.

**Caution**

An assistant stepped on the brake pedal to prevent the drive shaft from turning.

- 6 Remove the fixing bolt 1 of the lower swing arm ball joint assembly.
- 7 Remove the fixing nut 2 of the steering gear tie rod ball end.
- 8 Take out the outer end of the right front constant velocity drive shaft from the steering knuckle, and take out the metal gasket 3.

**Caution**

Ensure the axle shaft posture, pay attention to protecting the shaft, sheath and other parts to avoid secondary damage caused by bumps, scratches, and axle shaft detachment.

- 9 Use a suitable tool to remove the inner end of the drive shaft, and remove the front right constant velocity drive shaft.

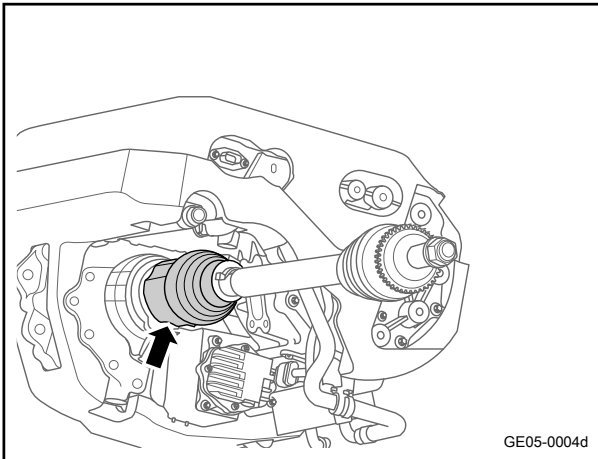
**Caution**

Prevent damage to the reducer housing and oil seal-side contact end surface during disassembly.

**Caution**

The drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.

Installation procedure

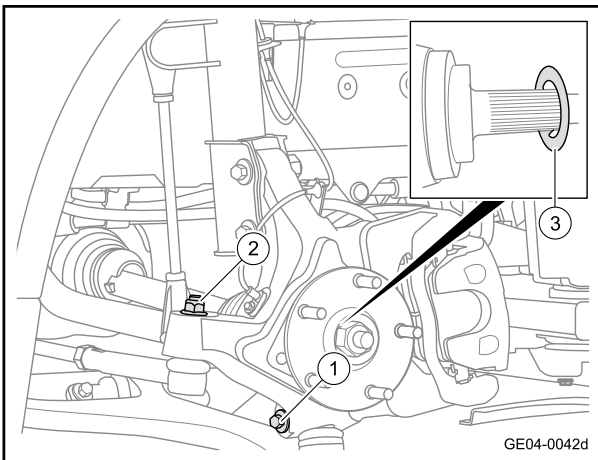


- 1 Move the front right constant velocity drive shaft to the installation position.

#### Caution

During the installation process, protect the drive shaft assembly from falling, and protect the dust cover and oil seal from being damaged.

- 2 Lubricate the inner end of the right front constant velocity drive shaft with lubricating oil, put the inner end of the right front constant velocity drive shaft into the reducer, and check whether the drive shaft circlip is stuck.



- 3 Install the metal washer 3 on the right front constant velocity drive shaft, and put the outer end of the right front constant velocity drive shaft into the steering knuckle.

#### Caution

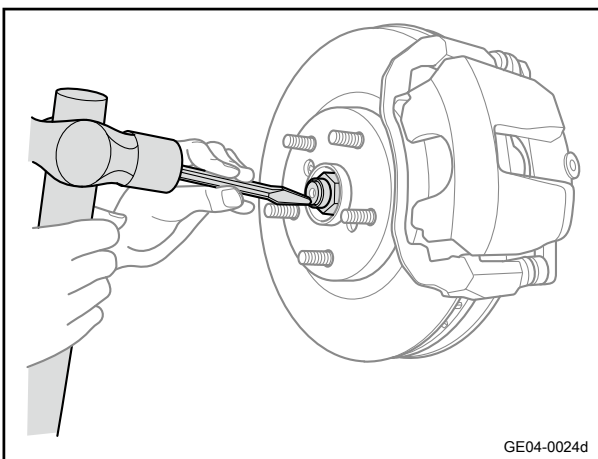
When installing the metal washer, confirm that the washer is coaxial with the spline shaft and push it to the end face of the drive shaft.

After assembling in place, confirm that the gasket will not be loose, and the surface of the gasket will not be scratched during the assembly process.

- 4 Install steering gear tie rod ball end fixing nut 2.  
Torque: 55N·m (metric) 40.6lb-ft (imperial system)
- 5 Install the lower swing arm ball joint fixing bolt 1.  
Torque: 110N·m (metric) 81.2lb-ft (imperial system)
- 6 Install and tighten the lock nut outside the drive shaft.  
Torque: 270N·m (metric) 199.3lb-ft (imperial system)

#### Caution

The outer lock nut of the drive shaft cannot be reused. Please replace it with a new drive shaft nut after disassembly.



- 7 Fill in reducer oil.
- 8 Install the front engine bilge guard.
- 9 Install the wheel.
- 10 Lower the vehicle.





## Braking System

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## 5.1 Warnings and Precautions

### 5.1.1 Warnings and Precautions

#### 5.1.1.1 Warnings and Precautions

Warning regarding the treatment of components of ESC system

##### Warning

Some components of the ESC cannot be repaired in isolation. Attempts to remove or disconnect some system components can result in personal injury or abnormal operation of system. Only those components that are permitted to be removed and installed can be repaired.

Warning regarding brake dust

##### Warning

When maintaining wheel brake components, please avoid the following operations:

- a. Do not repair and grind the brake friction facing.
- b. Do not sandpaper the brake friction facing.
- c. Do not clean wheel brake components with a dry brush or compressed air.

Some models or brake components of after-sales installation may contain fibers that can be mixed with the dust. Inhaling fiber-containing dust can seriously damage the body. Please clean any dust on the brake components with the wet cloth.

Warning regarding brake fluid

##### Warning

The composition of brake fluid is polyethylene glycol, which is prone to absorbing humidity and moisture. Please do not use the brake fluid in the open containers that may be contaminated with water and use improper or contaminated brake fluid, which may cause system fault, loss of control and personal injury.

Warning of brake fluid irritant

##### Warning

Brake fluid is irritating to skin and eyes. Once contacted, the following measures should be taken:

- a. Eye contact - flush thoroughly with water.
- b. Skin contact-wash with soap and water.

Warning regarding the replacement of brake pipe

##### Caution

When replacing the brake pipe, please install and fix it carefully and use the correct fasteners. Otherwise, it will cause damage to brake pipe and brake system, causing personal injury.

Notice of brake fluid filling in the brake system

##### Caution

When the brake fluid is added to the brake master cylinder tank, only the brake fluid from the clean, sealed brake fluid container can be used in line with Super DOT4. The use of the non-recommended brake fluid can lead to contamination and damage to rubber seals or rubber pads within hydraulic brake system components.

Notes to Brake Calipers

##### Caution

When the brake caliper is removed, a steel wire should be used to hang the brake caliper to avoid damage to the brake pipe.

## 5.2 Front brake

### 5.2.1 Specification

#### 5.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt in the lower end of brake caliper	M12×38	27 - 33	19.9 - 24.3
Fixing bolt of front left brake caliper assembly	M12×38	110 - 130	81.2 - 95.9
Brake hose and brake caliper fixing bolt	M10×20	30 - 36	22.1 - 26.6
Fixing nut for connecting No. 1 hard tube of brake master cylinder to ESC control module	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 1 hard tube of brake master cylinder with intelligent booster	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 2 hard tube of brake master cylinder to ESC control module	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting No. 2 hard tube of brake master cylinder with intelligent booster	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left front brake hard tube to left front brake hose	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left front brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right front No. 1 brake hard tube to right front No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right front No. 1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right front No. 2 brake hard tube to right front brake hose	M10	8 - 10	5.9 - 7.4

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut for connecting left rear No. 1 brake hard tube to left rear No. 2 brake hard tube.	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left rear No.1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to ESC controller	M10	8 - 10	5.9 - 7.4
Fixing nut of left rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting left rear No. 1 brake hard tube to left rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut of right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing nut for connecting right rear No. 1 brake hard tube to right rear No. 2 brake hard tube	M10	8 - 10	5.9 - 7.4
Fixing screw of front brake disc dust cover	M6×14	8 - 10	5.9 - 7.4
Fixing screw of front brake disc	M6×14	5 - 7	3.7 - 5.2

### 5.2.1.2 Specifications of front disc brake parts

Application	Metric system (mm)	Imperial system (in)
Thickness for scrapping of front brake disc	26	1.02
Allowable end face runout of front brake disc	0.15	0.0059
Allowable circumferential thickness difference of front brake disc	0.02	0.00079
Front brake pad standard thickness	11	0.43
Front brake pad minimum thickness	2	0.08

## 5.2.2 Description and operation

### 5.2.2.1 Instructions and Operations

Front disc brake system composition:

The front disc brake system is composed of the following components:

**Brake pad:** applies the mechanical output force from the hydraulic brake caliper to the rubbing surface of the brake disc.

**Brake pad guide:** located between the disc brake pad and the brake pad mounting bracket, used for keeping the smooth movement of the brake pad and eliminating noise.

**Brake disc:** slows down the speed of tire and wheel assemblies using the mechanical output force applied by the disc brake pad to the friction surface of the brake disc to realize the brake of the vehicle.

**Brake caliper:** receives the fluid pressure from the brake master cylinder and convert the fluid pressure into the mechanical output force acted on the internal brake pad. In case the master cylinder returns, the brake caliper piston automatically returns.

**Brake caliper and brake pad bracket:** Used for fixing the disc brake pad and the brake caliper in place and maintain the correct matching position with the hydraulic brake caliper. When the mechanical output force is acted on the brake pad, the brake pad slides.

**Floating pin of brake caliper:** used for installing the hydraulic brake caliper and fix the brake caliper in place and maintain the correct matching position with the brake caliper bracket. When there is the mechanical output force acted, the brake caliper, and the brake pad slide relatively.

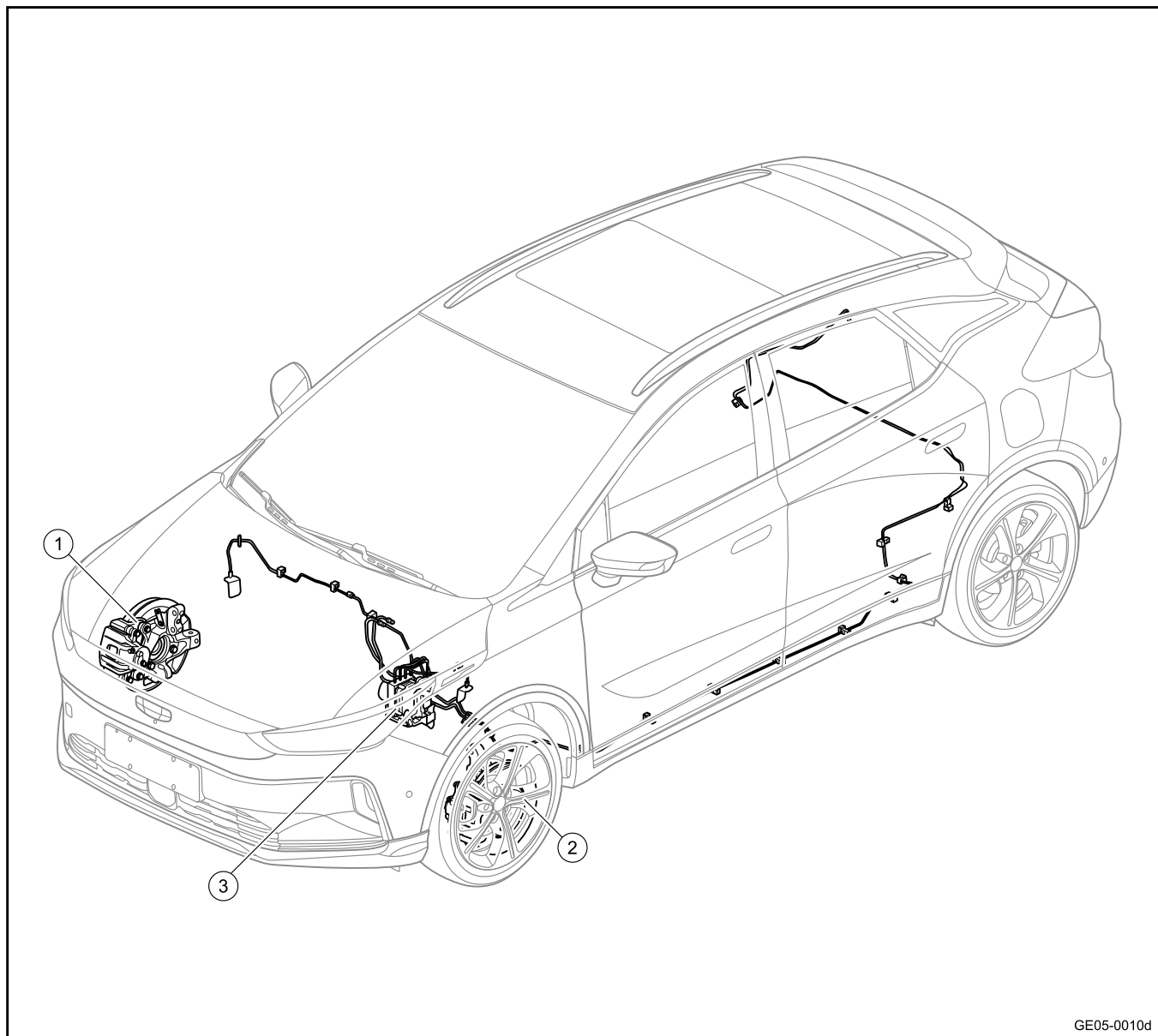
Operations of the front disc brake system:

The mechanical output force from the hydraulic brake caliper piston is acted on the internal brake pad. When the piston pushes and presses the internal brake pad outward, the brake caliper shell pulls the external brake pad inward at the same time to evenly distribute the output force. The brake pad acts the output force on the friction surface of two sides of the brake disc to slow down the speed of tire and wheel assemblies. Normal functions of the brake guide and the floating brake caliper are important for the uniform distribution of the brake force.



5.2.3 Parts location map

5.2.3.1 Part Position



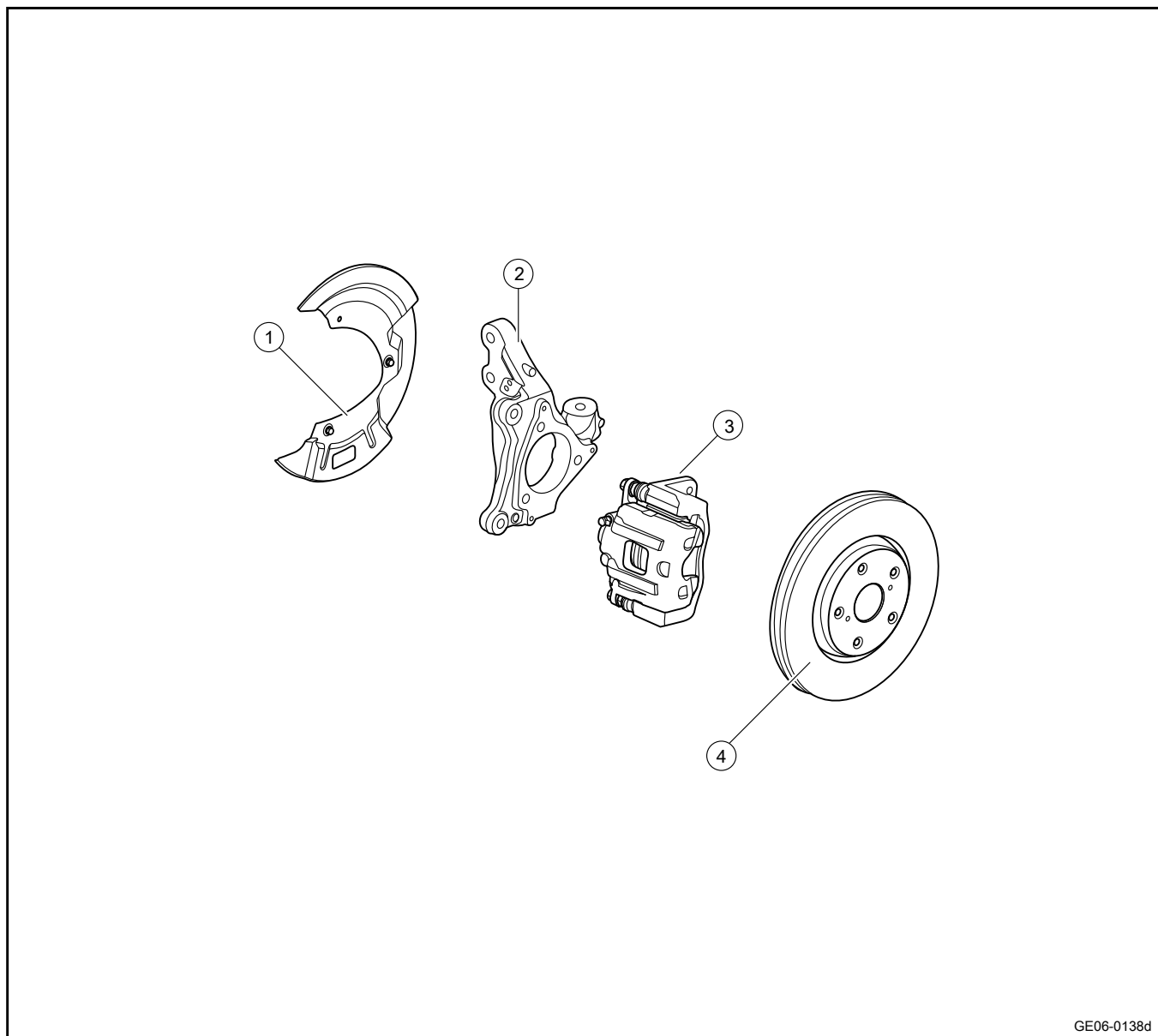
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- 1. Right front brake assembly
- 2. Left front brake assembly

- 3. ESC control module;

5.2.4 Exploded view

5.2.4.1 Breakdown Drawing



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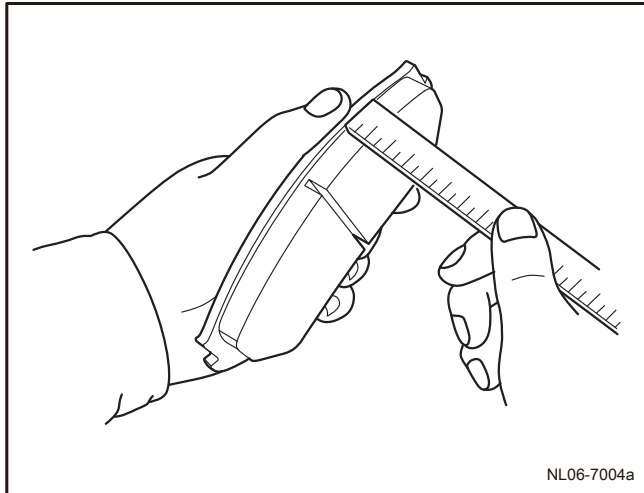
- 1. Front dust cover
- 2. Front steering knuckle

- 3. Front brake caliper assembly
- 4. Front brake disc

## 5.2.5 Diagnostic information and steps

### 5.2.5.1 Check brake pads

1. Regularly check the brake pads. Take the measurements as shown below. Replace the brake pads if they are out of specification.
2. If replacement is needed, the complete disc brake pads must be replaced.
3. Check whether the friction surface of disc brake pads is subject to crack, break or damage.



### 5.2.5.2 Check of brake caliper

1. Check whether the brake caliper shell is cracked, severely worn, and damaged. If the above conditions occur, the brake caliper needs to be replaced.
2. Check whether the seal ring of the brake caliper piston dust cover is cracked, broken, chipped, aging, and not properly installed in the brake caliper body. If any of the above conditions occur, replace the brake caliper.
3. Check whether there is brake fluid leakage around the seal ring of the brake caliper piston dust cover and on the disc brake pads. If there are signs of brake fluid leakage, replace the brake caliper.
4. Check whether the brake caliper piston can enter the brake caliper cylinder smoothly and the stroke is complete. The movement of the brake caliper piston in the brake caliper cylinder should be smooth and uniform. If the brake caliper piston is catching or it is difficult to reach the bottom, the brake caliper needs to be replaced.

### 5.2.5.3 Check of brake pad guide

- Check the brake pad guide for missing, serious corrosion and bending of installing projecting tongue.
- In case any above conditions is discovered, the brake pad guide needs replacement. Guarantee that the brake pads move smoothly on the disc brake pad guide without any obstruction.

### 5.2.5.4 Floating brake caliper check

Check whether the following conditions are in the floating pin of brake caliper:

- Catching
- Stuck
- Jacket cracking or damage
- Jacket missing

If any above conditions happen, the caliper and dust cover sealing ring need to be replaced.

### 5.2.5.5 Brake disc surface and wear check

1. Use industrial alcohol or allowed equivalent brake cleaner to clean the friction surface of the brake disc.

2. Check whether the rubbing surface of brake disc suffers from the following conditions:

- Serious corrosion and/or pitting
- Slight surface corrosion
- Cracks and/or burn spots
- Serious blue discoloration
- Deep scratches on the friction surface of the brake disc. In the case the friction surface of brake disc suffers from one or more above conditions, the brake disc requires surface finishing or replacement.

Surface trimming or replacement.

#### Caution

After surface finishing or replacement of brake disc, the brake pads also require replacement.

#### 5.2.5.6 Measurement of brake disc thickness

1. Clean the rubbing surface between brake disc and the brake pad by using industrial alcohol or similar brake cleaner.
2. Select 6 measuring points evenly distributed along the circumference on one side of the brake disc. Use a micrometer to measure and record the thickness measurements between the upper and lower end faces at 6 points.

#### Caution

Make sure to measure only on the friction surface.

The distance between the micrometer and the outer edge of the brake disc must be equal for each measurement.  
The distance from the outer edge: 13mm (metric) 0.51in (imperial).

3. If the brake disc thickness exceeds the specification, surface finishing or replacement should be made for the brake disc.

#### Caution

After surface finishing or replacement of brake disc, the brake pads also require replacement.

4. The maximum value minus the minimum value of the measured thickness is the circumferential thickness difference of the brake disc. Compare the thickness difference with the specification value.

Specification value: 0.02mm (metric system) 0.00079in (imperial system)

5. If the circumferential thickness difference of the brake disc exceeds the specification value (i.e.  $\geq 0.02\text{mm}$ ), the brake discs on both sides need to be replaced.

#### Caution

After surface finishing or replacement of brake disc, the brake pads also require replacement.

#### 5.2.5.7 Measurement of end face run-out value upon the assembly of brake disc

#### Caution

When removing the brake disc from the hub, remove any rust or dirt from the mating surfaces of the hub and brake disc, otherwise it may cause excessive amount of end face run-out value upon the assembly of brake disc, which may result in brake runout.

1. Remove the brake disc from the vehicle. Refer to replacement of brake disc
2. Clean the friction surface of brake disc with industrial alcohol or similar brake cleaner.
3. Install the brake disc onto the hub.
4. Install the nut by hand and tighten it with a wrench.
5. Switch the gear to N gear when the vehicle stalls.

6. Install the dial indicator base to the steering knuckle and position its measuring head so that it is in 90° contact with the friction surface of brake disc and is approximately 13mm (metric system)/0.5in (imperial system) from the outer edge of the brake disc.
7. Rotate the brake disc until the dial indicator shows minimum reading, then return the dial indicator to zero.
8. Rotate the brake disc until the dial indicator shows maximum reading
9. Mark and record the end face run-out value.
10. Compare the end face run-out value upon the assembly of brake disc with the specifications.  
Specification value: 0.15mm (metric system) 0.0059 (imperial system)
11. If the end face run-out amount upon the assembly of brake disc exceeds the specification ( $\geq 0.15\text{mm}$ ), check the circumferential thickness difference of brake disc, axial clearance of bearing and run-out value of axle hub. If they are functioning properly and the brake disc thickness is within the specified range, refinish the surface of the brake discs or replace the brake discs on both sides to ensure correct flatness.

#### Caution

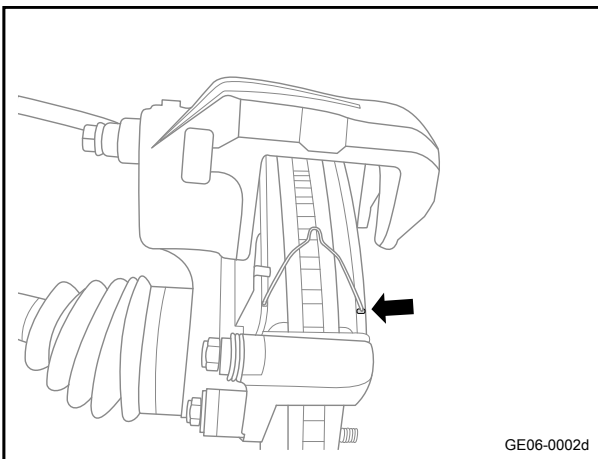
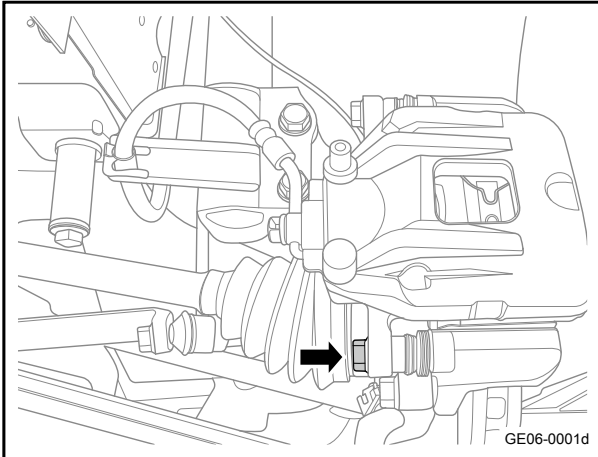
After surface finishing or replacement of brake disc, the brake pads also require replacement.

## 5.2.6 Removal and installation

### 5.2.6.1 Replacement of front brake pad

#### Removal procedure

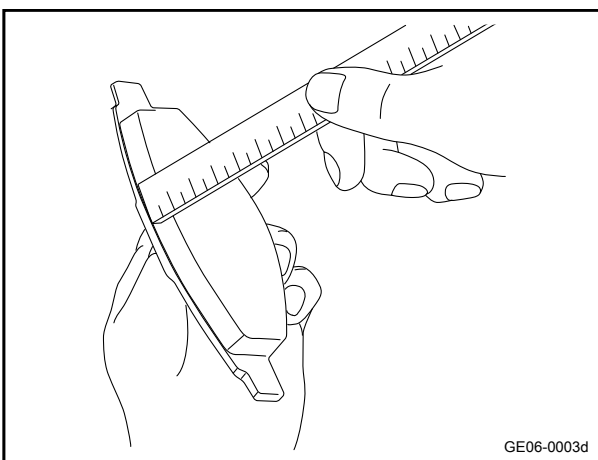
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove 1 fixing bolt at the low end of the brake caliper.



- 4 Lift up the brake caliper and remove the brake pads.

#### Caution

When lifting the brake caliper, remove the two springs of the brake pads in time to prevent them from popping up.



#### Inspection procedure

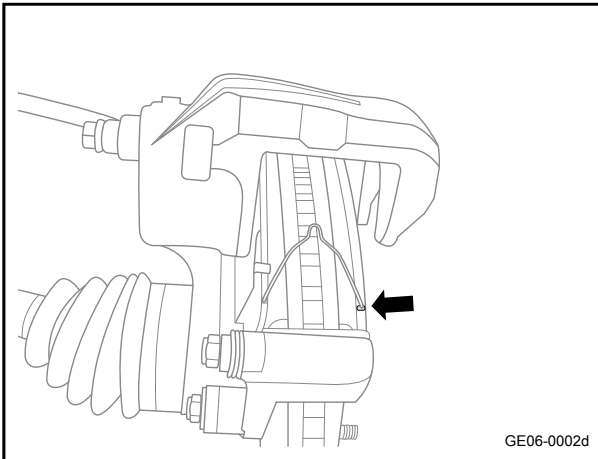
- 1 Check the thickness of the brake pads  
Standard thickness: 11mm (0.43in)  
Minimum thickness: 2mm (0.08in)

#### Caution

If the thickness of the brake pad lining is less than the minimum value, replace the front brake pad.

The brake pads are provided with mechanical alarm pads. If the alarm pads emit a scratching alarm sound during driving or the inspection shows signs of wear on the alarm pads, the brake pads should be replaced immediately.

#### Installation procedure



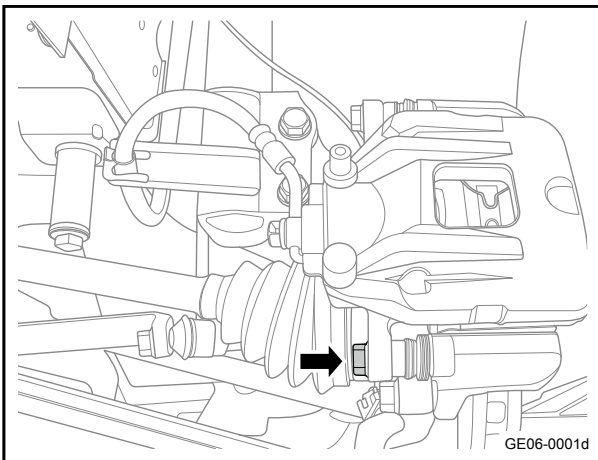
- 1 Move the brake pads to the installation position.
- 2 Lift up the brake caliper and install the brake pads.

#### Caution

When installing the brake pads, the pads with wear metal reminders are installed inside.

Remember to install the brake pad spring after installing the brake pad.

When pulling the brake caliper downward and installing the lower fixing bolts, be careful not to damage the piston dust-proofing seal.



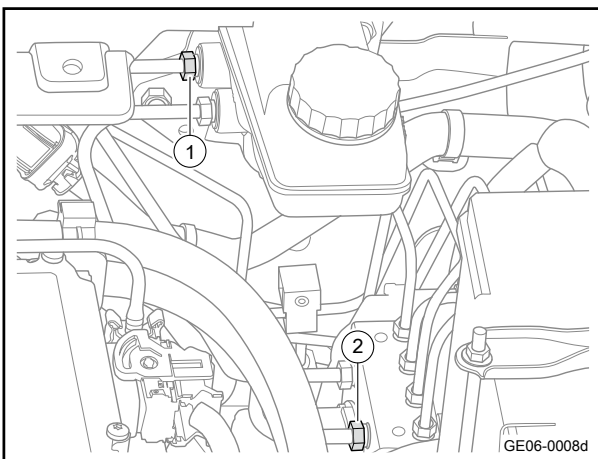
- 3 Install one fixing bolt at the lower end of the brake caliper.  
Torque: 30N·m (metric) 22.1lb-ft (imperial system)

- 4 Install the wheel.
- 5 Lower the vehicle.

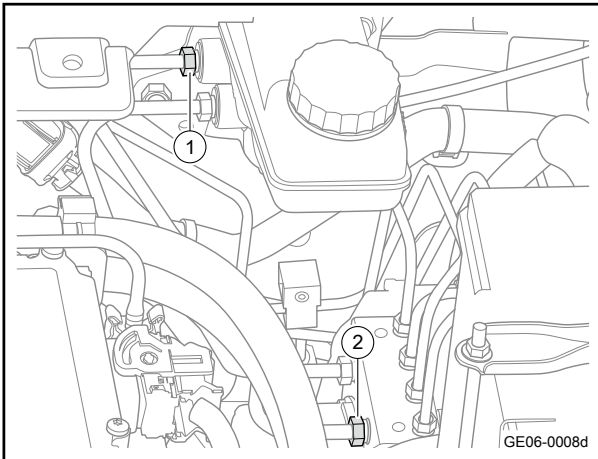
### 5.2.6.2 Replacement of No. 1 Rigid Pipe of Brake Master Cylinder

#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 3 Remove the fixing nut 1 connecting the No.1 rigid pipe of the brake master cylinder to the master booster.
- 4 Remove the fixing nut 2 connecting the No.1 rigid pipe of the brake master cylinder to the ESC control module.
- 5 Remove the No.1 rigid pipe of the brake master cylinder.



#### Installation procedure



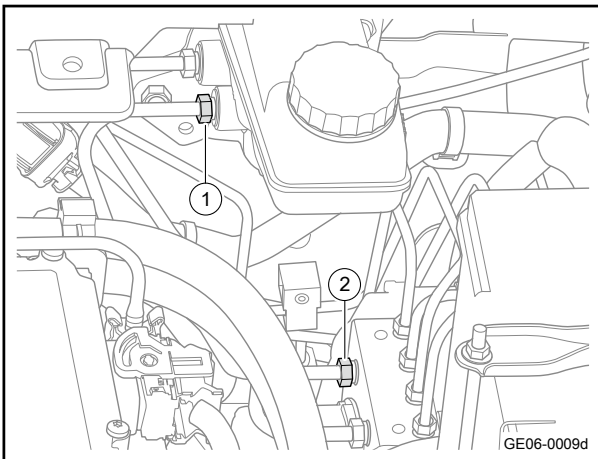
- 1 Move the No.1 rigid pipe of the brake master cylinder to the installation position.
- 2 Install the fixing nut 2 connecting the No. 1 rigid pipe of the brake master cylinder to the ESC control module.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the fixing nut 1 connecting the No. 1 rigid pipe of the brake master cylinder and the smart booster.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 4 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 5 Lower the vehicle.

### 5.2.6.3 Replacement of No. 2 Rigid Pipe of Brake Master Cylinder

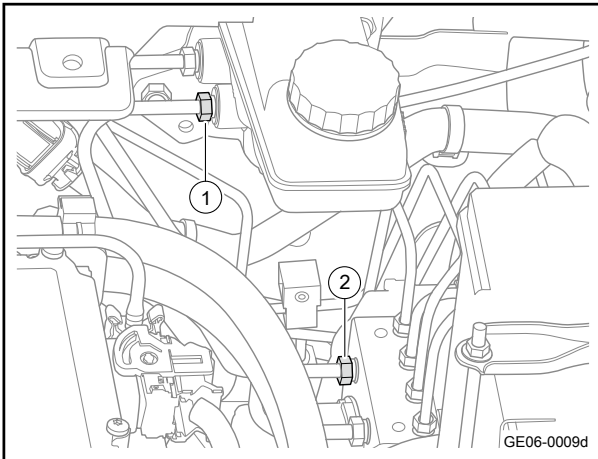
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 3 Remove the fixing nut 1 connecting the No.1 rigid pipe of the brake master cylinder to the master booster.
- 4 Remove the fixing nut 2 connecting the No.1 rigid pipe of the brake master cylinder to the ESC control module.
- 5 Remove the No.2 rigid pipe of the brake master cylinder.



#### Installation procedure



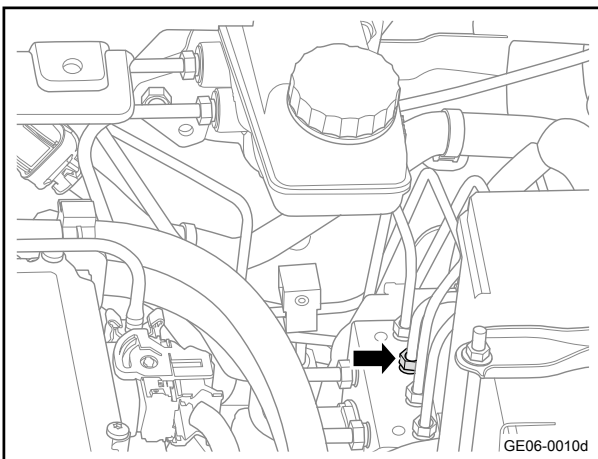


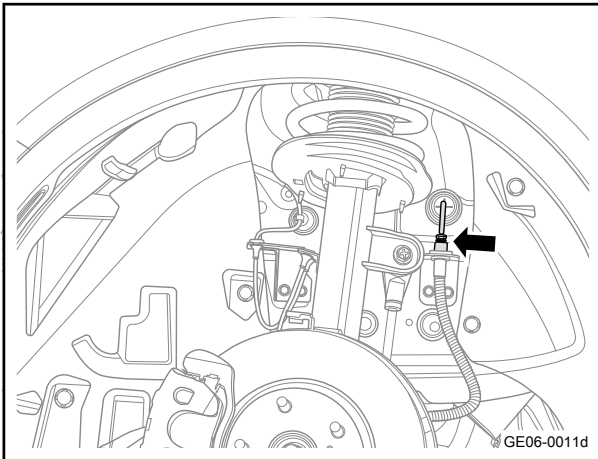
- 1 Move the No.2 rigid pipe of the brake master cylinder to the installation position.
- 2 Install the fixing nut 2 connecting the No. 2 rigid pipe of the brake master cylinder to the ESC control module.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install the fixing nut 1 connecting the No. 1 rigid pipe of the brake master cylinder and the smart booster.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 4 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 5 Lower the vehicle.

#### 5.2.6.4 Replacement of the front left brake hose

##### Removal procedure

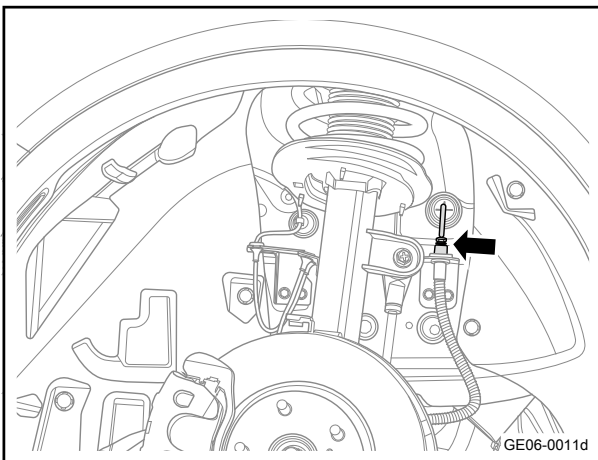
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 3 Remove the left front wheel. Refer to [Replacement of wheels](#)
- 4 Remove the 1 fixing nut connecting the left front brake pipe and the ESC controller.



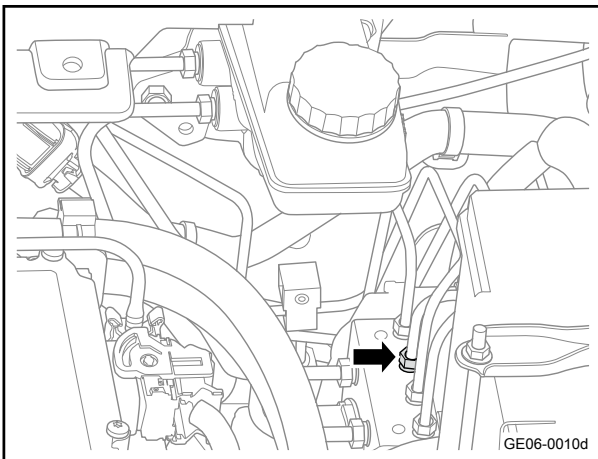


- 5 Remove the 1 fixing nut connecting the left front brake hard pipe and the left front brake hose.
- 6 Remove the front left brake pipe.

#### Installation procedure



- 1 Move the front left brake pipe to the installation position.
- 2 Install 1 fixing nut connecting the left front brake pipe and the left front brake hose.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



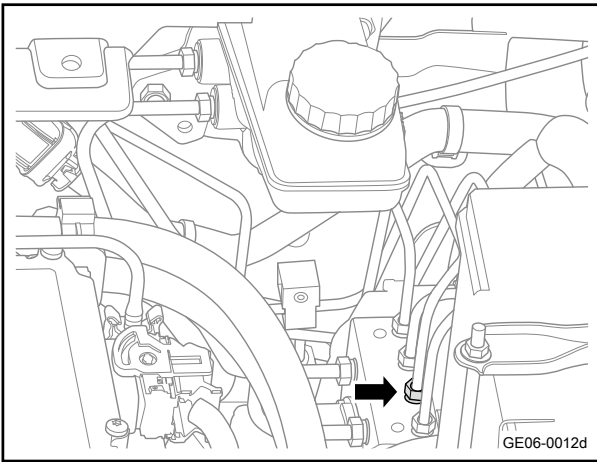
- 3 Install 1 fixing nut connecting the left front brake pipe to the ESC controller.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 4 Install the left front wheel.
- 5 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 6 Lower the vehicle.

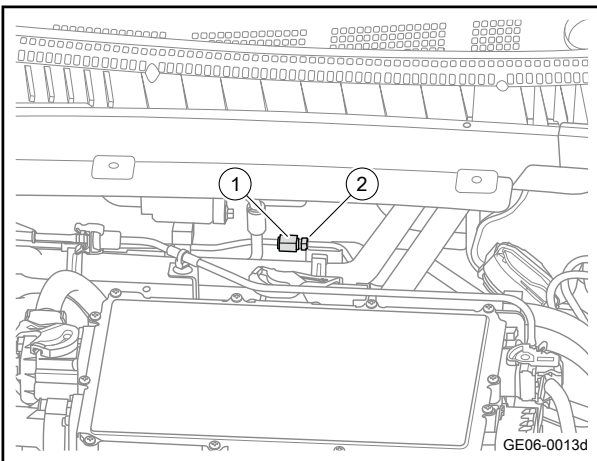
#### 5.2.6.5 Replacement of the right front No. 1 brake pipe

##### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 3 Remove the 1 fixing nut connecting the right front No. 1 brake pipe to the ESC controller.

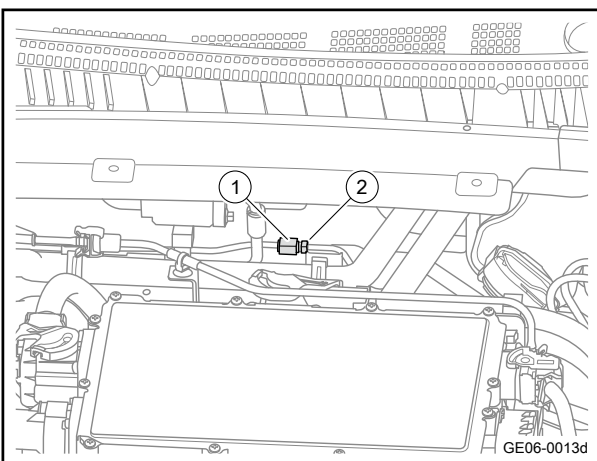


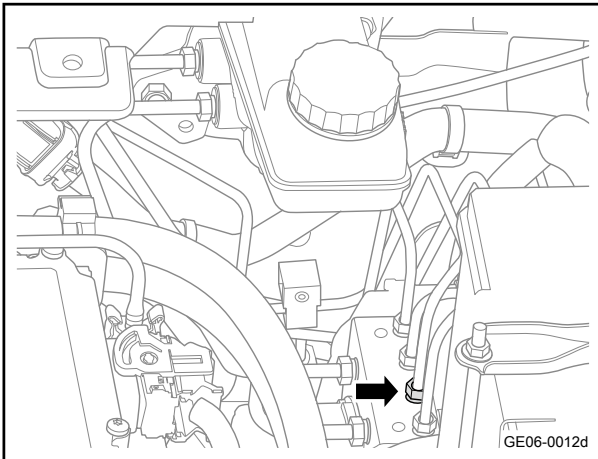
- 4 Use pliers to fix the right front No. 2 brake pipe 1, and remove the 1 fixing nut 2 connecting the right front No. 1 brake pipe and the right front No. 2 brake hard pipe.
- 5 Remove the right front No. 1 brake pipe.



#### Installation procedure

- 1 Move the front right No. 1 brake pipe to the installation position.
- 2 Use pliers to fix the right front No. 2 brake pipe 1, and install a fixing nut connecting the right front No. 1 brake pipe and the right front No. 2 brake hard pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)





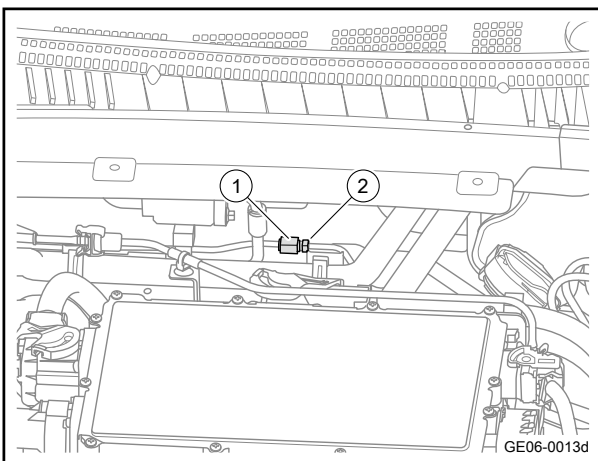
- 3 Install 1 fixing nut connecting the right front No. 1 brake pipe to the ESC controller.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

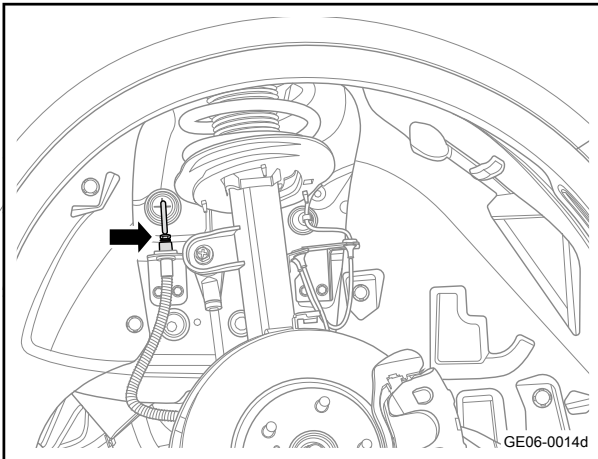
- 4 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 5 Lower the vehicle.

### 5.2.6.6 Replacement of the right front No. 2 brake pipe

#### Removal procedure

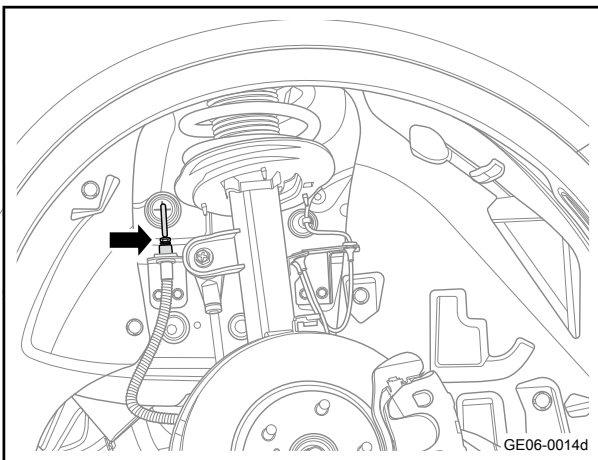
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 3 Remove the front right wheel. Refer to [Replacement of wheels](#)
- 4 Use pliers to fix the right front No. 2 brake pipe 1, and remove the 1 fixing nut 2 connecting the right front No. 2 brake pipe and the right front No.1 brake hard pipe.



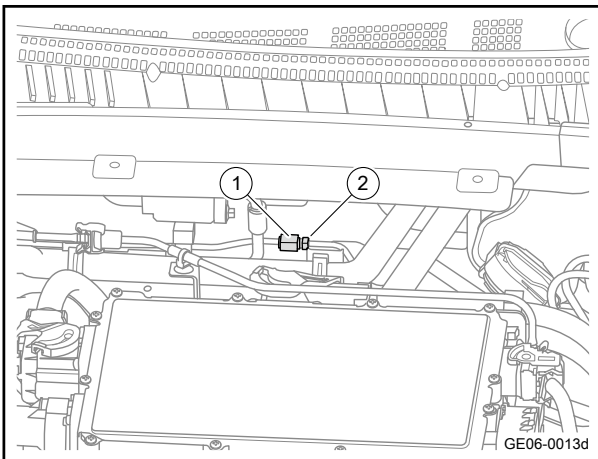


- 5 Remove 1 fixing nut connecting the front right No. 2 brake pipe and the right front brake hose.
- 6 Remove the right front No. 2 brake pipe.

#### Installation procedure



- 1 Move the front right No. 2 brake pipe to the installation position.
- 2 Install 1 fixing nut connecting the front right No. 2 brake pipe and the front right brake hose.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

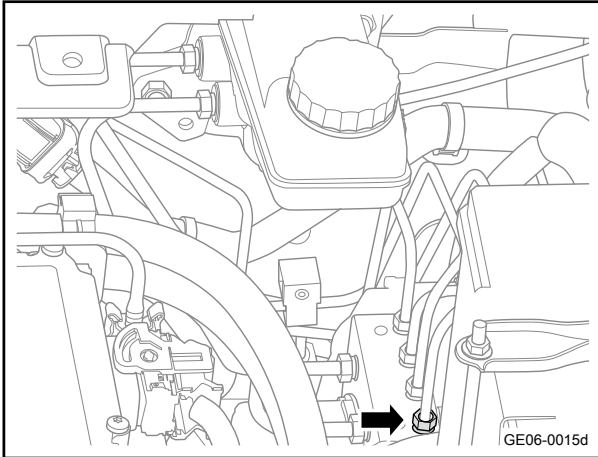


- 3 Use pliers to fix the right front No. 2 brake pipe 1, and install a fixing nut connecting the right front No. 1 brake pipe and the right front No. 2 brake hard pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

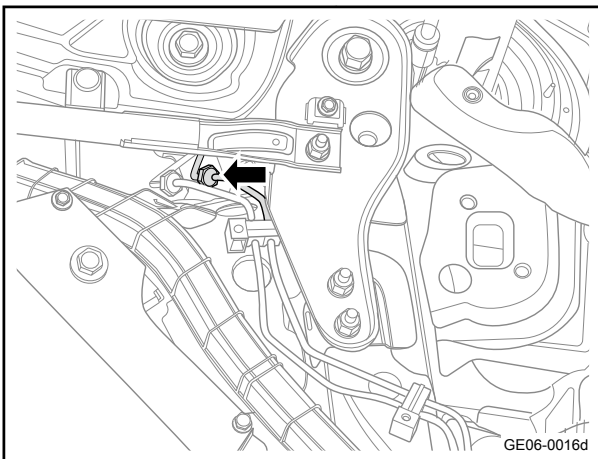
- 4 Install the front right wheel.
- 5 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 6 Lower the vehicle.

#### 5.2.6.7 Replacement of the left rear No. 1 brake pipe

##### Removal procedure

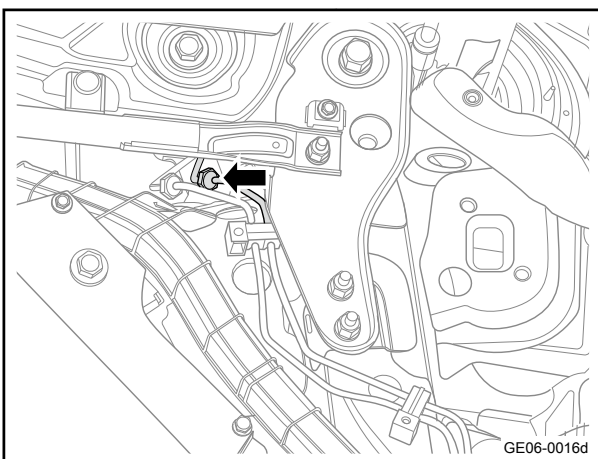


- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the power harness cover assembly. See [Replacement of power harness cover assembly](#)
- 4 Remove 1 fixing nut connecting the left rear No. 1 brake pipe and the ESC controller.

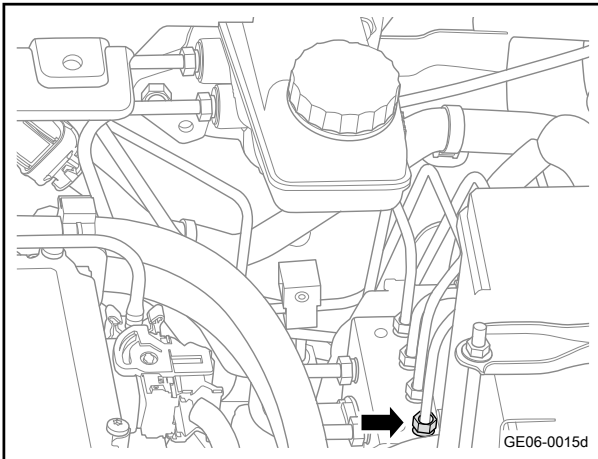


- 5 Remove the 1 fixing nut 1 connecting the left rear No. 1 brake pipe and the left rear No. 2 brake pipe.
- 6 Remove the left rear No. 1 brake pipe.

#### Installation procedure



- 1 Move the left rear No. 1 brake pipe to the installation position.
- 2 Install 1 fixing nut 1 connecting the left rear No. 1 brake pipe and the left rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



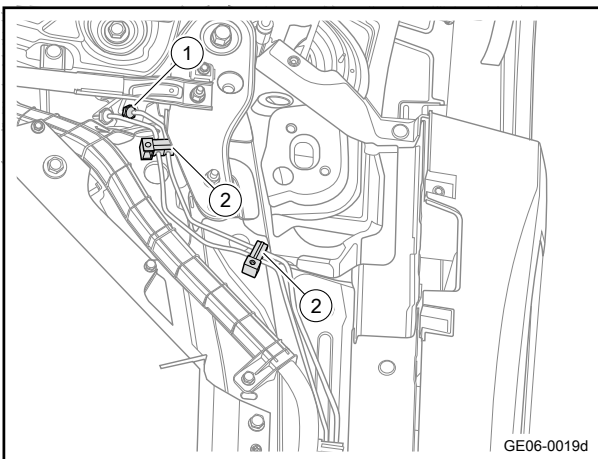
- 3 Install 1 fixing nut connecting the left rear No. 1 brake pipe to the ESC controller.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

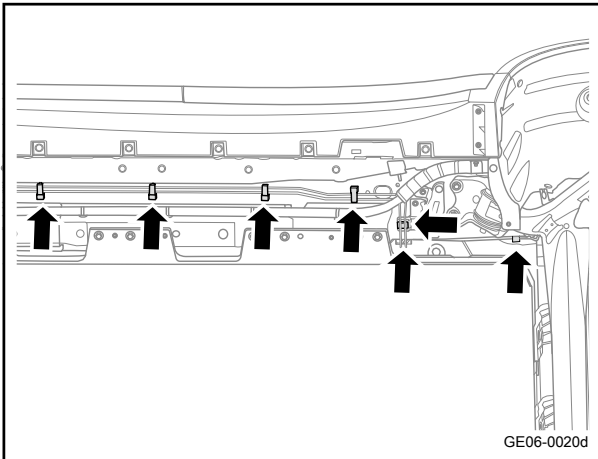
- 4 Install the power harness cover assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

### 5.2.6.8 Replacement of the left rear No. 2 brake pipe

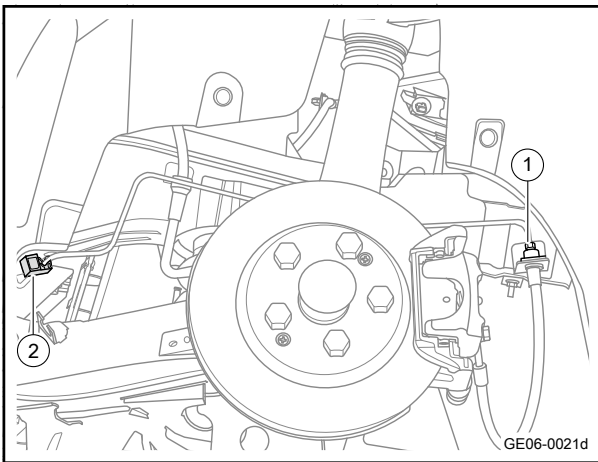
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the battery base protection module. Refer to the [Replacement of Battery Bottom Guard](#)
- 3 Drain the brake fluid. Refer to [Recycle and filling of braking fluid](#)
- 4 Remove wheels. Refer to [Replacement of wheels](#)
- 5 Remove the 1 fixing nut 1 connecting the left rear No. 1 brake pipe and the left rear No. 2 brake pipe.
- 6 Disengage the 2 fixed pipe clamps 2 of the left rear No. 2 brake pipe.



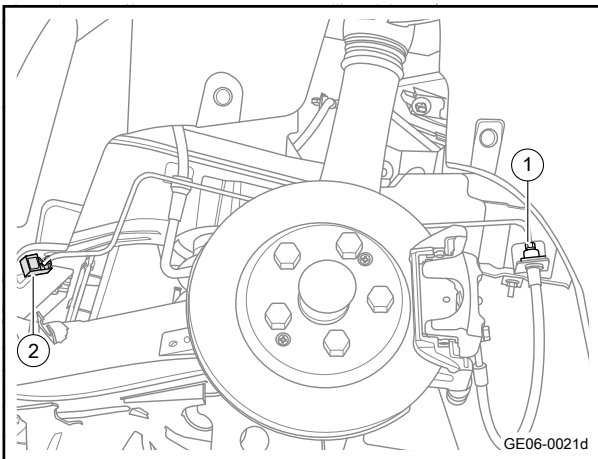


- 7 Disengage the 7 fixed pipe clamps of the left rear No. 2 brake pipe.



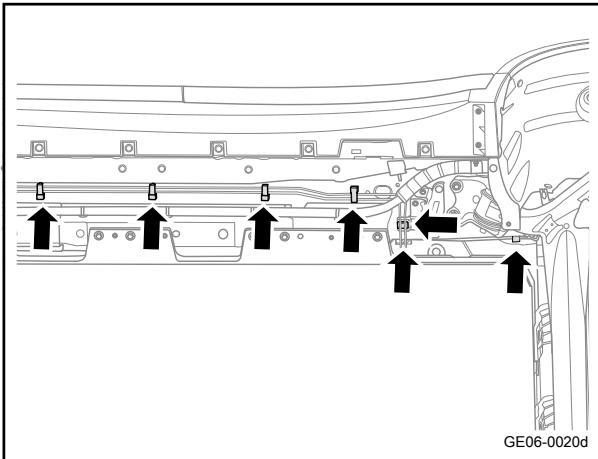
- 8 Remove the 1 fixing nut 1 of the left rear No. 2 brake pipe.
- 9 Disengage the 1 fixed pipe clamp of the left rear No. 2 brake pipe.
- 10 Remove the left rear No. 2 brake pipe.

#### Installation procedure

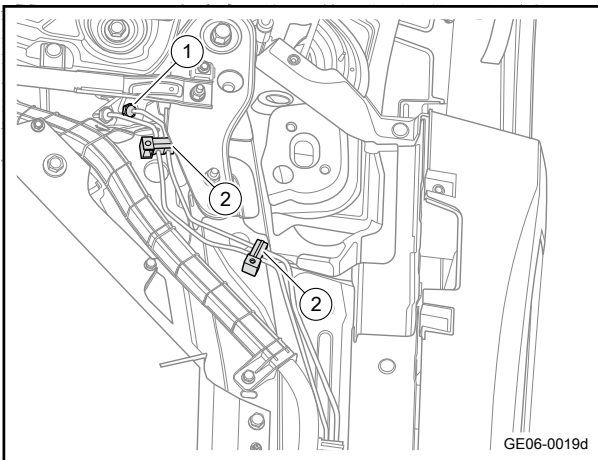


- 1 Move the left rear No. 2 brake pipe to the installation position.
- 2 Install 1 fixed pipe clamp 2 on the left rear No. 2 brake pipe.
- 3 Install 1 fixing nut 1 for the left rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)





- 4 Install 7 fixed pipe clamps on the left rear No. 2 brake pipe.



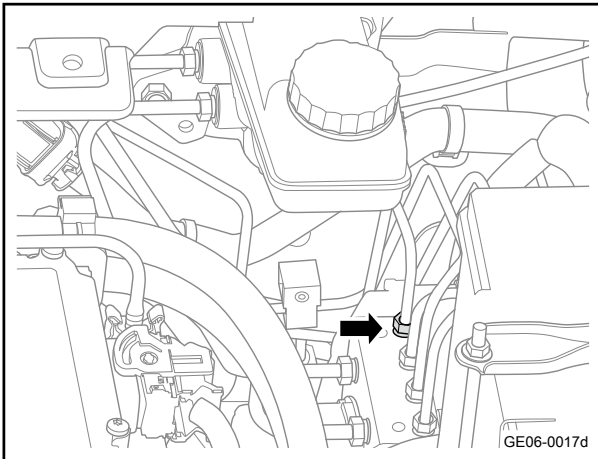
- 5 Install 2 fixed pipe clamp 2 on the left rear No. 2 brake pipe.
- 6 Install 1 fixing nut 1 connecting the left rear No. 1 brake pipe and the left rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 7 Install the wheel.
- 8 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 9 Mount the battery base protection module.
- 10 Lower the vehicle.

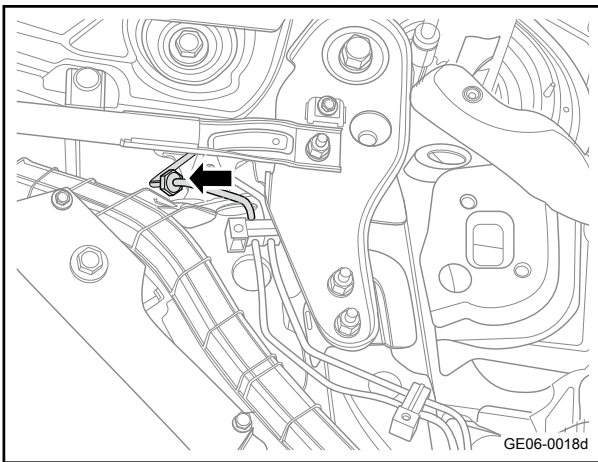
### 5.2.6.9 Replacement of right rear No. 1 brake pipe

#### Removal procedure

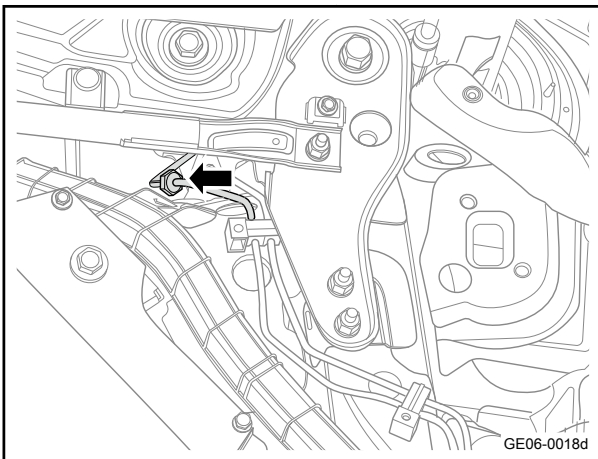
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the power harness cover assembly. See [Replacement of power harness cover assembly](#)



- 4 Remove the 1 fixing nut connecting the right rear No. 1 brake pipe and the ESC controller.

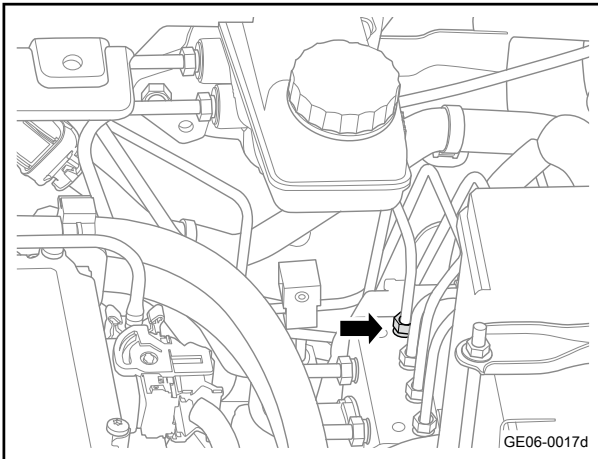


- 5 Remove 1 fixing nut 1 connecting right rear No. 1 brake pipe and the rear right No. 2 brake pipe.
- 6 Remove the right rear No. 1 brake pipe.



#### Installation procedure

- 1 Move the right rear No. 1 brake pipe to the installation position.
- 2 Install a fixing nut 1 connecting the right rear No. 1 brake pipe and the right rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



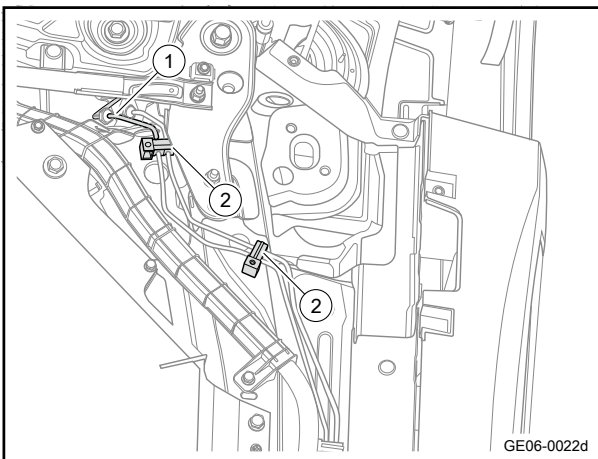
- 3 Install the 1 fixing nut connecting the right rear No. 1 brake pipe to the ESC controller.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

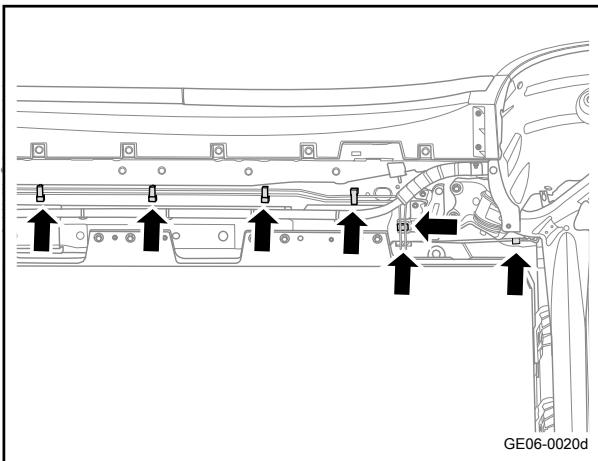
- 4 Install the power harness cover assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

### 5.2.6.10 Replacement of right rear No. 2 brake pipe

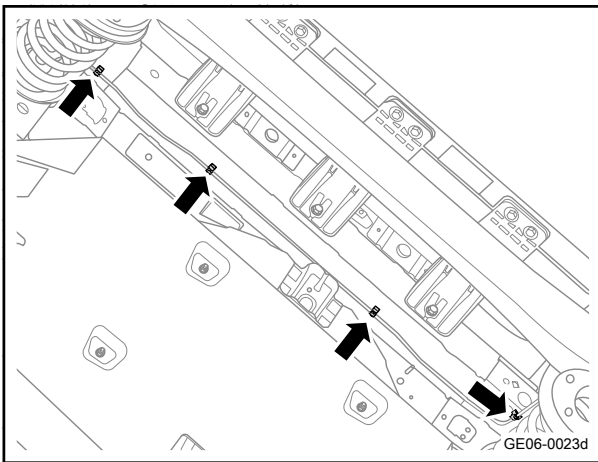
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the battery base protection module. Refer to the [Replacement of Battery Bottom Guard](#)
- 3 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 4 Remove wheels. Refer to [Replacement of wheels](#)
- 5 Remove 1 fixing nut 1 connecting right rear No. 1 brake pipe and the rear right No. 2 brake pipe.
- 6 Disengage the 2 fixed pipe clamps 2 of the right rear No. 2 brake pipe.

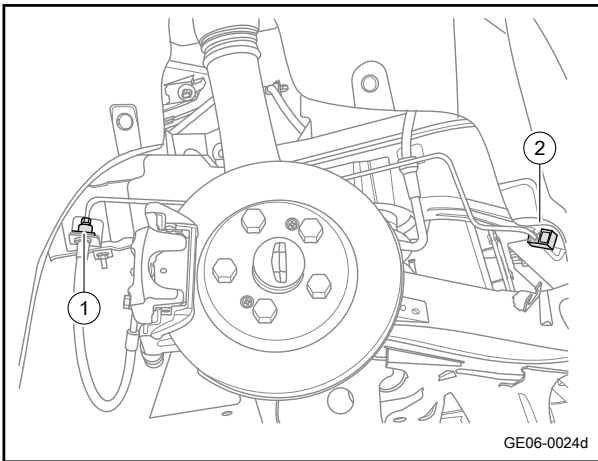




- 7 Disengage the 7 fixed pipe clamps of the right rear No. 2 brake pipe.

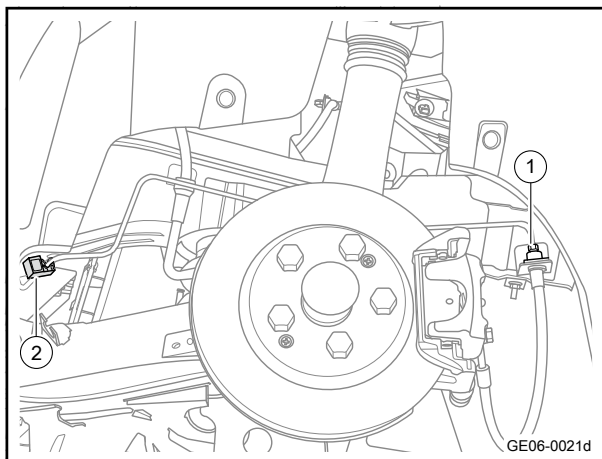


- 8 Disengage the 4 fixed pipe clamps of the right rear No. 2 brake pipe.

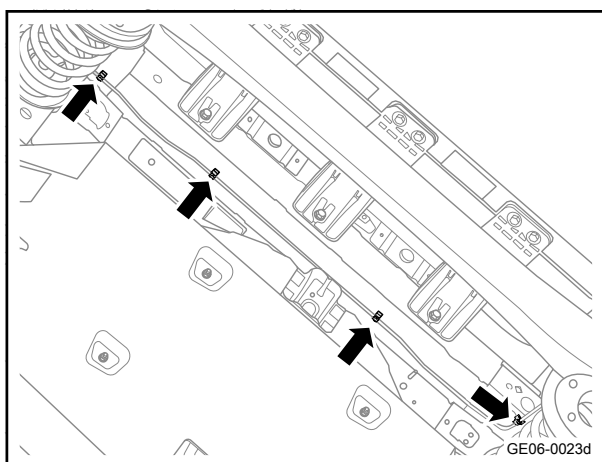


- 9 Remove the 1 fixing nut 1 of the right rear No. 2 brake pipe.
- 10 Disengage the 1 fixed pipe clamps 2 of the right rear No. 2 brake pipe.
- 11 Remove the right rear No. 2 brake pipe.

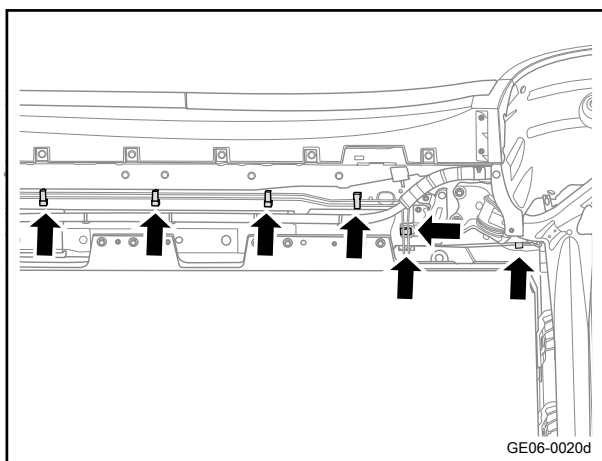
Installation procedure



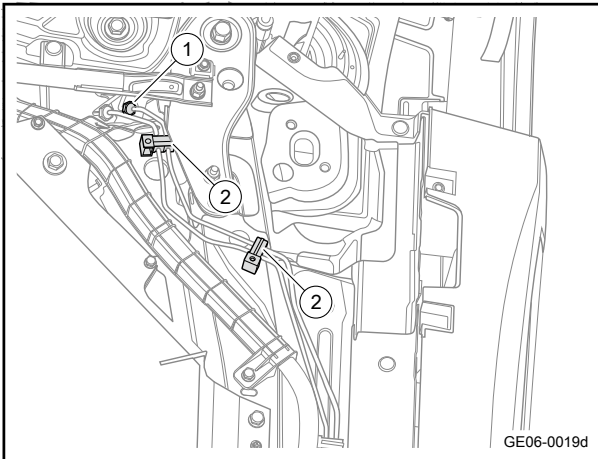
- 1 Move the right rear No. 2 brake pipe to the installation position.
- 2 Install 1 fixed pipe clamp 2 on the right rear No. 2 brake pipe.
- 3 Install 1 fixed nut 1 on the right rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



- 4 Disengage the 4 fixed pipe clamps of the right rear No. 2 brake pipe.



- 5 Install 7 fixed pipe clamps on the right rear No. 2 brake pipe.



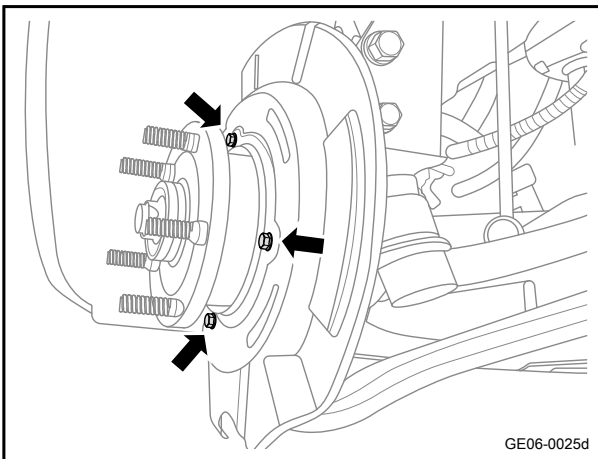
- 6 Install 2 fixed pipe clamp 2 on the right rear No. 2 brake pipe.
- 7 Install a fixing nut 1 connecting the right rear No. 1 brake pipe and the right rear No. 2 brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 8 Install the wheel.
- 9 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 10 Mount the battery base protection module.
- 11 Lower the vehicle.

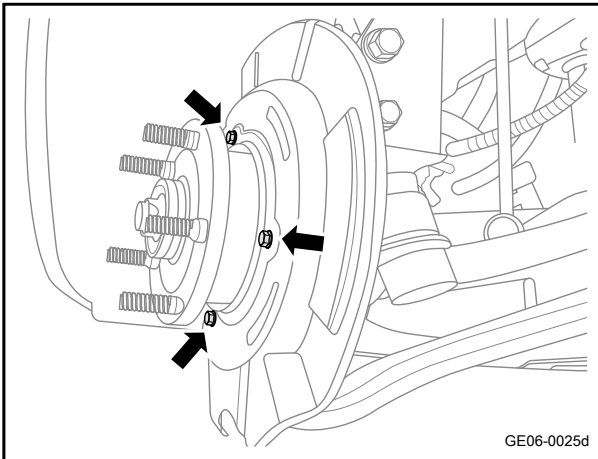
### 5.2.6.11 Replacement of the dust cover of the left front brake disc

#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the front brake caliper. See [Replacement of Left Front Brake Caliper Assembly](#)
- 4 Remove the front brake disc. Refer to [Replacement of front brake disc](#)
- 5 Remove the 3 fixing bolts of the dust cover of the left front brake disc.
- 6 Remove the dust cover of the left front brake disc.



#### Installation procedure



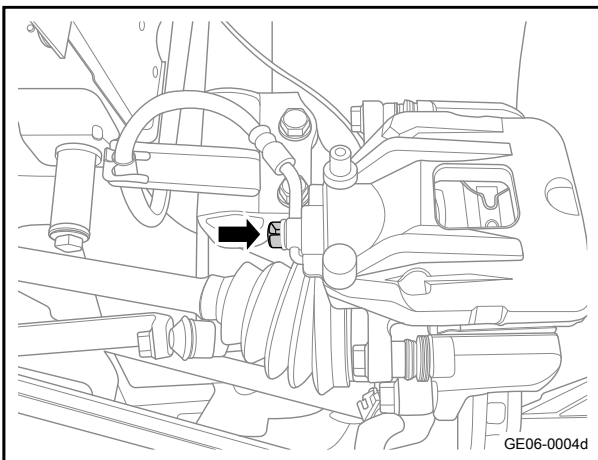
- 1 Move the dust cover of the left front brake disc to the installation position.
- 2 Install the 3 fixing bolts of the dust cover of the left front brake disc.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the front brake disc.
- 4 Install the front brake caliper.
- 5 Install the wheel.
- 6 Lower the vehicle.

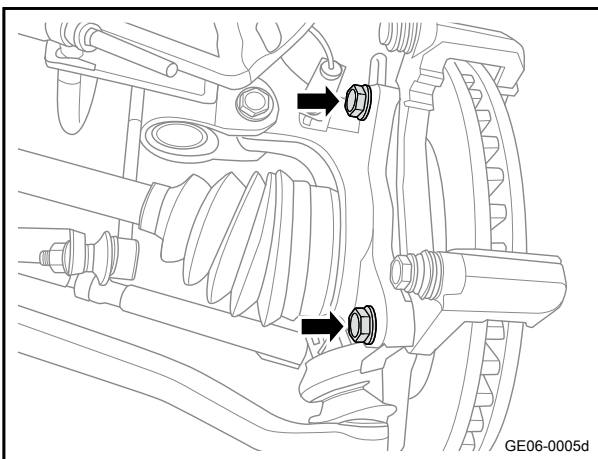
### 5.2.6.12 Replacement of left front brake caliper assembly

#### Removal procedure

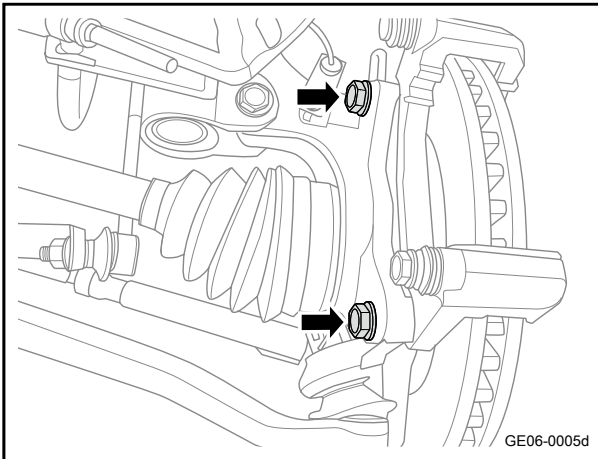
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove one fixing bolt of the brake caliper brake hose, remove the brake hose, and plug the brake caliper inlet and brake hose to prevent brake fluid from loss or contamination.



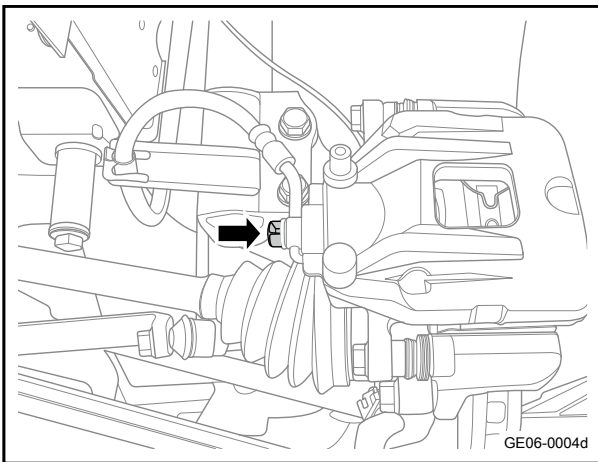
- 3 Remove 2 fixing bolts of left front brake caliper assembly.
- 4 Remove the front brake caliper assembly.



#### Installation procedure



- 1 Move the front left brake caliper assembly to the installation position.
- 2 Install 2 fixing bolts of the left front brake caliper assembly.  
Torque: 120N·m (metric) 88.6lb-ft (imperial system)



- 3 Install the 1 fixing bolt connecting the brake hose and brake caliper.  
Torque: 33N·m (metric) 22.4lb-ft (imperial system)

- 4 Fill the brake fluid and operate the hydraulic brake system exhaust program. Refer to [Hydraulic brake system exhaust procedure](#)
- 5 Lower the vehicle.

### 5.2.6.13 Replacement of front brake disc

#### Removal procedure

##### Caution

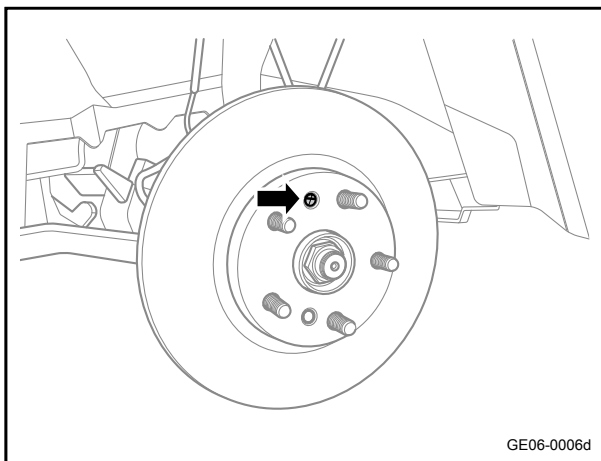
The removal and installation methods of the left front brake disc are similar to those of the right front brake disc.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the front brake caliper assembly. See [Replacement of Left Front Brake Caliper Assembly](#)

##### Caution

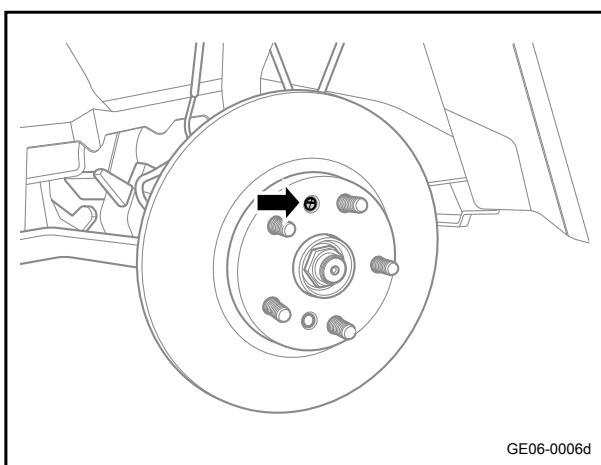
Remove the brake caliper. No need to remove the brake hose of brake caliper. One steel wire shall be used to hang the brake caliper to avoid any damage to the brake hose.





- 3 Remove 1 fixing screw of the front brake disc.
- 4 Take off the front brake disc.

#### Installation procedure



- 1 Move the front brake disc to the installation position.
- 2 Install the 1 fixing screw of the front brake disc.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 3 Install the left front brake caliper assembly.
- 4 Lower the vehicle.

## 5.3 Rear brake

### 5.3.1 Specification

#### 5.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Rear brake caliper bracket fixing bolt	M12×37	110 - 130	81.1 - 96.0

#### 5.3.1.2 Specifications of the rear disc brake parts

Application	Metric system (mm)	Imperial system (in)
Thickness for scrapping of rear brake disc	10	0.39
Allowable end face runout of rear brake disc	0.15	0.0059
Allowable circumferential thickness difference of rear brake disc	0.02	0.00079
Rear brake pad standard thickness	11	0.43
Rear brake pad minimum thickness	2	0.08

## 5.3.2 Description and operation

### 5.3.2.1 Instructions and Operations

Disc brake system composition:

The rear disc brake system consists of the following components:

**Brake pad:**

Applies the mechanical output force from the hydraulic brake caliper to the rubbing surface of the brake disc.

**Brake pad guide:**

Located between the disc brake pad and the brake pad mounting bracket, used for keeping the smooth movement of the brake pad and eliminating noise.

**Brake disc:**

Slow down the speed of tire and wheel assemblies using the mechanical output force applied by the disc brake pad to the friction surface of the brake disc to realize the brake of the vehicle.

**Brake caliper with EPB assembly:**

It receives the fluid pressure of the brake master cylinder and transforms the fluid pressure into mechanical output force to act on internal brake pad; when the master cylinder returns, the brake caliper piston automatically returns and the brake caliper is integrated with electric parking brake (EPB) motor which can be controlled by EPB switch to achieve electric parking.

**Brake caliper and brake pad bracket:**

It is used for fixing in position the disc brake pads and brake caliper. It also maintains a correct cooperative position with the hydraulic brake caliper and slides the brake pads when the mechanical output force acts on brake pads.

**Floating pin of the brake caliper:**

Used for installing the hydraulic brake caliper and fix the brake caliper in place and maintain the correct matching position with the brake caliper bracket. When there is the mechanical output force acted, the brake caliper, and the brake pad slide relatively.

**Operations of rear disc brake system:**

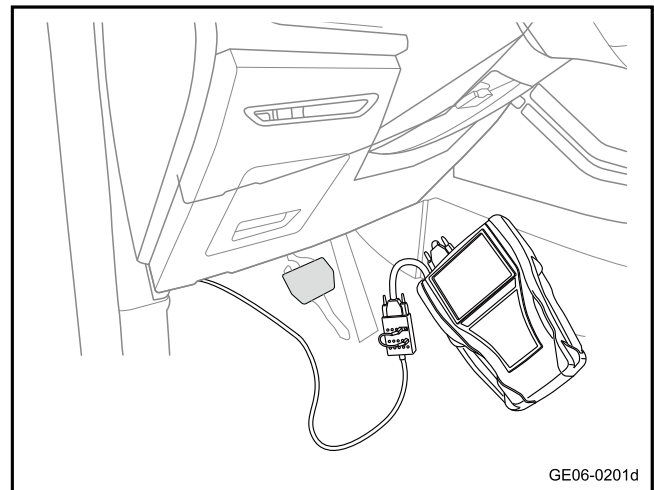
The mechanical output force from the hydraulic brake caliper piston is acted on the internal brake pad. When the piston pushes and presses the internal brake pad outward, the brake caliper shell pulls the external brake pad inward at the same time to evenly distribute the output force. The brake pad acts the output force on the friction surface of two sides of the brake disc to slow down the speed of tire and wheel

assemblies. Normal functions of the brake guide and the floating brake caliper are important for the uniform distribution of the brake force.

**Operation to release EPB:**

Used to remove rear brake pads

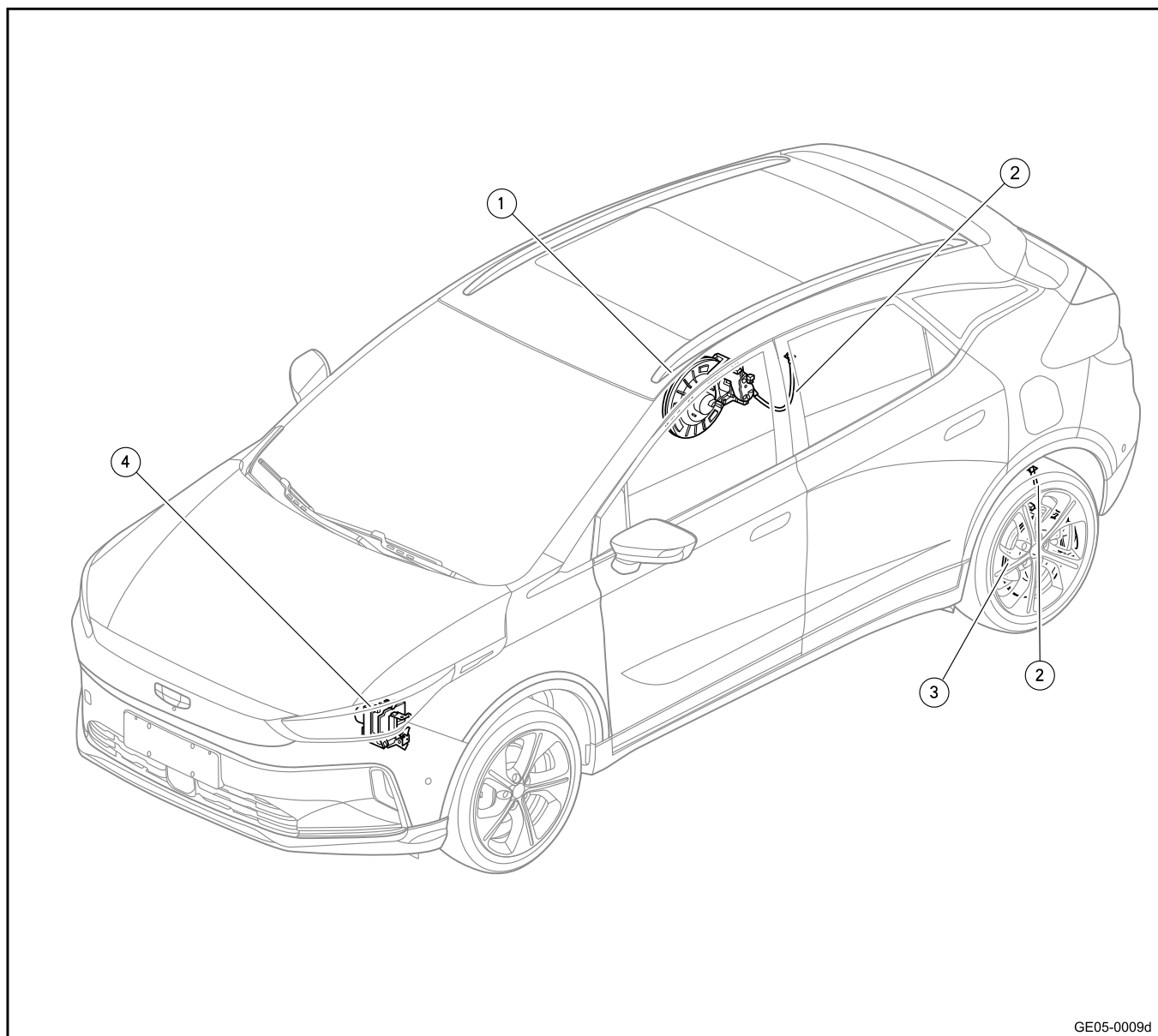
1. Connect the diagnostic apparatus.
2. Turn the start-and-stop switch to place the power supply in mode ON.
3. Operate the diagnostic apparatus and select EPB system.
4. Operate the vehicle management system and select replacement mode (before replacement) option. The system automatically opens the piston of rear brake caliper. Releases the parking brake.
5. Turn the start switch to power mode OFF.



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## 5.3.3 Parts location map

## 5.3.3.1 Part Position

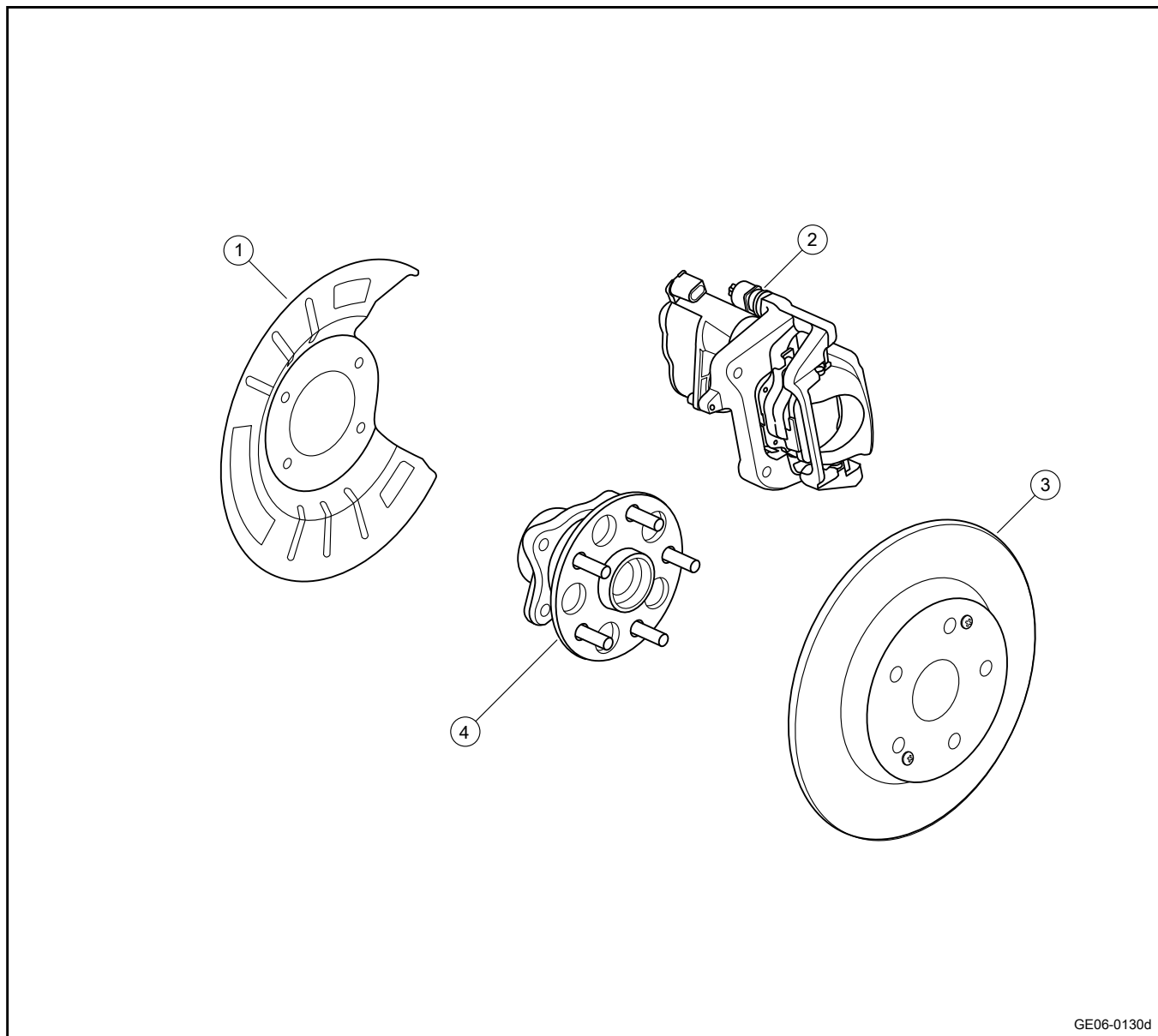


GE05-0009d

- |                              |                             |
|------------------------------|-----------------------------|
| 1. Right rear brake assembly | 3. Left rear brake assembly |
| 2. Rear brake hose           | 4. ESC controller assembly  |

5.3.4 Exploded view

5.3.4.1 Breakdown Drawing



GE06-0130d

- |                                |                      |
|--------------------------------|----------------------|
| 1. Rear dust cover             | 3. Rear brake disc   |
| 2. Rear brake caliper assembly | 4. Rear hub assembly |

### 5.3.5 Diagnostic information and steps

#### 5.3.5.1 Diagnostic information and procedures

Refer to [Diagnostic information and procedures for front brake](#)

### 5.3.6 Removal and installation

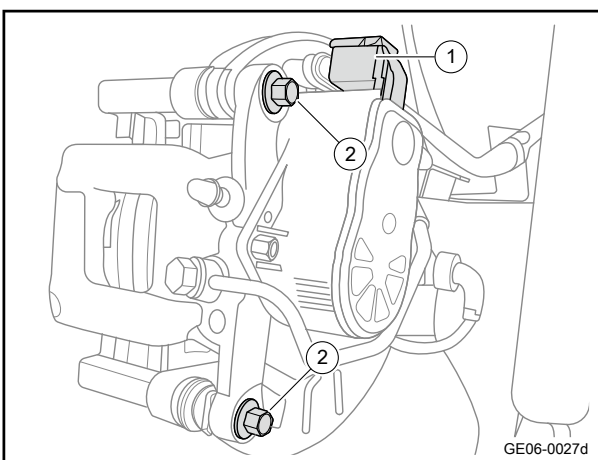
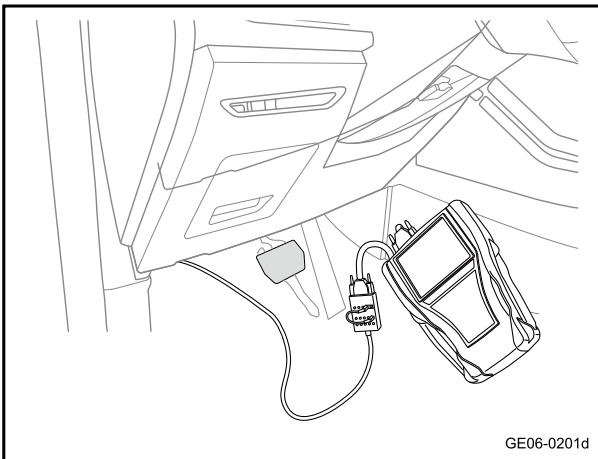
#### 5.3.6.1 Replacement of rear brake pad

##### Removal procedure

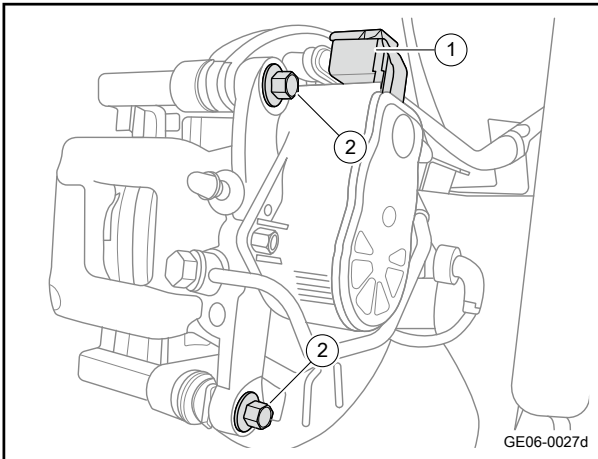
##### Caution

The replacement method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Connect the diagnostic apparatus.
- 4 Turn the start switch to power mode ON.
- 5 Operate the diagnostic apparatus and select EPB system.
- 6 Select the vehicle management system and select replacement mode (before replacement) option. The system automatically opens the piston of rear brake caliber. Releases the parking brake.
- 7 Turn the start switch to power mode OFF.
- 8 Disconnect the EPB motor harness connector 1.
- 9 Remove 2 fixing bolts 2 of brake caliper.
- 10 Remove the brake pads.



##### Installation procedure



- 1 Move the rear brake pad to the installation position.
- 2 Install the 2 fixing bolts 2 of rear brake caliper.  
Torque: 29.5N·m (metric) 21.8lb-ft (imperial system)

#### Caution

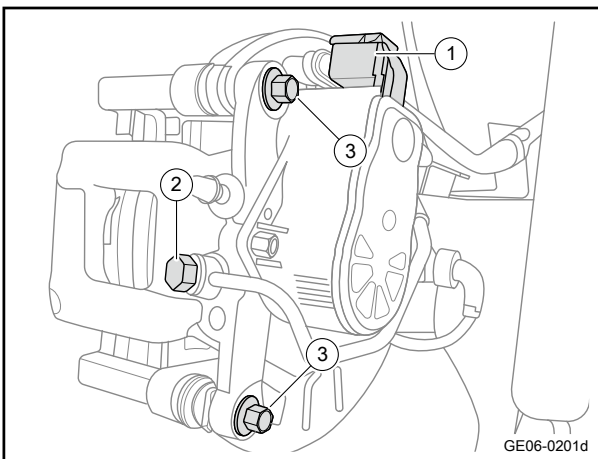
When installing the brake caliper, be careful not to damage the piston dust-proof seals.

- 3 Connect the EPB motor harness connector 1.
- 4 Operate the starting switch to place the power in mode "ON".
- 5 Use the diagnostic apparatus and select the replacement mode (after replacement) under the vehicle system management menu to reset the EPB after replacement, and clear the DTC.
- 6 Operate the starting switch to place the power in mode "OFF".
- 7 Install the wheel.
- 8 Lower the vehicle.

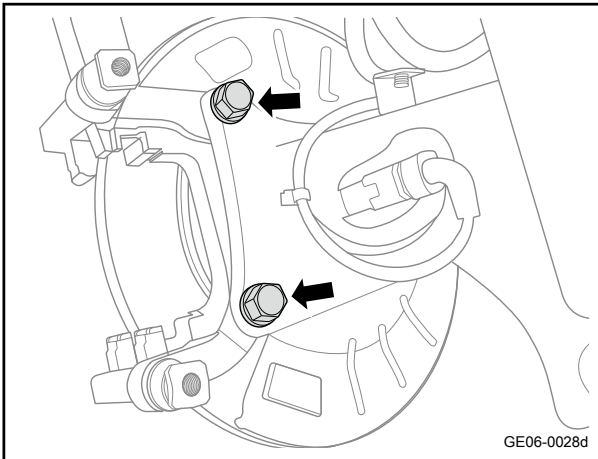
### 5.3.6.2 Replacement of rear brake caliper

#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Release the parking brake.
- 4 Disconnect the negative cable of battery.
- 5 Disconnect the EPB harness connector 1.
- 6 Remove the brake hose inlet bolt 2 of the brake caliper and plug the brake caliper inlet and brake hose to prevent brake fluid loss or contamination.
- 7 Remove 2 fixing bolts 2 of brake caliper.
- 8 Remove the rear brake pads.

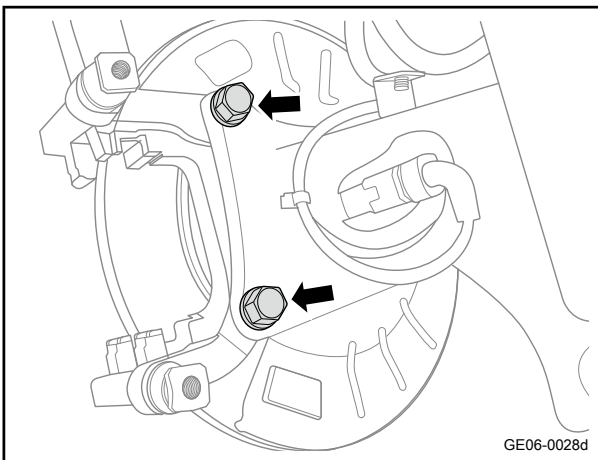




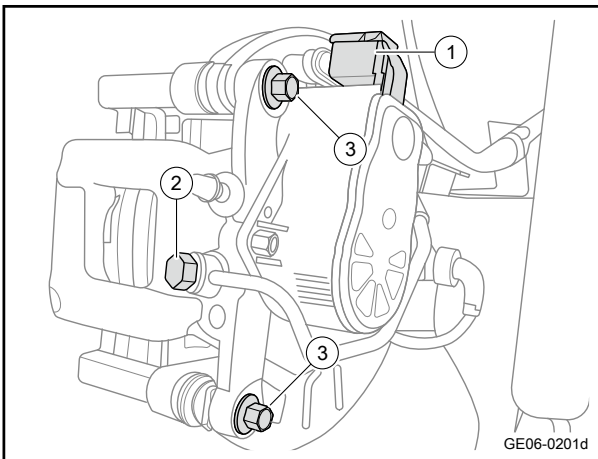


- 9 Remove 2 fixing bolts of the rear brake caliper.
- 10 Take off the rear brake caliper.

#### Installation procedure



- 1 Move the rear brake caliper to the installation position.
- 2 Install the 2 fixing bolts of rear brake caliper.  
Torque: 120N·m (metric) 88.6lb·ft (imperial system)



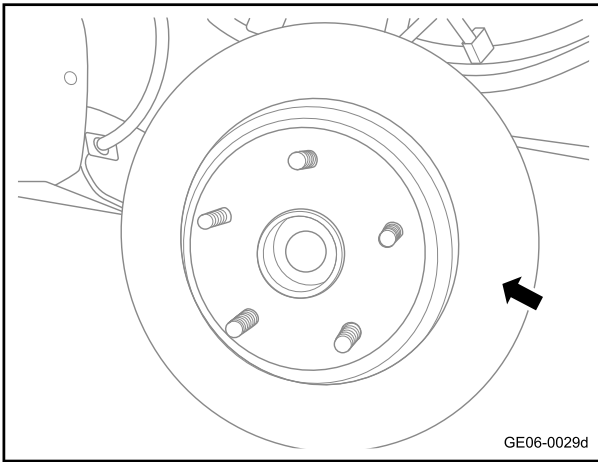
- 3 Install rear brake pads.
- 4 Install the rear brake caliper and tighten the 2 fixing bolts 3.
- 5 Install the brake hose inlet bolt 2 of the rear brake caliper.
- 6 Connect the EPB harness connector 1.

- 7 Refill brake fluid.
- 8 Perform the hydraulic brake system exhaust procedure.  
Refer to [Hydraulic brake system exhaust procedure](#)
- 9 Install the wheel.
- 10 Lower the vehicle.

### 5.3.6.3 Replacement of rear brake disc

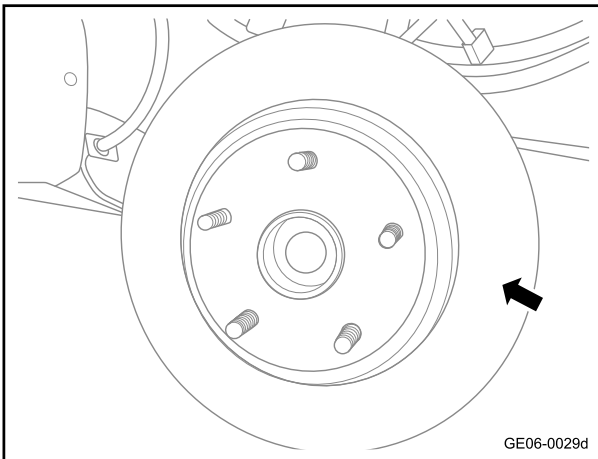
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the rear brake caliper. Refer to [Replacement of brake caliper](#)
- 3 Remove the rear brake disc.



#### Installation procedure

- 1 Move the rear brake disc to the installation position.



- 2 Install the rear brake caliper.
- 3 Lower the vehicle.

#### 5.3.6.4 Replacement of the rear brake disc dust cover

Refer to [Replacement of brake disc dust cap](#)

## 5.4 Hydraulic brake

### 5.4.1 Specification

#### 5.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of smart booster	M8	20 - 26	14.8 - 19.2
Left front brake hose and brake cylinder fixing bolt	M10×20	30 - 36	22.1 - 26.6
Bolt that connects left front brake hose with brake hard pipe	M10	8 - 10	5.9 - 7.4
Bolt that connects left rear brake hose with brake hard pipe	M10	8 - 10	5.9 - 7.4
Left rear brake hose and brake cylinder fixing bolt	M10×20	30 - 36	22.1 - 26.6
Brake pedal fixing bolt	M8×35	20 - 28	14.8 - 20.7
Fixing nut of brake pedal assembly	M8	20 - 28	14.8 - 20.7

## 5.4.2 Description and operation

### 5.4.2.1 Instructions and Operations

Hydraulic brake system includes the following parts

**Brake pedal:**

Receive, enlarge, and transmit the input force of the brake system.

**Brake pedal push rod:**

Transfer the enlarged brake pedal input force to the smart booster.

**Smart booster:**

The brake system input force is enlarged through the brake pedal and transferred by the brake pedal push rod to the smart booster, and applied to the hydraulic brake master cylinder after boosted by the smart booster. The smart booster uses the braking force to boost, reducing the control force applied by the driver to the brake pedal.

**Brake master cylinder fluid reservoir:**

The brake fluid used by the hydraulic brake system is provided inside.

**Brake master cylinder:**

Convert the mechanical input force into hydraulic output pressure, and the hydraulic output pressure is distributed to two hydraulic oil ways to supply oil for diagonal wheel brake oil way.

**Brake pipe and brake hose:**

Transfer brake fluid through the hydraulic brake system parts.

**Brake cylinder:**

Convert the hydraulic input pressure into a mechanical output force.

**System operation:**

The mechanical force from the brake pedal is converted by the master pump to oil pressure, after the adjustment of the hydraulic electronic control unit, and is transferred to the brake cylinder through the brake rigid tube and brake hose.

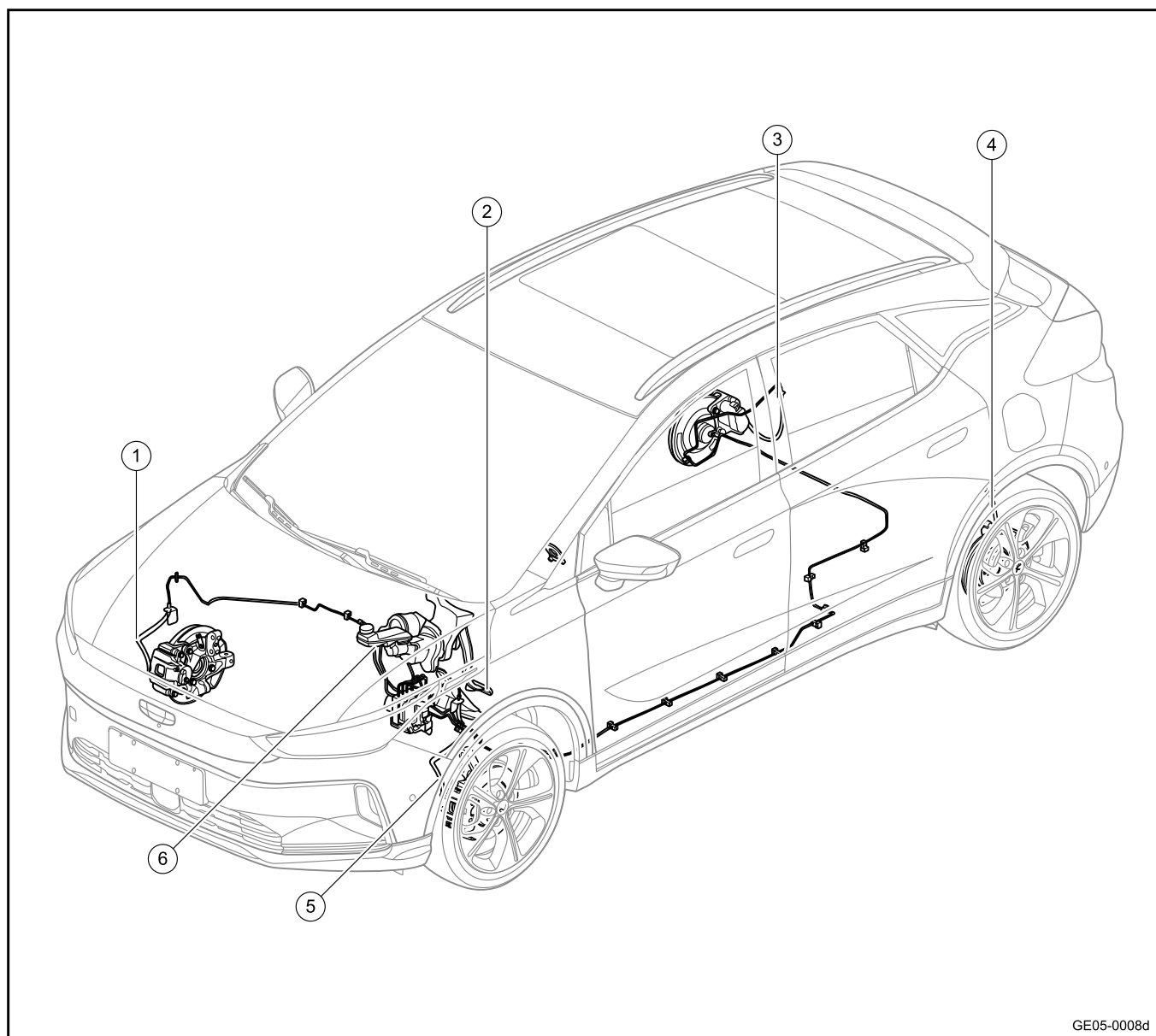
The brake cylinder converts the oil pressure into the mechanical force to make the brake pad press the brake disc to conduct the brake of the vehicle.

**Brake system fault indicator lamp:**

The instrument cluster detects that the brake fluid level is too low, and the instrument cluster will light up the brake system failure indicator lamp.

## 5.4.3 Part location

## 5.4.3.1 Part Position

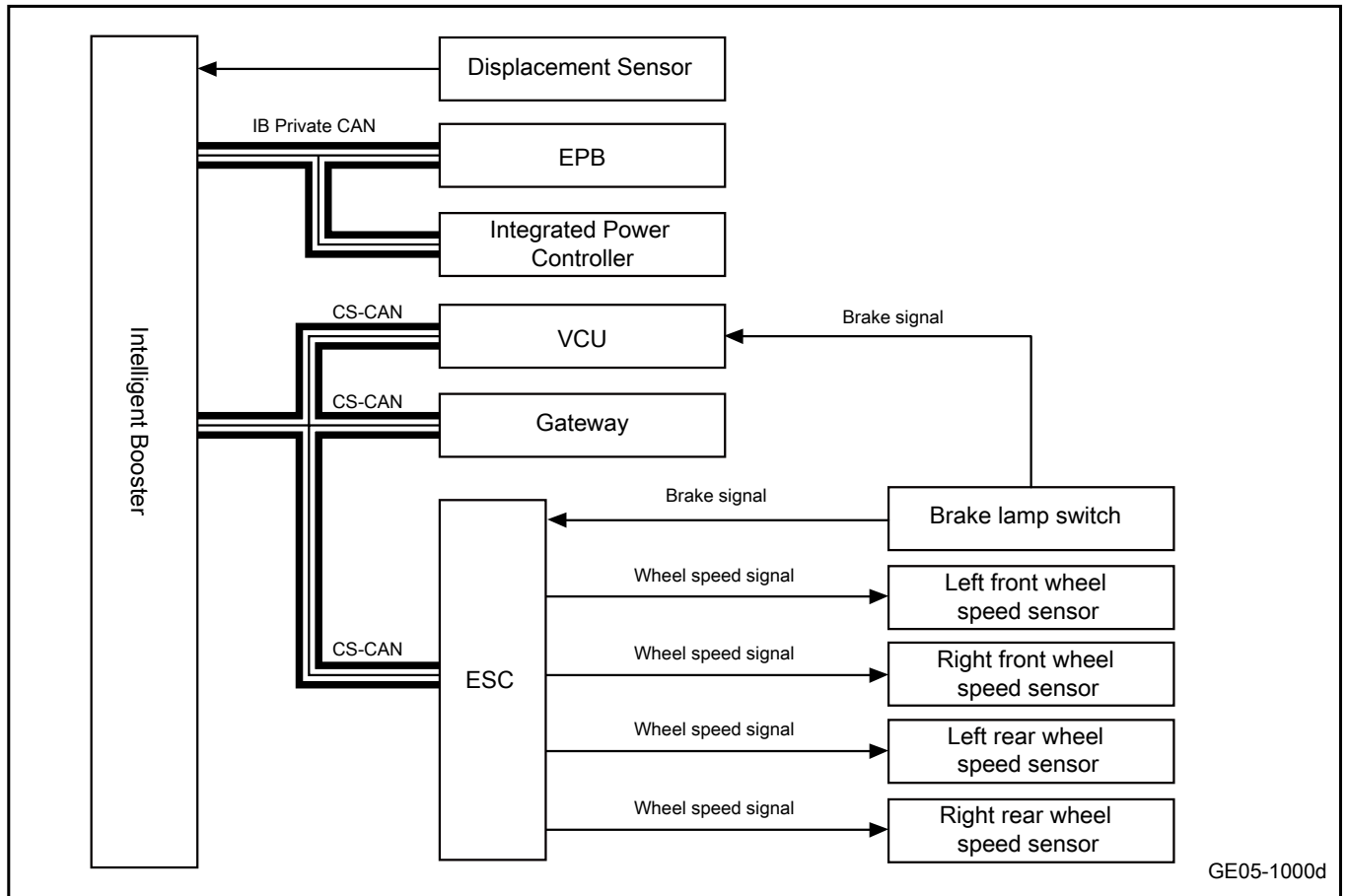


GE05-0008d

- |  |                          |
|--|--------------------------|
| 1. Front right brake hose              | 4. Rear left brake hose  |
| 2. Replacement of brake pedal assembly | 5. Front left brake hose |
| 3. Rear right brake hose               | 6. Smart booster         |

5.4.4 Electrical schematic diagram

5.4.4.1 Electrical Schematic Diagram



## 5.4.5 Diagnostic information and steps

### 5.4.5.1 Diagnosis Description

Before diagnosing the fault of the I-BOOSTER system. Refer to [Description and Operation](#). Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

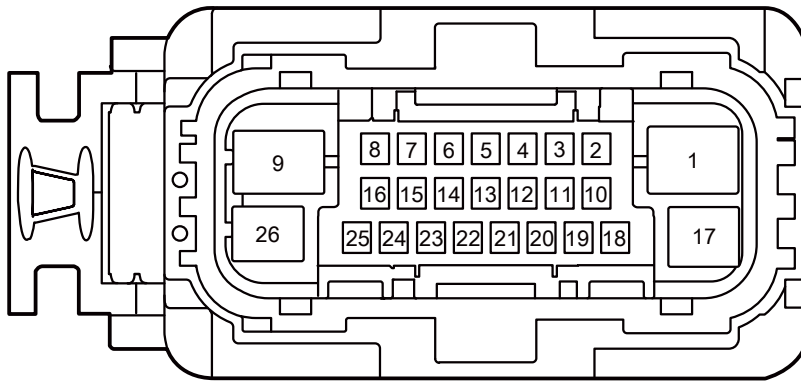
### 5.4.5.2 Routine inspection

- Check after-sales installations to guarantee that these installations will not affect the operation of I-BOOSTER system.
- Checking system parts that are easily accessible or can be seen to guarantee that there is no obvious damage or situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 5.4.5.3 List of I-BOOSTER System Terminals

#### CA141 Smart Booster Wiring Harness Connector

### CA141 Intelligent Booster Harness Connector



GE05-1021d

Terminal No.	Terminal name	Terminal description
1	ALT power supply	Intelligent booster battery power supply
2	Power supply of displacement sensor	Displacement sensor power output
3	-	-
4	-	-
5	-	-
6	-	-

Terminal No.	Terminal name	Terminal description
7	-	-
8	Displacement sensor grounding	Displacement sensor ground circuit
9	Ground connection	Smart booster grounding circuit
10	CS CAN-L	Chassis CAN low line
11	-	-
12	-	-
13	-	-
14	-	-
15		
16	Private CAN-L	Private CAN low line
17	-	-
18	CS CAN-H	Chassis CAN high line
19	-	-
20	IG1 power supply	Smart booster ACC\ON\START power supply
21	-	-
22	Displacement sensor signal 1	Displacement sensor signal 1 input
23	Displacement sensor signal 2	Displacement sensor signal 2 input
24	-	-
25	Private CAN-H	Private CAN high line
26	-	-

#### 5.4.5.4 Fault symptom table

Symptom	Suspected parts	Measures
Smart booster power failure	1. Battery	See <a href="#">Smart Booster Power Failure</a>
	2. Fuse	
	3. Circuit	
	4. Smart booster	
Smart Booster Communication Failure	1. Gateway	See <a href="#">Smart Booster Communication Failure</a>
	2. Smart booster	
	3. Circuit	
Internal failure of smart booster	1. Smart booster	See <a href="#">Internal Fault of Smart Booster</a>
Displacement sensor failure	1. Smart booster	See <a href="#">Displacement Sensor Failure</a>
	2. Displacement sensor	
	3. Circuit	

#### 5.4.5.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U012187	Communication with ESC is lost	See <a href="#">Smart Booster Communication Failure</a>



Diagnostic Trouble Code	Description	Fault location/elimination method
U021487	Communication with PEPS is lost	
U015587	Communication with IPK is lost	
U041681	Invalid signals received from ESC	
U051581	Invalid signals received from PEPS	
U042381	Invalid signals received from IPK	
U007300	Public CAN bus switching off error	
U000100	Private CAN bus switching off error	
C170009	CAN hardware error	
C170109	Pedal stroke sensor offset error	See <a href="#">Pedal Displacement Sensor Failure</a>
C170961	Pedal stroke sensor calibration data failure	
C171B4B	The temperature of the power supply end of the pedal stroke sensor is too high	
C170928	Pedal stroke sensor signal is out of range	
C170A11	Pedal stroke sensor is short to ground	
C170A12	Pedal stroke sensor is short to power supply	
C170C12	Motor temperature sensor channel 2 is shorted to the power supply	See <a href="#">Internal Fault of Smart Booster</a>
C170D11	Motor temperature sensor channel 1 is shorted to ground	
C170D12	Motor temperature sensor channel 1 is shorted to the power supply	
C170E98	Motor temperature is too high (level 2)	
C170F02	Motor temperature sensor signal is abnormal	
C171185	Motor current channel 1 signal exceeds the upper limit	
C171184	Motor current channel 1 signal exceeds the lower limit	
C171285	Motor current channel 2 signal exceeds upper limit	
C171284	Motor current channel 2 signal exceeds the lower limit	
C170211	Motor temperature sensor channel 2 is shorted to ground	
C170398	Motor temperature is too high (level 1)	
C170396	Motor abnormality found in self-check	

Diagnostic Trouble Code	Description	Fault location/elimination method
C170346	Motor calibration error	
C171085	Rotor position sensor signal is too large	
C171084	Rotor position sensor signal is too small	
C171396	Motor driver chip error	
C171002	The vector signal of the rotor position sensor is abnormal	
U100044	RAM fault	
U100145	Flash failure	
C171404	The hardware does not match the software	
C171592	Abnormal motor performance	
C171649	Power-end capacitor failure	
C171944	Controller NVRAM read error	
C171892	Controller A/D unit is abnormal	
C17041D	Microcontroller interface overcurrent	
U100246	EEPROM read/write error	
C170792	System running error	
C170809	Internal power supply error in microcontroller	
C170752	System initialization error	
U300617	ECU power supply voltage is high	
U300616	ECU power supply voltage is low	
C171A16	Too-low voltage causes the system to shut down	
C171A17	Over-high voltage causes the system to shut down	

### 5.4.5.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

#### 5.4.5.7 Read and clear of fault diagnosis code

##### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

##### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

#### 5.4.5.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	Power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	The number of transmissions	0-255	time
4	The first fault mileage	0-999999	Km

#### 5.4.5.9 Smart booster power failure

##### 1. DTC description:

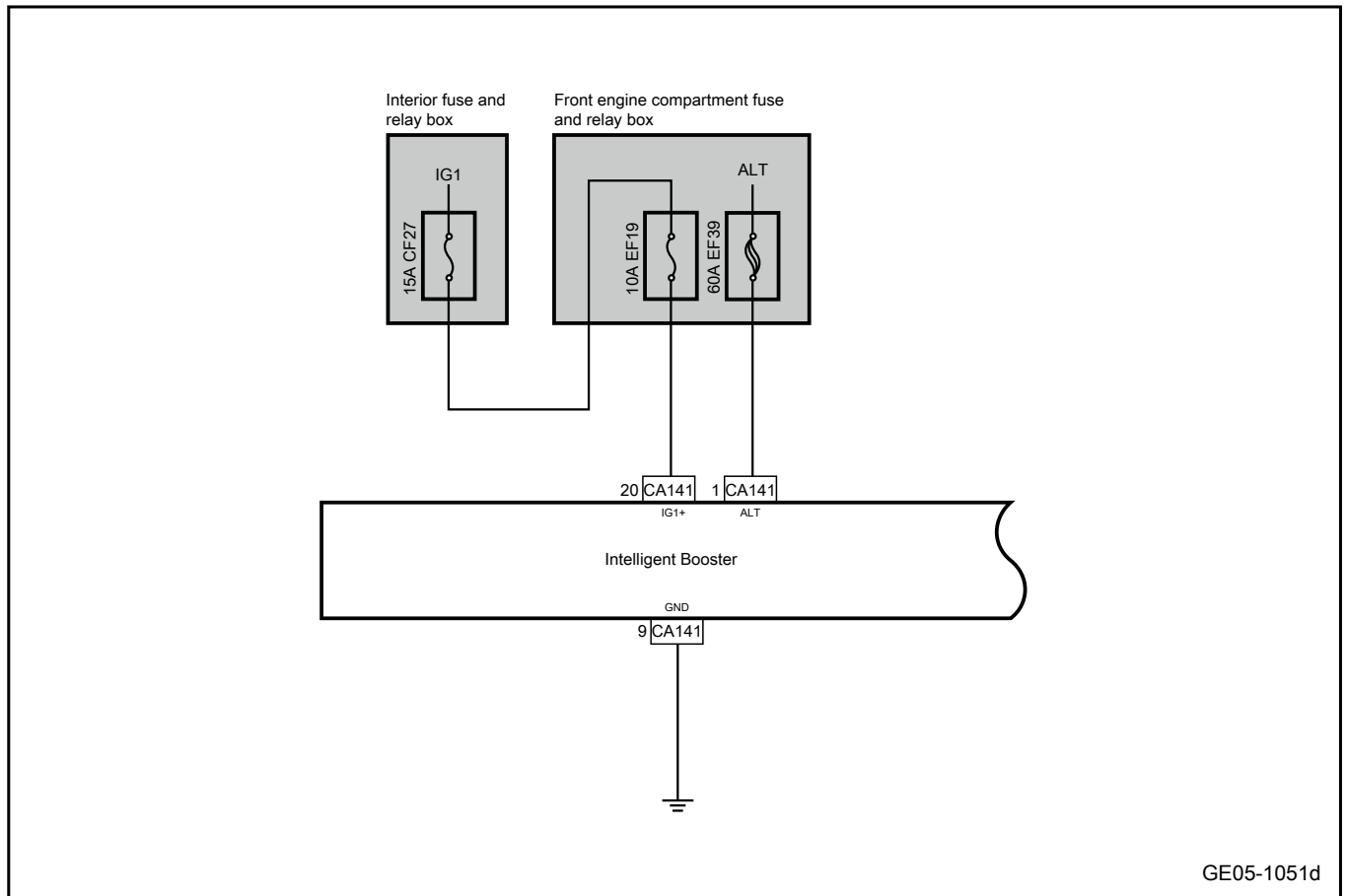
Diagnostic Trouble Code	Description
U300617	ECU power supply voltage is high
U300616	ECU power supply voltage is low
C171A16	Too-low voltage causes the system to shut down
C171A17	Over-high voltage causes the system to shut down

##### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	The motor power supply voltage is high and does not reach the shutdown level (between 16v and 27v), lasting for 200 milliseconds	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization	1. Circuit 2. Fuse 3. Smart booster
U300616	The motor power supply voltage is too low and does not reach the shutdown level (between 9.8v and 6.5v)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C171A16	The system voltage is too low, reaching the shutdown level (200ms<6.5V)		
C171A17	The system voltage is high, reaching the shutdown level (>27v, lasting for 200ms)		

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the smart booster harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the fuse of the smart booster.
--------	--------------------------------------

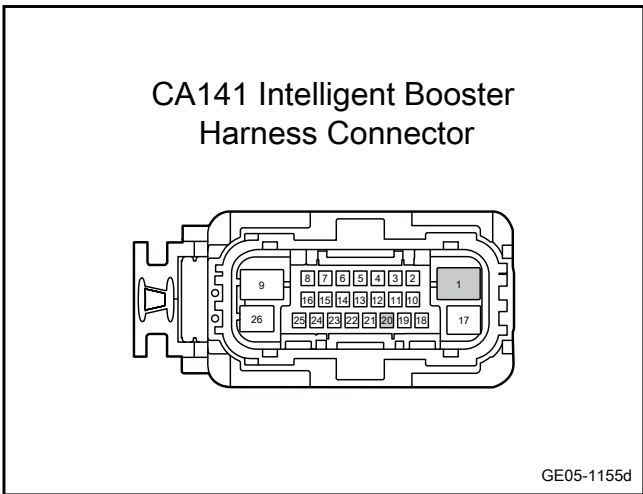
- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF27 is blown.  
  
Rated fuse capacity: 15A
- C. Unplug the fuse and check whether the fuse EF19 is blowout.  
  
Rated fuse capacity: 10A
- D. Unplug the fuse and check whether the fuse EF36 is blowout.  
  
Rated fuse capacity: 60A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the power circuit of the smart booster.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart booster harness connector CA141.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard voltage value
CA141(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA141(20)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

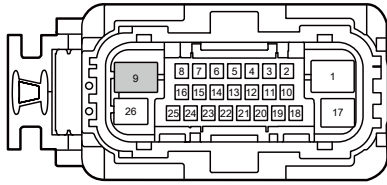
No

Repair or replace the harness.

Yes

**Step 4** Check the grounding circuit of the smart booster.

CA141 Intelligent Booster  
Harness Connector



GE05-1156d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart booster harness connector CA141.

Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard voltage value
CA141(9)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- C. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the smart booster.

- A. Replace the smart booster. See [Replacement of Smart Booster](#)

Next Step

Step 6 Reprogram and reset the smart booster.

- A. Reprogram and reset the smart booster. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 | System is normal.

### 5.4.5.10 Smart Booster Communication Failure

#### 1. DTC description:

Diagnostic Trouble Code	Description
U012187	Communication with ESC is lost
U021487	Communication with PEPS is lost
U015587	Communication with IPK is lost
U041681	Invalid signals received from ESC
U051581	Invalid signals received from PEPS
U042381	Invalid signals received from IPK
U007300	Public CAN bus switching off error
U000100	Private CAN bus switching off error
C170009	CAN hardware error

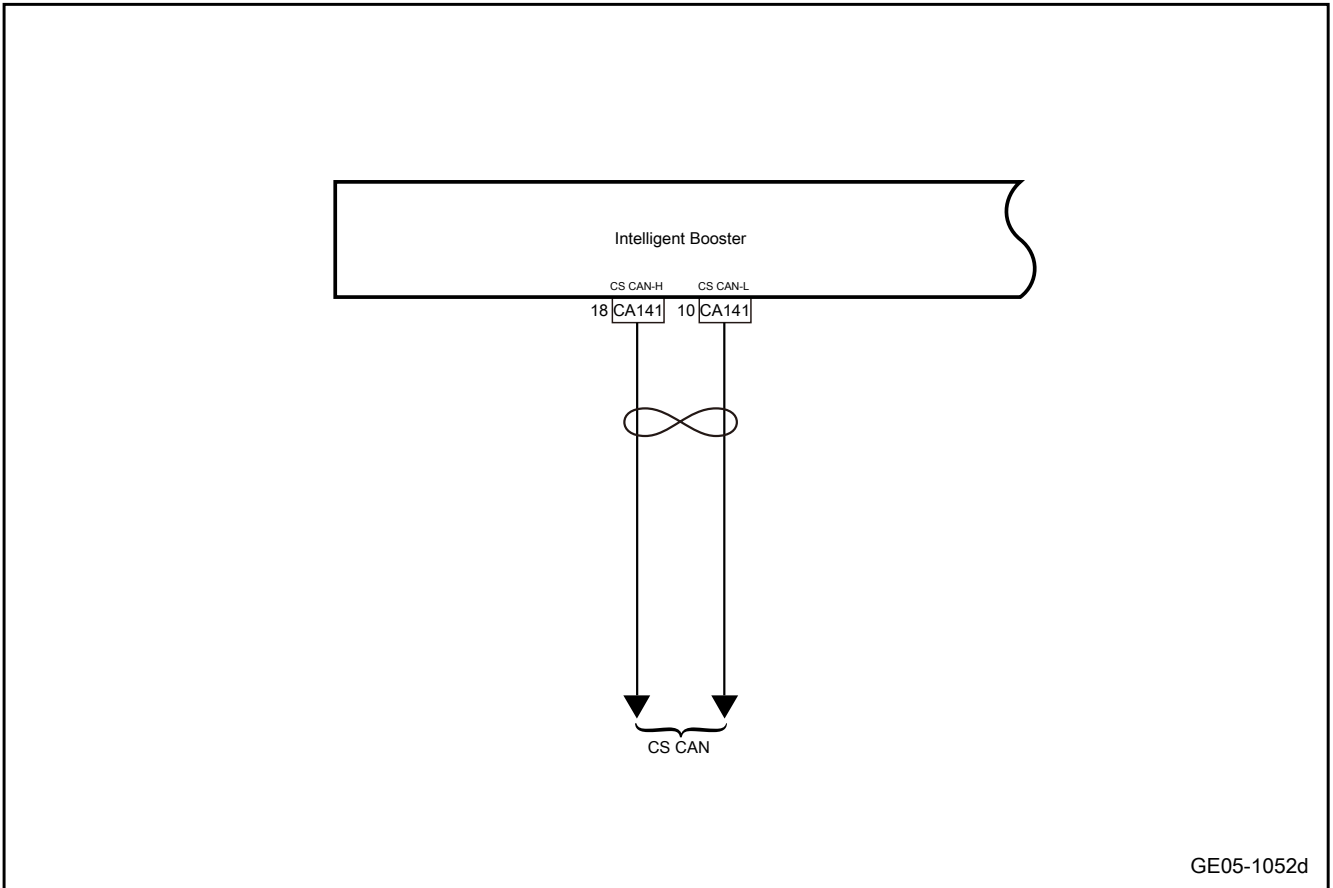
#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012187	Any message (0x60, 0x61, 0x108) from the ESC node is lost for 250 milliseconds	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Be able to communicate	1. Circuit 2. Smart booster 3. Diagnostic interface
U021487	Any message (0x1E2) from the PEPS node is lost for 250 milliseconds		
U015587	Any message from the IPK node is lost 5000ms (0x3F1)		
U041681	1. Use incorrect DLC, Chceksum/Alivecounter to receive 10 consecutive messages (10*message cycle) 2. Any signal received during the meeting is an invalid value within 250 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U051581	1. Use incorrect DLC to receive 10 consecutive messages (10*message cycle) 2. Any signal received during the conference is an invalid value within 250 milliseconds	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
U042381	1. Use incorrect DLC to receive 5 consecutive messages (5*message cycle) 2. Any signal in the conference is received with an invalid value within 5000ms		
U007300	After 3 consecutive bus disconnection detections, the fault will be recorded within 200 milliseconds		
U000100	After 3 consecutive bus disconnection detections, the fault will be recorded within 200 milliseconds		
C170009	CAN driver: timeout caused by HW error (CAN controller configuration failed)		

3. Schematic circuit diagram:





4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the smart booster harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. Check the instrument communication network, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the smart booster.

- A. Check whether the power supply and the grounding harness of smart booster control module are normal. See [Smart Booster Power Failure](#)
- B. Replace the smart booster, see [Replacement of the Smart Booster](#)

Next Step

Step 5 Reprogram and reset the smart booster.

- A. Reprogram and reset the smart booster. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 5.4.5.11 Internal failure of smart booster

#### 1. DTC description:

DTC	Trouble description
C170C12	Motor temperature sensor channel 2 is shorted to the power supply
C170D11	Motor temperature sensor channel 1 is shorted to ground
C170D12	Motor temperature sensor channel 1 is shorted to the power supply
C170E98	Motor temperature is too high (level 2)
C170F02	Motor temperature sensor signal is abnormal
C171185	Motor current channel 1 signal exceeds the upper limit
C171184	Motor current channel 1 signal exceeds the lower limit
C171285	Motor current channel 2 signal exceeds upper limit
C171284	Motor current channel 2 signal exceeds the lower limit
C170211	Motor temperature sensor channel 2 is shorted to ground
C170398	Motor temperature is too high (level 1)
C170396	Motor abnormality found in self-check
C170346	Motor calibration error
C171085	Rotor position sensor signal is too large
C171084	Rotor position sensor signal is too small
C171396	Motor driver chip error
C171002	The vector signal of the rotor position sensor is abnormal
U100044	RAM fault
U100145	Flash failure
C171404	The hardware does not match the software
C171592	Abnormal motor performance
C171649	Power-end capacitor failure
C171944	Controller NVRAM read error
C171892	Controller A/D unit is abnormal
C17041D	Microcontroller interface overcurrent
U100246	EEPROM read/write error
C170792	System running error
C170809	Internal power supply error in microcontroller
C170752	System initialization error

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C170C12	BLM temperature signal wire 2 are shorted to the power supply	1. Vehicle mode: ignition 2. Electronic control unit mode 3. System initialization, working voltage 4. Normal working voltage (9V-16V) 5. Be able to communicate	1. Smart booster
C170D11	BLM temperature signal wire 1 is shorted to ground		
C170D12	BLM temperature signal wire 1 are shorted to the power supply		
C170E98	Motor temperature is too high		
C170F02	BLM temperature sensor signal is unreasonable		
C171185	Motor offset/phase current 1 out of range high		
C171184	Motor offset/phase current 1 out of range low		
C171285	Motor offset/phase current 2 out of range high		
C171284	Motor offset/phase current 2 out of range low		
C170211	BLM temperature signal wire 2 is shorted to ground		
C170398	The temperature problem of the electronic control unit causes the motor current to decrease		
C170396	The BLM initial test was not completed within 500 ms after the first BLM initial test is started		
C170346	Failed lubrication program or failure to find idle program		
C171085	Rotation position sensor signal is too high		
C171084	Rotation position sensor signal is too low		
C171396	An internal problem occurred in the motor drive bridge ASIC		
C171002	The vector length of the rotation position sensor is unreasonable		
U100044	RAM fault		
U100145	Flash memory failure detected (checkout and incorrectness, single error overflow)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C171404	Flash software does not match the device		
C171592	Performance failure of brake booster motor		
C171649	Failure (e.g. capacitor missing) detected in the charge pump test		
C171944	Non-volatile random access memory (NVRAM) error of internal control module		
C171892	1. An open circuit on the ADC pin is detected in the ADC pin test 2. ADC failure in self-check 3. An ADC register bit is flipped or blocked		
C17041D	Internal oscillator failure of system ASIC is detected.		
U100246	1. Fail to write NvM items 2. The NvM item is not readable		
C170792	1. Operating system error 2. Overload during operation 3. iBooster is not closed		
C170809	1. ASIC internal current reference is out of range 2. Initial test/inspection of ASIC supply components fails		
C170752	The system stays in the initialization mode too long		

### 3. Diagnosis steps

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the smart booster harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace the smart booster.

- A. Check whether the power supply and the grounding harness of smart booster control module are normal. See [Smart Booster Power Failure](#)
- B. Replace the smart booster, see [Replacement of the Smart Booster](#)

Next Step

Step 5 Reprogram and reset the smart booster.

- A. Reprogram and reset the smart booster. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Write controller data.

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next Step

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 5.4.5.12 Displacement sensor failure

1. DTC description:

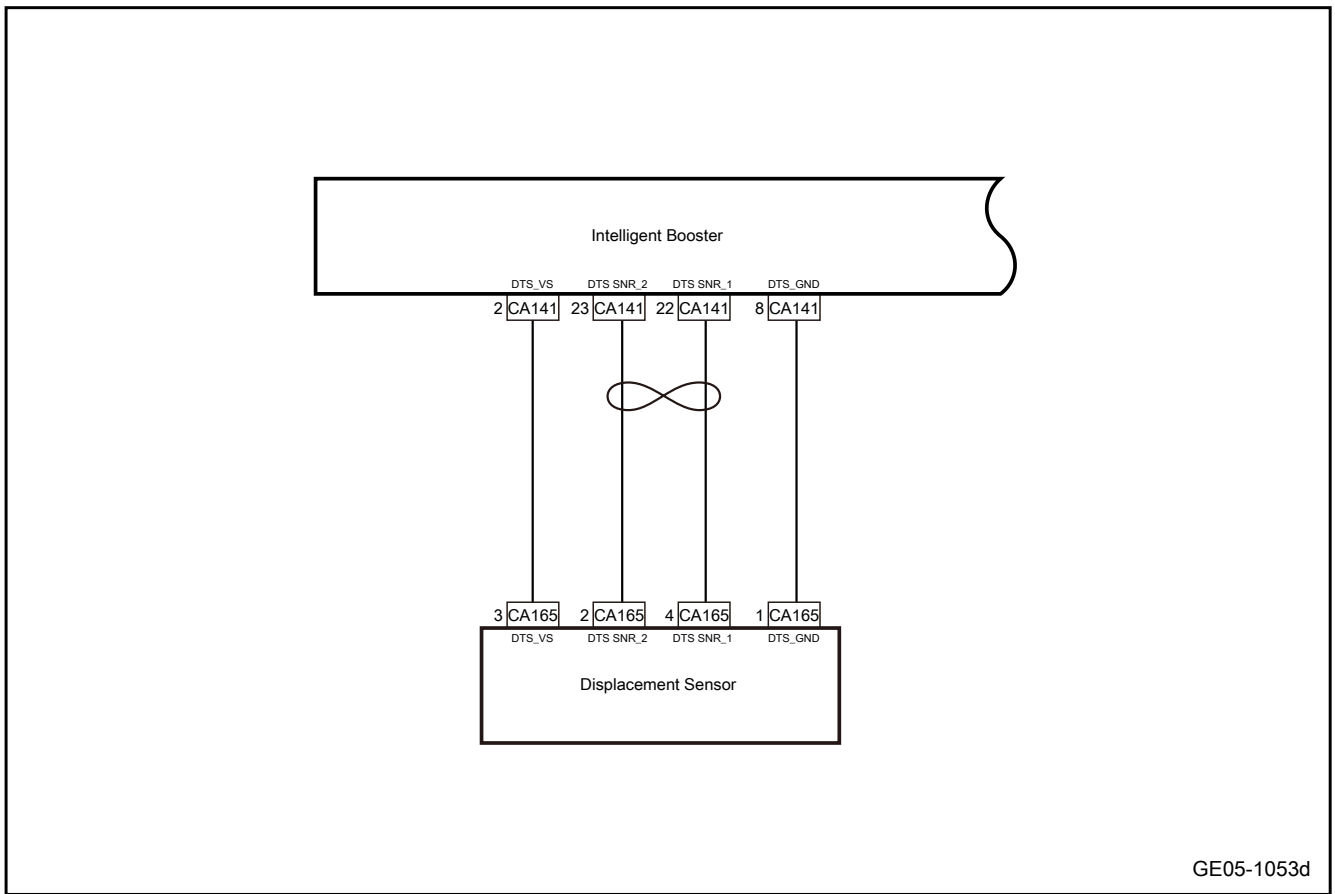
Diagnostic Trouble Code	Description
C170109	Pedal stroke sensor offset error
C170961	Pedal stroke sensor calibration data failure
C171B4B	The temperature of the power supply end of the pedal stroke sensor is too high
C170928	Pedal stroke sensor signal is out of range
C170A11	Pedal stroke sensor is short to ground
C170A12	Pedal stroke sensor is short to power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C170109	Linear position sensor offset is too high or too low	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	1. Circuit 2. Displacement sensor 3. Smart booster
C170961	LipsID in iBoosterNvM does not match LipsID in SW		
C171B4B	The sensor power supply temperature is too high and has been turned off		
C170928	If the linear position sensor offset is too high, the setting is faulty		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C170A11	Linear position sensor channel 1 line fails (line is short to ground)		
C170A12	Linear position sensor channel 1 line failure (line is short to power supply)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the smart booster and displacement sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the smart booster and displacement sensor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

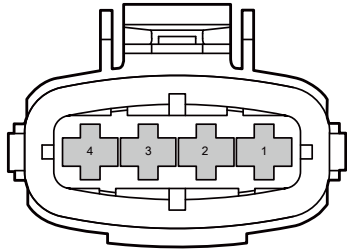
No

Repair or replace the faulty part.

Yes

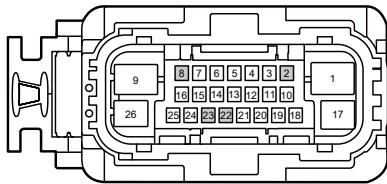
Step 3	Check whether the wiring harness between the displacement sensor and the smart booster is open.
--------	---

CA165 Displacement sensor harness connector



GE05-1151d

CA141 Intelligent Booster Harness Connector



GE05-1152d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart booster harness connector CA141.
- C. Disconnect the displacement sensor harness connector CA165.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA165(1)	CA141(8)	Standard resistance: less than 1Ω
CA165(2)	CA141(23)	
CA165(3)	CA141(2)	
CA165(4)	CA141(22)	

- E. Confirm whether the measured value meets the standard.

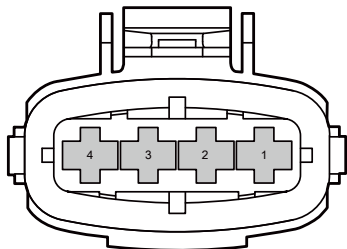
No

Repair or replace the harness.

Yes

Step 4 Check whether the wiring harness between the displacement sensor and the smart booster is short to the power supply.

CA165 Displacement sensor harness connector



GE05-1153d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart booster harness connector CA141.
- C. Disconnect the displacement sensor harness connector CA165.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA165(1)	Vehicle body is grounded.	Standard voltage: 0V
CA165(2)		
CA165(3)		

Measure terminal 1	Measure terminal 2	Standard value
CA165(4)		

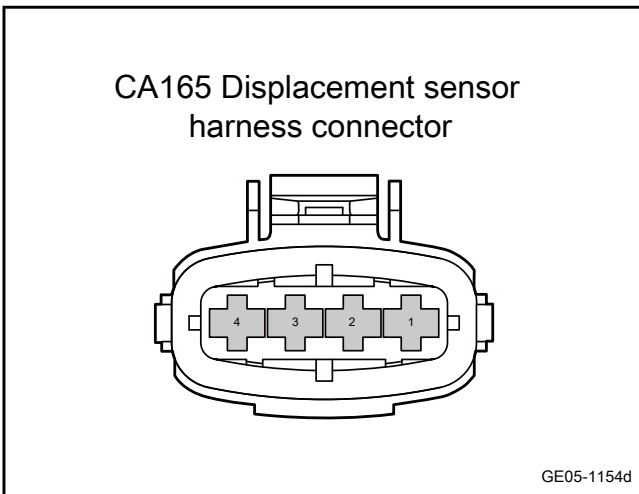
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the wiring harness between the displacement sensor and the smart booster is short to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart booster harness connector CA141.
- C. Disconnect the displacement sensor harness connector CA165.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA165(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA165(2)		
CA165(3)		
CA165(4)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the displacement sensor.

- A. Replace the displacement sensor. Refer to [Replacement of Displacement Sensor](#)
- B. Confirm whether the displacement sensor works normally.

Yes

System is normal.

No

**Step 7** Replace the smart booster.

- A. Check the power supply and ground wiring harness of the smart booster. See [Smart Booster Power Failure](#)
- B. Replace the smart booster. See [Replacement of Smart Booster](#)

Next Step

Step 8	Reprogram and reset the smart booster.
--------	--

- A. Reprogram and reset the smart booster. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

## 5.4.6 Removal and installation

### 5.4.6.1 Replacement of Smart Booster

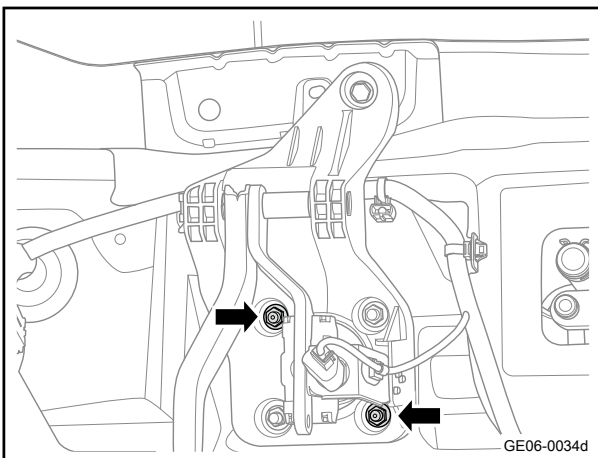
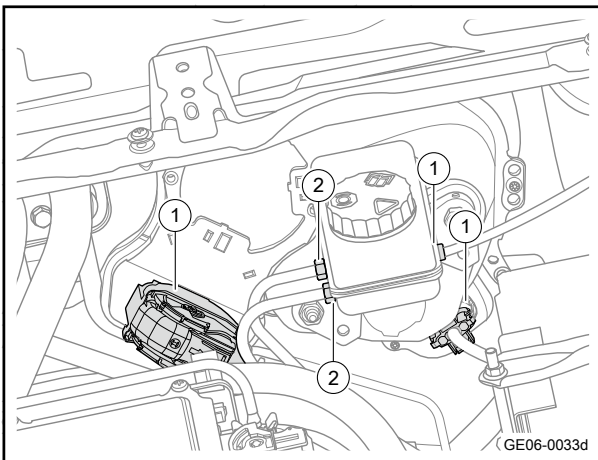
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

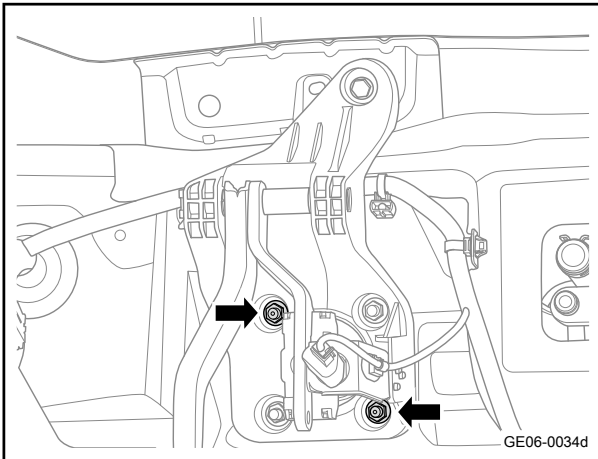
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the brake fluid. See [Draining and Filling of Brake Fluid](#)
- 3 Disconnect the smart booster harness connector 1.
- 4 Remove the 2 fixing nuts 2 of the brake pipe.

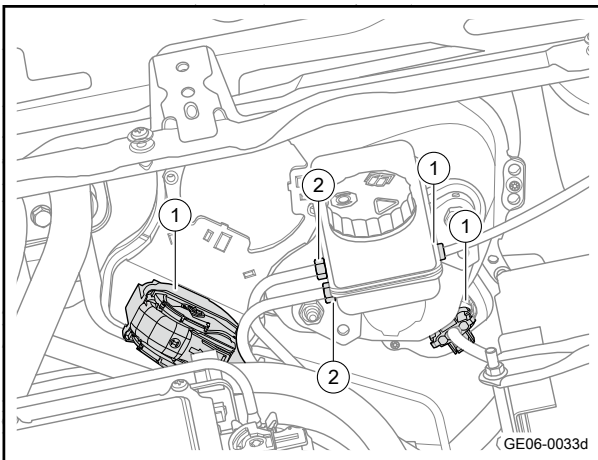


- 5 Remove the 2 fixing nuts of the smart booster.
- 6 Remove the smart booster.

#### Installation procedure



- 1 Move the smart booster to the installation location.
- 2 Install 2 fixing nuts of the smart booster.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)



- 3 Install the 2 fixing nuts 2 of the brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 4 Connect the smart booster harness connector 1.

- 5 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 6 Connect the negative cable of battery.

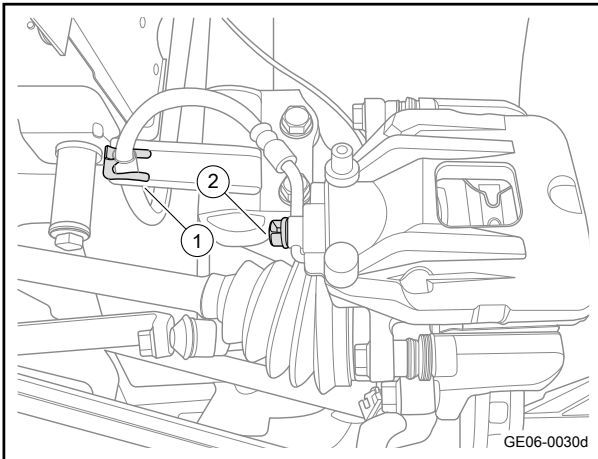
#### 5.4.6.2 Replacement of the front left brake hose

##### Removal procedure

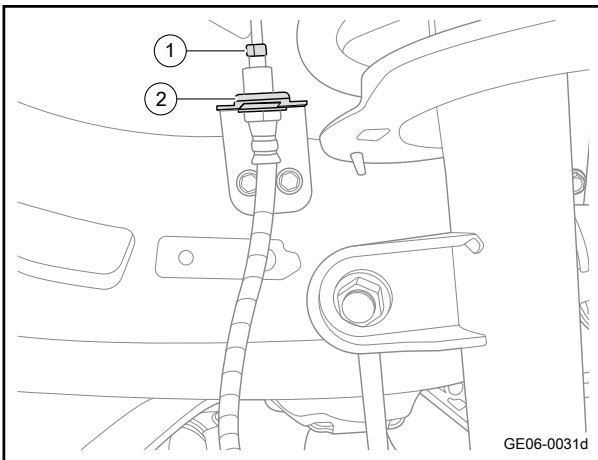
##### Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)

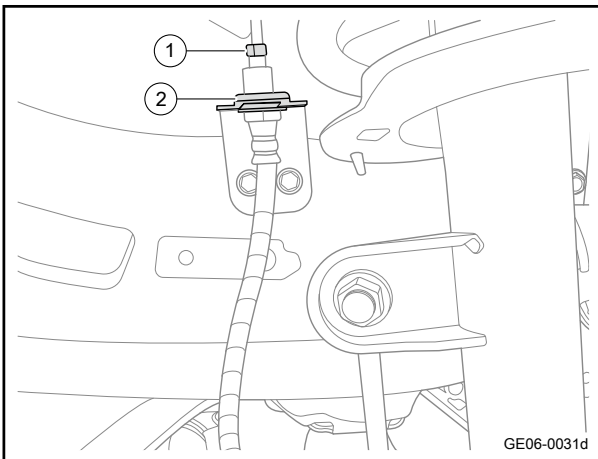


- 3 Remove the left front brake hose spring retaining plate 1, and disconnect the left front brake hose.
- 4 Remove the 1 fixing bolt 2 connecting the left front brake hose and the brake wheel cylinder.

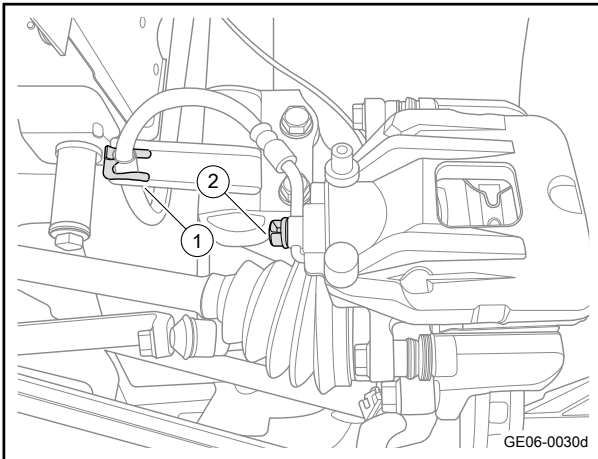


- 5 Remove the 1 fixing bolt 1 connecting the left front brake hose and the brake pipe.
- 6 Remove the retaining plate 2 connected to the left front brake oil pipe.
- 7 Remove the front left brake hose.

#### Installation procedure



- 1 Move the front left brake hose to the installation position.
- 2 Install the retaining plate 2 connected to the left front brake oil pipe.
- 3 Install 1 fixing bolt 1 connecting the left front brake hose and the brake pipe.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



- 4 Install 1 fixing bolt 2 connecting the left front brake hose and the brake wheel cylinder.  
Torque: 33N·m (metric) 24.4lb-ft (imperial system)
- 5 Install the left front brake hose spring retaining plate 1.

- 6 Install the wheel.
- 7 Lower the vehicle.

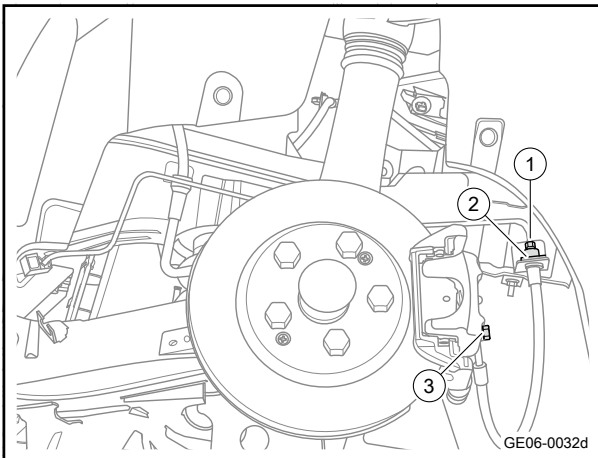
### 5.4.6.3 Replacement of rear right brake hose

#### Removal procedure

##### Caution

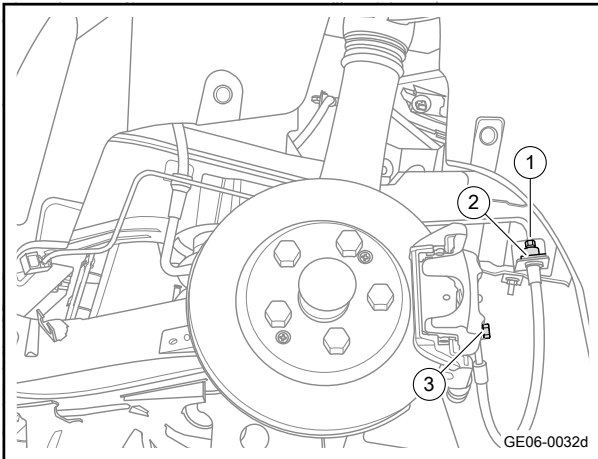
The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Remove the bolt 1 that connects the left rear brake hose with brake pipe
- 4 Remove the retaining plate 2 connected to the left rear brake oil pipe.
- 5 Remove the bolt 3 connecting the left rear brake hose to the brake cylinder.
- 6 Take off the rear left brake hose.



#### Installation procedure





- 1 Move the left rear brake hose to the installation position.
- 2 Install the bolt 3 connecting the left rear brake hose to the brake cylinder.  
Torque: 33N·m (metric) 24.4lb-ft (imperial system)
- 3 Install the retaining plate 2 connected to the left rear brake oil pipe.
- 4 Install the connecting bolt 1 between the left rear brake hose and the brake cylinder.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 5 Install the wheel.
- 6 Lower the vehicle.

#### 5.4.6.4 Replacement of brake pedal assembly

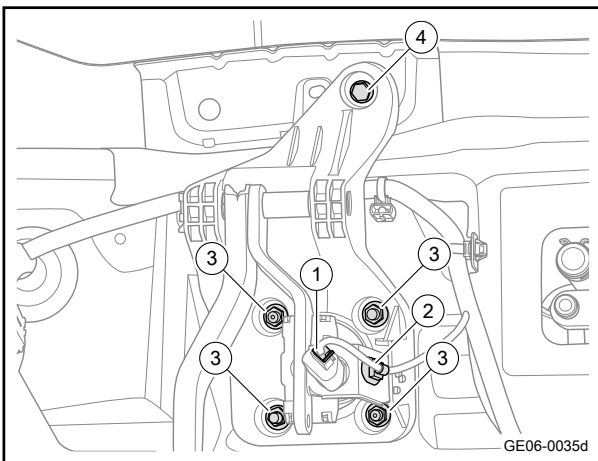
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

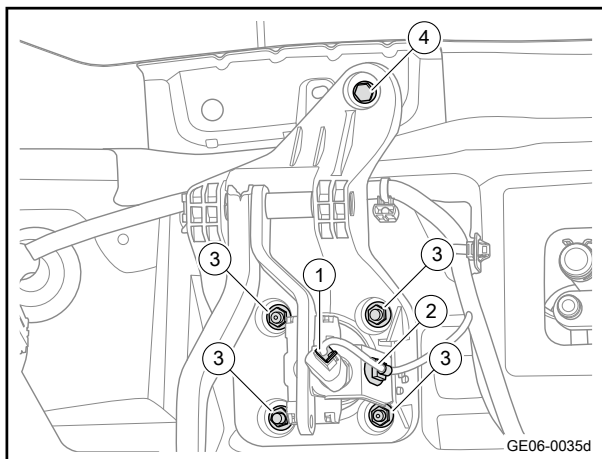
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the harness connector 1 of brake lamp switch.
- 3 Disengage the brake lamp switch harness buckle 2.
- 4 Remove the 4 fixing nuts 3 of the brake pedal.
- 5 Remove 1 fixing bolt 4 of the brake pedal.
- 6 Remove the brake pedal assembly.



##### Installation procedure



- 1 Move the brake pedal assembly to the installation position.
- 2 Install the 1 fixing bolt of 4 brake pedal.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)
- 3 Install the 4 fixing nuts 3 of the brake pedal.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)
- 4 Install the brake lamp switch harness buckle 2.
- 5 Connect the harness connector 1 of brake lamp switch.
- 6 Connect the negative cable of battery.

## 5.5 Parking system

### 5.5.1 Specification

#### 5.5.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
EPB switch pack fixing screw	ST4.2	2 - 3	1.5 - 2.2
Fixing nut for connecting EPB controller assembly to body	M6	8.5 - 11.5	6.3 - 8.5

## 5.5.2 Description and operation

### 5.5.2.1 Instructions and Operations

#### Structure and description of EPB electronic parking brake system

The EPB system, in which the parking brake control motor directly controls the rear wheel brake caliper to realize parking braking, composes of parking brake switch, ESC control module, EPB controller and parking brake actuator motor.

Parking brake switch is located on the auxiliary fascia console to the left of the gear shifting knob. When the parking brake switch is pulled up, the parking brake is locked. When the parking brake switch is pressed down, the parking brake is released.

The EPB system has an independent controller. The EPB switch is connected to the EPB controller. The main function of the EPB system is to receive the information of the EPB switch and the information on the CAN data bus, and then control the parking brake control motors through the processing and analysis of the information.

The parking brake control motors are installed on the left and right brake calipers of the rear wheels. Each motor is divided into two parts: a DC motor and a gear box, which are integrated with the rear wheel brake calipers. If a component fails, it is needed to the brake caliper assembly with EPB control motor, and the EPB actuator cannot be replaced separately. The control motor operates during the parking braking. There is no corresponding sensor inside the control motor to detect the clamp force of the brake pad. Instead, the change of motor current caused by the change of load is beneficial to understand the clamp force of the brake pad when meshing the brake pad. The working condition of DC motor is controlled by ESC control unit.

The EPB system is equipped for the parking brake through control of brake caliper. If there is a fault that the parking brake cannot be released, it is necessary to open the rear cover plate of the parking brake control motor. Then, it is proper to use a dedicated wrench to rotate the push rod in the actuating motor to release the brake caliper. After completing the operation, it is needed to use a dedicated diagnostic apparatus to reset the EPB brake caliper.

#### Advantages of EPB electronic parking brake system

1. The parking brake is automatically applied after the electric drive system is turned off.
2. Different drivers have different power levels. Traditional parking brakes have differences in actual parking brakes. EPB brake force is stable and will not vary from person to

person. It replaces the traditional parking brake system and achieves the parking brake by simple manual switch operation. Consequently, the comfort and safety of the complete vehicle is greatly improved.

3. The automatic functions such as auxiliary starting can be added. It occupies a small space, which makes the vehicle interior design more convenient.

### 5.5.3 How the system works

#### 5.5.3.1 System Working Principles

##### Parking in resting state and release

When the vehicle is stopped, regardless of whether the start switch is ON or OFF, and regardless of the state of the service brake, pull up the EPB switch, and the EPB system will automatically lock the vehicle. When the parking brake is released, the start-and-stop switch is set to the ON position (regardless of whether the motor is working or not), step on the brake pedal, and press down the EPB switch, and the EPB system stops and locks.

##### Emergency braking in moving state

When the vehicle is running, the driver pulls up the EPB switch. After receiving the switch signal, the EPB control unit requests the ESC system to control the service brake through the data bus. If the service brake system or ESC system fails, the EPB control unit directly controls the parking brake. The vehicle's brake system works (rear wheels only) to deal with this emergency. The brake control of the EPB system in moving state continues until the EPB switch is released. During braking in moving state, the parking brake warning lamp will always flash.

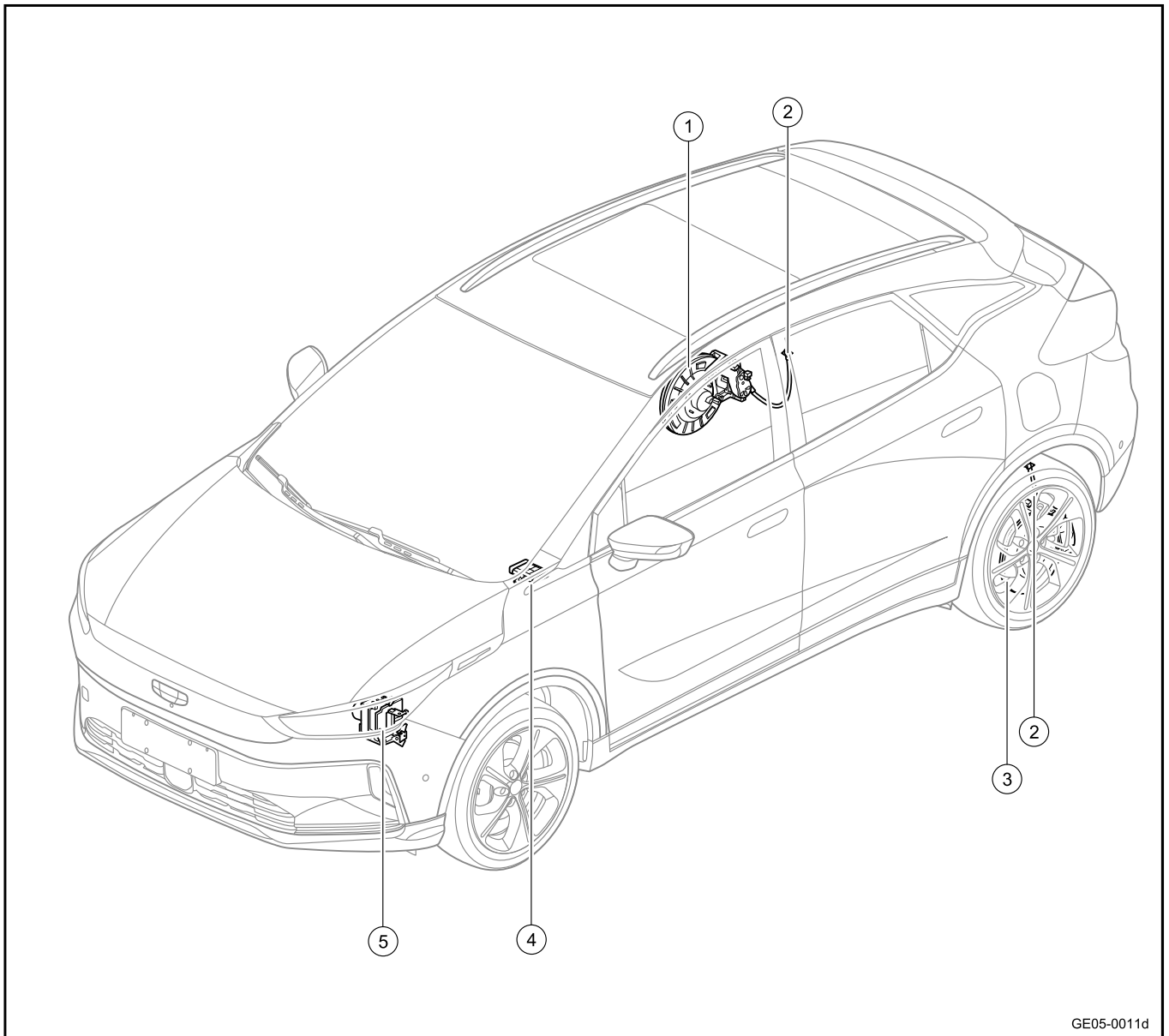
##### Hill Hold and assistance

When parking on a ramp, EPB will measure the slope according to the longitudinal acceleration sensor integrated in the hydraulic electronic control module, thereby calculating the sliding force of the vehicle on the slope due to gravity, and the EPB system will apply braking force to rear wheels to balance to the sliding force and thus realize parking on ramp.

When the vehicle starts on a ramp, the EPB Hill Hold assist function will be based on the angle of the ramp. The driving motor torque, accelerator pedal position, gear position and other information are used to calculate the release timing. When the traction force of the vehicle is greater than the sliding force, the parking brake is automatically released to assist in the starting on the slope.

## 5.5.4 Part location

## 5.5.4.1 Part Position

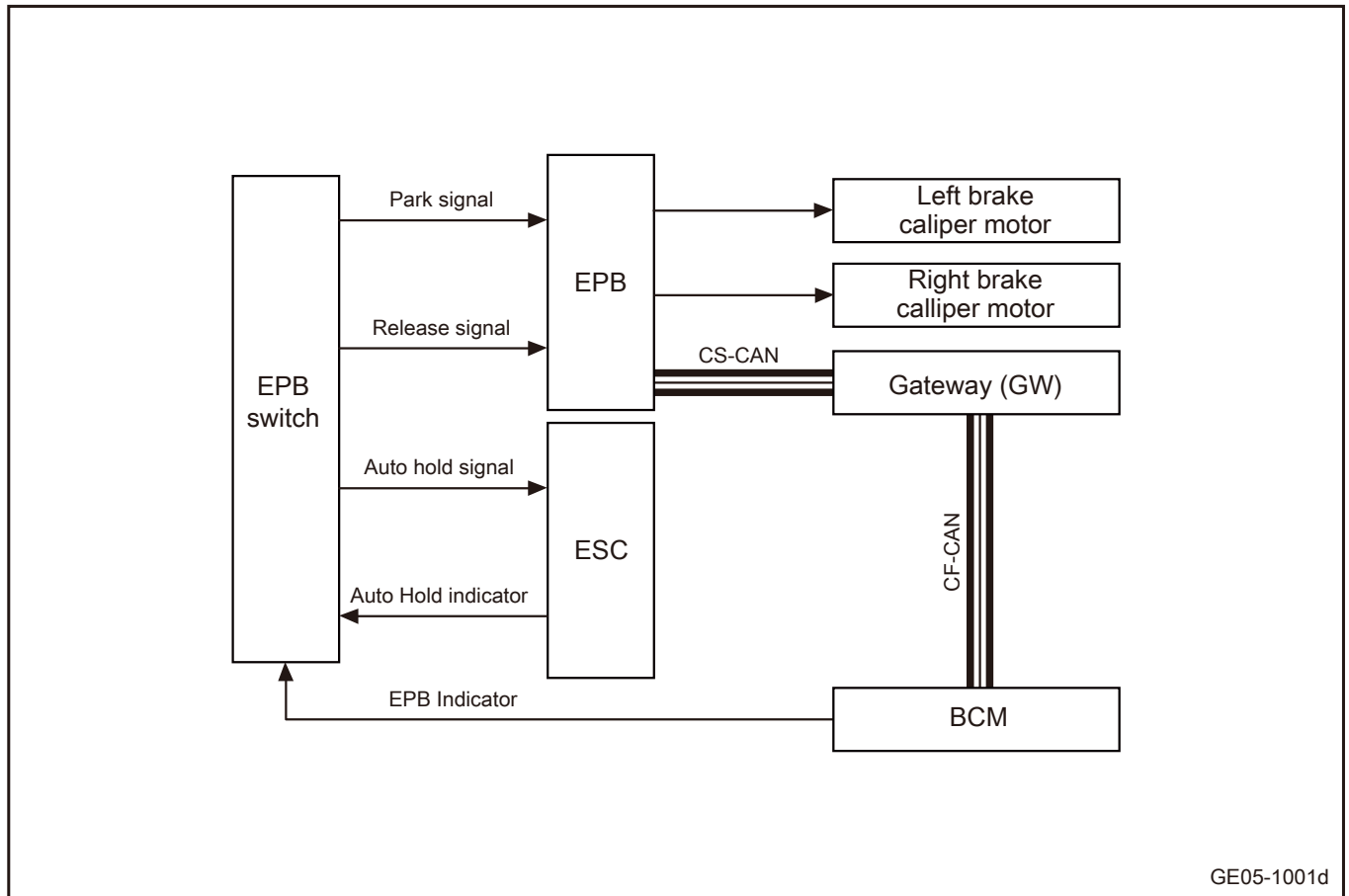


GE05-0011d

- |                              |                              |
|------------------------------|------------------------------|
| 1. Right rear brake assembly | 4. EPB control unit assembly |
| 2. Brake hose                | 5. ESC control module;       |
| 3. Left rear brake assembly  |                              |

5.5.5 Electrical block diagram

5.5.5.1 Electrical schematic diagram of parking system



## 5.5.6 Diagnostic information and steps

### 5.5.6.1 Diagnosis Description

The fault code can be read through the data connector of the vehicle (DTC diagnostic interface), the data table of ESC control module can be used to read the data table displayed on the intelligent tester, and the functions of reading switch and sensor values can be performed without removing any parts. Reading data table is the first step in trouble shooting and one of the ways to reduce diagnostic time.

### 5.5.6.2 Routine inspection

- Confirm trouble symptom

The most difficult situation in trouble shooting is the absence of any symptoms. In this case, the fault described by the user must be thoroughly analyzed. The same or similar conditions and environment when the fault of the distributor's vehicle comes out should be simulated. No matter how experienced and skilled the maintenance personnel is, if they do not confirm the symptoms of the fault, they will ignore some important things in the repair and make wrong guesses in some places. It will make trouble shooting to fail.

- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

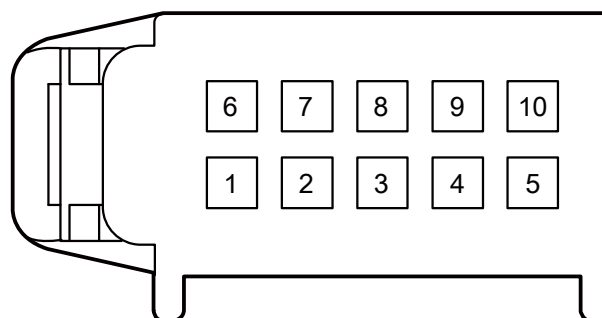
- The connector joints and vibration fulcrum are the main parts that should be thoroughly checked. Vibration method is recommended in case of failure due to vibration.

1. Gently vibrate the potentially faulty sensor part with fingers and check for faults.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the harness in both vertical and horizontal directions.

### 5.5.6.3 List of EPB terminals

#### IP141 EPB switch harness connector

#### IP141 EPB switch harness connector

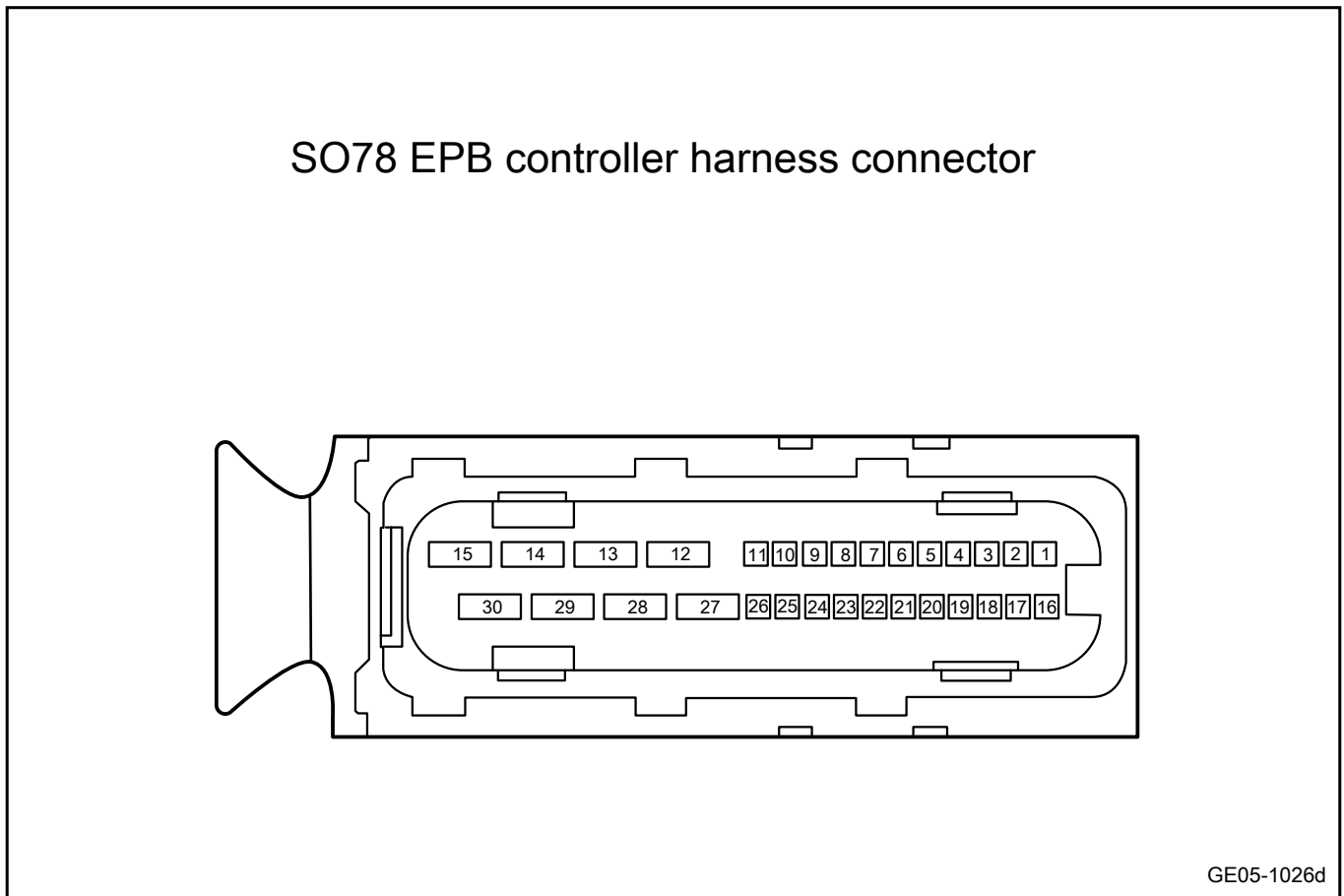


GE05-1022d



Terminal No.	Terminal name	Terminal description
1	AUTO HOLD indicator lamp input signal	Automatic parking indicator light control signal input
2	EPB indicator	EPB indicator control signal input
3	Auto Hold switch signal	AUTO HOLD switch signal output
4	Auto Hold indicator lamp power supply	Auto Hold indicator lamp power supply input
5	EPB parking brake release signal output	EPB parking brake release signal output
6	Ground connection	Grounding circuit of EPB switch
7	EPB-applied signal output	EPB-applied signal output
8	EPB release signal input	EPB release signal input
9	Backlight lamp power supply	Backlight power supply input
10	EPB-applied signal input	EPB-applied signal input

S078 EPB controller harness connector



Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	-	-

Terminal No.	Terminal name	Terminal description
4	-	-
5	-	-
6	Private CAN-H	Private CAN high line
7	Private CAN-L	Private CAN low line
8	-	-
9	EPB-applied signal input	EPB-applied signal input
10	EPB-applied signal output	EPB-applied signal output
11	IG1 power supply	EPB controller ACC\ON\START power supply
12	Right brake caliper motor positive	Right brake caliper motor control signal output
13	B+Power supply	EPB controller battery power supply
14	Left brake caliper motor positive	Left brake caliper motor control signal output
15	B+Power supply	EPB controller battery power supply
16	CS CAN-H	Chassis CAN high line
17	CS CAN-L	Chassis CAN low line
18	EPB release signal input	EPB release signal input
19	EPB release signal output	EPB release signal output
20	-	-
21	-	-
22	IG1 power supply	EPB controller ACC\ON\START power supply
23	-	-
24	-	-
25	-	-
26	-	-
27	Right brake caliper motor negative	Right brake caliper motor control signal output
28	Ground connection	EPB controller grounding circuit
29	Left brake caliper motor negative	Left brake caliper motor control signal output
30	Ground connection	EPB controller grounding circuit

#### 5.5.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
EPB power failure (left)	1. Battery	Refer to <a href="#">EPB power supply fault (left)</a>
	2. Fuse	
	3. Circuit	
	4. EPB	
EPB communication failure (left)	1. EPB	See <a href="#">EPB Communication Failure (Left)</a>
	2. CAN bus	

Symptom	Suspected parts	Measures / Reference
Internal fault of EPB (left)	1. EPB	Refer to <a href="#">EPB internal fault (left)</a>
EPB switch failure (left)	1. Circuit	Refer to <a href="#">EPB switch fault (left)</a>
	2. EPB	
	3. EPB switch	
Brake caliper motor failure (left)	1. Circuit	Refer to <a href="#">EPB brake caliper fault (left)</a>
	2. EPB	
	3. Left brake caliper motor	
EPB power failure (right)	1. Battery	Refer to <a href="#">EPB power supply failure (right)</a>
	2. Fuse	
	3. Circuit	
	4. EPB	
EPB communication failure (right)	1. EPB	See <a href="#">EPB Communication Failure (Right)</a>
	2. CAN bus	
Internal fault of EPB (right)	1. EPB	Refer to <a href="#">EPB internal fault (right)</a>
EPB switch fault (right)	1. Circuit	Refer to <a href="#">EPB switch fault (right)</a>
	2. EPB	
	3. EPB switch	
Brake caliper motor failure (right)	1. Circuit	Refer to <a href="#">Brake caliper motor fault (right)</a>
	2. EPB	
	3. Right brake caliper motor	
EPB indicator fault	1. Circuit	Refer to <a href="#">EPB indicator lamp fault</a>
	2. EPB switch	
	3. BCM	
Auto Hold indicator lamp failure	1. Circuit	See <a href="#">Automatic Parking Indicator Lamp Failure</a>
	2. EPB switch	
	3. Fuse	
	3. ESC	

### 5.5.6.5 List of Diagnostic Trouble Codes (DTC)

#### Left EPB

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	System power supply voltage is too low	Refer to <a href="#">EPB power supply fault (left)</a>
U300617	System power supply voltage is too high	
C150945	Controller failure-stack	Refer to <a href="#">EPB internal fault (left)</a>
C150940	Controller failure-digital-to-analog conversion	
C150942	Controller hardware failure-electrically erasable memory	
C150955	Controller failure-not properly configured	

Diagnostic Trouble Code	Description	Fault location/elimination method
C150986	Controller failure-unexpected power failure	
C150954	Controller failure-not calibrated	
C15094C	Controller hardware failure-main and auxiliary communication	
C150904	Controller failure-serial communication failure	
C150946	Controller hardware failure-primary storage	
C150944	Controller hardware failure-random storage	
C15097C	Controller failure-auxiliary chip input and output control	
C150116	Ignition circuit failure	See <a href="#">EPB Communication Failure (Left)</a>
C151029	Acceleration sensor sensor signal is invalid	
C151096	Acceleration sensor self-test fails	
U015187	Communication with ACU is lost	
U045281	ACU node signal is invalid	
U015987	Communication with PAS is lost	
U014087	Communication with BCM is lost	
U021487	Communication with PEPS is lost	
U042281	BCM node signal is invalid	
U051581	PEPS node signal is invalid	
U045A81	PAS node signal is invalid	
U112287	Communication with VCU_CSCAN is lost	
U140481	VCU node signal is invalid	
U012287	Communication with ESC is lost	
U041681	ESC node signal is invalid	
U007300	CAN bus off	
U011087	Communication with IPU is lost	
U041181	IPU node signal is invalid	
C150500	Switch failure	Refer to <a href="#">EPB switch fault (left)</a>
C150561	Switch failure-unstable	
C15062A	Switch failure-pulling up is stuck	
C15072A	Switch failure-release is stuck	
C150860	Switch failure-circuit failure	
C150862	Switch failure-inconsistent state	Refer to <a href="#">EPB brake caliper fault (left)</a>
C150060	Actuator voltage is abnormal	

Diagnostic Trouble Code	Description	Fault location/elimination method
C150218	Actuator failure (abnormal feedback current)	
C150277	Actuator failure (slipping on slope and re-clamping timeout)	
C15037C	Left actuator failure-running timeout	
C150313	Left actuator failure-open circuit	
C150311	Left actuator failure-motor short circuit to ground	
C15037E	Left actuator failure-motor short circuit to electricity	
C150370	Left actuator failure-mechanism damage	
C150315	Left actuator fault-short circuit	
C15037D	Left actuator failure-abnormal motor voltage	
C150354	Left motor drive chip failure	

## Right EPB

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	System power supply voltage is too low	Refer to <a href="#">EPB power supply failure (right)</a>
U300617	System power supply voltage is too high	
C150945	Controller failure-stack	Refer to <a href="#">EPB internal fault (right)</a>
C150940	Controller failure-digital-to-analog conversion	
C150942	Controller hardware failure-electrically erasable memory	
C150955	Controller failure-not properly configured	
C150986	Controller failure-unexpected power failure	
C150954	Controller failure-not calibrated	
C15094C	Controller hardware failure-main and auxiliary communication	
C150904	Controller failure-serial communication failure	
C150946	Controller hardware failure-primary storage	
C150944	Controller hardware failure-random storage	

Diagnostic Trouble Code	Description	Fault location/elimination method	
C15097C	Controller failure-auxiliary chip input and output control		
C150116	Ignition circuit failure	See <a href="#">EPB Communication Failure (Right)</a>	
C151029	Acceleration sensor sensor signal is invalid		
C151096	Acceleration sensor self-test fails		
U015187	Communication with ACU is lost		
U045281	ACU node signal is invalid		
U015987	Communication with PAS is lost		
U045A81	PAS node signal is invalid		
U014087	Communication with BCM is lost		
U021487	Communication with PEPS is lost		
U042281	BCM node signal is invalid		
U051581	PEPS node signal is invalid		
U112287	Communication with VCU_CSCAN is lost		
U140481	VCU node signal is invalid		
U012287	Communication with ESC is lost		
U041681	ESC node signal is invalid		
U007300	CAN bus off		
U011087	Communication with IPU is lost		
U041181	IPU node signal is invalid		
C150500	Switch failure		Refer to <a href="#">EPB switch fault (right)</a>
C150561	Switch failure-unstable		
C15062A	Switch failure-pulling up is stuck		
C15072A	Switch failure-release is stuck		
C150860	Switch failure-circuit failure		
C150862	Switch failure-inconsistent state		
C150060	Actuator voltage is abnormal	Refer to <a href="#">Brake caliper motor fault (right)</a>	
C150218	Actuator failure (abnormal feedback current)		
C150277	Actuator failure (slipping on slope and re-clamping timeout)		
C15037C	Right actuator failure-running timeout		
C150313	Right actuator failure-open circuit		
C150311	Right actuator failure-motor short circuit to ground		
C15037E	Right actuator failure-motor short circuit to electricity		

Diagnostic Trouble Code	Description	Fault location/elimination method
C150370	Right actuator failure-mechanism damage	
C150315	Right actuator fault-short circuit	
C15037D	Right actuator failure-abnormal motor voltage	
C150354	Right motor drive chip failure	

### 5.5.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 5.5.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 5.5.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	Slope	0-255	%
2	Vehicle mode	Stationary/moving/limp home	-
3	Battery voltage	0-255	V
4	Motor voltage	0-255	V
5	Motor running current	0-300	A

Serial No.	DID description	Physical value range	Unit
6	Brake disc temperature	0-1000	°C
7	Target clamping force	0-1700	KN
8	EPB switch status	Apply/release/idle/uncertain (switch failure)/disconnected	-
9	Actuator status	Apply (fully apply)/release (fully release)/apply/release/ detach/stop/fault	-

### 5.5.6.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by EPB can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- Operate the start-and-stop switch to place the power in mode "OFF".
- Connect the scan tool.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Select “EPB”/“action test”.
- Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
EPB status lamp control	EPB status indicator lamp	On/off
EPB warning lamp control	EPB warning lamp	On/off

### 5.5.6.10 EPB power failure (left)

#### 1. DTC description:

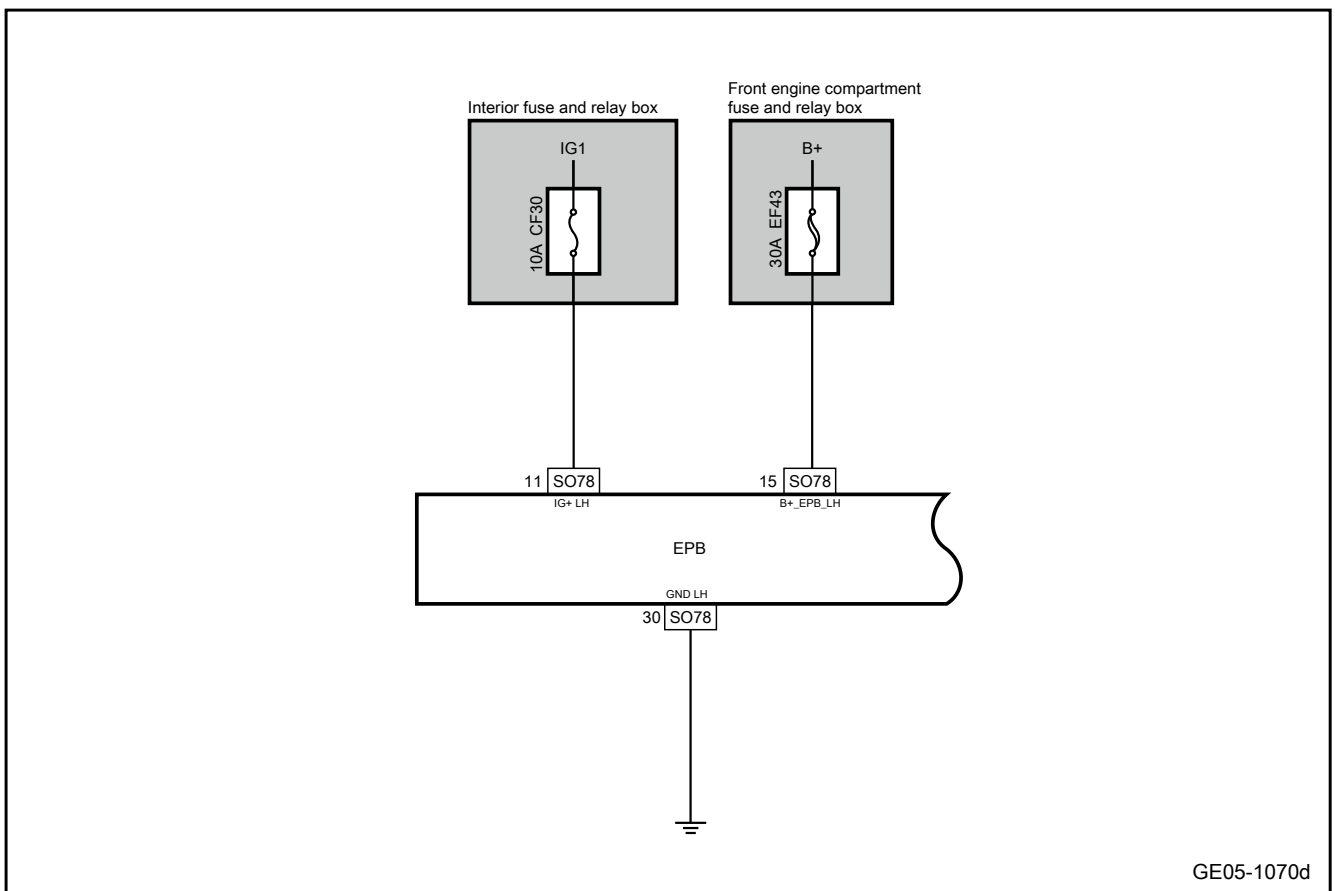
Diagnostic Trouble Code	Description
U300616	System power supply voltage is too low
U300617	System power supply voltage is too high

#### 2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	1. When the power supply voltage has been within the range of 7V-9V for 12s, the voltage is confirmed as too low; 2. When the power supply voltage has been less than 7V for 6s, the voltage is confirmed as too low	Ignition state	1. Battery 2. Circuit 3. Fuse 4. EPB
U300617	1. When the voltage has exceeded 20V for 3s, an over-high voltage failure is confirmed; 2. When the voltage has been within the range of 16V -20V, an over-high voltage failure is confirmed		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

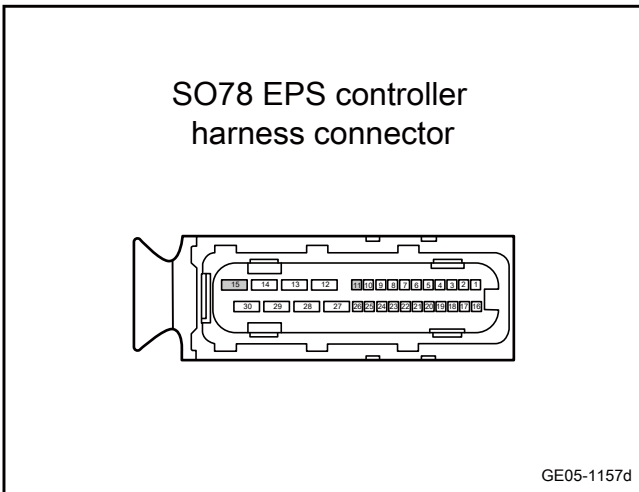
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF30 and check whether the fuse CF30 is blown.  
Rated fuse capacity: 10A
- C. Pull out the fuse EF43 of the front engine bay. Check whether the fuse EF43 is blown.  
Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the EPB power supply circuit.
--------	-------------------------------------



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(11)	Vehicle body is grounded.	Standard voltage: 11-14V
SO78(15)		

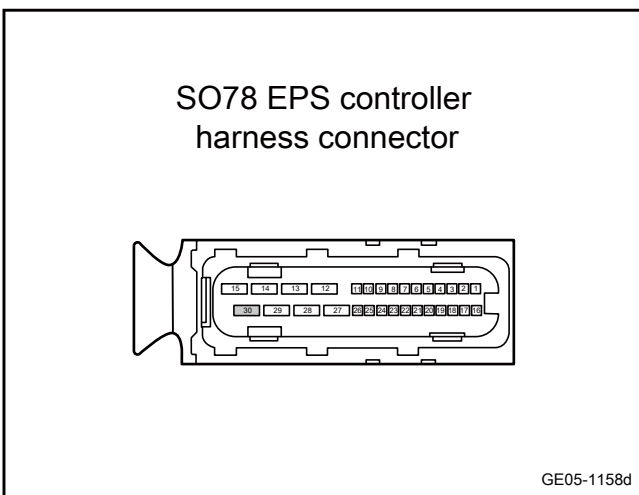
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the EPB grounding circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(30)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the EPB

- A. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

**Step 7** Reprogram and reset the EPB.

- A. Reprogram and reset the EPB. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 5.5.6.11 EPB communication failure (left)

#### 1. DTC description:

Diagnostic Trouble Code	Description
U015187	Communication with ACU is lost
U045281	ACU node signal is invalid
U015987	Communication with PAS is lost
U014087	Communication with BCM is lost
U021487	Communication with PEPS is lost
U042281	BCM node signal is invalid
U051581	PEPS node signal is invalid
U045A81	PAS node signal is invalid
U112287	Communication with VCU_CSCAN is lost
U140481	VCU node signal is invalid
U012287	Communication with ESC is lost
U041681	ESC node signal is invalid
U007300	CAN bus off
U011087	Communication with IPU is lost
U041181	IPU node signal is invalid

Diagnostic Trouble Code	Description
C150116	Ignition circuit failure
C151029	Acceleration sensor sensor signal is invalid
C151096	Acceleration sensor self-test fails

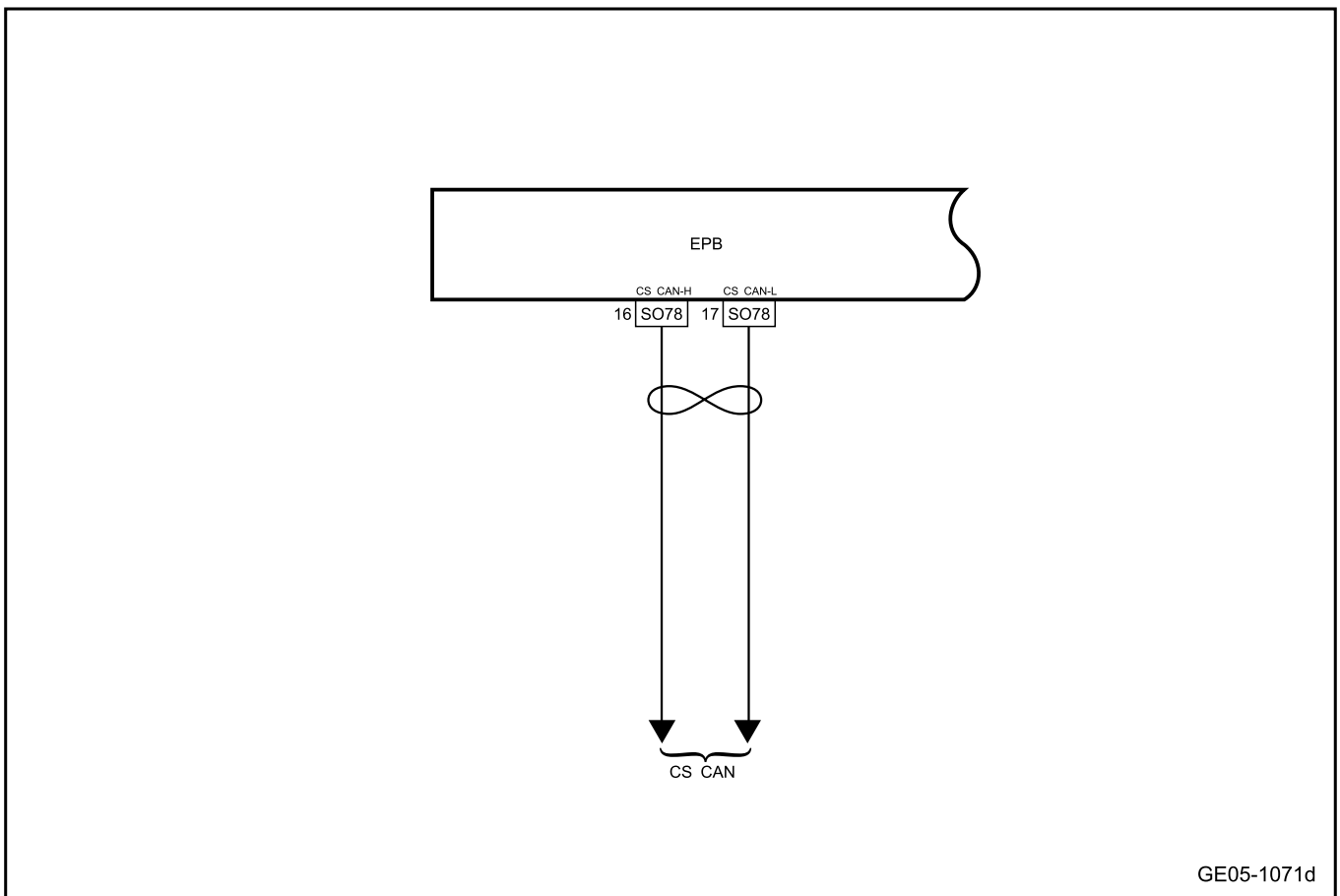
## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x380, 0x131)	1. The power supply voltage of CAN bus node is within the range of 9-16V (see the definition of communication diagnosis voltage for details). 2. The TDiagenable condition is met 3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection. 4. Ignition status is IGN ON	1. Circuit 2.EPB
U045281	There has been an invalid signal for 1.6s (receiving node: 0x380, 0x131) at the node		
U015987	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x191, 0x19F)		
U014087	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0x285)		
U021487	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0x1E2)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042281	There has been an invalid signal for 1.6s (receiving node: 0x285) at the node		
U051581	There has been an invalid signal for 1.6s (receiving node: 0x1E2) at the node		
U045A81	There has been an invalid signal for 1.6s (receiving node: 0x191, 0x19F) at the node		
U112287	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x165, 0xA6, 0x1A4)		
U140481	There has been an invalid signal for 1.6s (receiving node: 0x165, 0xA6, 0x1A4) at the node		
U012287	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x122, 0x123, 0x124, 0x125, 0x126)		
U041681	There has been an invalid signal for 1.6s (receiving node: 0x122, 0x123, 0x124, 0x125, 0x126) at the node		
U007300	Short-circuit to ground or power, or short-circuits CAN_H and CAN_L	6 seconds after ignition; no too high or too low voltage	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011087	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0xA8)	1. The power supply voltage of CAN bus node is within the range of 9-16V (see the definition of communication diagnosis voltage for details). 2. The TDiagenable condition is met	
U041181	There has been an invalid signal for 1.6s (receiving node: 0xA8) at the node	3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection. 4. Ignition status is IGN ON	
C150116	CAN ignition is inconsistent with hard wire ignition 1. CAN ignition signal is on, hard wire ignition signal is off; 2. CAN ignition signal is invalid, hard wire ignition signal is on; 3. CAN ignition signal is lost, hard wire ignition signal is on;	In ignition state or normal power state	
C151029	The sensor signal value is out of the normal range	In ignition state or normal power state	
C151096	Acceleration sensor self-check signal voltage is abnormal	When the system is initialized	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.



Yes

Step 3 Check the integrity of the CS-CAN bus.

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the EPB

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply fault \(left\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 5 Reprogram and reset the EPB.

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

### 5.5.6.12 Internal fault of EPB (left)

#### 1. DTC description:

DTC	Trouble description
C150945	Controller failure-stack
C150940	Controller failure-digital-to-analog conversion
C150942	Controller hardware failure-electrically erasable memory
C150955	Controller failure-not properly configured
C150986	Controller failure-unexpected power failure
C150954	Controller failure-not calibrated
C15094C	Controller hardware failure-main and auxiliary communication
C150904	Controller failure-serial communication failure
C150946	Controller hardware failure-primary storage
C150944	Controller hardware failure-random storage
C15097C	Controller failure-auxiliary chip input and output control

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150945	ECU stack failure	In ignition state or normal power state	1. EPB
C150940	Fault of ECU AD module		
C150942	EEPROM consecutive writing operation failed 15 times		
C150955	EEPROM registers are not configured correctly (four-byte mode or eight-byte mode)	When the system is initialized	
C150986	The system is powered off unexpectedly.	In ignition state or normal power state	
C150954	The system is not calibrated correctly	When the system is initialized	
C15094C	Primary and secondary MCU communication check error or no communication signal	In ignition state or normal power state	
C150904	Serial communication failure		
C150946	The verification result of flash data calculation is inconsistent with the recorded verification code	When the system is initialized	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150944	The calculation result stored in RAM is wrong	In ignition state or normal power state	
C15097C	The auxiliary ECU control IO is not set normally		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the EPB
--------	-----------------

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply fault \(left\)](#)
- B. Replace the EPB Refer to [Replacement of EPB](#)

Next Step

Step 5	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 7	System is normal.
--------	-------------------

### 5.5.6.13 EPB switch failure (left)

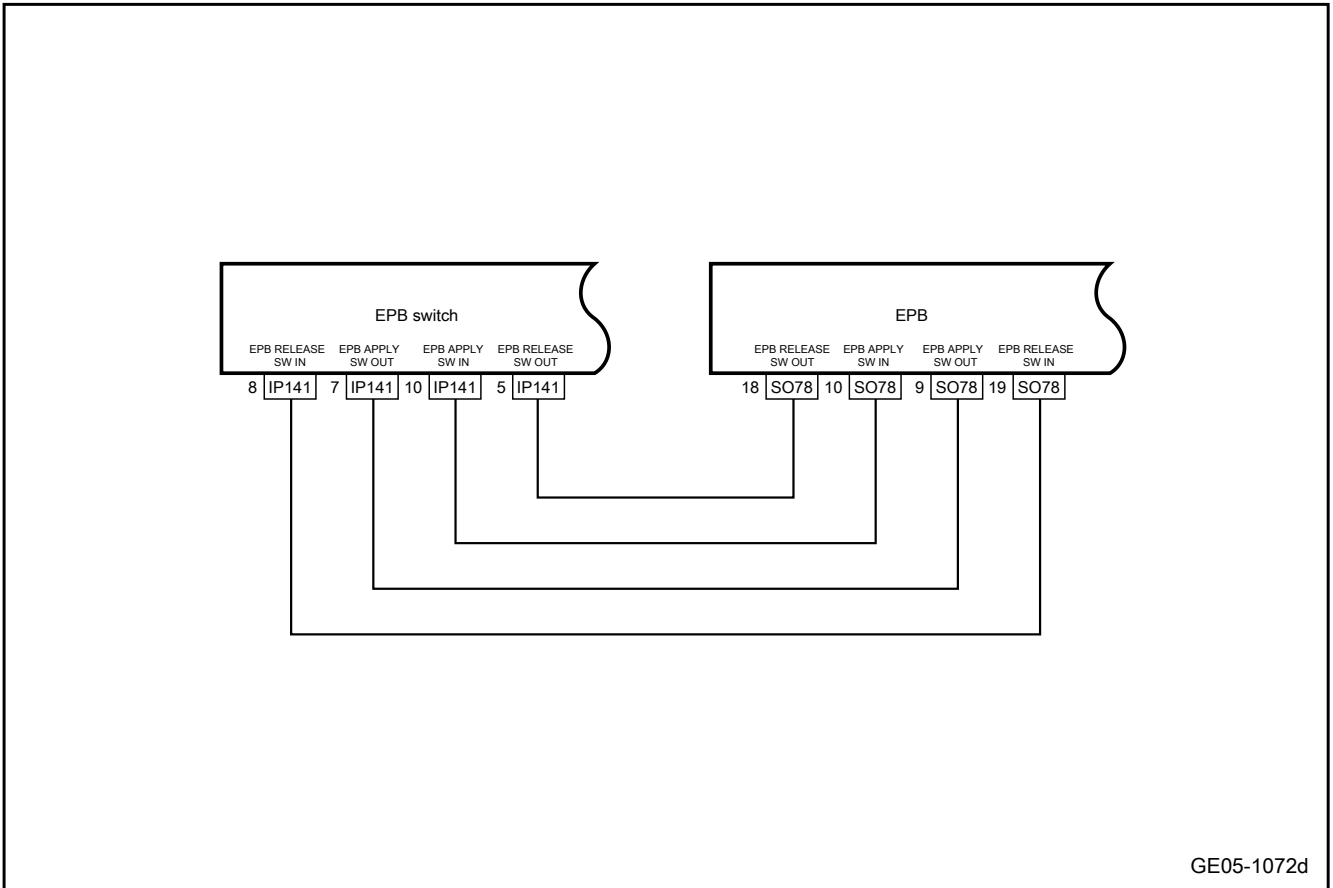
1. DTC description:

Diagnostic Trouble Code	Description
C150500	Switch failure
C150561	Switch failure-unstable
C15062A	Switch failure-pulling up is stuck
C15072A	Switch failure-release is stuck
C150860	Switch failure-circuit failure
C150862	Switch failure-inconsistent state

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150500	1. The switch is get stuck; 2. The switch status is unstable; the main MCU cannot recognize the switch status normally. (Disconnect the switch harness)	In ignition state or normal power state	1. Circuit 2. EPB 3. EPB switch
C150561	The switch state is none of APPLY/RELEASE/NEUTRAL. The switch state is unstable and jumps between two or more states. (Example: pulling EPB switch up and pressing it down at high frequency)		
C15062A	The switch has been in the APPLY state for more than 60 seconds		
C15072A	The switch has been in the RELEASE state for more than 60 seconds		
C150860	The switch state is none of APPLY/RELEASE/NEUTRAL. There is a problem with the switch harness (for example: unplug the EPB switch harness)		
C150862	It is detected that the main and auxiliary ECU switch states are inconsistent. When the switch is clamped or released, the switch states detected by the main and auxiliary MCUs are inconsistent.		

## 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

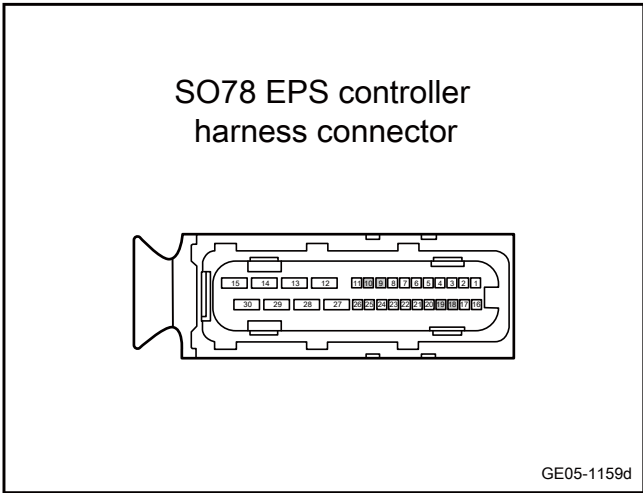
- A. Check the EPB switch and EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB switch and the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

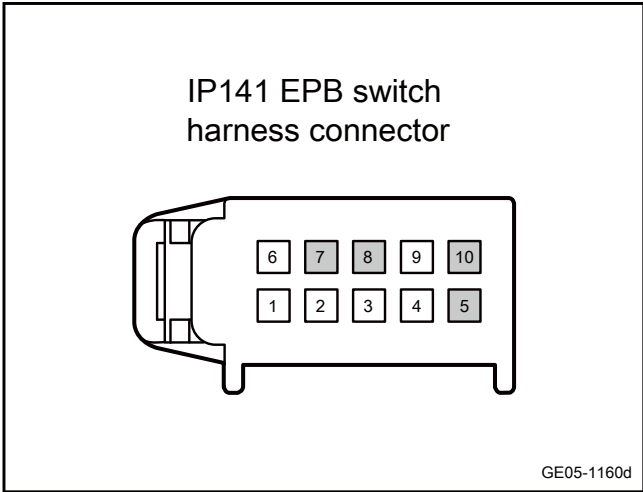
**Step 3** Check the circuit between the EPB switch and EPB is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(18)	IP141(5)	Standard resistance: less than 1Ω
SO78(9)	IP141(7)	
SO78(19)	IP141(8)	
SO78(10)	IP141(10)	

- E. Confirm whether the measured value meets the standard.

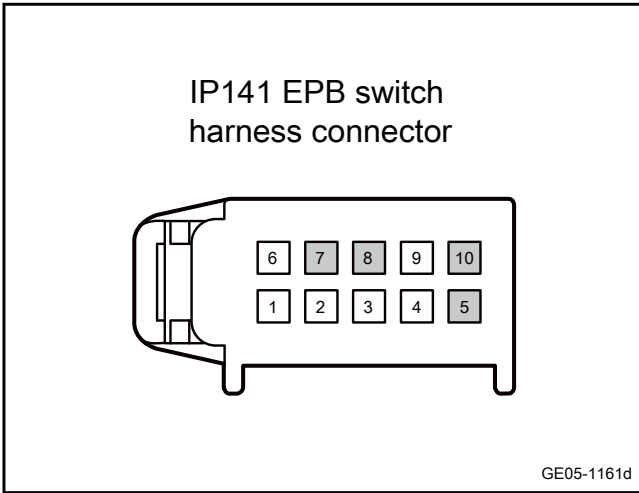


No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the EPB switch and EPB is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(5)	Vehicle body is grounded.	Standard voltage: 0V
IP141(7)		
IP141(8)		
IP141(10)		

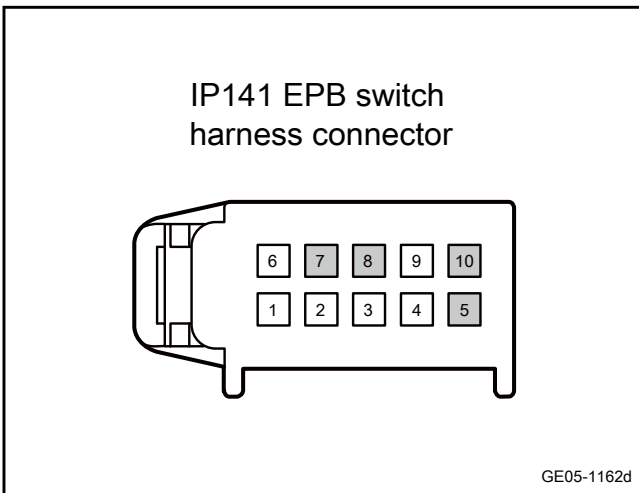
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the EPB switch and EPB is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP141(7)		
IP141(8)		
IP141(10)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace EPB switch.



- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the EPB
--------	-----------------

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply fault \(left\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 8	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

#### 5.5.6.14 Brake caliper motor failure (left)

1. DTC description:

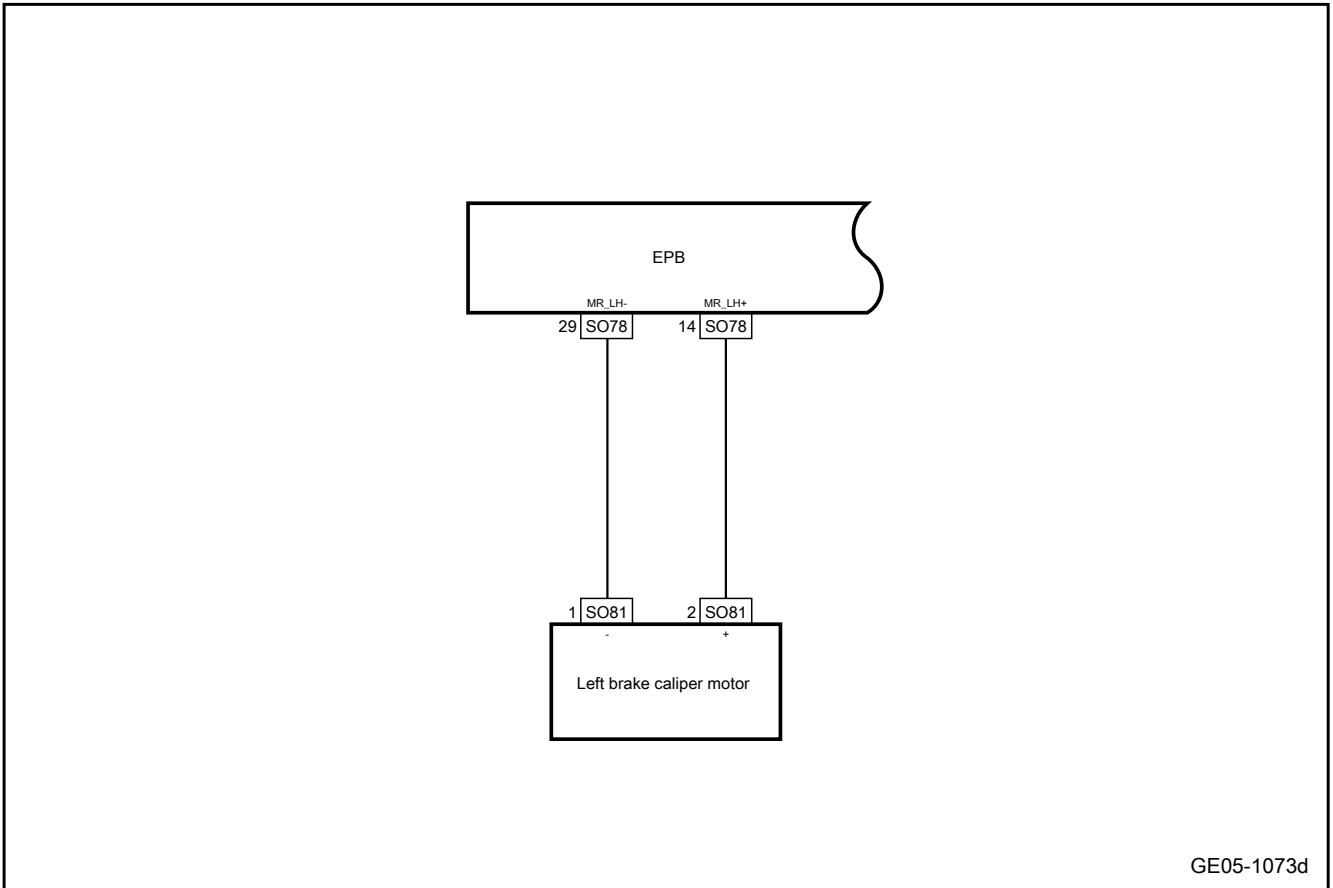
Diagnostic Trouble Code	Description
C150060	Actuator voltage is abnormal
C150218	Actuator failure (abnormal feedback current)
C150277	Actuator failure (slipping on slope and re-clamping timeout)
C15037C	Left actuator failure-running timeout
C150313	Left actuator failure-open circuit
C150311	Left actuator failure-motor short circuit to ground
C15037E	Left actuator failure-motor short circuit to electricity
C150370	Left actuator failure-mechanism damage
C150315	Left actuator fault-short circuit
C15037D	Left actuator failure-abnormal motor voltage
C150354	Left motor drive chip failure

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150060	1. When the voltage exceeds 20V 2. When the voltage is lower than 9V, a user action request is detected (operate the switch)	Ignition state	1. Circuit 2. EPB 3. Left brake caliper motor
C150218	It is detected that the feedback current is abnormal and the clamping force is insufficient when the actuator acts. With low voltage, greater clamping force is required. (Example: The voltage is 9V, and the vehicle is parked on a 20% ramp)	When the motor is running	
C150277	3s Slipping and re-clamping time exceeds 3 seconds		
C15037C	The idle travel time during actuation has exceeded the limit for more than 18 seconds. (Example: The clamping operation time of the idle motor exceeds 18s)		
C150313	Motor running feedback does not match the electrical characteristics. The actuator has an open circuit fault;	Ignition state	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150311	The motor is running, and the MOSFET feedback does not match the electrical characteristics.	In ignition state or normal power state	
C15037E	Motor running and self-test process, MOSFET feedback does not match the electrical characteristics.	In ignition state or normal power state	
C150370	The motor's idling stroke resistance is too large, and the idling stroke current is too large.	When the motor is running	
C150315	During motor running, the current is greater than the set short-circuit threshold. (Example: short the positive and negative poles of the motor, actuate the EPB switch to perform clamping or release operations)	When the motor is running	
C15037D	When the motor is moving, the voltage difference between the two ends of the motor is less than the set threshold.	In ignition state or normal power state	
C150354	The output signal of the motor drive chip is abnormal.	When the system is initialized	

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

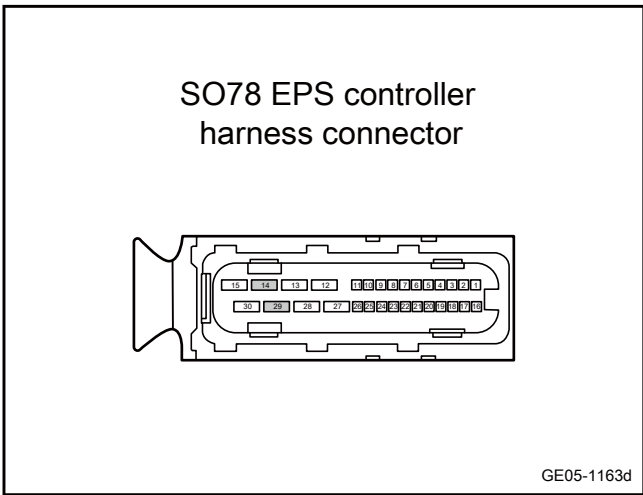
- A. Check the left brake caliper motor and EPB for signs of damage, distortion, stain, looseness, etc.
- B. Check the left-side brake caliper motor and the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

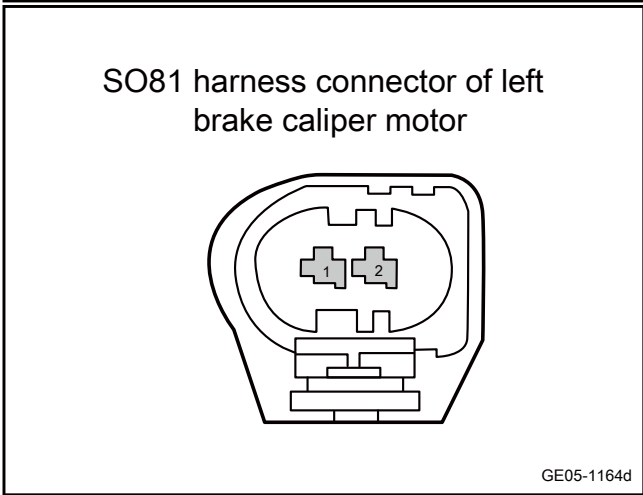
**Step 3** Detect whether the circuit between EPB and the left brake caliper motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(29)	SO81(1)	Standard resistance: less than 1Ω
SO78(14)	SO81(2)	

- E. Confirm whether the measured value meets the standard.

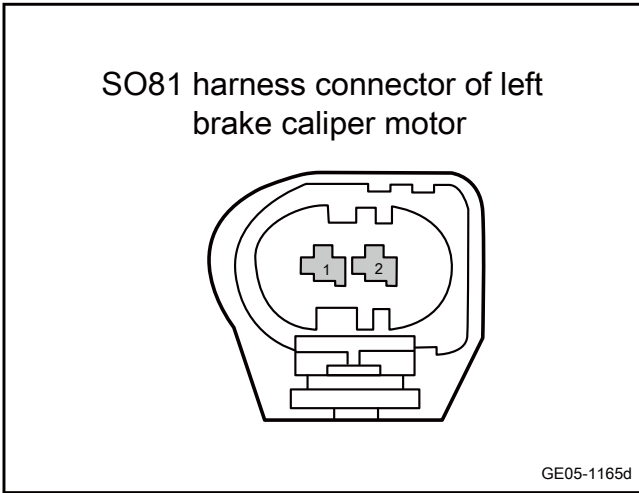


No

Repair or replace the harness.

Yes

**Step 4** Detect whether the circuit between EPB and left brake caliper motor is short to power supply



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO81(1)	Vehicle body is grounded.	Standard voltage: 0V
SO81(2)		

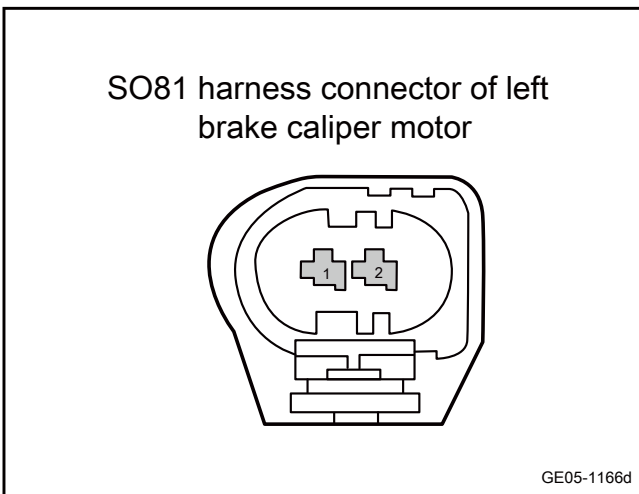
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Detect whether the circuit between EPB and left brake caliper motor is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO81(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO81(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace left-side brake caliper motor.

- A. Replace left-side brake caliper motor. Refer to replacement of left-side brake caliper motor
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7 Replace the EPB

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply fault \(left\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 8 Reprogram and reset the EPB.

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

5.5.6.15 EPB power failure (right)

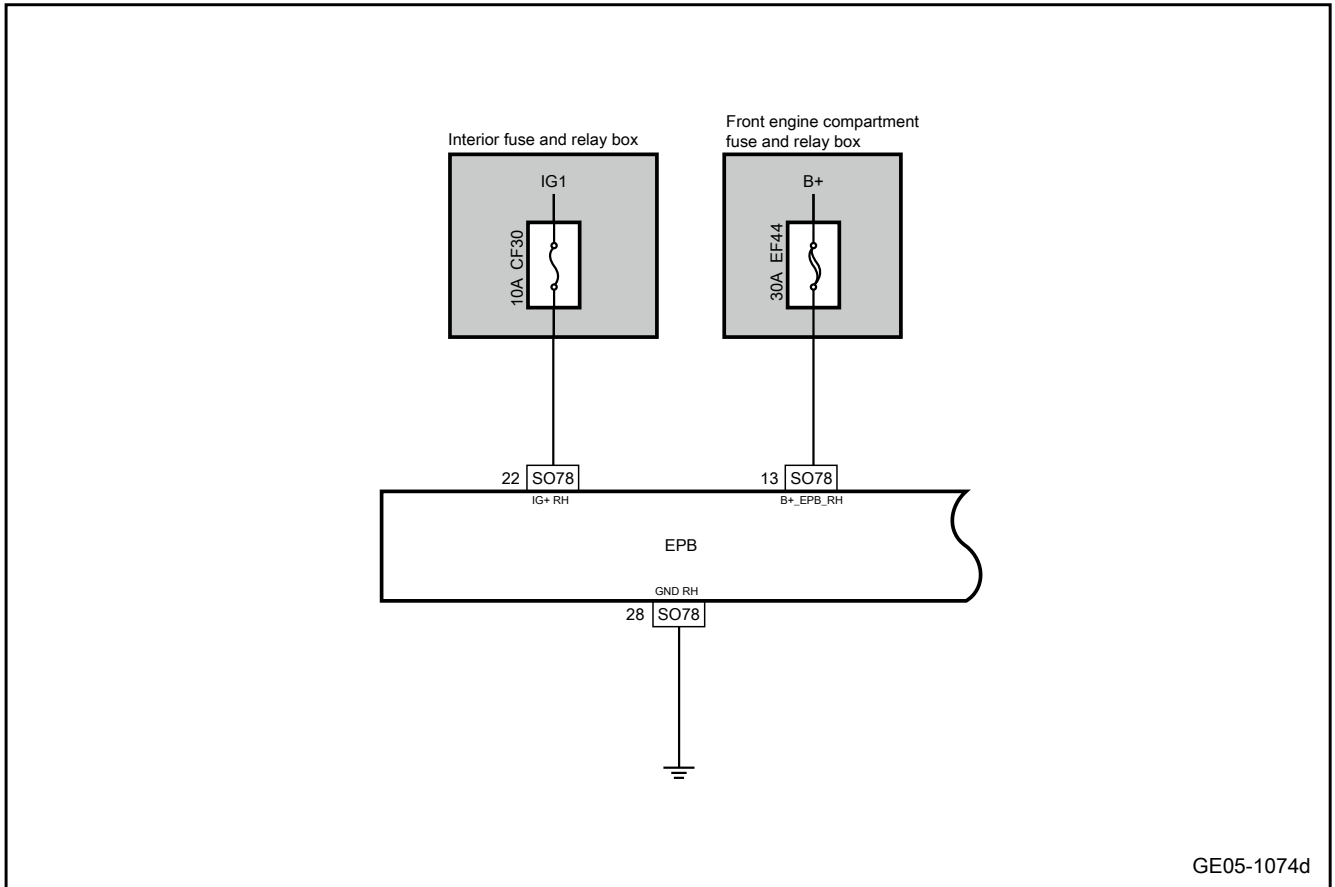
1. DTC description:

Diagnostic Trouble Code	Description
U300616	System power supply voltage is too low
U300617	System power supply voltage is too high

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	1. When the power supply voltage has been within the range of 7V-9V for 12s, the voltage is confirmed as too low; 2. When the power supply voltage has been less than 7V for 6s, the voltage is confirmed as too low	Ignition state	1. Battery 2. Circuit 3. Fuse 4. EPB
U300617	1. When the voltage has exceeded 20V for 3s, an over-high voltage failure is confirmed; 2. When the voltage has been within the range of 16V -20V, an over-high voltage failure is confirmed		

3. Schematic circuit diagram:





## 4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

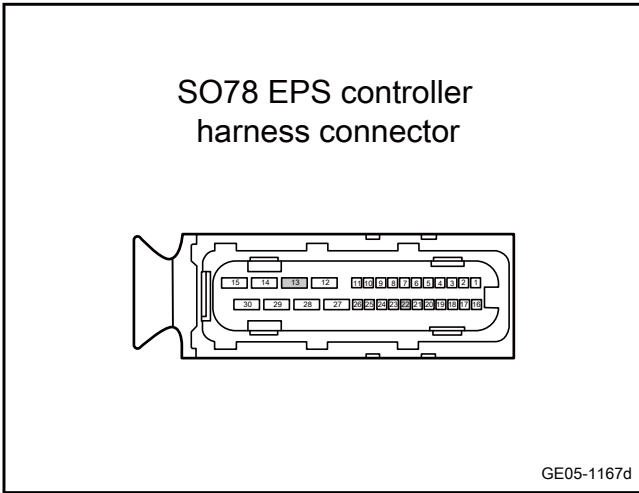
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF30 and check whether the fuse CF30 is blown.  
Rated fuse capacity: 10A
- C. Pull out the fuse EF44 of the front engine bay. Check whether the fuse EF44 is blown.  
Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the EPB power supply circuit.
--------	-------------------------------------



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

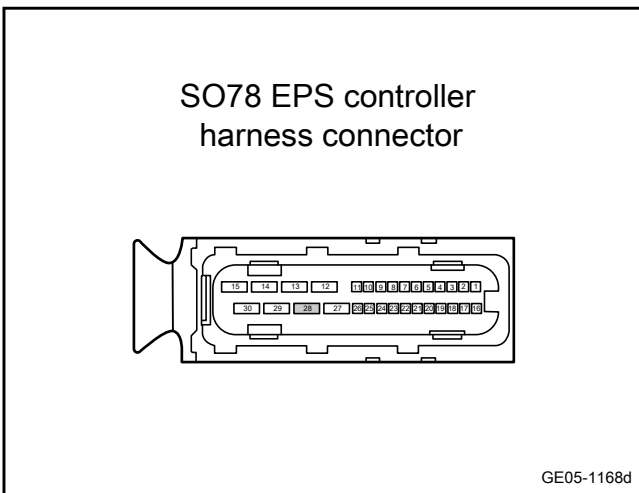
Measure terminal 1	Measure terminal 2	Standard value
SO78(22)	Vehicle body is grounded.	Standard voltage: 11-14V
SO78(13)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 5** Check the EPB grounding circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(28)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 6** Replace the EPB

- A. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

**Step 7** Reprogram and reset the EPB.

- A. Reprogram and reset the EPB. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 5.5.6.16 EPB communication failure (right)

#### 1. DTC description:

Diagnostic Trouble Code	Description
U015187	Communication with ACU is lost
U045281	ACU node signal is invalid
U015987	Communication with PAS is lost
U014087	Communication with BCM is lost
U021487	Communication with PEPS is lost
U042281	BCM node signal is invalid
U051581	PEPS node signal is invalid
U045A81	PAS node signal is invalid
U112287	Communication with VCU_CSCAN is lost
U140481	VCU node signal is invalid
U012287	Communication with ESC is lost
U041681	ESC node signal is invalid
U007300	CAN bus off
U011087	Communication with IPU is lost
U041181	IPU node signal is invalid

Diagnostic Trouble Code	Description
C150116	Ignition circuit failure
C151029	Acceleration sensor sensor signal is invalid
C151096	Acceleration sensor self-test fails

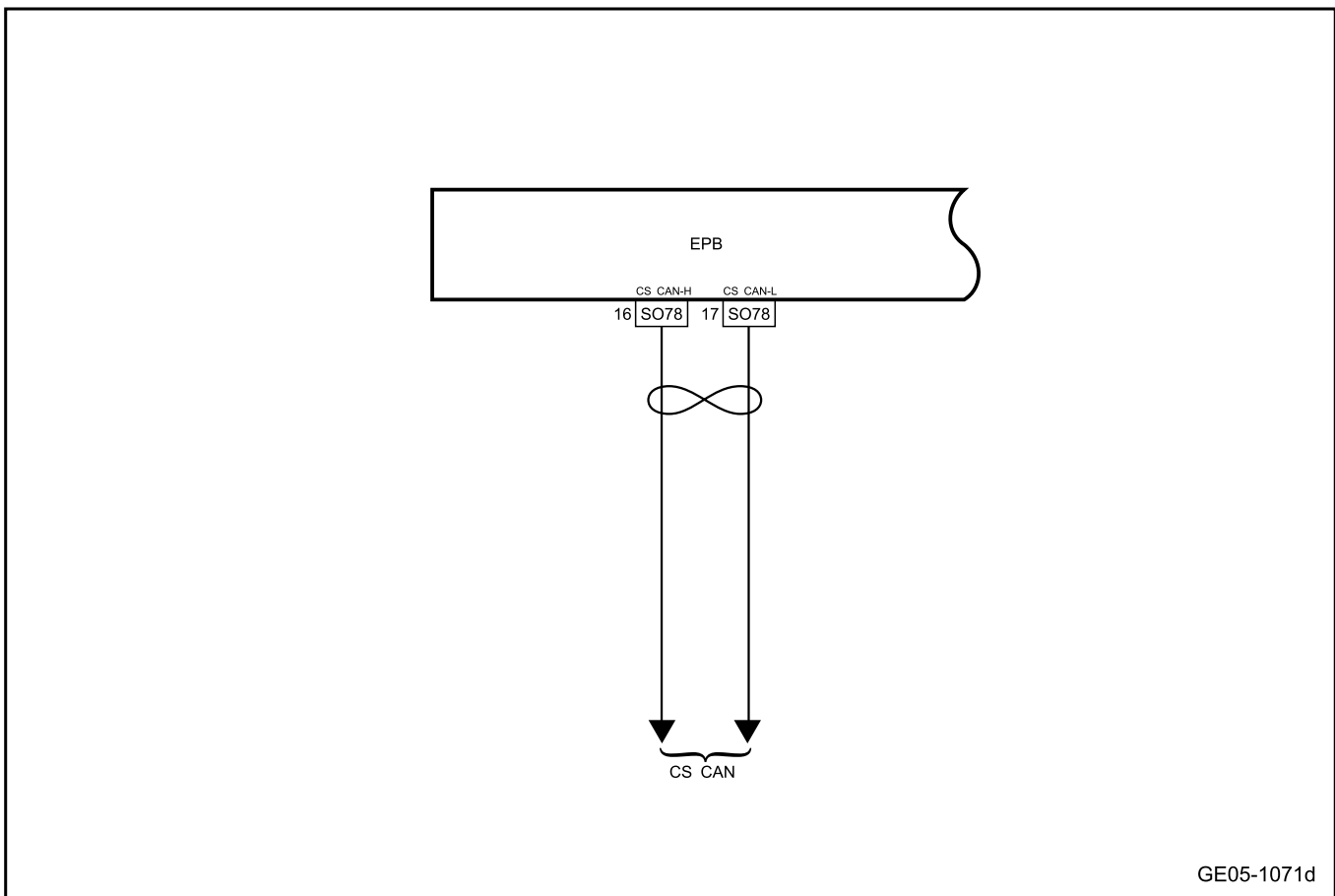
## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x380, 0x131)	1. The power supply voltage of CAN bus node is within the range of 9-16V (see the definition of communication diagnosis voltage for details). 2. The TDiagenable condition is met 3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection. 4. Ignition status is IGN ON	1. Circuit 2.EPB
U045281	There has been an invalid signal for 1.6s (receiving node: 0x380, 0x131) at the node		
U015987	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x191, 0x19F)		
U014087	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0x285)		
U021487	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0x1E2)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042281	There has been an invalid signal for 1.6s (receiving node: 0x285) at the node		
U051581	There has been an invalid signal for 1.6s (receiving node: 0x1E2) at the node		
U045A81	There has been an invalid signal for 1.6s (receiving node: 0x191, 0x19F) at the node		
U112287	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x165, 0xA6, 0x1A4)		
U140481	There has been an invalid signal for 1.6s (receiving node: 0x165, 0xA6, 0x1A4) at the node		
U012287	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise it is 5 times the minimum cycle time (receiving node: 0x122, 0x123, 0x124, 0x125, 0x126)		
U041681	There has been an invalid signal for 1.6s (receiving node: 0x122, 0x123, 0x124, 0x125, 0x126) at the node		
U007300	Short-circuit to ground or power, or short-circuits CAN_H and CAN_L	6 seconds after ignition; no too high or too low voltage	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011087	If the minimum cycle period of the message is less than 60ms, the duration for loss confirmation is 300ms, otherwise 5 times the minimum cycle time (receiving node: 0xA8)	1. The power supply voltage of CAN bus node is within the range of 9-16V (see the definition of communication diagnosis voltage for details). 2. The TDiagenable condition is met	
U041181	There has been an invalid signal for 1.6s (receiving node: 0xA8) at the node	3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection. 4. Ignition status is IGN ON	
C150116	CAN ignition is inconsistent with hard wire ignition 1. CAN ignition signal is on, hard wire ignition signal is off; 2. CAN ignition signal is invalid, hard wire ignition signal is on; 3. CAN ignition signal is lost, hard wire ignition signal is on;	In ignition state or normal power state	
C151029	The sensor signal value is out of the normal range	In ignition state or normal power state	
C151096	Acceleration sensor self-check signal voltage is abnormal	When the system is initialized	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the CS-CAN bus.

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the EPB

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply failure \(right\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 5 Reprogram and reset the EPB.

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 7	System is normal.
--------	-------------------

### 5.5.6.17 Internal fault of EPB (right)

#### 1. DTC description:

DTC	Trouble description
C150945	Controller failure-stack
C150940	Controller failure-digital-to-analog conversion
C150942	Controller hardware failure-electrically erasable memory
C150955	Controller failure-not properly configured
C150986	Controller failure-unexpected power failure
C150954	Controller failure-not calibrated
C15094C	Controller hardware failure-main and auxiliary communication
C150904	Controller failure-serial communication failure
C150946	Controller hardware failure-primary storage
C150944	Controller hardware failure-random storage
C15097C	Controller failure-auxiliary chip input and output control

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150945	ECU stack failure	In ignition state or normal power state	1. EPB
C150940	Fault of ECU AD module		
C150942	EEPROM consecutive writing operation failed 15 times		
C150955	EEPROM registers are not configured correctly (four-byte mode or eight-byte mode)	When the system is initialized	
C150986	The system is powered off unexpectedly.	In ignition state or normal power state	
C150954	The system is not calibrated correctly	When the system is initialized	
C15094C	Primary and secondary MCU communication check error or no communication signal	In ignition state or normal power state	
C150904	Serial communication failure		
C150946	The verification result of flash data calculation is inconsistent with the recorded verification code	When the system is initialized	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150944	The calculation result stored in RAM is wrong	In ignition state or normal power state	
C15097C	The auxiliary ECU control IO is not set normally		

## 3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the EPB
--------	-----------------

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply failure \(right\)](#)
- B. Replace the EPB Refer to [Replacement of EPB](#)

Next Step

Step 5	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 7	System is normal.
--------	-------------------

### 5.5.6.18 EPB switch fault (right)

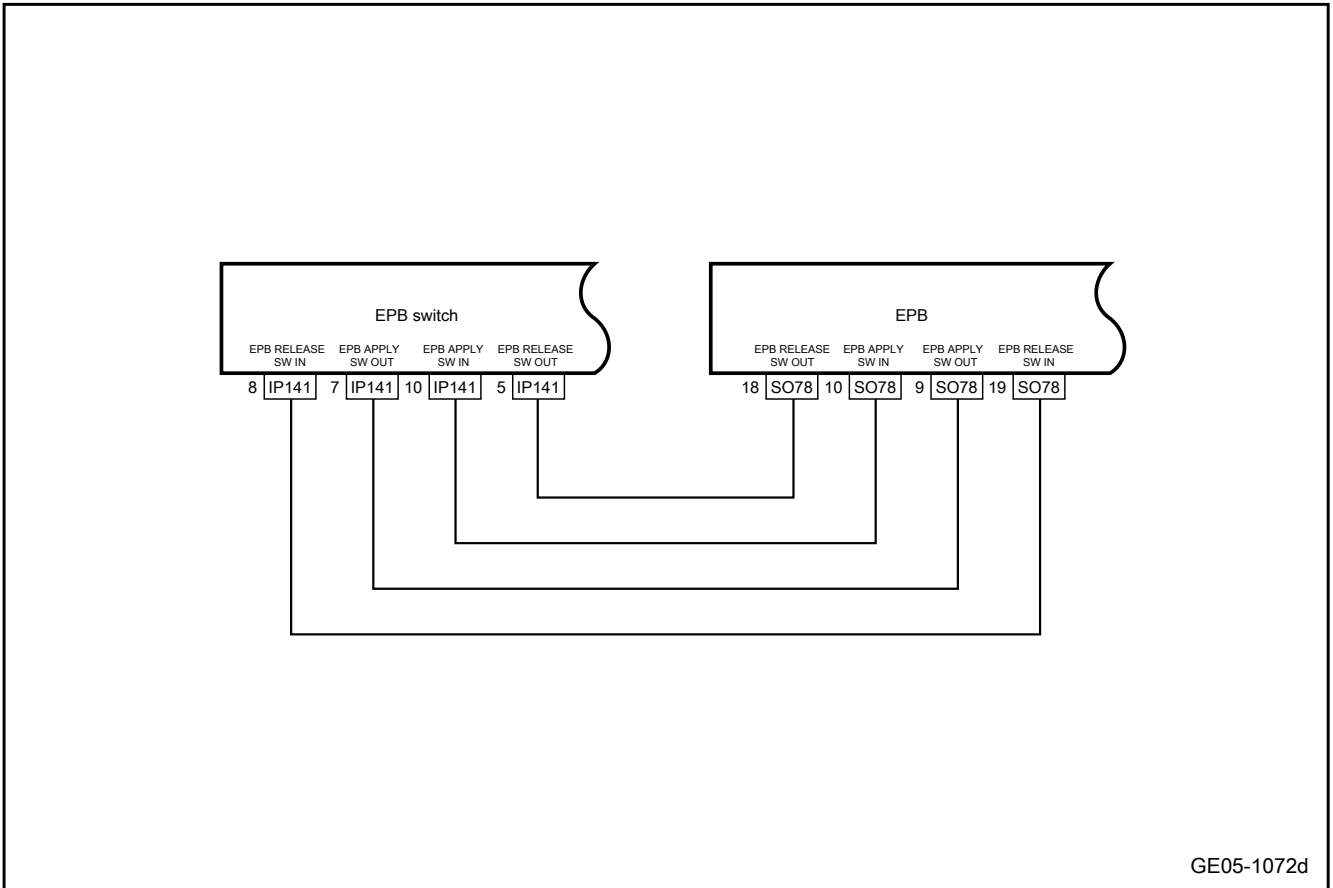
1. DTC description:

Diagnostic Trouble Code	Description
C150500	Switch failure
C150561	Switch failure-unstable
C15062A	Switch failure-pulling up is stuck
C15072A	Switch failure-release is stuck
C150860	Switch failure-circuit failure
C150862	Switch failure-inconsistent state

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150500	1. The switch is get stuck; 2. The switch status is unstable; the main MCU cannot recognize the switch status normally. (Disconnect the switch harness)	In ignition state or normal power state	1. Circuit 2. EPB 3. EPB switch
C150561	The switch state is none of APPLY/RELEASE/NEUTRAL. The switch state is unstable and jumps between two or more states. (Example: pulling EPB switch up and pressing it down at high frequency)		
C15062A	The switch has been in the APPLY state for more than 60 seconds		
C15072A	The switch has been in the RELEASE state for more than 60 seconds		
C150860	The switch state is none of APPLY/RELEASE/NEUTRAL. There is a problem with the switch harness (for example: unplug the EPB switch harness)		
C150862	It is detected that the main and auxiliary ECU switch states are inconsistent. When the switch is clamped or released, the switch states detected by the main and auxiliary MCUs are inconsistent.		

## 3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

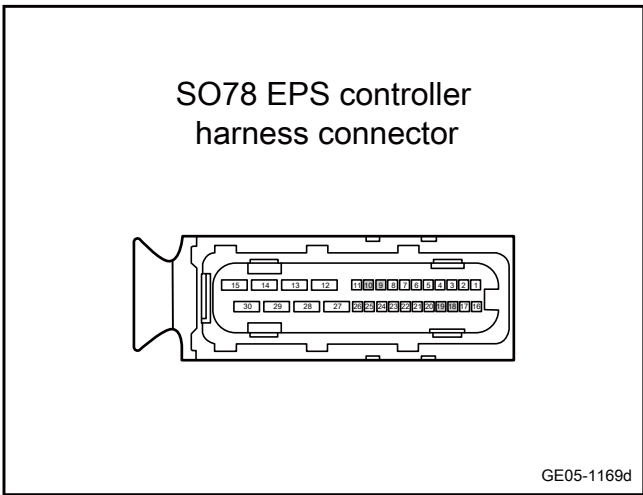
- A. Check the EPB switch and EPB for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB switch and the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

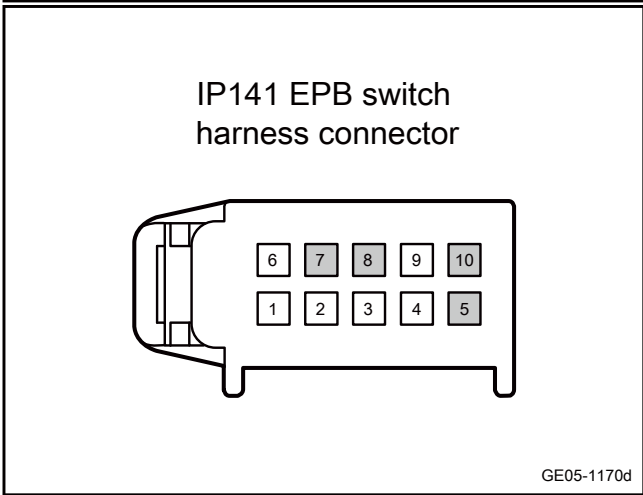
**Step 3** Check the circuit between the EPB switch and EPB is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(18)	IP141(5)	Standard resistance: less than 1Ω
SO78(9)	IP141(7)	
SO78(19)	IP141(8)	
SO78(10)	IP141(10)	

- E. Confirm whether the measured value meets the standard.

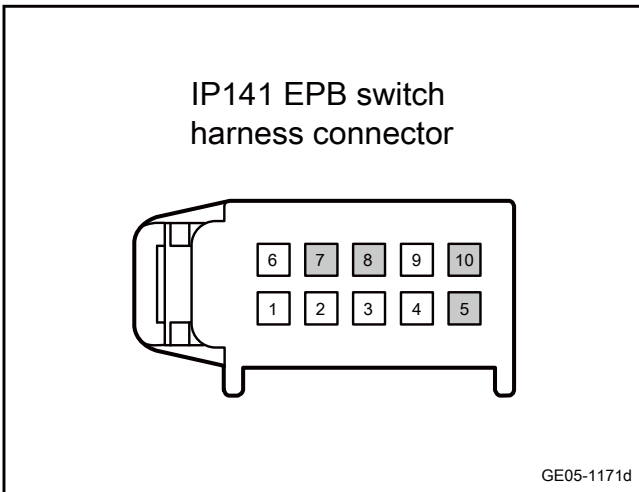


No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the EPB switch and EPB is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

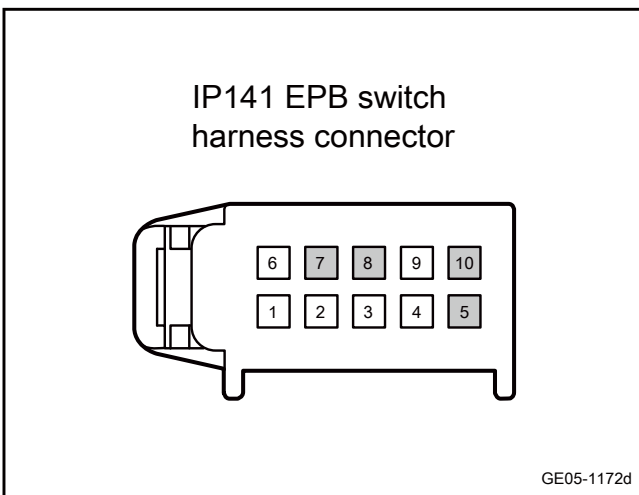
Measure terminal 1	Measure terminal 2	Standard value
IP141(5)	Vehicle body is grounded.	Standard voltage: 0V
IP141(7)		
IP141(8)		
IP141(10)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Check whether the circuit between the EPB switch and EPB is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP141(7)		
IP141(8)		
IP141(10)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Replace EPB switch.

- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the EPB
--------	-----------------

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply failure \(right\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 8	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.5.6.19 Brake caliper motor failure (right)

1. DTC description:



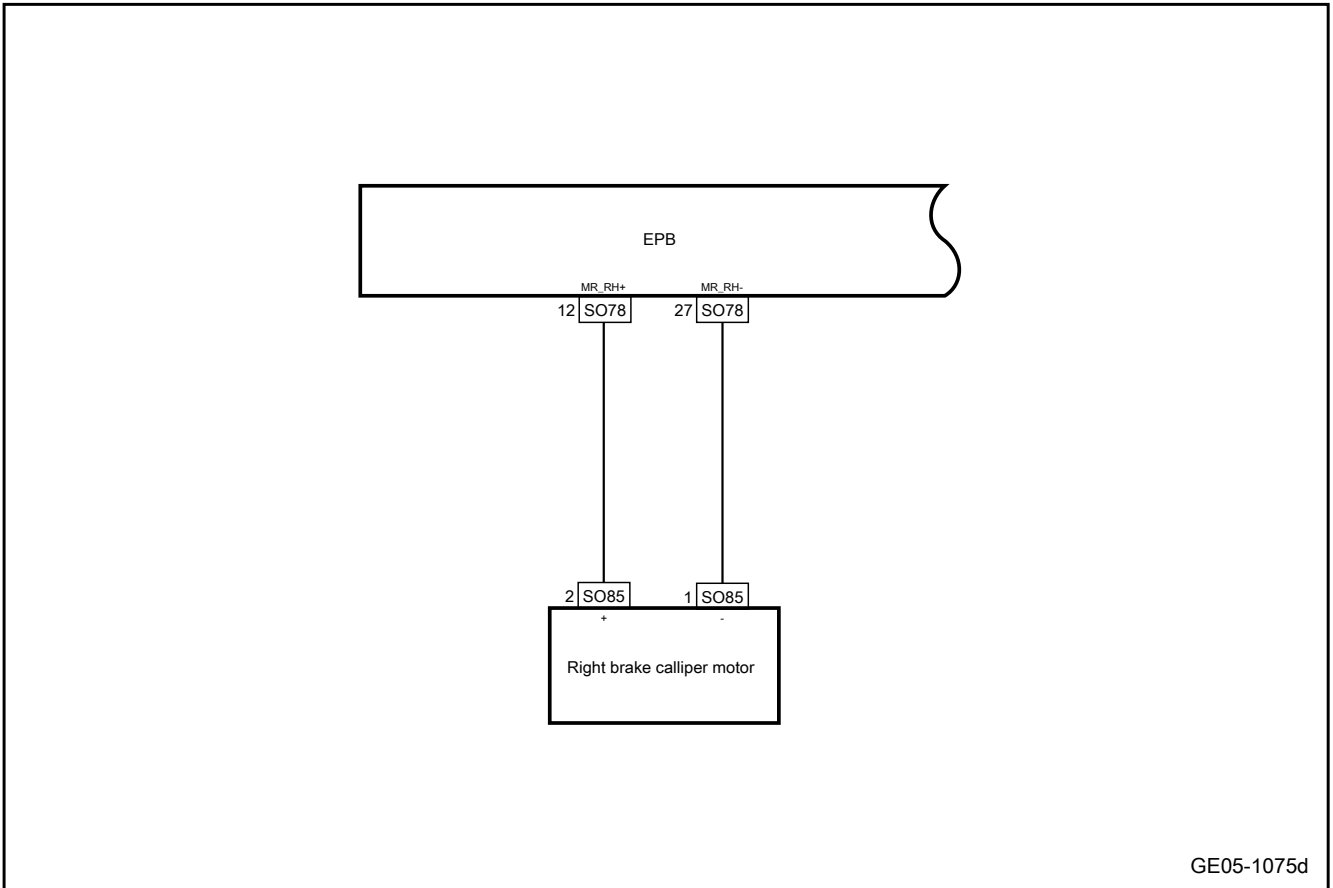
Diagnostic Trouble Code	Description
C150060	Actuator voltage is abnormal
C150218	Actuator failure (abnormal feedback current)
C150277	Actuator failure (slipping on slope and re-clamping timeout)
C15037C	Right actuator failure-running timeout
C150313	Right actuator failure-open circuit
C150311	Right actuator failure-motor short circuit to ground
C15037E	Right actuator failure-motor short circuit to electricity
C150370	Right actuator failure-mechanism damage
C150315	Right actuator fault-short circuit
C15037D	Right actuator failure-abnormal motor voltage
C150354	Right motor drive chip failure

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150060	1. When the voltage exceeds 20V 2. When the voltage is lower than 9V, a user action request is detected (operate the switch)	Ignition state	1. Circuit 2. EPB 3. Right brake caliper motor
C150218	It is detected that the feedback current is abnormal and the clamping force is insufficient when the actuator acts. With low voltage, greater clamping force is required. (Example: The voltage is 9V, and the vehicle is parked on a 20% ramp)	When the motor is running	
C150277	3s Slipping and re-clamping time exceeds 3 seconds		
C15037C	The idle travel time during actuation has exceeded the limit for more than 18 seconds. (Example: The clamping operation time of the idle motor exceeds 18s)		
C150313	Motor running feedback does not match the electrical characteristics. The actuator has an open circuit fault;	Ignition state	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150311	The motor is running, and the MOSFET feedback does not match the electrical characteristics.	In ignition state or normal power state	
C15037E	Motor running and self-test process, MOSFET feedback does not match the electrical characteristics.	In ignition state or normal power state	
C150370	The motor's idling stroke resistance is too large, and the idling stroke current is too large.	When the motor is running	
C150315	During motor running, the current is greater than the set short-circuit threshold. (Example: short the positive and negative poles of the motor, actuate the EPB switch to perform clamping or release operations)	When the motor is running	
C15037D	When the motor is moving, the voltage difference between the two ends of the motor is less than the set threshold.	In ignition state or normal power state	
C150354	The output signal of the motor drive chip is abnormal.	When the system is initialized	

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

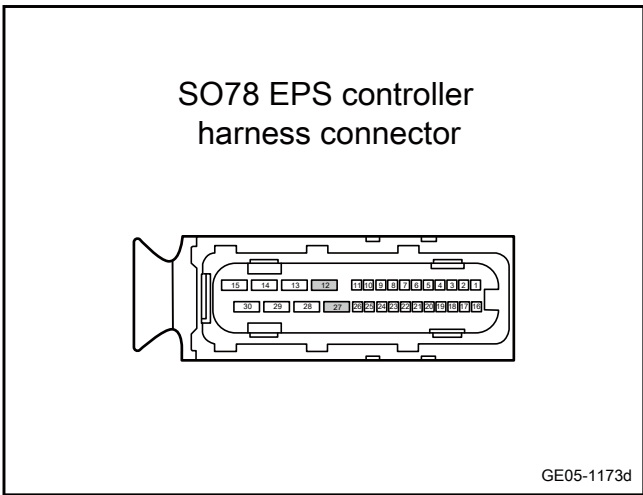
- A. Check the right brake caliper motor and EPB for signs of damage, distortion, stain, looseness, etc.
- B. Check the left brake caliper motor and the EPB harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

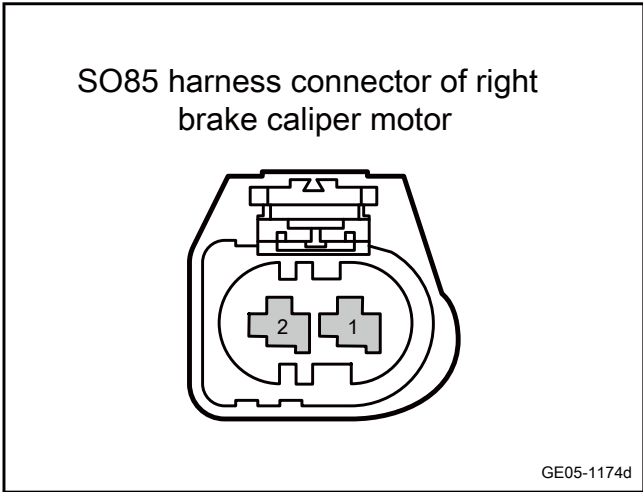
**Step 3** Check whether the circuit between EPB and right brake caliper motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO78(27)	SO85(1)	Standard resistance: less than 1Ω
SO78(12)	SO85(2)	

- E. Confirm whether the measured value meets the standard.



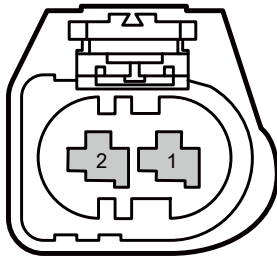
No

Repair or replace the harness.

Yes

**Step 4** Check whether the the circuit between EPB and right brake caliper motor is short to power supply.

SO85 harness connector of right brake caliper motor



GE05-1175d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO85(1)	Vehicle body is grounded.	Standard voltage: 0V
SO85(2)		

- F. Confirm whether the measured value meets the standard.

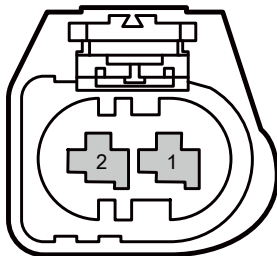
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between EPB and right brake caliper motor is short to GND

SO85 harness connector of right brake caliper motor



GE05-1176d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPB harness connector SO78.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO85(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO85(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace right brake caliper motor.

- A. Replace right brake caliper motor. Refer to Replacement of right brake caliper motor
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the EPB
--------	-----------------

- A. Check whether the power supply and grounding harness of EPB are normal. Refer to [EPB power supply failure \(right\)](#)
- B. Replace the EPB, refer to [Replacement of EPB](#)

Next Step

Step 8	Reprogram and reset the EPB.
--------	------------------------------

- A. Reprogram and reset the EPB. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

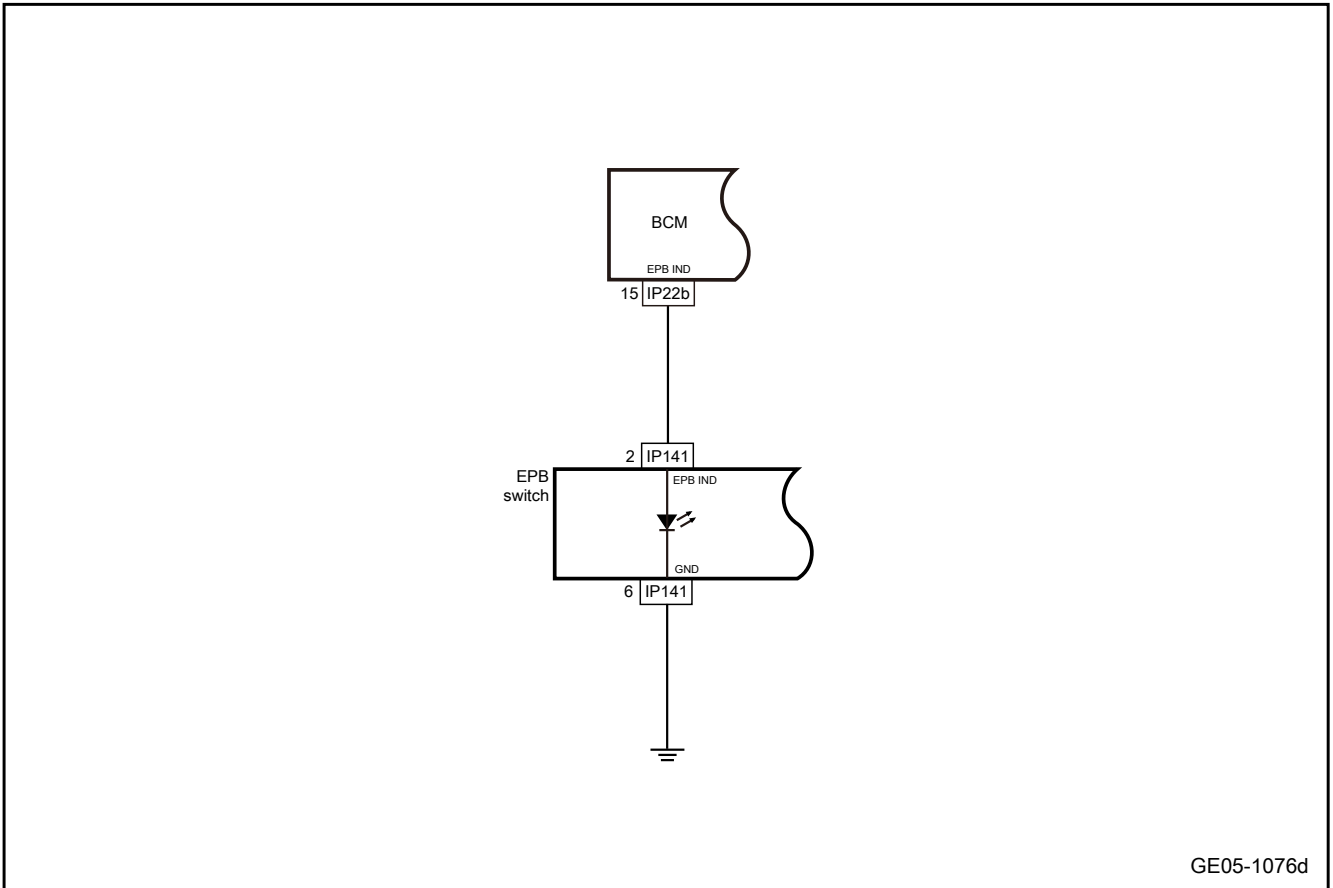
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.5.6.20 EPB indicator fault

1. Schematic circuit diagram:



GE05-1076d

2. Diagnosis steps:

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

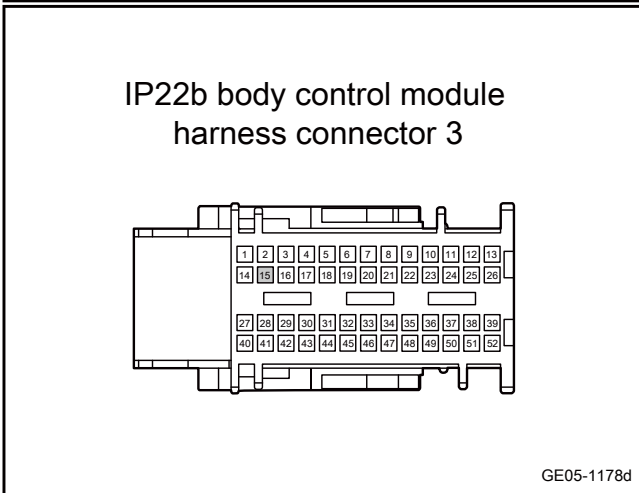
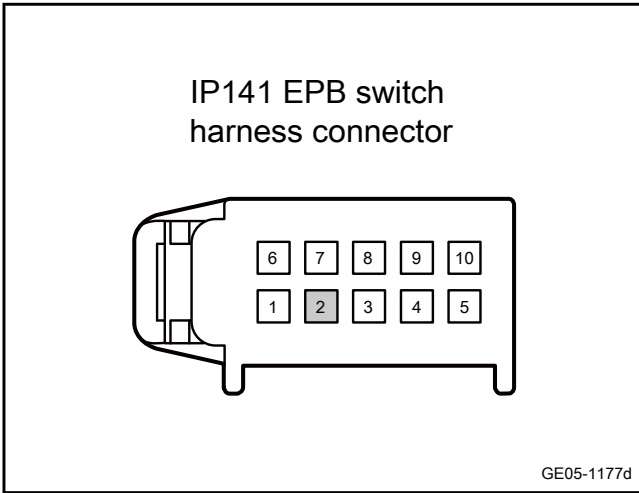
- A. Check the EPB switch and BCM for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB switch and the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the circuit between the EPB switch and BCM is open.
--------	---



Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

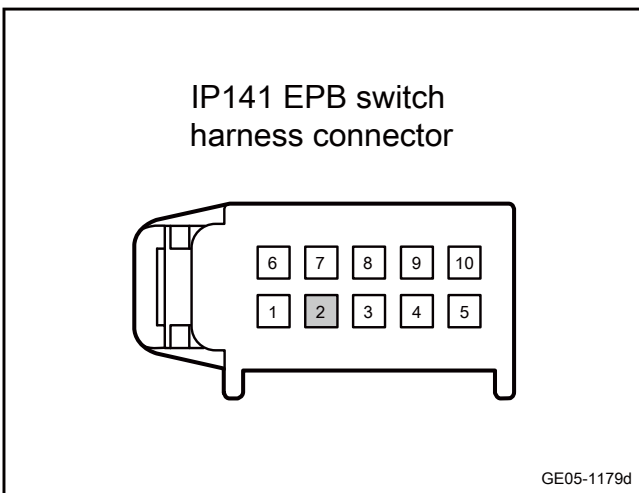
Measure terminal 1	Measure terminal 2	Standard value
IP141(2)	IP22b(15)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 3** | Check whether the circuit between the EPB switch and BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

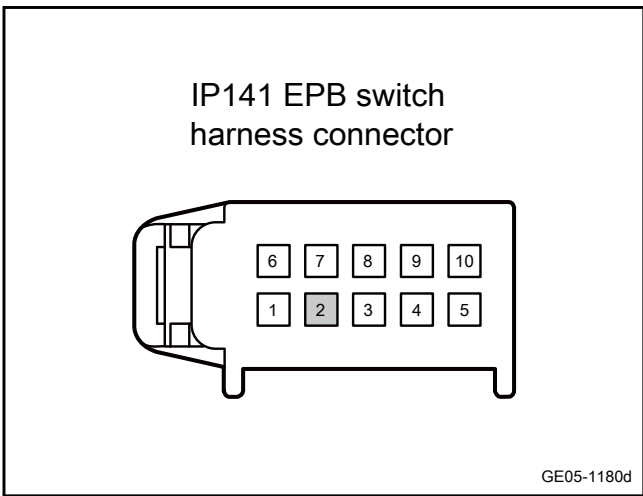
No

Repair or replace the harness.



Yes

**Step 4** Check whether the circuit between the EPB switch and BCM is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

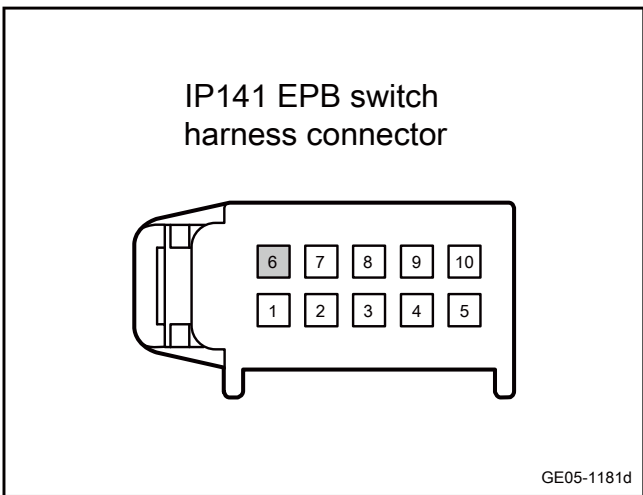
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the EPB switch grounding circuit is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(6)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace EPB switch.

- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Check whether the system is normal

Yes

System is normal.

No

Step 7 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 8 Reprogram and reset the BCM.

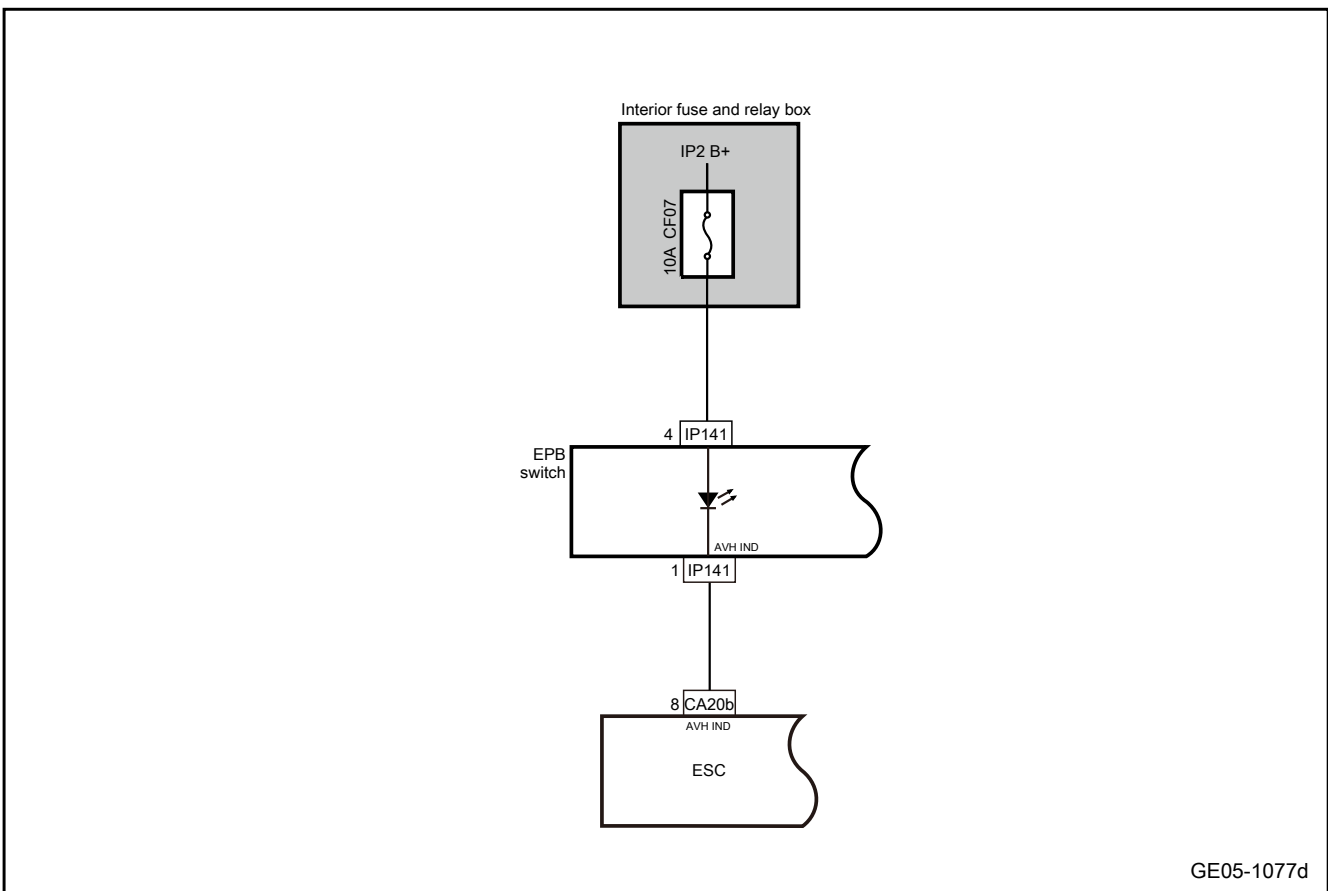
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9 System is normal.

### 5.5.6.21 Auto Hold indicator lamp failure

1. Schematic circuit diagram:



2. Diagnosis steps:

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Primary check.

- A. Check the EPB switch and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB switch and the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out fuse CF07 of the indoor fuse relay box. Check whether fuse CF07 is blown.

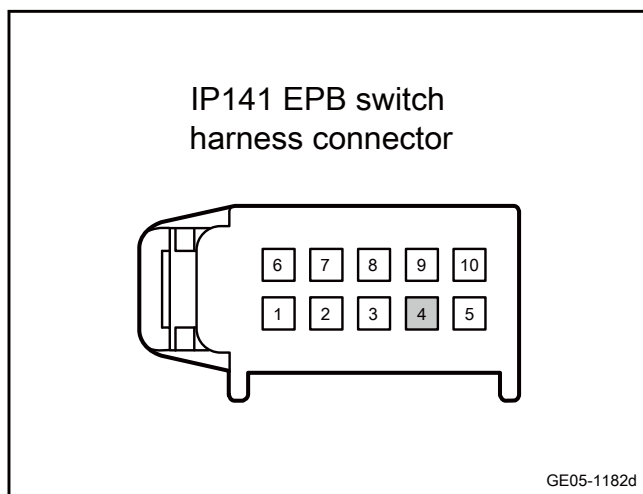
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the EPB switch power supply circuit is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(4)	Vehicle body is grounded.	Standard voltage: 11-14V

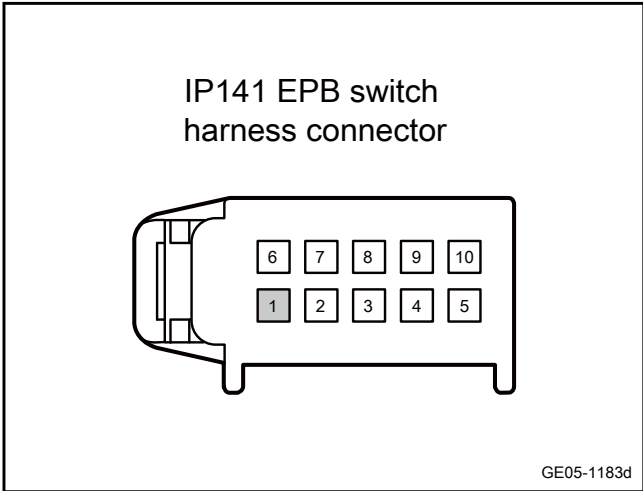
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

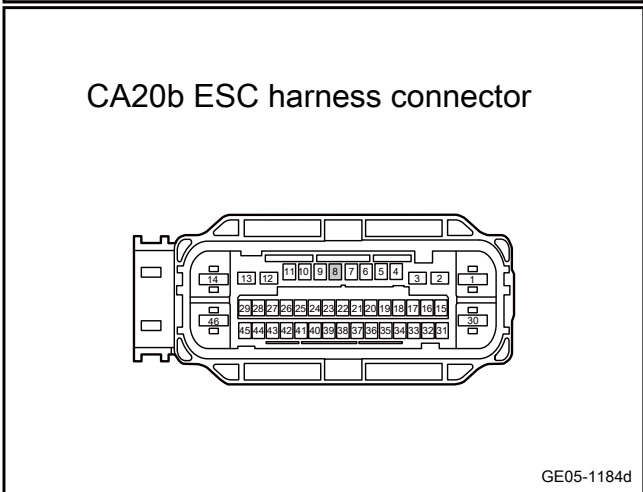
**Step 4** Check whether the circuit between the EPB switch and ESC is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(1)	CA20b(8)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

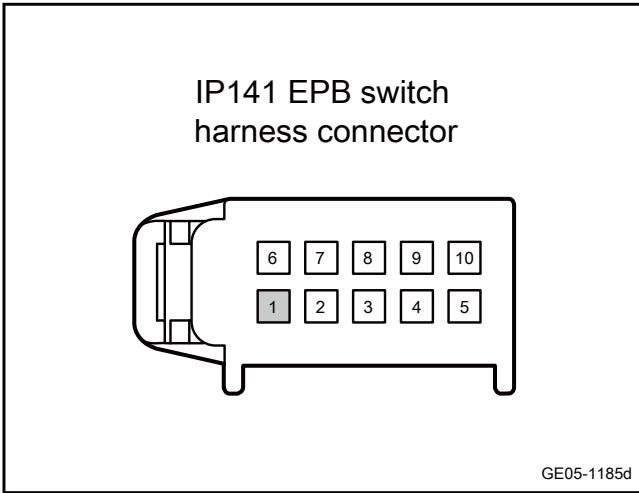


No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the EPB switch and ESC is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

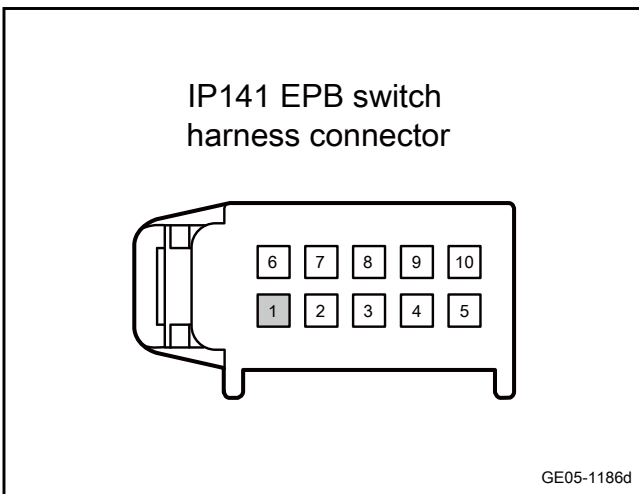
Measure terminal 1	Measure terminal 2	Standard value
IP141(1)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Check whether the circuit between the EPB switch and ESC is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 7** | Replace EPB switch.

- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Check whether the system is normal

Yes System is normal.

No

Step 8	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 9	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
---------	-------------------

### 5.5.6.22 EPB caliper release (enter and exit maintenance mode)

#### 1. Diagnosis steps:

Step 1	Connect the diagnostic apparatus with OBD diagnostic interface.
--------	---

Next Step

Step 2	Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
--------	---

Next Step

Step 3	Turn on the DTC to enter brand selection and vehicle identification modes.
--------	--

Next Step

Step 4	Enter the first-level menu 'Special Routines'.
--------	--

Next Step

Step 5	Enter the maintenance mode.
--------	-----------------------------

Next Step

Step 6	Start the diagnosis.
--------	----------------------

Next Step

Step 7	Enter extended mode.
--------	----------------------

Next Step

Step 8	Security authentication.
--------	--------------------------

Next Step

Step 9	Enter maintenance mode - start to release the friction lining.
--------	--

- A. 01=Successfully released the friction lining.
- B. 02=Fail to release friction lining.
- C. 03=Release the friction lining, in progress.

### Caution

Enter the maintenance mode, and the EPB fault lamp is on at this time.

Next Step

Step 10	Check the EPB release result.
---------	-------------------------------

- A. The friction lining was successfully released.
- B. Perform related maintenance.

Next Step

Step 11	After the maintenance is completed, exit the repair mode.
---------	---

Next Step

Step 12	Start the diagnostic tool.
---------	----------------------------

Next Step

Step 13	Enter extended mode.
---------	----------------------

Next Step

Step 14	Security authentication.
---------	--------------------------

Next Step

Step 15	Exit the maintenance mode.
---------	----------------------------

- A. 01=Exit the maintenance mode successfully.
- B. 02=Fail to exit the maintenance mode.
- C. 03=Exit the maintenance mode, in progress.

Next Step

Step 16	Check the 'Exit the Maintenance Mode' result.
------------	---

Next Step

Step 17	According to the status of the return value, the DTC prompts the success or failure of exiting the maintenance mode.
------------	--

Prompt success to 'exit the maintenance mode'.

Next Step

Step 18	Clear the trouble code.
------------	-------------------------

Next Step

Step 19	The ECU restarts.
------------	-------------------

### Caution

Exit the maintenance mode, and the EPB fault lamp is off at this time.

### 5.5.6.23 EPB initialization setting

#### 1. Diagnosis steps

Step 1	Connect the diagnostic apparatus with OBD diagnostic interface.
--------	---

Next Step

Step 2	Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
--------	---

Next Step

Step 3	Turn on the DTC to enter brand selection and vehicle identification modes.
--------	--

Next Step

Step 4	Enter the first-level menu 'Special Routine' to scan the whole vehicle.
--------	---

Next Step

Step 5	Start the diagnostic tool.
--------	----------------------------



Next Step

Step 6	Enter extended mode.
--------	----------------------

Next Step

Step 7	Security authentication.
--------	--------------------------

Next Step

Step 8	EPB initial settings.
--------	-----------------------

- A. 01 means the successful initialization.
- B. 02 means failed initialization.
- C. 03 means initialization in progress.

Next Step

Step 9	Check the initial setting result of EPB.
--------	--

There are three initial EPB settings:

- A. EPB initial settings successful.
- B. EPB initial settings failed.
- C. EPB initial settings timeout.

Next Step

Step 10	According to the query status, the DTC prompts whether the EPB initialization succeeds or fails.
---------	--

If the initialization times out or fails, you need to re-initialize settings.

Next Step

Step 11	Clear the trouble code.
---------	-------------------------

Next Step

Step 12	The ECU restarts (the EPB fault lamp goes out at this time).
---------	--

## 5.5.7 Removal and installation

### 5.5.7.1 Replacement of EPB switch pack

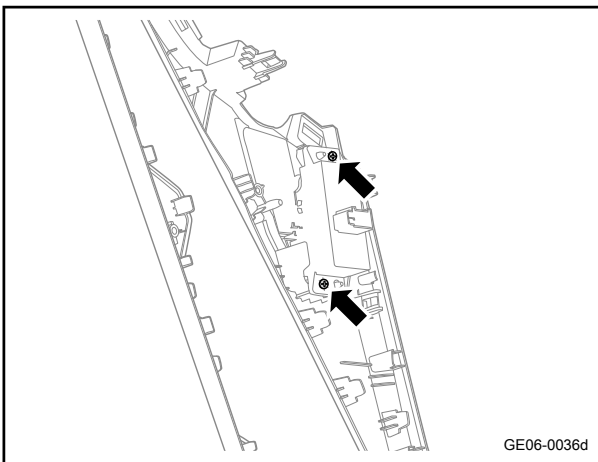
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

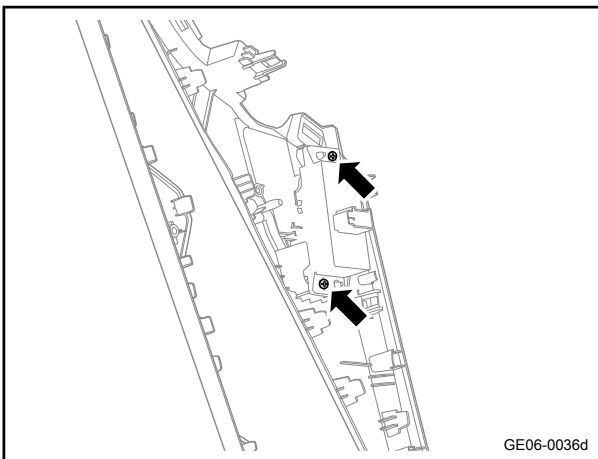
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the upper trim panel assembly of the auxiliary instrument. See [Replacement of upper trim panel assembly of auxiliary instrument](#)
- 3 Remove the 2 fixing screws of the EPB switch.
- 4 Pry down the EPB switch.



#### Installation procedure

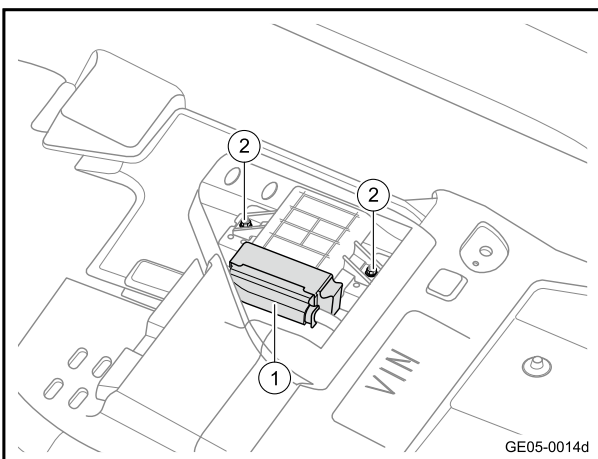
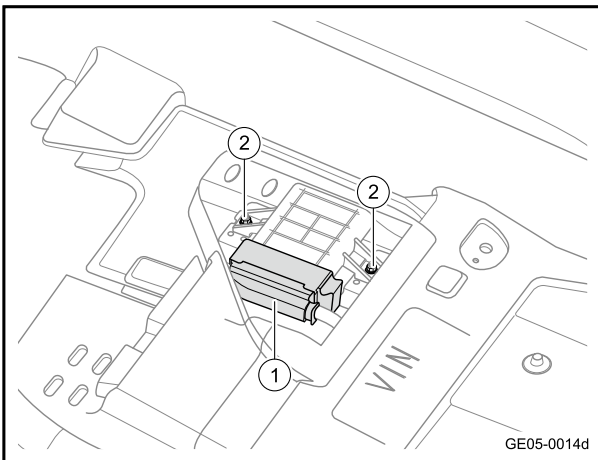
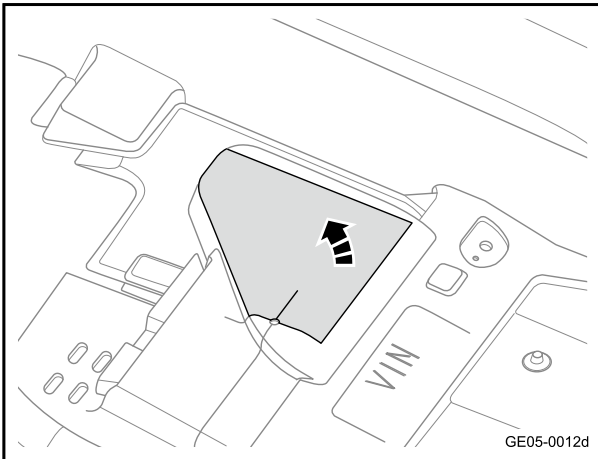
- 1 Connect to the EPB switch by clamping.
- 2 Install the 2 fixing screws of the EPB switch.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)



- 3 Install the upper trim panel assembly of the auxiliary fascia console.
- 4 Connect the negative cable of battery.

### 5.5.7.2 Replacement of EPB controller assembly

#### Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the passenger seat assembly. See [Replacement of driver's seat assembly](#)
- 3 Lift the carpet under the passenger seat.

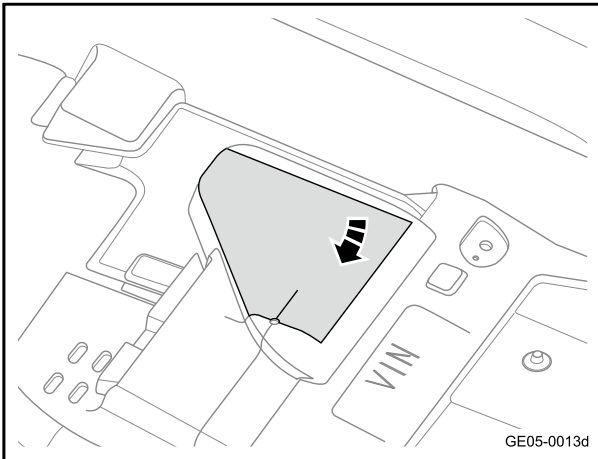
- 4 Disconnect the 1 harness connector 1 of EPB control unit assembly.
- 5 Remove the two fixing nuts 2 connecting the EPB controller assembly and the vehicle body.
- 6 Remove the EPB controller assembly.

#### Installation procedure

- 1 Move the EPB controller assembly to the installation location.
- 2 Install the two fixing nuts 2 connecting the EPB controller assembly to the vehicle body.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the 1 harness connector 1 of EPB control unit assembly.

#### Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".



4 Install the carpet under the passenger seat.

5 Install the passenger seat assembly.

6 Connect the negative cable of battery.

## 5.6 ABS/EBD/ESC

### 5.6.1 Specification

#### 5.6.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Front speed sensor fixing bolt	M6×12	8 - 10	5.9 - 7.4
Rear wheel speed sensor fixing bolt	M6×12	8.5 - 11.5	6.3 - 8.5
Fixing nut of ESC control module	M6	8.5 - 11.5	6.3 - 8.5
Brake pipe nuts of the ESC control module	M10	8 - 10	5.9 - 7.4

#### 5.6.1.2 Wheel speed sensor technical specifications

Speed sensor	Description
Sensor type	Smart speed sensor
Rated working voltage	12V
Peak working voltage	20V
Rated signal current	5.9mA-16.8mA
Peak signal current	34mA
Clearance value with signal panel	Front 0.6~1mm, rear 0.2~0.6mm

## 5.6.2 Description and operation

### 5.6.2.1 Instructions and Operations

This vehicle is equipped with ESC electronic stability control unit as standard, which adopts Bosch ESC9+RBS system, including ECU, HU hydraulic control unit, realizes basic functions such as EBD, ABS, TCS, VDC, and ESC value-added functions such as HHC, HBA, HBB, CDP. RBS brake energy recovery module software is integrated into the ESC. Hydraulic brake circuit represents X type.

#### EBD function

The electronic braking force distribution can recognize the tendency that the rear wheels are locked before the front wheels, and adjust the rear wheel braking force in time to ensure that the rear wheels will not be locked before the front wheels so as to ensure vehicle stability.

The system is automatically turned on. When the driver brakes, the system automatically monitors the slip rates of the front and rear wheels and compares them. Before the ABS takes effect, the valve adjusts the pressure on the rear wheel pipeline so that the front and rear wheels can lock simultaneously. When the system monitors a fault, the EBD function will be turned off promptly.

When EBD fails, the yellow EBD fault lamp on the instrument will light up until the fault is eliminated. After troubleshooting, the function will be restored in the next ignition cycle.

#### ABS function

The anti-lock braking function can identify the locking tendency of one or several wheels at an early stage and reduce the braking pressure of these one or several wheels, which ensures that the driver can avoid obstacles and slow down or stop.

The system is automatically turned on. When the driver brakes, the system automatically monitors the slip rates of the front and rear wheels. Before the wheels are locked, the hydraulic pressure of the wheel cylinder is adjusted through the stages of pressure retention, decompression, and pressure increase, so as to keep the wheels slip rate within the specified range to prevent the wheels from locking. When the system monitors a fault, the ABS function will be turned off promptly.

When the system is power-on, it will conduct self-test. The indicator lamp of instrument is on. If there is no fault within several seconds, it will be extinguished. When the system detects ABS failure, the yellow ABS fault lamp on the instrument will light up until the fault is eliminated. After troubleshooting, the function will be restored in the next ignition cycle.

#### AVH function

AVH system can help a vehicle to keep its state of rest at any static condition. The driver does not need to always step on the brake pedal to keep the vehicles still.

After AVH works for a certain time or after the driver leaves the vehicle, it can be realized that the hydraulic brake switches to electronic parking brake (EPB), to realize safe parking.

Alarm strategy: AVH function is opened through AVH switch. When AVH function is opened, ESC will lighten indicator lamp of AVH switch through low level drive.

#### TCS function

The function of traction control system is to identify the tendency of the driving wheel to slip during the starting or accelerating of the vehicle. It can intervene in power output control or exert wheel brake to control the wheel slip rate and guarantee the drive stability and comfort of the vehicle.

When the system is in auto on status, the driver can turn it off by using the ESC OFF switch on the panel. When the function is activated, started or accelerated, the system will automatically monitor the slip rate of the driving wheel. When it is over the set value range, through reducing the power output torque or applying hydraulic braking to the wheel, the system will prevent the wheel from skipping to reduce the lateral adhesion. When it is below the set value range, power output should be increased (not higher than the driver requirement) and the brake torque should be reduced. When the system monitors a fault, TCS will be switched off promptly. When torque needed by the driver is less than possible output torque, the intervention of TCS in power output will stop promptly.

When the system is power-on, it will conduct self-test. The indicator lamp of instrument is on. If there is no fault within several seconds, it will be extinguished. When TCS is invalid, yellow ESC fault lamp on instrument will be lightened. If the fault is not eliminated, the fault lamp will always be on. After troubleshooting, the function will be restored in the next ignition cycle. When ESC OFF switch is pressed, TCS function is switched off and ESC OFF lamp on the instrument keeps on.

#### VDC function

Vehicle dynamic stability control can identify the difference between actual status of complete vehicle and driving intention. It prevents loss of vehicle control and improves

vehicle stability through adjusting wheel brake pressure or intervening in power management control (or intervening in management control of driving motor).

When the system is in auto on status, the driver can turn it off by using the ESC OFF switch on the panel. With the function activated, the system will monitor operation input of the driver (such as turning the steering wheel, stepping on the accelerator pedal, etc.). Comparing with actual traveling track of complete vehicle, when understeering or oversteering happens to the vehicle, the system will operate power out and wheel brake as the circumstances may require, to correct the traveling track of vehicle, prevent the vehicle slipping out of lane or drifting, and ensure traffic safety.

When the system is power-on, it will conduct self-test. The indicator lamp of instrument is on. If there is no fault within several seconds, it will be extinguished. When the system detects VDC failure, the yellow ESC fault lamp on the instrument will light up until the fault is eliminated. When ESC OFF switch is pressed, VDC function is switched off and ESC OFF lamp on the instrument keeps on.

#### HHC function

The hill starting assist can release the brake while hill starting, and the vehicle stays in place, simplifying the operation of the hill starting.

The system is in auto on status. When the vehicle is in uphill and brake pedal is stepped on, it will be stopped. When the driver intends to drive, it is needed to loosen the brake pedal to step on the accelerator pedal and hydraulic brake force will be applied on four wheels by the HHC system to prevent the wheels skidding away. Keep the vehicle stopped for 2s. When the driving force is greater than protection pressure, the system will promptly release hydraulic brake force on the wheels to start the vehicle. When the function is activated, the rear brake lamp will be lightened.

#### HBA function

EBA prevents the case that the driver does not step on the brake pedal with enough strength. It can provide maximum brake assistance for the driver when emergency brake is needed and shorten brake distance.

The system is in auto on status. If the speed and strength of the driver stepping on pedal exceed threshold value and are monitored, it will automatically increase brake hydraulic pressure to the pressure of wheel lock.

When the system detects HBA failure, the yellow ESC fault lamp on the instrument will light up until the fault is eliminated.

#### HBB function

Hydraulic power assist. When insufficient electric power assistance is detected, the ESC will provide hydraulic braking.

HBB is an enhanced function, which is composed of the vehicle's ESC system with electric booster and brake master cylinder. When the driver steps on the brake pedal, if the electric boost is insufficient, the limit is reached, or the braking force declines, the HBB function is activated, and the brake pressure is actively increased by ESC system to help the driver achieve the desired deceleration.

When the HBB function fails, the yellow EBD indicator lamp on the instrument lights up.

#### CDP function

When the parking switch is pulled for emergency braking, the ESC will hydraulically brake the four wheels to reduce the braking distance.

The system is automatically turned on. When the vehicle speed is greater than 3km/h and emergency braking is required, and when the driver directly pulls up the EPB switch, the ESC will hydraulically brake the four wheels, and the deceleration can reach 6m/s<sup>2</sup>.

When the CDP is activated, the red brake light illuminates.

#### RBS function

The braking energy recovery system. Under the premise of satisfying the stability of the vehicle, the system performs electrical torque output control when the brake pedal is applied to the brake, so as to convert the vehicle's kinetic energy into electrical energy, and then recover braking energy.

The system is automatically turned on by default. When the driver needs to decelerate and step on the brake, the VCU will control the motor to recover the braking energy, and dynamically adjust the proportion of the electric mechanism power torque and the hydraulic braking torque according to the actual braking torque demand of the vehicle.

ESC control module;

#### Caution

**There is a rubber damping pad between the mounting bolt of the ESC control module and the bracket. The function of the rubber damping pad is to protect the hydraulic electronic control unit from vehicle vibration. The hydraulic electronic control unit cannot be disassembled and should be replaced as an assembly.**

The ESC control module controls system functions and detects faults. When the ignition switch is turned on and the

DTC of anti-lock braking system does not appear, the system energizes the relay to provide the solenoid valve and the pump with battery positive voltage. The ESC control module continuously detects the status of the wheels and controls the slip rates of the wheels to be kept within a certain range, thereby maintaining the stability of the vehicle. The hydraulic control pipeline adopts a diagonal split configuration, so that the oil of the master cylinder flows all the way to the left front wheel and the right rear wheel, and the other oil flows to the right front wheel and the left rear wheel. The diagonal branch circuit is isolated in hydraulic control, so that when one main brake circuit leaks or fails, the other circuit can ensure continuous braking capability. The ESC control module includes the following main components:

- ESC control module;
- ESC pump and its relay
- Inlet valve, each inlet valve controls one wheel
- Drain valves, each drain valve controls one wheel
- Electromagnetic coil relay

Wheel speed sensor:

The wheel speed sensor is a Hall-type speed sensor. As the wheel rotates, the ABS control module uses the wheel speed signal to calculate the wheel speed.

Brake lamp switch

When the brake pedal is depressed, the brake lamp is turned on, and the brake signal is sent to the ABS control module at the same time.

ABS warning lamp:

Located on the instrument cluster, it will light up to notify the driver that the ABS is malfunctioning. When the following events occur, the instrument cluster instrument cluster will turn on the ABS warning lamp:

- The ABS control module detects that the ABS system is faulty, and the instrument cluster receives a request for turning on from the ABS control module through the CAN bus.

- The instrument cluster performs a self-check test at the beginning of each ignition cycle, and the indicator lamp turns on

for about 3s.

- The instrument cluster detects that the communication with the ABS control module is lost.

EBD warning lamp:

Located on the instrument cluster, it will light up to notify the driver that the EBD is malfunctioning. When the ABS warning lamp is on but the EBD warning lamp is off, the EBD function

is still valid. When the ABS warning lamp and EBD warning lamp are both on, both ABS and EBD functions are invalid.

ESCOFF warning lamp:

Press the ESC OFF switch to turn off the TCS and ESC functions. At the same time, the ESC sends CAN information to the instrument, and the instrument lights up the yellow ESC OFF status indicator. ESC sends a low-level signal to drive the ESC OFF switch indicator lamp on

Self-diagnostic test:

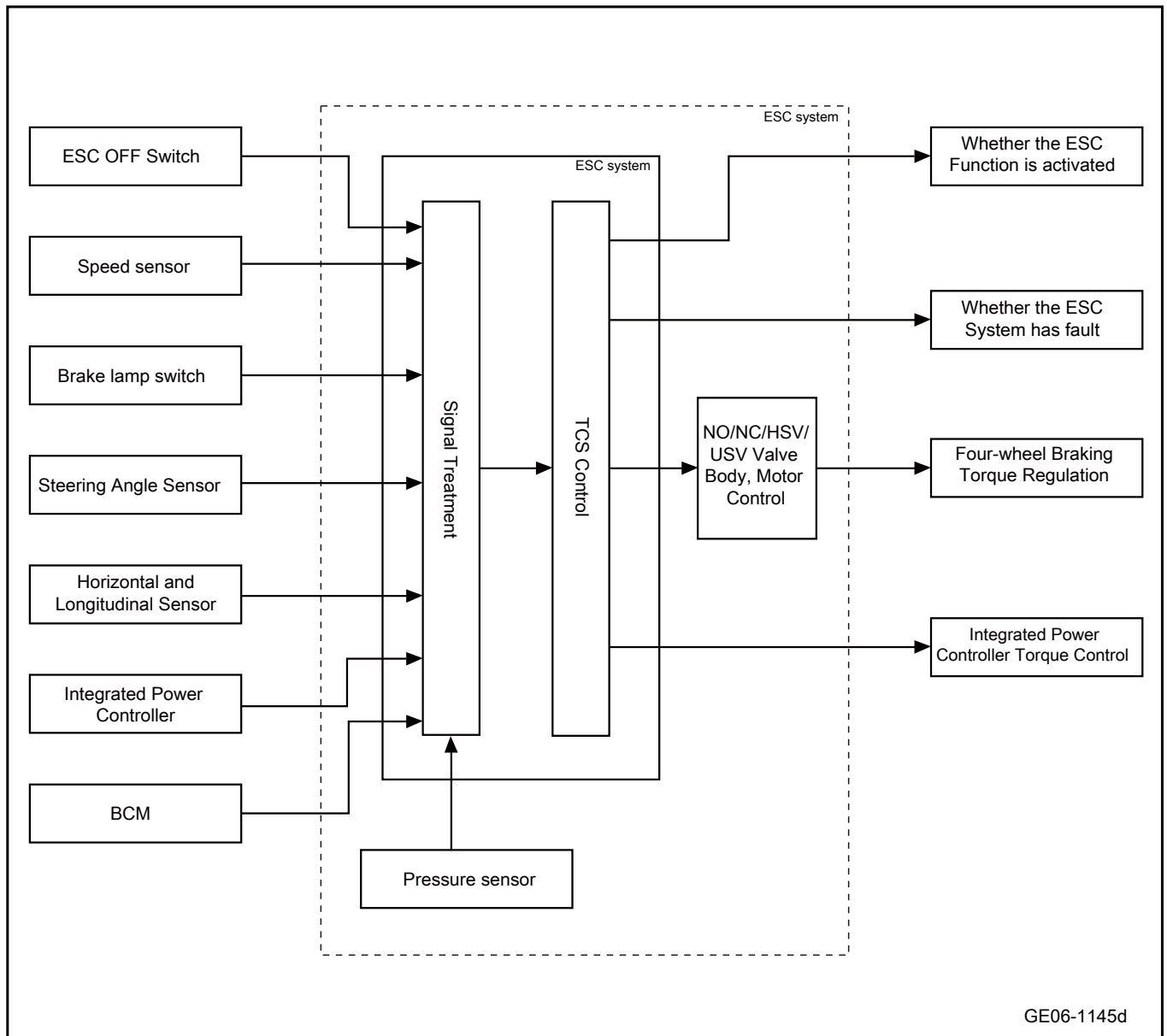
The ABS control module performs a self-diagnosis test every time the start-and-stop switch is turned on. As long as the ABS is powered and in working condition, it will monitor the performance. Once an error is found, it will immediately alarm until the error disappears, and the error code will remain in the ABS memory until it is manually eliminated.



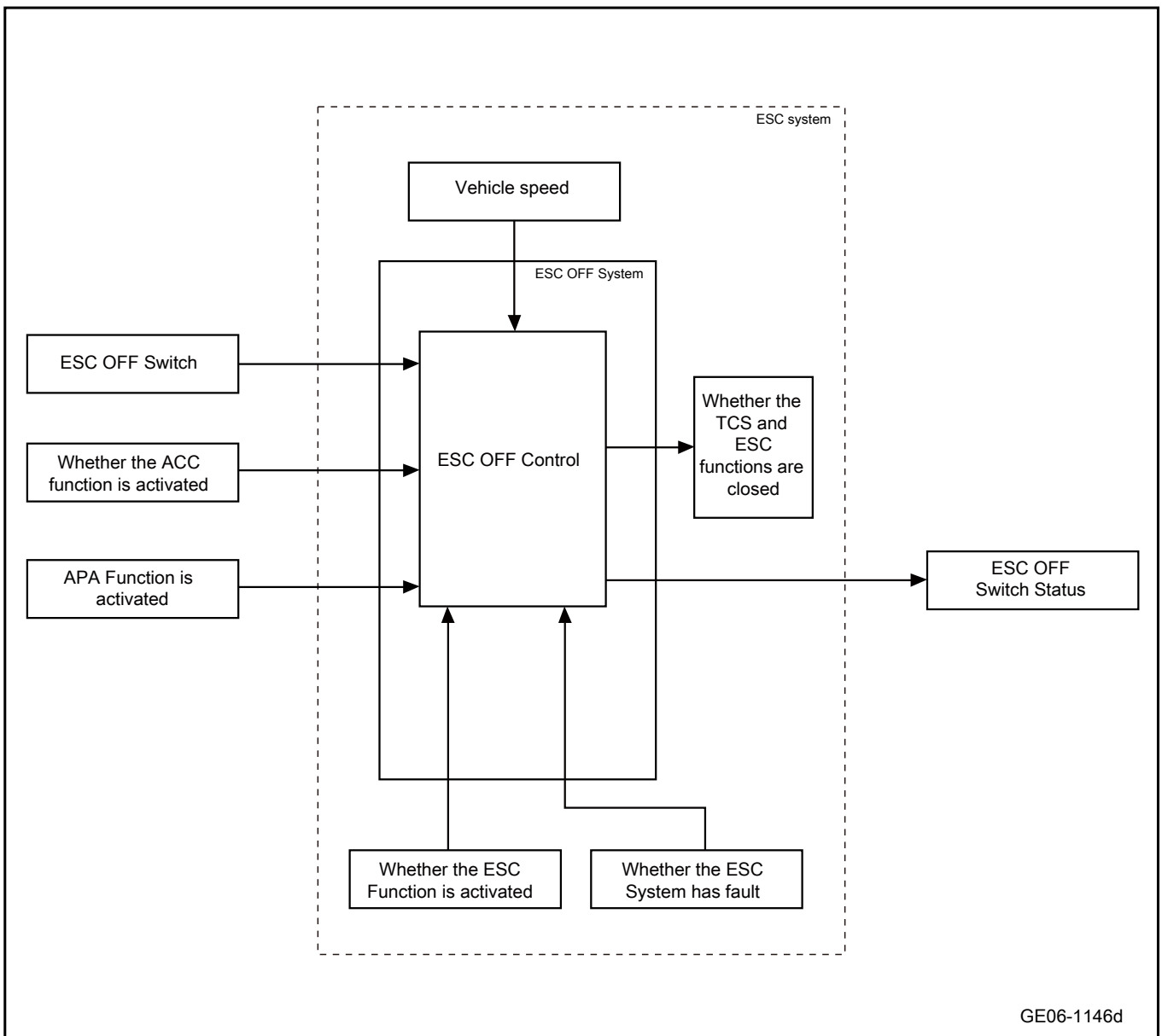
5.6.3 How the system works

5.6.3.1 System Working Principles

Functional block diagram of ESC system



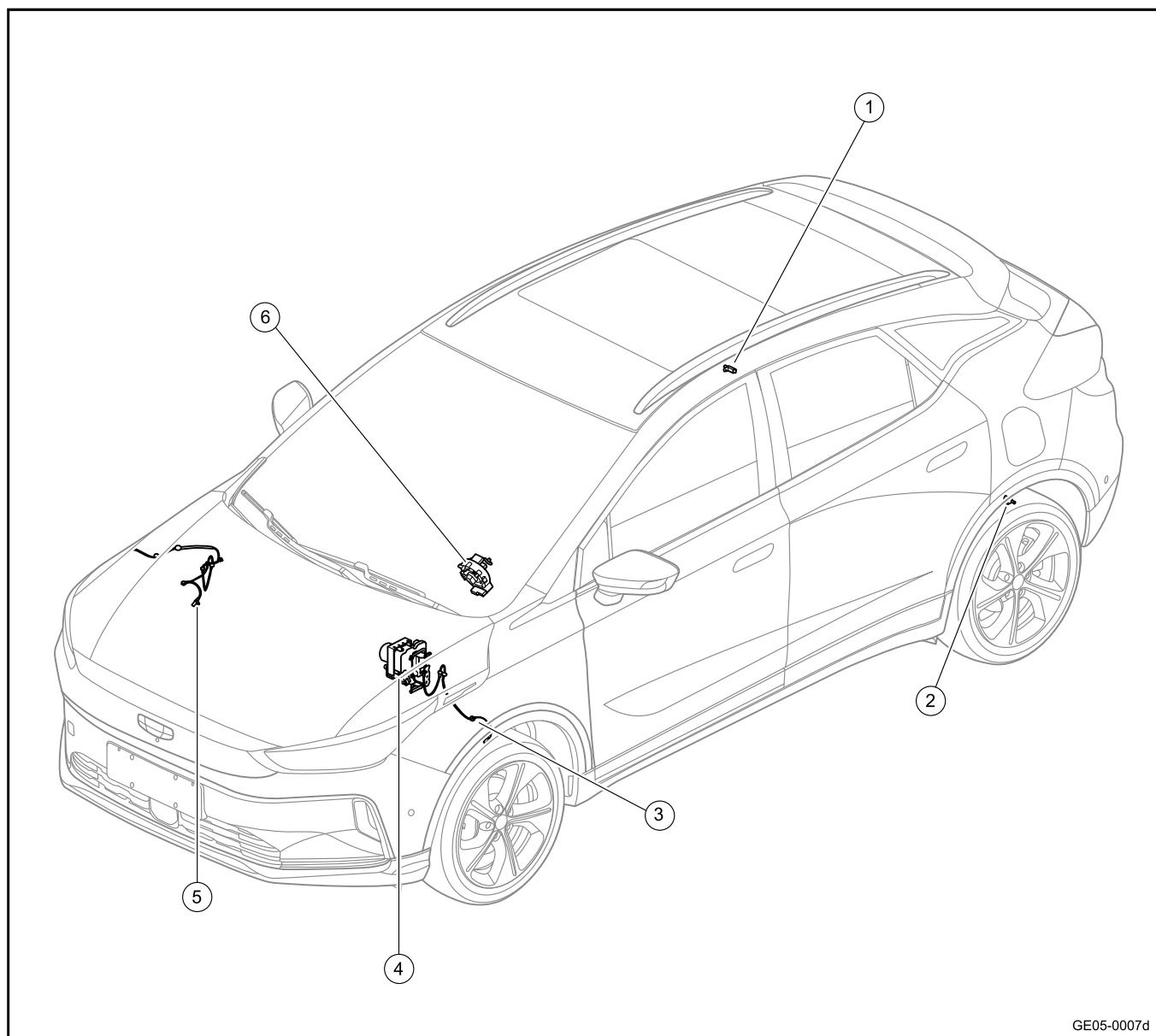
Functional block diagram of ESC OFF system



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## 5.6.4 Part location

## 5.6.4.1 Part Position

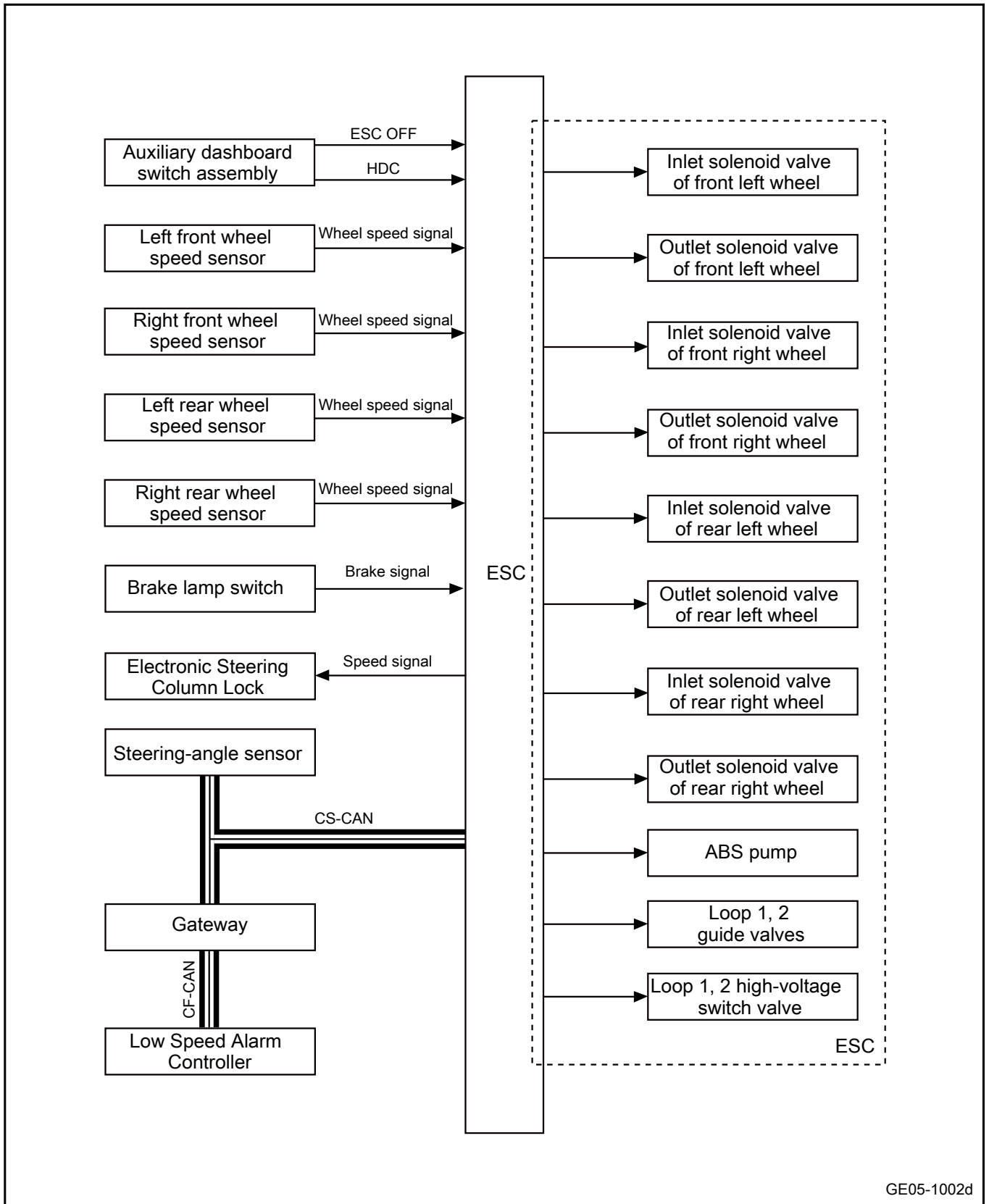


GE05-0007d

- |                                  |   |
|----------------------------------|---|
| 1. Right rear wheel speed sensor | 4. ESC controller assembly                |
| 2. Left rear wheel speed sensor  | 5. Right front wheel speed sensor         |
| 3. Left front wheel speed sensor | 6. Clock spring and steering angle sensor |

5.6.5 Electrical block diagram

5.6.5.1 Schematic diagrams of electrical principle of ABS and ESC systems



## 5.6.6 Diagnostic information and steps

### 5.6.6.1 Diagnosis Description

The fault code can be read through the vehicle's data connector (DLC diagnostic interface). The data table of the ESC control module can be used to read the data table displayed on the intelligent tester, and the functions of the reading switch and sensor values can be performed without removing any parts. Reading data table is the first step in trouble shooting and one of the ways to reduce diagnostic time.

### 5.6.6.2 Routine inspection

– Confirm fault symptom. The most difficult case in fault elimination is absence of symptom. In this case, a complete analysis of fault description narrated by users must be made. The same or similar conditions and environment when the fault of the distributor's vehicle comes out should be simulated. No matter how experienced and skilled the maintenance personnel is, if they do not confirm the symptoms of the fault, they will ignore some important things in the repair and make wrong guesses in some places. It will make trouble shooting to fail.

– Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

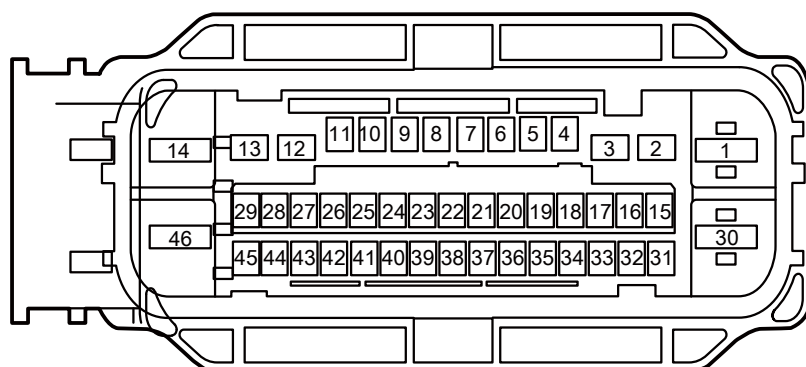
– The connector joints and vibration fulcrum are the main parts that should be thoroughly checked. Vibration method is recommended in case of failure due to vibration.

1. Gently vibrate the potentially faulty sensor part with fingers and check for faults.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the harness in both vertical and horizontal directions.

### 5.6.6.3 List of ESC Control Module Terminals

#### CA20b ESC harness connector

CA20b ESC harness connector



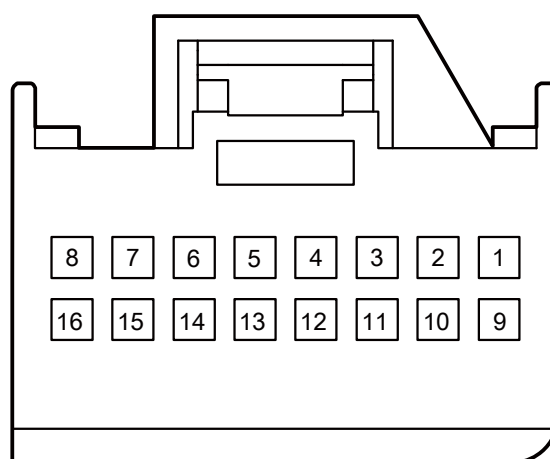
GE05-1023d

Terminal No.	Terminal name	Terminal description
1	B+Power supply	Battery power supply of ESC module
2	-	-
3	-	-
4	-	-
5	CS CAN-H	Chassis CAN high line
6	-	-
7	FL speed sensor negative	FL speed sensor signal (negative signal)
8	Auto Hold working indicator negative terminal input signal	AUTO HOLD working indicator negative end input signal
9	Speed signal	Speed signal
10	Hill descent control switch indicator signal	Hill descent control switch indicator signal
11	Private CAN-H	Private CAN high line
12	-	-
13	-	-
14	Ground connection	Grounded circuit of ESC module
15	-	-
16	-	-
17	Hill descent control switch signal input	Hill descent control switch signal input
18	ESC OFF switch indicator lamp signal	ESC OFF switch indicator lamp control signal
19	CS CAN-L	Chassis CAN low line
20	-	-
21	FR speed sensor positive	FR wheel speed sensor signal (positive signal)
22	RR speed sensor positive	RR wheel speed sensor signal (positive signal)
23	RL speed sensor negative	RL wheel speed sensor signal (negative signal)
24	FL speed sensor positive	FL wheel speed sensor signal (positive signal)
25	Private CAN-L	Private CAN low line
26	FR speed sensor negative	FR wheel speed sensor signal (negative signal)
27	-	-
28	-	-
29	-	-
30	B+Power supply	Battery power supply of ESC module
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-

Terminal No.	Terminal name	Terminal description
36	IG1 power supply	ACCION\START power supply of ESC module
37	RR speed sensor negative	RR wheel speed sensor signal (negative signal)
38	Brake lamp switch signal	Brake lamp switch signal input
39	RL speed sensor positive	RL speed sensor signal (positive signal)
40	-	-
41	Auto Hold switch signal	AUTO HOLD switch signal input
42	-	-
43	ESC OFF Switch	ESC OFF switch signal input
44	-	-
45	-	-
46	Ground connection	Grounded circuit of ESC module

### IP164b auxiliary fascia console switch pack harness connector

#### P164b Harness connector of auxiliary dashboard switch assembly



GE05-1024d

Terminal No.	Terminal name	Terminal description
1	IG1 power supply	Auxiliary fascia console switch pack ACCION\START power supply
2	-	-
3	-	-
4	HDC switch indicator lamp	HDC switch indicator lamp control input
5	ESC OFF switch indicator	ESC OFF switch indicator lamp control input

Terminal No.	Terminal name	Terminal description
6	Backlight lamp power supply	Backlight power supply input
7	-	-
8	LIN	LIN data communication bus
9	B+Power supply	Ambient light power input
10	-	-
11	-	-
12	HDC switch signal	HDC switch signal output
13	ESC OFF switch signal	ESC OFF switch signal output
14	-	-
15	Ground connection	Grounding circuit of auxiliary fascia console switch pack
16	B+Power supply	Battery power supply for auxiliary instrument switch pack

#### 5.6.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
ESC warning lamp keeps on	1. Harness	Refer to <a href="#">ESC alarming indicator is always on</a>
	2.ESC	
	3. Instrument cluster control unit	
ESC warning indicator is always off under any conditions	1. Harness	Refer to <a href="#">ESC warning indicator is always off under any conditions</a>
	2.ESC	
	3. Instrument cluster control unit	
ESC communication fault	1.ESC	Refer to <a href="#">ESC communication failure</a>
	2. CAN bus	
ESC power failure	1. Battery	Refer to <a href="#">ESC power failure</a>
	2. Fuse	
	3. Circuit	
	4.ESC	
Internal fault of ESC	1.ESC	Refer to <a href="#">Internal failure of ESC</a>
Wheel speed sensor fault	1. Harness	Refer to <a href="#">Wheel speed sensor fault</a>
	2. Speed sensor	
	3.ESC	
FR speed sensor fault	1. Harness	Refer to front right wheel speed sensor fault
	2. Right front wheel speed sensor	
	3.ESC	
Left front speed sensor fault	1. Harness	Refer to front left wheel speed sensor fault
	2. Left front wheel speed sensor	
	3.ESC	
RL wheel speed sensor fault	1. Harness	Refer to rear left wheel speed sensor fault
	2. Left rear wheel speed sensor	
	3.ESC	



Symptom	Suspected parts	Measures / Reference
RR speed sensor fault	1. Harness	Refer to rear right wheel speed sensor fault
	2. Right rear wheel speed sensor	
	3.ESC	
Brake lamp switch fault	1. Harness	Refer to <a href="#">Brake lamp switch fault</a>
	2. Brake lamp switch	
	3.ESC	
ESC OFF switch fault	1. Harness	Refer to <a href="#">ESC OFF switch fault</a>
	2. Auxiliary fascia console switch pack	
	3.ESC	
Fault of HDC switch	1. Harness	Refer to HDC switch fault
	2. Auxiliary fascia console switch pack	
	3.ESC	
Steering Angle Sensor Does not Work	1. Fuse	See <a href="#">Steering Angle Sensor Does not Work</a>
	2. Harness	
	3. Steering-angle sensor	
Parking Brake Caliper Failure	1. Circuit	Refer to <a href="#">Parking Brake Caliper Failure</a>
	2. EPB switch	
	3. Left and right parking brake calipers	
	4.ESC	
Failure of Auto Hold function	1. Circuit	Refer to <a href="#">Failure of AUTO HOLD function</a>
	2. EPB switch	
	3.ESC	

#### 5.6.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
C006102	Invalid lateral acceleration value	Refer to <a href="#">Internal failure of ESC</a>
C006202	Invalid longitudinal acceleration value	
C006302	Invalid yaw rate value	
C100004	ECU hardware fault	
C100104	CAN hardware fault	
C100204	Abnormal ABS/ESP control	
C100304	Valve relay fault	
C100409	General valve fault (hardware fault)	
C100498	Valve overheating	
C100504	Exhaust pump fault	
C101E01	Pressure sensor circuit fault (only ESC)	
C101E11	Pressure sensor 1 circuit is short to ground (ESC only)	
C101E12	The pressure sensor 1 circuit is short to the power supply (ESC only)	

Diagnostic Trouble Code	Description	Fault location/elimination method	
C101E64	Pressure sensor signal fault (only ESC)		
C101F29	Steering angle sensor fault (only ESC)		
C101F54	Calibration error of steering angle sensor (only ESC)		
C102004	ESC off switch is faulty		
C103152	System initialization is not completed		
C10337A	Hydraulic module is working beyond limit		
C104200	Energy recuperation malfunction		
C105404	Energy recovery signal status error		
C106104	Abnormal ABS emergency braking		
C106229	Receive iBooster error signal		
C150077	The actuator status is abnormal in the initialization phase		
C150107	Suspected actuator status		
C150200	Invalid hydraulic assist		
C100D01	Left front wheel speed sensor fault (no specific cause of the fault is detected)		Refer to front left wheel speed sensor fault
C100D11	Left front speed sensor is short GND		
C100D12	Left front speed sensor fault is short to power supply		
C100D13	Left front speed sensor circuit is open		
C100D64	Left front speed sensor signal fault (out of range, lost, noise and off and on)		
C100E01	FR speed sensor faults (no specific fault cause has been detected)	Refer to front right wheel speed sensor fault	
C100E11	Short circuit to ground of FR speed sensor		
C100E12	FR speed sensor is short to power supply		
C100E13	Circuit open of FR speed sensor		
C100E64	FR speed sensor signal faults (exceeding range, losing, noise and off and on)		
C100F01	Fault of RL wheel speed sensor (the specific reason cannot be detected)	Refer to rear left wheel speed sensor fault	
C100F11	RL wheel speed sensor is short to GND		
C100F12	RL wheel speed sensor is short to power supply		

Diagnostic Trouble Code	Description	Fault location/elimination method
C100F13	RL wheel speed sensor is open	
C100F64	Signal fault of RL wheel speed sensor (out of range, loss, noise, intermittent)	
C101001	RR speed sensor fault (No specific fault cause has been detected)	Refer to rear right wheel speed sensor fault
C101011	RR speed sensor is shorted to GND	
C101012	RR speed sensor is shorted to power supply	
C101013	Circuit open of RR speed sensor	
C101064	RR speed sensor fault (out of range, lost, noise, off and on)	
C101104	General error of the wheel speed sensor (replacement of sensor and multiple sensors errors)	Refer to <a href="#">Wheel speed sensor fault</a>
C102C71	Button catching of auto hold braking (Only for ESC)	Refer to <a href="#">Failure of AUTO HOLD function</a>
C102312	Button loop fault of auto hold (Only for ESC)	
C150309	The motor does not start normally-left caliper	Refer to <a href="#">Parking Brake Caliper Failure</a>
C150318	Insufficiently increased clamp forces-the left caliper	
C150319	The coefficient of friction is too high-left caliper	
C15031D	Emergency release detected-left caliper	
C150371	Locked-rotor of motor-left caliper	
C150391	Suspicious motor parameters- the left caliper	
C150393	No increase in force detected-left caliper	
C102200	The left brake fault of AUTO HOLD braking (Only for ESC)	
C102401	Electrical fault of the left brake for AUTO HOLD (Only for ESC)	
C102719	The left-side motor overcurrent of AUTO HOLD braking (Only for ESC)	
C102601	Electrical fault of AUTO HOLD brake driver (Only for ESC)	
C103242	Electronic caliper storage unit fault	

Diagnostic Trouble Code	Description	Fault location/elimination method	
C150409	The motor does not start normally-right caliper		
C150418	Insufficient increased clamp force- right caliper		
C150419	The coefficient of friction is too high-right caliper		
C15041D	Emergency release detected-right caliper		
C150471	Locked-rotor of motor-right caliper		
C150491	Suspicious motor parameters- right caliper		
C150493	No increase in force detected-right caliper		
C102100	The right brake fault of AUTO HOLD (only for ESC)		
C102501	The right brake electrical fault of AUTO HOLD (only for ESC)		
C102819	The right motor overcurrent of the AUTO HOLD (only for ESC)		
U003700	CAN1 bus switching off error		Refer to <a href="#">ESC communication failure</a>
U007300	CAN bus is switched off wrongly		
U011087	Loss of communication with integrated power controller		
U012687	Communication with the angle sensor is lost		
U014087	Communication with body controller is lost		
U015187	Communication with airbag controller is lost		
U015587	Loss of communication with IPK node		
U015687	Loss of communication with multimedia module		
U023587	Communication with medium-range radar controller is lost		
U031800	ECU software fault		
U041181	Invalid signal received from the integrated power controller		
U042281	An invalid signal is received from the body control system		
U042381	The data received from the IPK is illegal		

Diagnostic Trouble Code	Description	Fault location/elimination method	
U042881	An invalid signal is received from the steering angle sensor (only ESC)		
U043381	An invalid signal is received from medium-range radar controller		
U045281	Invalid signal received from ACU (Airbag Control Unit)		
U045781	Invalid signal received from multimedia controller		
U111487	Lost communication with complete vehicle controller		
U111587	Loss of communication with VCU (Complete Vehicle Controller) energy recovery related channels		
U111787	Loss of communication with AVM (electronic stability control system only)		
U111A87	Communication with iBooster is lost		
U130055	Variable coding fault		
U140481	Invalid signal received from the complete vehicle controller		
U140781	Invalid signal received from AVM		
U140A81	Invalid signal received from iBooster		
U300616	ECU power supply voltage is too low		Refer to <a href="#">ESC power failure</a>
U300617	ECU power supply voltage is too high		

### 5.6.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 5.6.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

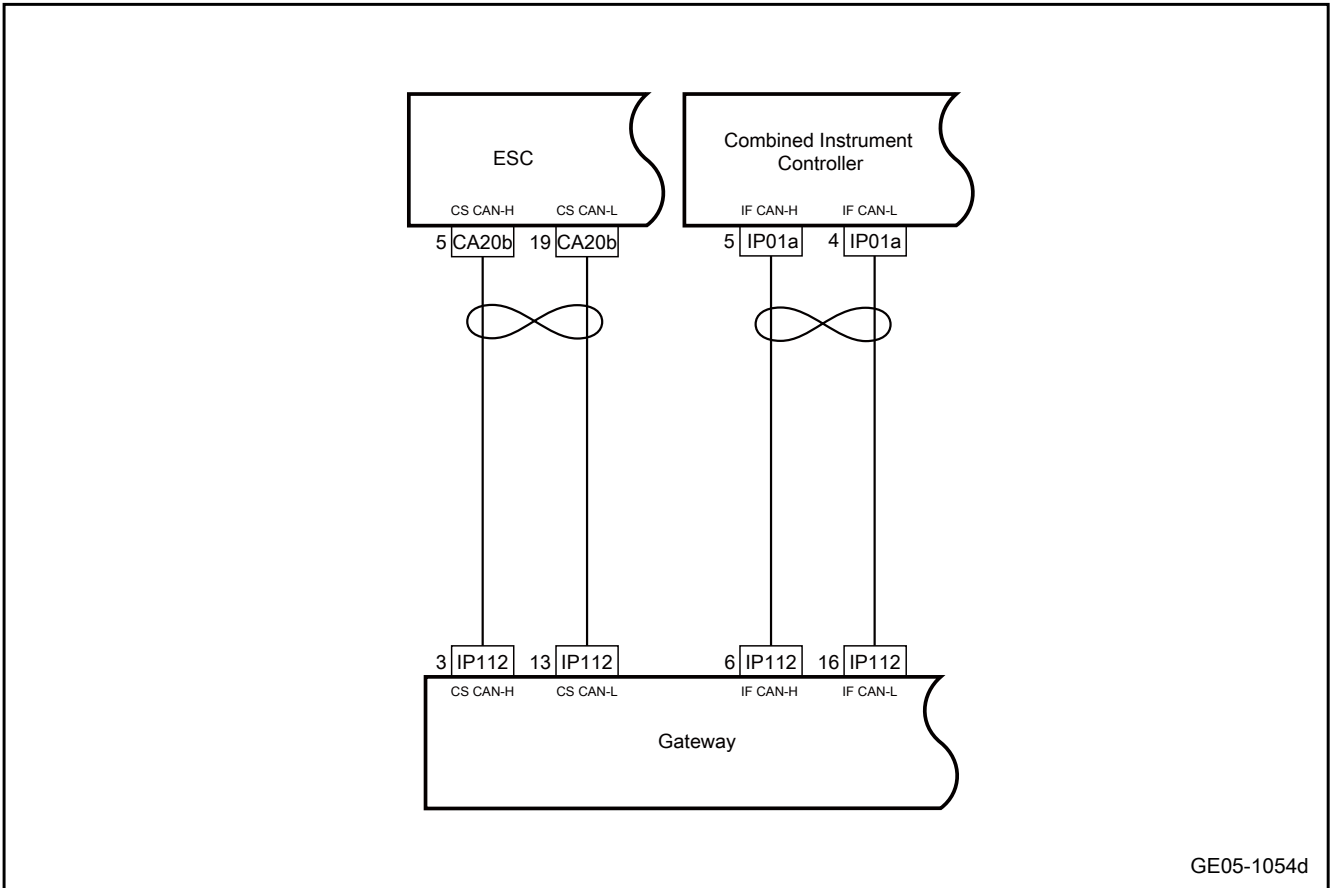
- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 5.6.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	Power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Number of triggers	0-255	time
4	Mileage to first misfunction	0-999999	Km
5	Brake lamp switch	-	-
6	Pressure of master cylinder	-42.5-425	Bar
7	Real accelerator pedal position	0-100	%
8	Gear status	-	-
9	Handbrake status	-	-
10	Read the current status of the left actuator	-	-
11	Read the current status of the right actuator	-	-

### 5.6.6.9 ESC warning lamp keeps on

1. Schematic circuit diagram:



GE05-1054d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the combination instrument controller and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Use diagnostic apparatus to carry out the active test of ESC warning lamp.
--------	--

- A. Connect the DTC, operate the start-and-stop switch, and turn on the READY gear of the complete vehicle.
- B. Select “Active test” on function tests.

Active test: ESC warning lamp

Diagnostic instrument display	Test components
ESC warning	The ESC warning lamp is illuminated or not (ON/OFF)

- C. Check whether the ESC warning lamp is functioning properly.

Yes

System is normal.

No

Step 3 Check the CS-CAN bus integrity.

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Check the IF-CAN bus integrity.

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN network is normal.

No

Check or repair the IF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 5 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)
- C. Confirm whether the system is normal.



Yes

System is normal.

No

Step 6	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the instrument cluster controller.
--------	--

- A. Check whether combination instrument controller power supply and grounding harness are normal. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)

Next Step

Step 8	Reprogram and reset the instrument cluster controller.
--------	--

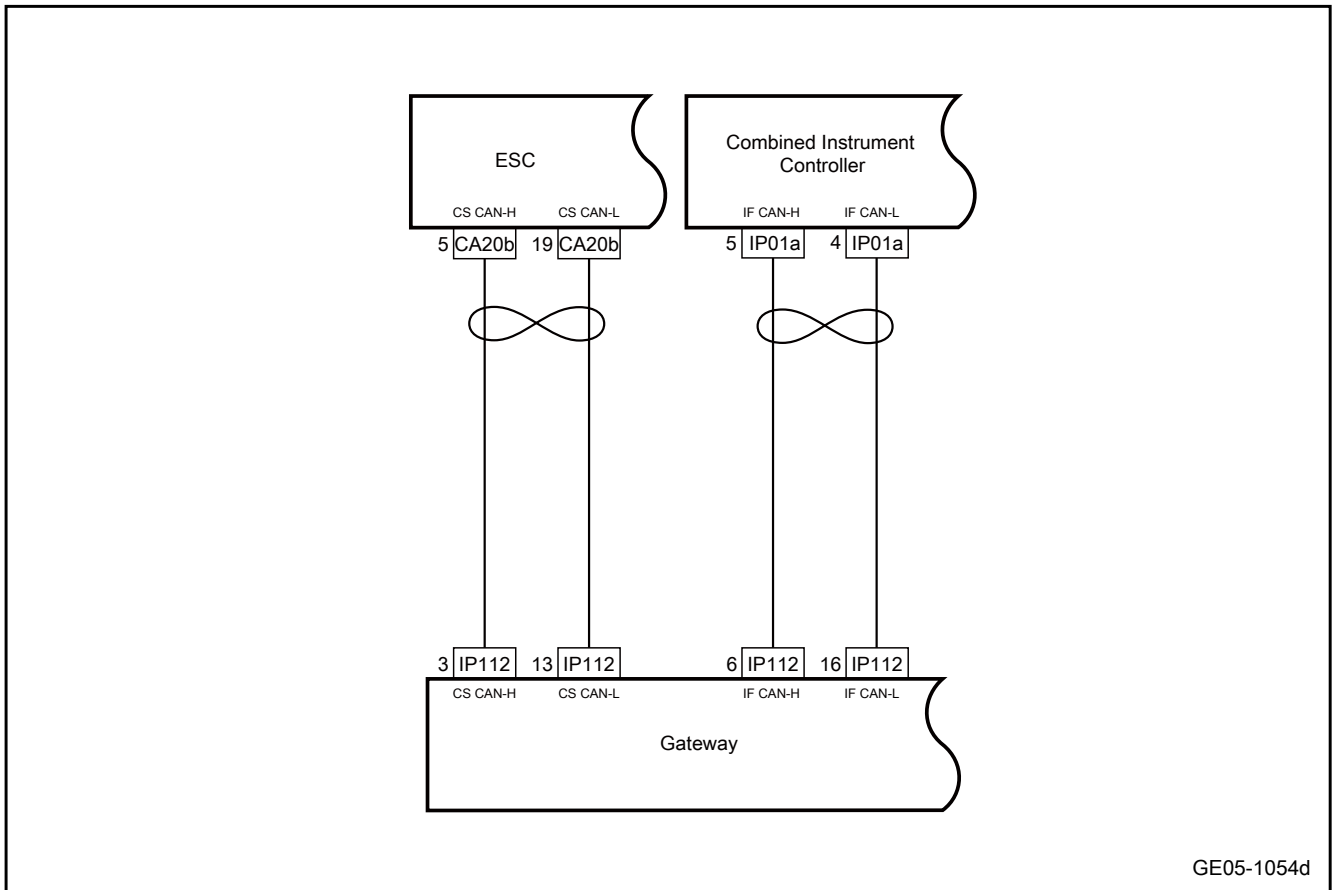
- A. Reprogram and reset the instrument cluster controller. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 5.6.6.10 ESC warning indicator is always off under any conditions

1. Schematic circuit diagram:



GE05-1054d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the combination instrument controller and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Use diagnostic apparatus to carry out the active test of ESC warning lamp.
--------	--

- A. Connect the DTC, operate the start-and-stop switch, and turn on the READY gear of the complete vehicle.
- B. Select “Active test” on function tests.

Active test: ESC warning lamp

Diagnostic instrument display	Test components
ESC warning	The ESC warning lamp is illuminated or not (ON/OFF)

- C. Check whether the ESC warning lamp is functioning properly.

Yes

System is normal.

No

**Step 3** Check the CS-CAN bus integrity.

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

**Step 4** Check the IF-CAN bus integrity.

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN network is normal.

No

Check or repair the IF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

**Step 5** Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the instrument cluster controller.
--------	--

- A. Check whether combination instrument controller power supply and grounding harness are normal. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)

Next Step

Step 8	Reprogram and reset the instrument cluster controller.
--------	--

- A. Reprogram and reset the instrument cluster controller. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 5.6.6.11 ESC power failure

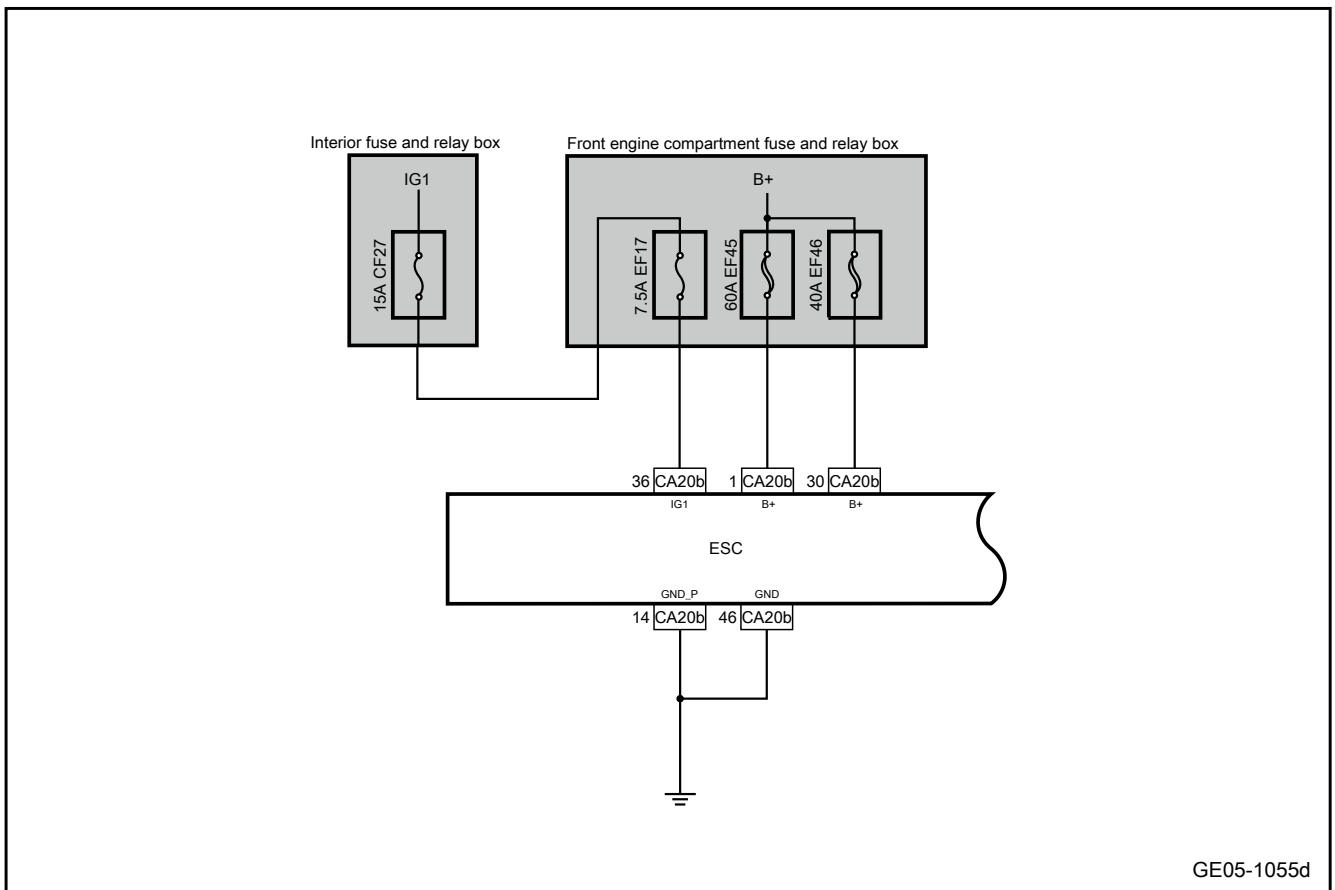
#### 1. DTC description:

Diagnostic Trouble Code	Description
U300616	ECU power supply voltage is too low
U300617	ECU power supply voltage is too high

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	ECU power supply voltage divider has drifted or interrupted, or the hydraulic power supply voltage is lower than the full functional range (8.6V), or the NET power supply voltage is too low (< 9V, tested for 100ms)	1. The tester ECU communication is normal 2. Normal working voltage - CAN communication is normal	1. Battery 2. Circuit 3. Fuse 4.ESC
U300617	The ECU power supply voltage is higher than the full-function voltage threshold (16.5V), or the net power supply voltage is too high (>18V for100ms is detected)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

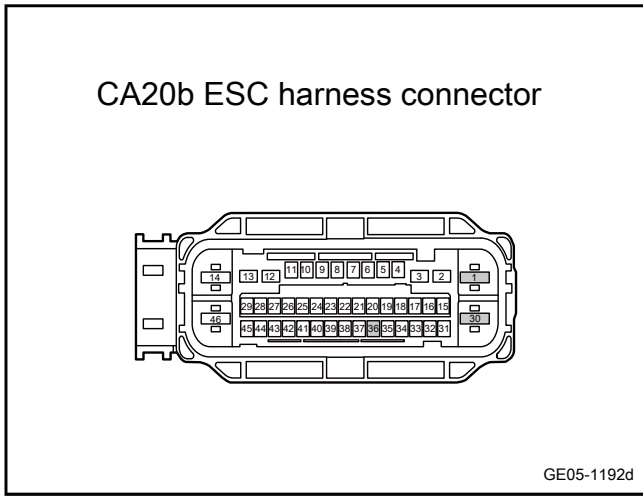
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF27 and check whether the fuse CF27 is blown.  
Rated fuse capacity: 15A
- C. Pull out the fuse EF17 of the front engine bay. Check whether the fuse EF17 is blown.  
Rated fuse capacity: 7.5A
- D. Pull out the fuse EF45 of the front engine bay. Check whether the fuse EF45 is blown.  
Rated fuse capacity: 60A
- E. Pull out the fuse EF46 of the front engine bay. Check whether the fuse EF46 is blown.  
Rated fuse capacity: 40A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the ESC power supply circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA20b(30)		
CA20b(36)		

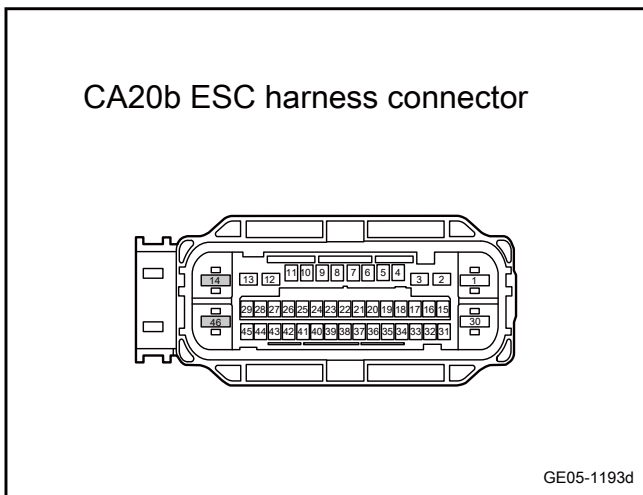
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the ESC grounding circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(14)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA20b(46)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the ESC

- A. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 7 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 5.6.6.12 Internal failure of ESC

#### 1. DTC description:

DTC	Trouble description
C006102	Invalid lateral acceleration value
C006202	Invalid longitudinal acceleration value
C006302	Invalid yaw rate value
C100004	ECU hardware fault
C100104	CAN hardware fault
C100204	Abnormal ABS/ESP control
C100304	Valve relay fault
C100409	General valve fault (hardware fault)
C100498	Valve overheating
C100504	Exhaust pump fault
C101E01	Pressure sensor circuit fault (only ESC)
C101E11	Pressure sensor 1 circuit is short to ground (ESC only)
C101E12	The pressure sensor 1 circuit is short to the power supply (ESC only)
C101E64	Pressure sensor signal fault (only ESC)



DTC	Trouble description
C101F29	Steering angle sensor fault (only ESC)
C101F54	Calibration error of steering angle sensor (only ESC)
C102004	ESC off switch is faulty
C103152	System initialization is not completed
C10337A	Hydraulic module is working beyond limit
C104200	Energy recuperation malfunction
C105404	Energy recovery signal status error
C106104	Abnormal ABS emergency braking
C106229	Receive a signal of iBooster error
C150077	The actuator status is abnormal in the initialization phase
C150107	Suspected actuator status
C150200	Invalid hydraulic assist

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C006102	<ol style="list-style-type: none"> <li>If the absolute value of the horizontal acceleration is greater than 20 m/s<sup>2</sup>.</li> <li>The horizontal acceleration sensor signal is not inconsistent with yaw signal or sas signal</li> </ol>	<ol style="list-style-type: none"> <li>Vehicle mode: ignition</li> <li>Electronic control unit mode: system initialization</li> <li>Working voltage: normal working voltage (9V-16V)</li> </ol>	1. ESC
C006202	<ol style="list-style-type: none"> <li>Compared with the acceleration value calculated according to the vehicle speed, the longitudinal acceleration sensor value exceeds the limit of 20 m/s<sup>2</sup></li> <li>The longitudinal acceleration sensor has an uncertain fault</li> </ol>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C006302	<ol style="list-style-type: none"> <li>1. If Yrs excursion exceeds 5.25 ° / s</li> <li>2. The absolute value of the yaw rate sensor signal exceeds 30°/s at rest.</li> <li>3. Yaw rate sensor (YRS)- absolute signal value &gt; 180 94.75 deg/s</li> <li>4. When other sensors (WSS, SAS, Ay) are used for input, the measurement of yaw rate is unreasonable</li> <li>5. YawRate initial value (100ms is detected)</li> <li>6. The redundant error of the lateral acceleration sensor is detected (the minimum duration detected is 20 milliseconds)</li> </ol>		
C100004	<ol style="list-style-type: none"> <li>1. Flash failure</li> <li>2. A uC failure reported by the error signal module occurred</li> <li>3. A CPU exception occurs and normal program flow stops</li> <li>4. Microcontroller RAM failure</li> <li>5. Internal system stack or timing error</li> <li>6. SPI failure, EEPROM error, ECU ADC conversion failure</li> </ol>		
C100104	Controller error/controller configuration error (10ms is detected)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100204	<ol style="list-style-type: none"> <li>1. Continuous ABS/EBD control on one or more wheels, the duration is incredibly long (<math>\geq 60</math>s)</li> <li>2. Continuously strong vehicle dynamic control (VDC) occurrence time of the front shaft <math>\geq 10</math> s</li> <li>3. Abs emergency brake failure</li> </ol>		
C100304	<ol style="list-style-type: none"> <li>1. The power supply circuit of the valve relay is interrupted</li> <li>2. Valve relay action failure</li> <li>3. The actual error of the main valve</li> </ol>		
C100409	<ol style="list-style-type: none"> <li>1. General valve driver hardware fault</li> <li>2. The current controller of the valve driver ASIC is not working properly (25ms is detected)</li> <li>3. The USV coil temperature is too high</li> </ol>		
C100498	<ol style="list-style-type: none"> <li>1. BTM is closed through software configuration</li> <li>2. The brake disc temperature limit is too high during active brake pressure control</li> </ol>		
C100504	<ol style="list-style-type: none"> <li>1. Interruption or short circuit in the entire UMgen measurement path</li> <li>2. Interrupted short circuit or defective part in the freewheel path</li> <li>3. Defect/overload of motor relay or door driver</li> <li>4. The fuse is broken or the power cord is missing</li> <li>5. Load dump detection logic part Asic internal failure</li> </ol>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101E01	The main cylinder line pressure sensor is faulty (100 milliseconds is detected)		
C101E11	Pressure sensor 1 wire is short to ground or the sensor power or signal wire is interrupted		
C101E12	The pressure sensor 1 circuit is short-circuited to the power supply or the sensor ground is interrupted		
C101E64	<ol style="list-style-type: none"> <li>1. The offset value of the master cylinder pressure sensor exceeds the standard.</li> <li>2. The sensitivity of the pressure sensor is unqualified</li> </ol>		
C101F29	<ol style="list-style-type: none"> <li>1. SAS signal and the values of other sensors are unreasonable</li> <li>2. The SAS offset exceeds the limit</li> </ol>		
C101F54	The electronic stability control unit received an invalid calibration signal from the SAS node		
C102004	After the initialization, press PATA for more than 10s but the status remains unchanged		
C103152	<ol style="list-style-type: none"> <li>1. The reference speed calculation in VDC cannot be fully initialized within 1 second</li> <li>2. The reference speed calculation in TCS cannot be fully initialized within 1 second</li> <li>3. The system fails to start</li> </ol>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C10337A	Reach the specified pump motor running time or the specified number of maneuvers for AVH, CDD, HDC, and VLC functions		
C104200	The electric powertrain applies regenerative braking torque not requested by the electronic control unit of the braking system. The response of the power train system (actual regenerative braking torque) does not correspond to the target regenerative braking torque		
C105404	Any of the following faults lasts for 250 milliseconds (0x0A6) 1. The data length code is wrong 2.CRC error 3. Activity counter error 4. Invalid signal: Receive (VCUòRegenTrqPot, VCUòRegenTrqPotQualifier, VCUòRegenTrqPot, VCUòRegenTrqPotQualifier, VCUòRegenTrqPotQualifier) 250 ms		
C106104	The Abs controller detects that the pressure has not increased for a long time, which is incredible. Therefore, the pressure on all wheels will increase before the master cylinder pressure (driver requests)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C106229	iBooster sends the signal HBCRequest to the ESP whose status is TRUE. iBooster is off or in failure mode. Only when the communication is normal		
C150077	If the actuator state does not meet expectations (apply or release) during the initialization process, if the ActuatorState is not applied or released, a fault will be generated		
C150107	If the actuator status is inconsistent, if the brake power is inconsistent, the PBC left and right actuator status is different, the ESC actuator status is different from the PBC actuator status		
C150200	If it is not confirmed that there is hydraulic pressure, Hps is unsuccessful within 2 seconds		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC Refer to [Replacement of ESC](#)

Next Step

Step 5 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 5.6.6.13 ESC communication fault

#### 1. DTC description:

Diagnostic Trouble Code	Description
U003700	CAN1 bus switching off error
U007300	CAN bus is switched off wrongly
U011087	Loss of communication with integrated power controller
U012687	Communication with the angle sensor is lost
U014087	Communication with body controller is lost
U015187	Communication with airbag controller is lost
U015587	Loss of communication with IPK node
U015687	Loss of communication with multimedia module
U023587	Communication with medium-range radar controller is lost
U031800	ECU software fault
U041181	Invalid signal received from the integrated power controller
U042281	An invalid signal is received from the body control system
U042381	The data received from the IPK is illegal
U042881	An invalid signal is received from the steering angle sensor (only ESC)
U043381	An invalid signal is received from medium-range radar controller
U045281	An invalid signal is received from ACU
U045781	Invalid signal received from multimedia controller
U111487	Lost communication with complete vehicle controller
U111587	Loss of communication with VCU (Complete Vehicle Controller) energy recovery related channels
U111787	Loss of communication with AVM (electronic stability control system only)
U111A87	Communication with iBooster is lost
U130055	Variable coding fault



Diagnostic Trouble Code	Description
U140481	Invalid signal received from the complete vehicle controller
U140781	Invalid signal received from AVM
U140A81	Invalid signal received from iBooster

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003700	CAN1 (dedicated) bus disconnection failure, 100 milliseconds	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	1. Circuit 2.ESC 3. Diagnostic interface
U007300	CAN0 (common) bus disconnection fault, 100 milliseconds		
U011087	The message (0x0A8) from the IPU node is missing for 250ms.	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Be able to communicate	
U012687	The message (0x0E0) from the IPU node is missing for 100ms.		
U014087	The message (0x285) from the BCM node is missing 500ms.		
U015187	The message (0x380) from the ACU node is missing 1000ms. Or any message (0x130, 0x131) from the ACU node has been missed for 100 milliseconds		
U015587	The message (0x3F1) from the IPK node is missing 5000ms.		
U015687	The message (0x2A4) from the MMI node is missing 500ms.		
U023587	Any message (0x1A1, 0x1A2) from the FRS node has been lost for 240ms, which is only for DA		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U031800	1. Unmatched configuration of the system status management unit 2. The wrong hexadecimal file flashed in the attached electronic control unit 3. Unmatching of data communication between application software and hardware related software.	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
U041181	Any of the following faults lasts for 250 milliseconds (0x0A8) 1. CRC error 2. Activity counter error 3. Receiving invalid signals (IPU_IsgSpdActSgn) for 250 milliseconds		
U042281	Any of the following faults lasts for 500 milliseconds (0x285) 1. The data length code is wrong		
U042381	Any of the following faults lasts for 500 milliseconds (0x3F1) 1. The data length code is wrong	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
U042881	Any of the following faults lasts for 100 milliseconds (0x0E0) 1. The data length code is wrong 2. CRC error 3. Activity counter error 4. Invalid signal (SteerWheelAngle is invalid, TrimmingSts is invalid, FailureSts is invalid, SAS U CalibrationSts is invalid value)	4. Be able to communicate	

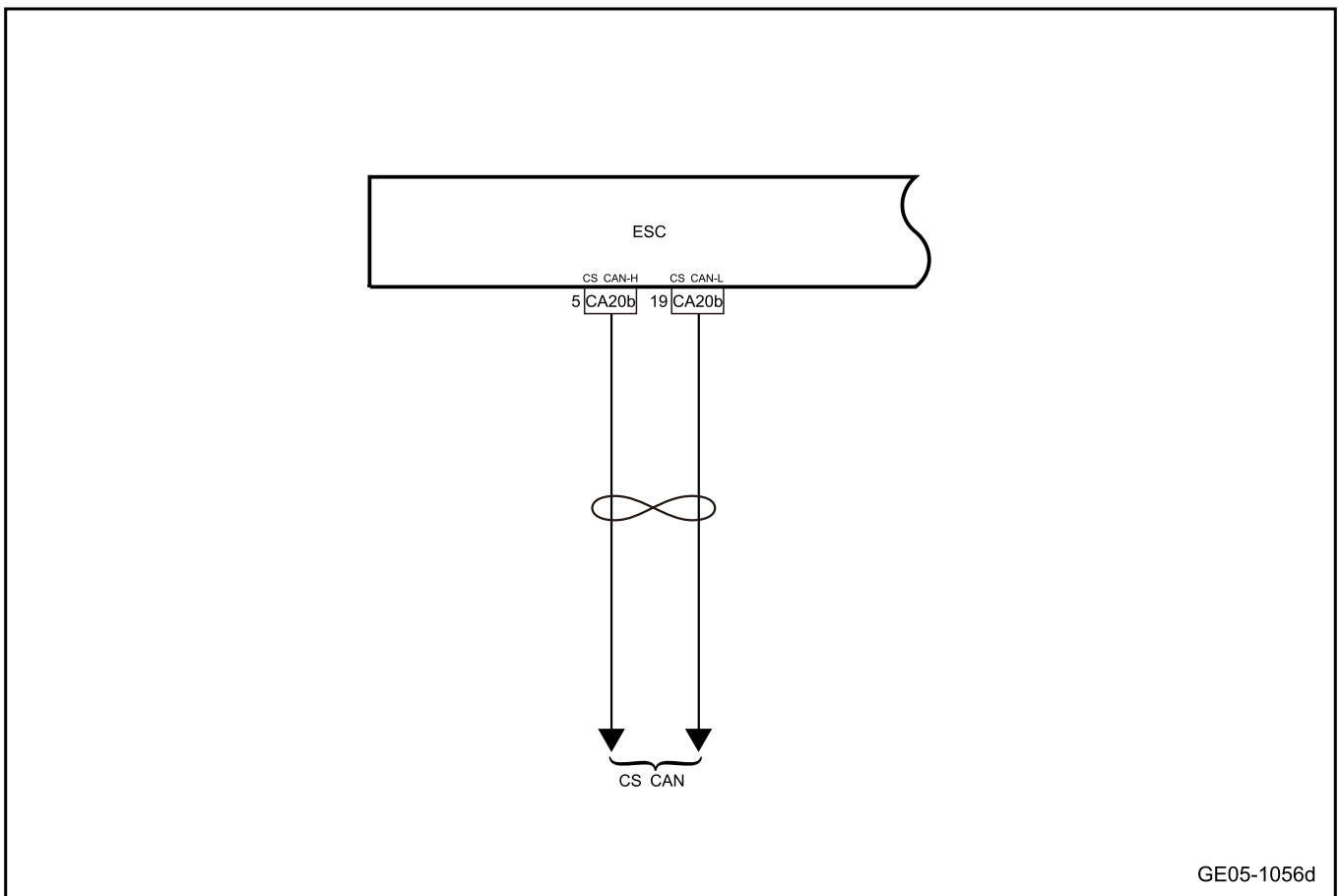
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U043381	Any of the following faults lasts for 240 milliseconds (0x1A1, 0x1A2) 1. The data length code is wrong 2. CRC error 3. Activity counter error 4. Invalid signal: (FRS_ALOD_Mode, FRS_AEB_axTar) 240ms		
U045281	Any of the following faults lasts for 1000ms (0x380) or 100ms (0x130, 0x131) 1. The data length code is wrong 2. CRC error 3. Activity counter error 4. Invalid signal receiving time is 1000 milliseconds		
U045781	Any of the following faults lasts for 500 milliseconds (0x2A4) 1. The data length code is wrong		
U111487	1. Public CAN: Any message from the VCU node (0x1A4, 0x1A5, 0x165) is missing 240ms 2. Private CAN: The message (0x0A4) from the VCU node is missing 250ms		
U111587	The message (0x0A6) from the VCU node is missing 250ms		
U111787	The message from the AVM node (0x135, 0x136) is missing 240ms If a frame failure occurs, the signal failure diagnosis code will be recorded, but the confirmation bit will not be set		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111A87	Private CAN: Any message (0x070) from the IBOOSTER node is missing for 250ms or the message (0x10A) from the IBOOSTER node is missing for 240ms		
U130055	The variable code in EEPROM is not correct	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	250 milliseconds (0x0A6) or 240 milliseconds (0x1A4, 0x1A5, 0X165) Private CAN: Any of the following faults lasts for 250 milliseconds (0x0A4) 1. The data length code is wrong 2.CRC error 3. Activity counter error 4. Invalid signal: Public CAN: Received an invalid signal within 240ms (VCU_ ModeGearDisplaySts, VCU_ MaxPTTorqueAllowed, VCU_ MinPTTorqueAllowed), or (VCU_RegenTrqPot, VCU_ RegenTrqPotQualifier, VCU_ RegenTrqAct, VCU_ RegenTrqActQualifier, VCU_ RegenTrqVot_Qualifier, VCU_RegenTrqVot_ Qualifier: private VCU_ RegenTrqVot_Qualifier: private) Receive invalid signal (VCU driver and torque VCU driver and torque invalid, VCU actual pedal position VCU actual pedal position valid, VCU accelerator pedal position VCU__ acelectedalpositioninvalid) 250 ms	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Be able to communicate	
U140781	Any of the following faults lasts for 240ms (0x135) 1. The data length code is wrong 2.CRC error 3. Activity counter error 4. Invalid signal (AVM_APA_ StopDistance, AVM_APA_		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
	VLCxAxTarAim) lasts for 240ms Any of the following faults lasts for 240ms (0x136) 1. The data length code is wrong 4. Invalid signal (AVM_APA_VLCModeReq) lasts for 240ms		
U140A81	Any of the following faults lasts for 250 milliseconds (0x070) or 240 milliseconds (0x10A) 1. The data length code is wrong 2. CRC error 3. Activity counter error 4. Invalid signal: received (IB_VirtualOutputRodTravel, virtual travel is invalid, actual travel is invalid, IB_ActualOutputRodTravelInvalid, IB_ExtBrakeReqStatus) 250ms or (IB_Runout Pressure, IB_Runout Pressure is invalid, IB_forced potential, forcibly destroying the potential environment, IB_brakepedalappliedinvalid) lasts for 240ms		

3. Schematic circuit diagram:



GE05-1056d

4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the CS-CAN bus.

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 5 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.



### 5.6.6.14 Wheel speed sensor fault

1. DTC description:

Diagnostic Trouble Code	Description
C101104	General error of the wheel speed sensor (replacement of sensor and multiple sensors errors)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101104	1. The hardware wsstest error in the system IC. (Detecting for 15ms) 2. Replace the anti-skid system of the front/rear axle 3. Multiple WSS failures cause system degradation 4. The wheel speed sensor power supply is too low (60 milliseconds is detected) 5. At least one wheel speed sensor is installed in the wrong direction. (Detecting for 20000ms)	1. The tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Harness 2. ESC 2. Speed sensor

3. Diagnosis steps:

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check wheel speed sensor and ESC for signs of damage, distort, stain, loosening, etc.
- B. Check the wheel speed sensor, ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check FL wheel speed sensor fault.
--------	------------------------------------

- A. Refer to front left wheel speed sensor fault
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Check the front right wheel speed sensor fault
--------	--

- A. Refer to front right wheel speed sensor fault
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Check the rear left wheel speed sensor fault
--------	--

- A. Refer to rear left wheel speed sensor fault
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Check the rear right wheel speed sensor fault
--------	---

- A. Refer to rear right wheel speed sensor fault
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC Refer to [Replacement of ESC](#)

Next Step

Step 8	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.6.6.15 Left front speed sensor fault

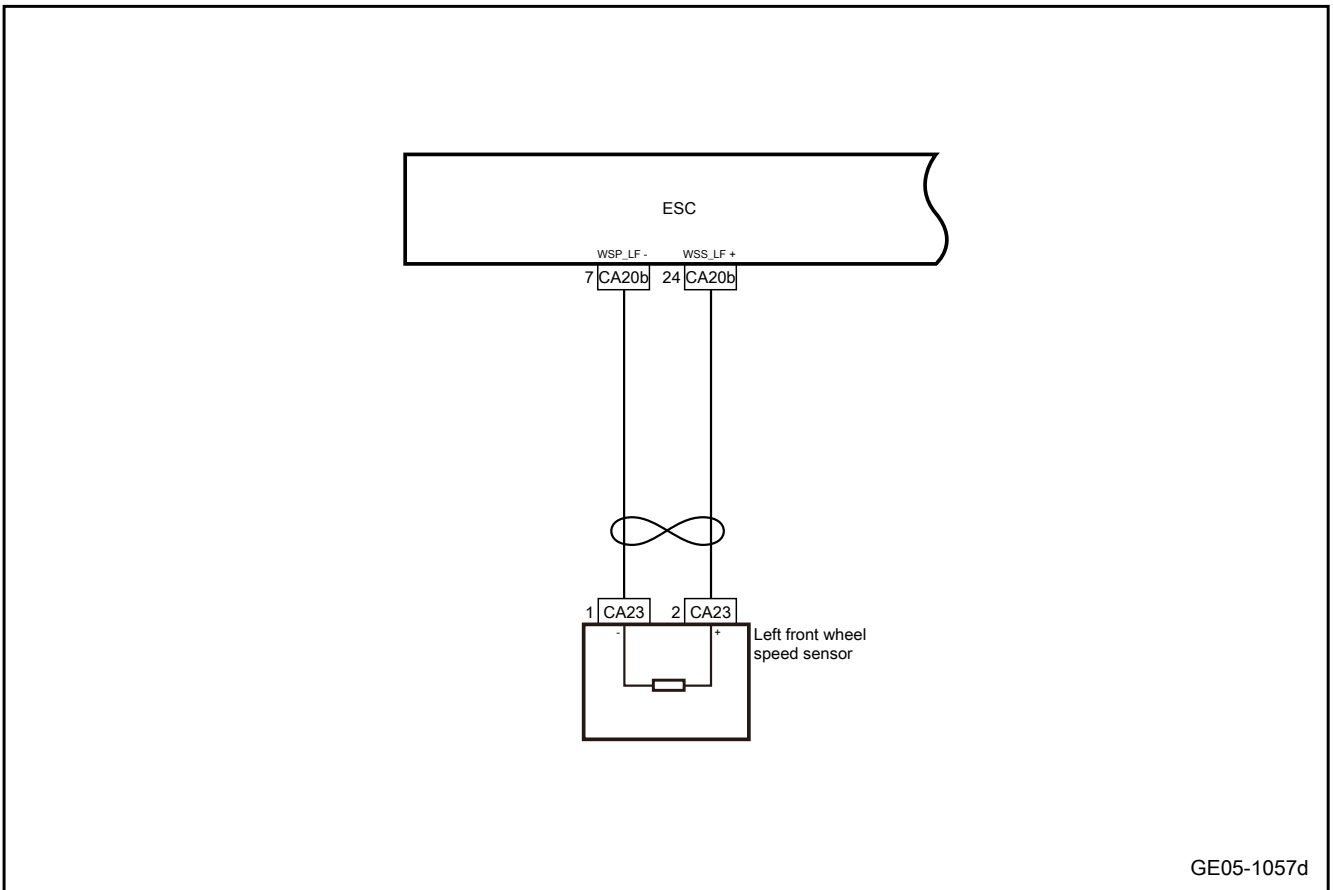
1. DTC description:

Diagnostic Trouble Code	Description
C100D01	Left front wheel speed sensor fault (no specific cause of the fault is detected)
C100D11	Left front speed sensor is short GND
C100D12	Left front speed sensor fault is short to power supply
C100D13	Left front speed sensor circuit is open
C100D64	Left front speed sensor signal fault (out of range, lost, noise and off and on)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100D01	<ol style="list-style-type: none"> <li>1. The wss_-fl line is faulty (the exact cause of the fault is not detected). (Detecting for 120ms)</li> <li>2. Short circuit to UBATT power circuit and any short circuit between the sensors (35ms is detected)</li> </ol>	<ol style="list-style-type: none"> <li>1. The tester ECU communication is normal</li> <li>2. Normal working voltage</li> <li>3. CAN communication is normal</li> <li>4. No overvoltage or undervoltage</li> </ol>	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2.ESC</li> <li>3. Left front wheel speed sensor</li> </ol>
C100D11	The front left WSS power cord is short to ground. (Detecting for 120ms)		
C100D12	The WSS FL sensor circuit is short to UBATT. (detecting for 120ms)		
C100D13	WSS UFL sensor line or power circuit interruption (120ms is detected)		
C100D64	<ol style="list-style-type: none"> <li>1. Reach the maximum wheel speed</li> <li>2. The fault caused by the lack of wheel speed</li> <li>3. Wss signal interference or jamming</li> <li>4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence.</li> <li>5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detecting for 72s)</li> </ol>		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

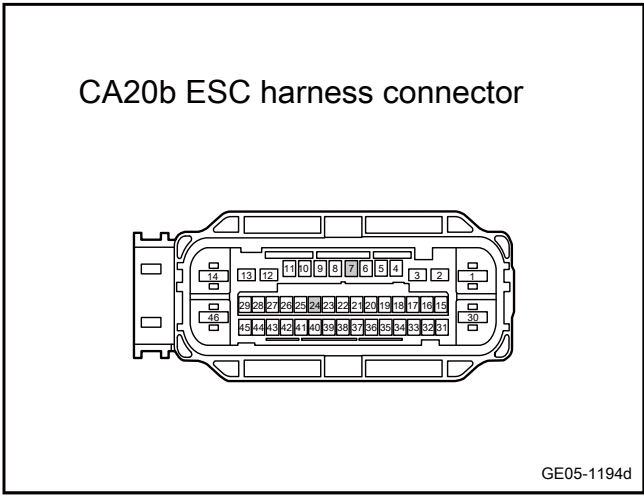
- A. Check the front left wheel speed sensor for signs of damage, distortion, stains, loosening, etc.
- B. Check the left front speed sensor and the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

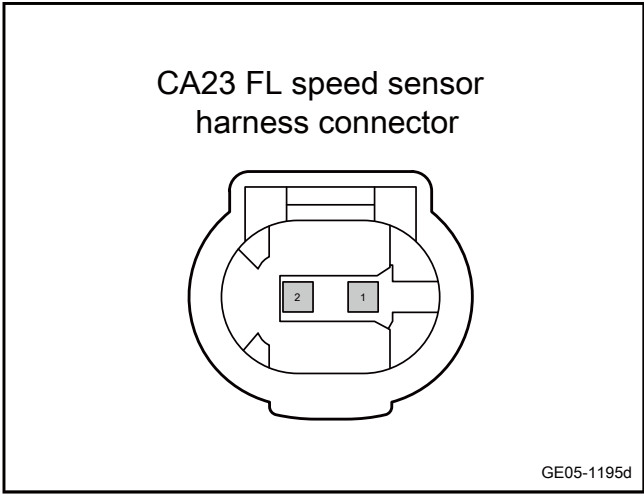
**Step 3** Check whether the circuit between ESC and the left front speed sensor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the left front speed sensor harness connector CA23.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(7)	CA23(1)	Standard resistance: less than 1Ω
CA20b(24)	CA23(2)	

- E. Confirm whether the measured value meets the standard.



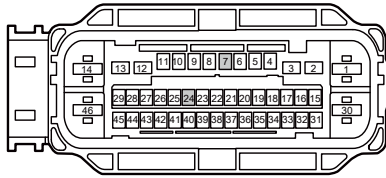
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between ESC and the left front speed sensor is short to power supply.

CA20b ESC harness connector



GE05-1196d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the left front speed sensor harness connector CA23.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(7)	Vehicle body is grounded.	Standard voltage: 0V
CA20b(24)		

- F. Confirm whether the measured value meets the standard.

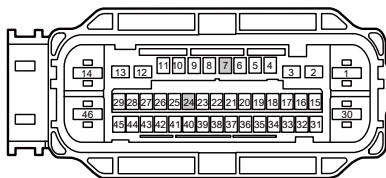
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between ESC and the left front speed sensor is short to GND.

CA20b ESC harness connector



GE05-1197d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the left front speed sensor harness connector CA23.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA20b(24)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace left front speed sensor

- A. Replace left front speed sensor Refer to Replacement of left front speed sensor.
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 8	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.6.6.16 FR speed sensor fault

#### 1. DTC description:

Diagnostic Trouble Code	Description
C100E01	FR speed sensor faults (no specific fault cause has been detected)
C100E11	Short circuit to ground of FR speed sensor
C100E12	FR speed sensor is short to power supply

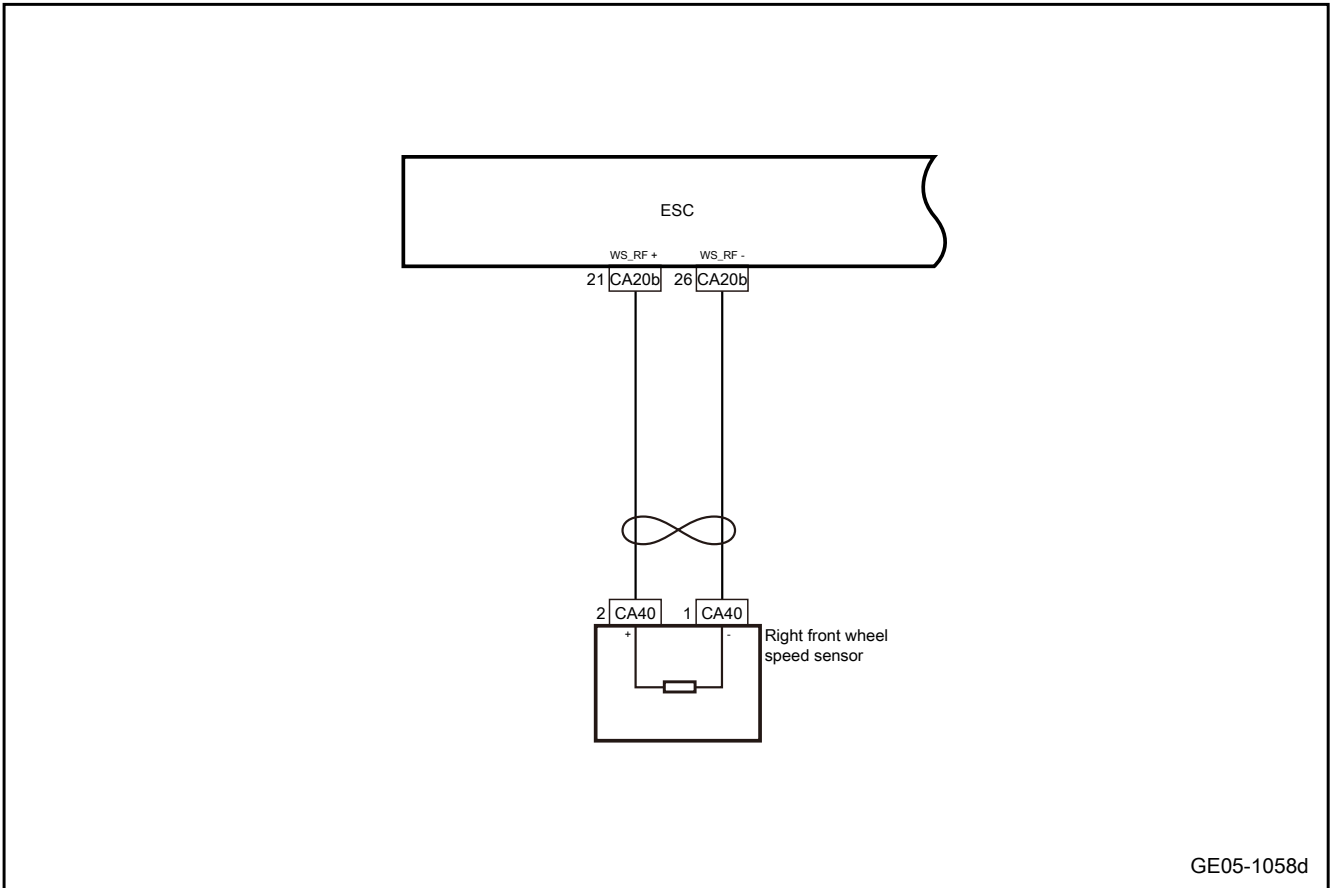


Diagnostic Trouble Code	Description
C100E13	Circuit open of FR speed sensor
C100E64	FR speed sensor signal faults (exceeding range, losing, noise and off and on)

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100E01	1. The wss_-fr line is faulty (the exact cause of the fault is not detected). (Detecting for 120ms) 2. Short circuit to UBATT power circuit and any short circuit between the sensors (35ms is detected)	1. The tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2.ESC 3. Right front wheel speed sensor
C100E11	The front right WSS power cord is short to ground. (Detecting for 120ms)		
C100E12	The WSS FR sensor circuit is short to UBATT. (detecting for 120ms)		
C100E13	WSS UFL sensor line or power circuit interruption (120ms is detected)		
C100E64	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detecting for 72s)		

## 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

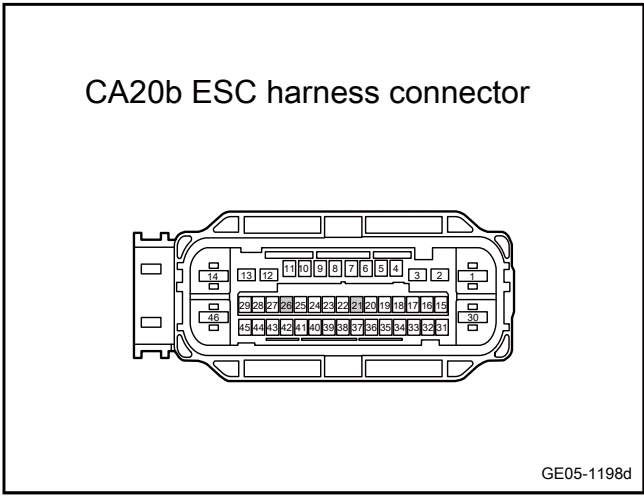
- A. Check the front right wheel speed sensor for signs of damage, distortion, stains, loosening, etc.
- B. Check the FR speed sensor and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

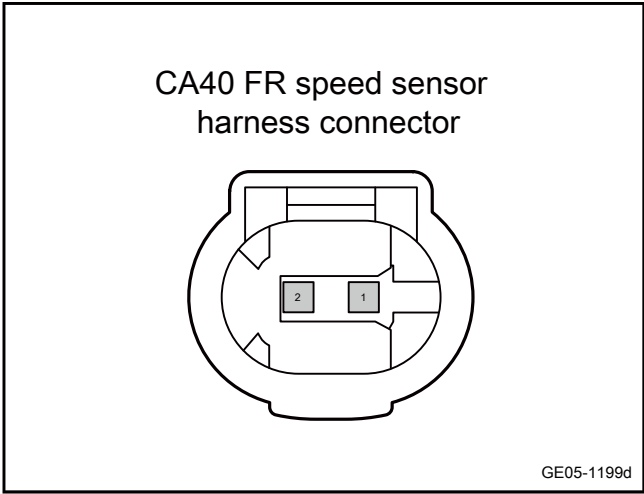
**Step 3** Check whether the line between ESC and FR speed sensor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the FR speed sensor harness connector CA40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(26)	CA40(1)	Standard resistance: less than 1Ω
CA20b(21)	CA40(2)	

- E. Confirm whether the measured value meets the standard.



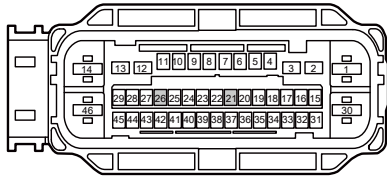
No

Repair or replace the harness.

Yes

**Step 4** Check whether the line between ESC and FR speed sensor is short to power supply.

CA20b ESC harness connector



GE05-1200d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the FR speed sensor harness connector CA40.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(26)	Vehicle body is grounded.	Standard voltage: 0V
CA20b(21)		

- F. Confirm whether the measured value meets the standard.

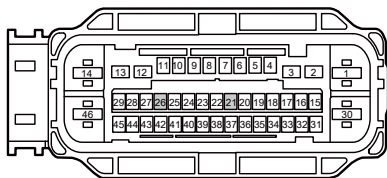
No

Repair or replace the harness.

Yes

Step 5 Check whether the line between ESC and FR speed sensor is short to GND

CA20b ESC harness connector



GE05-1201d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the FR speed sensor harness connector CA40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(26)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA20b(21)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 FR speed sensor replacement.

- A. FR speed sensor replacement. Refer to replacement of FR speed sensor.
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 8 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 5.6.6.17 RL wheel speed sensor fault

1. DTC description:

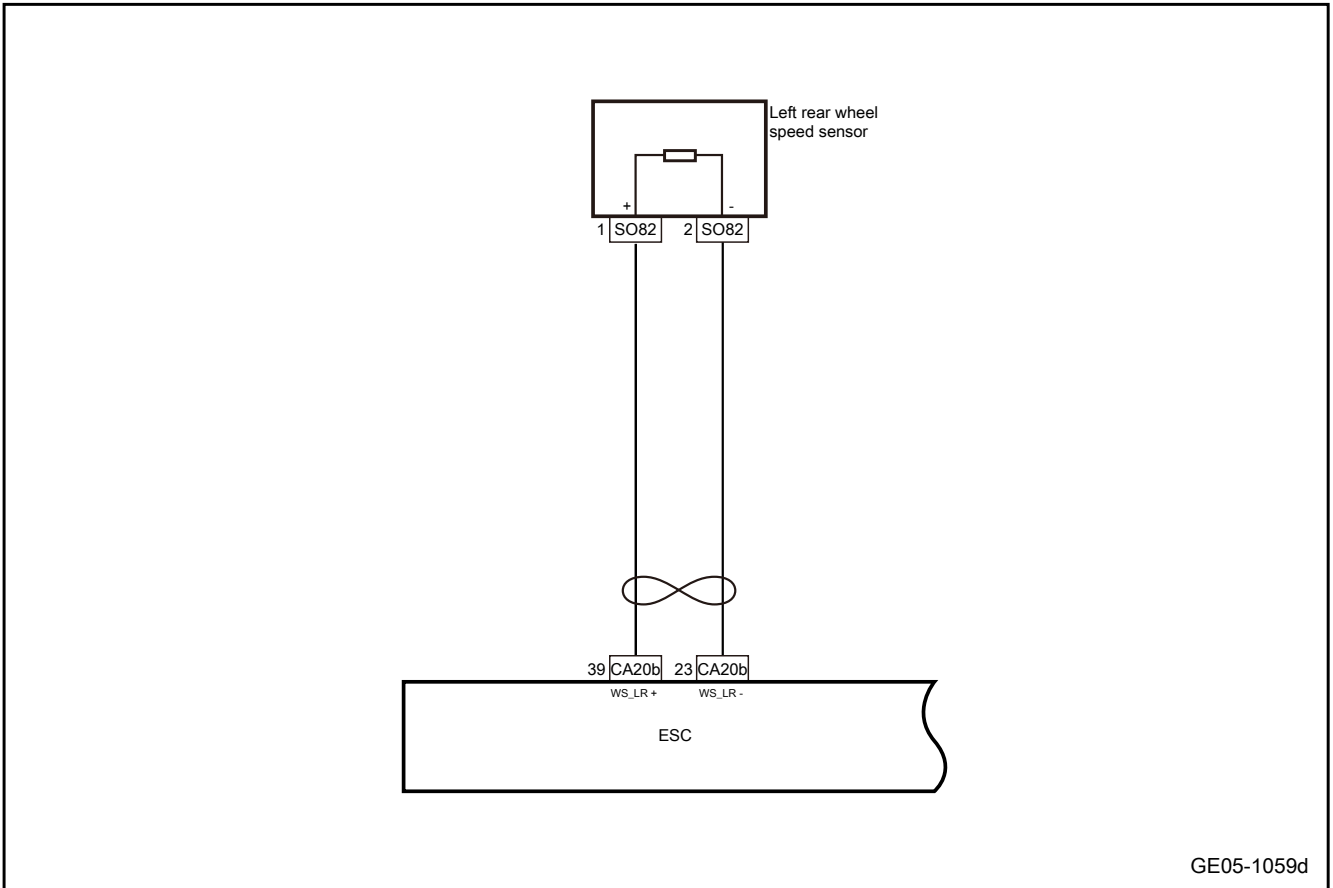
Diagnostic Trouble Code	Description
C100F01	Fault of RL wheel speed sensor (the specific reason cannot be detected)
C100F11	RL wheel speed sensor is short to GND
C100F12	RL wheel speed sensor is short to power supply

Diagnostic Trouble Code	Description
C100F13	RL wheel speed sensor is open
C100F64	Signal fault of RL wheel speed sensor (out of range, loss, noise, intermittent)

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100F01	1. The wss_-rl line is faulty (the exact cause of the fault is not detected). (Detecting for 120ms) 2. Short circuit to UBATT power circuit and any short circuit between the sensors (35ms is detected)	1. The tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2.ESC 3. Left rear wheel speed sensor
C100F11	The WSS power cord at the rear left is short to ground. (Detecting for 120ms)		
C100F12	The WSS RL sensor circuit is short to UBATT. (detecting for 120ms)		
C100F13	WSS UFL sensor line or power circuit interruption (120ms is detected)		
C100F64	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detecting for 72s)		

## 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

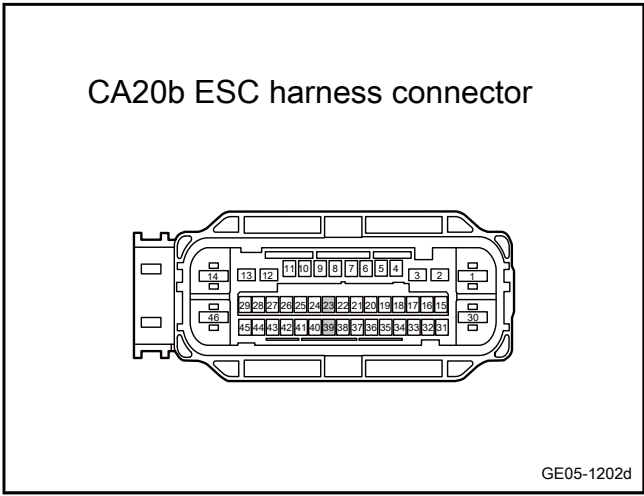
- A. Check the rear left wheel speed sensor for signs of damage, distortion, stains, loosening, etc.
- B. Check whether RL wheel speed sensor and the ESC harness connector indicate any signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

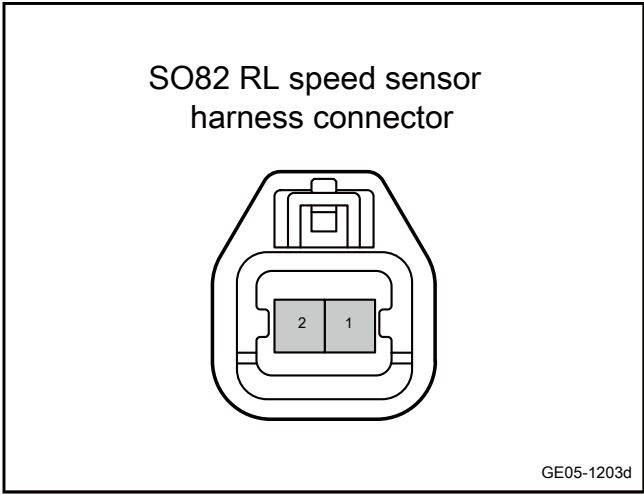
**Step 3** Check whether the circuit of ESC and RL wheel speed sensor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(39)	SO82(1)	Standard resistance: less than 1Ω
CA20b(23)	SO82(2)	

- E. Confirm whether the measured value meets the standard.



No

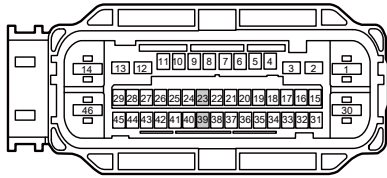
Repair or replace the harness.

Yes

**Step 4** Check whether the circuit of ESC and RL wheel speed sensor is short to power supply.



CA20b ESC harness connector



GE05-1204d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(39)	Vehicle body is grounded.	Standard voltage: 0V
CA20b(23)		

- F. Confirm whether the measured value meets the standard.

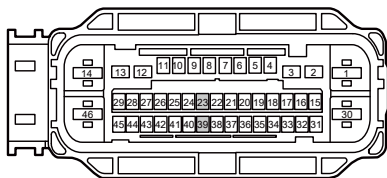
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between ESC and RL wheel speed sensor is short to GND.

CA20b ESC harness connector



GE05-1205d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(39)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA20b(23)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace RL wheel speed sensor.

- A. Replace RL wheel speed sensor. Refer to Replacement of RL wheel speed sensor.
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 8	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.6.6.18 RR speed sensor fault

1. DTC description:

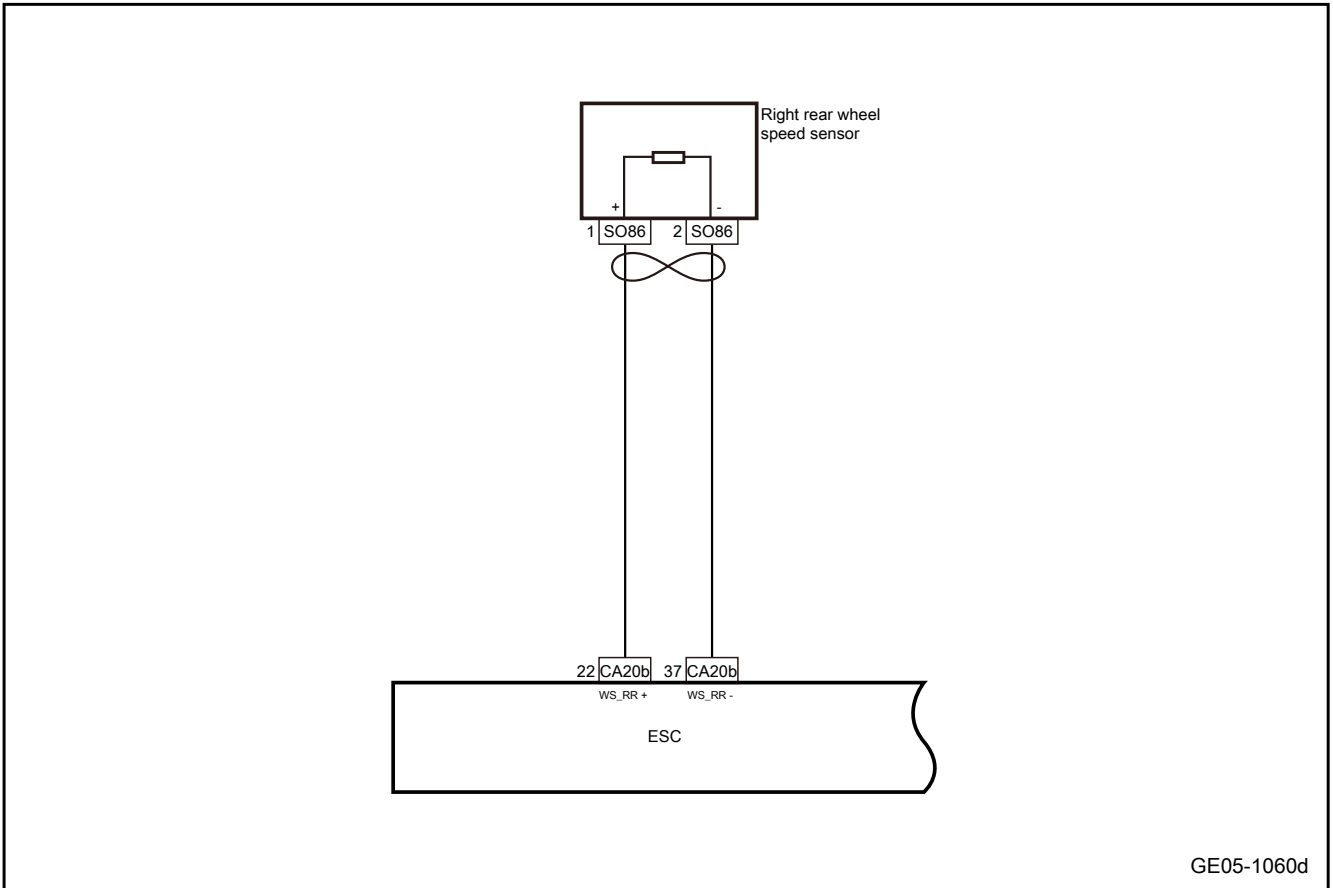
Diagnostic Trouble Code	Description
C101001	RR speed sensor fault (No specific fault cause has been detected)
C101011	RR speed sensor is shorted to GND
C101012	RR speed sensor is shorted to power supply

Diagnostic Trouble Code	Description
C101013	Circuit open of RR speed sensor
C101064	RR speed sensor fault (out of range, lost, noise, off and on)

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101001	1. The wss_-rr line is faulty (the exact cause of the fault is not detected). (Detecting for 120ms) 2. Short circuit to UBATT power circuit and any short circuit between the sensors (35ms is detected)	1. The tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2.ESC 3. Right rear wheel speed sensor
C101011	The WSS power cord on the rear right is short to ground. (Detecting for 120ms)		
C101012	The WSS RR sensor circuit is short to UBATT. (detecting for 120ms)		
C101013	WSS UFL sensor line or power circuit interruption (120ms is detected)		
C101064	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detecting for 72s)		

## 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

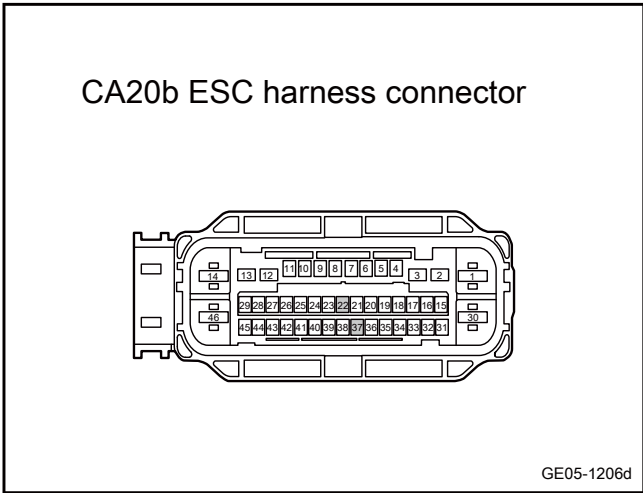
- A. Check the rear left wheel speed sensor for signs of damage, distortion, stains, loosening, etc.
- B. Check the RR speed sensor and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

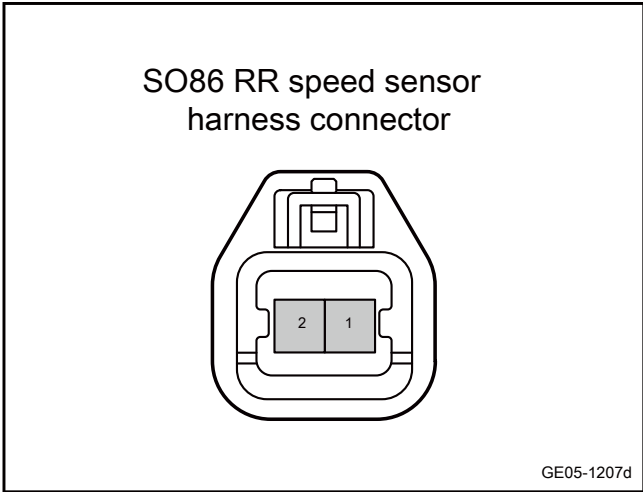
**Step 3** Check whether the circuit between the ESC and the RR speed sensor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(22)	SO86(1)	Standard resistance: less than 1Ω
CA20b(37)	SO86(2)	

- E. Confirm whether the measured value meets the standard.



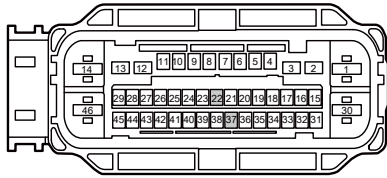
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between ESC and RR speed sensor is shorted to power supply.

CA20b ESC harness connector



GE05-1208d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(22)	Vehicle body is grounded.	Standard voltage: 0V
CA20b(37)		

- F. Confirm whether the measured value meets the standard.

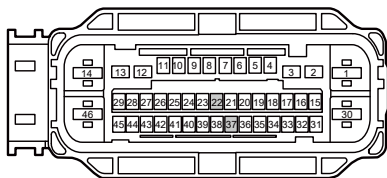
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between ESC and the RR speed sensor is shorted to GND.

CA20b ESC harness connector



GE05-1209d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA20b(22)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA20b(37)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the RR speed sensor

- A. Replace the RR speed sensor Refer to replacement of RR speed sensor
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 8	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

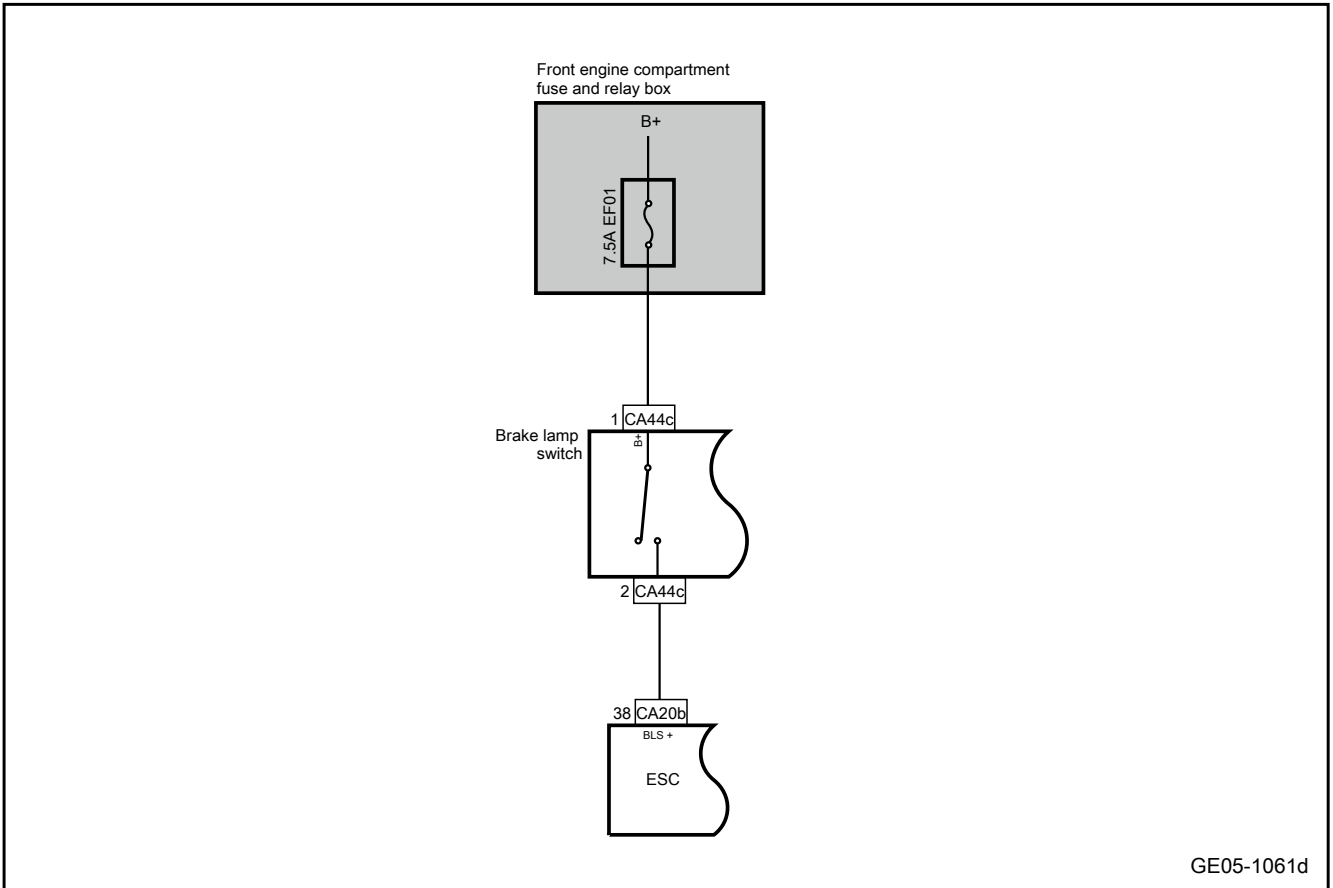
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 5.6.6.19 Brake lamp switch fault

1. Schematic circuit diagram:



GE05-1061d

2. Diagnosis steps:

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the brake lamp switch and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the brake lamp switch and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the brake lamp switch insurance.
--------	--



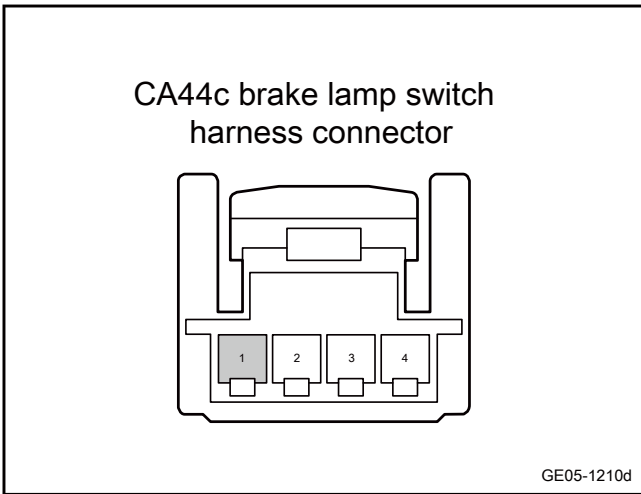
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove fuse EF01 and check if it is blown.  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the power harness of the brake lamp switch.



- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Disconnect the brake lamp switch harness connector CA44c.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- e. Confirm whether the voltage value meets the standard.

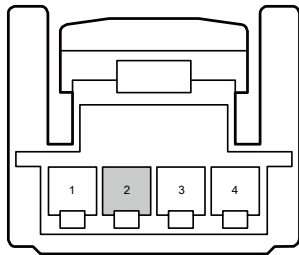
No

Repair or replace the harness.

Yes

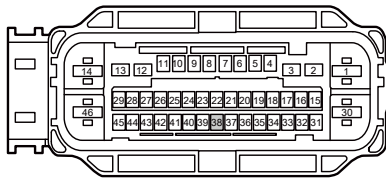
**Step 4** Check whether the circuit between the brake lamp switch and ESC is open.

CA44c brake lamp switch harness connector



GE05-1211d

CA20b ESC harness connector



GE05-1212d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	CA20b(38)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

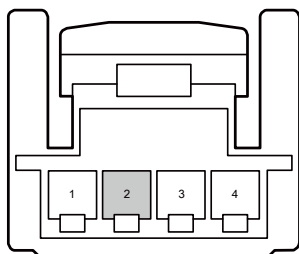
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the brake lamp switch and ESC is short to power supply.

CA44c brake lamp switch harness connector



GE05-1213d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	Vehicle body is grounded.	Standard voltage: 0V

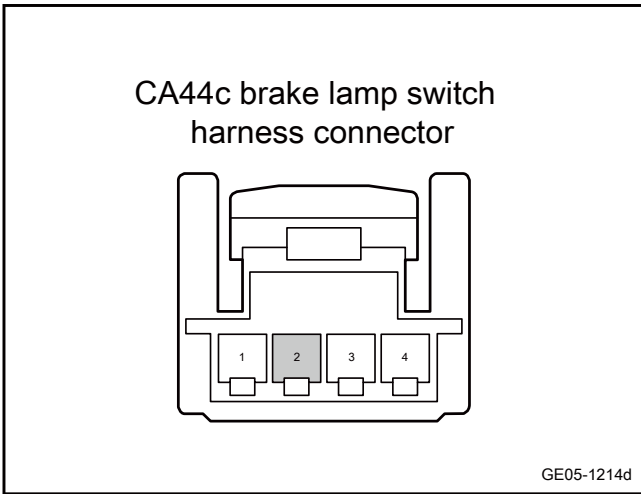
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the brake lamp switch and ESC is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the brake lamp switch.

- A. Replace the brake lamp switch. Refer to [Replacement of brake lamp switch](#)
- B. Check whether the system is normal

Yes

System is normal.

No

**Step 8** Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

**Step 9** Reprogram and reset the ESC.

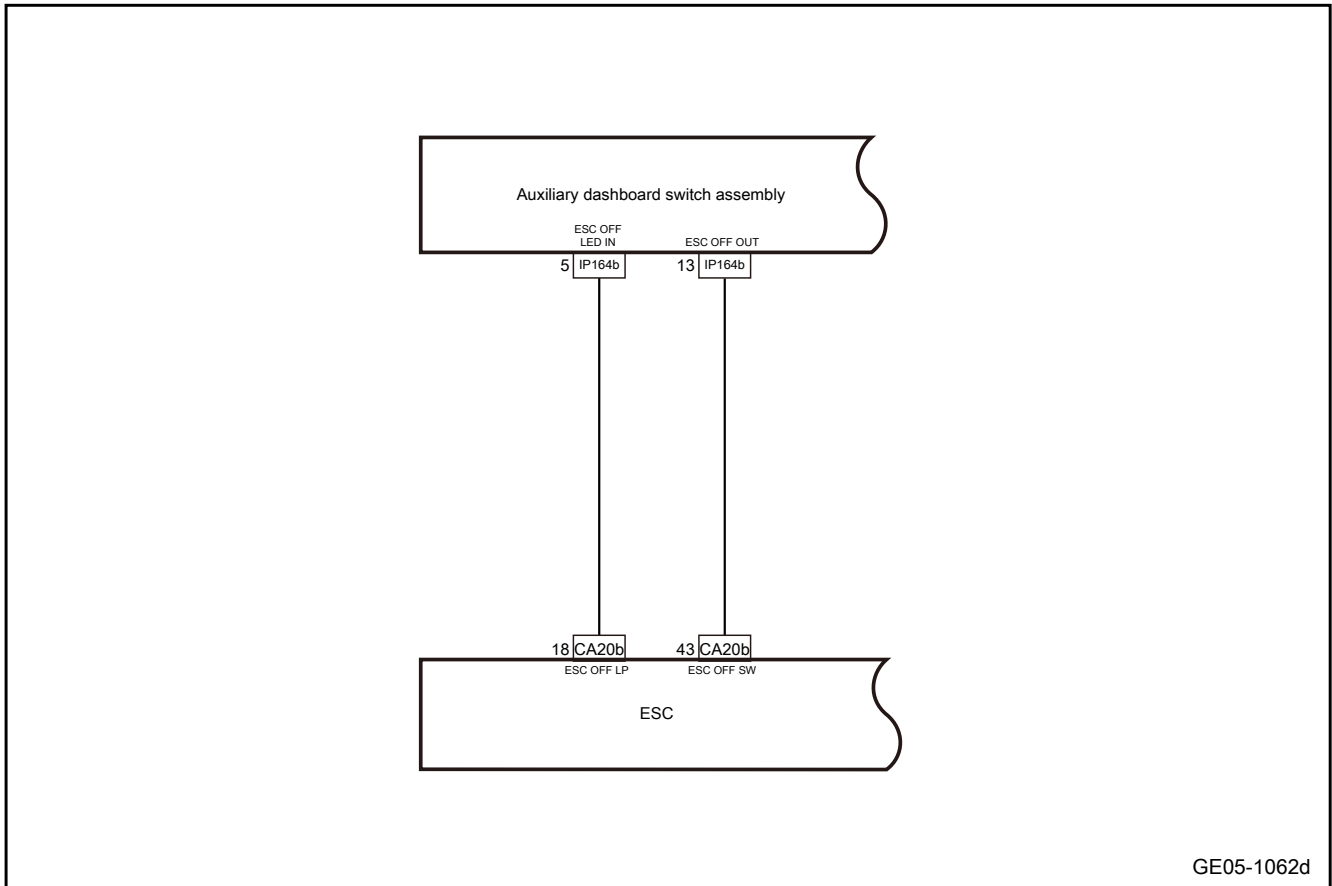
- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
------------	-------------------

### 5.6.6.20 ESC OFF switch fault

1. Schematic circuit diagram:



2. Diagnosis steps:

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

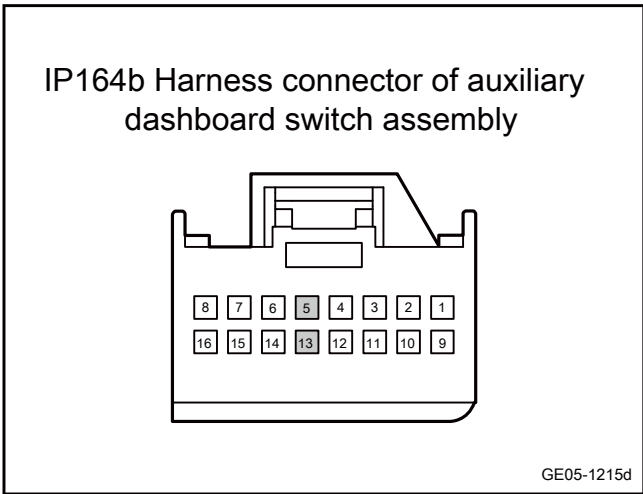
- A. Check the auxiliary fascia console switch pack and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the auxiliary fascia console switch pack and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

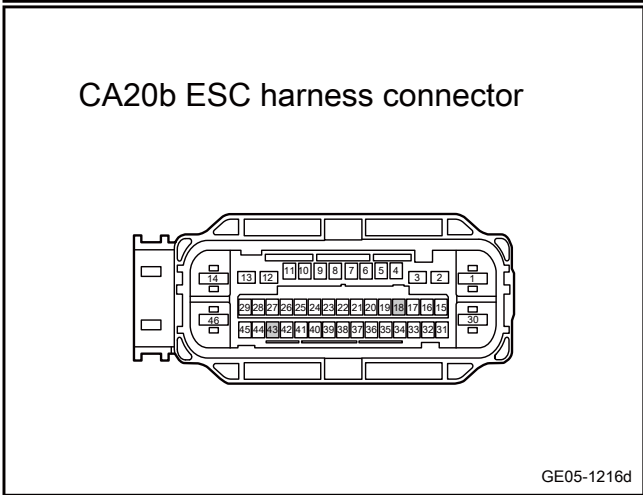
**Step 2** Check whether the circuit between the auxiliary fascia console switch pack and ESC is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP164b(5)	CA20b(18)	Standard
IP164b(13)	CA20b(43)	resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

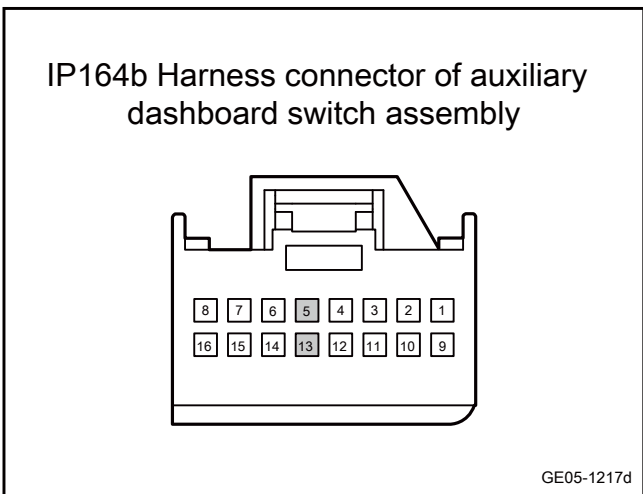


No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the auxiliary fascia console switch pack and ESC is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP164b(5)	Vehicle body is grounded.	Standard voltage: 0V

Measure terminal 1	Measure terminal 2	Standard value
IP164b(13)		

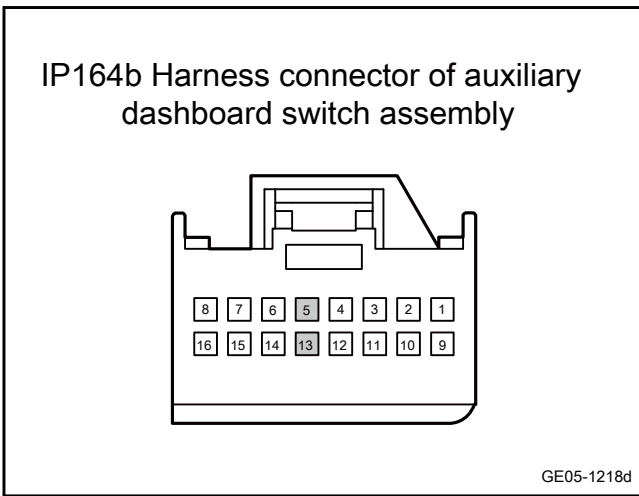
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the auxiliary fascia console switch pack and ESC is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP164b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP164b(13)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the auxiliary fascia console switch pack.

- A. Replace the auxiliary fascia console switch pack. Refer to [Replacement of auxiliary fascia console switch pack](#)
- B. Check whether the system is normal

Yes

System is normal.

No

**Step 6** Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 7 | Reprogram and reset the ESC.

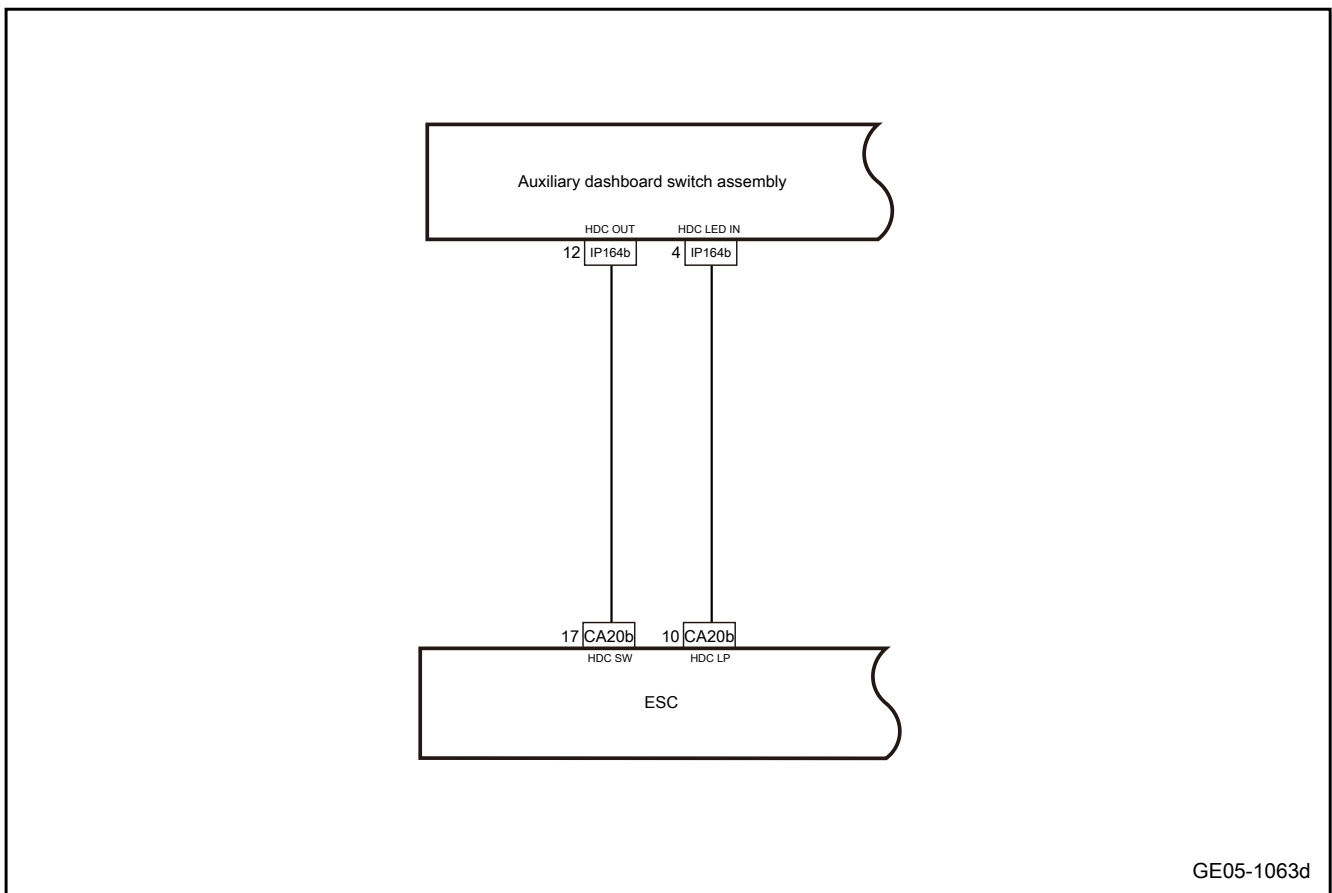
A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 | System is normal.

### 5.6.6.21 Fault of HDC switch

1. Schematic circuit diagram:



2. Diagnosis steps:

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 | Primary check.

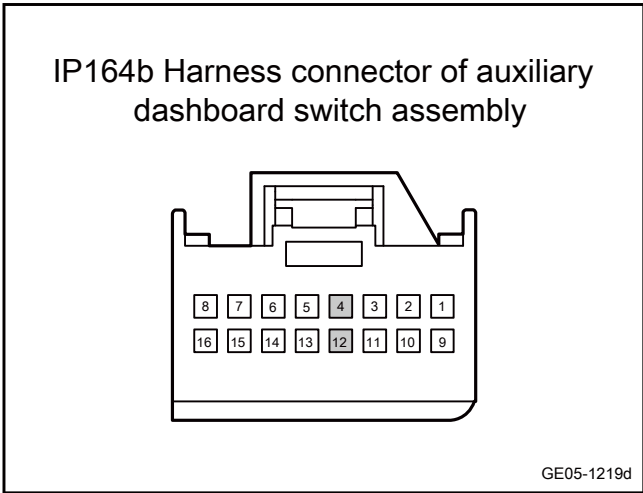
- A. Check the auxiliary fascia console switch pack and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the auxiliary fascia console switch pack and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

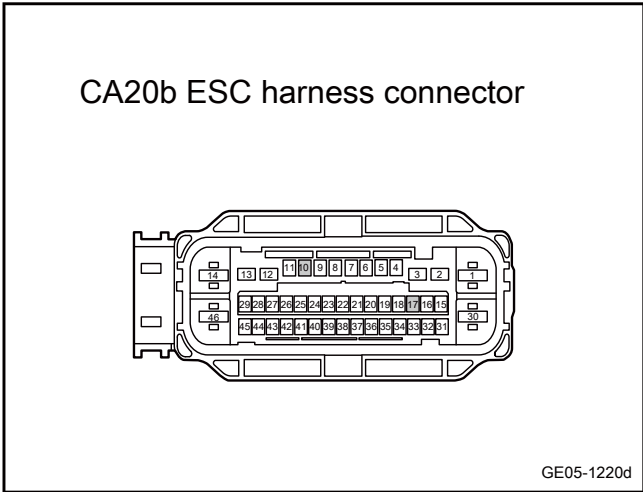
**Step 2** Check whether the circuit between the auxiliary fascia console switch pack and ESC is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP164b(4)	CA20b(10)	Standard resistance: less than 1Ω
IP164b(12)	CA20b(17)	

- E. Confirm whether the measured value meets the standard.



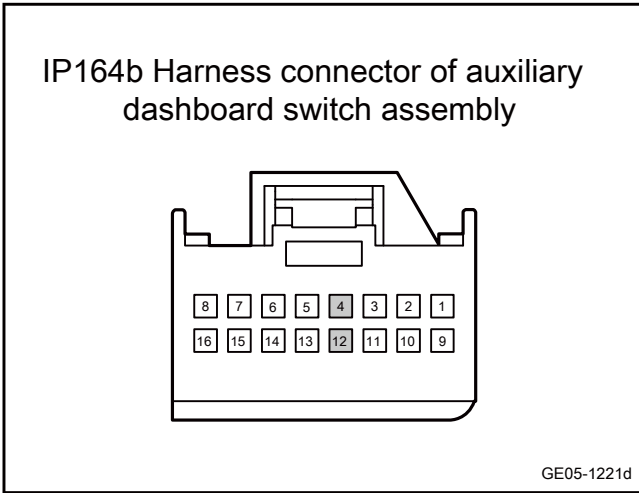
No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the auxiliary fascia console switch pack and ESC is short to power supply.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

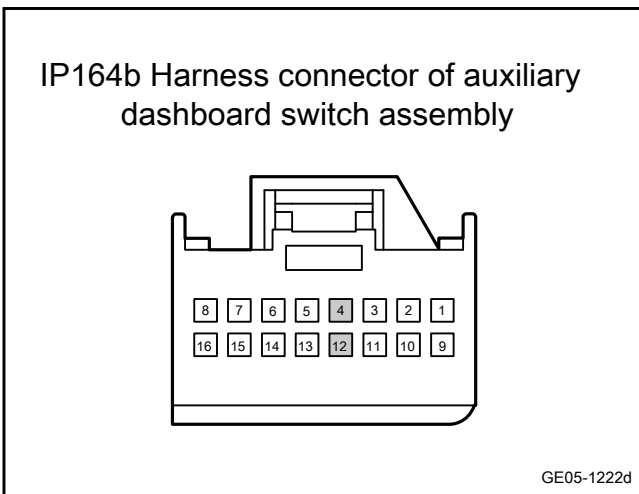
Measure terminal 1	Measure terminal 2	Standard value
IP164b(4)	Vehicle body is grounded.	Standard voltage: 0V
IP164b(12)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the auxiliary fascia console switch pack and ESC is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect auxiliary fascia console switch pack and ESC harness connector IP164b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP164b(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP164b(12)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Replace the auxiliary fascia console switch pack.

- A. Replace the auxiliary fascia console switch pack. Refer to [Replacement of auxiliary fascia console switch pack](#)
- B. Check whether the system is normal

Yes

System is normal.

No

Step 6 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 7 Reprogram and reset the ESC.

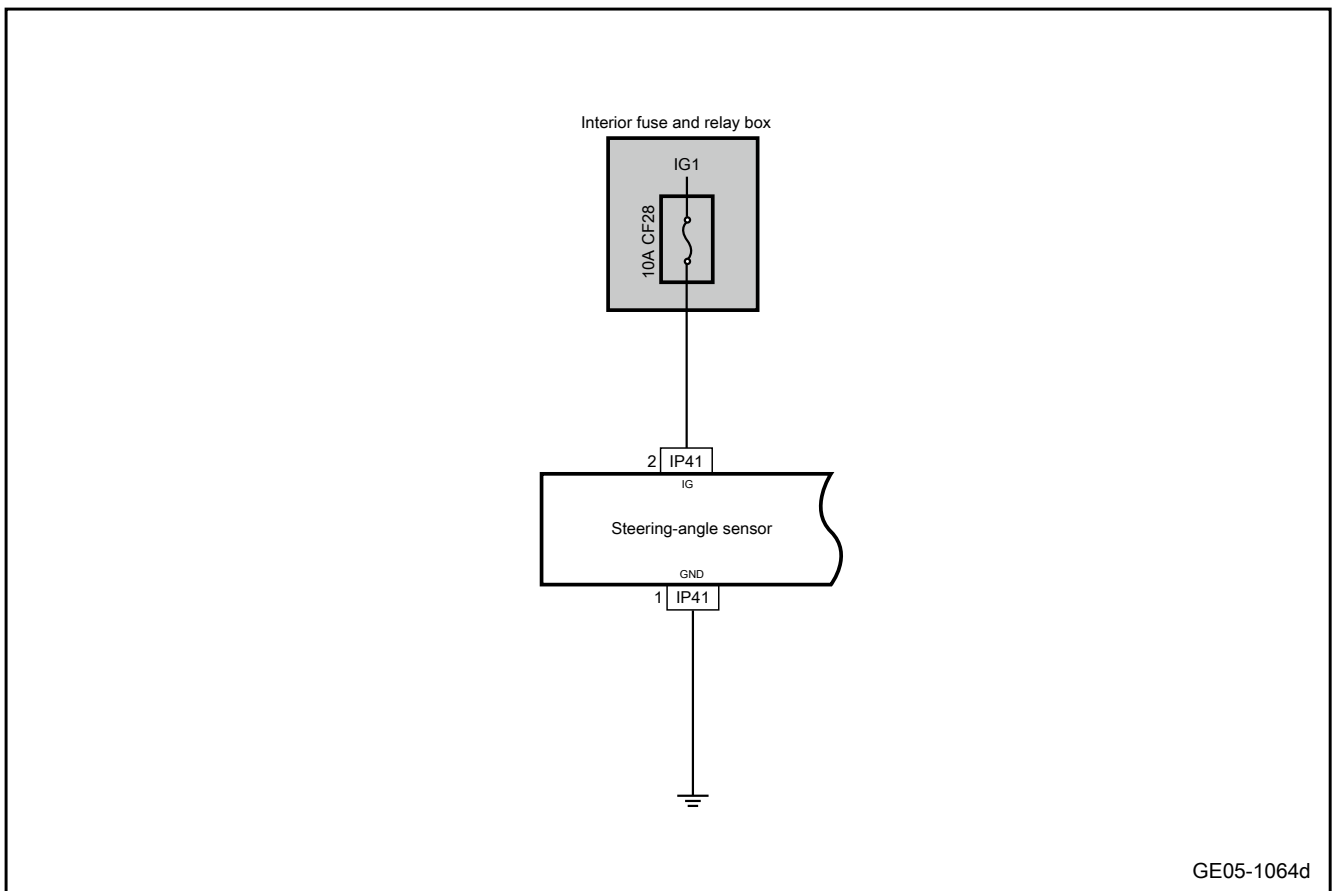
- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 System is normal.

### 5.6.6.22 Steering Angle Sensor Does not Work

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Primary check.

- A. Check the steering angle sensor for signs of damage, deformation, stain, loosening, etc.
- B. Check the steering angle sensor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove fuse CF28 and check if it is blown.

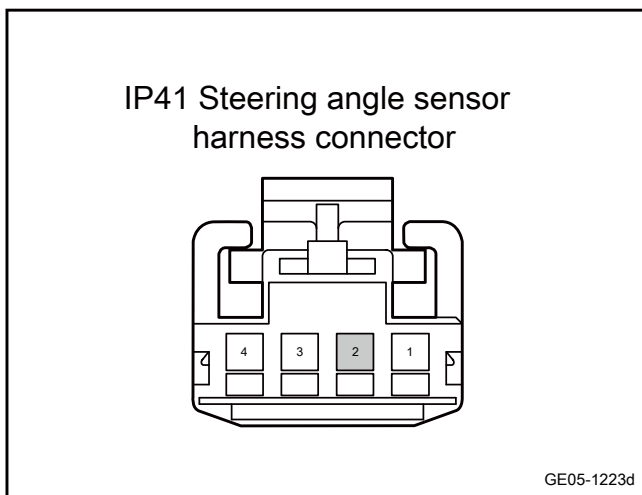
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the operating voltage of the steering angle sensor is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the steering angle sensor harness connector IP41.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP41(2)	Vehicle body is grounded.	Standard voltage: 11-14V

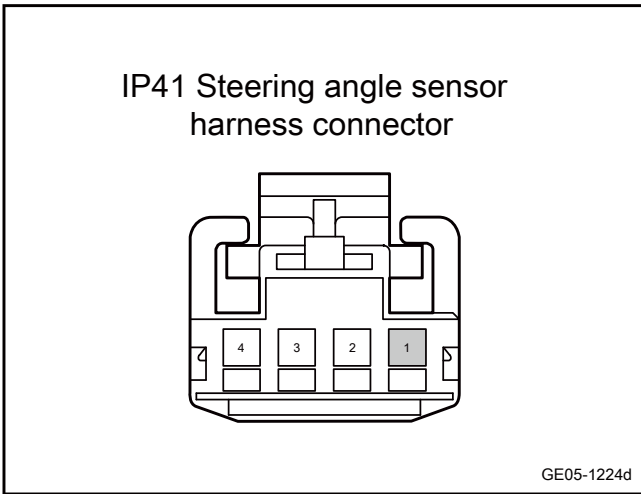
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the grounding harness of the steering angle sensor is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the steering angle sensor harness connector IP41.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP41(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the steering angle sensor.

- A. Replace the steering angle sensor. See [Replacement of Steering Angle Sensor](#)

Next Step

Step 6 System is normal.

### 5.6.6.23 Parking Brake Caliper Failure

1. DTC description:

Diagnostic Trouble Code	Description
C150309	The motor does not start normally-left caliper
C150318	Insufficiently increased clamp forces- the left caliper
C150319	The coefficient of friction is too high-left caliper
C15031D	Emergency release detected-left caliper
C150371	Locked-rotor of motor-left caliper
C150391	Suspicious motor parameters- the left caliper
C150393	No increase in force detected-left caliper
C102200	The left brake fault of AUTO HOLD braking (Only for ESC)
C102401	Electrical fault of the left brake for AUTO HOLD (Only for ESC)
C102719	The left-side motor overcurrent of AUTO HOLD braking (Only for ESC)

Diagnostic Trouble Code	Description
C102601	Electrical fault of AUTO HOLD brake driver (Only for ESC)
C103242	Electronic caliper storage unit fault
C150409	The motor does not start normally-right caliper
C150418	Insufficient increased clamp force- right caliper
C150419	The coefficient of friction is too high-right caliper
C15041D	Emergency release detected-right caliper
C150471	Locked-rotor of motor-right caliper
C150491	Suspicious motor parameters- right caliper
C150493	No increase in force detected-right caliper
C102100	The right brake fault of AUTO HOLD (only for ESC)
C102501	The right brake electrical fault of AUTO HOLD (only for ESC)
C102819	The right motor overcurrent of the AUTO HOLD (only for ESC)

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150309	The power path fails every time the APB is started (for example, the motor circuit is disconnected, and the resistance is too high)	1. Ignition switch is turned on 2. System initialization 3. Normal working voltage (9V-16V)	1. Circuit 2. Left brake caliper motor 3. Right brake caliper motor 4.ESC
C150318	If the force accumulation current of the left brake is too low, if the force (F1 14500N/F2 18500N) is not reached within 4.5s during the force accumulation phase		
C150319	If the idle current of the left brake is too high, if the idle current exceeds the current threshold		
C15031D	Emergency release or replacement of brake pads by using very high pressure in the left motor		
C150371	If the left braking force increases too fast, a motor stall is detected during the application process		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150391	At the beginning of each lock cycle, check for motor defects, parameter estimation errors/wiring harness failures		
C150393	If the boost of the left brake does not start, if the force is not reached within 20 seconds		
C102200	1. Voltage polarity error of left-side ECU motor 2. The left EPB motor stalls during release 3. The left EPB motor stalls during application.		
C102401	1. The left APB motor circuit is short-circuited to the battery. (The voltage on the motor terminals (M+ and M-) is greater than 4.2v, less than 4.9V) 2. The left APB motor is short-circuited to the ground 3. If the absolute voltage value of the left positive-left motor negative of the motor is higher than the specified threshold, set the fault		
C102719	If it detects that the current is too high, the EPB will set the fault bit		
C102601	APB motor electrical coupling fault (detecting for 30ms)	1. Ignition switch is turned on 2. System initialization	
C103242	Shadow memory cell defect	3. Normal working voltage (9V-16V)	
C150409	The power path fails every time the APB is started (for example, the motor circuit is disconnected, and the resistance is too high)	1. Ignition switch is turned on 2. System initialization 3. Normal working voltage (9V-16V)	1. Circuit 2. Right brake caliper motor 3.ESC

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150418	If the force accumulation current of the right brake is too low, if the force (F1 14500N/F2 18500N) is not reached within 4.5s during the force accumulation phase		
C150419	If the idle current of right brake is too high, if the idle current exceeds the current threshold		
C15041D	Emergency release or replacement of brake pads by high voltage release in the right motor		
C150471	If the right braking force increases too fast, the motor stall is detected during the application process		
C150491	At the beginning of each lock cycle, check for motor defects, parameter estimation errors/ wiring harness failures		
C150493	If the force increase of the right brake does not start, if the power is not reached within 20 seconds		
C102100	<ol style="list-style-type: none"> <li>1. Right ECU motor voltage polarity error.</li> <li>2. The right EPB motor stalls during release</li> <li>3. The right EPB motor stalls during application.</li> </ol>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C102501	1. The right APB motor is short-circuited to the battery. (The voltage on the motor terminals (M+ and M-) is greater than 4.2v, less than 4.9V) 2. The right APB motor is shorted to ground 3. If the absolute voltage value of the right plus-right minus motor is higher than the specified threshold, set the fault		
C102819	If it detects that the current is too high, the EPB will set the fault bit		

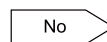
## 3. Diagnosis steps

**Caution**

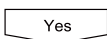
Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

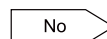
No 

Refer to [Intermittent Trouble Check](#)

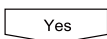
Yes 

Step 2	Primary check.
--------	----------------

- A. Check the ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No 

Repair or replace the faulty part.

Yes 



Step 3 Check the left brake caliper motor.

- A. . Refer to [EPB brake caliper fault \(left\)](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Check the right brake caliper motor.

- A. . Refer to [Brake caliper motor fault \(right\)](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the ESC

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC Refer to [Replacement of ESC](#)

Next Step

Step 7 Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 5.6.6.24 Failure of Auto Hold function

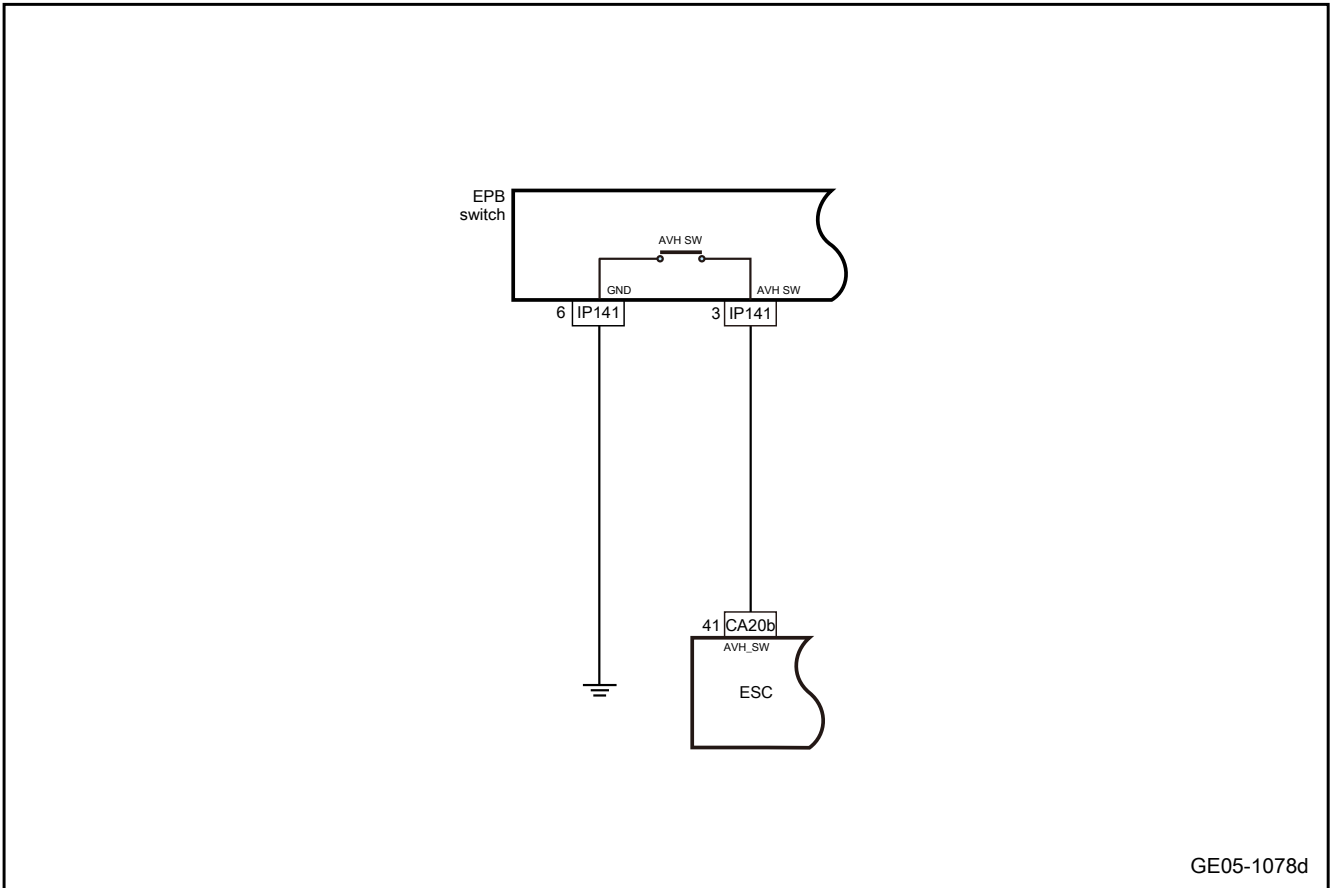
1. DTC description:

Diagnostic Trouble Code	Description
C102C71	Button catching of auto hold braking (Only for ESC)
C102312	Button loop fault of auto hold (Only for ESC)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C102C71	Pushing and pulling time of APB button is too long	1. Vehicle mode: ignition 2. Electronic control unit mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	1. Circuit 2. EPB switch 3.ESC
C102312	EPB command button failure: circuit failure (300 milliseconds is detected)		

3. Schematic circuit diagram:



4. Diagnosis steps:

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

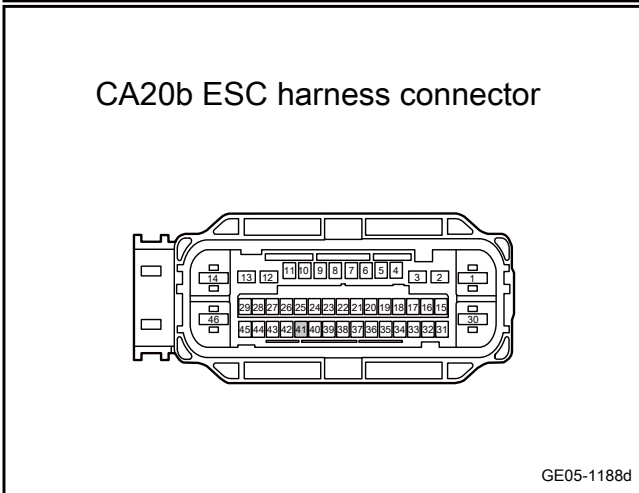
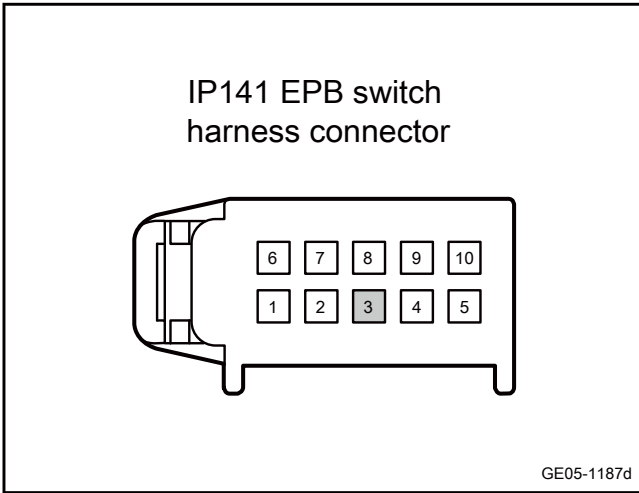
- A. Check the EPB switch and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPB switch and the ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the circuit between the EPB switch and ESC is open.
--------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	CA20b(41)	Standard resistance: less than 1Ω

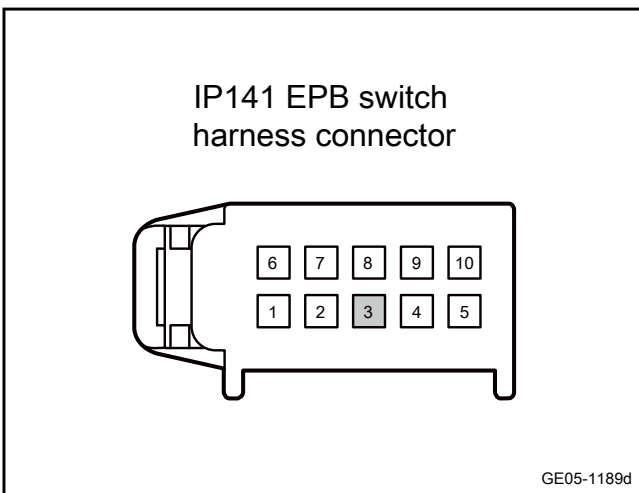
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the EPB switch and ESC is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	Vehicle body is grounded.	Standard voltage: 0V

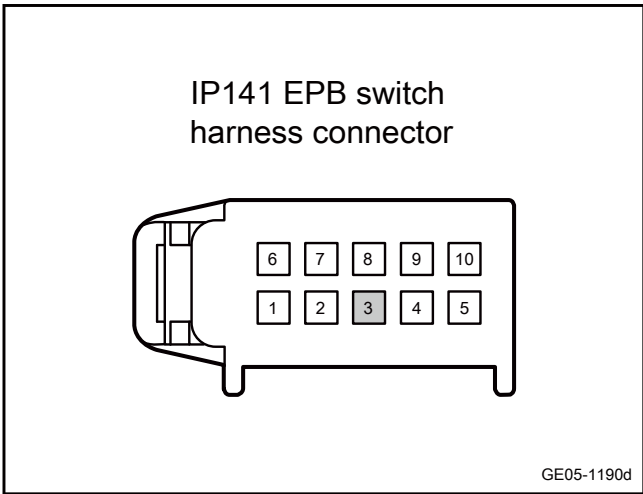
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the EPB switch and ESC is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the ESC harness connector CA20b.
- C. Disconnect harness connector IP141 of the EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

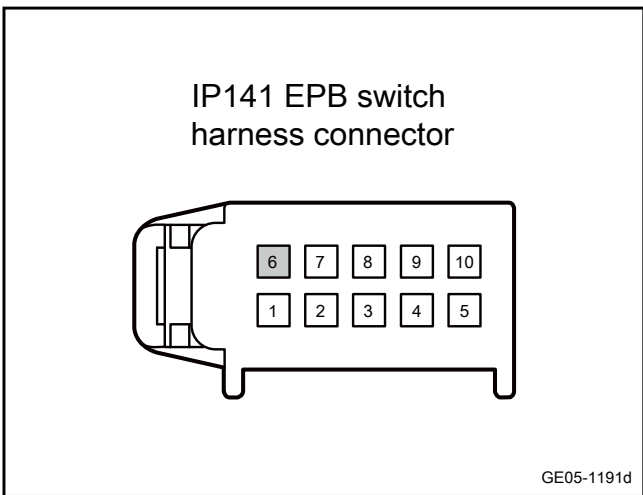
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the EPB switch grounding circuit is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(6)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace EPB switch.

- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Check whether the system is normal

Yes

System is normal.

No

Step 7	Replace the ESC
--------	-----------------

- A. Check whether the power supply and grounding harness of ESC are normal. Refer to [ESC power failure](#)
- B. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 8	Reprogram and reset the ESC.
--------	------------------------------

- A. Reprogram and reset the ESC. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
---------	-------------------

### 5.6.6.25 Calibration of steering angle sensor (ESC)

#### 1. Diagnosis steps:

Step 1	Connect the diagnostic apparatus with OBD diagnostic interface.
--------	---

Next Step

Step 2	Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
--------	---

Next Step

Step 3	Turn on the DTC to enter brand selection and vehicle identification modes.
--------	--

Next Step

Step 4	Enter the extended diagnostic session mode.
--------	---

Next Step

Step 5	Level 1 safety certification.
--------	-------------------------------

Next Step

Step 6	Start the steering angle sensor calibration.
--------	--

After the calibration is completed, there will be the following three prompts:

- A. 01= successful calibration of steering angle sensor.
- B. 02= failed calibration of steering angle sensor
- C. 03=The calibration of the steering angle sensor is in progress.

Next Step

Step 7	Read the calibration status of the steering angle sensor.
--------	---

After displaying the successful calibration, you can proceed to the next step, otherwise you need to re-calibrate.

Next Step

Step 8	After calibration is completed, exit and return to the main interface.
--------	--

### 5.6.6.26 Exhaust

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".
--------	--

**Note**

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6 Select "ESC"

Next Step

Step 7 Select "special function".

Next Step

Step 8 Select "Exhaust".

**Note**

The system will prompt: Do you want to perform this operation? Click [YES] to continue, and click [NO] to quit the operation.

Next Step

Step 9 Click "YES".

**Note**

The system will display: Valve relay status, pump motor status, valve actuation status, front left intake valve status, front left exhaust valve status, front right intake valve status, rear left intake valve status, rear left exhaust valve status, rear right intake valve status, rear right exhaust valve status, loop control valve 1 status (only for ESP), loop control valve 2 status (only for ESP), high-pressure switch valve 1 status (only for ESP) and high-pressure switch valve 2 status (only for ESP).

Next Step

Step 10 Click "YES".

**Note**

The system will prompt: Rear left wheel exhaust has been activated successfully.

Next Step

Step 11 Click "Confirm".



**Note**

The system will prompt: Rear left wheel exhaust is in progress with the time of 25s, and it is needed to continuously press on the brake.

The system will prompt: Rear left wheel exhaust has been completed.

Next Step

Step 12	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Front left wheel exhaust has been activated successfully.

Next Step

Step 13	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Front left wheel exhaust is in progress with the time of 25s, and it is needed to continuously press on the brake.

The system will prompt: Front left wheel exhaust has been completed.

Next Step

Step 14	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Front right wheel exhaust has been activated successfully.

Next Step

Step 15	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Front right wheel exhaust is in progress with the time of 25s, and it is needed to continuously press on the brake.

The system will prompt: Front right wheel exhaust has been completed.

Next Step

Step 16	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Rear right wheel exhaust has been activated successfully.

Next Step

Step 17	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Rear right wheel exhaust is in progress with the time of 86s, and it is needed to continuously press on the brake.

The system will prompt: Rear right wheel exhaust has been completed.

Next Step

Step 18	Click "Confirm".
------------	------------------

**Note**

The system will display: Valve relay status, pump motor status, valve actuation status, front left intake valve status, front left exhaust valve status, front right intake valve status, rear left intake valve status, rear left exhaust valve status, rear right intake valve status, rear right exhaust valve status, loop control valve 1 status (only for ESP), loop control valve 2 status (only for ESP), high-pressure switch valve 1 status (only for ESP) and high-pressure switch valve 2 status (only for ESP).

Next Step

Step 19	Click "Confirm".
------------	------------------

**Note**

The system will prompt: Select calibration status: Exhaust of all four wheels is successful, that is, exhaust filling is successful, please click "Yes"; exhaust of any wheel fails, that is, exhaust filling fails, please click "No".

The system will prompt: Rear right wheel exhaust has been completed.

Next Step

Step 20	Click "Yes", the exhaust function is completed.
------------	---

### 5.6.6.27 Filling

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “ESC”
--------	--------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “filling”
--------	------------------

#### Note

The system will prompt: Do you want to perform this operation? Click [YES] to continue, and click [NO] to quit the operation.

Next Step

Step 9	Click “YES”.
--------	--------------

#### Note

The system will display: Valve relay status, pump motor status, valve actuation status, front left intake valve status, front left exhaust valve status, front right intake valve status, rear left intake valve status, rear left exhaust valve status, rear right intake valve status, rear right exhaust valve status, loop control valve 1 status (only for ESP), loop control valve 2 status (only for ESP), high-pressure switch valve 1 status (only for ESP) and high-pressure switch valve 2 status (only for ESP).

Next Step

---

Step 10	Click "YES".
------------	--------------

**Note**

System prompt: The vacuum filling has completed or has not yet started.

Next Step

Step 11	Click "Confirm".
---------	------------------

**Note**

The system will display: Valve relay status, pump motor status, valve actuation status, front left intake valve status, front left exhaust valve status, front right intake valve status, rear left intake valve status, rear left exhaust valve status, rear right intake valve status, rear right exhaust valve status, loop control valve 1 status (only for ESP), loop control valve 2 status (only for ESP), high-pressure switch valve 1 status (only for ESP) and high-pressure switch valve 2 status (only for ESP).

Next Step

Step 12	Click "Confirm".
------------	------------------

**Note**

System prompt: Please click [Yes] if the filling succeeds; Please click [No] if the filling fails.

Next Step

Step 13	Click "Yes" and the filling function is completed.
------------	--

## 5.6.7 Removal and installation

### 5.6.7.1 Replacement of front wheel speed sensor

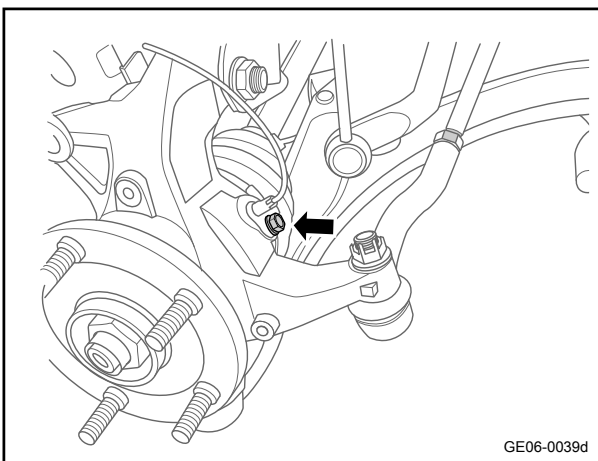
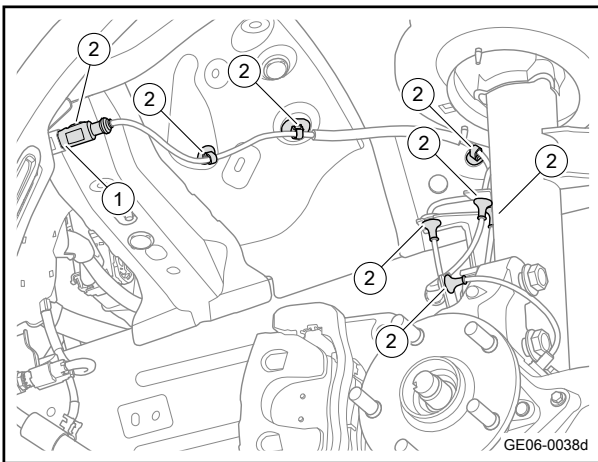
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

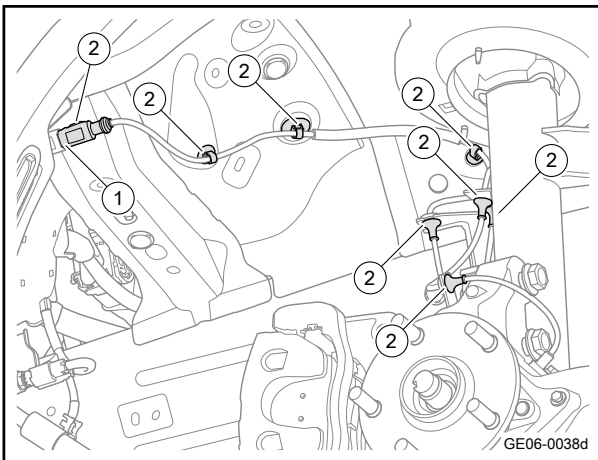
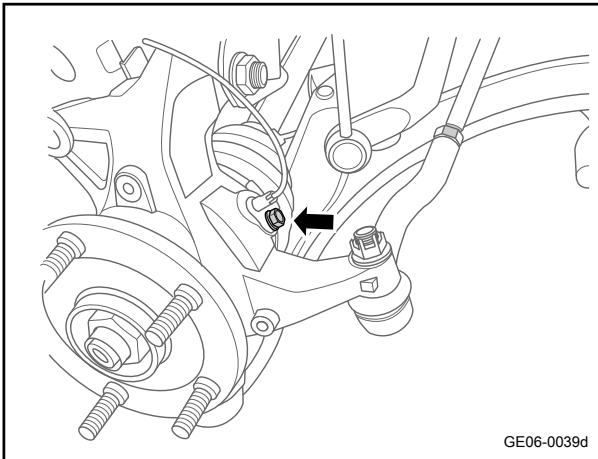
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove wheels. Refer to [Replacement of wheels](#)
- 4 Remove the left front fender liner. Refer to [Replacement of front right fender liner](#)
- 5 Disconnect the front wheel speed sensor harness connector 1.
- 6 Disengage the 8 harness buckles 2 of the front wheel speed sensor.



- 7 Remove the 1 fixing bolt of the front wheel speed sensor.
- 8 Take off the front wheel speed sensor.

#### Installation procedure



- 1 Move the front wheel speed sensor to the installation position.
- 2 Install the 1 fixing bolt of the front wheel speed sensor.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the 8 harness buckles 2 of front wheel speed sensor.
- 4 Connect FL speed sensor harness connector 1.

- 5 Install the left front fender liner.
- 6 Install the wheel.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

### 5.6.7.2 Replacement of rear wheel speed sensor assembly

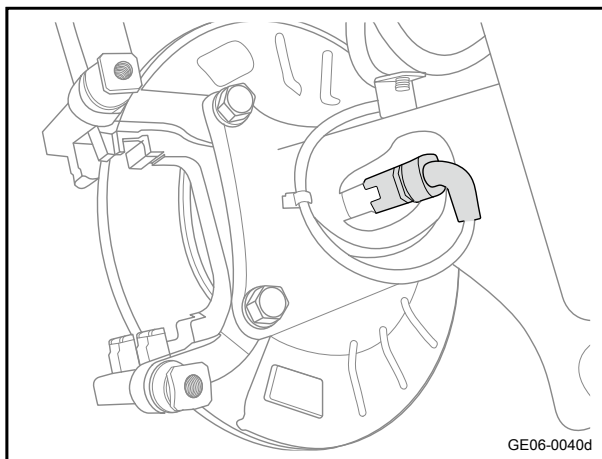
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

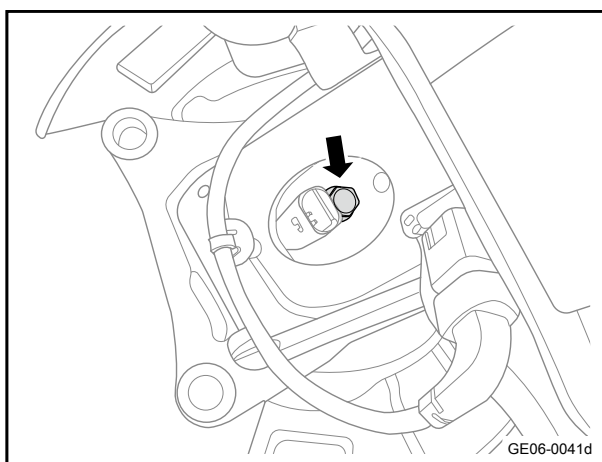
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

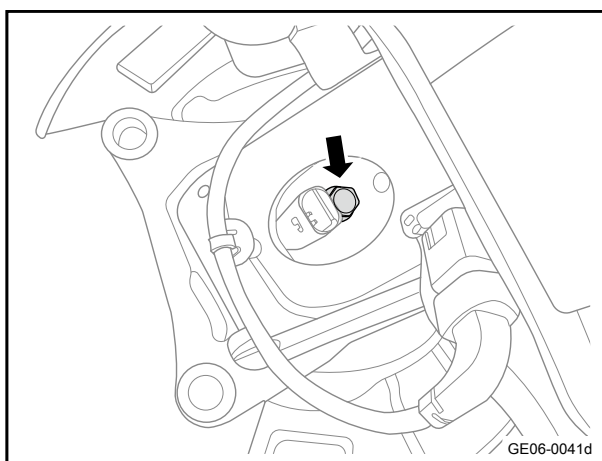
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)



- 3 Disconnect the rear wheel speed sensor harness connector.

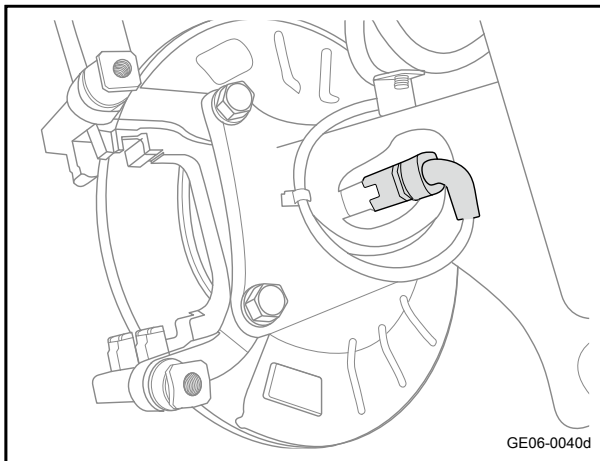


- 4 Remove the 1 fixing bolt of rear wheel speed sensor.
- 5 Take off the rear wheel speed sensor.



#### Installation procedure

- 1 Move the rear wheel speed sensor to the installation position.
- 2 Install the 1 fixing bolt of rear wheel speed sensor.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 3 Connect the rear wheel speed sensor harness connector.

- 4 Lower the vehicle.

- 5 Connect the negative cable of battery.

### 5.6.7.3 Replacement of ESC control module

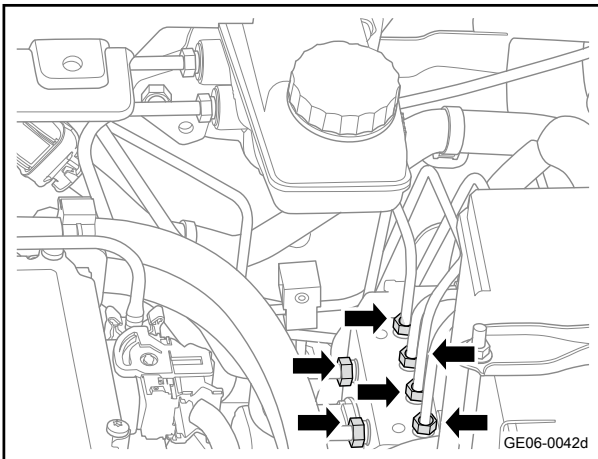
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

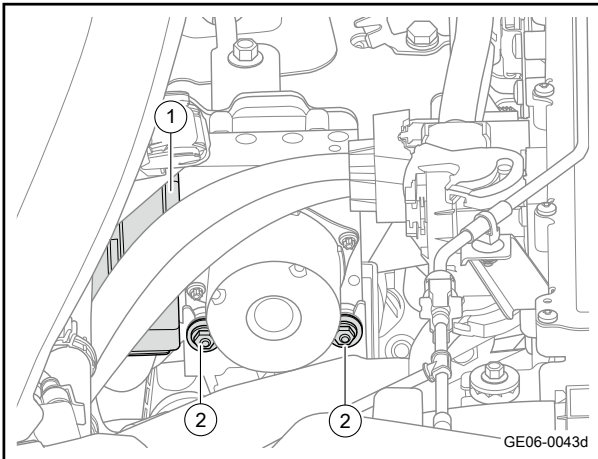
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the brake fluid. See [Draining and Filling of Brake Fluid](#)
- 3 Remove the 6 brake pipe nuts of the ESC control module.

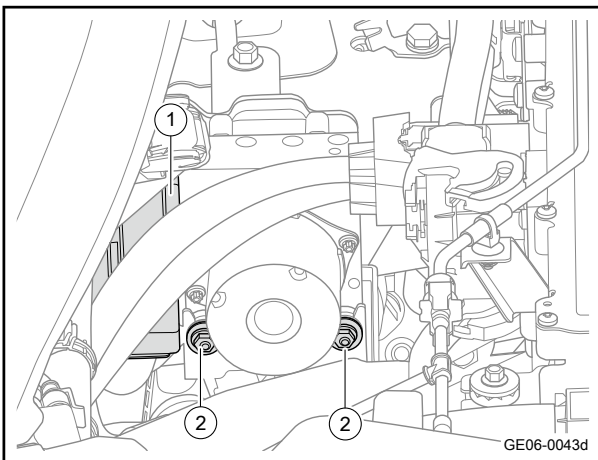




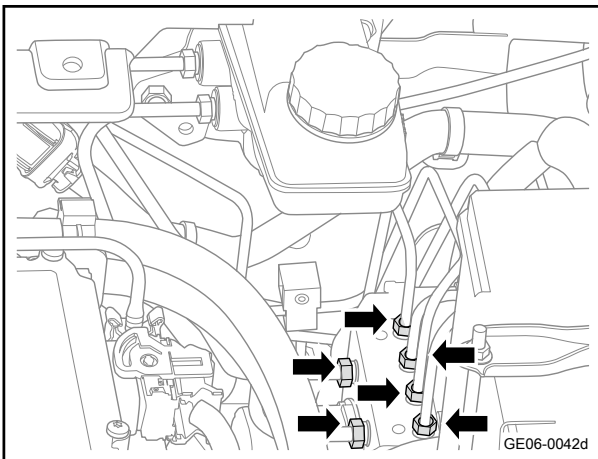


- 4 Disconnect the ESC control module harness connector 1.
- 5 Remove the 2 fixing nuts from the ESC control module.
- 6 Take off the ESC control module.

## Installation procedure



- 1 Move the ESC control module to the installation position.
- 2 Install 2 fixing nuts of the ESC control module.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the ESC control module harness connector 1.



- 4 Install 6 brake pipe nuts of the ESC control module.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 5 Fill the brake fluid and operate the hydraulic brake system exhaust program.
- 6 Connect the negative cable of battery.
- 7 Connect the diagnostic instrument and execute the programming of the control unit.

### 5.6.7.4 Replacement of steering wheel angel sensor

Refer to [Replacement of clock spring](#)

### 5.6.7.5 Replacement of ESC switch

Removal procedure

Refer to [Replacement of auxiliary instrument switch pack](#)

### 5.6.7.6 Replacement of EPB switch pack

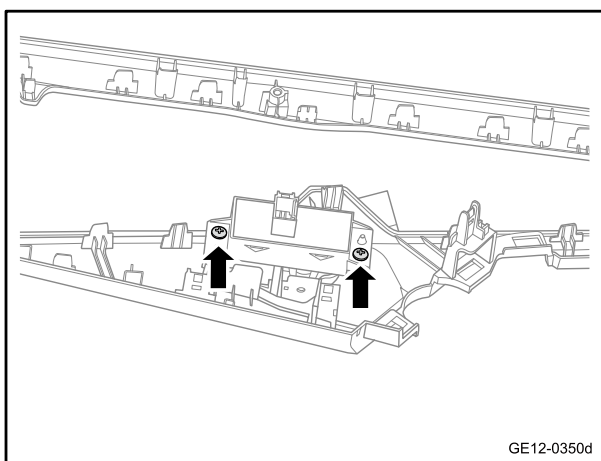
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

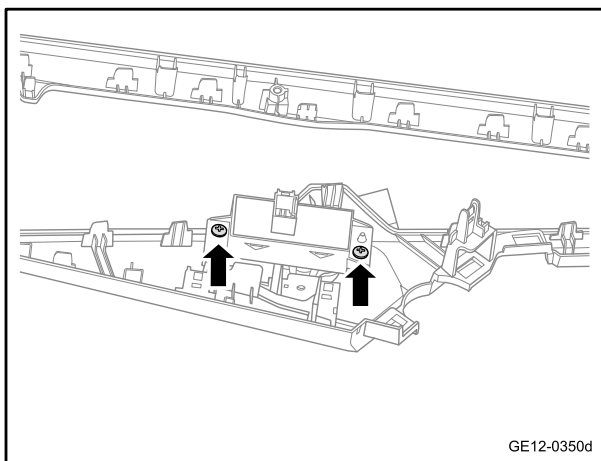
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the upper trim panel assembly of the auxiliary instrument. See [Replacement of upper trim panel assembly of auxiliary instrument](#)
- 3 Remove the 2 fixing screws between the EPB switch pack and the upper trim panel assembly of the auxiliary instrument.
- 4 Remove the EPB switch.



Installation procedure

- 1 Move the EPB switch to the installation position.
- 2 Install the 2 fixing screws of the EPB switch and the upper decorative panel assembly of the auxiliary instrument.  
Torque: 2.5N·m (metric) 1.8lb·ft (imperial system)



- 3 Install the upper trim panel assembly of the auxiliary fascia console.
- 4 Connect the negative cable of battery.

---

## 5.7 TPMS

### 5.7.1 Specification

#### 5.7.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
TPMS	-	3 - 5	2.2 - 3.7

## 5.7.2 Description and operation

### 5.7.2.1 Instructions and Operations

The tire pressure monitoring system (TPMS) uses radio waves and sensing technology to detect the real-time tire pressure and temperature. The tire pressure monitoring system detects the pressure and temperature of the vehicle tires through sensors installed on each wheel, and sends the tire pressure and temperature signal to the TPMS, and the instrument displays the corresponding pressure value according to the tire pressure and temperature signals sent by the TPMS, and informs the driver of the tire pressure. When the tire pressure is normal, it is displayed in black, and when the tire pressure is abnormal, the corresponding tire is displayed in red. When more than one tire triggers the high tire temperature/low tire pressure alarm, the TPMS error warning lamp is turned on, and the tire that triggered the alarm is displayed in red to remind the driver to check the tire pressure. Each tire should be inflated to the inflation pressure recommended by the vehicle manufacturer (indicated on the tire pressure label) in a cold state, and the tires should be checked regularly. If the tire pressure abnormality indicator lights up, indicating that one or more tires are under abnormal pressure, please immediately reduce the speed of the vehicle and avoid violent steering and braking operations, and stop the vehicle immediately to check the tire and its inflation pressure.

### 5.7.2.2 Composition of tire pressure monitoring system

TPMS system consists of the following components

- TPMS sensor
- RFR radio frequency receiving module
- BCM central processing unit

#### Caution

The receiver of the tire pressure monitoring system can provide good installation flexibility to meet the installation needs of a large range of vehicles. This flexibility of installation can be achieved by using a special metal bracket attached to the housing. The bracket is connected to the housing by sliding the bracket into the protrusion on the side of the housing and be locked, and no additional fixing device is needed.

Every tire is equipped with a TPMS sensor connected to the tire valve. The TPMS sensor is a battery-powered unit that regularly measures tire pressure, temperature and acceleration information. The pressure, temperature and acceleration information will be converted into digital form by

the MCU in the TPMS sensor. The acceleration information is used to determine whether the vehicle is stationary or in motion. The RF transmission circuit equipped with the TPMS sensor is used to periodically transmit the information in the tire. The TPMS sensor is also equipped with a low frequency (LF) receiving circuit. The low-frequency receiving circuit enables the TPMS sensor to be diagnosed and enter different modes through the externally triggered low-frequency electromagnetic field.

#### RFR radio frequency receiving module

When the vehicle's ignition circuit is turned on, the MCU and RF receiving circuits of the TPMS receiver are activated. The receiver unit continuously monitors wireless signals from nearby TPMS sensors. The TPMS receiver unit can memorize the ID code of the TPMS loaded in a specific vehicle. When TPMS receiver unit receives a message, it checks to see if the ID code included in the received message matches the stored ID code. If it does, TPMS receiver unit inputs the information into the TPMS alarm algorithm. The algorithm evaluates the pressure and temperature of each tire over time and makes a decision in the event of a potentially dangerous under pressure situation, then continuously alerts the driver through the tire pressure alarm lamp. In addition to processing information, the TPMS receiver can also perform self-checking on its own circuit and working status. If a serious fault is detected, the TPMS receiver will continue to illuminate the TPMS warning lamp to warn the vehicle driver.

## 5.7.3 How the system works

### 5.7.3.1 System Working Principles

#### Description of TPMS function status

##### a. Reset status

If initial added power or voltage is lower than reset threshold, TPMS control unit will be in non-operational service status and reset status. Once the voltage reaches acceptable value, TPMS control unit will be released from reset status and the module will be in normal status.

##### b. Initialization status (system self-inspection)

If the power supply mode of start and stop button is in ON status, in initialization status, system will initially set I/O port, register, internal variables, data memory address.

##### c. Starting status

When in starting status, TPMS will support normal operation of the system:

###### 1. Receive data frame of radio frequency from TPMS sensor

When in starting status, TPMS control unit has to continuously receive and process data frames of radio frequency sent by TPMS sensor.

###### 2. Verify the received data frames

When a data frame of radio frequency sent by TPMS sensor is received, TPMS control unit will firstly verify the legality of received messages. The messages sent by sensor will be processed through collision warning algorithm.

###### 3. Process all valid received messages of TPMS sensor

Once tyre pressure is monitored to be low, tyre pressure warning lamp (TREAD) should be lightened.

###### 4. Continuously monitor K bus request

TPMS control unit must be activated before K bus is being used.

###### 5. Vehicle motion status (speed sensor)

A speed signal is needed to monitor whether there is a tyre without sensor used in vehicle.

##### d. Diagnosis status

When diagnostic apparatus is connected and communication can be made through CAN bus, TPMS control unit will be in diagnosis mode.

##### e. Sleep status

System, which is in sleep mode, will be in low power dissipation status. When the system is in sleep mode, no sensor message or diagnosis command needs to be received and processed. If the ignition system is monitored to be open, system will be out of sleep mode.

###### • Activation condition

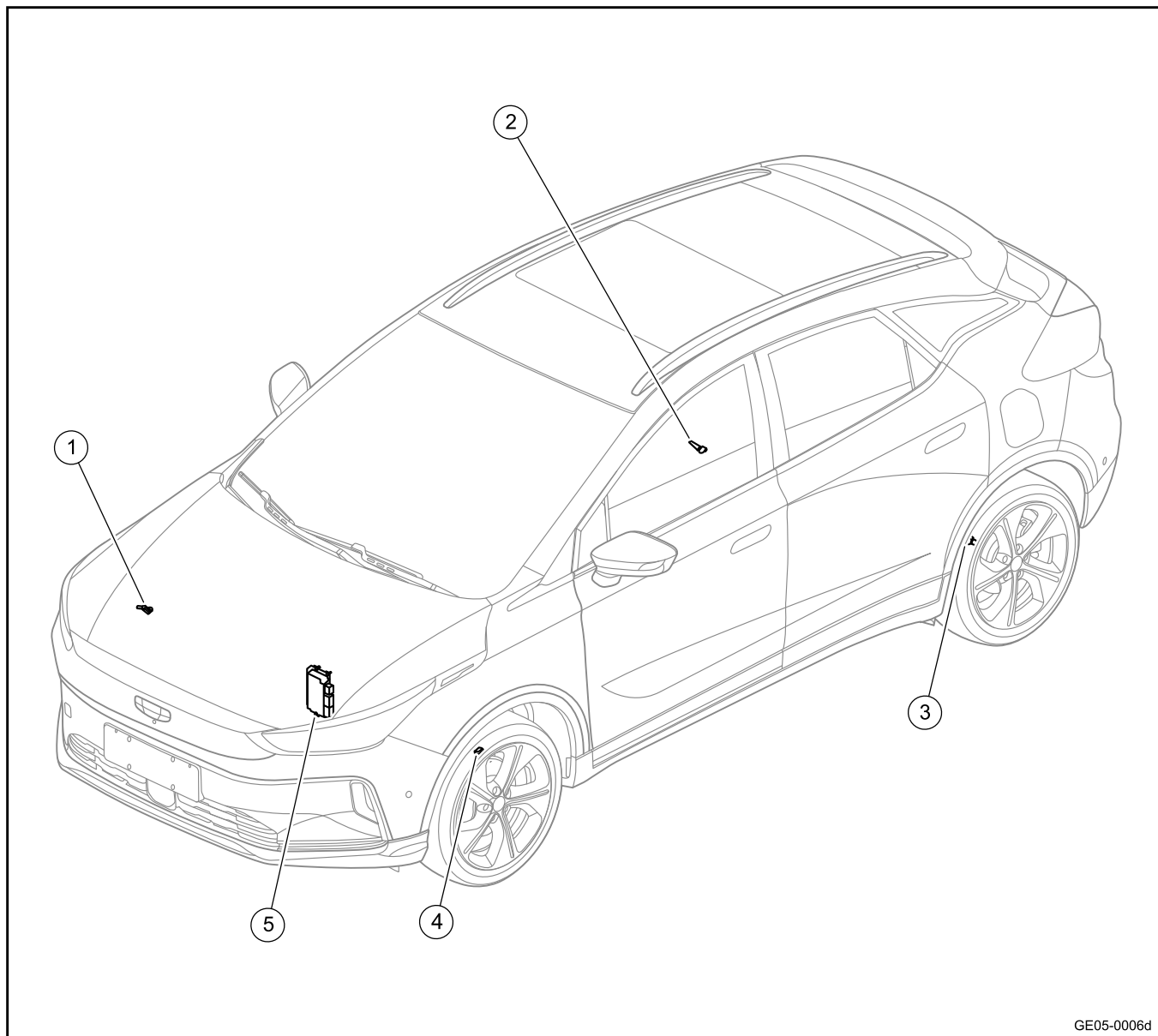
When the input signal of start and stop button is changed from Off status (OFF) to On status (ON), TPMS control unit will be out of dormant status.

###### • Dormancy condition

When TPMS control unit detects that the input of ignition message is Off status (OFF) and there is no RF message to receive with no unfinished control transmission of LFI, TPMS receiver will be in dormant status.

5.7.4 Part location

5.7.4.1 Part Position

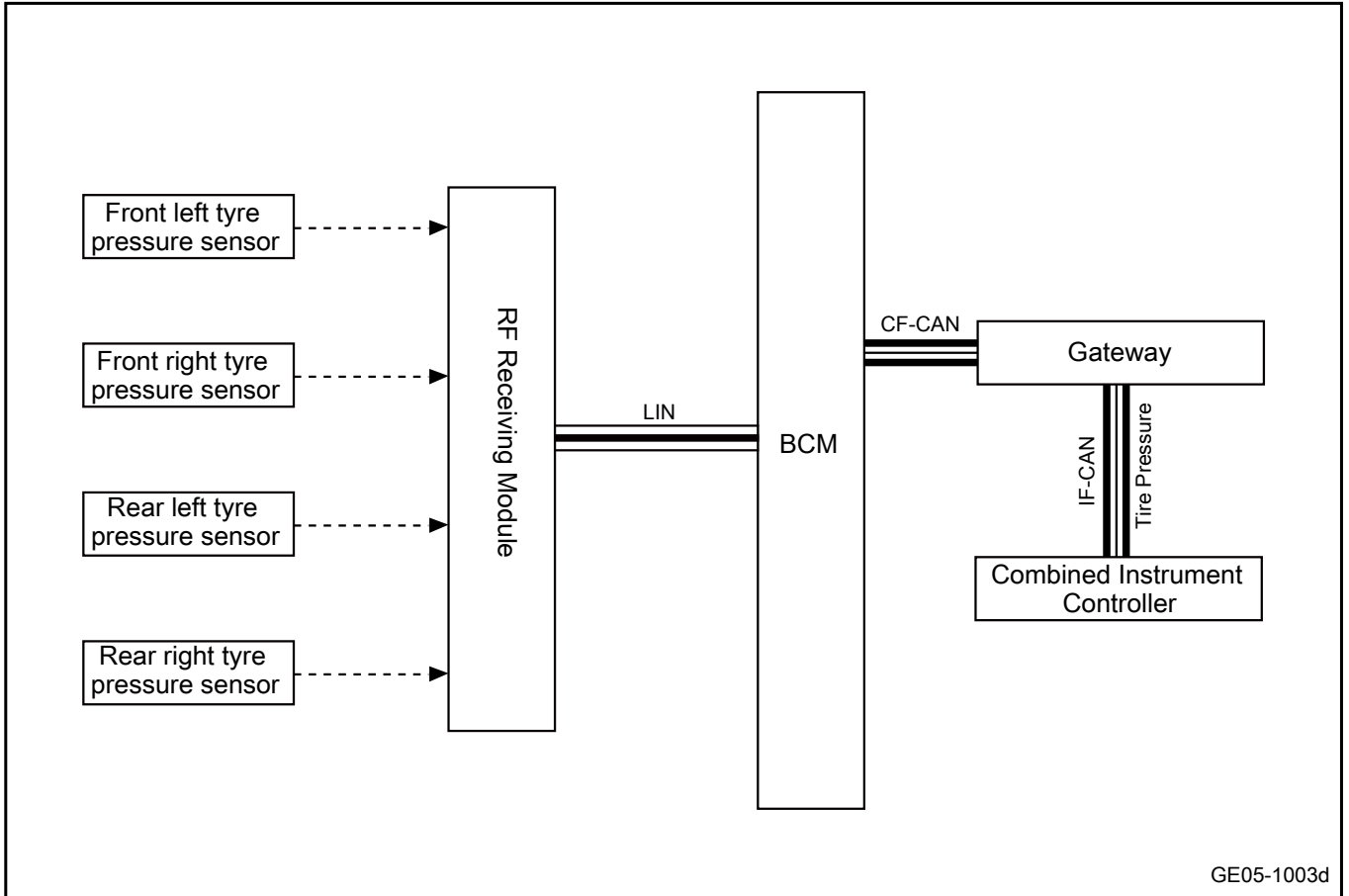


GE05-0006d

- |                         |                         |
|-------------------------|-------------------------|
| 1. FR wheel TPMS sensor | 4. FL wheel TPMS sensor |
| 2. RR wheel TPMS sensor | 5. Body control module  |
| 3. RL wheel TPMS sensor |                         |

5.7.5 Electrical block diagram

5.7.5.1 Electrical schematic diagram of TPMS





## 5.7.6 Diagnostic information and steps

### 5.7.6.1 Diagnosis Description

Before diagnosing TPMS faults, refer to [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 5.7.6.2 Routine inspection

- Confirm customer's fault before repair.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a fault, such as:
  - Check whether tire pressure is normal.
  - Check the tires and hubs, visually check whether the tires and hubs are of the same model
  - Whether there are obvious mechanical or electrical damage signs.

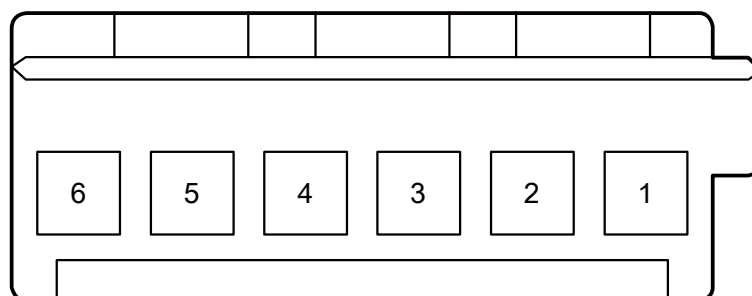
Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 5.7.6.3 Terminal List

#### SO409 RF receiver module wiring harness connector

### SO409 RF Receiving Module Harness Connector



GE05-1025d

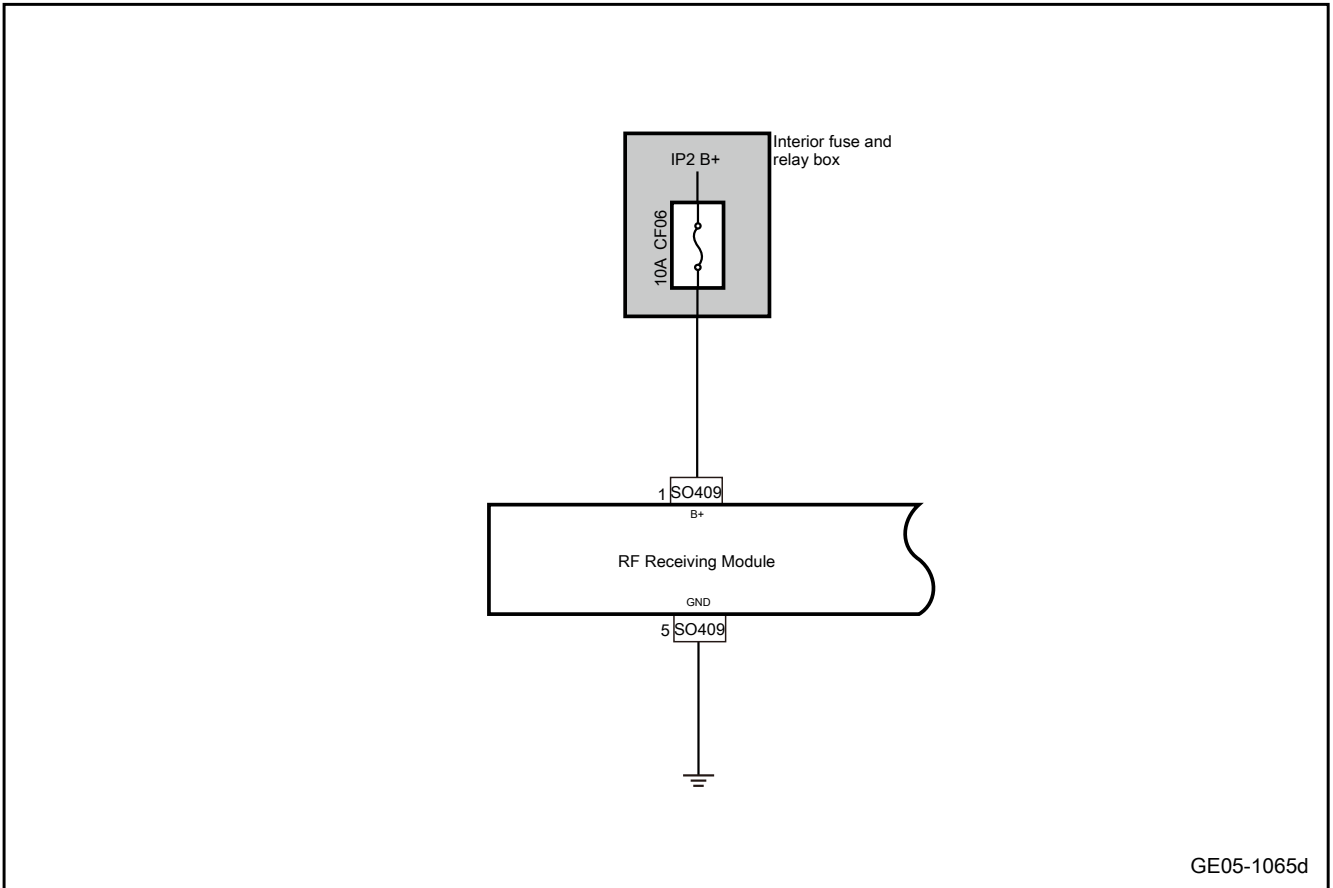
Terminal No.	Terminal name	Terminal description
1	B+Power supply	Battery power supply for radio frequency receiver module
2	-	-
3	-	-
4	-	-
5	Ground connection	Grounded circuit of RF receiver module
6	LIN	LIN data communication bus

#### 5.7.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
RF receiver module power failure	1. Battery	See <a href="#">RF Receiver Module Power Failure</a>
	2. Fuse	
	3. Circuit	
	4. RF receiver module	
LIN communication failure of RF receiver module	1. Harness	See <a href="#">LIN Communication Failure of RF Receiver Module</a>
	2. Speed sensor	
	3. RF receiver module	
	4. BCM	
Tyre pressure monitoring system (TPMS) indicator light is always on	1. Harness	Refer to <a href="#">Tyre pressure monitoring system (TPMS) indicator lamp is always on</a>
	2. Speed sensor	
	3. RF receiver module	
	4. BCM	
	5. IPK	
The tyre pressure monitoring system (TPMS) indicator lamp is off when the tyre pressure is significantly insufficient	1. Harness	Refer to <a href="#">The tyre pressure monitoring system (TPMS) indicator lamp is off when the tyre pressure is significantly insufficient</a>
	2. Speed sensor	
	3. RF receiver module	
	4. BCM	
	5. IPK	

#### 5.7.6.5 RF receiver module power failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the radio frequency receiving module for signs of damage, deformation, stain, loosening, etc.
- B. Check the radio frequency receiving module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF06 and check whether the fuse CF06 is blown.

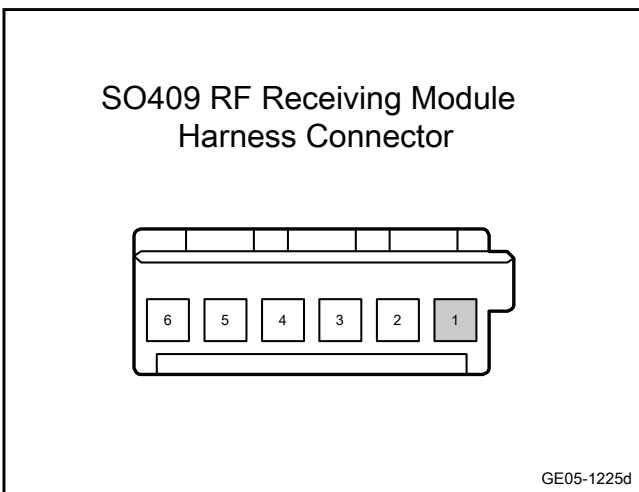
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the power supply circuit of the RF receiver module.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the radio frequency receiving module harness connector SO409.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO409(1)	Vehicle body is grounded.	Standard voltage: 11-14V

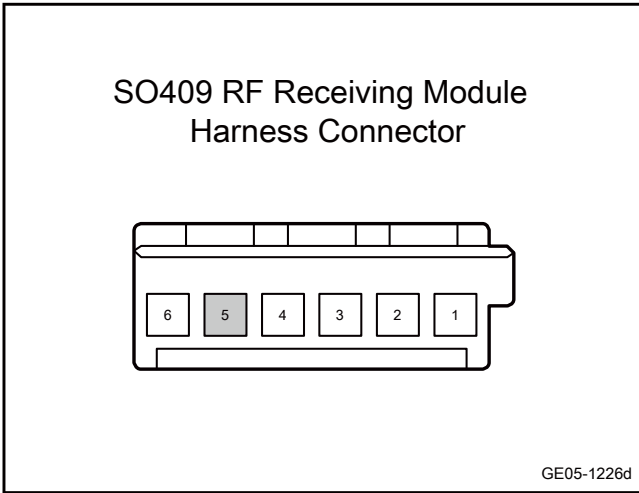
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check the grounded circuit of the RF receiver module.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the radio frequency receiving module harness connector SO409.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO409(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Replace the RF receiver module.

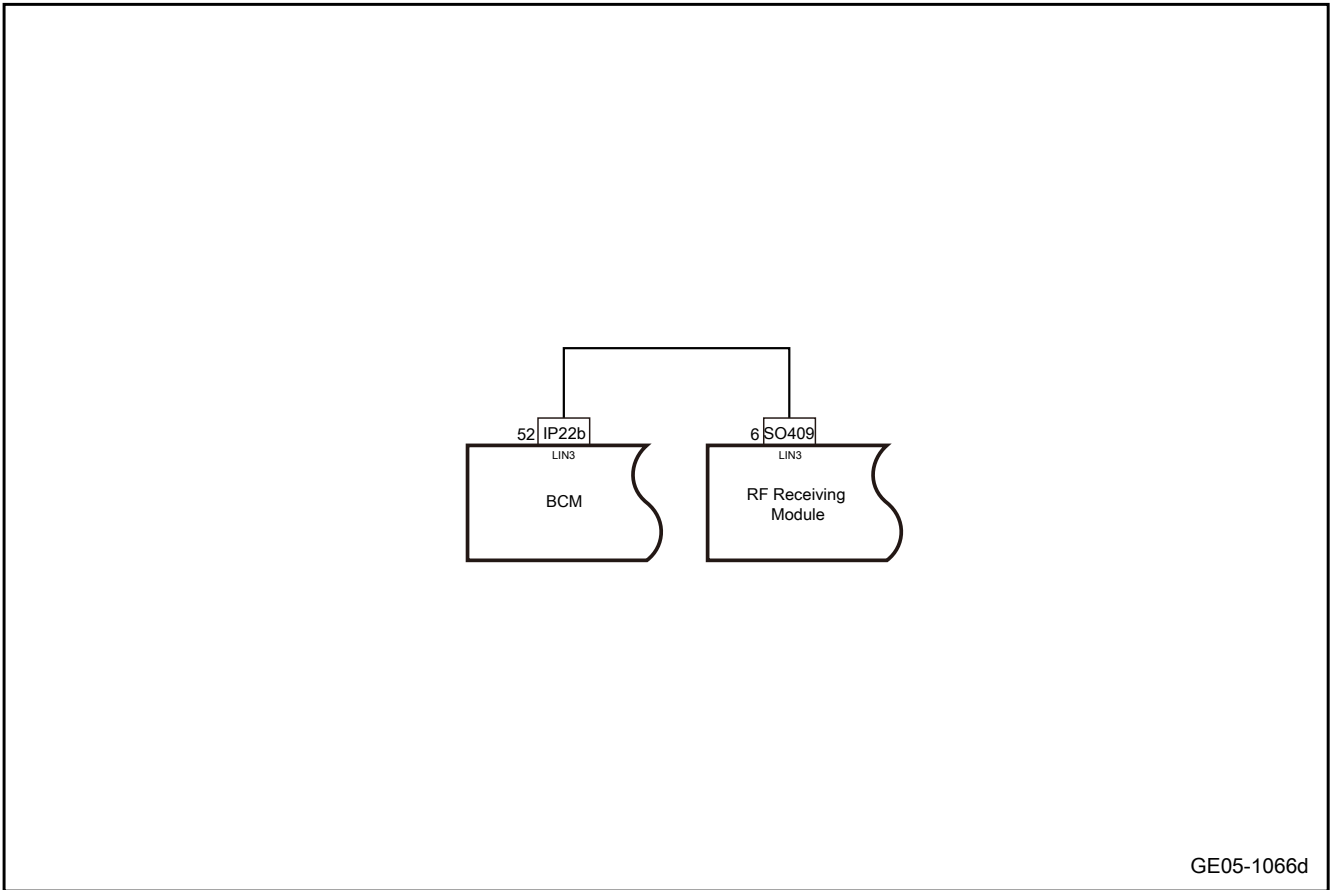
- A. To replace the RF receiving module, see [Replace the RF Receiver Module](#)

Next Step

**Step 7** | System is normal.

### 5.7.6.6 LIN communication failure of RF receiver module

1. Schematic circuit diagram:



GE05-1066d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the radio frequency receiving module and BCM for signs of damage, deformation, stain, loosening, etc.
- B. Check the radio frequency receiving module and BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

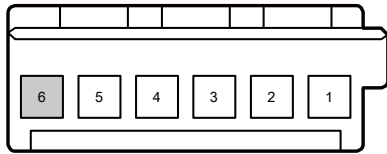
No

Repair or replace the faulty part.

Yes

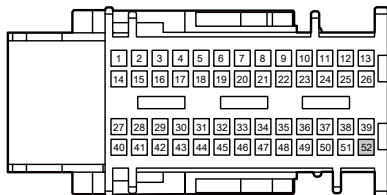
Step 2	Check whether the circuit between the RF receiver module and the BCM is normal.
--------	---

SO409 RF Receiving Module  
Harness Connector



GE05-1227d

IP22b body control module  
harness connector 3



GE05-1228d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the radio frequency receiving module harness connector SO409.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO409(6)	IP22b(52)	Standard resistance: less than 1Ω
SO409(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO409(6)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Replace the RF receiver module.

- A. To replace the RF receiving module, see [Replace the RF Receiver Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 4** Replace the BCM

- A. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 5	Reprogram and reset the BCM.
--------	------------------------------

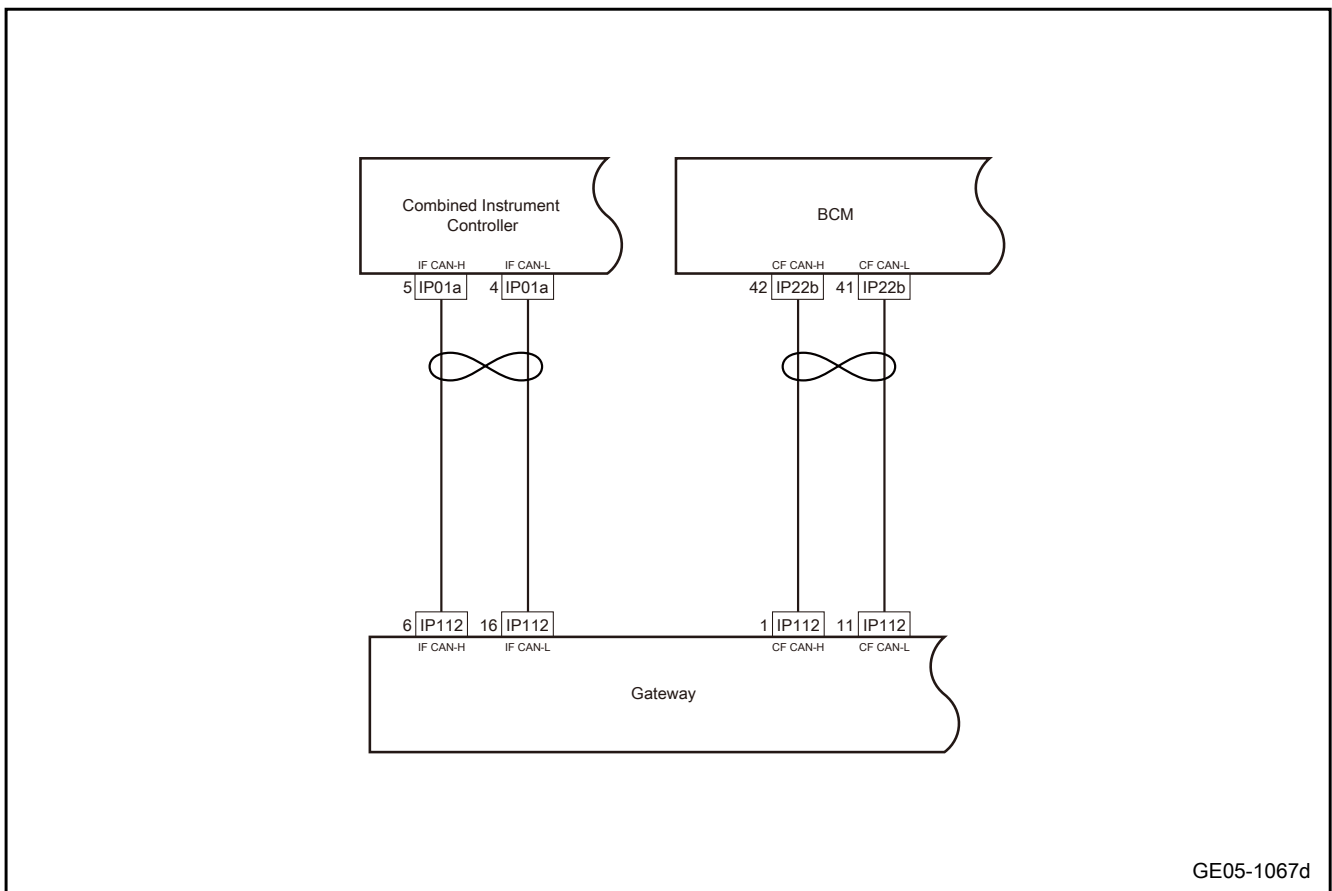
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6	System is normal.
--------	-------------------

### 5.7.6.7 Tyre pressure monitoring system (TPMS) indicator light is always on

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster controller, gateway, BCM for signs of damage, deformation, stains, loosening, etc.
- B. Check the combination instrument controller, gateway and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.



Yes

**Step 2** The active test of tire pressure monitoring warning lamp is carried out with diagnostic instrument.

- A. Connect the DTC, operate the start-and-stop switch, and turn on the READY gear of the complete vehicle.
- B. Select “Active test” on function tests.

Active test: tire pressure monitoring, warning lamp

Diagnostic instrument display	Test components
Tire Pressure Monitoring Warning	Tire pressure monitoring warning lamp is on or off (ON/OFF)

- C. Check whether the tire pressure monitoring warning lamp is working properly.

Yes

System is normal.

No

**Step 3** Check the IF-CAN network integrity.

- A. Perform IF CAN network integrity check, refer to IF CAN network integrity check.
- B. Whether CAN integrity is normal.

No

Repair CAN bus faults.

Yes

**Step 4** Check the CF-CAN network integrity.

- A. Perform CF CAN network integrity check, refer to CF CAN network integrity check.
- B. Whether CAN integrity is normal.

No

Repair CAN bus faults.

Yes

**Step 5** Replace the instrument cluster controller.

- A. Check whether combination instrument controller power supply and grounding harness are normal. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Reprogram and reset the instrument cluster controller.
--------	--

- A. Reprogram and reset the instrument cluster controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 8	Reprogram and reset the BCM.
--------	------------------------------

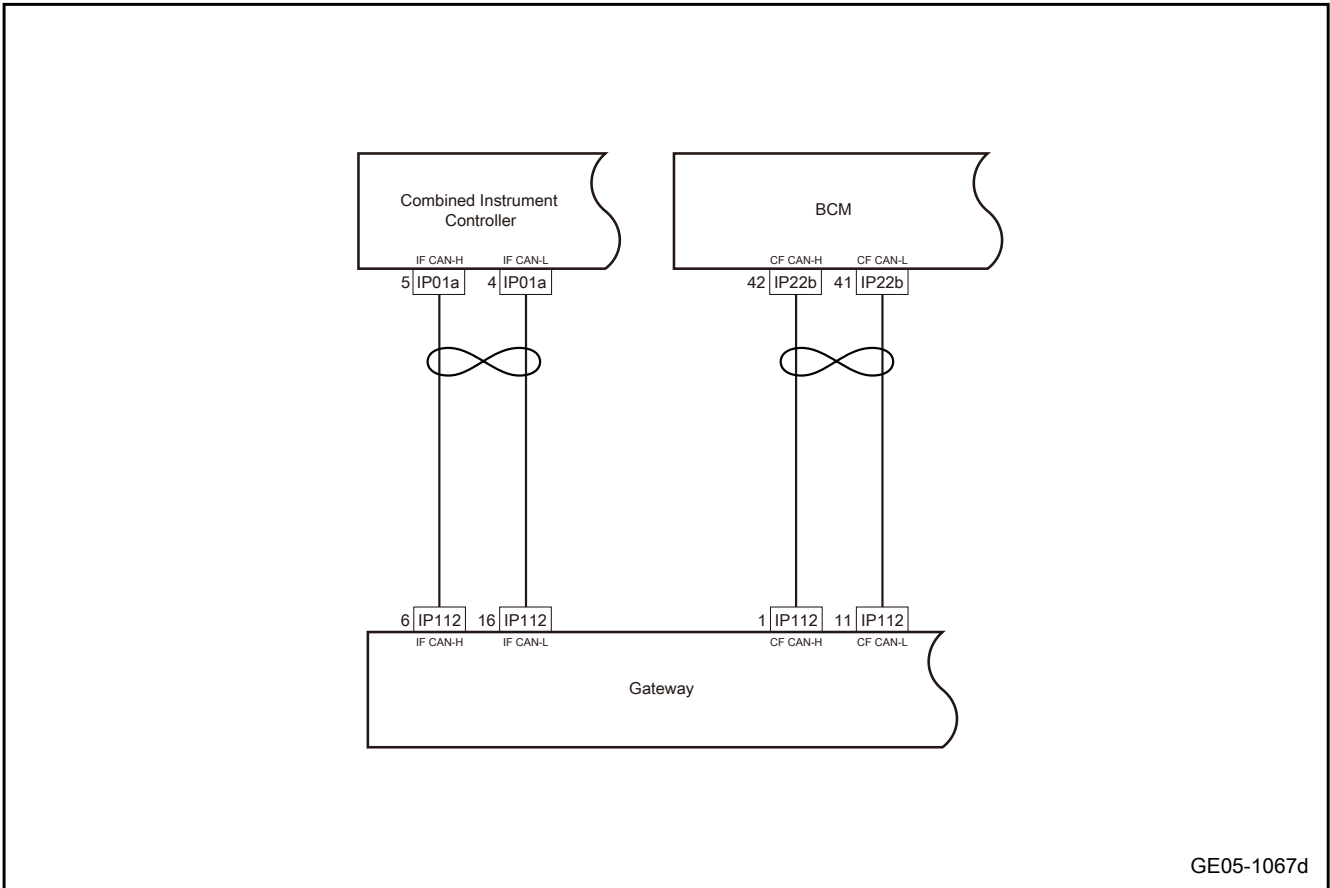
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 5.7.6.8 The tyre pressure monitoring system (TPMS) indicator lamp is off when the tyre pressure is significantly insufficient

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster controller, gateway, BCM for signs of damage, deformation, stains, loosening, etc.
- B. Check the combination instrument controller, gateway and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	The active test of tire pressure monitoring warning lamp is carried out with diagnostic instrument.
--------	---

- A. Connect the DTC, operate the start-and-stop switch, and turn on the READY gear of the complete vehicle.
- B. Select “Active test” on function tests.

Active test: tire pressure monitoring, warning lamp

Diagnostic instrument display	Test components
Tire Pressure Monitoring Warning	Tire pressure monitoring warning lamp is on or off (ON/OFF)

- C. Check whether the tire pressure monitoring warning lamp is working properly.

Yes

System is normal.

No

**Step 3** Check the IF-CAN network integrity.

- A. Perform IF CAN network integrity check, refer to IF CAN network integrity check.
- B. Whether CAN integrity is normal.

No

Repair CAN bus faults.

Yes

**Step 4** Check the CF-CAN network integrity.

- A. Perform CF CAN network integrity check, refer to CF CAN network integrity check.
- B. Whether CAN integrity is normal.

No

Repair CAN bus faults.

Yes

**Step 5** Replace the instrument cluster controller.

- A. Check whether combination instrument controller power supply and grounding harness are normal. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Reprogram and reset the instrument cluster controller.
--------	--

- A. Reprogram and reset the instrument cluster controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 8	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 5.7.6.9 Learning of sensor

The automatic learning function enable it automatically recognize and confirm the TPMS sensor on the vehicle without the intervention of external equipment.

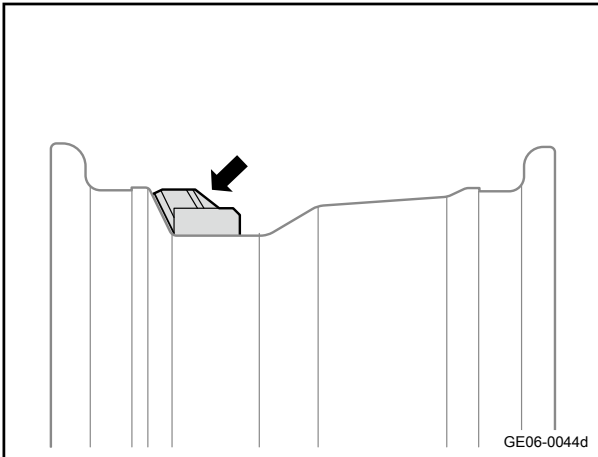
1. The automatic learning function compares the vehicle speed signal with the acceleration signal.
2. The automatic learning function confirms its own sensor firstly.
3. The vehicle speed condition for activating the automatic learning function is 25km/h.
4. When the vehicle is parked for more than 19 minutes and the IGN-ON is restarted, the automatic learning function will be activated. When the vehicle speed reaches 25kph, the automatic positioning function and the automatic learning function will be activated together and will end within 10 minutes. After the successful automatic learning function, automatic positioning function will go into effect. ECU automatically judges the installation position of each sensor in the tire and records the position information in ECU.

## 5.7.7 Removal and installation

### 5.7.7.1 Replacement of TPMS

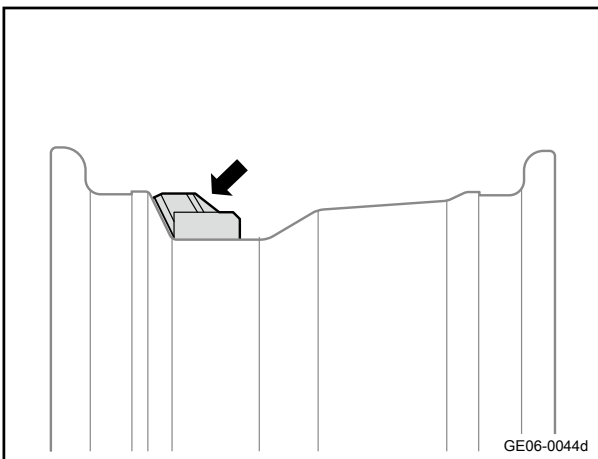
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Use a tire changer to remove rubber tires.
- 4 Remove the TPMS.



#### Installation procedure

- 1 Install TPMS.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 2 Install rubber tires using a tire changer.
- 3 Install the wheel.
- 4 Lower the vehicle.

---

## steering system

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## 6.1 Warnings and Precautions

### 6.1.1 Warnings and Precautions

#### 6.1.1.1 Warnings and Precautions

Matters needing attention in fault diagnosis of electric power assist

##### Caution

When two or more faults occur, the diagnostic trouble code is always displayed in sequence starting from the smallest code.

Since the diagnostic trouble code (DTC) is stored in the backup memory of the control module, after maintenance, the code in the memory must be cleared. The method of clearing is to ground the diagnostic fault line and display the fault code three times.

Refer to the fault code diagnosis table, write down the displayed fault code, and deal with the fault.

---

## 6.2 Electric power steering system

### 6.2.1 Description and operation

#### 6.2.1.1 Operation and Description

The electric power steering system is a power steering system in which the electric motor directly provides power, and the power is controlled by the electronic control unit. When the driver turns the steering wheel, the steering control unit generates auxiliary power according to the detected torque voltage signal and the steering angle. The vehicle speed determines the power effect of the electric motor. The purpose is to ensure that the vehicle drives easily at low speed and stably and reliably at high speed. When the vehicle is not rotating, the motor does not work.

#### Caution

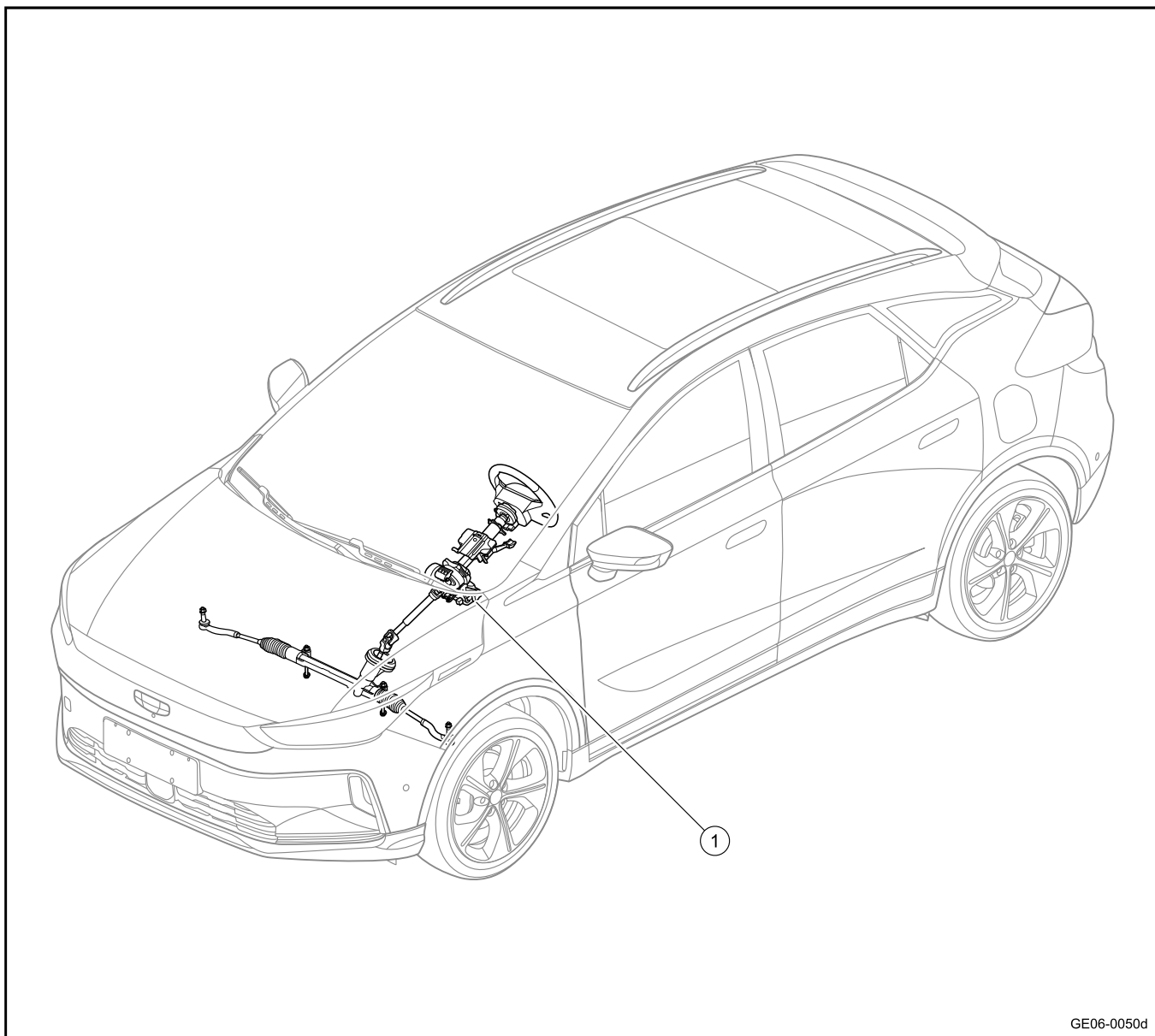
Before the steering column assembly and assembly box c/w track rod of steering gear are disconnected, the wheels should be maintained at the front side direction and the steering column should be located on the locked position. When the above components are disconnected, front wheel tires and wheels should not be moved and the steering wheel should not be rotated. Otherwise, some components may be oriented in mistake during installation and the airbag clock spring will be deviated from the central position, thus causing the damage of the airbag clock spring.

#### Caution

The steering column has not only a steering function, but also a safety protection function. To ensure the energy absorption function of the steering column, specified screws, bolts and nuts should be used and tightened to specified torque. When the vehicle suffers from front collision, energy absorption column will collapse and reduce the driver injury odds.

6.2.2 Part location

6.2.2.1 Part Position

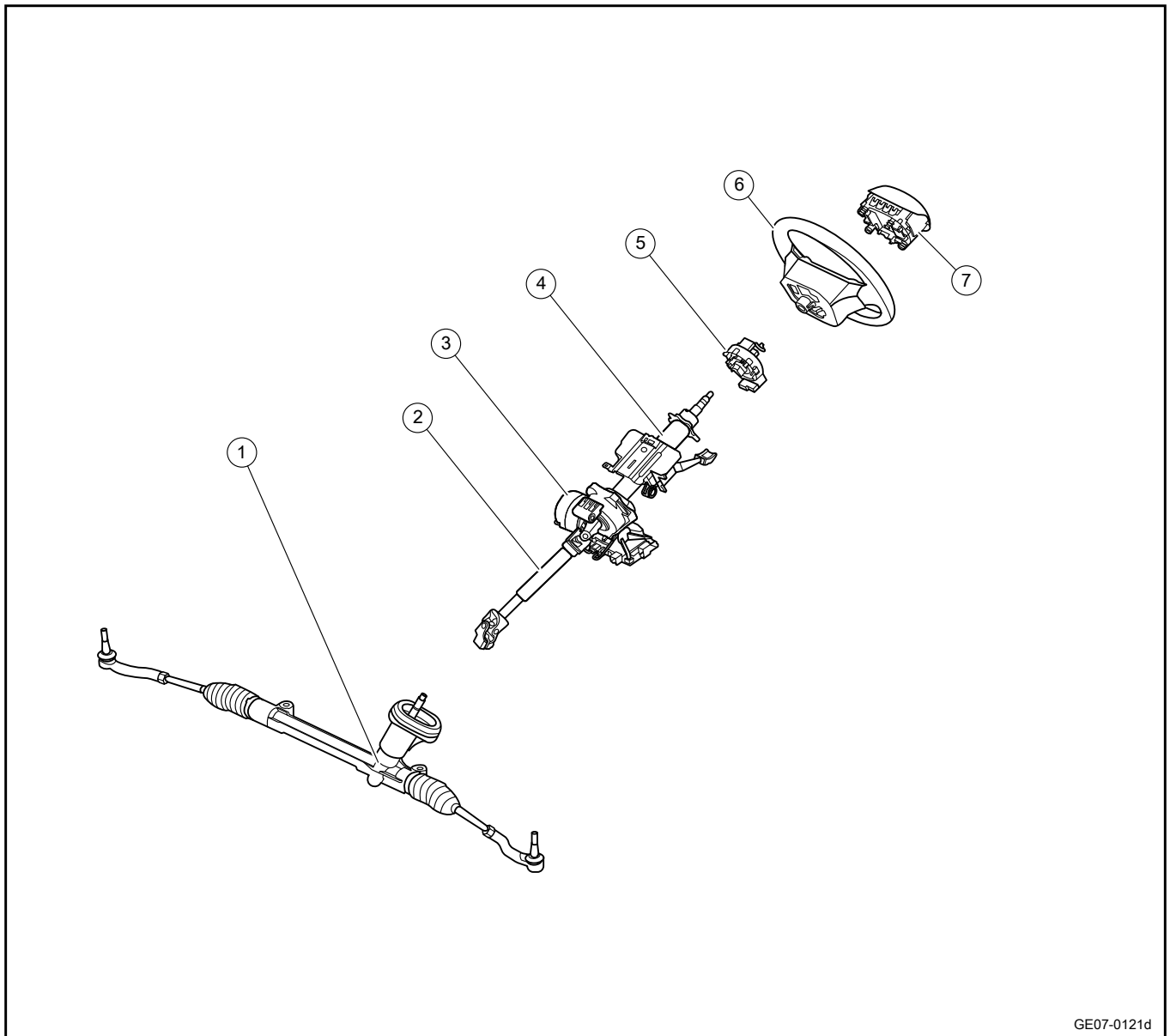


GE06-0050d

1. Electric power steering system

## 6.2.3 Exploded view

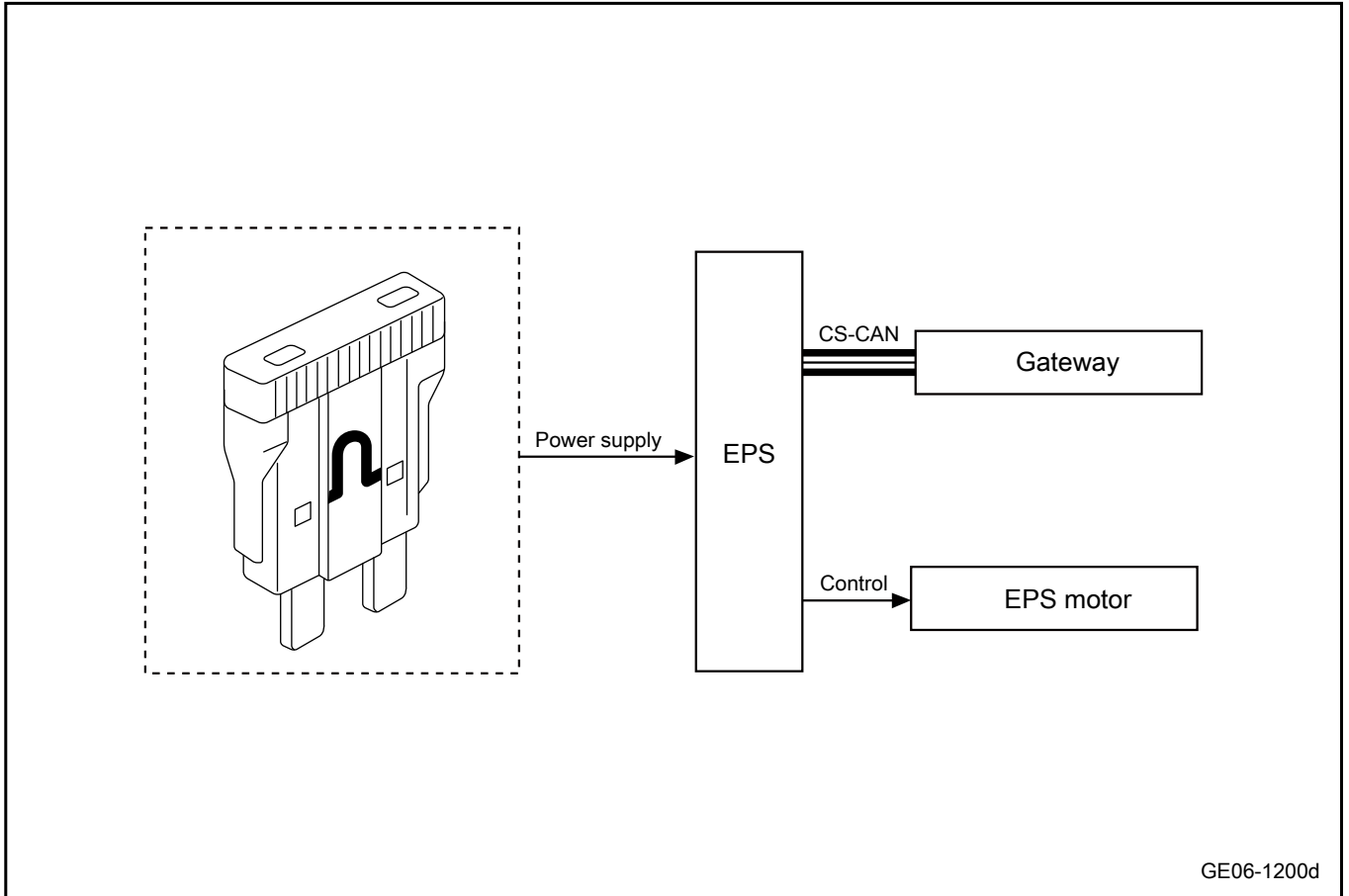
## 6.2.3.1 Breakdown Drawing



- |                              |   |
|------------------------------|---|
| 1. Steering gear c/w tie rod | 5. Clock spring and steering angle sensor |
| 2. Intermediate shaft        | 6. Steering wheel                         |
| 3. Steering motor assembly   | 7. Driver seat airbag                     |
| 4. Steering column           |   |

6.2.4 Electrical block diagram

6.2.4.1 Schematic diagram of the electrical principle of the electric power steering system



## 6.2.5 Diagnostic information and steps

### 6.2.5.1 Diagnosis Description

Before diagnosing the fault of electric power steering system, refer to [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 6.2.5.2 Routine inspection

- Confirm customer's fault before repair.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a fault, such as:
  - Check whether the tires are eccentrically worn.
  - Check the steering gear for signs of collision damage.
  - Check whether the suspension parts are deformed by collision.
  - Whether the tightening bolts of the movable coupling head of the electric power steering column assembly shaft are loose, whether the fixing bolts on the mounting bracket of the electric power steering strut assembly are loose, and whether there are any removal marks on the surface of the torque mark and the nut.

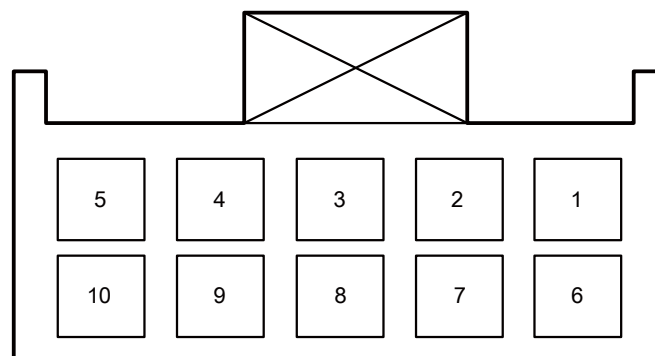
Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 6.2.5.3 List of terminals of electric power steering system

#### IP35 EPS module harness connector

#### IP35 EPS module harness connector

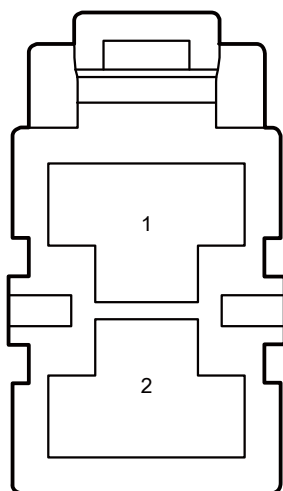


GE06-1221d

Terminal No.	Terminal name	Terminal description
1	IG1 power supply	ACC/ON/START power supply of EPS module
2	CS CAN-H	Chassis CAN high line
3	-	-
4	CS CAN-L	Chassis CAN low line
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-

### CA22 EPS power supply harness connector

#### CA22 EPS power harness connector



GE06-1222d

Terminal No.	Terminal name	Terminal description
1	B+Power supply	Battery power supply of EPS module
2	Ground connection	Grounded circuit of EPS module

#### 6.2.5.4 Fault symptom table

Symptom	Possibility and cause	Measures
EPS power failure	1. Battery	Refer to <a href="#">EPS power failure</a>
	2. Fuse	
	3. Harness and connector	

Symptom	Possibility and cause	Measures
	4.EPS	
EPS communication fault	1. Battery	Refer to <a href="#">EPS communication fault</a>
	2. Fuse	
	3. Harness and connector	
	4. Diagnostic interface	
	5.EPS	
Internal fault of EPS	1.EPS	Refer to <a href="#">Internal failure of EPS</a>
EPS motor fault	1. Harness and connector	Refer to <a href="#">EPS motor faults</a>
	2. EPS motor	
	3.EPS	

### 6.2.5.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller voltage is low.	Refer to <a href="#">EPS power failure</a>
U300617	Controller voltage is high.	
U007300	CAN bus switch-off fault	Refer to <a href="#">EPS communication fault</a>
U012187	Loss of communication with ABS/ESC node	
U015587	Loss of communication with IPK node	
U111487	Loss of communication with VCU	
U120387	Loss of communication with FCS node	
U015987	Loss of communication with PAS node	
U041681	Invalid ESC node signal	
U042381	Invalid IPK node signal	
U140481	Invalid data received from VCU	
U100044	ECU RAM error	
U100246	ECU eeprom error	
U100347	External watchdog error	
C110004	ECU hardware error	
C110154	ECU abnormal shutdown/ECU software fault	
C110E16	Power invalidation due to too low voltage.	
C110E17	Power invalidation due to too high voltage.	
C110F97	Torque sensor signal channel combination fault	
C110F49	Torque sensor internal fault	
C110F02	Torque sensor index signal fault	



Diagnostic Trouble Code	Description	Fault location/elimination method	
C111061	Overflow in software calculation or calibrated data check error of torque sensor		
C111129	Steering wheel angle signal is invalid		
C111125	Steering wheel angle signal is not true		
C111146	Calibration error of the steering wheel angle		
C111104	Initialization error of the steering wheel angle		
C111500	The hardware executes accidental restart		
C111602	Error in communication with SPI		
C111707	Due to excessive machine noise, there is an excessive power density or a reduction in power caused by excessive friction compensation.		
C111801	Fault for related circuit module of internal power of ECU		
C111941	ECU flashing check error		
C111A42	ECU eeprom layout or check error		
C111B61	ECU Calculation failure /ECU calculation failure		
C111C98	Power reduction due too high temperature of ECU		
C111228	Fault of position sensor of the motor rotor		Refer to <a href="#">EPS motor faults</a>
C111307	Fault of motor or motor-related drive circuit		
C111403	Motor control goes wrong		

### 6.2.5.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 6.2.5.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 6.2.5.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Mileage at last fault	0-999999	Km
4	Torque output ratio	0-100	%
5	Steering wheel torque	-328-327	Nm

### 6.2.5.9 Internal failure of EPS

#### 1. DTC description:

DTC	Trouble description
U100044	ECU RAM error
U100246	ECU eeprom error
U100347	External watchdog error
C110004	ECU hardware error
C110154	ECU abnormal shutdown/ECU software fault
C110E16	Power invalidation due to too low voltage.
C110E17	Power invalidation due to too high voltage.
C110F97	Torque sensor signal channel combination fault
C110F49	Torque sensor internal fault
C110F02	Torque sensor index signal fault
C111061	Overflow in software calculation or calibrated data check error of torque sensor
C111129	Steering wheel angle signal is invalid
C111125	Steering wheel angle signal is not true
C111146	Calibration error of the steering wheel angle

DTC	Trouble description
C111104	Initialization error of the steering wheel angle
C111500	The hardware executes accidental restart
C111602	Error in communication with SPI
C111707	Due to excessive machine noise, there is an excessive power density or a reduction in power caused by excessive friction compensation.
C111801	Fault for related circuit module of internal power of ECU
C111941	ECU flashing check error
C111A42	ECU eeprom layout or check error
C111B61	ECU Calculation failure /ECU calculation failure
C111C98	Power reduction due too high temperature of ECU

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	RAM inspection invalidation	1. DTCs enabled 2.IGN ON	EPS
U100246	eeprom configuration or reading or writing error		
U100347	Watchdog test is failed		
C110004	Error in ECU self-check, module transfer ADC and integrated circuit ASIC or register		
C110154	Ignition line is switched off abnormally, battery voltage is shut off, etc.	1. Ignition lasts for 1 seconds 2. Diagnostic trouble code (DTC) is enabled	
C110E16	The battery voltage has been lower than 6.5V for 20ms.		
C110E17	The battery voltage has been higher than 18V for 20ms.	1. DTCs enabled 2.IGN ON	
C110F97	Torque sensor is damaged. Signals A and B are out of range (0.15 V~4.85 V). Or difference between two signals is too big (more than 100Nm)		
C110F49	The torque sensor data is not true when the equipment is starting. The signal value of torque sensor is less than 3% (0.15V) of power supply value.		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C110F02	<ol style="list-style-type: none"> <li>1. Combined with the internal error of torque sensor</li> <li>2. If not, it is detected that the index signal voltage is too high, too low, short circuit, open circuit</li> </ol>		
C111061	<ol style="list-style-type: none"> <li>1. There is overflow during the software calculation process</li> <li>2. The check value stored in torque sensor does not match with the check value based on actual calculation</li> </ol>		
C111129	Internal angle accuracy test is failed		
C111125	Internal angle is not true and steering angle signal is overrun		
C111146	Calibrated angle value is lost or incorrect. Correct value (-7°, 7°). Values out of the range are incorrect. (for reference only)		
C111104	Angle initialization value is lost or incorrect		
C111500	<ol style="list-style-type: none"> <li>1. External RESET signal is reset</li> <li>2. Watchdog is overflowed; overflow value 65535 (for reference only)</li> <li>3. Time monitoring is reset</li> <li>4. Low voltage indication is reset</li> <li>5. Software is reset</li> <li>6. Safety guard is reset</li> </ol>		
C111602	<ol style="list-style-type: none"> <li>1. SPI communication is time-out or invalid</li> <li>2. Synchronization error</li> </ol>		
C111707	Excessive machine noise, excessive power density or friction compensation		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C111801	Internal voltage of monitor is incorrect. The voltage is 3.3V (for reference only)		
C111941	Wrong storage area is detected in flashing test		
C111A42	There is incorrect eeprom layout, or invalid data in Nvshare		
C111B61	Internal calculation fault		
C111C98	PCB or power output circuit temperature is out of range. Temperature is out of range: > 85°C (for reference only)		

## 3. Diagnosis steps

## Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPS module for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and set the EPS module.
--------	-----------------------------------

- A. Reprogram and set the EPS module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the EPS
--------	-----------------

- A. Check the EPS power supply and grounding harness. Refer to [EPS power failure](#)
- B. Replace the EPS Refer to [Replacement of EPS](#)

Next Step

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6	System is normal.
--------	-------------------

### 6.2.5.10 EPS power failure

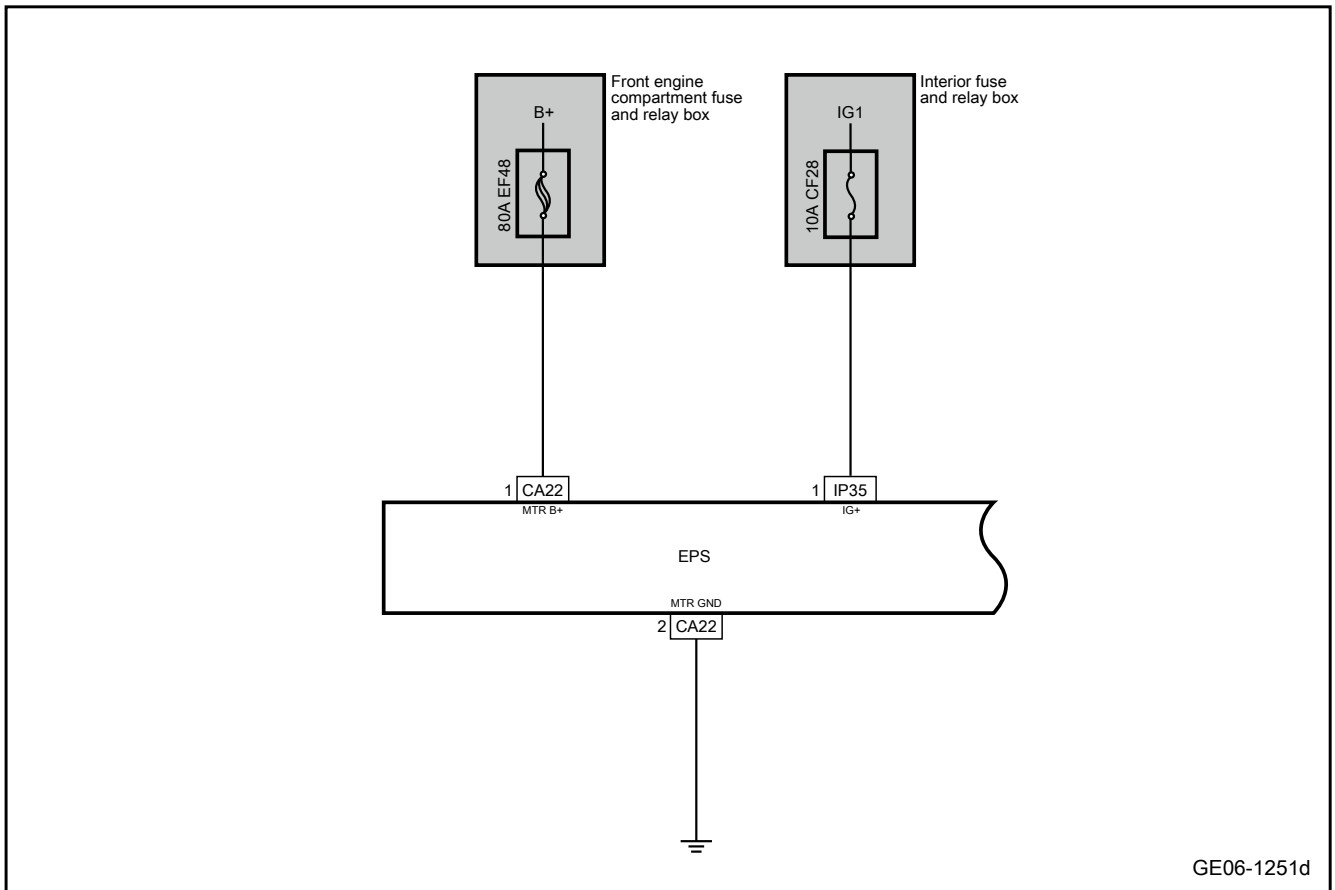
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is low.
U300617	Controller voltage is high.

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage has been lower than 9V for 1s.	1. Ignition lasts for 1 seconds 2. Diagnostic trouble code (DTC) is enabled	1. Battery 2. Circuit 3. Fuse 4. EPS
U300617	The battery voltage has been higher than 16V for 1s.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the EPS for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF28 and check whether the fuse CF28 is blown.  
Rated fuse capacity: 10A
- C. Pull out the fuse EF48 of the front engine bay. Check whether the fuse EF48 is blown.  
Rated fuse capacity: 80A

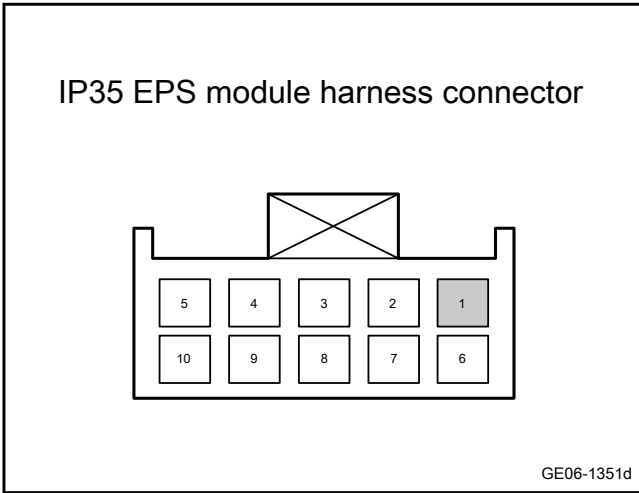
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

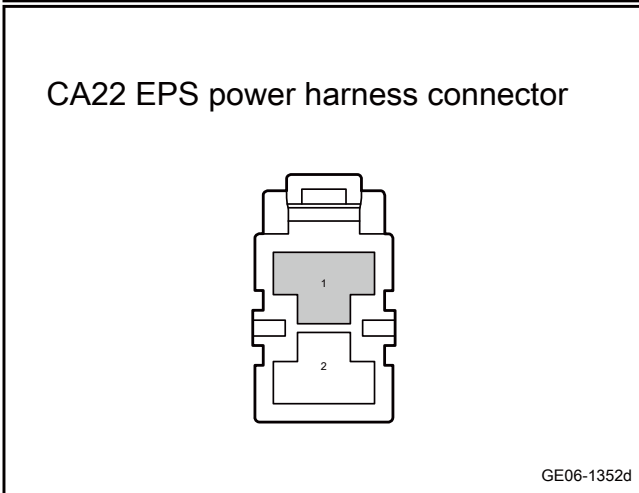
Step 4 | Check whether the ECM module voltage is normal.





- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPS module harness connector IP35.
- C. Disconnect the EPS module harness connector CA22.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP35(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA22(1)		



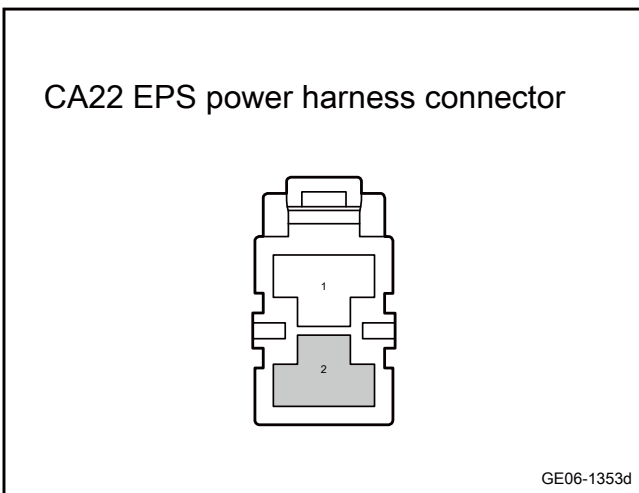
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding harness of EPS module is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the EPS module harness connector CA22.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA22(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the EPS
--------	-----------------

A. Replace the EPS Refer to [Replacement of EPS](#)

Next Step
-----------

Step 7	Reprogram and reset the EPS.
--------	------------------------------

- A. Reprogram and set the EPS Refer to the Programming and setting of each module of the complete vehicle
- B. Confirm whether the system is normal.

Yes
-----

System is normal.
-------------------

No
----

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes
-----

Diagnose according to the output trouble code.
--

No
----

Step 9	System is normal.
--------	-------------------

### 6.2.5.11 EPS communication fault

1. DTC description:

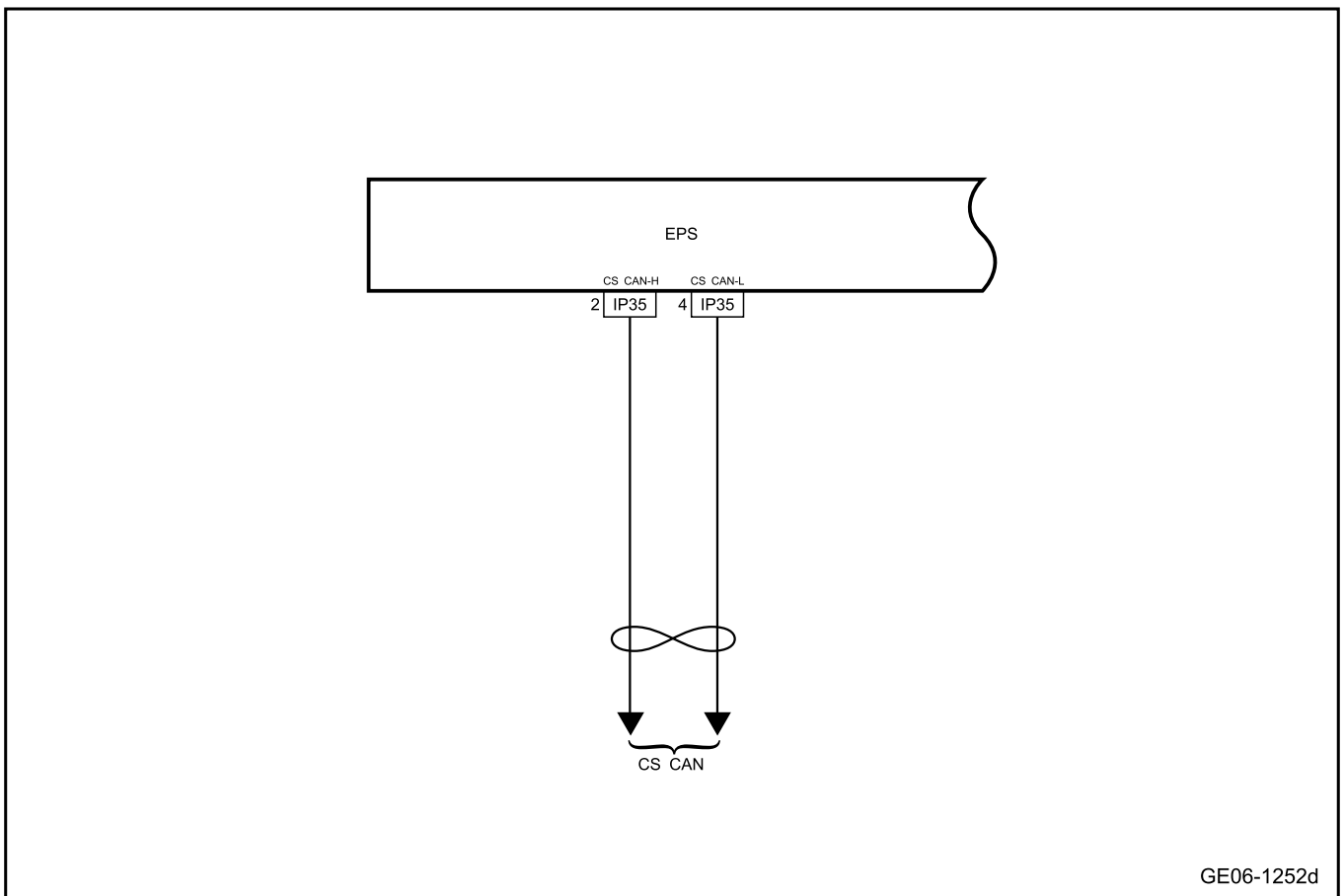
Diagnostic Trouble Code	Description
U007300	CAN bus switch-off fault
U012187	Loss of communication with ABS/ESC node
U015587	Loss of communication with IPK node
U111487	Loss of communication with VCU
U120387	Loss of communication with FCS node
U015987	Loss of communication with PAS node
U041681	Invalid ESC node signal
U042381	Invalid IPK node signal
U140481	Invalid data received from VCU

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus is detected to be off for 1s	1. CAN bus wakeup 2.IGN ON 3. The voltage is within 9V-16V 4. DTCs enabling	1. Circuit 2.EPS 3. Diagnostic interface
U012187	The message ESC_STATUS (0x125) has been not received for 250 milliseconds (range: 225ms-275ms)	1. Ignition lasts for 1 seconds 2. The power supply voltage is 6V-16V 3. No bus disconnection 4. Diagnostic trouble code (DTC) is enabled	
U015587	The message IPK_STS (0x26D) has been not received for 500 milliseconds (range: 450 milliseconds-550 milliseconds)		
U111487	The message VCU_ModeControl (0x165) has been not received for 250 milliseconds (range: 225ms-275ms)		
U120387	The message 'Future Combat System' alert status (0x1B0) has been not received for 250 milliseconds (range: 225ms-275ms)		
U015987	The message PAS_APA_Status (0x191) has been not received for 250 milliseconds (range: 225ms-275ms)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041681	ESCRRWheelSpeedInvalid is equal to invalid (0x1) or the value of ESC_front wheel speed kPh_AliveCounter is equal to the value in the previous cycle or the value of ESC_rear wheel speed skph_AliveCounter is equal to the value in the previous cycle or ESC_front wheel speed skph_checksum The value is incorrect or the value of ESC_rear wheel speed skph_checksum is incorrect or the value of ESC_flwheelspeedkph is equal to invalid (0x1FFF) or the value of ESC_frWheelSpeedkThis is equal to invalid (0x1FF) or the value of ESCrWheelSpeedkThis is equal to invalid (0x1FF)		
U042381	The absolute value of the signal IPK_IPK t is equal to invalid within 500 milliseconds. The IPK_lpkt anemometer is invalid for more than 5000ms or the value of the signal IPK_Fail is equal to the error (0x1) for 500ms. / Signal IPK_Fail exceeds 500ms error		
U140481	The signal VCU_ModeGearDisplaySts is equal to invalid for more than 250ms The message VCU_ModeGearDisplaySts DLC is incorrect for more than 250ms	After IGN ON for 1s The voltage is within 9V-16V No bus-off occurs DTCs	

3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPS module for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the CS-CAN bus.
--------	--

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.
--

Yes

Step 4	Replace the EPS
--------	-----------------

- A. Check the EPS power supply and grounding harness. Refer to [EPS power failure](#)
- B. Replace the EPS, refer to [Replacement of EPS](#)

Next Step

Step 5	Reprogram and reset the EPS.
--------	------------------------------

- A. Reprogram and reset the EPS. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 7	System is normal.
--------	-------------------

### 6.2.5.12 EPS motor fault

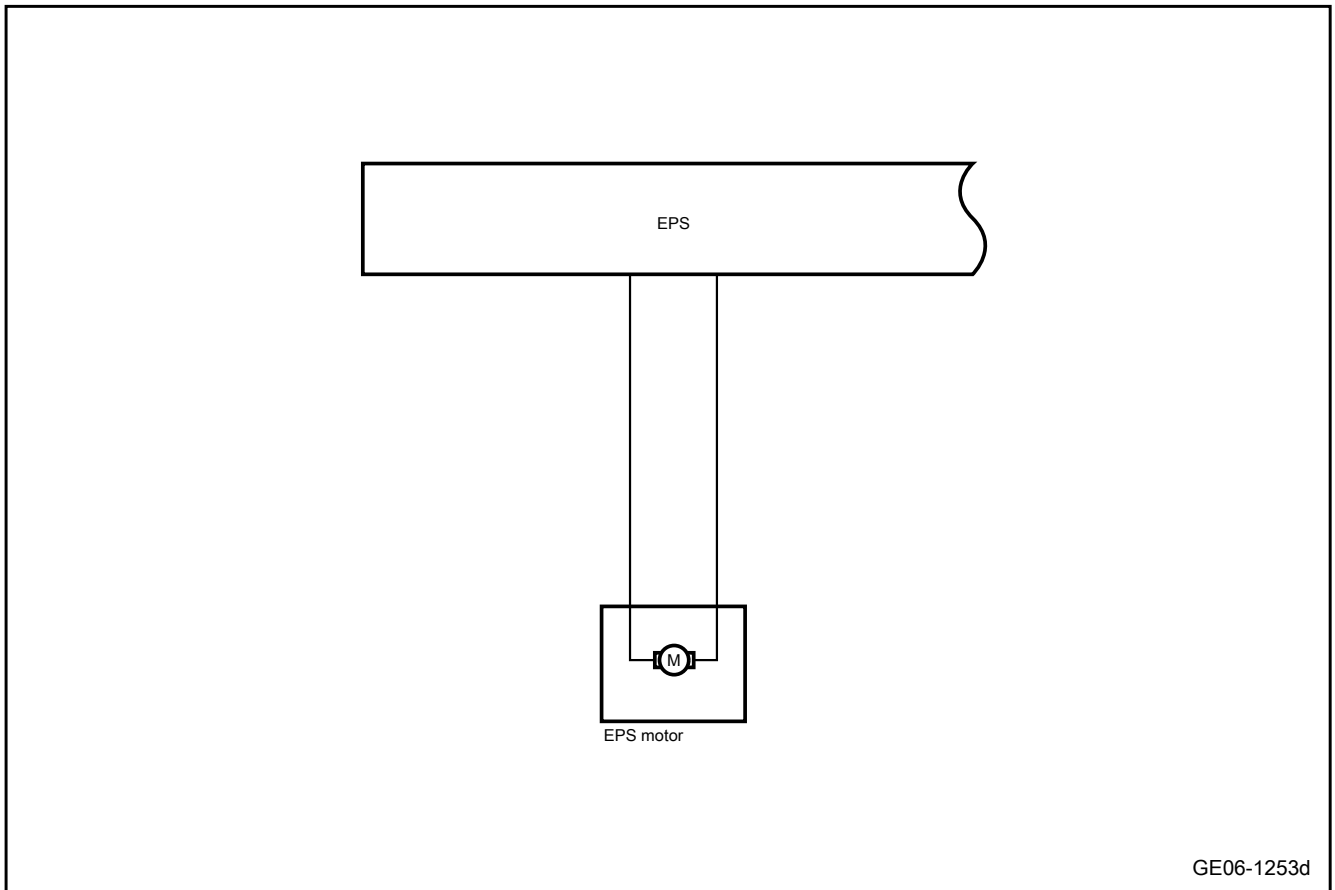
#### 1. DTC description:

Diagnostic Trouble Code	Description
C111228	Fault of position sensor of the motor rotor
C111307	Fault of motor or motor-related drive circuit
C111403	Motor control goes wrong

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C111228	1. Rotor position sensor signal goes wrong or exceeds the range 2. Calculated rotor position value is untruthful. Normal range value: 0.15 V-4.85 V (for reference only)	1. DTCs enabled 2.IGN ON	1. Circuit 2. EPS motor 3.EPS
C111307	1. Power output circuit or FET drive circuit breaks down 2.Motor power line is interrupted 3. Motor phase current deviation exceeds the range. The value of motor phase current limit is 200A (for reference only)		
C111403	PWM signal goes wrong		

#### 3. Schematic circuit diagram:



#### 4. Diagnosis steps

##### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------



- A. Check the EPS, EPS motor for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPS, EPS motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Detect whether the circuit between the start EPS motor and EPS is open.
--------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
EPS harness connector end	Disconnect the EPS motor harness connector end.	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Detect whether the circuit between the EPS motor and EPS is short to power supply.
--------	--

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
EPS harness connector end	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Detect whether the circuit between the EPS motor and EPS is short to GND.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
EPS harness connector end	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the EPS motor.

- A. Replace the EPS motor. Refer to Replacement of EPS motor
- B. Confirm whether the EPS motor is in normal operation.

Yes

System is normal.

No

Step 7	Replace the EPS
--------	-----------------

- A. Check the EPS power supply and grounding harness.  
Refer to [EPS power failure](#)
- B. Replace the EPS Refer to [Replacement of EPS](#)

Next Step

Step 8	Reprogram and reset the EPS.
--------	------------------------------

- A. Reprogram and reset the EPS. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 6.2.5.13 EPS angle calibration

#### 1. Diagnosis steps:

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the first-level menu 'Diagnosis' to scan the whole vehicle.
--------	---

Next Step

Step 3	Enter the secondary menu 'Special Routine Control'.
--------	---

Next Step

Step 4	Enter the three-level menu 'EPS Angle Calibration'.
--------	---

Next Step

Step 5	Start the diagnosis.
--------	----------------------

Next Step

Step 6	Enter extended mode.
--------	----------------------

Next Step

Step 7	Security authentication.
--------	--------------------------

Next Step

Step 8	Send the command to start the angle calibration.
--------	--

Angle calibration begins.

#### Caution

Please turn the steering wheel at least  $\pm 25^\circ$  at a speed of less than  $200^\circ/\text{s}$ , and then straighten the steering wheel.

Next Step

Step 9	Turn the steering wheel.
--------	--------------------------

#### Caution

The time reserved for turning the steering wheel is 10 seconds.

Next Step

Step 10	Request the angle calibration result.
------------	---------------------------------------

- A. XX is 03, and the diagnostic instrument displays 'Angle calibration is in progress'.
- B. XX is 04, the diagnostic instrument displays 'Angle calibration completed and successful'.
- C. XX is 05, and the diagnostic instrument displays 'Angle calibration completed but unsuccessful'.

Next Step

Step 11	Exit extended mode.
---------	---------------------

### 6.2.5.14 Erase the terminal learning status

#### 1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “EPS”.
--------	---------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “erasing the terminal learning status”.
--------	--

#### Note

Follow the system prompts.

#### Caution

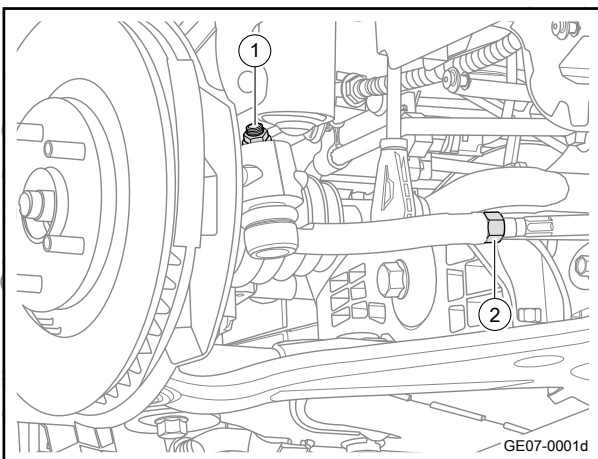
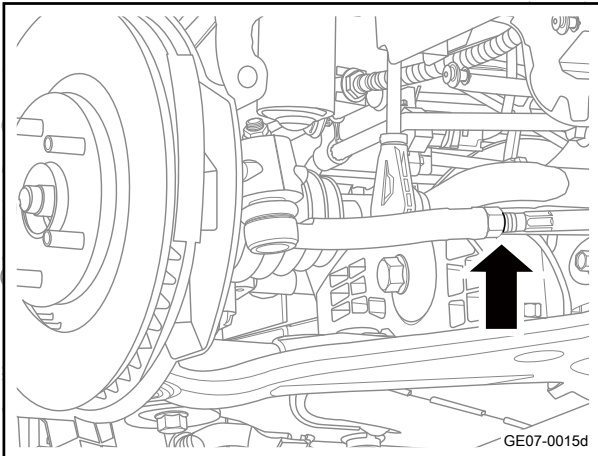
After the battery harness is plugged in or the EPS plug-in unit is plugged out, please turn the steering wheel left or right to the end position, and then straighten the steering wheel.

## 6.2.6 Removal and installation

### 6.2.6.1 Replacement of steering bar and ball joint

#### Removal procedure

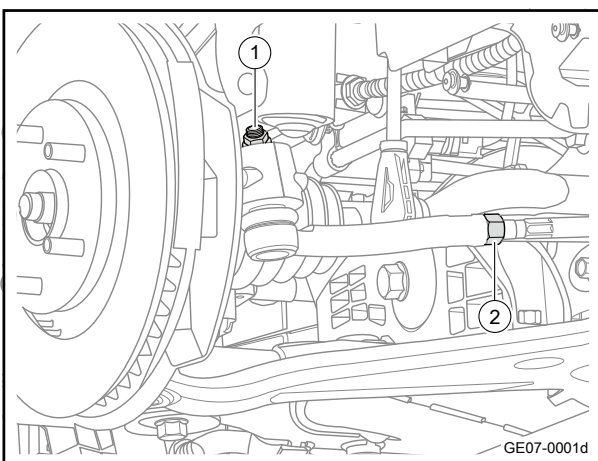
- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove wheels. Refer to [Replacement of wheels](#)
- 3 Mark the thread position on the steering tie rod to facilitate reinstallation of the adjusting nut.



- 4 Remove the steering tie rod and ball joint fixing nut 1 and disconnect the steering tie rod and ball joint from the steering knuckle.
- 5 Loosen the steering tie rod adjusting nut 2 and unscrew the steering tie rod and ball joint.

#### Installation procedure

- 1 Move the steering tie rod and ball joint to the installation position.
- 2 Install the steering tie rod and the ball joint adjusting nut 2 on the steering tie rod and adjust them to the marked position.
- 3 Install the steering tie rod and the ball joint fixing nut 1. Torque: 55N·m (metric) 40.6lb-ft (imperial system)
- 4 Install the wheel.



- 5 Lower the vehicle.
- 6 Regulate the toe-in of front wheel Refer to adjustment of front wheel toe-in

### 6.2.6.2 Replacement of electronic steering lock

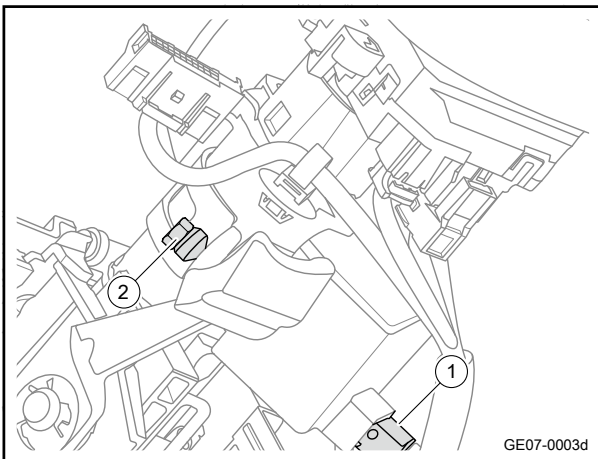
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

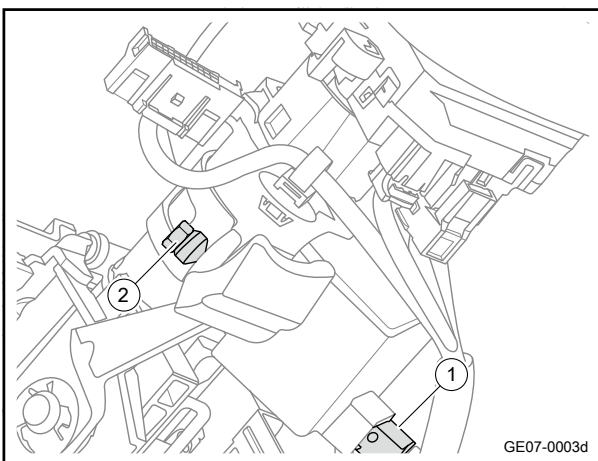
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the upper guard assembly of the steering column. Refer to [Replacement of Upper Shield Assembly of Steering Column](#)
- 3 Remove the lower guard assembly of the steering column. See [Replacement of Lower Guard Assembly of Steering Column](#)
- 4 Disconnect electric steering column lock harness connector 1.
- 5 Remove the electronic steering lock fixing bolt 2.
- 6 Remove the electronic steering lock.



#### Installation procedure

- 1 Move the electronic steering lock to the installation position.
- 2 Install the electronic steering lock fixing bolt 2.  
Torque: Nm ( metric system ) lb-ft ( imperial system )
- 3 Connect electric steering column lock harness connector 1.
- 4 Install the steering column lower shield assembly.

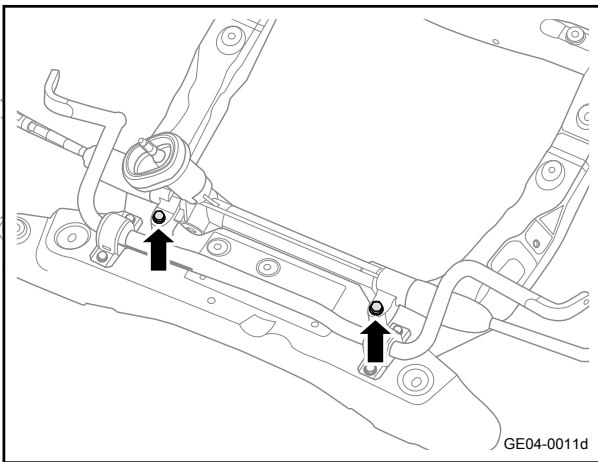


- 5 Install the upper shield of the steering column.
- 6 Connect the negative cable of battery.
- 7 Connect the diagnostic instrument, select PEPS module-special function-replace ESCL, complete ESCL learning.

### 6.2.6.3 Replacement of steering gear c/w tie rod assembly

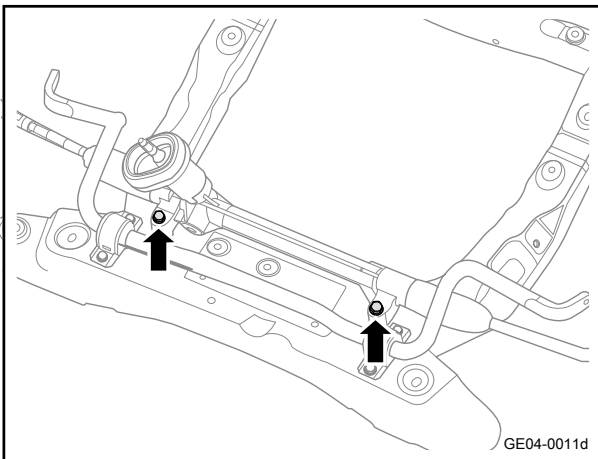
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Front subframe assembly See [Replacement of Front Subframe Assembly](#)
- 3 Disassemble the two fixing bolt-and-nut components of the steering gear with tie rod assembly.
- 4 Take off the steering gear c/w tie rod assembly.



#### Installation procedure

- 1 Move the steering gear with tie rod assembly to the installation position.
- 2 Install the two fixing bolt-and-nut components of the steering gear with tie rod assembly.  
Torque: 130N·m (metric) 96.0lb-ft (imperial system)



- 3 Install the front subframe assembly.
- 4 Lower the vehicle.
- 5 Vehicle for road test.



## 6.3 Steering wheel and steering column

### 6.3.1 Specification

#### 6.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of steering bar and ball joint	M12	50 - 60	37.0 - 44.3
Steering gear c/w tie rod assembly fixing bolt	M12×130	117 - 143	86.3 - 105.5
Fixing screw in the right lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing screw in the left lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing screw in the underside lower shield of the steering column	ST4.2×16	1 - 2	0.7 - 1.5
Fixing nut of steering wheel assembly	M12	40 - 50	29.5 - 37.0

## 6.3.2 Description and operation

### 6.3.2.1 General

#### Warning

Refer to ["Warnings regarding additional protection system"](#) in ["Warnings and Notices"](#)

#### Caution

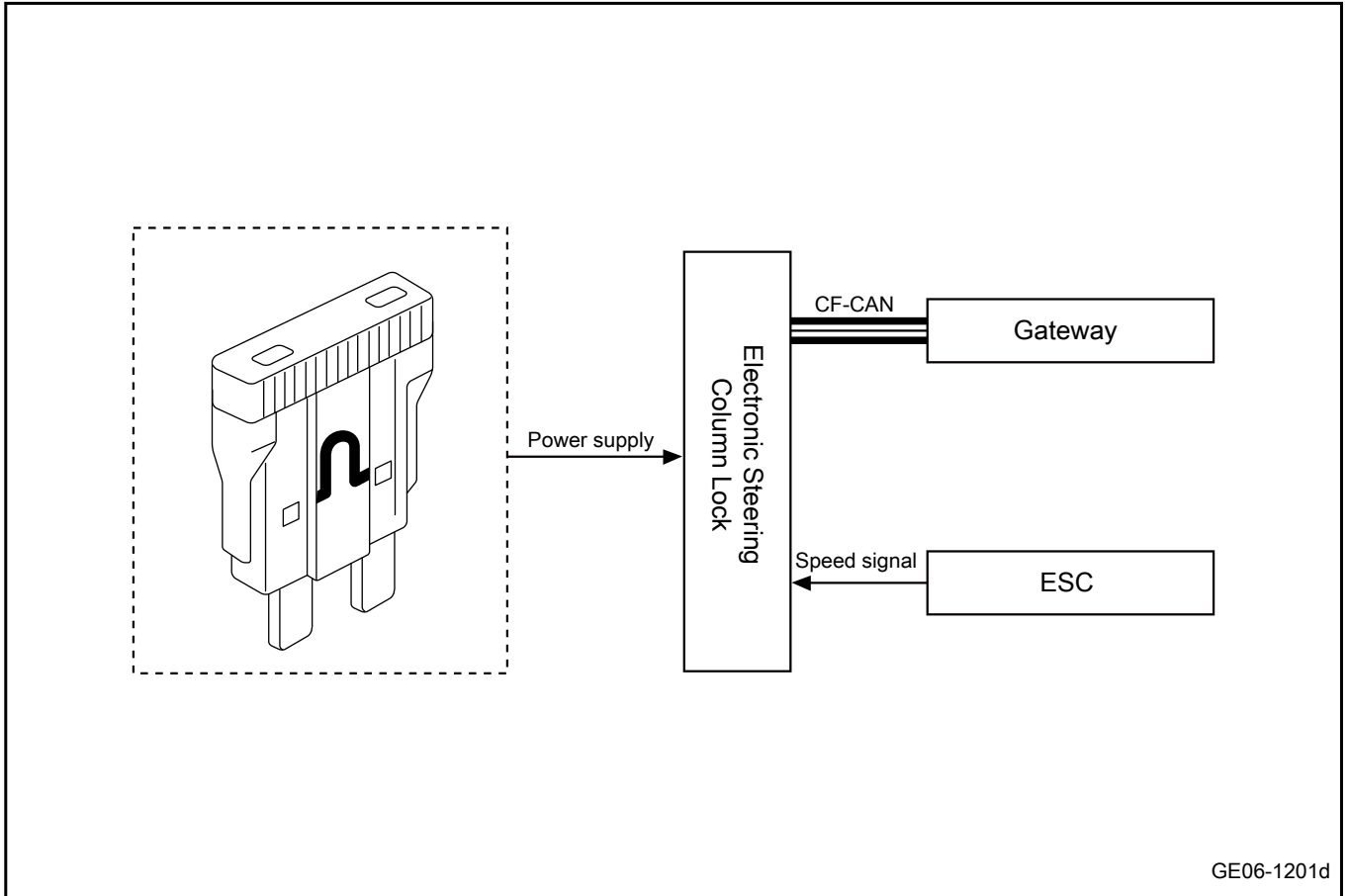
Refer to ["Note warnings regarding the steering wheel in the full turn position"](#) in ["Warnings and Notices"](#)

#### Caution

Before the combination switch and the electric power steering column are separated, the inner ring of the clock spring needs to be fixed with a strap to avoid rotation after disassembly.

6.3.3 Electrical block diagram

6.3.3.1 Schematic diagram of electrical principle of steering wheel and steering column



## 6.3.4 Diagnostic information and steps

### 6.3.4.1 Diagnosis Description

Before diagnosing ESCL faults, refer to [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

### 6.3.4.2 Routine inspection

- Confirm customer's fault before repair.

– Check electronic steering column system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

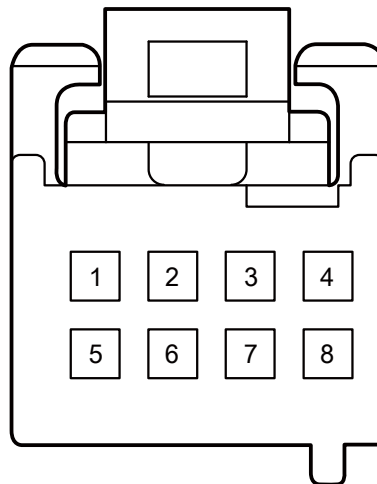
Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 6.3.4.3 ESCL terminal list

#### IP34 electric steering column lock harness connector

#### IP34 electric steering column lock harness connector



GE06-1223d

Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	Ground connection	Grounded circuit of electronic steering column lock
4	B+Power supply	Battery power supply of electronic steering column lock

Terminal No.	Terminal name	Terminal description
5	CF CAN-L	Comfort CAN low line
6	CF CAN-H	Comfort CAN high line
7	Speed signal	Speed signal input
8	IG1 power supply	ACC\ION\START power supply of electronic steering column lock

#### 6.3.4.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Power failure of electronic steering column lock	1. Harness and connector	See <a href="#">Power Failure of Electronic Steering Column Lock</a>
	2. Battery	
	3. Fuse	
	4.ESCL	
Internal faults of the electronic steering column lock	1.ESCL	See <a href="#">Internal Faults of the Electronic Steering Column Lock</a>
Communication failure of electronic steering column lock	1. Harness and connector	See <a href="#">Communication Failure of Electronic Steering Column Lock</a>
	2.ESCL	
	3. Gateway	
Vehicle speed signal failure	1. Harness and connector	See <a href="#">Vehicle Speed Signal Failure</a>
	2.ESCL	
	3.ESC	

#### 6.3.4.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U100044	RAM fault	See <a href="#">Internal Faults of the Electronic Steering Column Lock</a>
U100145	Flash failure	
U100246	EEPROM fault	
B1E1648	Real-time operating system failure	
B1E1149	Security MOS tube does not work	
B1E1264	Power signal of ON gear is inconsistent with CAN bus	
B1E1449	The voltages at both ends of the DC motor are abnormal	
B1E1471	Full axle of the driver is overloaded	
B1E1474	The DC motor did not complete the action within the specified time	
B1E1701	General electrical fault	
B1E1702	Secondary chip fault	
B1E1931	Verify that there is no signal	
B1E1962	Verification and check failure	
B1E1549	Hall sensor fault	
B1E2129	VSO signal invalid	

Diagnostic Trouble Code	Description	Fault location/elimination method
B1E2126	VSO_HW and WSO_CAN are inconsistent	
U007300	CAN bus off	See <a href="#">Communication Failure of Electronic Steering Column Lock</a>
U014087	Loss of communication with vehicle body controller	
U021487	Loss of communication with the keyless system module	
U241881	Message checksum error with keyless system module	
U012287	Loss of communication with the electronic stability system module.	
U241A81	Message checksum error with ESC front wheel speed	
U241B81	Message checksum error with ESC's rear wheel speed	
U015587	Communication with instrument module is lost	
U007088	CAN SBC failure	
U300616	Power supply voltage is lower than 9V	
U300617	Power supply voltage is higher than 16V	

### 6.3.4.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 6.3.4.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.

c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

## 2. Clear DTC

a. Connect the fault diagnostic apparatus to the fault diagnostic interface.

b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.

c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 6.3.4.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km

### 6.3.4.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by ESCL can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

a. Operate the start-and-stop switch to place the power in mode "OFF".

b. Connect the scan tool.

c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.

d. Select “ESCL”/“action test”.

e. Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Control locking/unlocking start	Electronic steering column lock	Unlock/lock

### 6.3.4.10 Power failure of electronic steering column lock

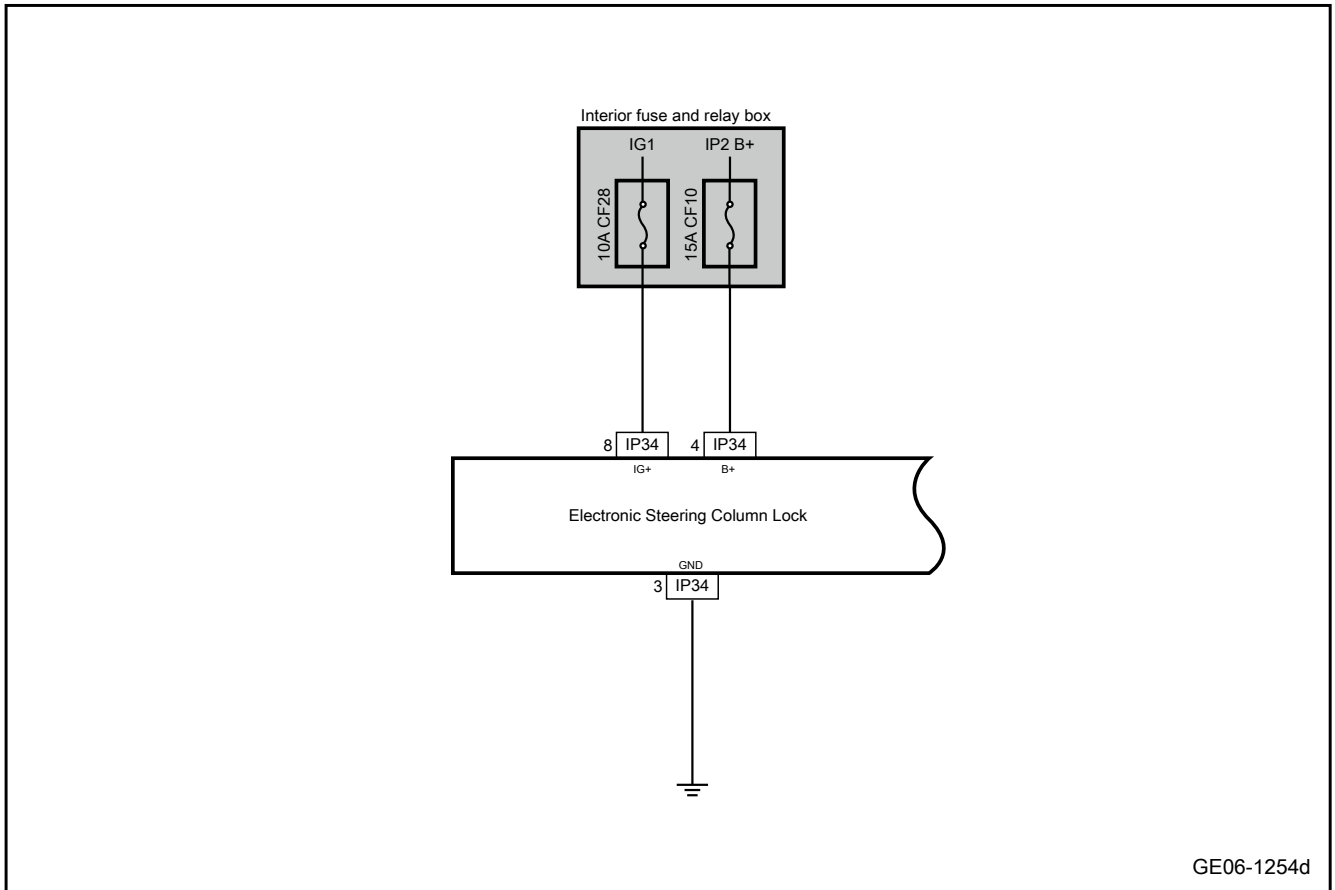
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Power supply voltage is lower than 9V
U300617	Power supply voltage is higher than 16V

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	VBATT is less than 9V, lasting for 500 milliseconds. Note: In the system test, the DTC search time of 100 milliseconds can be accepted as the deviation	1. DTC code setting is enabled	1. Battery 2. Circuit 3. Fuse 4. Electronic steering column lock
U300617	VBATT is greater than 16V, lasting for 500 milliseconds. Note: In the system test, the DTC search time of 100 milliseconds can be accepted as the deviation		

3. Schematic circuit diagram:



4. Diagnosis steps



Step 1	Primary check.
--------	----------------

- A. Check the electronic steering column lock for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic steering column lock harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF10 and check whether the fuse CF10 is blown.  
Rated fuse capacity: 15A
- C. Pull off the interior fuse CF28 and check whether the fuse CF28 is blown.  
Rated fuse capacity: 10A

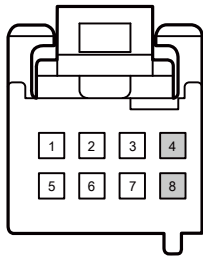
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the working voltage of the electronic steering column lock is normal.
--------	---

### IP34 electric steering column lock harness connector



GE06-1354d

- Operate the starting switch to place the power in mode "OFF".
- Disconnect the electronic steering column lock harness connector IP34.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP34(4)	Vehicle body is grounded.	Standard voltage: 11-14V
IP34(8)		

- Confirm whether the measured value meets the standard.

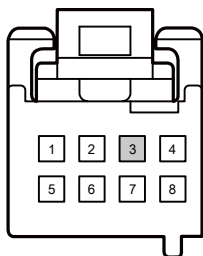
No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding harness of the electronic steering column lock is normal.

### IP34 electric steering column lock harness connector



GE06-1355d

- Operate the starting switch to place the power in mode "OFF".
- Disconnect the electronic steering column lock harness connector IP34.
- Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP34(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the electronic steering column lock.

- Replace the electronic steering column lock. See [Replacement of Electronic Steering Column Lock](#)

Next Step

**Step 7** Reprogram and reset the ESCL.

- A. Reprogram and set the ESCL Refer to the Programing and setting of each module of the complete vehicle
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 6.3.4.11 Communication failure of electronic steering column lock

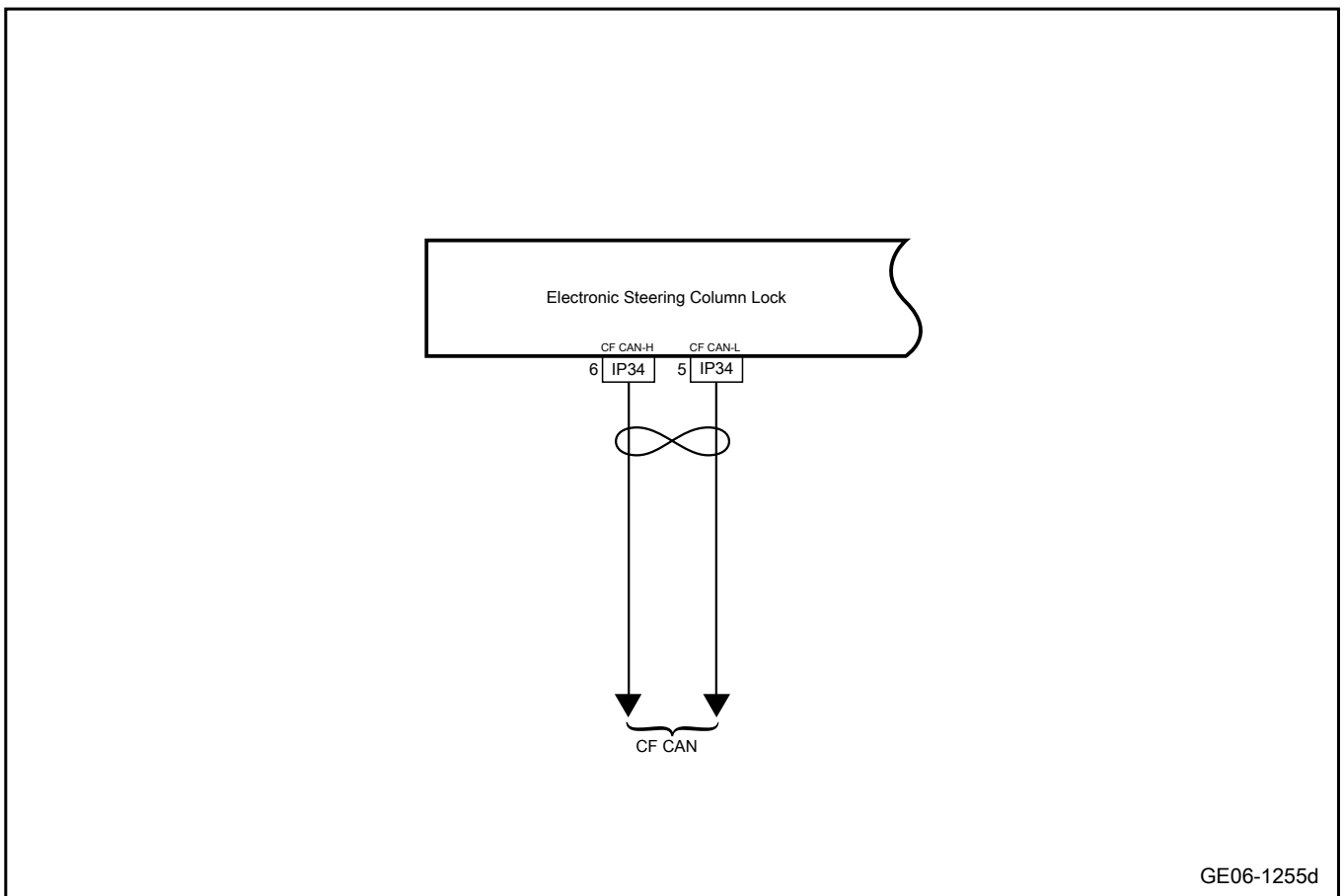
#### 1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U014087	Loss of communication with vehicle body controller
U021487	Loss of communication with the keyless system module
U241881	Message checksum error with keyless system module
U012287	Loss of communication with the electronic stability system module.
U241A81	Message checksum error with ESC front wheel speed
U241B81	Message checksum error with ESC's rear wheel speed
U015587	Communication with instrument module is lost
U007088	CAN SBC failure

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location	
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. CAN bus wakeup 2. The power supply voltage is 6V-16V	1. Circuit 2. Electronic steering column lock 3. Diagnostic interface	
U014087	Message BCM_StateUpdate (0x285) loss lasts for 500 milliseconds	1. Set DTC 2. The power supply voltage is 6V-16V 3. No bus off 4. 3s-4s ignition 5. Ignition status is "ignition".		
U021487	Message PEPS U message (0x1E2) loss lasts for 250 milliseconds			
U241881	When the checksum error is detected or the activity counter is not updated 3 times in a row			
U012287	Loss of information ESC_front wheel speed skph (0x122)/ESC_rear wheel speed skph(0x123) for 250 milliseconds Set the DTC when one of the front wheel speed gears of the electronic stability control system and the rear wheel speed gears of the electronic stability control system are lost			
U241A81	When the checksum error is detected or the activity counter is not updated 3 times in a row			
U241B81	When the checksum error is detected or the activity counter is not updated 3 times in a row			
U015587	Loss of information IPK U total odometer (0x3F1) for 5000 milliseconds			
U007088	CAN-SBC chip loses communication with MCU			1. Set DTC 2. The power supply voltage is 6V-16V

3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the electronic steering column lock for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic steering column lock harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the CF-CAN bus.

- A. Perform CF CAN network integrity check, refer to [CF CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN network is normal.

No

Check or repair the CF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Replace the electronic steering column lock.

- A. Check the power supply and grounding harness of the electronic steering column lock. See [Power Failure of Electronic Steering Column Lock](#)
- B. To replace the electronic steering column lock, see [Replacement of Electronic Steering Column Lock](#)

Next Step

Step 5 Reprogram and reset the electronic steering column lock.

- A. Reprogram and reset the electronic steering column lock. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 6.3.4.12 Internal faults of the electronic steering column lock

#### 1. DTC description:

DTC	Trouble description
U100044	RAM fault
U100145	Flash failure
U100246	EEPROM fault
B1E1648	Real-time operating system failure
B1E1149	Security MOS tube does not work
B1E1264	Power signal of ON gear is inconsistent with CAN bus
B1E1449	The voltages at both ends of the DC motor are abnormal
B1E1471	Full axle of the driver is overloaded
B1E1474	The DC motor did not complete the action within the specified time
B1E1701	General electrical fault
B1E1702	Secondary chip fault
B1E1931	Verify that there is no signal
B1E1962	Verification and check failure
B1E1549	Hall sensor fault
B1E2129	VSO signal invalid
B1E2126	VSO_HW and WSO_CAN are inconsistent

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	RAM test failed	1. Set DTC 2. Power supply voltage is 9V-16V.	1. Electronic steering column lock
U100145	Flash test failed		
U100246	EEPROM check failure		
B1E1648	1. RTOS detection invalid 2. Preset the completion time of each task of RTOS. Once a certain task exceeds the preset value, set DTC		
B1E1149	Security MOS tube does not work		
B1E1264	The ON gear power signal is inconsistent with the CAN bus for 10 consecutive times		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location	
B1E1449	Before executing the action, the motor terminal voltage exceeds the normal set value			
B1E1471	Abnormal full bridge status feedback during execution			
B1E1474	The DC motor did not complete the action within the execution time			
B1E1701	A general electrical fault has occurred			
B1E1702	SMP failure occurred			
B1E1931	Verify that no signal occurs			
B1E1962	An authentication comparison failure occurred			
B1E1549	1. The unlocking sensor does not work 2. Unlocking sensor status does not match			
B1E2129	High potential			1. Set DTC 2. Power supply voltage is 9V-16V. 3.(After ignition 1 is turned on for 1800mS) or within 30s after the key is turned off
B1E2126	VSO_HW-wheel speed kph   >12Km/h			

### 3. Diagnosis steps

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes



Step 2	Primary check.
--------	----------------

- A. Check the electronic steering column lock for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic steering column lock harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the electronic steering column lock.
--------	--

- A. Reprogram and reset the electronic steering column lock. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the electronic steering column lock.
--------	--

- A. Check the power supply and grounding harness of the electronic steering column lock. See [Power Failure of Electronic Steering Column Lock](#)
- B. Replace the electronic steering column lock. See [Replacement of Electronic Steering Column Lock](#)

Next Step

Step 5	Reprogram and reset the electronic steering column lock.
--------	--

- A. Reprogram and reset the electronic steering column lock. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

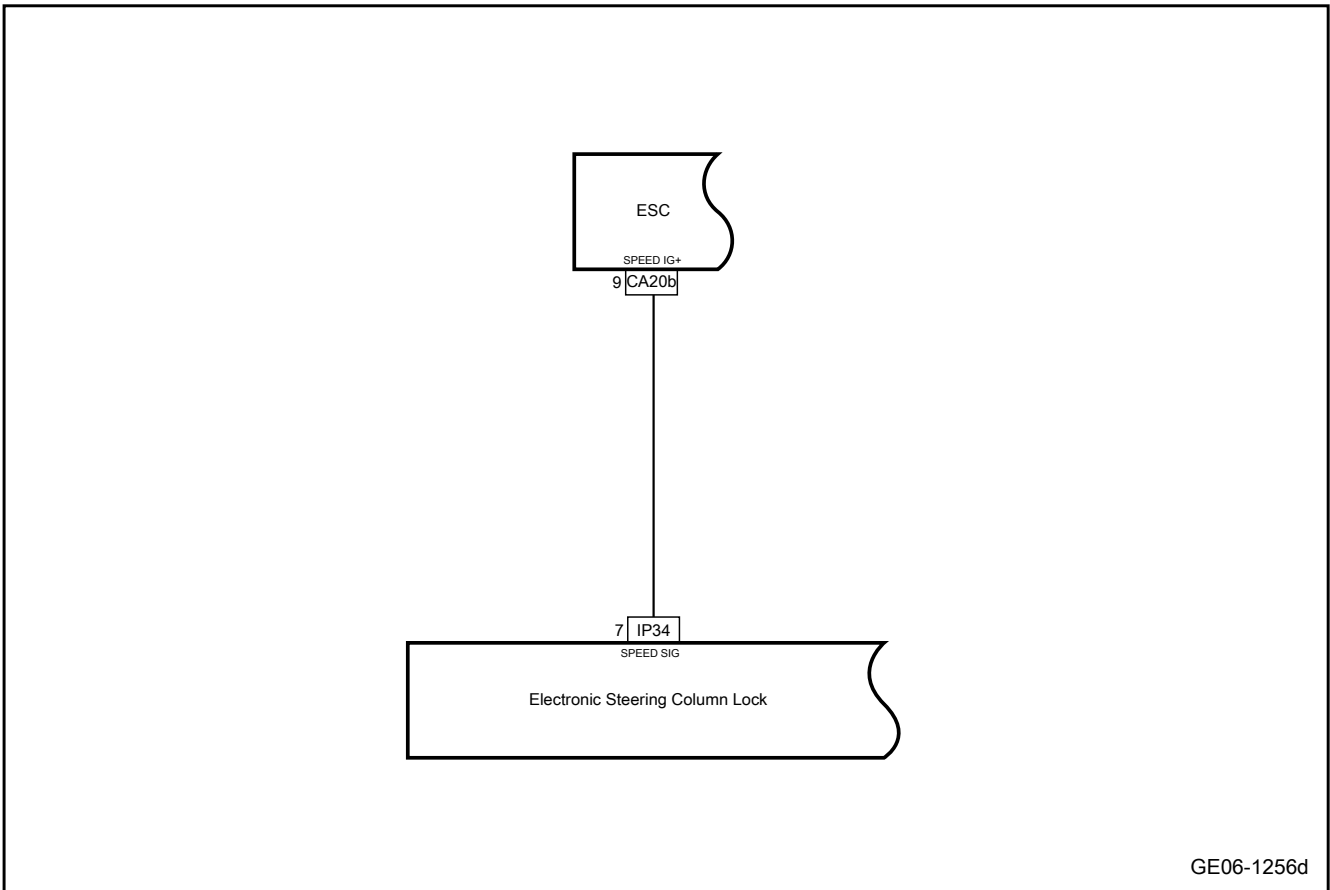
Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 6.3.4.13 Vehicle speed signal failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

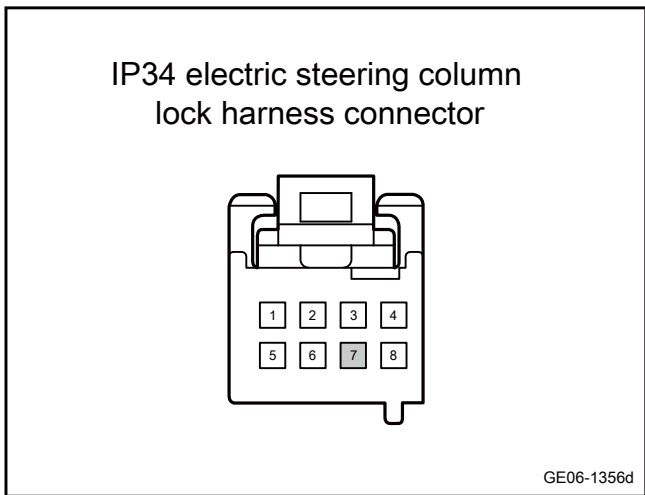
- A. Check the electronic steering column lock and ESC for signs of damage, deformation, stain, loosening, etc.
- B. Check the electronic steering column lock and ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

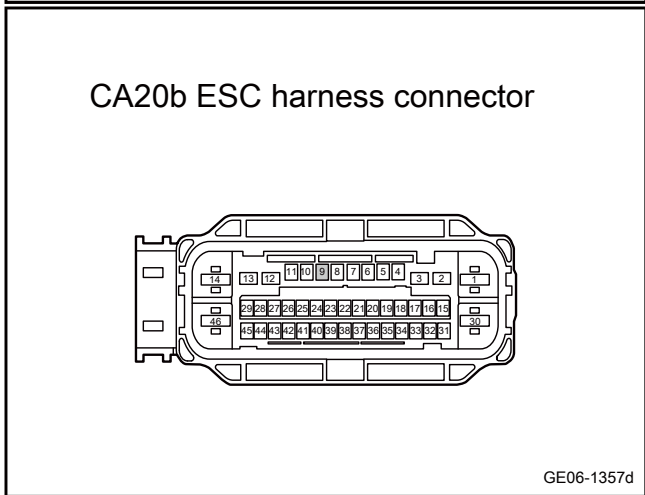
Yes

Step 2 Check whether the circuit between the electronic steering column lock and the ESC is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the electronic steering column lock harness connector IP34.
- C. Disconnect the ESC harness connector CA20b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP34(7)	CA20b(9)	Standard resistance: less than 1Ω
IP34(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher



- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP34(7)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the electronic steering column lock.

- A. To replace the electronic steering column lock, see [Replacement of Electronic Steering Column Lock](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 | Replace the ESC

- A. Replace the ESC, refer to [Replacement of EMC](#)

Next Step

Step 5 | Reprogram and reset the ESC.

- A. Reprogram and reset the ESC. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6 | System is normal.

### 6.3.5 Removal and installation

#### 6.3.5.1 Replacement of Upper Shield Assembly of Steering Column

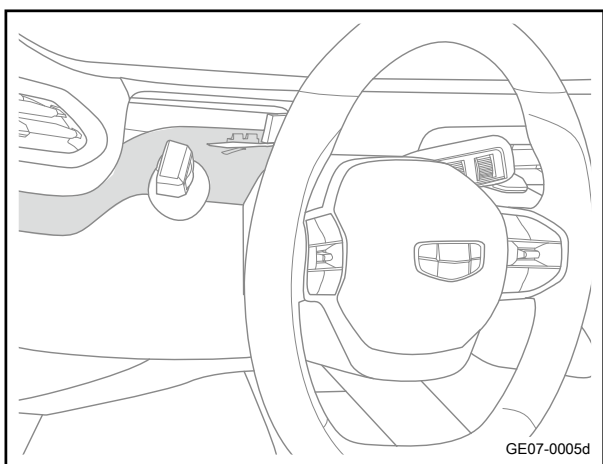
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

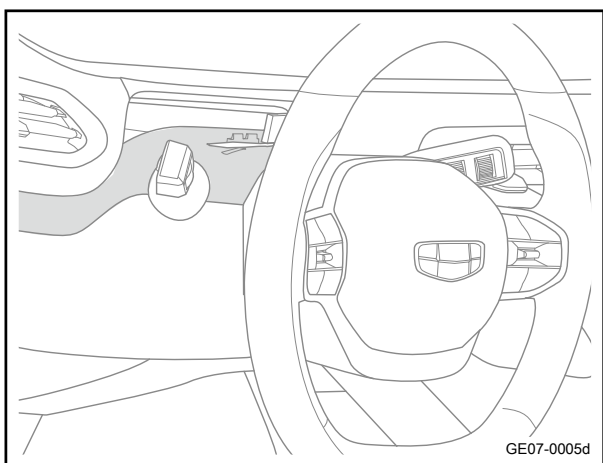
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the instrument cluster assembly. Refer to [Replacement of IP cluster Assembly](#)
- 3 Remove the upper shield of the steering column.



##### Installation procedure

- 1 Move the upper guard assembly of the steering column to the installation position.
- 2 Install the upper shield of the steering column.

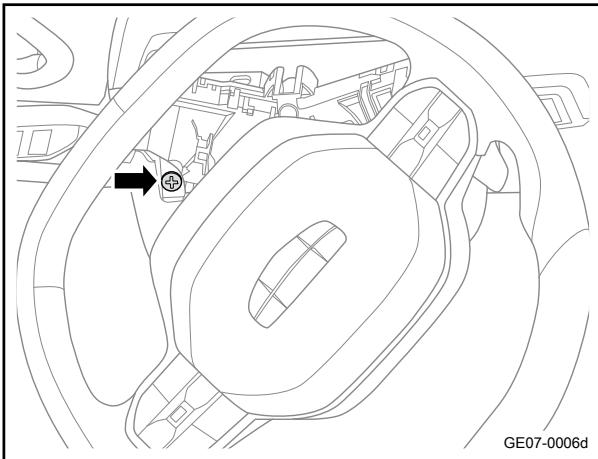


- 3 Install the instrument cluster assembly.
- 4 Connect the negative cable of battery.

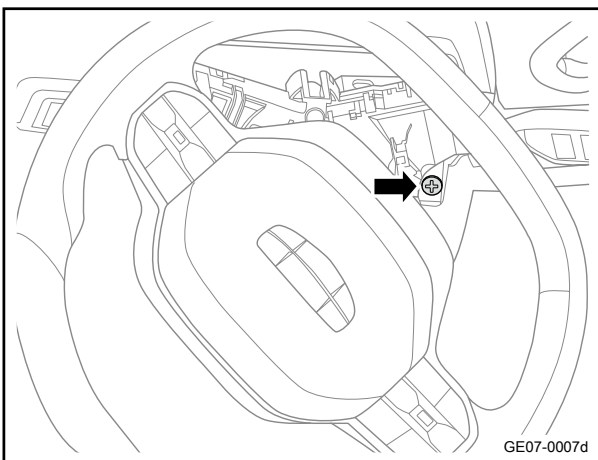
#### 6.3.5.2 Replacement of the lower shield of the steering column

##### Removal procedure

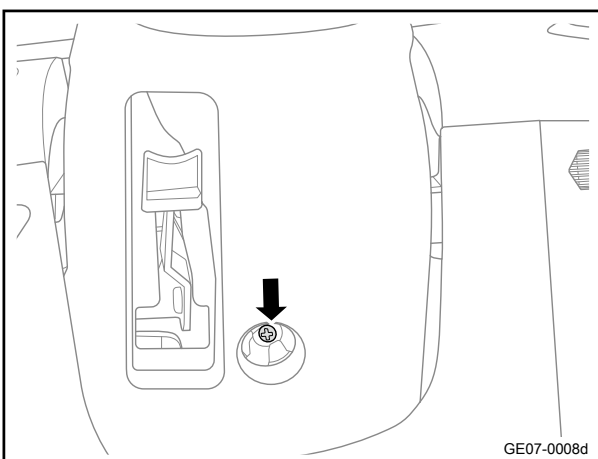
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the upper guard assembly of the steering column. See [Upper Guard Assembly of Steering Column](#)
- 3 Connect the negative cable of battery.
- 4 Turn the steering wheel to a suitable position, and remove the 1 fixing screw on the left side of the lower guard of the steering column.



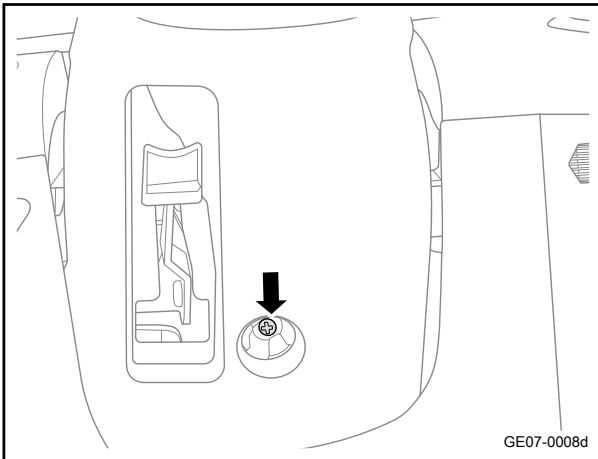
- 5 Turn the steering wheel to a suitable position, and remove the 1 fixing screw on the right side of the lower guard of the steering column.



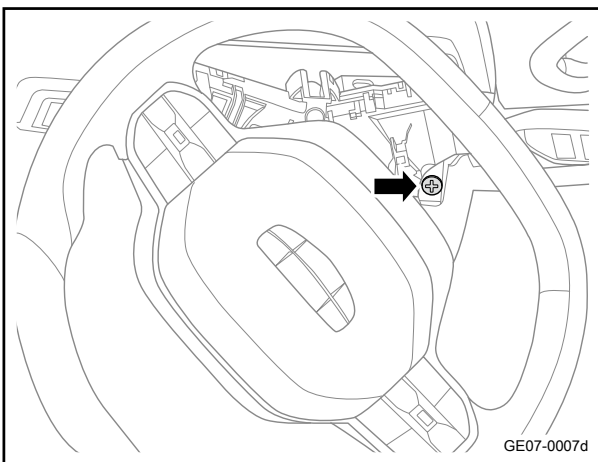
- 6 Remove the 1 fixing screw on the lower side of the lower guard of the steering column.
- 7 Remove the lower shield of the steering column.



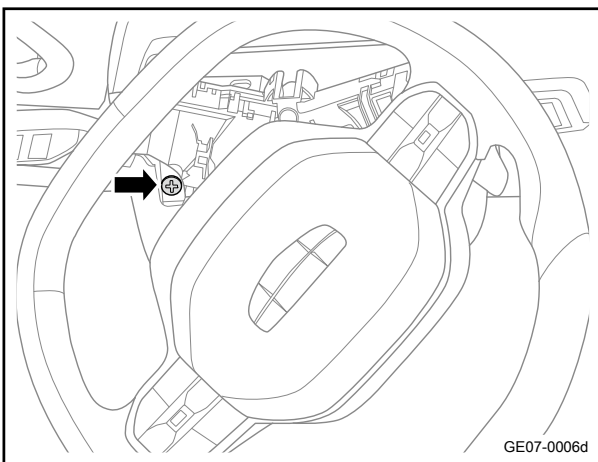
## Installation procedure



- 1 Move the lower guard assembly of steering column to the installation position.
- 2 Install 1 fixing screw on the lower side of the steering column lower guard.  
Torque 1.5N·m (metric system) 1.1lb-ft (imperial system)



- 3 Turn the steering wheel to a proper position, and install a fixing screw on the right side of the lower guard of the steering column.  
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)



- 4 Turn the steering wheel to a suitable position, and install a fixing screw on the left side of the lower guard of the steering column.  
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

- 5 Disconnect the negative cable of battery.
- 6 Install the upper shield of the steering column.
- 7 Connect the negative cable of battery.

### 6.3.5.3 Replacement of steering wheel assembly

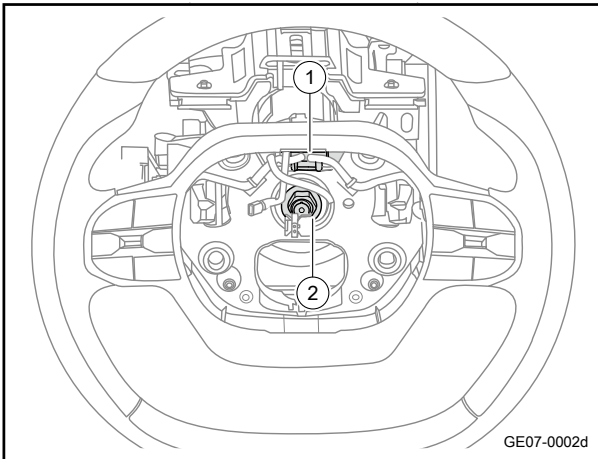
## Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

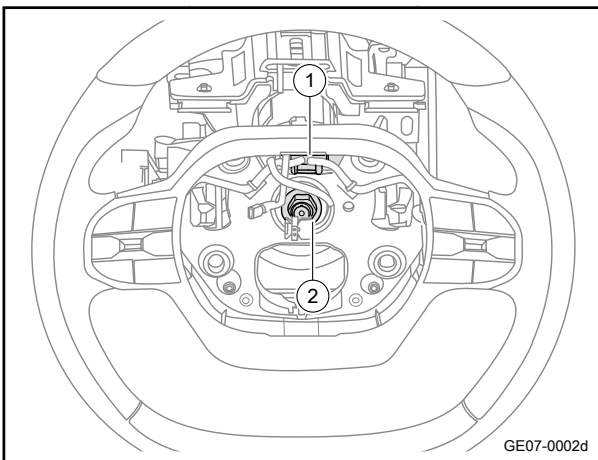
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the driver's airbag. Refer to [Replacement of driver's airbag](#)
- 3 Mark the corresponding positions of the steering wheel and the steering column, and disconnect the wiring harness connector 1 of steering wheel assembly.
- 4 Remove 1 fixing nut 2 of steering wheel assembly.
- 5 Remove the steering wheel assembly.



#### Installation procedure

- 1 Move the steering wheel assembly to the installation position.
- 2 Install 1 fixing nut 2 of the steering wheel assembly.  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)
- 3 Connect the wiring harness connector 1 of the steering wheel assembly according to the marked positions.



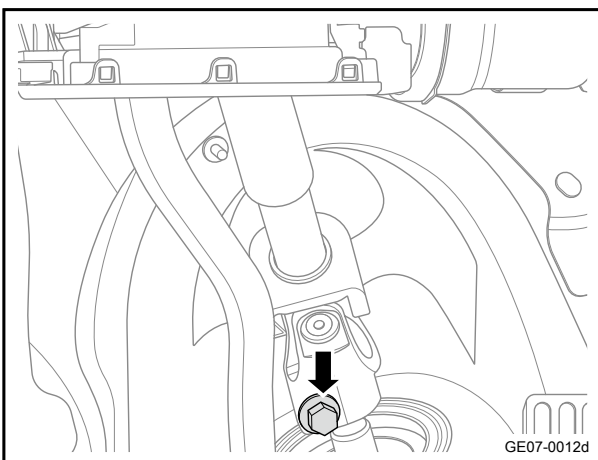
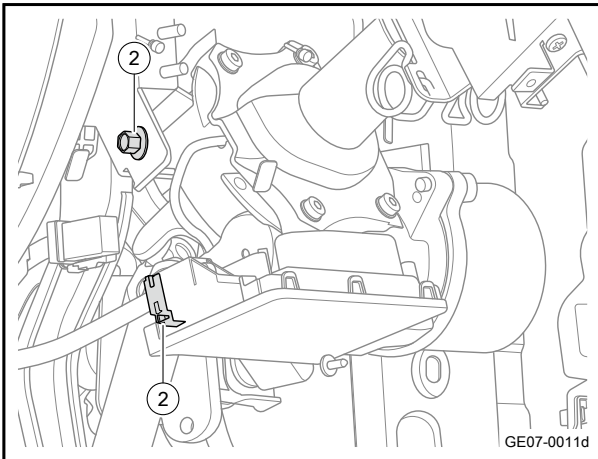
- 4 Install driver airbag.
- 5 Connect the negative cable of battery.

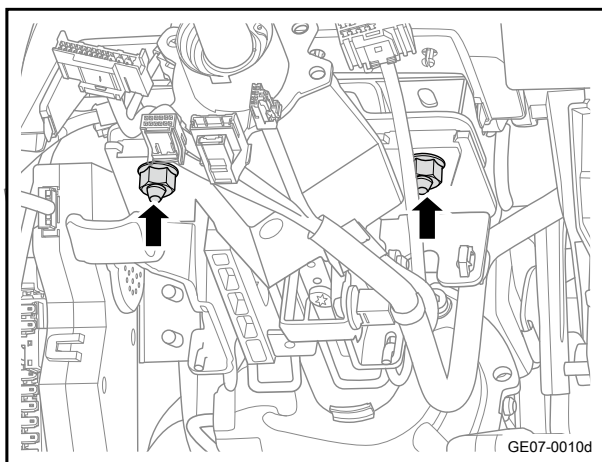
### 6.3.5.4 Replacement of electric power steering column assembly

#### Removal procedure



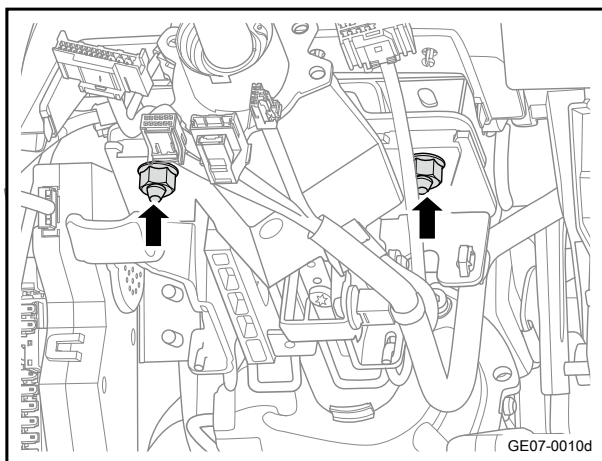
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the lower shield of the steering column. Refer to [Replacement of the lower shield of the steering column](#)
- 3 Remove the clock spring Refer to [Replacement of clock spring](#)
- 4 Remove the combined switch. Refer to [Replacement of combination switch](#)
- 5 Remove the trim panel assembly on the left side of the dashboard. See [Replacement of the Left Trim Panel Assembly of the Dashboard](#)
- 6 Remove the left lower fender apron of the dashboard. See [Replacement of Lower Guard Assembly of the Dashboard](#)
- 7 Disconnect the electric steering column harness connector 1.
- 8 Remove the fixing bolt 2 connecting the electric power steering column and the dashboard beam.
- 9 Remove the fixing bolts of the universal joint of the intermediate shaft of the electric power steering column.



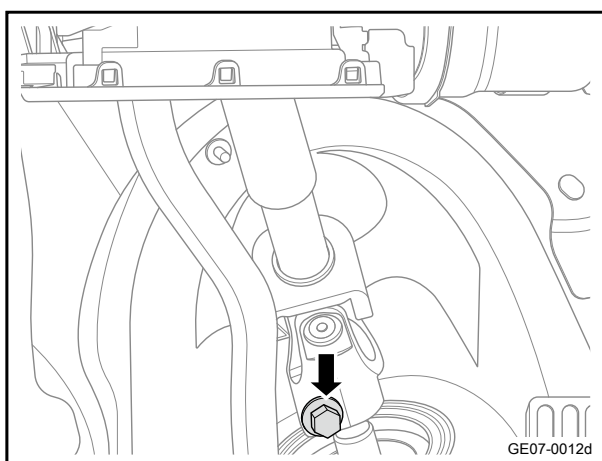


- 10 Remove the 2 fixing nuts connecting the electric power steering column and the upper part of the dashboard beam.
- 11 Take off the electric steering column assembly.

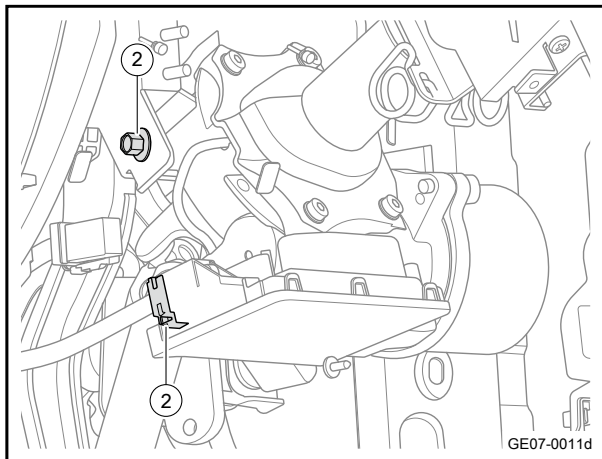
#### Installation procedure



- 1 Place the electric power steering column assembly in the installation position.
- 2 Install 2 fixing nuts connecting the electric power steering column and the upper part of the dashboard beam.  
Torque: 25N·m (metric) 18.4lb-ft (imperial system)



- 3 Install the universal joint fixing bolts of the intermediate shaft of the electric power steering column.  
Torque: 39N·m (metric) 28.8lb-ft (imperial system)



- 4 Install the fixing bolt 2 connecting the electric power steering column and the dashboard beam.  
Torque: 25N·m (metric) 18.4lb-ft (imperial system)
- 5 Remove the electric steering column harness connector 1.
  
- 6 Install the left lower fender apron of the dashboard.
- 7 Install the left trim panel of the dashboard.
- 8 Install the combination switch.
- 9 Install the clock spring.
- 10 Install the lower shield of the steering column.
- 11 Connect the negative cable of battery.



## Heating, ventilation and air conditioning system

<b>7.1 Warnings and Precautions.....</b>	<b>7-3</b>		
7.1.1 Warnings and Precautions.....	7-3		
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## 7.1 Warnings and Precautions

### 7.1.1 Warnings and Precautions

#### 7.1.1.1 Warnings and Precautions

##### Warning

Refrigerant-related work should be carried out in a well-ventilated environment, and do not breath refrigerant vapor. Inhalation of air-conditioning refrigerant R134a/R1234yf and lubrication oil vapor or mist should be avoided. Contact with them will irritate the eyes, nose and pharynx. Work in a well-ventilated area. When removing the R134a/R1234yf from the A/C system, certified maintenance equipment that meets the requirements (R134a/R1234yf regenerative equipment) should be used. In case of accidental fluid discharge from the system, the working area must be ventilated before the maintenance continues. Other health and safety information can be obtained from refrigerant and lubricant manufacturers.

##### Warning

Before repairing the electrical system, the negative cable of the battery must be disconnected, and the DC bus connector on the high-and-low voltage charging system side must be disconnected. It is forbidden to conduct welding or steam cleaning operations on or near vehicles equipped with air-conditioning pipes or components.

##### Precautions about air-conditioning refrigerants

##### Warning

1. Skin contact may cause frostbite.
2. The instructions provided by the manufacturer must be followed. While working, wear appropriate goggles and protective gloves.

##### A/C refrigerant operations to be avoided

##### Warning

1. Do not store refrigerant in places exposed to sunlight or heat sources.
2. When filling, do not put the refrigerant bottles upright, and keep their valves facing downwards.
3. Do not expose the refrigerant bottle to frost and snow.
4. Do not drop the refrigerant bottle.
5. Never discharge the refrigerant directly into the atmosphere under any circumstances.
6. Do not mix refrigerants, such as R1234yf and R12.

##### Precautions about lubricants for air conditioning system

##### Warning

It is required to use only lubricants of the types and grades specified by the compressor manufacturer. Lubricants of different types and grades must not be mixed, otherwise the compressor will be damaged. Lubrication oil is easy to absorb water, so the contact duration between lubrication oil and air should be reduced as much as possible.

##### Warning

It is forbidden to use water, corrosive solvents or flammable and explosive solvents to clean the air conditioning system. It is recommended to use cleaning agents such as R-141b and heptane.

Add lubricant in strictly according to the specified filling amount. Pay attention to the fact that lubricating oil hinders heat exchange, and excessive amount will seriously reduce the air conditioning effect; in general, there is no need to add lubricating oil, because the lubricant has been filled by the compressor manufacturer.

Lubrication oil is easy to absorb water, so the contact duration between lubrication oil and air should be reduced as much as possible.

Before filling, check the quality of the lubricant in the pipeline. If severe blackening or carbon particles is found, the entire air-conditioning system should be thoroughly cleaned and all lubricant should be replaced.

Lubricant should be filled from the compressor exhaust port before vacuuming.

## 7.2 Automatic air conditioning

### 7.2.1 Specification

#### 7.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
A/C control panel assembly fixing screw	ST4.8	1 - 2	0.7 - 1.5
Fixing screw of thermal management controller	ST4.2	1.3 - 1.7	1 - 1.3
Fixing bolt connecting compressor's air intake hose and the compressor	M8×20	20 - 28	14.8 - 20.7
Fixing bolt connecting compressor exhaust hose and the compressor	M8×20	20 - 28	14.8 - 20.7
Fixing bolt connecting the compressor exhaust hose and the condenser	M6×25	8.5 - 11.5	6.3 - 8.5
Electric compressor assembly fixing bolt	M8×95	20 - 28	14.8 - 20.7
Front fixing bolt of heater assembly bracket	M6×25	8 - 10	5.9 - 7.4
Rear fixing bolt of heater assembly bracket	M6×25	8 - 10	5.9 - 7.4
Fixing screw of heater assembly	ST4.8	2.5 - 3.5	1.8 - 2.6
Fixing nut of heater assembly earth wire	M6	8 - 10	5.9 - 7.4
Fixing bolt of heat exchanger assembly	M6×30	8 - 10	5.9 - 7.4
Fixing nut of heat exchanger assembly	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting heat exchanger highly-configured low pressure hose to heat exchanger assembly	M6×25	8 - 10	5.9 - 7.4
Fixing bolt for connecting battery water pump bracket to electric motor	M6×16	35 - 45	25.8 - 33.2
Fixing nut of four-way valve to solenoid bracket	M6	8.5 - 11.5	6.3 - 8.5



Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of on-board air intelligent control module	M6×16	5 - 7	3.7 - 5.2
Fixing nut of on-board air intelligent control module	M6	5 - 7	3.7 - 5.2
Rear air-conditioning unit assembly fixing bolt	M6×25	5 - 7	3.7 - 5.2
Blower speed control module fixing screw	M4×14	0.9 - 1.5	0.7 - 1.1
Blower speed control module fixing screw	ST4.8×13	1.2 - 1.8	0.9 - 1.3
Foot-blowing air duct fixing screw	M4×14	0.9 - 1.5	0.7 - 1.1
Fixing screw of evaporator housing	M4×14	0.9 - 1.5	0.7 - 1.1
Fixing but of electronic water pump	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly bracket	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting evaporator inlet and outlet tube assembly to compressor air intake hose	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting evaporator inlet and outlet tube assembly to condenser outlet pipe assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly bracket	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolts for connecting the highly-configured low pressure hose of the heat exchanger to the evaporator inlet and outlet tube assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt of evaporator inlet and outlet tube assembly	M6×20	8.5 - 11.5	6.3 - 8.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of heat exchanger high pressure tube assembly bracket	M6	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting the high-pressure tube assembly of the heat exchanger to the heat exchanger assembly	M6×35	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting the low-pressure hose of the heat exchanger to the heat exchanger assembly	M6×25	8.5 - 11.5	6.3 - 8.5
Fixing bolt for connecting the low-pressure hose of the heat exchanger to the evaporator inlet and outlet tube assembly	M6×25	8.5 - 11.5	6.3 - 8.5

### 7.2.1.2 Refrigeration system parameters

#### 1. Air conditioning system performance

Parts	Parameter	Item
Heater core	7500	Heating capacity W
	300	Air flow m <sup>3</sup> /h
	-10	Inlet air temperature °C
Evaporator core	5000	Heating capacity W
	450	Air flow m <sup>3</sup> /h
	26.7	Inlet air temperature °C

#### 2. Air conditioning system specifications

Parts	Parameter	Item
Heater core	DC aluminum-made	Type
	/	Dimensions W (width) × H (height) × L (length) mm (in)
	/	Number of pipe rows
Blower	With brush (GBM-M motor)	Type
	470	Maximum air volume (m <sup>3</sup> /h)
	264	Motor power consumption W
	-40~60	Operation temperature range °C
Evaporator	Concurrent flow	Type
	5	Refrigerating capacity KW
	/	Number of pipe rows

Condenser	Parallel flow type	Type
	590*400*22	Dimensions W (width) × H (height) × L (length) mm (in)
	13000	Heat exchange amount W
	3	Fin pitch mm
Refrigerant (Type I)	R1234yf	Model
	500	Filling capacity
Refrigerant (Type II)	R134a	Model
	500	Filling capacity
Compressor	Scroll	Type
	33	Displacement CC
Compressor lubricant	POE	Model
	130	Filling capacity
Heater	7000	Rated power w

3. The air flow distribution ratio of the air outlets

Air out mode button	Return air	Fresh air			
	Refrigeration	1/2 refrigeration	Heating		
	Face blowing mode	Feet-blowing/face-blowing mode	Foot blowing mode	Mixed mode	Defrosting mode
Face-blowing rate at front-row air outlet (%)	83.5	54.2	10.7	9	11.1
Foot-blowing rate at front-row air outlet (%)	/	19.9	41.8	34.8	/
Air flow rate at front-row defrosting vent (%)	/	/	16.6	28.1	72.2
Blowing rate at front row side (%)	/	/	4.1	5.9	16.7
Blowing rate at rear row side (%)	16.5	25.9	26.9	22.3	/

4. The air flow distribution ratio of the rear-row air outlets

Rear exhaust mode	Rear exhaust air volume distribution ratio	
	Air volume of rear foot blowing outlet (%)	Air volume of rear foot blowing outlet (%)
Refrigeration - face-blowing mode	16.5	/

1/2 cooling-foot blowing/face blowing mode	12.3	13.6
Heating - feet-blowing mode	/	26.9

### 7.2.1.3 System capacity

Mode	Parameter	Effect
HVAC refrigeration	HVAC mode: full cooling/blowing face/ internal circulation	At 12V, cooling capacity $\geq$ 5000W
	Air dry bulb temperature at the inlet side: $(27\pm 1)^{\circ}\text{C}$	
	Air wet bulb temperature at the inlet side: $(19.5\pm 0.5)^{\circ}\text{C}$	
	Expansion valve inlet subcooling degree: $(5\pm 1)^{\circ}\text{C}$	
	Expansion valve inlet refrigerant pressure: $(1.58\pm 0.01)\text{ MPa}$	
	Evaporator outlet refrigerant pressure: $(0.193 \pm 0.01)\text{ MPa}$	
	Blower voltage $(12\pm 0.1\text{V})$	
HVAC heating	HVAC mode: full heating/foot blowing/ outer circulation	At 12V, heating capacity $\geq$ 7500W
	Ambient temperature: $(20\pm 1)^{\circ}\text{C}$	
	Relative humidity: $(50\pm 5)\%$	
	Coolant composition: water 50%, ethylene glycol 50%	
	Inlet coolant temperature: $(85\pm 1)^{\circ}\text{C}$	
	Volume flow of coolant: 6L/min	
	Blower voltage $(12\pm 0.1\text{V})$	

### 7.2.1.4 Resistance property of evaporator temperature sensor

Components	Parameter	Value	Operating temperature range $^{\circ}\text{C}$
Evaporation temperature sensor	R0 $^{\circ}\text{C}$	6.468-6.732k $\Omega$	-30 $^{\circ}\text{C}$ ~80 $^{\circ}\text{C}$
	R25 $^{\circ}\text{C}$	1.968-2.146k $\Omega$	

### 7.2.1.5 Resistance property of exterior/interior temperature sensor

Components	Parameter	Value	Operating temperature range $^{\circ}\text{C}$
External temperature sensor	R0 $^{\circ}\text{C}$	91.533-98.775k $\Omega$	-30 $^{\circ}\text{C}$ ~85 $^{\circ}\text{C}$
	R25 $^{\circ}\text{C}$	30 $\times(1\pm 0.015)$ k $\Omega$	
	B0/25	3758.2 $\pm$ 75.164K	
Internal temperature sensor	R0 $^{\circ}\text{C}$	97 $\times(1\pm 0.03)$ k $\Omega$	-30 $^{\circ}\text{C}$ ~85 $^{\circ}\text{C}$
	R25 $^{\circ}\text{C}$	30 $\times(1\pm 0.015)$ k $\Omega$	

Components	Parameter	Value	Operating temperature range °C
	B0/25	3887±38.87K	

## 7.2.2 Description and Operation

### 7.2.2.1 General

The automatic A/C system is designed to provide a comfortable riding environment to the passenger compartment regardless of the external weather conditions. The system consists of the following components:

- Refrigerating system
- Heating system
- Air distribution system
- Mode/Temperature Control System

### 7.2.2.2 Description and Operation

#### Compressor

The compressor is an electric scroll compressor, and the compressor controller is integrated with the compressor and the scroll is driven to compress by the rotation of the motor itself, to complete the suction and discharge of refrigerant and provide power for the refrigeration cycle.

Step-less regulation of refrigerating output is realized through the drive controller adjusting the speed, and it is easy to realize the automatic control of the vehicle air-conditioning temperature.

#### Condenser, liquid receiver dryer

The high temperature and high pressure refrigerant vapor from the air conditioner compressor flows into the condenser. The condenser is made of aluminum tubes and cooling fins that can rapidly transfer heat. The cooling fins condense the high temperature and high pressure refrigerant vapor into a medium-temperature and high-pressure liquid through heat dissipation.

The receiver dryer is located on the left side of the condenser and is welded with the condenser into a whole. The internal structure design of the liquid receiver dryer can ensure that the medium temperature and high pressure gas-liquid mixed refrigerant enters it, and that the liquid refrigerant that comes out of the liquid storage dryer is medium temperature and high pressure liquid refrigerant. There is desiccant that absorbs the moisture of the refrigeration system inside the receiver dryer, and the desiccant cannot be reused. When leakage occurs due to the following reasons, the reservoir dryer core cannot be repaired but can only be replaced.

1. Perforated
2. Damaged sealing area
3. The outside air has entered the system for quite a long time

#### Indoor temperature sensor, outdoor temperature sensor

Exterior/interior temperature sensors affect the automatic control of the inside air temperature: these sensors are all temperature sensitive thermistors, and the resistance of the sensors is inversely proportional to the temperature. The air conditioning control module sets the internal and external circulation motors, the cooling and heating temperature and wind direction motors, and the blower speed control module according to the resistance value information so as to control the temperature of the air conditioner.

The housing of the room temperature sensor is connected to the aspirator through a hose pipe. The air that flows out of the air conditioner creates a slight vacuum at the end of the aspirator hose. This kind of vacuum causes the air in the vehicle to flow through the indoor temperature sensor, which improves the accuracy of the vehicle compartment temperature detected by the sensor.

The outdoor temperature sensor is located in the front grille area under the front bumper of the vehicle. The air conditioning control module uses this sensor to obtain information about the ambient temperature. The air conditioning control module uses this information to display the outside temperature on the instrument.

#### Sunlight sensor

The sun sensor is located on the top of the dashboard, near the windshield. Sun light sensor is a light energy sensor, which can measure the heat generated by the sunlight hitting the vehicle and provide more compensation parameters for the A/C control module. The thermal management controller collects the sunlight sensor signals and corrects the air outlet temperature of the air conditioner, so that all occupants can get the most comfortable feeling.

#### Interior air-conditioning unit

The indoor air-conditioning unit is located in the dashboard and consists of a blower motor, a blower speed control module, an air-conditioning filter, a heater core, an evaporator, an expansion valve, a cooling and heating temperature and wind direction control motor, as well as various air deflection dampers and ventilation ducts.

1. Blower motor

#### Caution

When placing the blower motor, do not use the fan wheel of the blower motor as a supporting surface,

and it is forbidden to touch the fan wheel to prevent damage to the blade of the fan wheel.

The blower consists of a permanent magnet motor and a squirrel cage-type fan. The change of the operating speed of the blower depends on the blower speed control module. If the user selects the maximum air conditioning mode, most of the air entering the blower comes from the passenger compartment (internal circulation).

### 2. Heater core

The heater core is the main component of the heater system. The heater core is located in the air-conditioning unit. The engine coolant heated by PTC is pumped into the heater core. The heater core transfers heat from the engine coolant to the air flowing through the heater core. The heater core has special inlet and outlet warm air pipes. When disassembling, the warm water pipeline of the heater core must be completely empty. During maintenance, the heater core equipped with independent warm water pipeline must have been installed.

### 3. Evaporator and expansion valve

The evaporator is located on the left side of the air conditioning unit. When the air conditioning unit is installed on the vehicle, it needs to be removed before the evaporator and expansion valve can be removed and installed. When removing, the refrigerant pipeline of the evaporator must be completely empty. During maintenance, the evaporator equipped with a separate refrigerant pipeline must have been installed. The expansion valve is connected to the evaporator and is installed at the entrance end of the evaporator. One side of the expansion valve is connected to the inlet and exhaust pipes of the air-conditioning compressor, and the other side is connected with the inlet and outlet pipes of the evaporator, which restricts the high-pressure liquid refrigerant in the liquid pipeline, so that the refrigerant becomes a low-pressure liquid when it flows to the evaporator.

The expansion valve changes its position as the lower limit of air-conditioning pressure and the upper limit of air-conditioning pressure change from large to small. The evaporator cools and dehumidifies the air before the air enters the passenger compartment. The refrigerant evaporates in the evaporator, thereby absorbing the heat of the air flowing through the evaporator. When the heat in the air is transferred to the evaporator core, the moisture in the air will condense on the outer surface of the evaporator core to form water and flow out.

The evaporator is equipped with a temperature sensor to prevent the vapor from freezing. The sensor measures the surface temperature of the heat sink on the evaporator. When the evaporator temperature is less than 1 degree, the compressor will be turned off, and when the temperature is higher than 5 degrees, the compressor will be turned on.

### Refrigerant R134a/R1234yf and lubricating oil

The refrigerant has the function of absorbing heat, carrying heat, and releasing heat in the air-conditioning system. The refrigerant R134a/R1234yf is used in the vehicle, which is non-toxic, flame retardant, transparent, colorless liquefied gas.

Before performing maintenance work that requires opening of the refrigeration system pipes or components, you should refer to the instructions for the disposal of refrigerant pipes and pipe joints as well as the instructions for maintaining chemical stability. The R134a/R1234yf system is filled with special lubricant POE synthetic refrigerant oil, which is easy to absorb water and needs to be stored in a closed container. Only POE synthetic refrigerant lubricants can be used in the internal circulation of the R134a/R1234yf air conditioning system. Only mineral-based 525 viscosity refrigerant oil can be used on the installation thread and O-ring seal. The use of other lubricating oil will cause the compressor or accessories to malfunction.

### Caution

It is required to use only lubricants of the types and grades specified by the compressor manufacturer. Lubricants of different types and grades must not be mixed, otherwise the compressor will be damaged. Lubrication oil is easy to absorb water, so the contact duration between lubrication oil and air should be reduced as much as possible.

A certain amount of lubrication oil of the same type should be added or poured out when components of the A/C system are replaced. Generally, it can be carried out according to the following recommended data:

A/C lubrication oil filling capacity:

Dis-assembly and assembly	Filling amount	Unit	Remarks
Condenser	30	ml	-
Compressor exhaust pipe	10	ml	-
High/low pressure pipe	10	ml	-
Compressor	-	ml	When the compressor is delivered by the manufacturer, it will carry a large amount of lubrication oil (more than the amount of lubrication oil in the whole A/C system). Therefore, it is unnecessary to replenish lubrication oil after the replacement of compressor, while a certain amount of lubrication oil must be discharged from the compressor before installation.

Air-conditioning high-pressure pipe, air-conditioning low-pressure pipe, air-conditioning pressure sensor

The vehicle uses high-pressure pipes and low-pressure pipes (air-conditioning hard pipes and/or hoses) of the air conditioner to connect the air conditioner's refrigeration system, forming a closed system. Refrigerant and lubricating oil flow in this closed system to complete the working cycle of the refrigerant. The rigid pipe of the air conditioner is composed of aluminum tubes and corresponding joints, and the air conditioner hose is composed of rubber hoses and corresponding joints.

The air-conditioner pressure sensor collects pressure signals and sends different fan duty cycles. At the same time, the pressure range is limited to protect the compressor.

The solenoid valve of refrigeration pipeline is an on-off valve, which closes the refrigerant circuit entering the passenger compartment as required when only the battery is cooled.

#### Heater

The heater is composed of a resistive film and a heat dissipation element. Within a certain voltage range, the heating power changes with current changes. The resistance of the resistive film has a small effect on temperature changes. Therefore, the electric heater can output a stable power, thus providing a stable heat source for the heating system.

#### AQS air quality sensor

Through the air quality sensor, the turbidity of the air outside the vehicle can be sensitively sensed and the air circulation mode can be switched immediately. For example: if the air quality is poor, the air conditioning system will automatically switch to the internal circulation state, which can largely prevent the polluted air outside the vehicle from entering the it.

#### Plug-in temperature sensor

The sensor is mainly used for cooling of cooler, and for controlling the opening of the electronic refrigerating expansion valve of passenger compartment.

#### Electronic expansion valve

The electronic expansion valve is the component controlling the cooler battery cooling refrigeration circuit. It is closed when the single-occupant compartment is cooled. It communicates and interacts with the thermal management controller through the Lin bus.

#### In-vehicle air intelligent control module

The smart air control module in the vehicle is located on the right side of the dashboard. It can detect the dust



concentration in the air in the vehicle, that is, the value of PM2.5, and at the same time display the air quality index on the entertainment display screen.

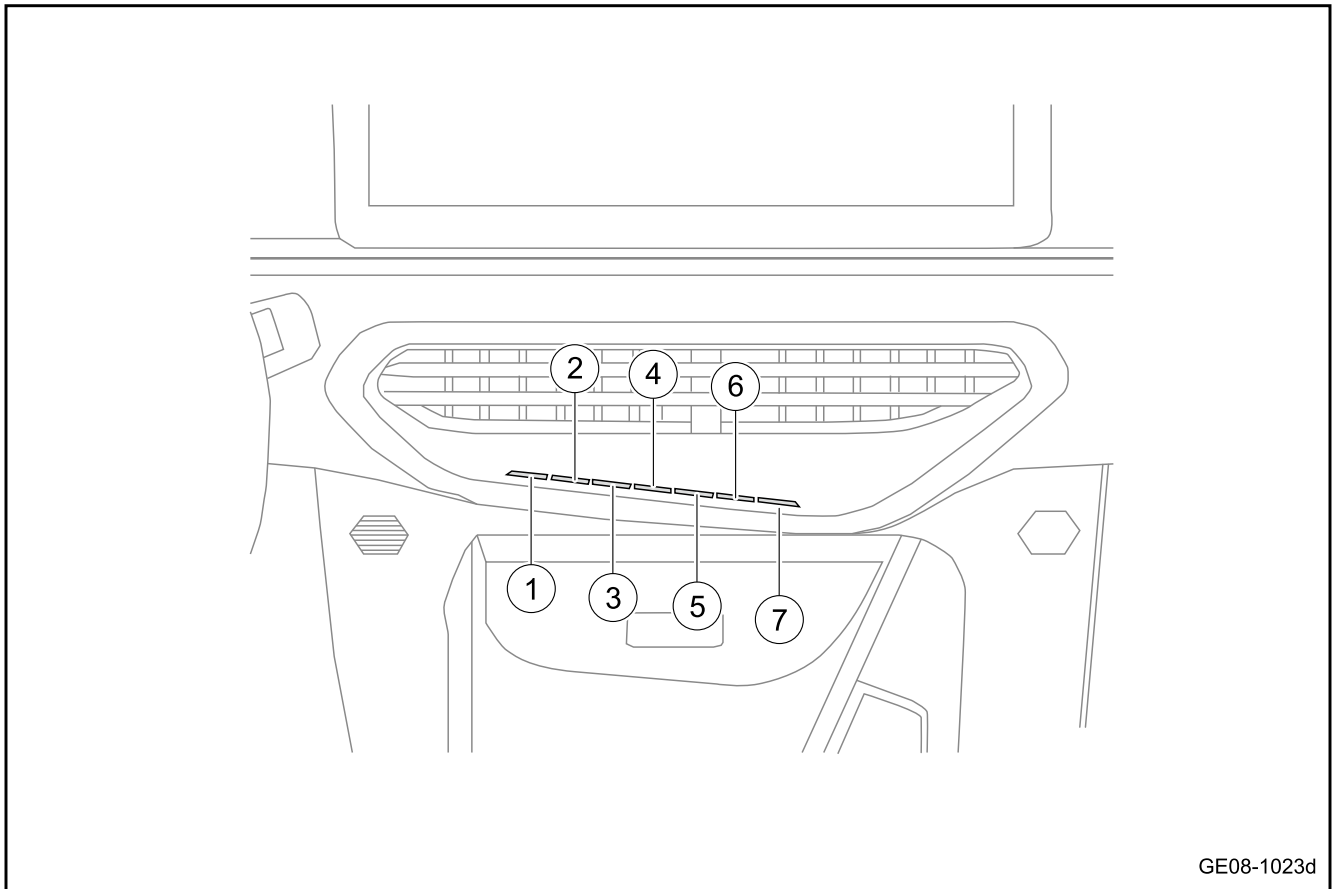
### Negative ion generator

The negative ion generator can convert DC electricity to AC high voltage electricity through a series of power conversion circuits, and then obtain pure DC negative high voltage electricity after rectification and filtering through special-grade electronic materials. This DC negative high voltage is connected to the release tip made of metal or carbon element, and the high-voltage corona is generated by the tip DC high voltage, and a large number of electrons (e-) are released at a high speed. These electrons (e-) are immediately captured by oxygen molecules (O<sub>2</sub>) in the air to generate negative air ions. Eco-grade small particle size negative oxygen ions are easier to penetrate the human blood-brain barrier and play a role in medical care.

### 7.2.3 How the system works

#### 7.2.3.1 Air-conditioning control panel function description

##### A/C control panel



- |   |   |
|---|---|
| 1. OFF button                                   | 2. AUTO button  |
| 3. Wind speed decrease button                   | 4. Wind speed increase button                                 |
| 5. Front windshield defrosting/defogging button | 6. Rear windshield/external rearview mirror defrosting button |
| 7. A/C button                                   |   |

##### 1.OFF button

When the air conditioning system is working, pressing the this key will stop the operation of the entire air conditioning system. At this time, the air conditioner is in external circulation mode by default, PM2.5, rear defrosting does not exit.

##### 2.AUTO button

Press the button in the manual state, the air conditioner controller enters AUTO mode, the air conditioner runs according to the current set temperature, and the A/C button indicator lamp automatically lights up. If the other function buttons are operated, the automatic mode of the corresponding function will exit, and the automatic mode of other functions will not be affected. At the same time, the function key indicator lights up. At this time, the air volume, air outlet mode, air supply mode and the air temperature of the blower will be automatically adjusted to make the human body comfortable.

In automatic mode, automatic switching between the internal and external air circulation is performed. At this time, operate any key except the AUTO key to exit the AUTO mode, and the automatic functions of other keys will not be affected. Operate ION, synchronization, setting temperature, rear defrost, cycle and AQS, AUTO control will not exit

3. Wind speed decrease button

Press this button to decrease the wind speed by 1 step, and the wind speed adjustment range is 1-8 steps.

4. Wind speed increase button

Press this button to increase the wind speed by 1 step, and the wind speed adjustment range is 1-8 steps.

5. Front windshield defrosting/defogging button

Press this button to enter the defrosting mode, and A/C is turned on, the inner and outer circulation mode is switched to the outer circulation, the blowing mode is the window blowing mode, and the A/C button indicator lamp is on. If the outdoor temperature is lower than 0 degrees, A/C will not work. After the defrosting and defogging function is activated, the default minimum wind speed is level 5. At this time, adjusting the outlet temperature and the outlet speed will not exit the defrost mode. Turn off the defrosting and defogging function, and the air conditioner will return to the state before turning on the defrosting and defogging.

6. Rear windshield/exterior rearview mirror defrosting button

Press this button to turn on or off the defrosting function of the rear windshield/exterior mirror. When the rear windshield/exterior rearview mirror defrosting function is enabled, the button indicator lamp will light up. Press this button again to turn off the defrosting function of the rear windshield/external mirror. After the rear defrosting function is turned on, the rear defrosting heating will automatically stop after 12 minutes, and the button indicator lamp will go out.

7.A/C button

Press this button to turn on or turn off the air conditioning refrigeration system. If the outdoor temperature is lower than 0°C and the air conditioner is in AUTO mode, the air conditioning refrigeration system will not work (the button indicator lamp is off by default). If the air conditioning system is set to the highest temperature, the air conditioning refrigeration system will not work, but the button indicator lamp will light up.

Coolant filling instructions

When filling the coolant in the cooling system, connect the pipeline. Add coolant in the cooling pot to the MAX, set the Ready gear for the whole vehicle, press the 'AUTO' and 'Post defrost' buttons (buttons 2 and 6) at the same time for more than 3 seconds and then release them, check whether there are bubbles in the coolant pot, whether the coolant level has dropped (if not, press buttons 2 and 6 again at the same time), the refilling time is more than 30 minutes, and the vehicle needs to be powered off after refilling.

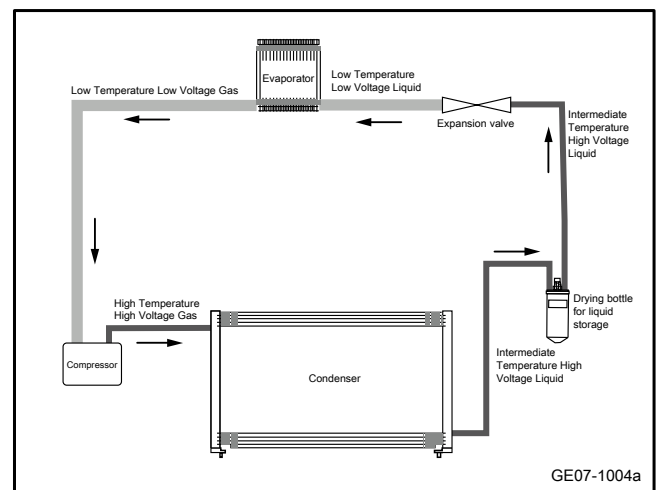
When filling the heating air circuit coolant, make sure that the pipes are connected properly. Add coolant medium in the heating pot to the MAX, set the Ready gear for the whole vehicle, use the diagnostic instrument to enter the AC module in the Geometry C model, select the control option in the AC module, find the 'heat exchange water pump', and control the pump duty cycle at 90%, the refilling time is more than 15 minutes, and the diagnosis can be exited after refilling.

7.2.3.2 Working principles of the automatic A/C

System diagnosis

Through the diagnosis interface, the air-conditioning control module can send corresponding diagnostic information to the special diagnostic instrument which can read information such as the manufacturer number and software version number of the air-conditioning control module from the air-conditioning control module.

Working principles of the cooling system



The compressor is driven by high-voltage electricity to extract gaseous refrigerant from the evaporator and compress it. The temperature and pressure of the refrigerant increase to form a high-temperature and high-pressure gaseous refrigerant.

High-pressure overheated refrigerant is sent to the condenser. At this time, the heat in the refrigerant is taken away by the air delivered to the radiator fin of the condenser. The refrigerant is cooled because of the loss of heat.

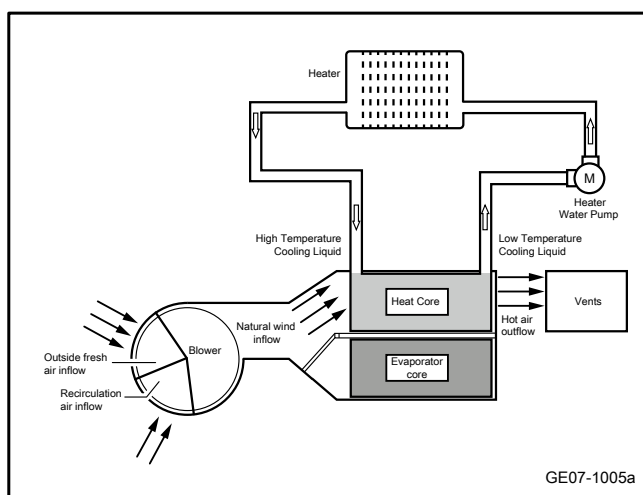
The refrigerant is sent to the fluid reservoir dryer under high pressure, which serves as a storage intermediary to filter all water entrapped in the refrigerant.

Dried refrigerant is transmitted to the entrance of the expansion valve which controls the flow rate of refrigerant into the evaporator by throttling and reducing pressure. The temperature and pressure of the refrigerant decrease, forming a low-pressure mist refrigerant.

The fog refrigerant is heated to evaporate in the evaporator. At last, the blower blows the air through the surface of the evaporator box towards each air outlet. Because of the evaporation and heat absorption of the refrigerant inside the evaporator, the heat in the air passing the evaporator box surface is absorbed, so the temperature of the air outlets is far lower than the ambient temperature. The evaporated low-pressure refrigerant gas flows from the evaporator box to the expansion valve.

At last, the low-pressure refrigerant air flows back to the compressor for another compression; at this point, the A/C refrigerant completes a working cycle.

#### Working principles of the heating system

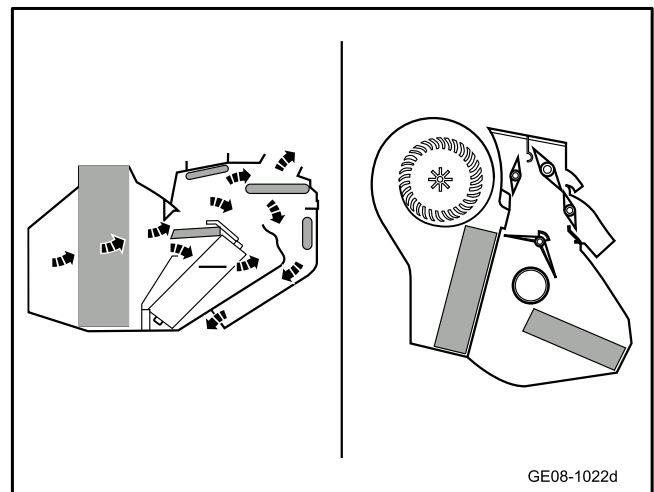


The heating system includes a blower, an electric heater (PTC), a heater pump, and a heater core.

When the automatic air conditioning system is in heating mode, the heater water pump pumps the coolant from the

heater core to the heater. The heater heats the coolant under the action of high-voltage electricity, and the high-temperature coolant flows into the heater core. . At the same time, the cooling and heating temperature control motor turns the temperature control device to the heating position, and part or all of the air flow is bypassed to the heater core under the action of the blower to realize heat transfer. Any air that does not need to be heated will be mixed with the heated air before entering the passenger compartment to obtain the corresponding mixed air with a suitable temperature.

#### Working principle of the ventilation control system



Various positions on the ventilation control system can make the model valve air ducts mix or introduce cold air, hot air and outdoor into the A/C system; and the airflow is sent to the vehicle through the air duct system and the air outlets.

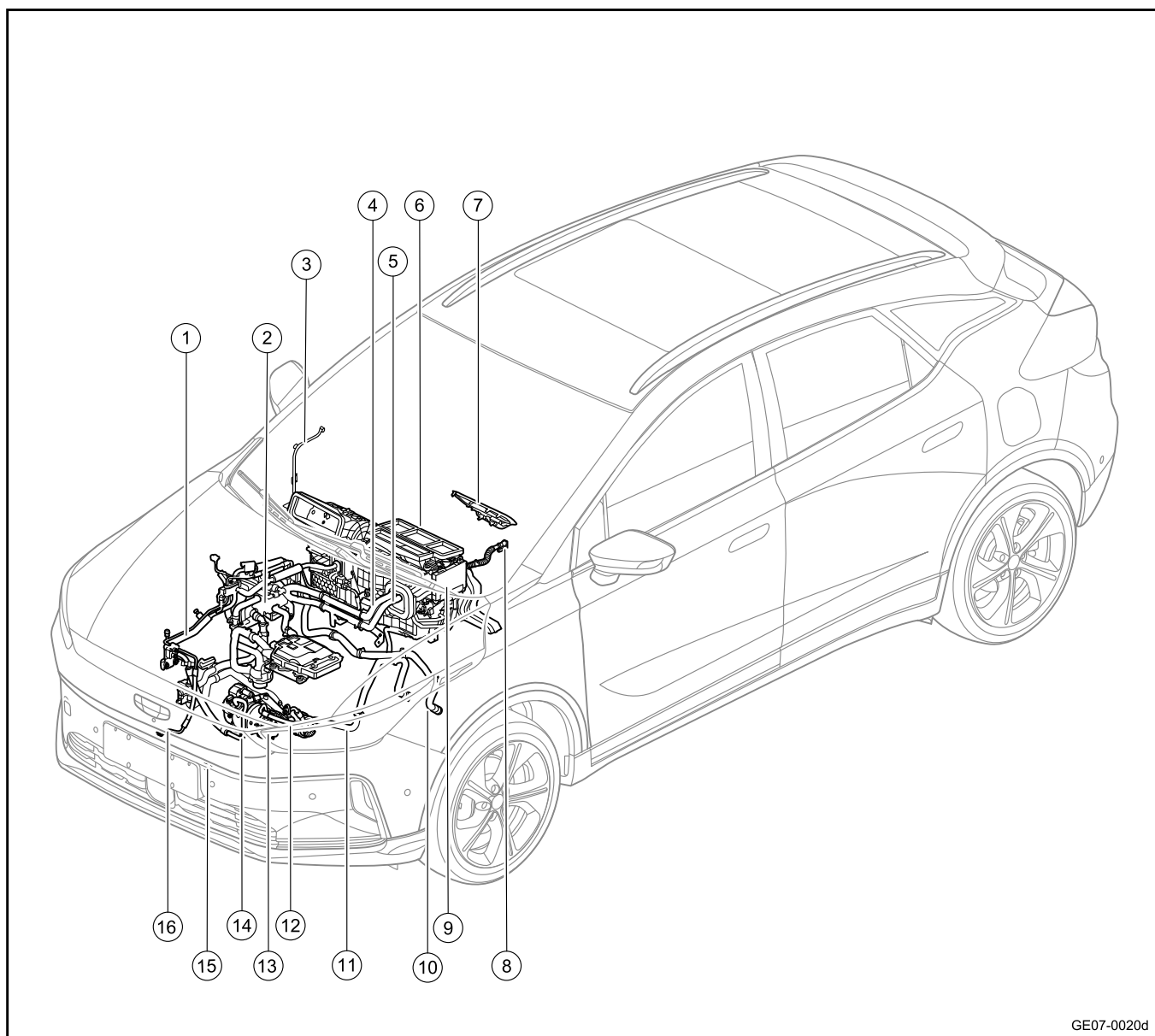
In the 'AUTO (automatic)' mode, the corresponding mode status will be automatically selected, and the air supply mode of the vehicle can be changed by using the 'Outlet Mode' button. If an air supply mode is currently displayed, press the 'Air Supply Mode' button to select the next air supply mode.

The air flow direction is changed according to the following modes:

- Face blowing-the front row sends air through the air outlet of the instrument panel, and the rear row sends air through the air outlet of the auxiliary fascia console
- Foot blowing-the air for front row is supplied through the air duct of the air conditioner, and the air for rear row is supplied through the floor air outlet
- Defrosting-air is supplied through defrosting air outlet
- Two-way-the air for front row is supplied through the air outlet of the instrument panel and the air duct of the main air conditioner, and the air for rear row is supplied through the auxiliary instrument panel and the floor air outlet
- Mixing-air supply through the air duct, floor and defrosting air outlet of the air conditioner

7.2.4 Part location

7.2.4.1 Part Position

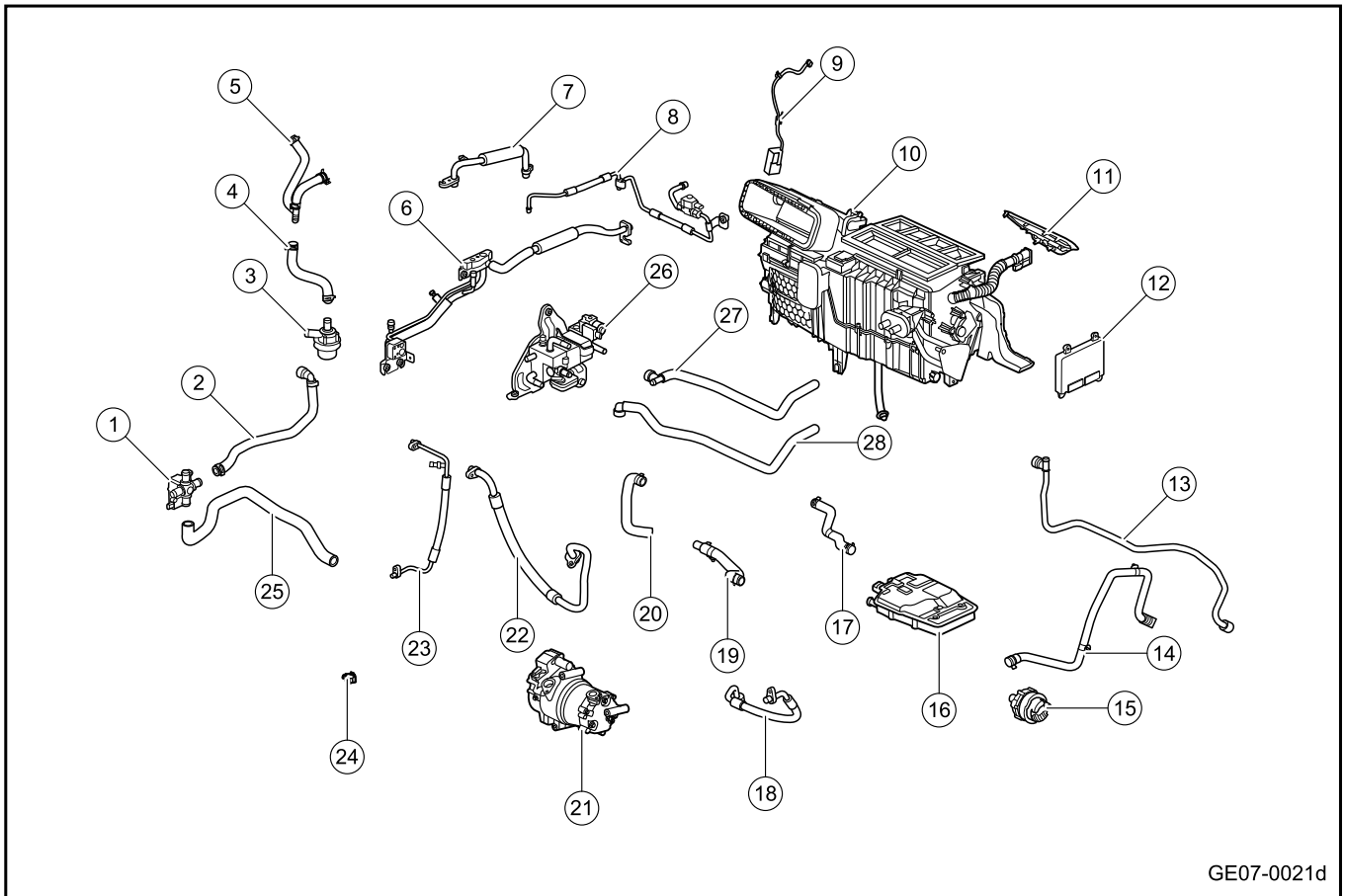


GE07-0020d

- |  |                                    |
|--|------------------------------------|
| 1. Evaporator inlet and outlet pipe assembly | 9. Thermal management controller   |
| 2. Heat exchanger assembly                   | 10. Heat exchanger inlet hose      |
| 3. In-vehicle air intelligent control module | 11. Battery inlet pipe             |
| 4. Air conditioning heater inlet pipe        | 12. Compressor outlet hose         |
| 5. Air conditioning heater outlet pipe       | 13. Electric compressor assembly   |
| 6. Air-conditioning unit assembly            | 14. Compressor inlet hose          |
| 7. A/C control panel                         | 15. External temperature sensor    |
| 8. Internal temperature sensor               | 16. Condenser outlet pipe assembly |

## 7.2.5 Exploded view

## 7.2.5.1 Breakdown Drawing

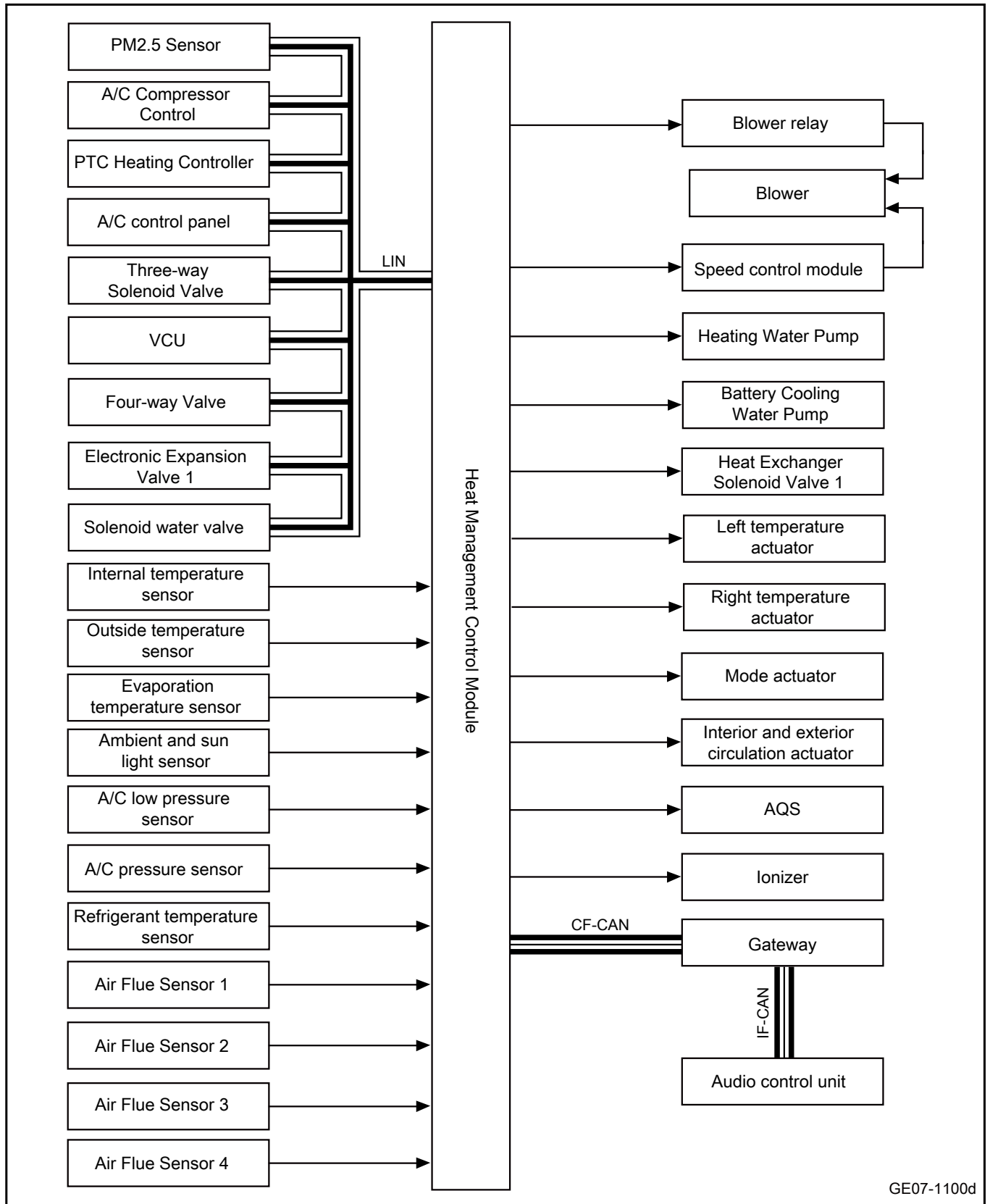


GE07-0021d

- |   |   |
|---|---|
| 1. Four-way valve                                       | 15. Battery-powered water pump              |
| 2. Heat exchanger outlet hose                           | 16. Heater assembly                         |
| 3. Electronic water pump                                | 17. Heater outlet hose                      |
| 4. Rear water inlet hose of electric heating water pump | 18. Compressor outlet hose                  |
| 5. Front inlet hose of electric heating water pump      | 19. Heater inlet hose                       |
| 6. Evaporator inlet and outlet pipe assembly            | 20. Electric heating water pump outlet pipe |
| 7. Low pressure hose of heat exchanger                  | 21. Electric compressor assembly            |
| 8. High pressure pipe assembly of heat exchanger        | 22. Compressor inlet hose                   |
| 9. In-vehicle air intelligent control module            | 23. Condenser outlet pipe assembly          |
| 10. Air-conditioning unit assembly                      | 24. External temperature sensor             |
| 11. A/C control panel                                   | 25. Battery-powered water pump inlet pipe   |
| 12. Thermal management controller                       | 26. Heat exchanger assembly                 |
| 13. Heat exchanger inlet hose                           | 27. Air conditioning heater inlet pipe      |
| 14. Battery inlet pipe                                  | 28. Air conditioning heater outlet pipe     |

7.2.6 Electrical block diagram

7.2.6.1 Electrical schematic diagram of air conditioning system



## 7.2.7 Diagnostic information and steps

### 7.2.7.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

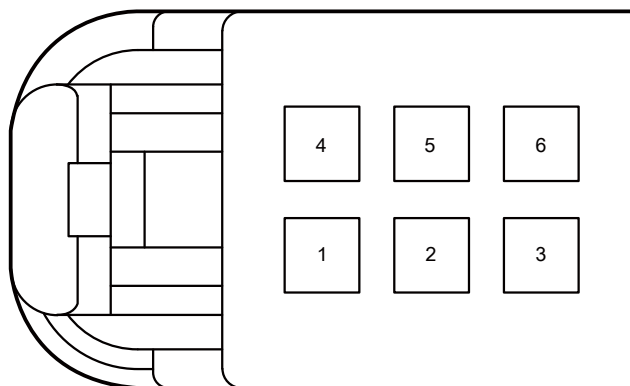
### 7.2.7.2 Routine inspection

- Check after-sales installations that may affect the performance of the A/C system.
- Check A/C system components and lines that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a fault.
- Check the A/C system pipeline that is easy to be seen or can be seen to find out whether there is A/C system leakage.

### 7.2.7.3 List of air conditioning control module terminals

#### IP85g harness connector A of automatic air conditioning control panel

### IP85g harness connector A of automatic air conditioning control panel



GE07-1121d

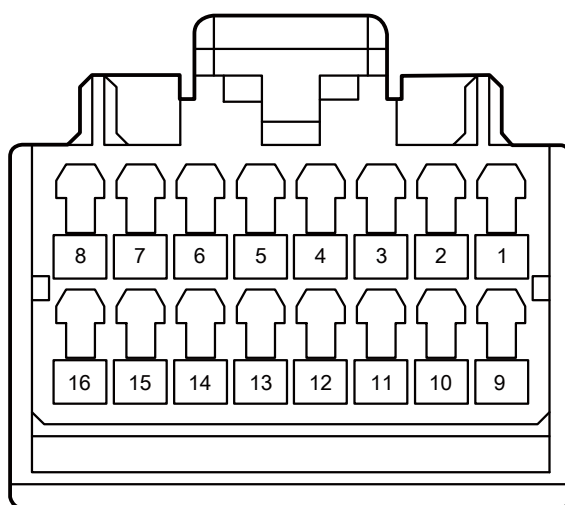
Terminal No.	Terminal name	Terminal description
1	-	-
2	IG1 power supply	Automatic air conditioning control panel ACC\ON\START power supply
3	-	-
4	Backlight lamp power supply	Backlight power supply input



Terminal No.	Terminal name	Terminal description
5	Ground connection	Grounding circuit of automatic air conditioning control panel
6	LIN	LIN data communication bus

IP79a thermal management control module harness connector 1

IP79a Heat Management Control Module Harness Connector 1

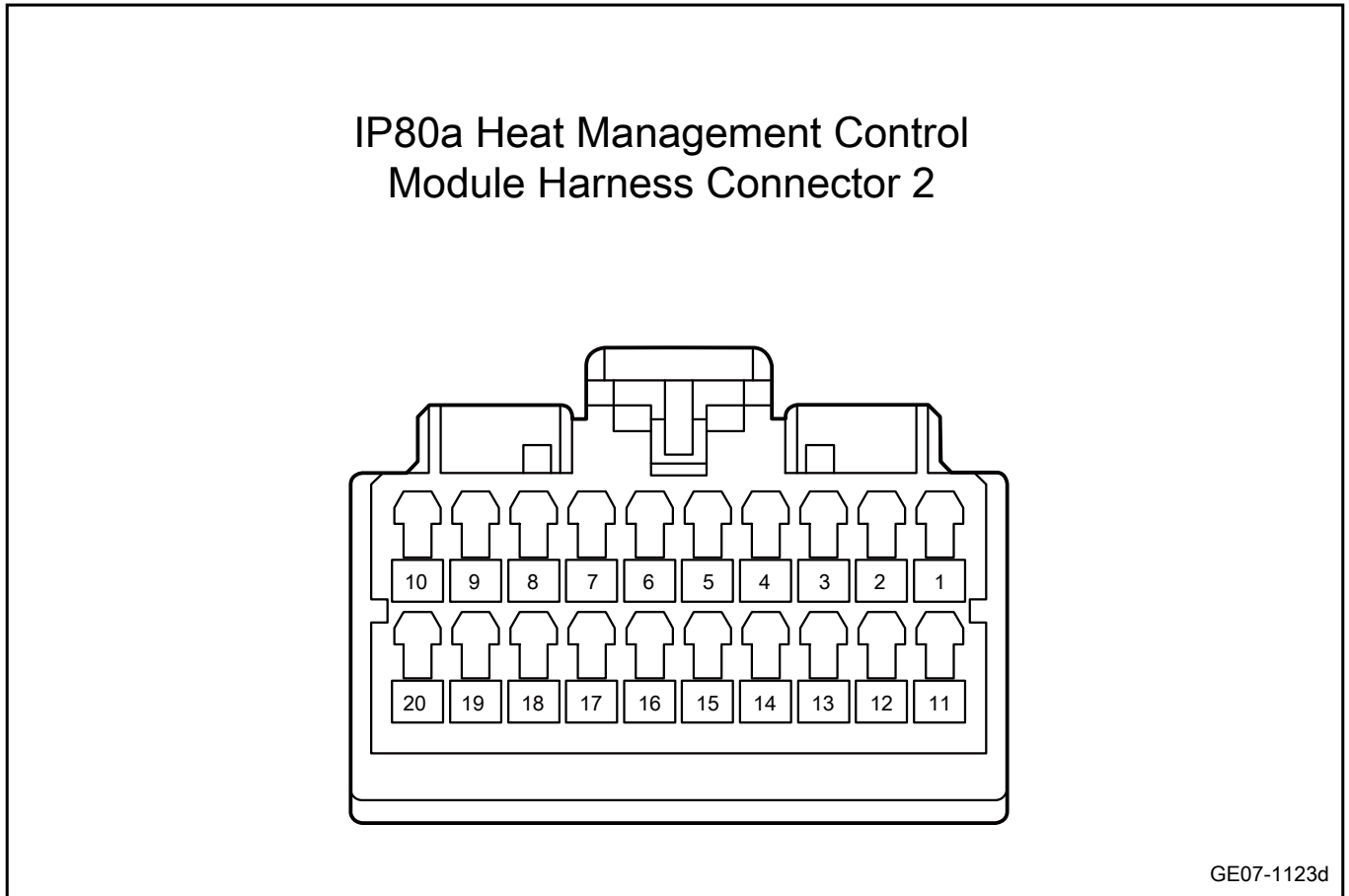


GE07-1122d

Terminal No.	Terminal name	Terminal description
1	IG1 power supply	Thermal management control module ACC\ION\START power supply
2	Left sunlight sensor signal	Left sunlight sensor signal input
3	Right sunlight sensor signal	Right sunlight sensor signal input
4	-	-
5	-	-
6	-	-
7	Ionizer working signal	Ionizer working signal output
8	Ground connection	Grounded circuit of thermal management control module
9	CF CAN-H	Comfort CAN high line
10	CF CAN-L	Comfort CAN low line
11	LIN	LIN data communication bus
12	B+Power supply	Thermal management control module battery power supply
13	Ground connection	Grounded circuit of thermal management control module
14	Internal temperature sensor positive	Indoor temperature sensor signal (positive signal)

Terminal No.	Terminal name	Terminal description
15	Outdoor temperature sensor positive	Exterior temperature sensor signal (positive signal)
16	-	-

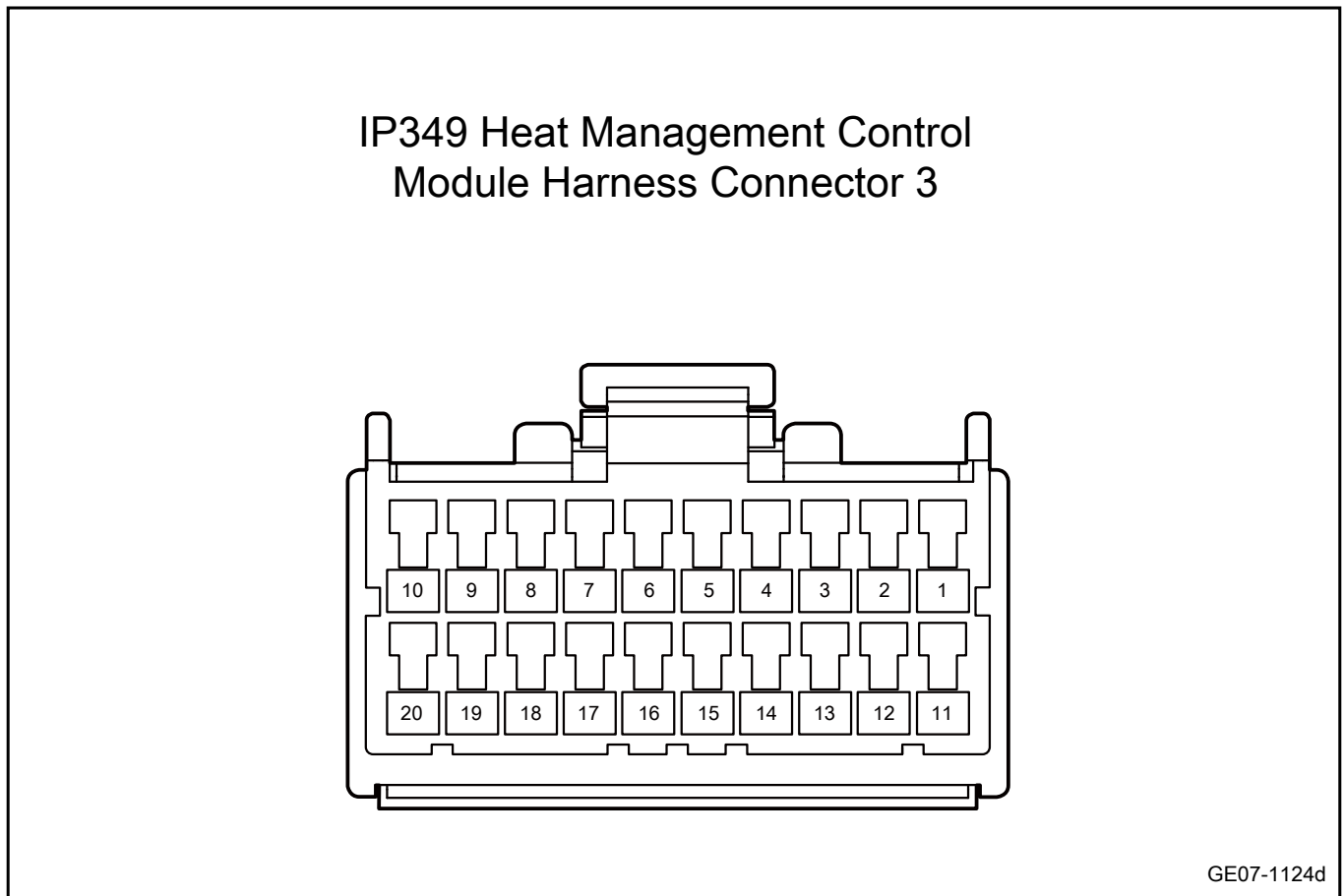
IP80a thermal management control module harness connector 2



Terminal No.	Terminal name	Terminal description
1	-	-
2	Left temperature damper motor negative	Left temperature damper motor negative electrode
3	Left temperature damper motor positive	Left temperature damper motor positive electrode
4	-	-
5	Compressor suction pressure signal	Compressor inlet pressure sensor signal (positive signal)
6	-	-
7	Ionizer feedback signal	Ionizer feedback signal
8	Power supply of sensor	5V power supply of sensor
9	Sensor grounding	Module analog ground
10	-	-

Terminal No.	Terminal name	Terminal description
11	Blowing air duct sensor signal at front passenger side	Blowing air duct sensor signal (positive signal) at front passenger side
12	Blowing air duct sensor signal at driver's side	Blowing air duct sensor signal (positive signal) at driver's side
13	Blower speed control signal	Blower speed control signal output
14	Blower feedback negative	Blower feedback negative
15	Blower feedback positive	Blower feedback positive
16	Battery-powered cooling water pump control signal	PWM control signal of battery cooling water pump
17	Temperature motor feedback at driver's side	Temperature motor position feedback signal at driver's side
18	-	-
19	A/C high pressure sensor signal	Air conditioner high pressure sensor signal circuit
20	-	-

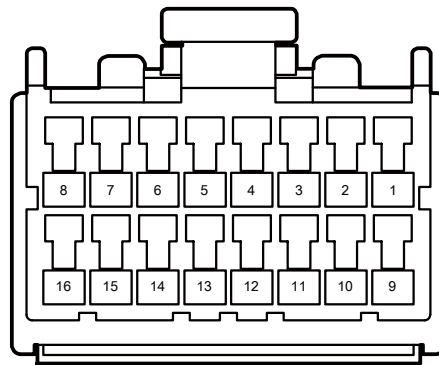
IP349 thermal management control module harness connector 3



Terminal No.	Terminal name	Terminal description
1	Mode damper motor negative	Mode actuator motor negative
2	Mode damper motor positive	Mode actuator motor positive
3	AQS control signal	AQS control signal
4	Heating water pump control signal	Heating water pump PWM control signal
5	Right temperature damper motor negative	Right temperature actuator motor negative
6	Right temperature damper motor positive	Right temperature actuator motor positive
7	Interior and exterior circulating motor negative	Interior and exterior circulating actuator motor negative
8	Interior and exterior circulating motor positive	Interior and exterior circulating actuator positive
9	-	-
10	-	-
11	Throttle motor mode feedback	Throttle motor position feedback signal
12	-	-
13	Temperature motor feedback at front passenger side	Temperature motor position feedback signal at front passenger side
14	Evaporator temperature sensor positive	Evaporator temperature sensor signal (positive signal)
15	Left foot air duct sensor signal	Left foot air duct sensor signal (positive signal)
16	Right foot air duct sensor signal	Right foot air duct sensor signal (positive signal)
17	Interior and exterior circulating motor feedback	Position feedback signal from interior and exterior circulating motor
18	Blower relay control	Blower relay control signal
19	Actuator 5V power supply	Actuator 5V power supply
20	Actuator ground	Actuator module analog ground

IP350 thermal management control module harness connector 4

### IP350 Heat Management Control Module Harness Connector 4



GE07-1125d

Terminal No.	Terminal name	Terminal description
1	-	-
2	Temperature sensor, sunlight sensor ground	Temperature sensor, sunlight sensor common module analog ground
3	A/C main relay control	Main relay control signal of air conditioner
4	Heat exchange solenoid valve 1 control signal	Heat exchange solenoid valve control signal
5	-	-
6	-	-
7	-	-
8	-	-
9	Ground connection	Grounded circuit of thermal management control module
10	Air duct sensor grounding	Air duct sensor common module analog ground
11	Refrigerant temperature signal	Refrigerant temperature signal (positive signal)
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-

## 7.2.7.4 Fault symptom table

Symptom	Possibility and cause	Measures
Thermal management control module power failure	1. Battery	Refer to the <a href="#">Power Fault of Thermal Management Control Module</a>
	2. Thermal management control module	
	3. Fuse	
	4. Harness and connector	
Thermal management control module communication failure	1. Harness and connector	See <a href="#">Communication Failure of Thermal Management Control Module</a>
	2. Thermal management control module	
	3. Diagnostic interface	
Automatic air conditioning control panel failure	1. Battery	Refer to <a href="#">Automatic air-conditioning control panel failure</a>
	2. Automatic air conditioning control panel	
	3. Fuse	
	4. Harness and connector	
Fault of evaporator temperature sensor	1. Harness and connector	Refer to <a href="#">Evaporator temperature sensor failure</a>
	2. Evaporator temperature sensor	
	3. Thermal management control module	
Fault of outdoor temperature sensor	1. Harness and connector	Refer to <a href="#">External temperature sensor failure</a>
	2. External temperature sensor	
	3. Thermal management control module	
Fault of inside temperature sensor	1. Harness and connector	Refer to <a href="#">Internal temperature sensor failure</a>
	2. Internal temperature sensor	
	3. Thermal management control module	
Fault of left temperature actuator	1. Harness and connector	Refer to fault of left temperature actuator
	2. Temperature actuator	
	3. Thermal management control module	
Fault of right temperature actuator	1. Harness and connector	Refer to <a href="#">Right temperature actuator failure</a>
	2. Temperature actuator	
	3. Thermal management control module	
Fault of mode actuator	1. Harness and connector	Refer to fault of mode actuator
	2. Mode actuator	
	3. Thermal management control module	
Fault of inner and outer circulation actuator	1. Harness and connector	Refer to <a href="#">Internal and external circulating actuator failure</a>
	2. Interior and exterior circulation actuator	
	3. Thermal management control module	
Ambient light and sun light sensor failure	1. Harness and connector	Refer to <a href="#">Ambient light and sun light sensor failure</a>
	2. Sunlight sensor failure	
	3. Thermal management control module	
Air conditioning blower fault	1. Harness and connector	Refer to <a href="#">A/C blower failure</a>

Symptom	Possibility and cause	Measures
	2. Blower	
	3. Thermal management control module	
Three-way solenoid valve failure	1. Harness and connector	See <a href="#">Three-way Solenoid Valve Failure</a>
	2. Three-way solenoid valve	
	3. Thermal management control module	
Four-way valve failure	1. Harness and connector	See <a href="#">Four-way Valve Failure</a>
	2. Four-way valve	
	3. Thermal management control module	
Refrigerant temperature sensor fault	1. Harness and connector	Refer to <a href="#">Refrigerant temperature sensor failure</a>
	2. Refrigerant temperature sensor	
	3. Thermal management control module	
Failure of air duct sensor 1	1. Harness and connector	See <a href="#">Failure of Air Duct Sensor 1</a>
	2. Air duct sensor 1	
	3. Thermal management control module	
Failure of air duct sensor 2	1. Harness and connector	See <a href="#">Failure of Air Duct Sensor 2</a>
	2. Air duct sensor 2	
	3. Thermal management control module	
Failure of air duct sensor 3	1. Harness and connector	See <a href="#">Failure of Air Duct Sensor 3</a>
	2. Air duct sensor 3	
	3. Thermal management control module	
Failure of air duct sensor 4	1. Harness and connector	See <a href="#">Failure of Air Duct Sensor 4</a>
	2. Air duct sensor 4	
	3. Thermal management control module	
Air Conditioner Low Pressure Sensor Failure	1. Harness and connector	See <a href="#">Air Conditioner Low Pressure Sensor Failure</a>
	2. A/C low pressure sensor	
	3. Thermal management control module	
Air Conditioner Pressure Sensor Failure	1. Harness and connector	Refer to <a href="#">A/C pressure sensor failure</a>
	2. A/C pressure sensor	
	3. Thermal management control module	
AQS fault	1. Harness and connector	Refer to <a href="#">AQS failure</a>
	2. AQS	
	3. Thermal management control module	
Ionizer failure	1. Harness and connector	See <a href="#">Ionizer Failure</a>
	2. Ionizer	
	3. Thermal management control module	
PM2.5 sensor failure	1. Harness and connector	Refer to <a href="#">PM2.5 sensor failure</a>
	2. PM2.5 sensor	
	3. Thermal management control module	
A/C Compressor Failure	1. Harness and connector	See <a href="#">Air Conditioner Compressor Failure</a>

Symptom	Possibility and cause	Measures
	2. A/C compressor	
	3. Thermal management control module	
Heating water pump failure	1. Harness and connector	See <a href="#">Heating Water Pump Failure</a>
	2. Heating water pump	
	3. Thermal management control module	
Battery-powered cooling water pump failure	1. Harness and connector	See <a href="#">Battery Cooling Water Pump Failure</a>
	2. Battery cooling water pump	
	3. Thermal management control module	
PTC heating controller failure	1. Harness and connector	See <a href="#">PTC Heating Controller Failure</a>
	2. PTC heating controller	
	3. Thermal management control module	
Solenoid valve failure	1. Harness and connector	See <a href="#">Solenoid Water Valve Failure</a>
	2. Solenoid water valve	
	3. Thermal management control module	
Heat exchanger solenoid valve failure	1. Harness and connector	See <a href="#">Heat Exchanger Solenoid Valve Failure</a>
	2. Heat exchanger solenoid valve 1	
	3. Thermal management control module	
Electronic expansion valve failure	1. Harness and connector	See <a href="#">Electronic Expansion Valve Failure</a>
	2. Electronic expansion valve	
	3. Thermal management control module	

### 7.2.7.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Control module input voltage is low	Refer to the <a href="#">Power Fault of Thermal Management Control Module</a>
U300617	Control module input voltage is high	
U015687	Communication with MMI is lost	See <a href="#">Communication Failure of Thermal Management Control Module</a>
U016B87	Communication with ACCM is lost	
U111F87	Communication with PTC is lost	
U111C87	Communication with BMSL is lost	
U111D87	Communication with WV2 is lost	
U111E87	Communication with WV3 is lost	
U016687	Communication with FCP is lost	
U014087	Communication with BCM is lost	
U111487	Communication with VCU is lost	
U012287	Communication with ESC is lost	
U015587	Communication with IPK is lost	
U019887	Communication with T-BOX is lost	
U007300	CAN bus off	
B118611	Evaporator temperature sensor short to GND	Refer to <a href="#">Evaporator temperature sensor failure</a>



Diagnostic Trouble Code	Description	Fault location/elimination method
B118615	Evaporator temperature sensor is short-circuited to GND or is open circuited	
B118711	Outside temperature sensor is short to GND	Refer to <a href="#">External temperature sensor failure</a>
B118715	Outside temperature sensor is short or open to power supply	
B118511	The inside temperature sensor is short to GND	Refer to <a href="#">Internal temperature sensor failure</a>
B118515	The inside temperature sensor is shot to power supply or its circuit is open	
B118171	Driver side air damper motor locked-rotor	Refer to fault of left temperature actuator
B118111	Driver side temperature adjustment motor is short to GND.	
B118115	Driver side temperature adjustment motor is short to power supply or open circuit.	
B118271	Front passenger side temperature air damper motor locked-rotor	Refer to <a href="#">Right temperature actuator failure</a>
B118211	Front passenger side temperature adjustment motor is short to GND.	
B118215	The temperature adjustment motor on the co-driver side is shorted to power supply or circuit open.	
B118371	Air outlet mode motor locked-rotor	Refer to fault of mode actuator
B118311	Adjustment motor of air outlet mode	
B118315	Adjustment motor of air outlet mode is short to power supply or open	
B118471	Circulating air damper motor locked-rotor	Refer to <a href="#">Internal and external circulating actuator failure</a>
B118411	The circulating air damper motor is short-circuited to GND	
B118415	The circulation damper motor is shorted to power supply or circuit open.	
B118A15	Sunlight sensor of driver side is short or open to power supply	See <a href="#">Environment and Sunlight Sensor Failure</a>
B118A11	Sunlight sensor at driver side is short-circuited to GND	
B118B15	Sunlight sensor of co-driver side is short or open to power supply	

Diagnostic Trouble Code	Description	Fault location/elimination method
B118B11	Sunlight sensor at the front passenger side is short-circuited to GND	
B118096	Blower fault	Refer to <a href="#">A/C blower failure</a>
B11A912	Short circuit of water valve 1 coil	See <a href="#">Three-way Solenoid Valve Failure</a>
B11A913	Water valve 1 coil is open circuit	
B11A916	Water valve 1 underpressure	
B11A917	Water valve 1 overpressure	
B11A997	Water valve 1 shuts off at over temperature	
B11A998	Water valve 1 over-temperature alarm	
B11AB13	Water valve 3 coil is open circuit	See <a href="#">Four-way Valve Failure</a>
B11AB16	Water valve 3 underpressure	
B11AB17	Water valve 3 overpressure	
B11AB97	Water valve 3 shuts off at over temperature	
B11AB98	Water valve 3 over-temperature alarm	
B11E511	Inner condenser outlet refrigerant temperature sensor is short-circuited to GND	Refer to <a href="#">Refrigerant temperature sensor failure</a>
B11E515	Inner condenser outlet refrigerant temperature sensor is short to power supply or open	
B11E211	The refrigerant temperature sensor at the outlet of the compressor is short-circuited to ground	
B11E215	The refrigerant temperature sensor at the outlet of the compressor is short-circuited or open-circuited to the power supply	
B11E314	The refrigerant pressure sensor at compressor discharge outlet is open circuit-ed or short circuit-ed to ground	
B11E312	The refrigerant pressure sensor at compressor discharge outlet is short-circuited to the power supply	
B11E414	The refrigerant pressure sensor at compressor suction inlet is open circuit-ed or short circuit-ed to ground	

Diagnostic Trouble Code	Description	Fault location/elimination method
B11E412	The refrigerant pressure sensor at compressor suction inlet is short-circuited to the power supply	
B11E711	Plate-type heat exchanger outlet refrigerant temperature sensor is short to GND	
B11E715	Plate-type heat exchanger outlet refrigerant temperature sensor is short to power supply or open	
B11E811	Driver side face-blowing temperature sensor is short-circuited to GND	
B11E815	Driver side face-blowing temperature sensor is short-circuited to power supply or open circuit	See <a href="#">Failure of Air Duct Sensor 1</a>
B11E911	Driver side foot-blowing temperature sensor is short-circuited to GND	
B11E915	Driver side foot-blowing temperature sensor is short-circuited to power supply or open circuit	See <a href="#">Failure of Air Duct Sensor 2</a>
B11EA11	Front passenger side face-blowing temperature sensor is short-circuited to GND	
B11EA15	Front passenger side face-blowing temperature sensor is short-circuited to power supply or open circuit	See <a href="#">Failure of Air Duct Sensor 3</a>
B11EB11	Foot-blowing foot temperature sensor at front passenger side to the ground	
B11EB15	Front passenger side foot-blowing temperature sensor is short-circuited to power supply or open circuit	See <a href="#">Failure of Air Duct Sensor 4</a>
U02A387	Communication with PM2.5 AQM is lost	Refer to <a href="#">PM2.5 sensor failure</a>
B11A417	Compressor standby over-voltage fault	
B11A416	Compressor standby undervoltage fault	
B118F19	Compressor overcurrent protection	
B118F16	Compressor underpressure fault	
B118F17	Compressor over-voltage fault	
B118F44	Compressor RAM failure	
B118F45	Compressor ROM failure	
B118F46	Compressor EEPROM failure	See <a href="#">Air Conditioner Compressor Failure</a>

Diagnostic Trouble Code	Description	Fault location/elimination method	
B11DA01	High voltage detection circuit failure of compressor		
B11DB01	Compressor current detection circuit failure		
B11DC01	Compressor motor current detection circuit failure		
B11DC19	Compressor motor current abnormality protection		
B11DD01	Basic temperature sensor failure of compressor		
B11DD98	Low temperature protection of compressor basic temperature		
B11DE01	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature sensor failure		
B11DE98	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature overheating abnormality protection		
B11DF01	Compressor drive circuit failure		
B118F96	Compressor failure		
B11E096	Compressor rotor action abnormality protection		
B11917B	Electric heating water pump no-load		See <a href="#">Heating Water Pump Failure</a>
B119197	Electric heating water pump blocked/overcurrent		
B119198	Electric heating water pump shuts down due to over temperature		
B119117	Electric heating water pump overvoltage protection		
B11927B	Battery-powered coolant electronic water pump no-load	See <a href="#">Battery Cooling Water Pump Failure</a>	
B119297	Battery-powered coolant electronic water pump blocked/overcurrent		
B119298	Battery-powered coolant electronic water pump shuts down due to over temperature		
B119217	Battery-powered coolant electronic water pump overvoltage protection		
B119817	Heater DC/DC overvoltage at low-voltage terminal	See <a href="#">PTC Heating Controller Failure</a>	

Diagnostic Trouble Code	Description	Fault location/elimination method	
B119919	Heater overcurrent at high voltage terminal		
B119A15	Heater IGBT short circuit/open circuit		
B119B41	Heater memory error		
B119C98	Heater cooling temperature is too high		
B119D16	High and low voltage alarm at heater hardware interface		
B119E16	Heater undervoltage alarm		
B119E17	Heater overvoltage alarm at high-voltage terminal		
B119F02	Heater LIN communication		
B11A098	Heater hardware overheated		
B11A009	Heater hardware protection		
B11A109	Temperature sensor error at the coolant inlet of the heater		
B11A209	Temperature sensor error at the coolant outlet of the heater		
B11A309	Heater core temperature sensor error		
B11EC15	Electronic expansion valve 1 short circuit or open circuit		See <a href="#">Electronic Expansion Valve Failure</a>
B11EC98	Electronic expansion valve 1 over temperature protection or over temperature alarm		
B11EC16	Electronic expansion valve 1 working power supply undervoltage		
B11EC17	Electronic expansion valve 1 working power supply overvoltage		
U022B87	The thermal management controller loses communication with the electronic expansion valve 1		
B11ED15	Electronic expansion valve 2 short circuit or open circuit		
B11ED98	Electronic expansion valve 2 over temperature protection or over temperature alarm		
B11ED16	Electronic expansion valve 2 working power supply undervoltage		
B11ED17	Electronic expansion valve 2 working power supply overvoltage		

Diagnostic Trouble Code	Description	Fault location/elimination method
U022C87	The thermal management controller loses communication with the electronic expansion valve 2	
B11AA12	Short circuit of water valve 2 coil	See <a href="#">Solenoid Water Valve Failure</a>
B11AA13	Water valve 2 coil is open circuit	
B11AA16	Water valve 2 underpressure	
B11AA17	Water valve 2 overpressure	
B11AA97	Water valve 2 shuts off at over temperature	
B11AA98	Water valve 2 over-temperature alarm	
B11EE96	Solenoid valve 1 control circuit failure	See <a href="#">Heat Exchanger Solenoid Valve Failure</a>
B11EF96	Solenoid valve 2 control circuit failure	
B11F096	Solenoid valve 3 control circuit failure	
B11F196	Solenoid valve 4 control circuit failure	
B11F296	Solenoid valve 5 control circuit failure	

### 7.2.7.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 7.2.7.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.

c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 7.2.7.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km
6	Coolant temperature	-36.8-137.2	°C

### 7.2.7.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by AC can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Connect the scan tool.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Select “AC”/“action test”.
- e. Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Position of temperature-adjusting air damper at driver's side	Temperature-adjusting air damper at driver's side	0-100%
Position of the temperature damper at the front passenger side	Temperature damper at the front passenger side	0-100%
Temperature inside the vehicle	Internal temperature sensor	-40~87°C
Outside (ambient) temperature	External temperature sensor	-40~87°C
Evaporator temperature	Evaporation temperature sensor	-40~87°C
Air inlet damper position	Air inlet motor	0-100%
Heat exchange water pump	Heat exchange water pump	0-100%
Battery-powered water pump	Battery-powered water pump	0-100%
Blower PWMM duty cycle	Blower	0-100%
Air conditioning relay control status	Air Conditioning Relay	No pull-in/pull-in
Target air temperature at driver side	Temperature actuator at driver side	0-87°C
Target air temperature at front passenger side	Temperature actuator at front passenger side	0-87°C

Diagnostic apparatus display item	Test components	Control range
Switch state of solenoid valve 1	Solenoid valve 1	Valve closed/valve open
The position of the plate end electronic expansion valve	Electronic expansion valve	0-576
Three-way water valve 1 position control	Three-way water valve 1	0-100%
Three-way water valve 2 position control	Three-way water valve 2	0-100%
Four-way valve position control	Four-way valve	Big loop/small loop
Air conditioner cooling fan request status	Cooling fan	0-100%
Compressor Control	Electric compressor negative	0-8600rpm
Expected water temperature of heater	PTC heater	0-100°C
Switch state of solenoid valve 3	Solenoid valve 3	Valve closed/valve open
Switch state of solenoid valve 4	Solenoid valve 4	Valve closed/valve open
Switch state of solenoid valve 5	Solenoid valve 5	Valve closed/valve open

### 7.2.7.10 Thermal management control module power failure

#### 1. DTC description:

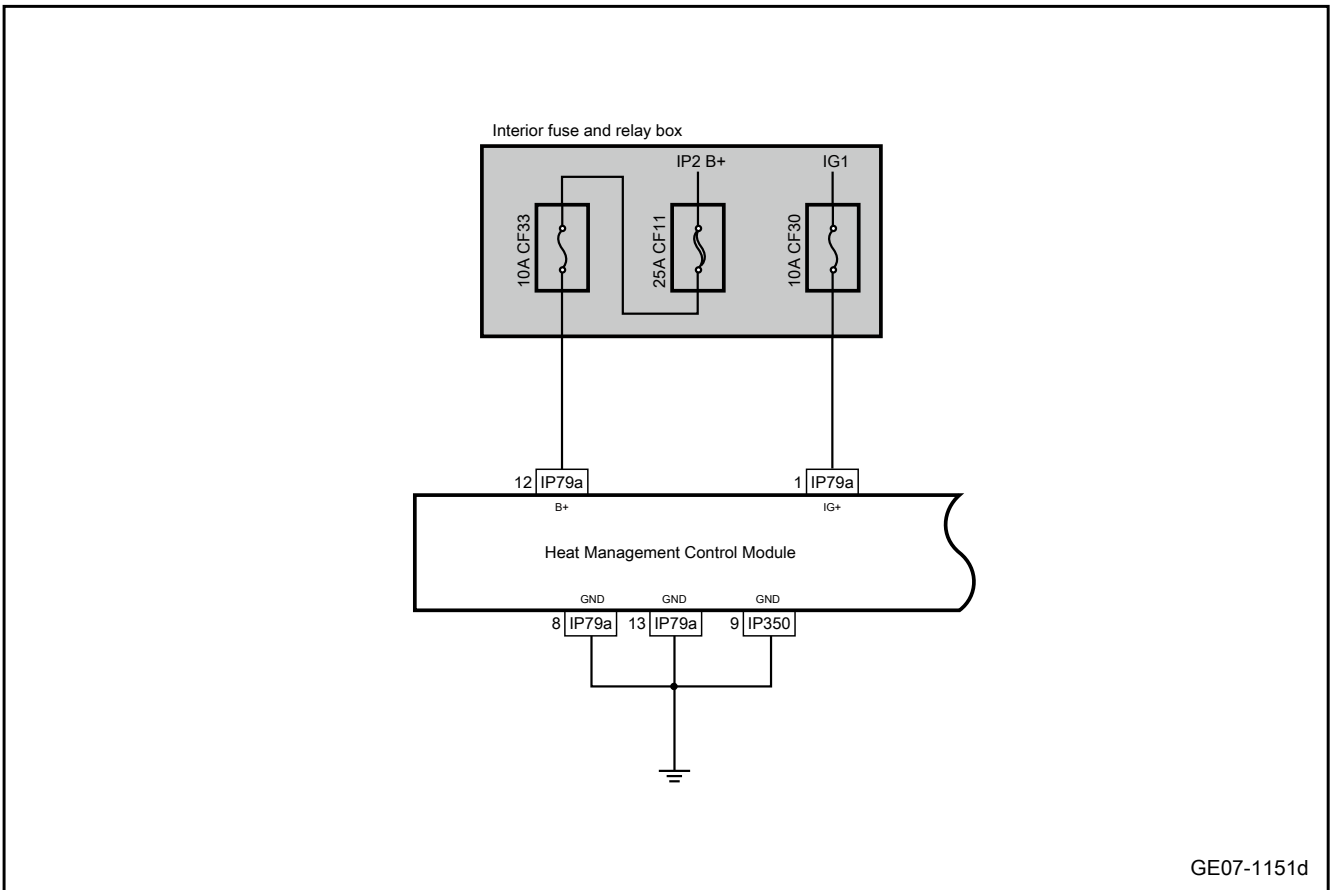
Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Battery voltage $\leq 9V$ , keep the state for at least 1s Note: Service life	1. Ignition status is "Ignition ON".	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module
U300617	Battery voltage $\geq 16V$ , keep the state for at least 1s Note: Applicable to 16.25V, 16V		

#### 3. Schematic circuit diagram:





4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Inspect the fuse.

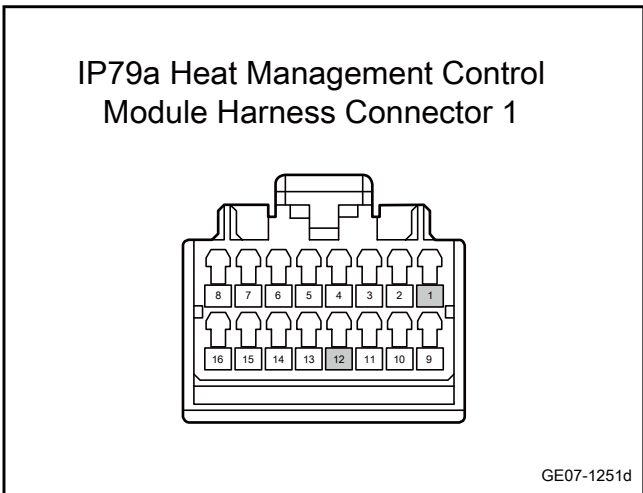
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF30 and check whether the fuse CF30 is blown.  
Rated fuse capacity: 10A
- C. Pull off the interior fuse CF33 and check whether the fuse CF33 is blown.  
Rated fuse capacity: 10A
- D. Pull out the fuse EF28 of the front engine compartment. Check whether the fuse EF28 is blown.  
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check whether the working voltage of the thermal management control module is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP79a(12)		

- E. Confirm whether the measured value meets the standard.

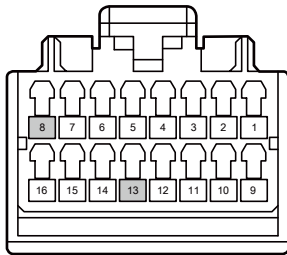
No

Repair or replace the harness.

Yes

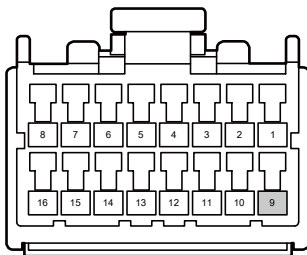
**Step 5** Check whether the grounding harness of the thermal management control module is normal.

IP79a Heat Management Control Module Harness Connector 1



GE07-1252d

IP350 Heat Management Control Module Harness Connector 4



GE07-1253d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connectors IP79a and IP79a of the thermal management control module.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP79a(13)		
IP350(9)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

**Step 7** Reprogram and reset heat management control module.

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 7.2.7.11 Thermal management control module communication failure

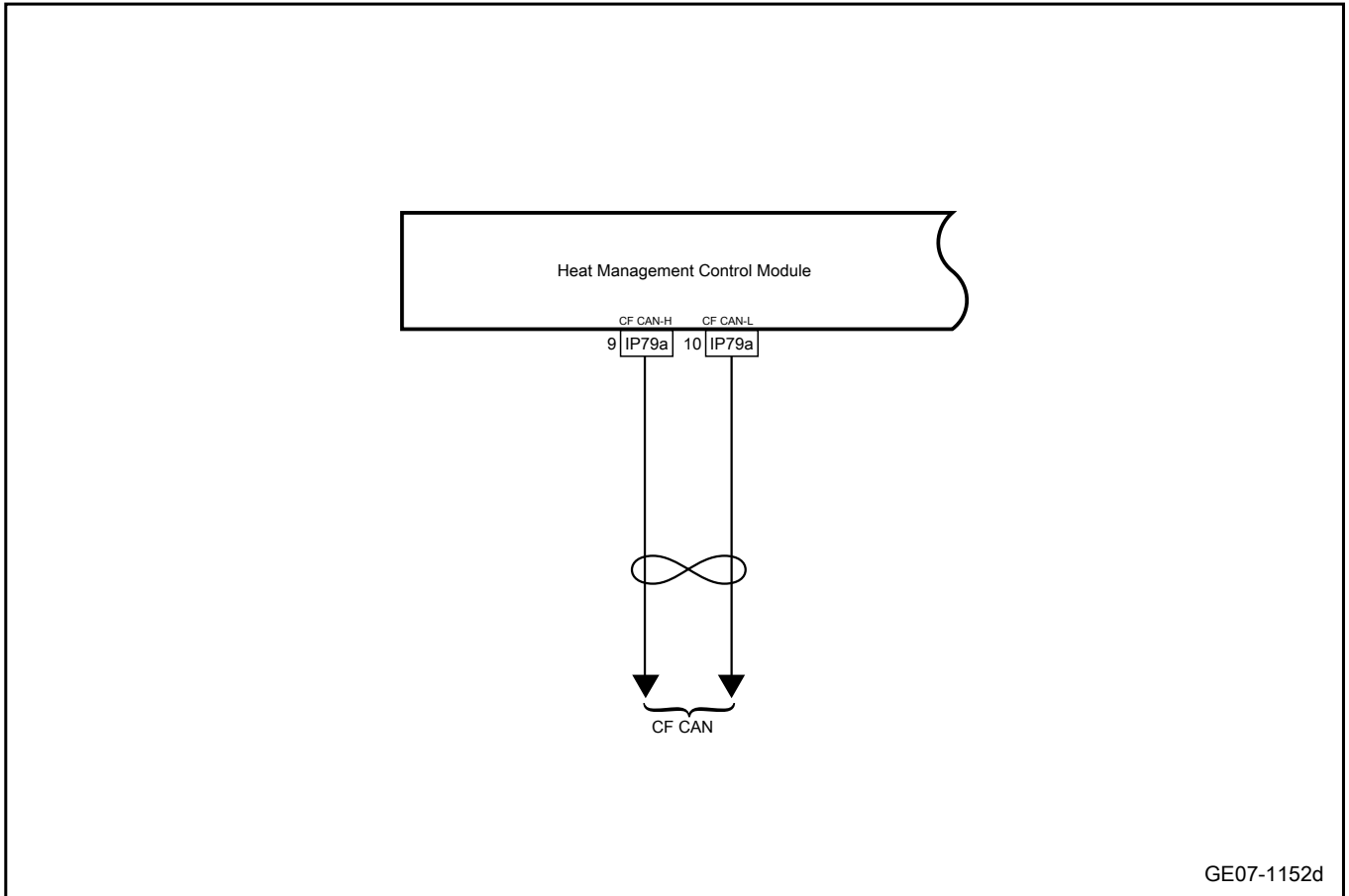
#### 1. DTC description:

Diagnostic Trouble Code	Description
U015687	Communication with MMI is lost
U016B87	Communication with ACCM is lost
U111F87	Communication with PTC is lost
U111C87	Communication with BMSL is lost
U111D87	Communication with WV2 is lost
U111E87	Communication with WV3 is lost
U016687	Communication with FCP is lost
U014087	Communication with BCM is lost
U111487	Communication with VCU is lost
U012287	Communication with ESC is lost
U015587	Communication with IPK is lost
U019887	Communication with T-BOX is lost
U007300	CAN bus off

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	5T lost MMI (ID=0x2A5) message	1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage) 2. The TDiagenable condition is met 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. Ignition status is "Ignition ON".	1. Circuit 2. Thermal management control module 3. Diagnostic interface
U016B87	5T (T analysis) lost account (ID=0x0C) message		
U111F87	5T PTC (ID=0x27) information is lost		
U111C87	5T lost WV1 (ID=0x09) message		
U111D87	5T lost WV2 (ID=0x0A) message		
U111E87	5T lost WV3 (ID=0x0B) message		
U016687	5T (T analysis text) lost FCP (ID=0x11) message		
U014087	5T lost vehicle body control module (ID=0x285) information		
U111487	VCU_HBCAN (ID=0x162) message loss for 250 milliseconds		
U012287	Lost ESC (ID=0x125) message for 250 milliseconds		
U015587	5T (T analysis) lost IPK (ID=0x3F1) message		
U019887	5T lost T-BOX (ID=0x292) message		
U007300	The bus switching off counter cL1ToL2 equals to 10.		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Check the CF-CAN bus integrity.

- A. Check CF-CAN network integrity, refer to [CF-CAN bus integrity check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4 | Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. See [Power Failure of Automatic Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 5 | Reprogram and reset heat management control module.

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

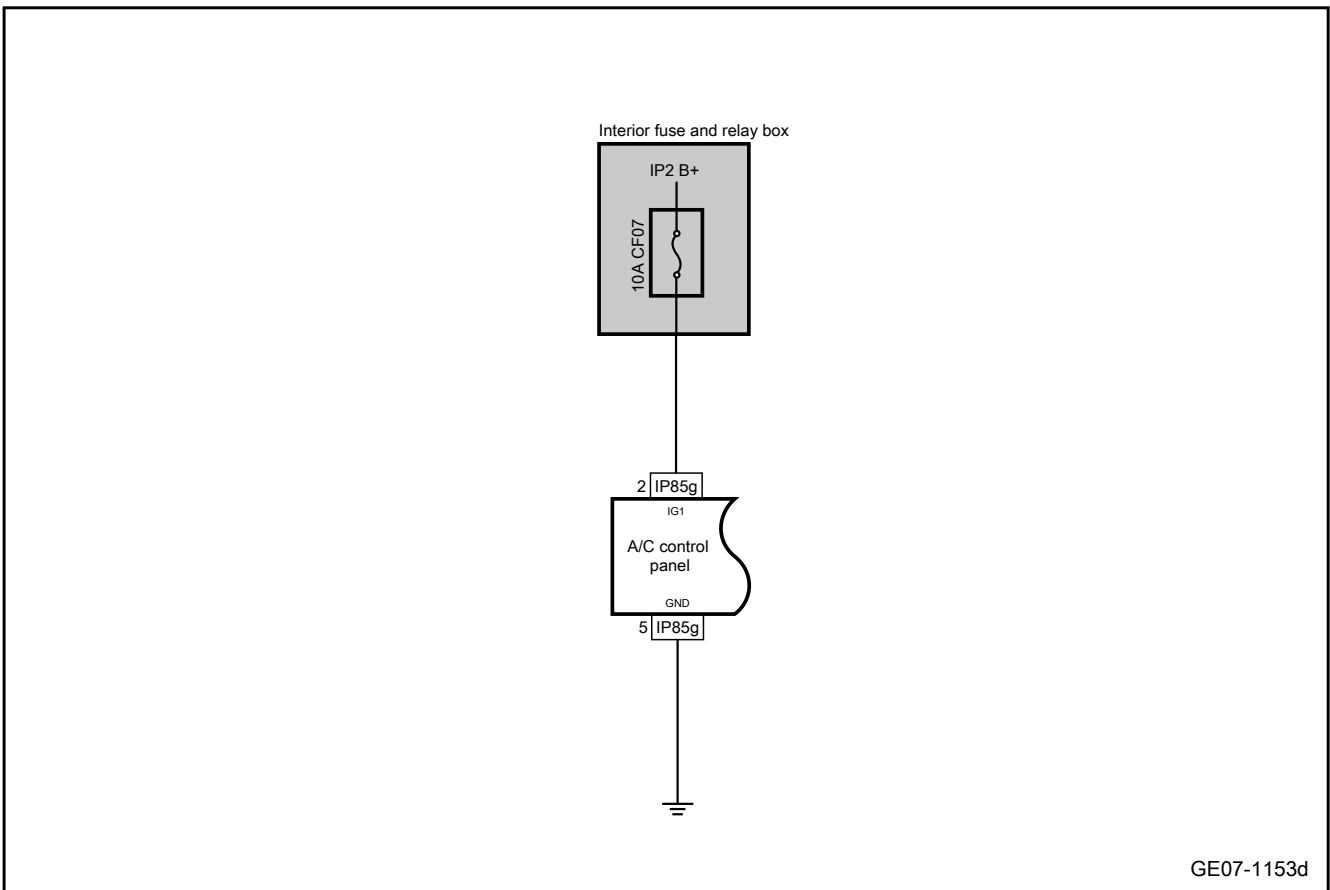
Diagnose according to the output trouble code.

No

Step 7 System is normal.

7.2.7.12 Automatic air conditioning control panel failure

1. Schematic circuit diagram:



2. Diagnosis steps



Step 1	Primary check.
--------	----------------

- A. Check the automatic air conditioning control panel for signs of damage, deformation, stain, loosening, etc.
- B. Check the harness connector of automatic air-conditioning control panel for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

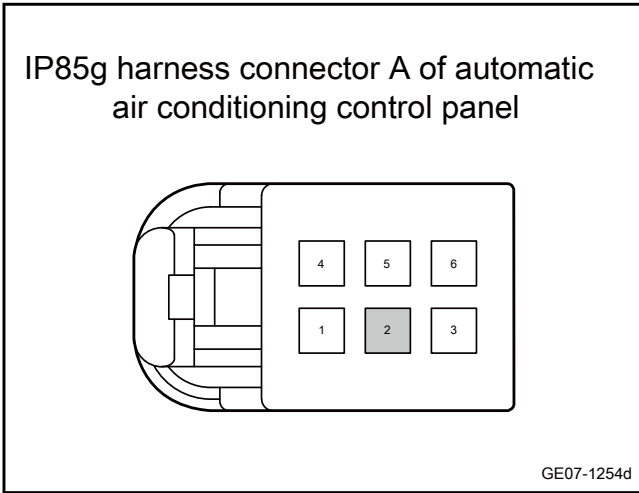
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF07 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the working voltage of automatic air-conditioning control panel is normal.
--------	--



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP85g(2)	Vehicle body is grounded.	Standard voltage: 11-14V

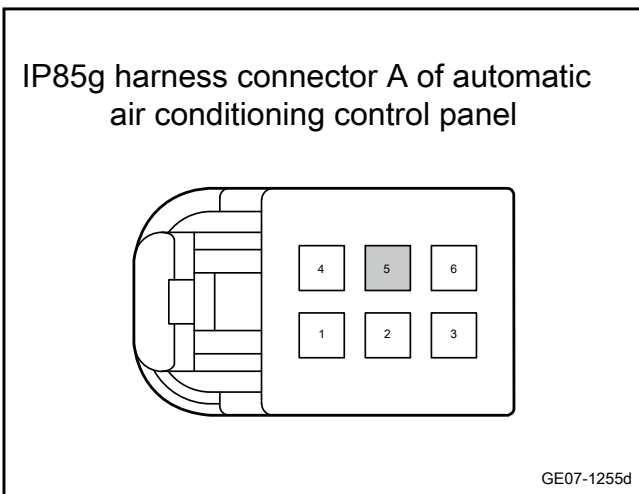
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the grounding harness of automatic air-conditioning control panel is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP85g(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace automatic air-conditioning control panel.

- A. Replace automatic air-conditioning control panel. Refer to Replacement of automatic air-conditioning control panel

Next Step

Step 7 System is normal.

7.2.7.13 Fault of evaporator temperature sensor

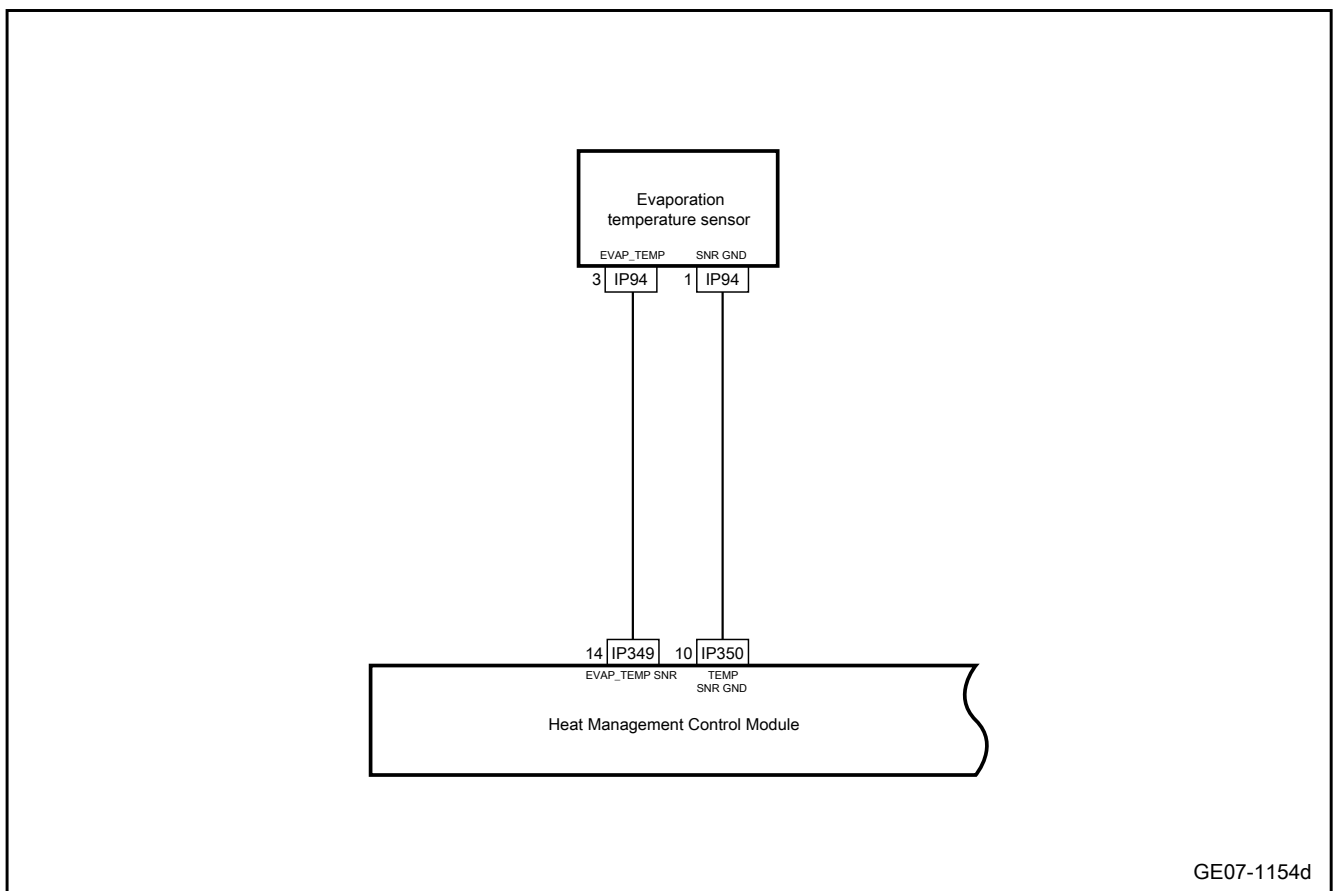
1. DTC description:

Diagnostic Trouble Code	Description
B118611	Evaporator temperature sensor short to GND
B118615	Evaporator temperature sensor is short-circuited to GND or is open circuited

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118611	It has been detected for 500ms that the voltage value detected by the evaporator air outlet sensor is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Evaporator temperature sensor
B118615	It has been detected for 500ms that the voltage value detected by the evaporator air outlet sensor is continuously greater than 4.9V		

3. Schematic circuit diagram:



GE07-1154d

## 4. Diagnosis steps

## Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the evaporator temperature sensor for signs of damage, deformation, stains, looseness, etc.
- B. Check thermal management control module, evaporator temperature sensor harness connector for signs of damage, bad contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

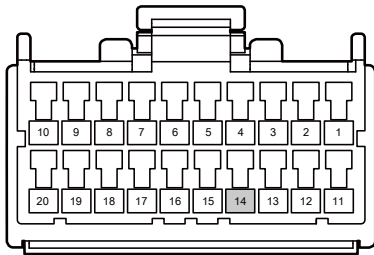
No

Repair or replace the faulty part.

Yes

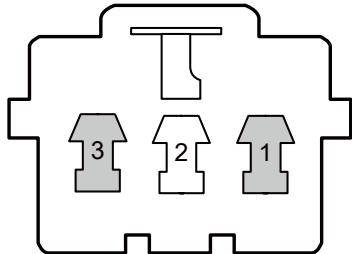
Step 3	Test whether the circuit between thermal management control module and evaporator temperature sensor is open.
--------	---

IP349 Heat Management Control Module Harness Connector 3



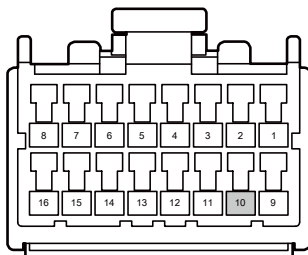
GE07-1256d

IP94 evaporator temperature sensor harness connector



GE07-1257d

IP350 Heat Management Control Module Harness Connector 4



GE07-1258d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	IP94(3)	Standard resistance: less than 1Ω
IP350(10)	IP94(1)	

- F. Confirm whether the measured value meets the standard.

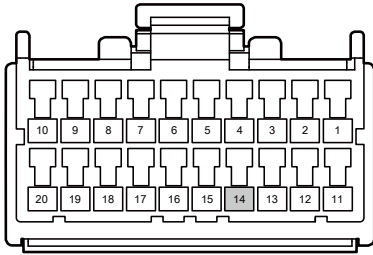
No

Repair or replace the harness.

Yes

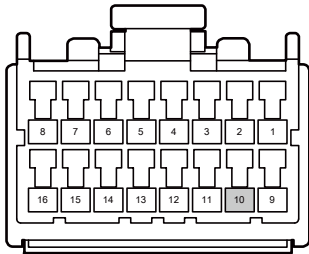
Step 4	Test whether the circuit between thermal management control module and evaporator temperature sensor is short to the power supply.
--------	--

IP349 Heat Management Control Module Harness Connector 3



GE07-1259d

IP350 Heat Management Control Module Harness Connector 4



GE07-1260d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	Vehicle body is grounded.	Standard voltage: 0V
IP350(10)		

- G. Confirm whether the measured value meets the standard.

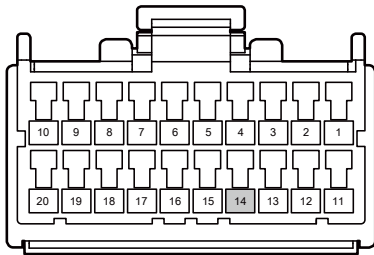
No

Repair or replace the harness.

Yes

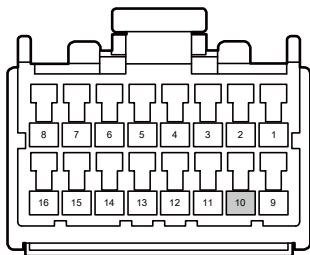
Step 5	Test whether the circuit between thermal management control module and evaporator temperature sensor is short to the ground.
--------	--

**IP349 Heat Management Control Module Harness Connector 3**



GE07-1261d

**IP350 Heat Management Control Module Harness Connector 4**



GE07-1262d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6 | Evaporator temperature sensor replacement.**

- A. Evaporator temperature sensor replacement. Refer to Evaporator temperature sensor replacement
- B. Confirm whether the evaporator temperature sensor is working normally.

Yes

System is normal.

No

**Step 7 | Replace the thermal management control module.**

- A. Check the power and ground wiring harness of the thermal management control module. Refer to [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 7.2.7.14 Fault of outdoor temperature sensor

1. DTC description:

Diagnostic Trouble Code	Description
B118711	Outside temperature sensor is short to GND
B118715	Outside temperature sensor is short or open to power supply

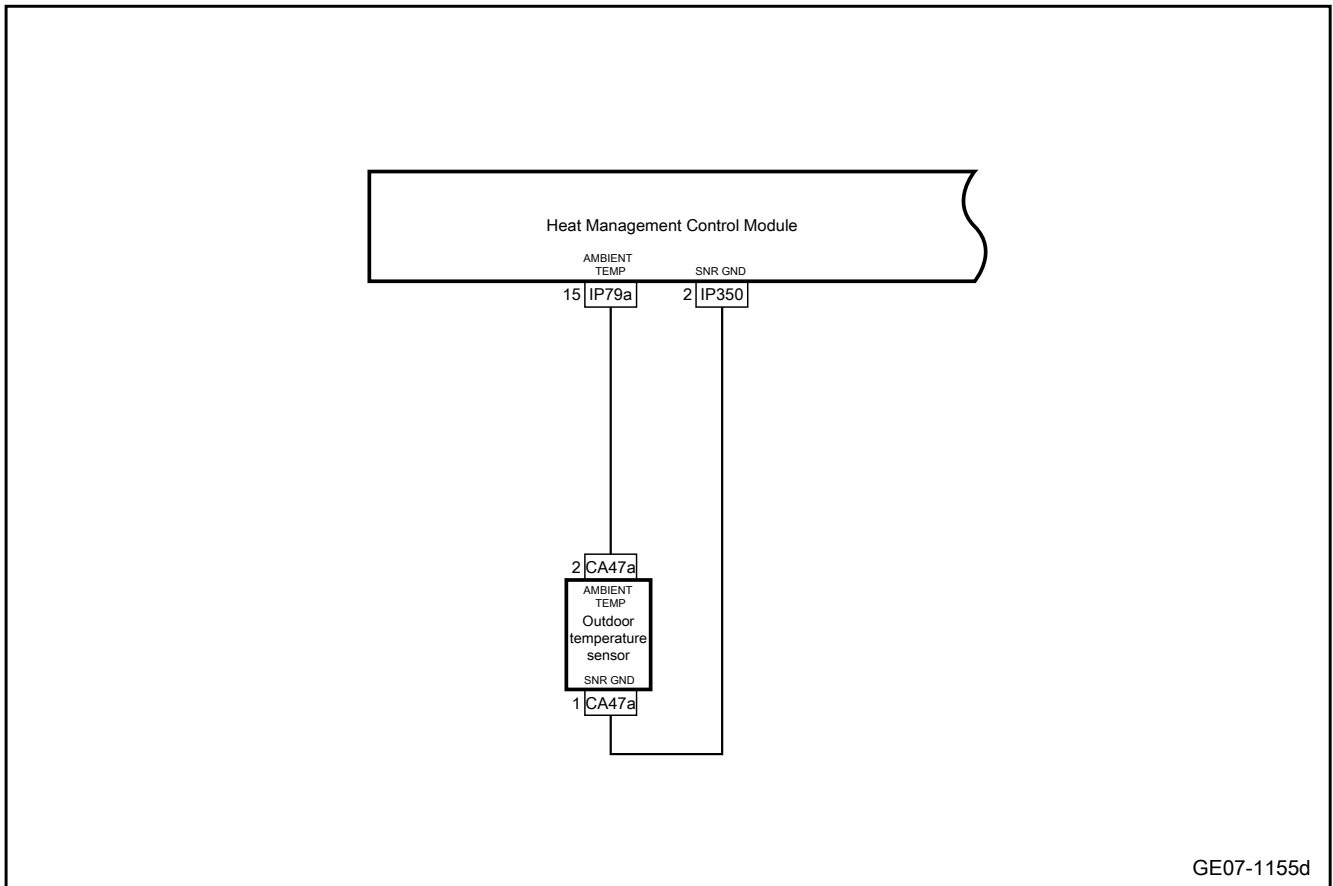
2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118711	It has been detected for 500ms that the voltage value detected by the air outlet sensor outside the vehicle is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. External temperature sensor



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118715	It has been detected for 500ms that the voltage value detected by the air outlet sensor outside the vehicle is continuously greater than 4.9V		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the external temperature sensor for signs of damage, deformation, stains, looseness, etc.
- B. Check the thermal management control module and external temperature sensor harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

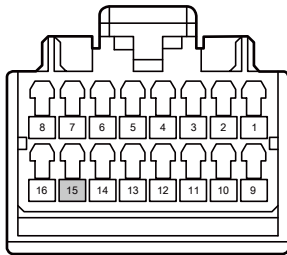
No

Repair or replace the faulty part.

Yes

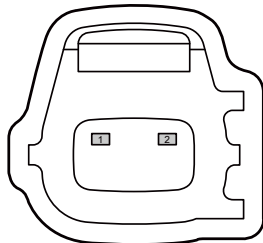
Step 3	Check whether the wiring harness between the thermal management control module and the external temperature sensor is open circuit.
--------	---

IP79a Heat Management Control Module Harness Connector 1



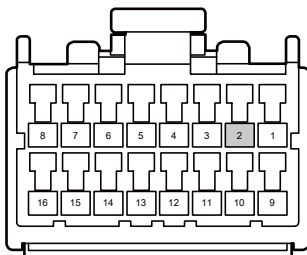
GE07-1263d

CA47a outside temperature sensor harness connector



GE07-1264d

IP350 Heat Management Control Module Harness Connector 4



GE07-1265d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	CA47a(2)	Standard resistance: less than 1Ω
IP350(2)	CA47a(1)	

- F. Confirm whether the measured value meets the standard.

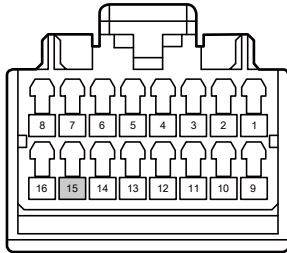
No

Repair or replace the harness.

Yes

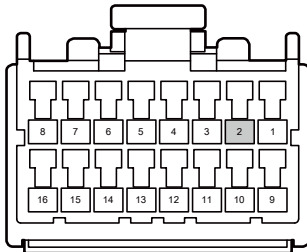
**Step 4** Check whether the wiring harness between the thermal management control module and the external temperature sensor is short-circuited to the power supply.

IP79a Heat Management Control Module Harness Connector 1



GE07-1266d

IP350 Heat Management Control Module Harness Connector 4



GE07-1267d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	Vehicle body is grounded.	Standard voltage: 0V
IP350(2)		

- G. Confirm whether the measured value meets the standard.

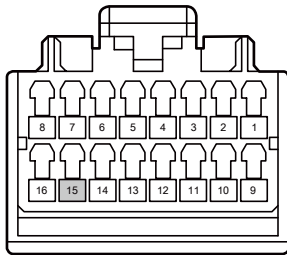
No

Repair or replace the harness.

Yes

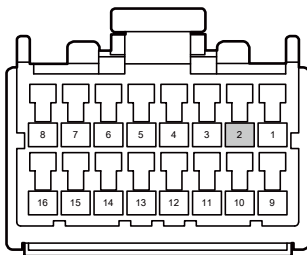
Step 5	Check whether the wiring harness between the thermal management control module and the external temperature sensor is short-circuited to the ground.
--------	--

IP79a Heat Management Control Module Harness Connector 1



GE07-1268d

IP350 Heat Management Control Module Harness Connector 4



GE07-1269d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replace outdoor temperature sensor.

- A. Replace outdoor temperature sensor. Refer to replacement of outdoor temperature sensor
- B. Confirm whether the outdoor temperature sensor works normally.

Yes

System is normal.

No

Step 7 | Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 7.2.7.15 Fault of inside temperature sensor

#### 1. DTC description:

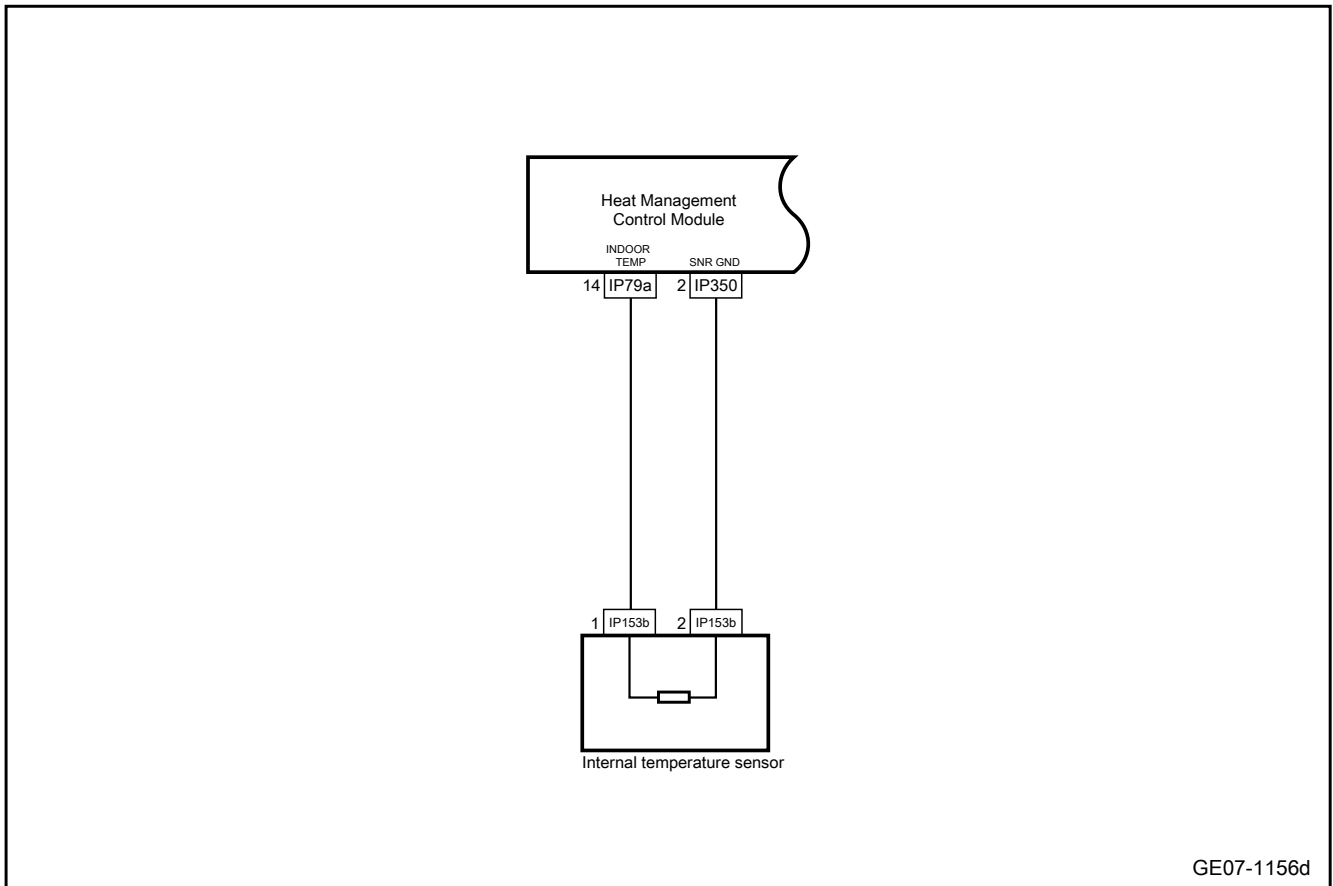
Diagnostic Trouble Code	Description
B118511	The inside temperature sensor is short to GND
B118515	The inside temperature sensor is shot to power supply or its circuit is open

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118511	It has been detected for 500ms that the voltage value detected by the air outlet sensor inside the vehicle is continuously less than 0.1V	Power supply within the range of 1.9V-16V 2. IG ON 3S after enabling	1. Circuit 2. Thermal management control module 3. Internal temperature sensor

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118515	It has been detected for 500ms that the voltage value detected by the air outlet sensor inside the vehicle is continuously greater than 4.9V		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and indoor temperature sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the thermal management control module and indoor temperature sensor harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

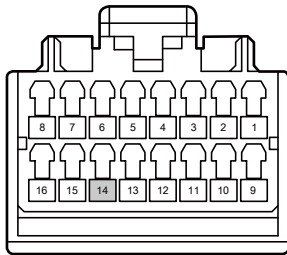
Repair or replace the faulty part.

Yes

Step 3	Detect whether the wiring harness between the thermal management control module and the indoor temperature sensor is open.
--------	--

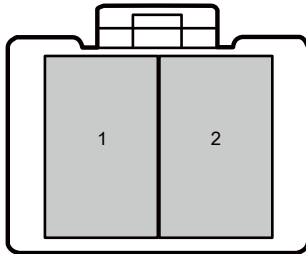


IP79a Heat Management Control Module Harness Connector 1



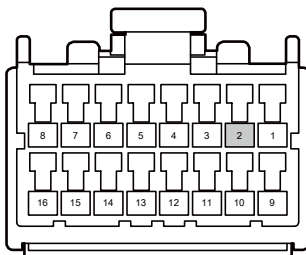
GE07-1270d

IP153b inside temperature sensor harness connector



GE07-1271d

IP350 Heat Management Control Module Harness Connector 4



GE07-1272d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(14)	IP153b(1)	Standard resistance: less than 1Ω
IP350(2)	IP153b(2)	

- F. Confirm whether the measured value meets the standard.

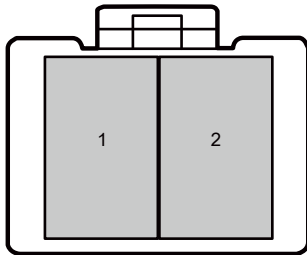
No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the thermal management control module and the indoor temperature sensor is short-circuited to the power supply.

IP153b inside temperature sensor harness connector



GE07-1273d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP153b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP153b(2)		

- G. Confirm whether the measured value meets the standard.

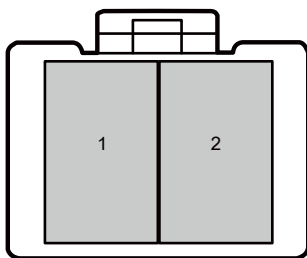
No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the indoor temperature sensor is short-circuited to the ground.

IP153b inside temperature sensor harness connector



GE07-1274d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP153b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP153b(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the indoor temperature sensor.

- A. Replace the indoor temperature sensor. Refer to [Replacement of indoor temperature sensor](#)
- B. Confirm whether the indoor temperature sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8 Reprogram and reset heat management control module.

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 7.2.7.16 Fault of left temperature actuator

#### 1. DTC description:

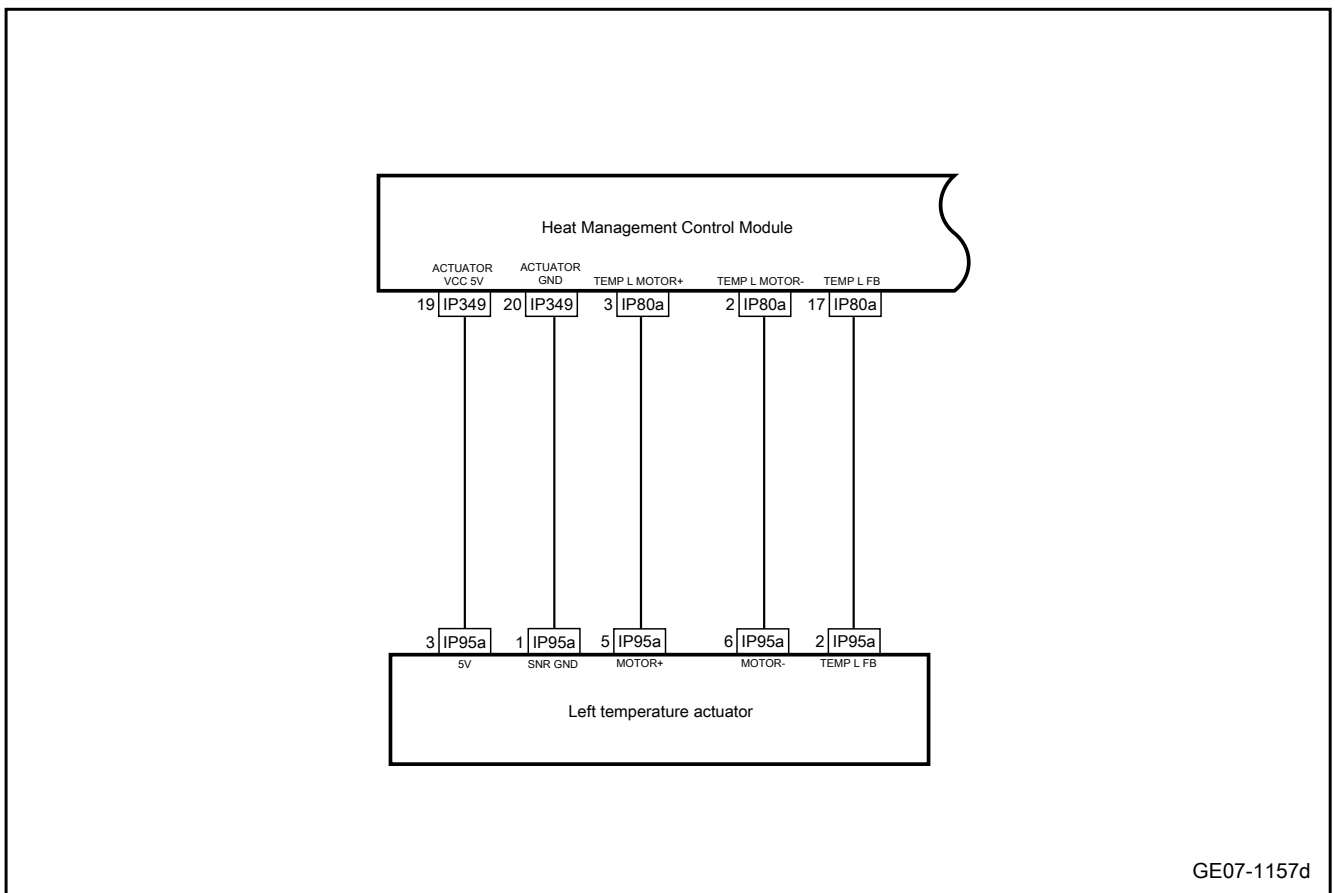
Diagnostic Trouble Code	Description
B118171	Driver side air damper motor locked-rotor
B118111	Driver side temperature adjustment motor is short to GND.
B118115	Driver side temperature adjustment motor is short to power supply or open circuit.

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118171	<ol style="list-style-type: none"> <li>The temperature motor at driver side must meet the conditions for running all the time</li> <li>The temperature motor at driver side cannot run at an angle that meets the requirements within a unit time</li> <li>Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again</li> </ol>	<ol style="list-style-type: none"> <li>Power supply within the range of 1.9V-16V</li> <li>The state of the vehicle is in IGN ON mode</li> </ol>	<ol style="list-style-type: none"> <li>Circuit</li> <li>Thermal management control module</li> <li>Left temperature actuator</li> </ol>
B118111	<ol style="list-style-type: none"> <li>The temperature motor at driver side keeps running</li> <li>The time for the temperature motor control pin at driver side to return to the ground short-circuit is greater than 500 milliseconds</li> <li>Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again</li> </ol>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118115	1. The temperature motor at driver side keeps running 2. The time for the temperature motor control pin at driver side to return to an open circuit or short circuit to the power supply for more than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the left temperature actuator for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module and left temperature actuator for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

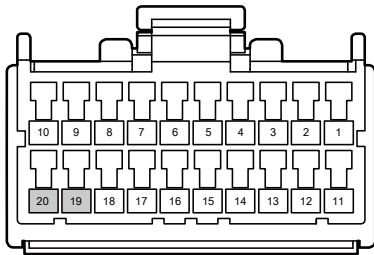
No

Repair or replace the faulty part.

Yes

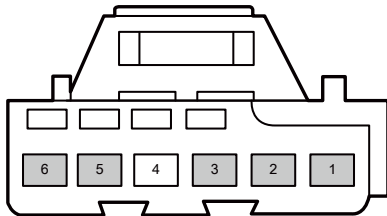
Step 3	Check whether the wiring harness between the thermal management control module and the left temperature actuator is open.
--------	---

IP349 Heat Management Control Module Harness Connector 3



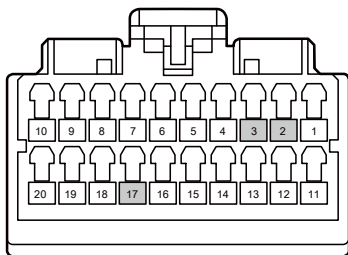
GE07-1275d

IP95a left temperature actuator harness connector



GE07-1276d

IP80a Heat Management Control Module Harness Connector 2



GE07-1277d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Disconnect the left temperature actuator harness connector IP95a.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP95a(1)	Standard resistance: less than 1Ω
IP80a(17)	IP95a(2)	
IP349(19)	IP95a(3)	
IP80a(3)	IP95a(5)	
IP80a(2)	IP95a(6)	

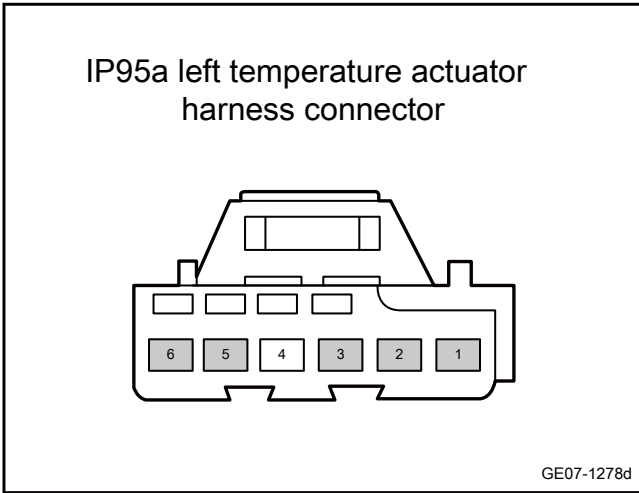
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the thermal management control module and the left temperature actuator is short circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Disconnect the left temperature actuator harness connector IP95a.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP95a(1)	Vehicle body is grounded.	Standard voltage: 0V
IP95a(2)		
IP95a(3)		
IP95a(5)		
IP95a(6)		

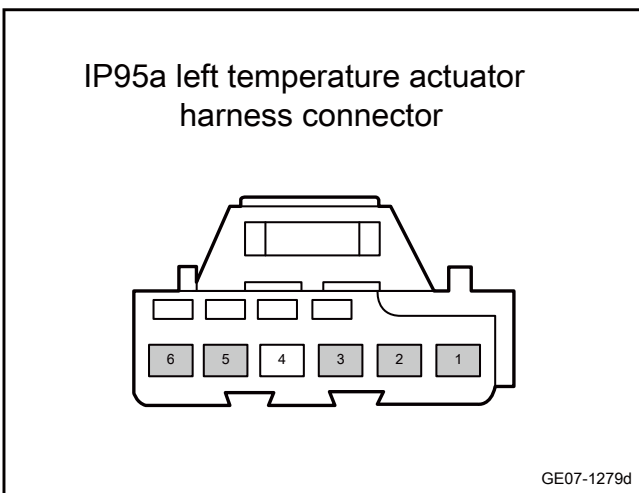
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the left temperature actuator is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Disconnect the left temperature actuator harness connector IP95a.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP95a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP95a(2)		
IP95a(3)		
IP95a(5)		



Measure terminal 1	Measure terminal 2	Standard value
IP95a(6)		

F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left temperature actuator.

- A. Replace the left temperature actuator.
- B. Check whether the left temperature actuator operates normally.

Yes

System is normal.

No

**Step 7** Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

**Step 8** Reprogram and reset heat management control module.

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 7.2.7.17 Fault of right temperature actuator

1. DTC description:

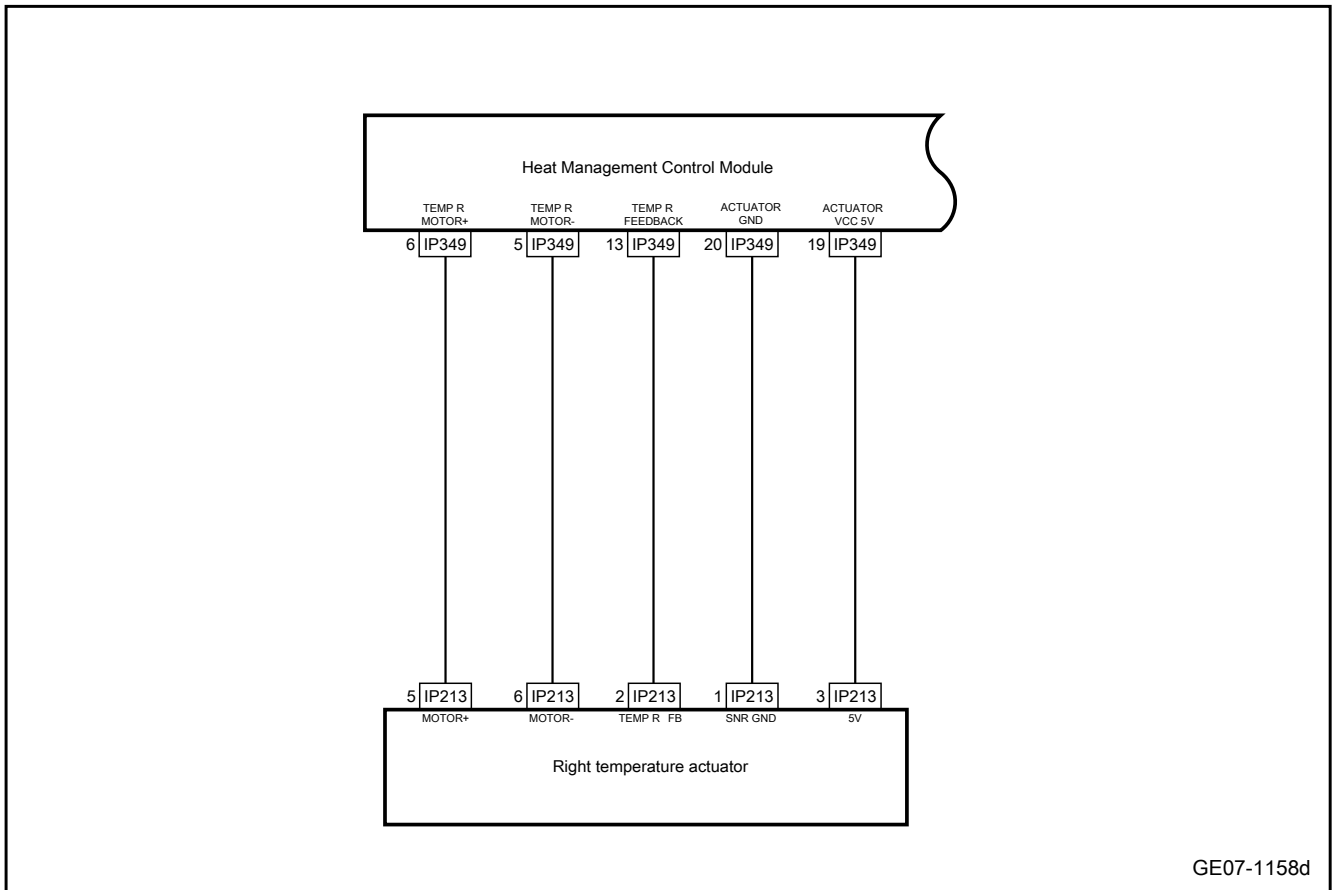
Diagnostic Trouble Code	Description
B118271	Front passenger side temperature air damper motor locked-rotor
B118211	Front passenger side temperature adjustment motor is short to GND.
B118215	The temperature adjustment motor on the co-driver side is shorted to power supply or circuit open.

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118271	1. The temperature motor at front passenger side must meet the requirements for running all the time 2. The temperature motor at front passenger cannot run at an angle that meets the requirements within a unit time 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again	Power supply within the range of 1.9V-16V 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Right temperature actuator

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118211	1. The temperature motor at front passenger side keeps running 2. The time for the temperature motor control pin at front passenger side to return to the ground short-circuit is greater than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		
B118215	1. The temperature motor at front passenger side keeps running 2. The time for the temperature motor control pin at front passenger side to return to an open circuit or short circuit to the power supply for more than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		

3. Schematic circuit diagram:



GE07-1158d

4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

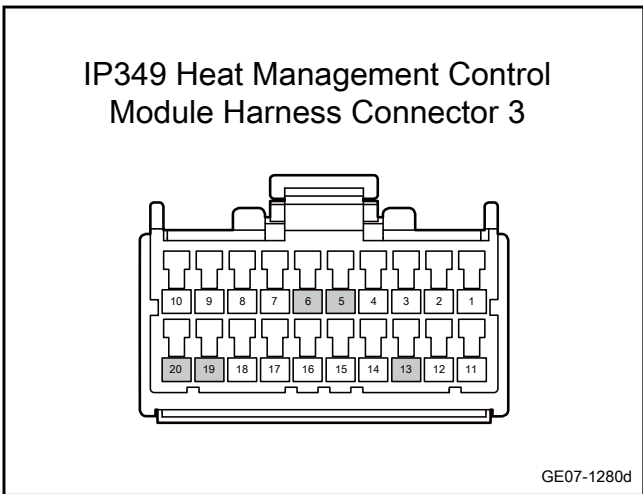
- A. Check the thermal management control module and the right temperature actuator for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module and right temperature actuator for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

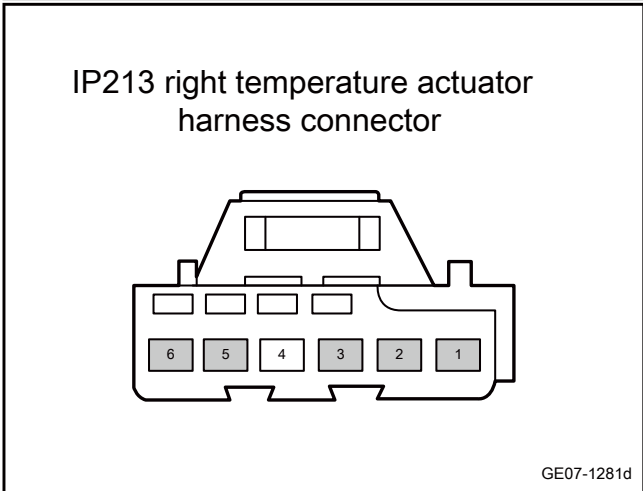
**Step 3** Check whether the wiring harness between the thermal management control module and the right temperature actuator is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the right temperature actuator harness connector IP213.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP213(1)	Standard resistance: less than 1Ω
IP349(13)	IP213(2)	
IP349(19)	IP213(3)	
IP349(6)	IP213(5)	
IP349(5)	IP213(6)	

- E. Confirm whether the measured value meets the standard.

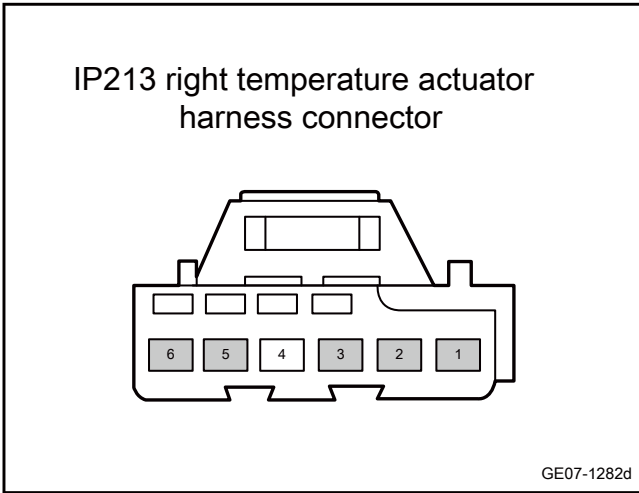


No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the thermal management control module and the right temperature actuator is short circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the right temperature actuator harness connector IP213.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP213(1)	Vehicle body is grounded.	Standard voltage: 0V
IP213(2)		
IP213(3)		
IP213(5)		
IP213(6)		

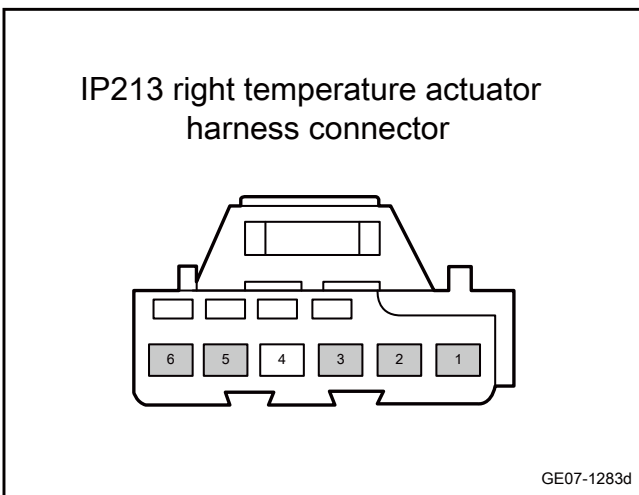
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

<b>Step 5</b>	Check whether the wiring harness between the thermal management control module and the right temperature actuator is short to ground.
---------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the right temperature actuator harness connector IP213.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP213(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP213(2)		
IP213(3)		
IP213(5)		
IP213(6)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right temperature actuator.

- A. Replace the right temperature actuator.
- B. Confirm whether the right temperature actuator operates normally.

Yes

System is normal.

No

**Step 7** Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

**Step 8** Reprogram and reset heat management control module.

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 7.2.7.18 Fault of mode actuator

#### 1. DTC description:

Diagnostic Trouble Code	Description
B118371	Air outlet mode motor locked-rotor
B118311	Adjustment motor of air outlet mode
B118315	Adjustment motor of air outlet mode is short to power supply or open

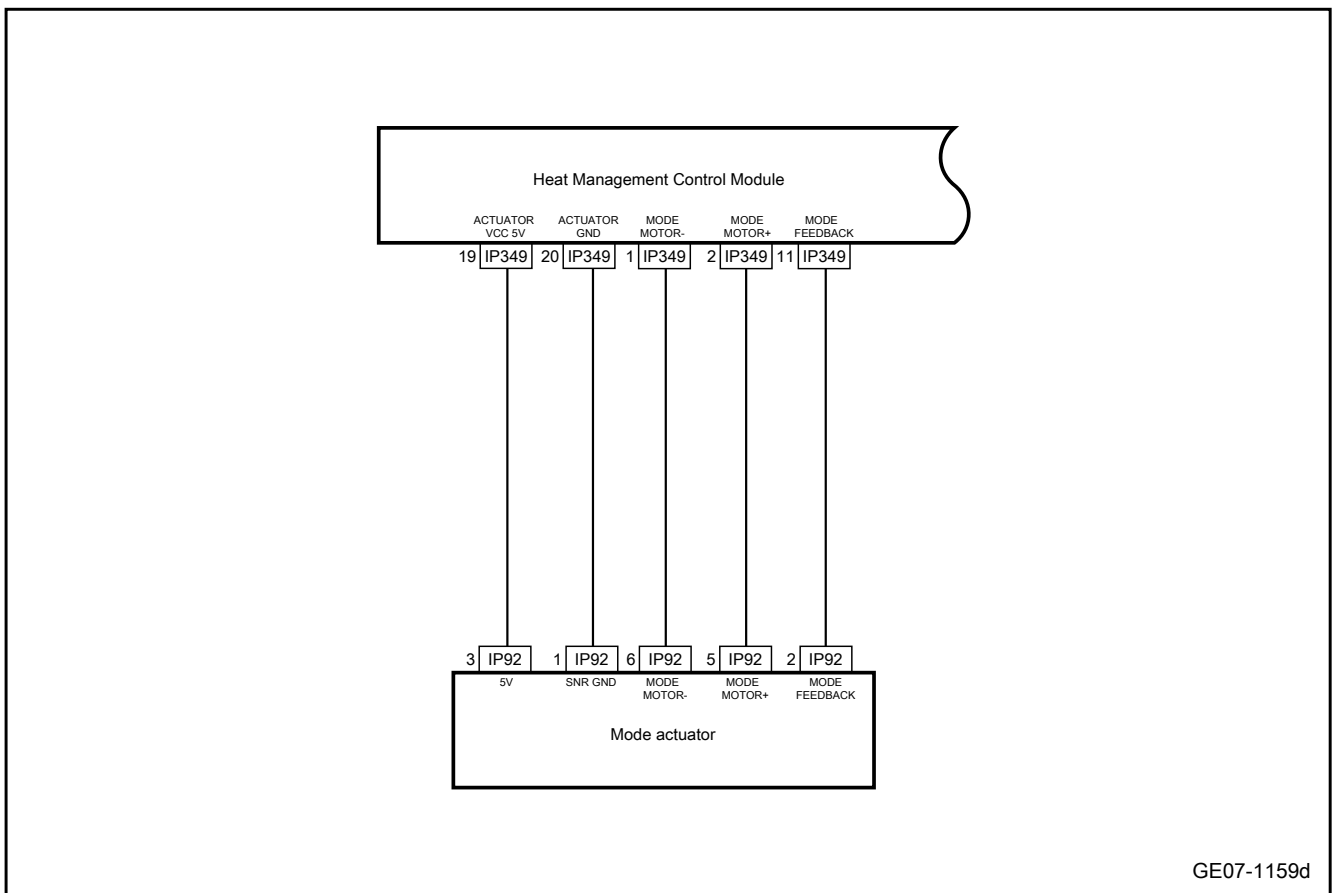
#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118371	<ol style="list-style-type: none"> <li>The mode motor runs all the time</li> <li>The mode motor cannot run at an angle that meets the requirements within a unit time</li> <li>Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again</li> </ol>	<ol style="list-style-type: none"> <li>Power supply within the range of 1.9V-16V</li> <li>The state of the vehicle is in IGN ON mode</li> </ol>	<ol style="list-style-type: none"> <li>Circuit</li> <li>Thermal management control module</li> <li>Mode actuator</li> </ol>
B118311	<ol style="list-style-type: none"> <li>The mode motor runs all the time</li> <li>The time for the mode motor control pin to return to the ground short-circuit is greater than 500 milliseconds</li> <li>Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again</li> </ol>		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118315	1. The mode motor runs all the time 2. The time for the mode motor control pin to return to an open circuit or short circuit to the power supply for more than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and mode actuator for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module and mode actuator for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

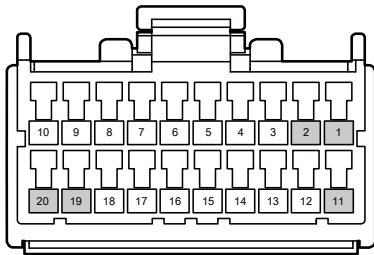
No

Repair or replace the faulty part.

Yes

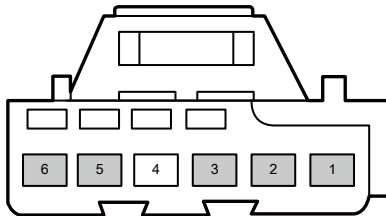
Step 3	Check whether the wiring harness between the thermal management control module and the mode actuator is open.
--------	---

IP349 Heat Management Control Module Harness Connector 3



GE07-1284d

IP92 mode actuator harness connector

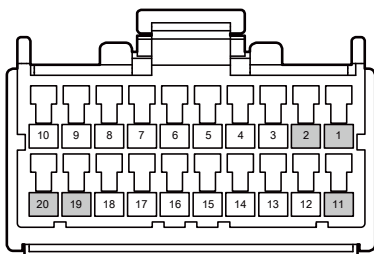


GE07-1285d

Yes

Step 4 Check whether the wiring harness between the thermal management control module and the mode actuator is short circuit.

IP349 Heat Management Control Module Harness Connector 3



GE07-1286d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP92(1)	Standard resistance: less than 1Ω
IP349(11)	IP92(2)	
IP349(19)	IP92(3)	
IP349(2)	IP92(5)	
IP349(1)	IP92(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard voltage: 0V
IP349(11)		
IP349(19)		
IP349(2)		

Measure terminal 1	Measure terminal 2	Standard value
IP349(1)		

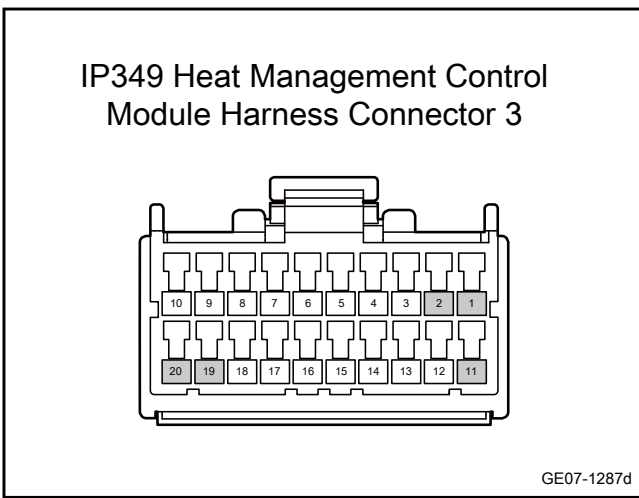
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the mode actuator is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(11)		
IP349(19)		
IP349(2)		
IP349(1)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace mode actuator.

- A. Replace mode actuator. Refer to replacement of mode actuator
- B. Confirm whether the mode actuator works normally.

Yes

System is normal.

No

**Step 7** Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
---------	-------------------

### 7.2.7.19 Fault of inner and outer circulation actuator

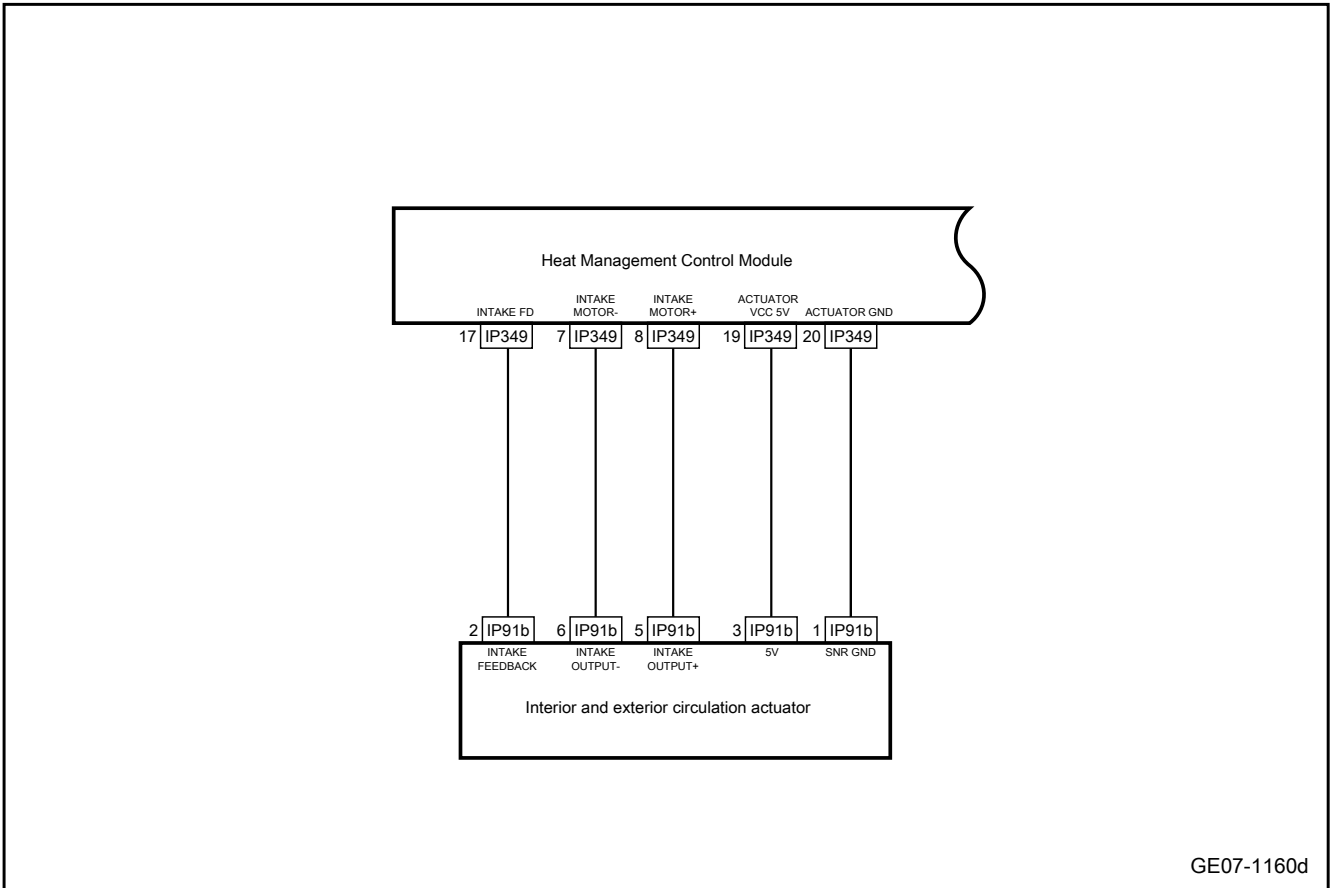
1. DTC description:

Diagnostic Trouble Code	Description
B118471	Circulating air damper motor locked-rotor
B118411	The circulating air damper motor is short-circuited to GND
B118415	The circulation damper motor is shorted to power supply or circuit open.

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118471	1. The inner and outer circulation motors are always running 2. The inner and outer circulation motors cannot run at an angle that meets the requirements within a unit time 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		
B118411	1. The circulating damper motor runs all the time 2. The time for the circulating damper motor control pin to return to the ground short-circuit is greater than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again	Power supply within the range of 1.9V-16V 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Interior and exterior circulation actuator
B118415	1. The circulating damper motor runs all the time 2. The time for the circulating damper motor control pin to return to an open circuit or short circuit to the power supply for more than 500 milliseconds 3. Rotate the motor back and forth, and read DTC from one limit to another. If it cannot be read, switch from this limit to another limit and read DTC again		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

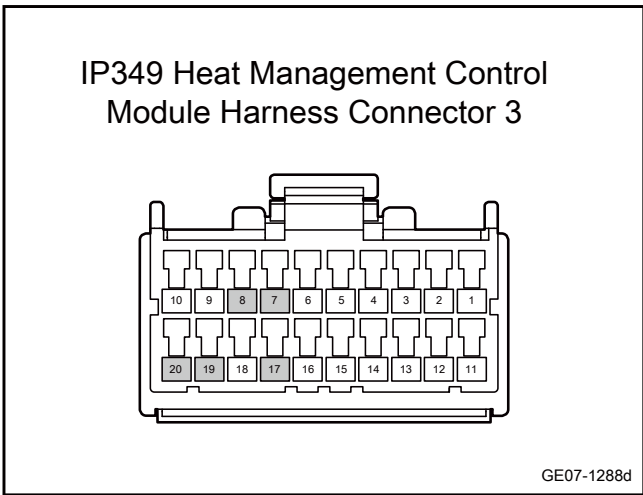
- A. Check the thermal management control module and the internal and external circulation actuators for signs of damage, deformation, stains, loosening, etc.
- B. Check the harness connector of thermal management control module and internal and external circulating actuators for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the wiring harness between the thermal management control module and the internal and external circulating actuator is open.



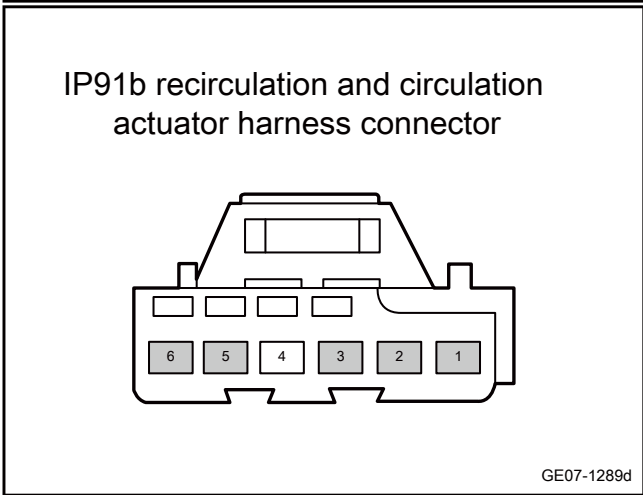
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the inner and outer circulation actuator harness connector IP91b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP91b(1)	Standard resistance: less than 1Ω
IP349(17)	IP91b(2)	
IP349(19)	IP91b(3)	
IP349(8)	IP91b(5)	
IP349(7)	IP91b(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

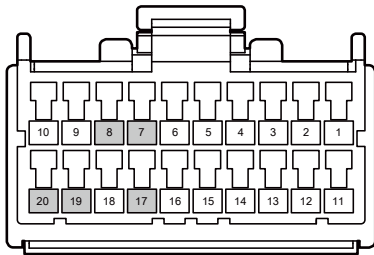


Yes

**Step 4** Check whether the wiring harness between the thermal management control module and the internal and external circulating actuator is short to power supply.



IP349 Heat Management Control Module Harness Connector 3



GE07-1290d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the inner and outer circulation actuator harness connector IP91b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard voltage: 0V
IP349(17)		
IP349(19)		
IP349(8)		
IP349(7)		

- F. Confirm whether the measured value meets the standard.

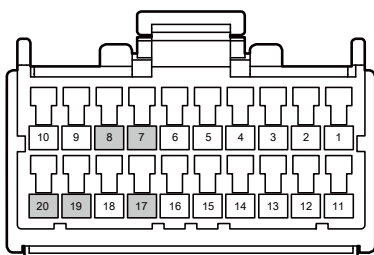
No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the internal and external circulating actuator is short to ground.

IP349 Heat Management Control Module Harness Connector 3



GE07-1291d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the inner and outer circulation actuator harness connector IP91b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(17)		
IP349(19)		
IP349(8)		
IP349(7)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the inner and outer circulation actuators.
--------	--

- A. Replace the inner and outer circulation actuators. Refer to replacement of the inner and outer circulation actuators
- B. Confirm whether the inner and outer circulation actuators work normally.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 7.2.7.20 Ambient and sun light sensor failure

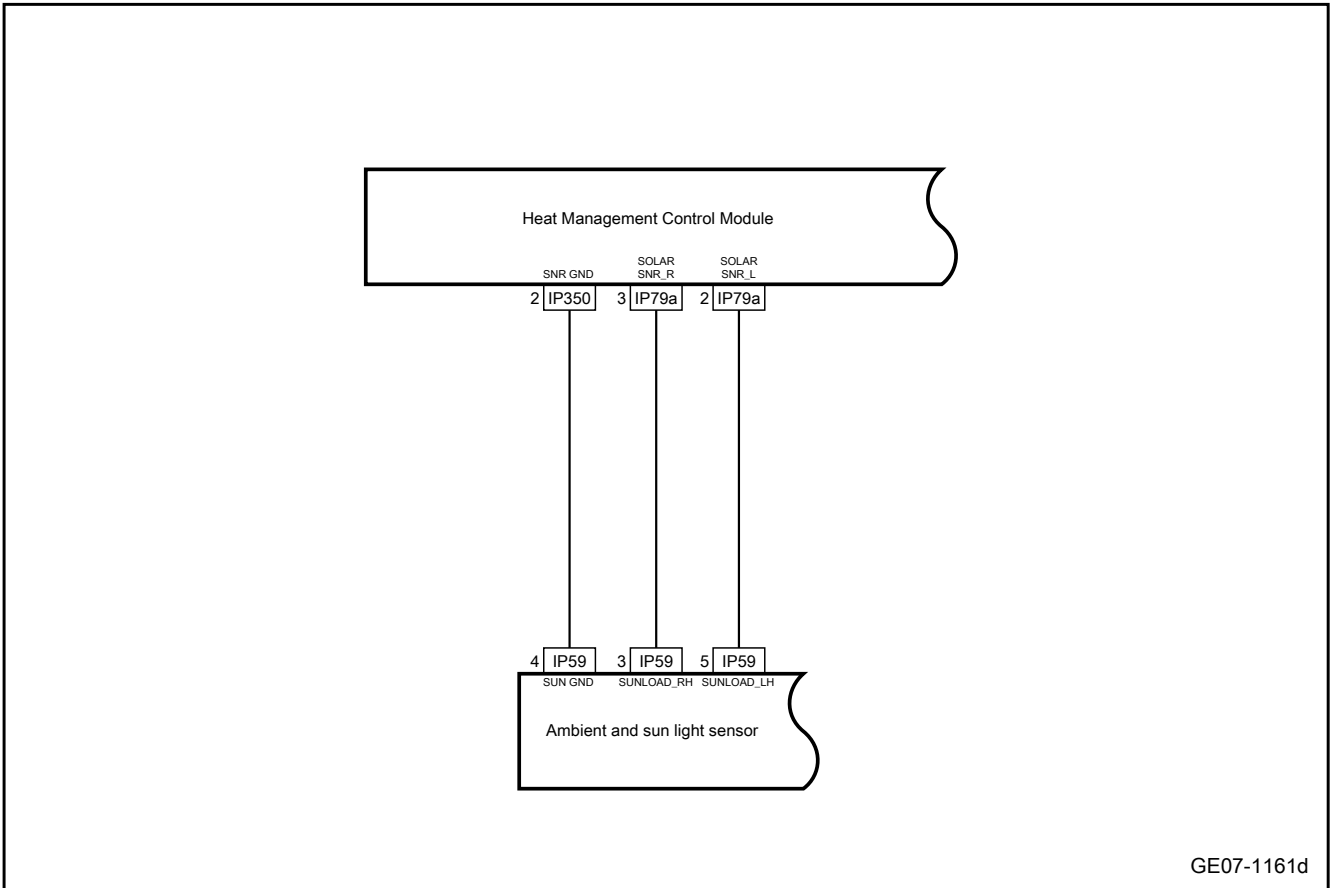
1. DTC description:

Diagnostic Trouble Code	Description
B118A15	Sunlight sensor of driver side is short or open to power supply
B118A11	Sunlight sensor at driver side is short-circuited to GND
B118B15	Sunlight sensor of co-driver side is short or open to power supply
B118B11	Sunlight sensor at the front passenger side is short-circuited to GND

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118A15	It has been detected for 500ms that the voltage value detected by the sunshine air outlet sensor at driver side is continuously greater than 4.9V	Power supply within the range of 1.9V-16V 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Ambient light and sun light sensor
B118A11	It has been detected for 500ms that the voltage value detected by the sunshine air outlet sensor at driver side is continuously less than 0.1V		
B118B15	It has been detected for 500ms that the voltage value detected by the sunshine air outlet sensor at front passenger side is continuously greater than 4.9V		
B118B11	It has been detected for 500ms that the voltage value detected by the sunshine air outlet sensor at front passenger side is continuously less than 0.1V		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, ambient light and sunlight sensor for signs of damage, deformation, smudges, or looseness.
- B. Check the thermal management control module and ambient and sun light sensor harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

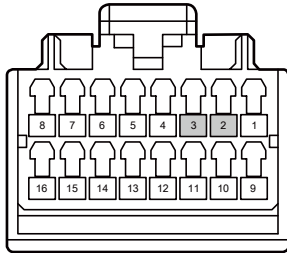
No

Repair or replace the faulty part.

Yes

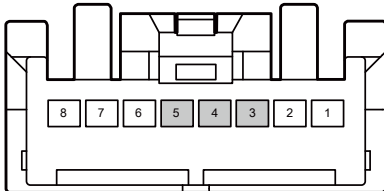
Step 3	Check whether the wiring harness between the thermal management control module and the ambient light and sunlight sensor is open.
--------	---

IP79a Heat Management Control Module Harness Connector 1



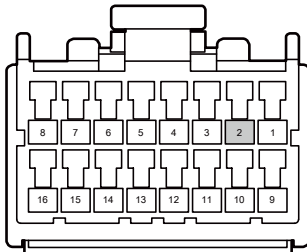
GE07-1292d

IP59 ambient and sun light sensor harness connector



GE07-1293d

IP350 Heat Management Control Module Harness Connector 4



GE07-1294d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(2)	IP59(5)	Standard resistance: less than 1Ω
IP79a(3)	IP59(3)	
IP350(2)	IP59(4)	

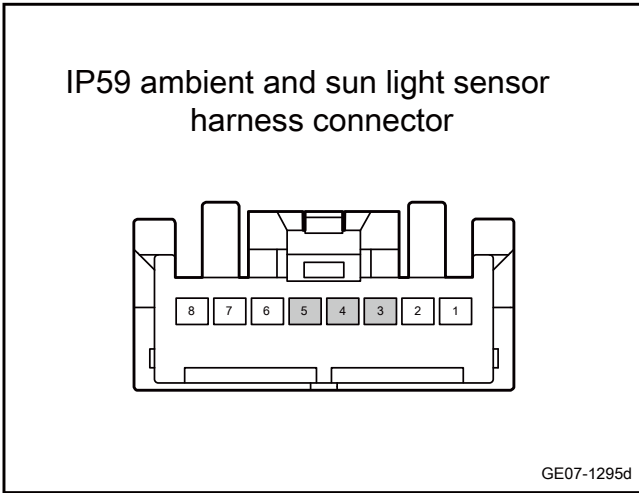
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Detect whether the wiring harness between the thermal management control module and the ambient light and sunlight sensor is short-circuited to the power supply.
--------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(5)	Vehicle body is grounded.	Standard voltage: 0V
IP59(3)		
IP59(4)		

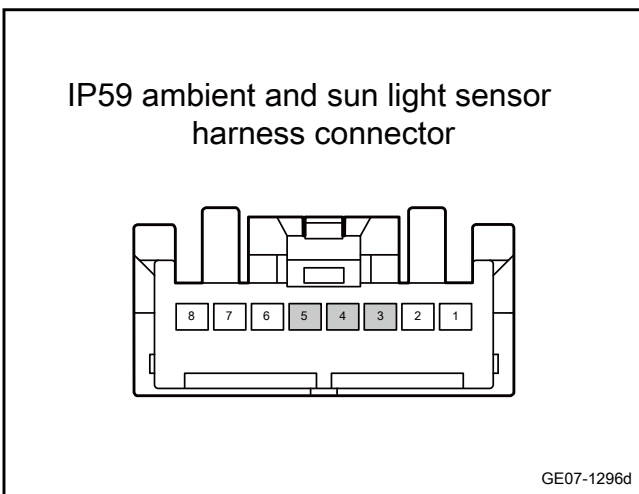
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the ambient light and sunlight sensor is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP59(3)		
IP59(4)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the ambient light and sun light sensor.
--------	---

- A. Replace the ambient light and sun light sensor. Refer to [Replacement of ambient light and sun light sensor](#)
- B. Confirm whether the ambient and sunlight sensor is in normal operation.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 10	System is normal.
------------	-------------------

### 7.2.7.21 Air conditioning blower fault

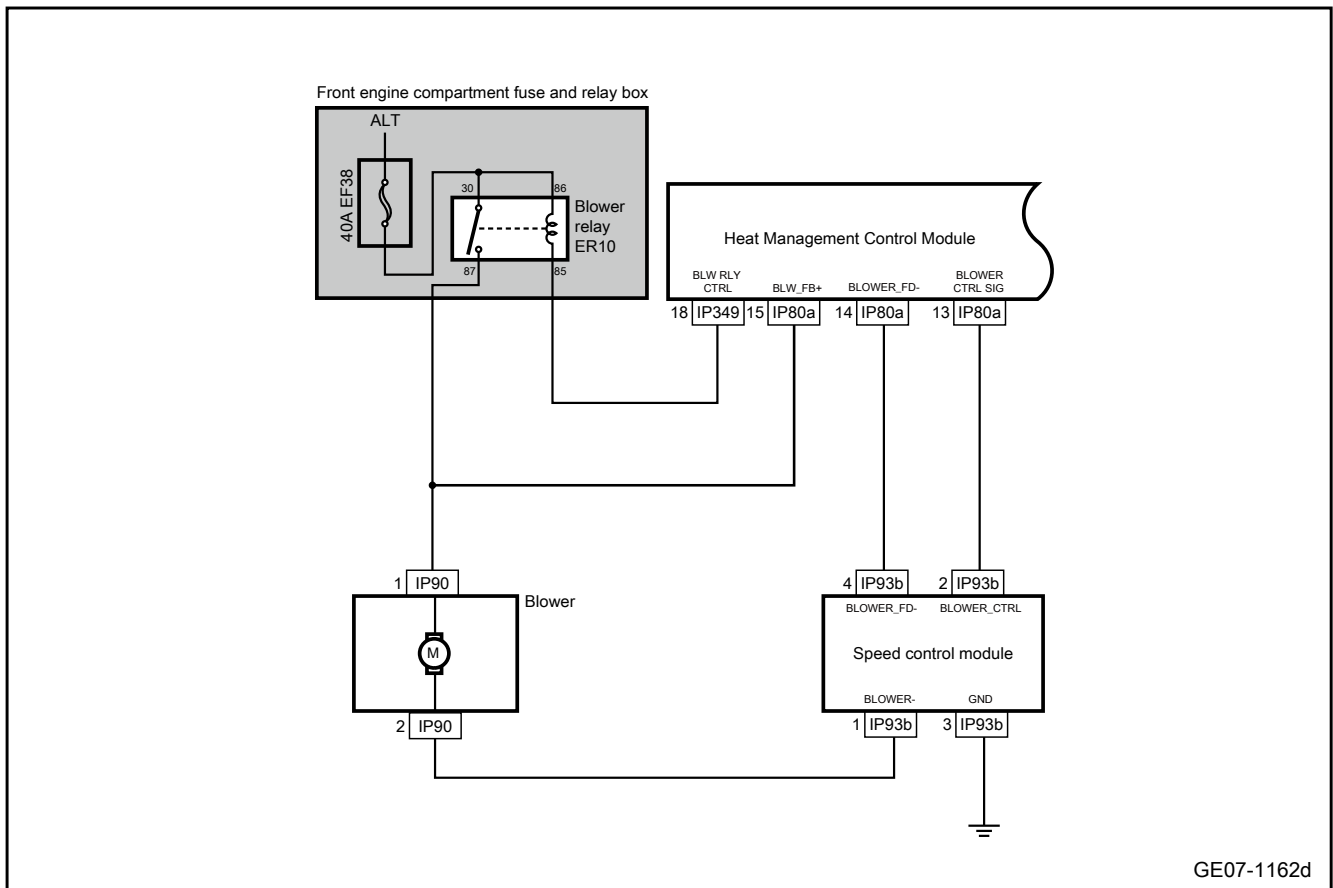
1. DTC description:

DTC	Trouble description
B118096	Blower fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118096	The difference between the target terminal voltage of the blower and the actual feedback voltage is greater than 1V and the acquisition time is greater than 5 seconds	Power supply within the range of 1.9V-16V 2. After igon2s is enabled	1. Harness 2. Battery 3. Blower 4. Thermal management control module 5. Speed control module

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the thermal management control module, blower, and speed control module for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module, blower and speed control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the battery voltage.

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 Check the blower fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the EF38 fuse in the front engine compartment and check whether the fuse is blown out.  
Rated fuse capacity: 40A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check blower relay.

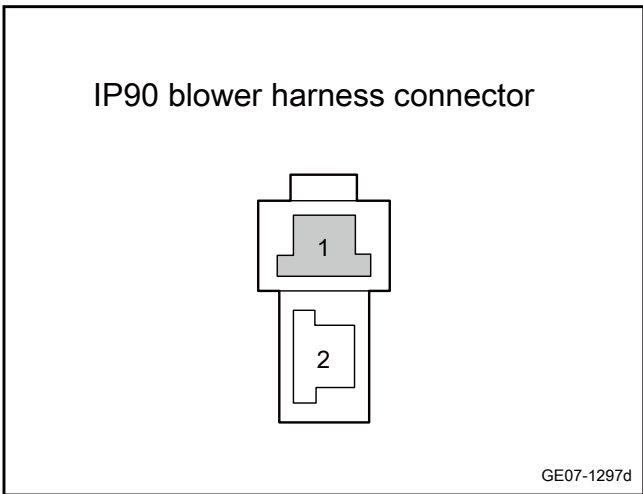
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug blower relay ER10, and use relay of same specification to replace it.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Check whether the harness between the blower relay and blower is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	ER10(87)	Standard resistance: less than 1Ω

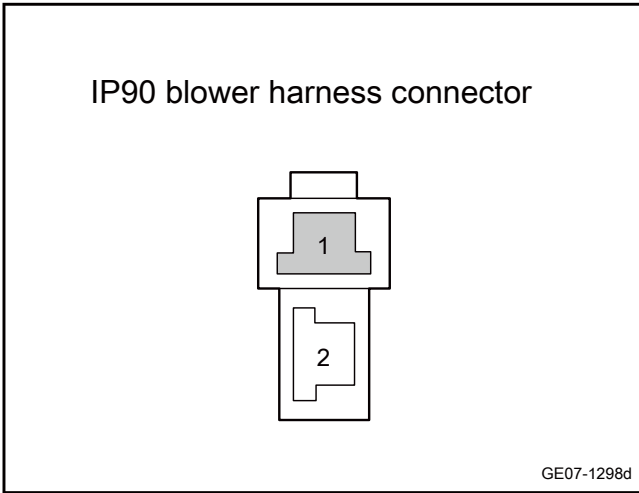
- E. Confirm whether the resistance value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the harness between the blower relay and blower is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard voltage: 0V

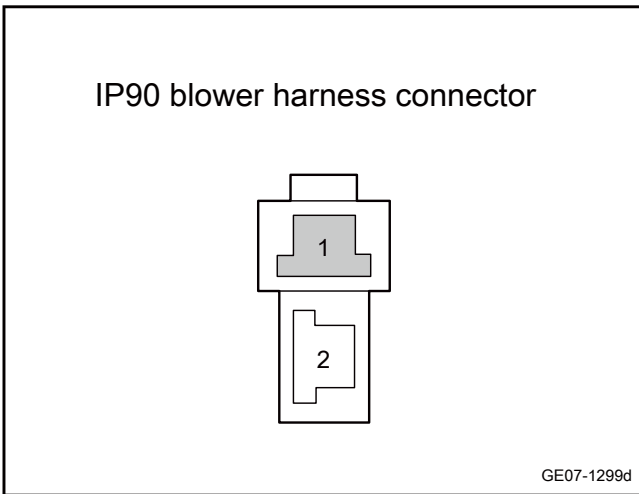
- F. Confirm whether the resistance value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the harness between the blower relay and blower is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

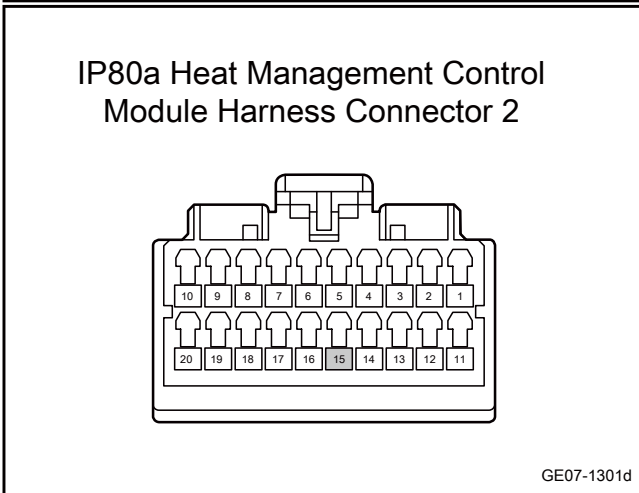
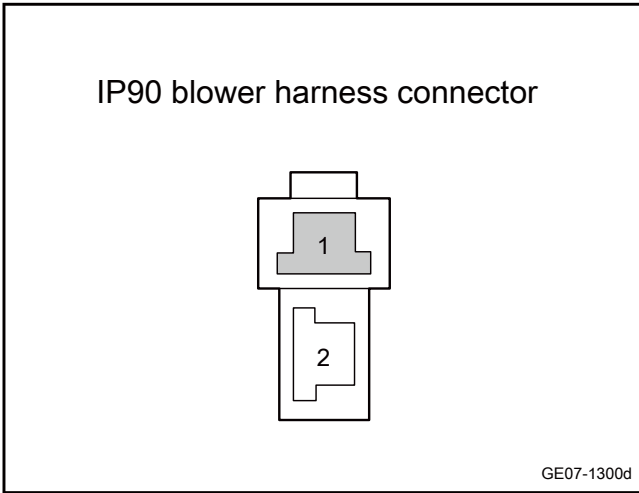
- E. Confirm whether the resistance value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Check whether the harness between thermal management control module and blower is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	IP80a(15)	Standard resistance: less than 1Ω

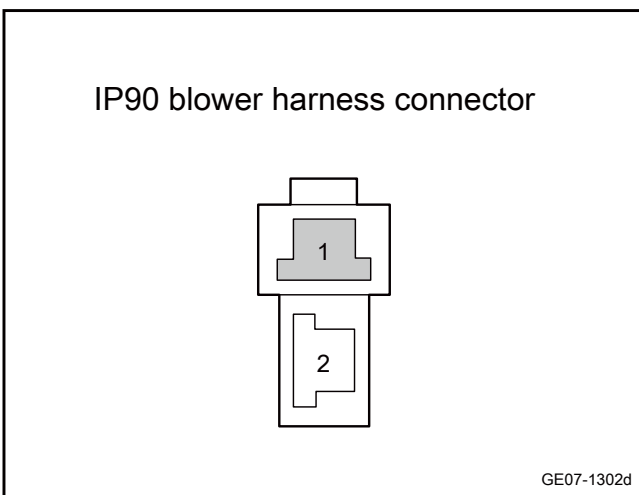
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 10	Check whether the harness between the thermal management control module and blower is short to power supply.
---------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard voltage: 0V

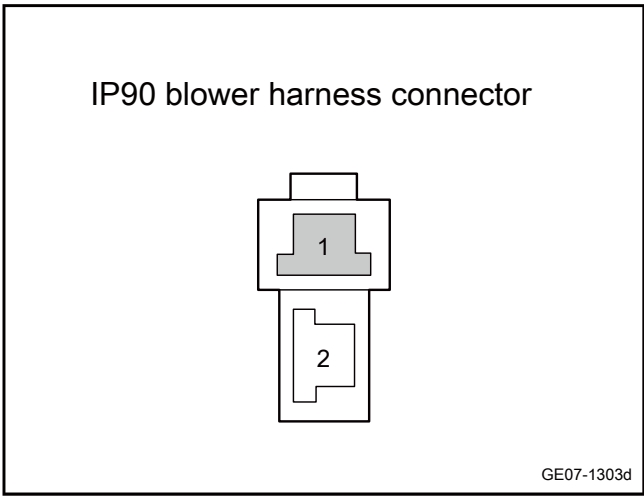
- F. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

**Step 11** Check whether the harness between the thermal management control module and blower is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

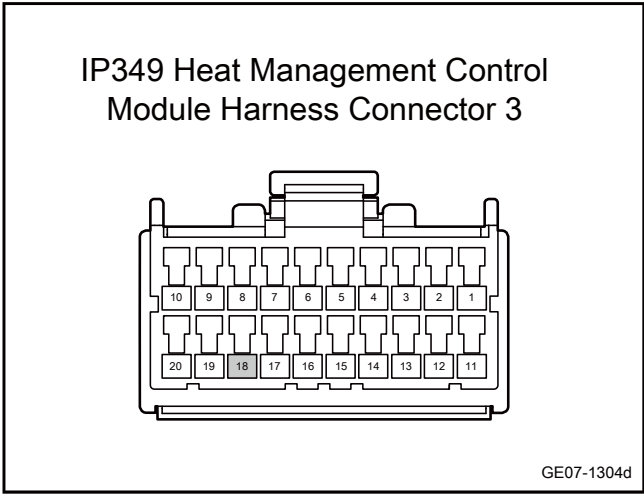
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

**Step 12** Check whether the wiring harness between the blower relay and the thermal management control module is an open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	ER10(85)	Standard resistance: less than 1Ω

- E. Whether does the measured value meet the standard.

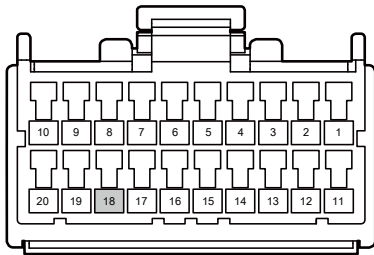
No

Repair or replace the harness.

Yes

**Step 13** Check whether the wiring harness between the blower relay and the thermal management control module is short-circuited to the power supply.

IP349 Heat Management Control Module Harness Connector 3



GE07-1305d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	Vehicle body is grounded.	Standard voltage: 0V

- F. Whether does the value meet the standard.

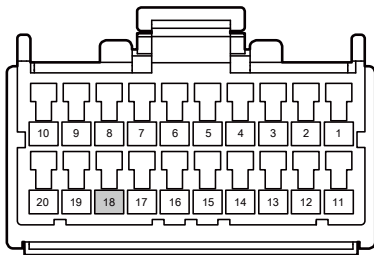
No

Repair or replace the harness.

Yes

Step 14	Check whether the wiring harness between the blower relay and the thermal management control module is short-circuited to the ground.
---------	---

IP349 Heat Management Control Module Harness Connector 3



GE07-1306d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

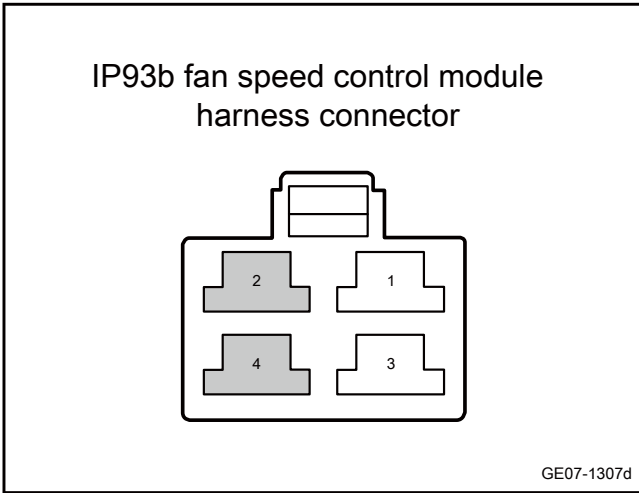
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 15	Check whether the wiring harness between the speed control module and the thermal management control module is open.
---------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(2)	IP80a(13)	Standard resistance: less than 1Ω
IP93b(4)	IP80a(14)	

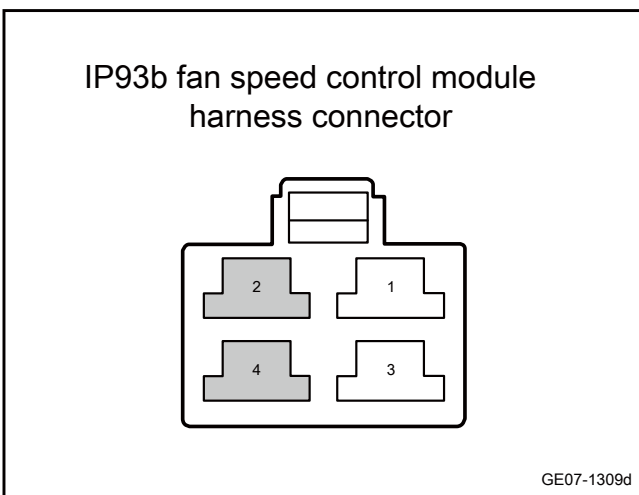
- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

<b>Step 16</b>	Check whether the wiring harness between the speed control module and the thermal management control module is short-circuited to the power supply.
----------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(2)	Vehicle body is grounded.	Standard voltage: 0V
IP93b(4)		

- F. Whether does the measured value meet the standard.

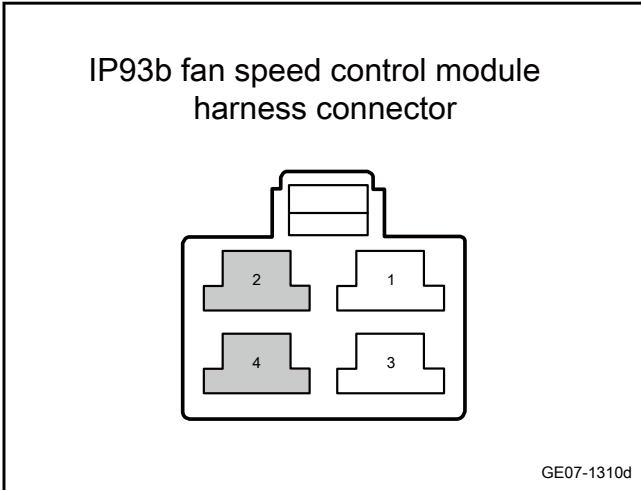


No

Repair or replace the harness.

Yes

**Step 17** Check whether the wiring harness between the speed control module and the thermal management control module is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connector IP80a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP93b(4)		

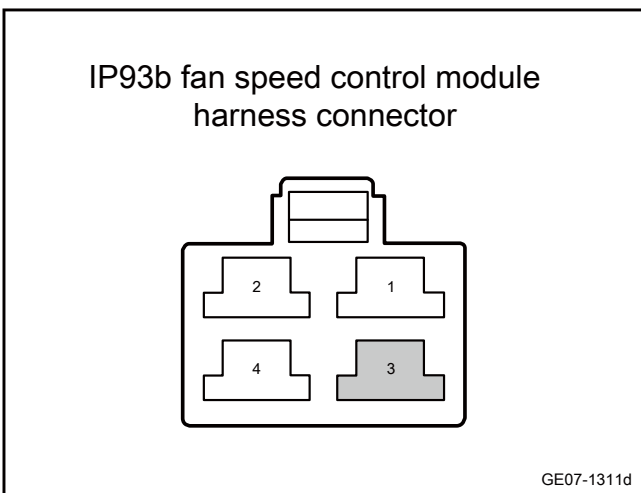
- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

**Step 18** Check whether the grounding harness of speed control module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

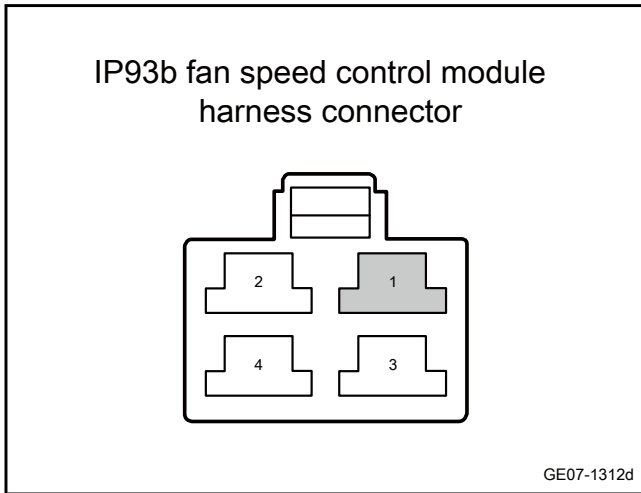
- D. Whether does the measured value meet the standard.

No

Repair or replace the harness.

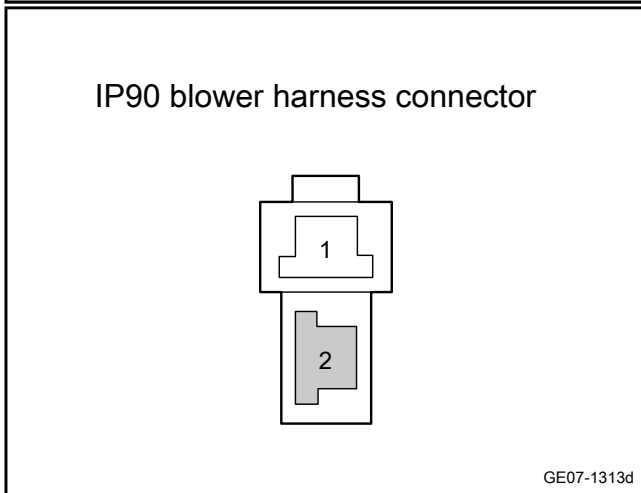
Yes

Step 19	Check whether the harness between speed control module and blower is open.
------------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(1)	IP90(2)	Standard resistance: less than 1Ω



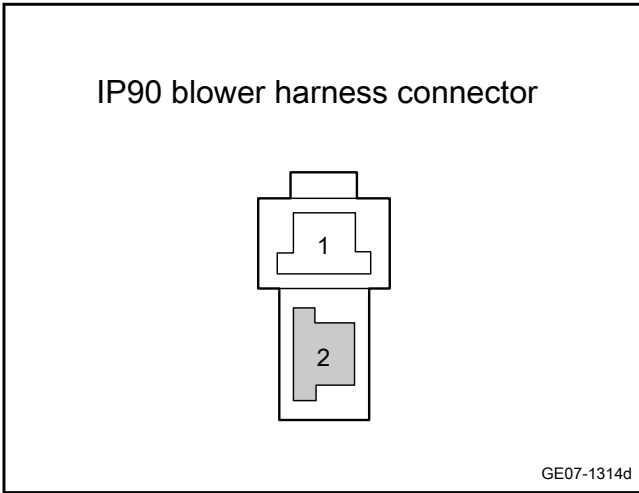
- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 20	Check whether the harness between speed control module and blower is short to power supply.
------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard voltage: 0V

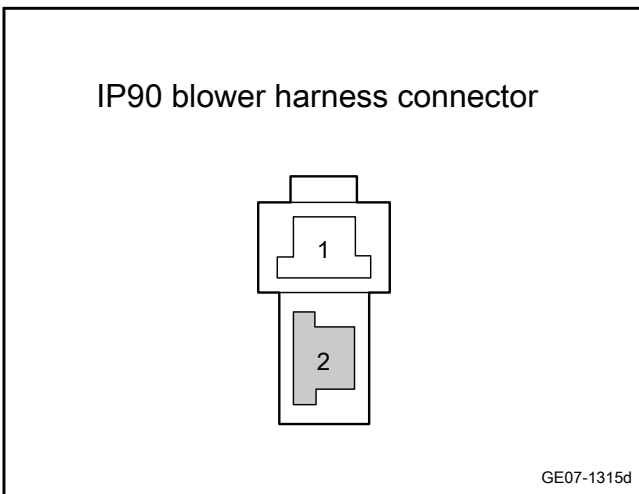
- F. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 21	Check whether the harness between the speed control module and blower is short to GND.
---------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 22	Replace speed control module.
---------	-------------------------------

- A. Replace speed control module. Refer to Replacement of speed control module
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 23	Replace blower
------------	----------------

- A. Replace blower Refer to Replacement of blower
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 24	Replace the thermal management control module.
------------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 25	Reprogram and reset heat management control module.
------------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 26	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 27	System is normal.
------------	-------------------

### 7.2.7.22 Three-way solenoid valve failure

1. DTC description:

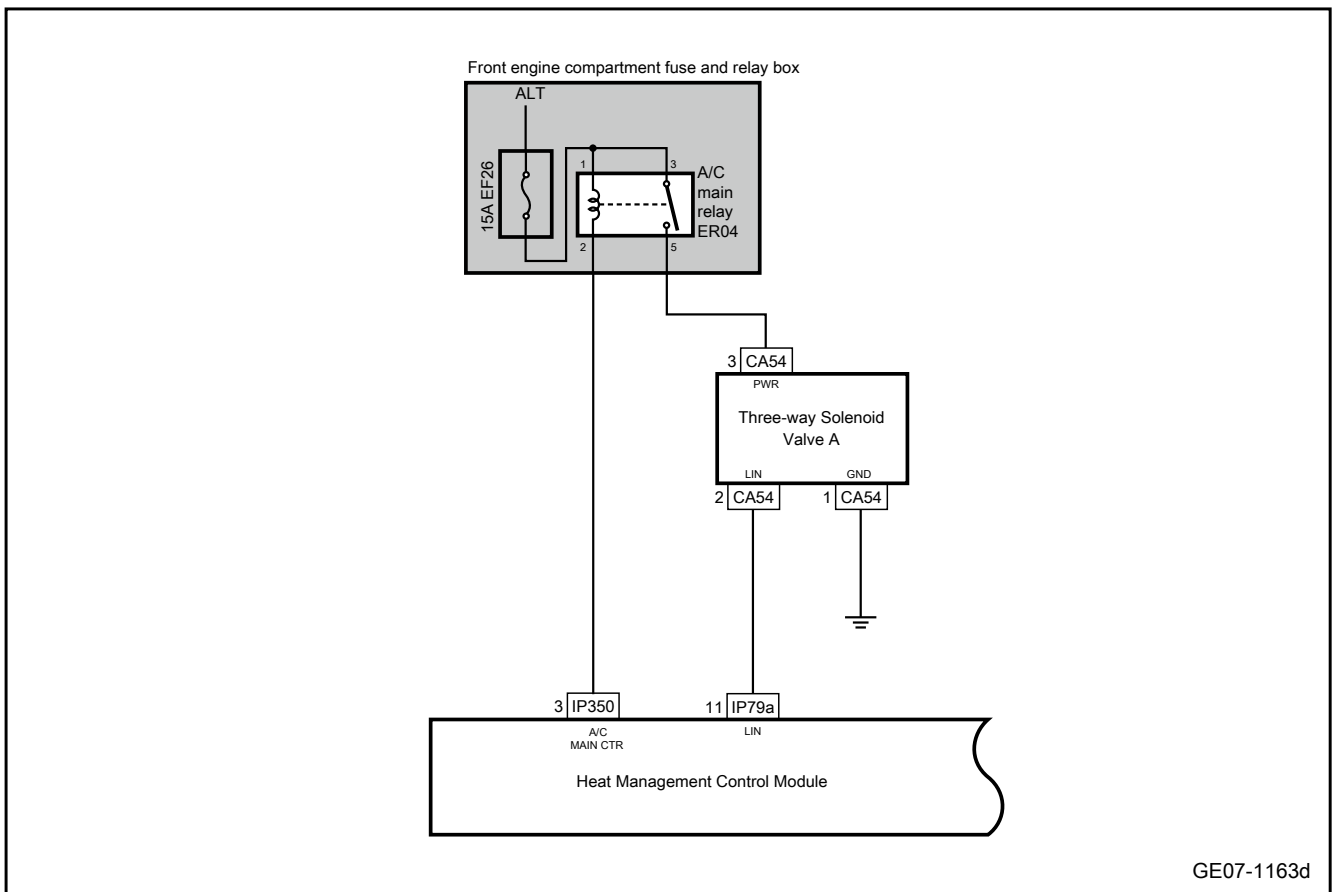
Diagnostic Trouble Code	Description
B11A912	Short circuit of water valve 1 coil
B11A913	Water valve 1 coil is open circuit
B11A916	Water valve 1 underpressure
B11A917	Water valve 1 overpressure
B11A997	Water valve 1 shuts off at over temperature
B11A998	Water valve 1 over-temperature alarm

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A912	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'coil short circuit' (ID:0x09, 0.1 ~ 0.3=1)	1. The power supply voltage is within the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Three-way solenoid valve
B11A913	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'coil open circuit' (ID:0x09, 0.1 ~ 0.3=2)		
B11A916	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'underpressure (ID:0x09, 0.6 ~ 0.7=2)		
B11A917	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'overpressure (ID:0x09, 0.6 ~ 0.7=1)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A997	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'shuts off at over temperature' (ID: 0x09,0.1 ~ 0.3=3)		
B11A998	The fault signal continuously received by AC from water valve 1 for 2 seconds is 'over-temperature alarm' (ID: 0x09,0.4 ~ 0.5=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the relay.
--------	------------------

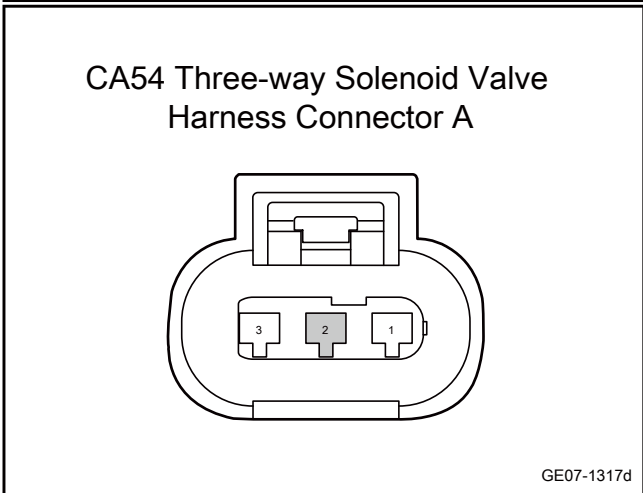
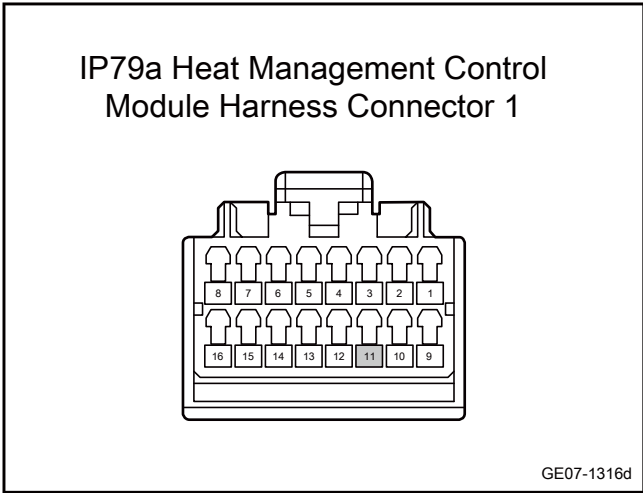
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 5** Check whether the wiring harness between the thermal management control module and the three-way solenoid valve is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the three-way solenoid valve harness connector CA54.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA54(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

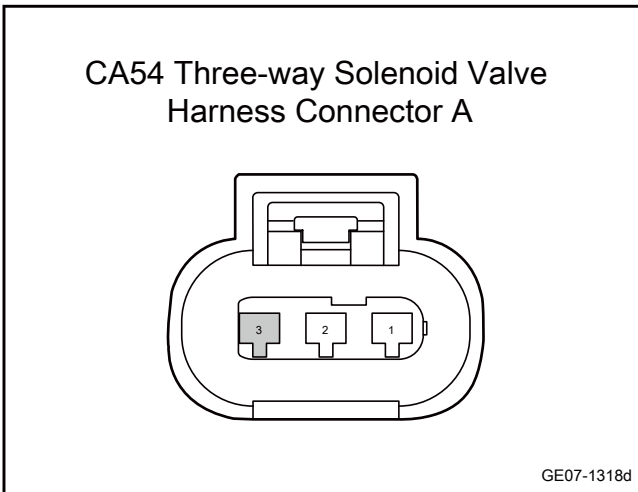
No

Repair or replace the harness.

Yes

**Step 6** Check whether the wiring harness between the three-way solenoid valve and the main relay of the air conditioner is normal.





- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the three-way solenoid valve harness connector CA54.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA54(3)	ER04(5)	Standard resistance: less than 1Ω
CA54(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA54(3)	Vehicle body is grounded.	Standard voltage: 0V

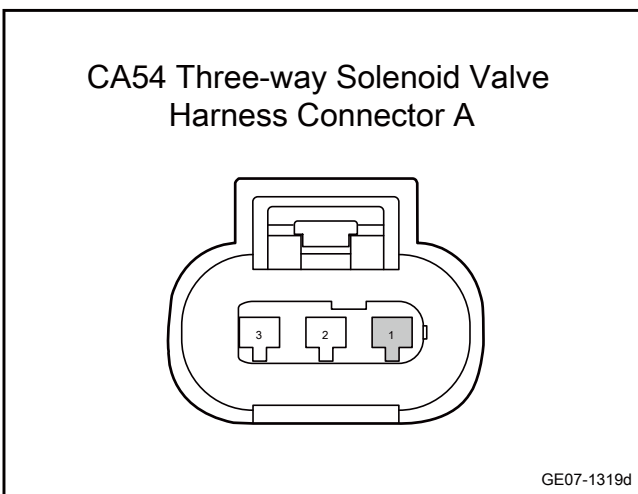
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 | Check whether the grounding harness of the three-way solenoid valve is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the three-way solenoid valve harness connector CA54.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA54(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the three-way solenoid valve.
--------	---------------------------------------

- A. Replace the three-way solenoid valve. Refer to [Replacement of three-way solenoid valve](#)
- B. Confirm whether the three-way solenoid valve is working properly.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.23 Four-way valve failure

1. DTC description:

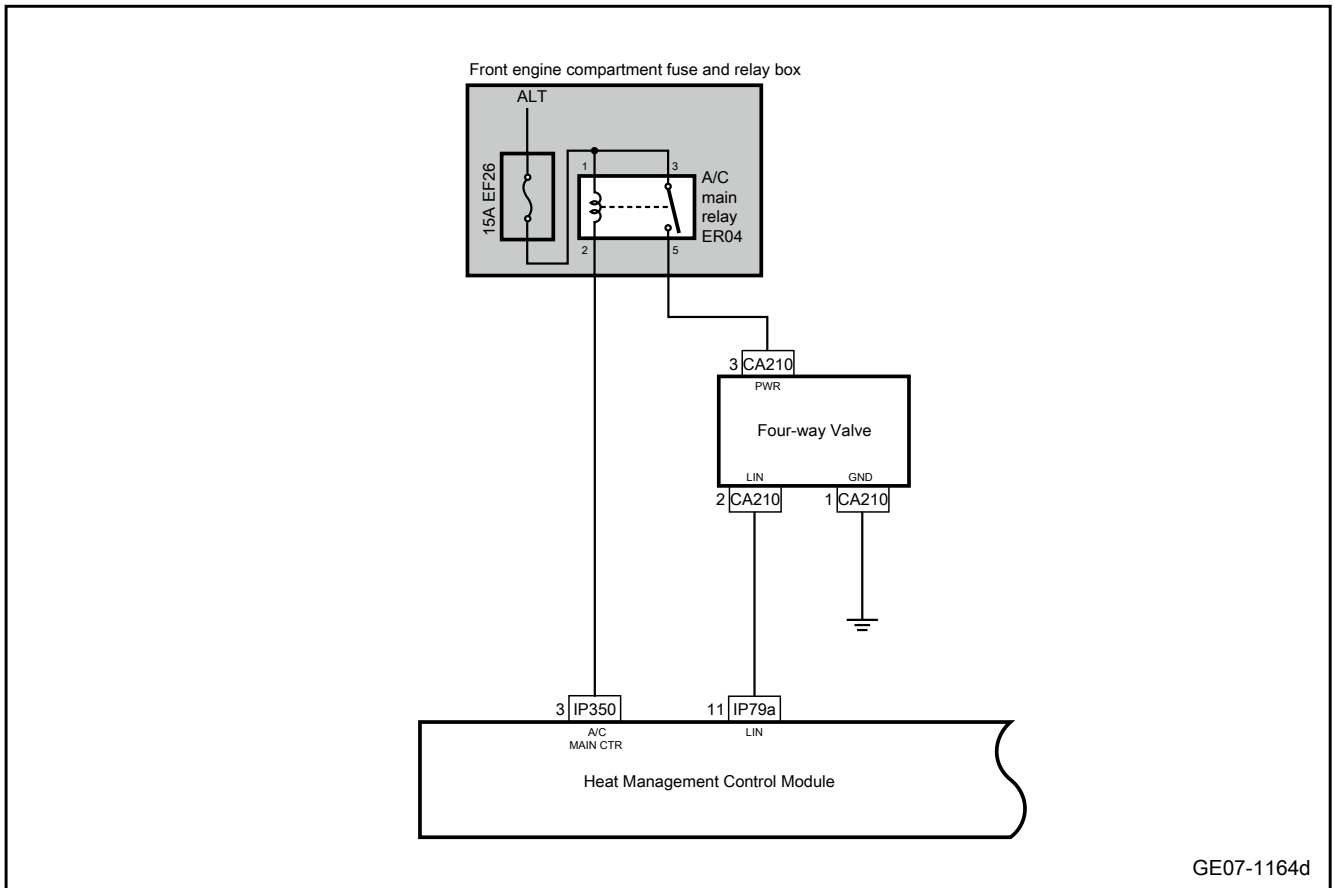
Diagnostic Trouble Code	Description
B11AB13	Water valve 3 coil is open circuit
B11AB16	Water valve 3 underpressure
B11AB17	Water valve 3 overpressure
B11AB97	Water valve 3 shuts off at over temperature
B11AB98	Water valve 3 over-temperature alarm

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AB13	The fault signal continuously received by AC from water valve 3 for 1 seconds is 'coil open circuit' (ID:0x10, 0.2 ~ 0.5=2)	1. The power supply voltage is within the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Four-way valve
B11AB16	The fault signal continuously received by AC from water valve 3 for 2 seconds is 'underpressure (ID:0x10, 1.4 ~ 1.5=2)		
B11AB17	The fault signal continuously received by AC from water valve 3 for 2 seconds is 'overpressure (ID:0x10, 1.4 ~ 1.5=1)		
B11AB97	The fault signal continuously received by AC from water valve 3 for 2 seconds is 'shuts off at over temperature' (ID:0x10, 0.2 ~ 0.5=3)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AB98	The fault signal continuously received by AC from water valve 3 for 2 seconds is 'over-temperature alarm' (ID: 0x10,1.6=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the main relay ER04 of air conditioner.
--------	---

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

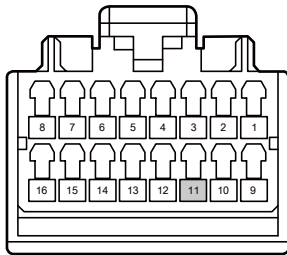
Yes

System is normal.

No

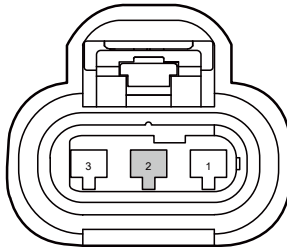
Step 5	Check whether the wiring harness between the thermal management control module and the four-way valve is normal.
--------	--

IP79a Heat Management Control Module Harness Connector 1



GE07-1320d

CA210 Four-way Valve Harness Connector



GE07-1321d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the four-way valve harness connector CA210.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA210(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

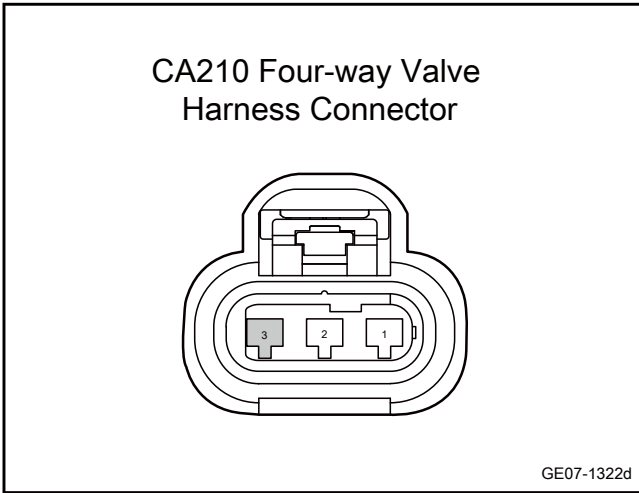
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the wiring harness between the four-way valve and the air conditioning relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the four-way valve harness connector CA210.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA210(3)	ER04(5)	Standard resistance: less than 1Ω
CA210(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA210(3)	Vehicle body is grounded.	Standard voltage: 0V

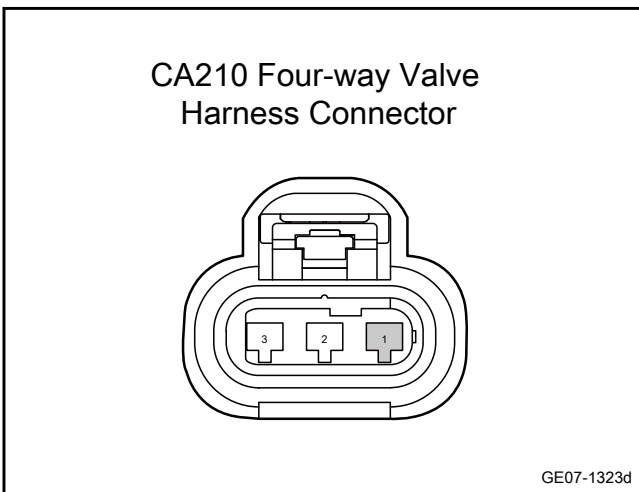
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the four-way valve grounding harness is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the four-way valve harness connector CA210.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA210(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the four-way valve.
--------	-----------------------------

- A. Replace the four-way valve. See [Replacement of Four-Way Valve](#)
- B. Confirm whether the four-way valve is working properly.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 12	System is normal.
------------	-------------------

### 7.2.7.24 Refrigerant temperature sensor fault

1. DTC description:

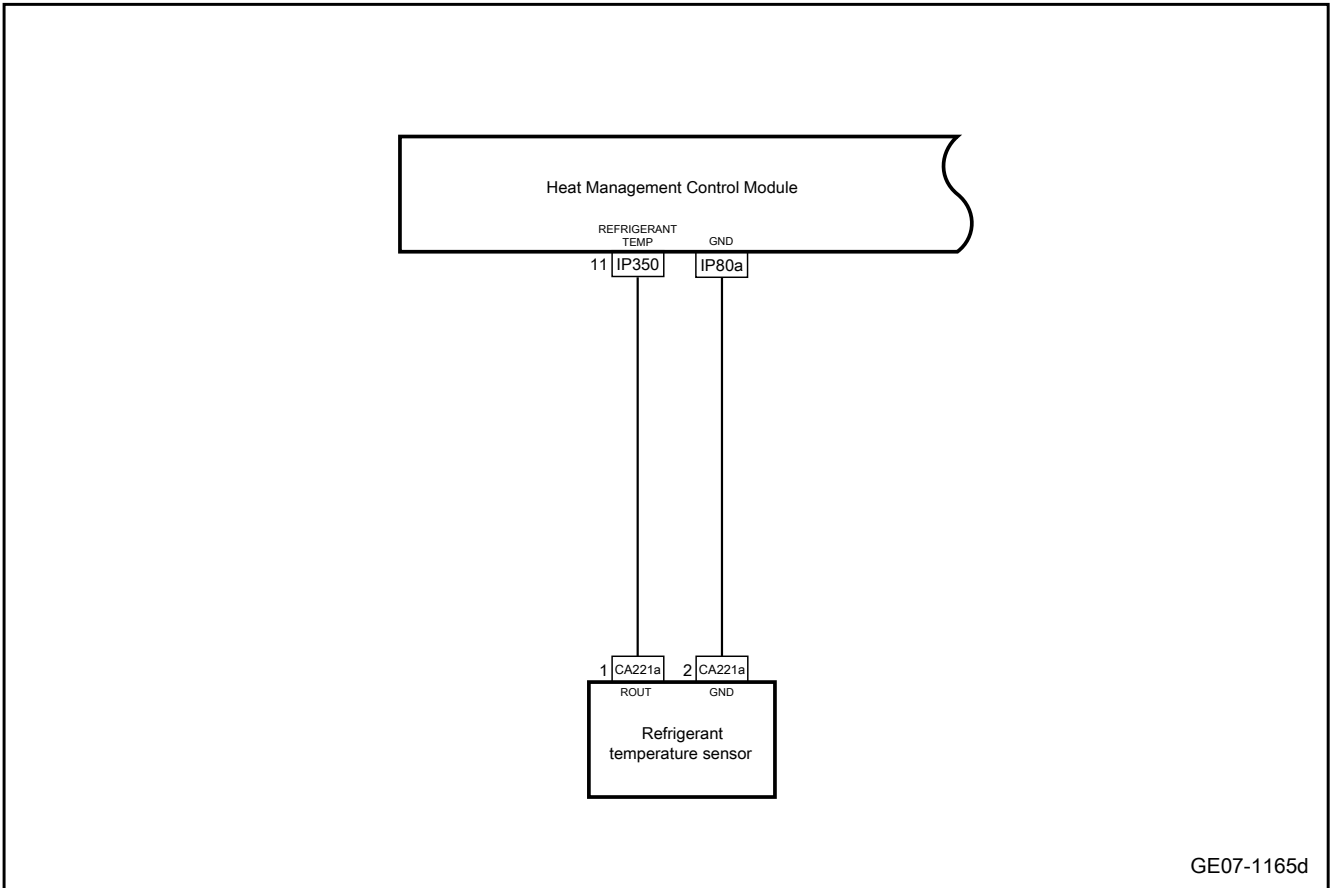
Diagnostic Trouble Code	Description
B11E511	Inner condenser outlet refrigerant temperature sensor is short-circuited to GND
B11E515	Inner condenser outlet refrigerant temperature sensor is short to power supply or open
B11E211	The refrigerant temperature sensor at the outlet of the compressor is short-circuited to ground
B11E215	The refrigerant temperature sensor at the outlet of the compressor is short-circuited or open-circuited to the power supply
B11E314	The refrigerant pressure sensor at compressor discharge outlet is open circuit-ed or short circuit-ed to ground
B11E312	The refrigerant pressure sensor at compressor discharge outlet is short-circuited to the power supply
B11E414	The refrigerant pressure sensor at compressor suction inlet is open circuit-ed or short circuit-ed to ground
B11E412	The refrigerant pressure sensor at compressor suction inlet is short-circuited to the power supply
B11E711	Plate-type heat exchanger outlet refrigerant temperature sensor is short to GND
B11E715	Plate-type heat exchanger outlet refrigerant temperature sensor is short to power supply or open

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E511	PT1's temperature sensor detects that the voltage value has been less than 0.1V for 500ms continuously	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Refrigerant temperature sensor
B11E515	The PT1 temperature sensor detects that the voltage value has been greater than 4.9V for 500ms continuously		
B11E211	PT1's temperature sensor detects that the voltage value has been less than 0.1V for 500ms continuously	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	
B11E215	The PT1 temperature sensor detects that the voltage value has been greater than 4.9V for 500ms continuously		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E314	PT1's pressure sensor detects that the voltage value has been less than 0.1V for 500ms continuously		
B11E312	The PT1 pressure sensor detects that the voltage value has been greater than 4.9V for 500ms continuously		
B11E414	The refrigerant pressure sensor at the suction inlet of the compressor detects that the voltage value has been less than 0.1V for 500ms continuously		
B11E412	The refrigerant pressure sensor at the suction inlet of the compressor detects that the voltage value has been greater than 4.9V for 500ms continuously		
B11E711	The voltage detected by temperature sensor of T3 has been less than 0.1V continuously for 500ms	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	
B11E715	The voltage value detected by the temperature sensor of T3 has been greater than 4.9V continuously for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and refrigerant temperature sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the thermal management control module and refrigerant temperature sensor harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

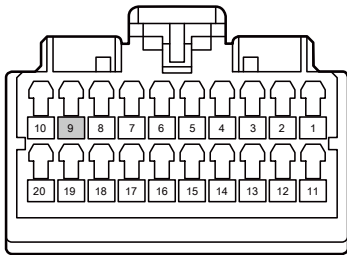
Repair or replace the faulty part.

Yes

Step 3

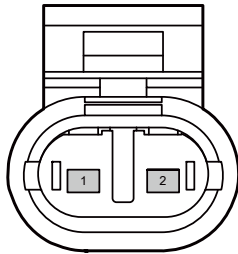
Detect whether the wiring harness between the thermal management control module and the refrigerant temperature sensor is open.

IP80a Heat Management Control Module Harness Connector 2



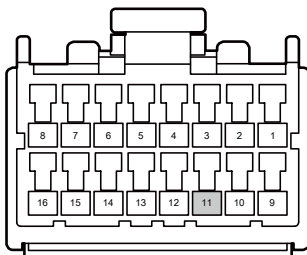
GE07-1324d

CA221a refrigerant temperature sensor harness connector



GE07-1325d

IP350 Heat Management Control Module Harness Connector 4



GE07-1326d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA221a(2)	Standard resistance: less than 1Ω
IP350(11)	CA221a(1)	

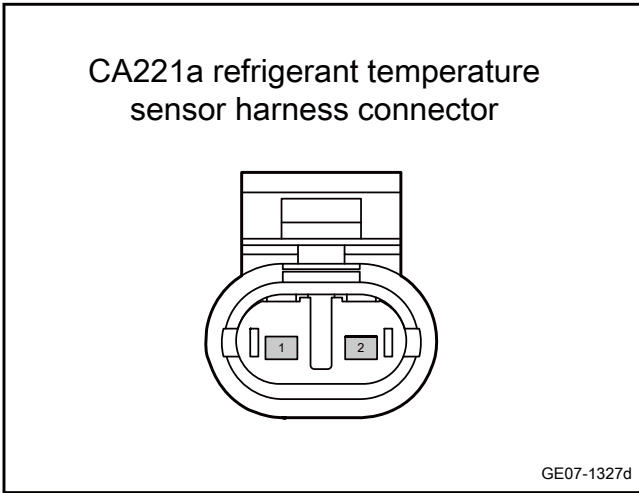
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the thermal management control module and the refrigerant temperature sensor is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA221a(2)	Vehicle body is grounded.	Standard voltage: 0V
CA221a(1)		

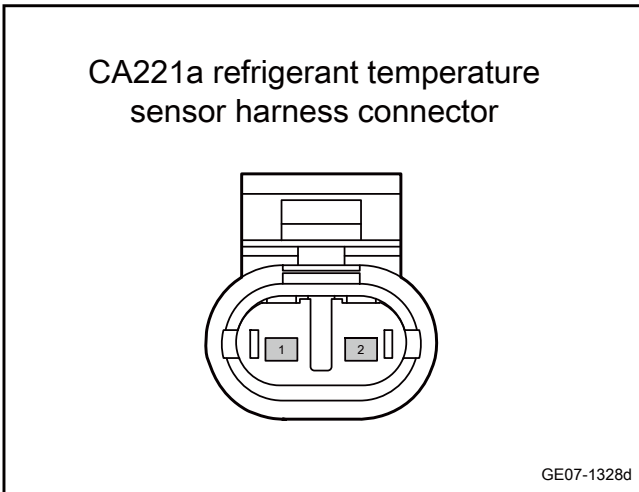
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the thermal management control module and the refrigerant temperature sensor is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA221a(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA221a(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the refrigerant temperature sensor.

- A. Replace the refrigerant temperature sensor. Refer to [Replacement of refrigerant temperature sensor](#)
- B. Confirm whether the refrigerant temperature sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8 Reprogram and reset heat management control module.

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 7.2.7.25 Failure of air duct sensor 1

#### 1. DTC description:

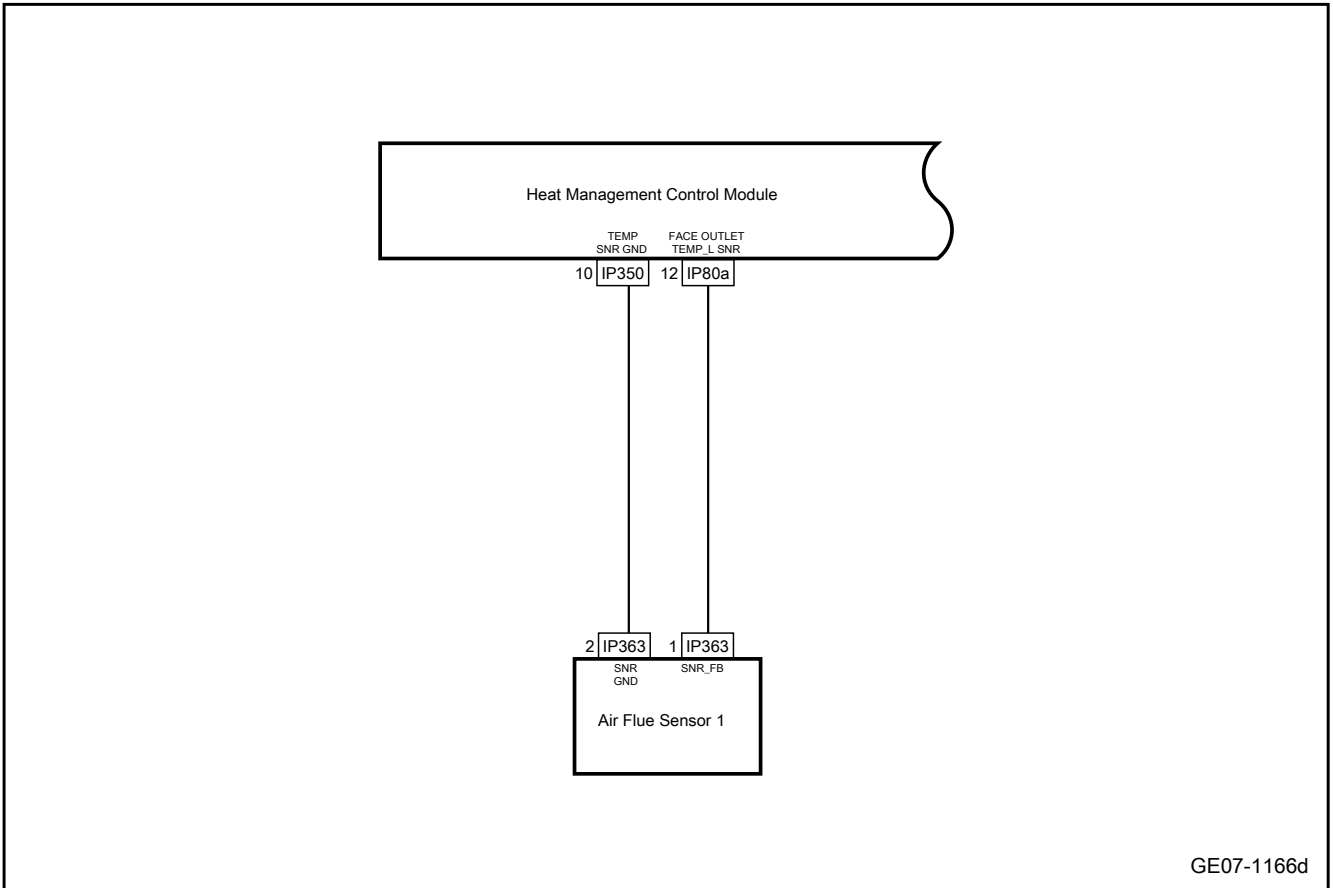
Diagnostic Trouble Code	Description
B11E811	Driver side face-blowing temperature sensor is short-circuited to GND
B11E815	Driver side face-blowing temperature sensor is short-circuited to power supply or open circuit

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E811	It has been detected for 500ms that the voltage value detected by the face-blowing air outlet sensor at driver side is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 1
B11E815	It has been detected for 500ms that the voltage value detected by the face-blowing air outlet sensor at driver side is continuously greater than 4.9V		

#### 3. Schematic circuit diagram:





4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the air duct sensor 1 for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and air duct sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

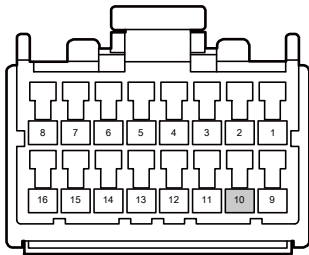
No

Repair or replace the faulty part.

Yes

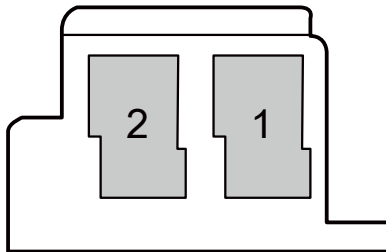
Step 3	Detect whether the wiring harness between the thermal management control module and the air duct sensor 1 is an open circuit.
--------	---

IP350 Heat Management Control Module Harness Connector 4



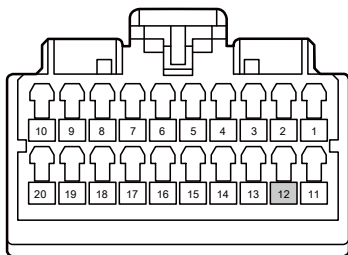
GE07-1329d

IP363 Air Flue Sensor Harness Connector 1



GE07-1330d

IP80a Heat Management Control Module Harness Connector 2



GE07-1331d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 1 harness connector IP363.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP363(2)	Standard resistance: less than 1Ω
IP80a(12)	IP363(1)	

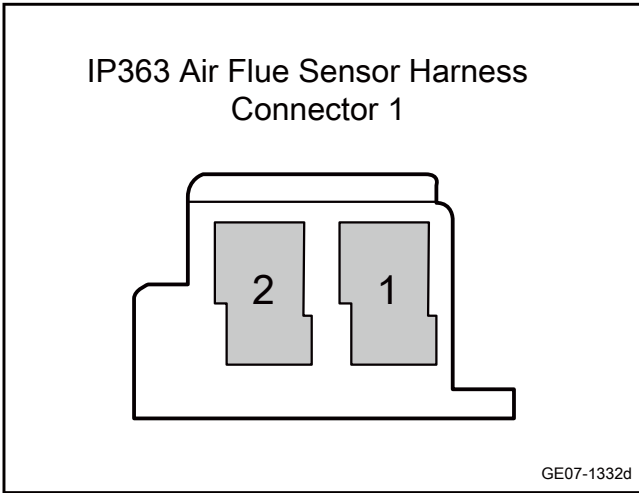
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Detect whether the wiring harness between the thermal management control module and the air duct sensor 1 is short-circuited to the power supply.
--------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 1 harness connector IP363.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP363(2)	Vehicle body is grounded.	Standard voltage: 0V
IP363(1)		

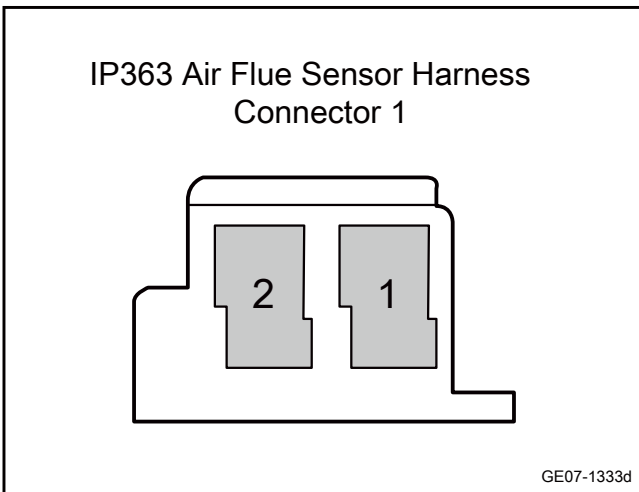
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the wiring harness between the thermal management control module and the air duct sensor 1 is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 1 harness connector IP363.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP363(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP363(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the air duct sensor 1.
--------	--------------------------------

- A. Replace the air duct sensor 1. See [Replacement of Air Duct Sensor 1](#)
- B. Confirm whether the air duct sensor 1 works normally.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

7.2.7.26 Failure of air duct sensor 2

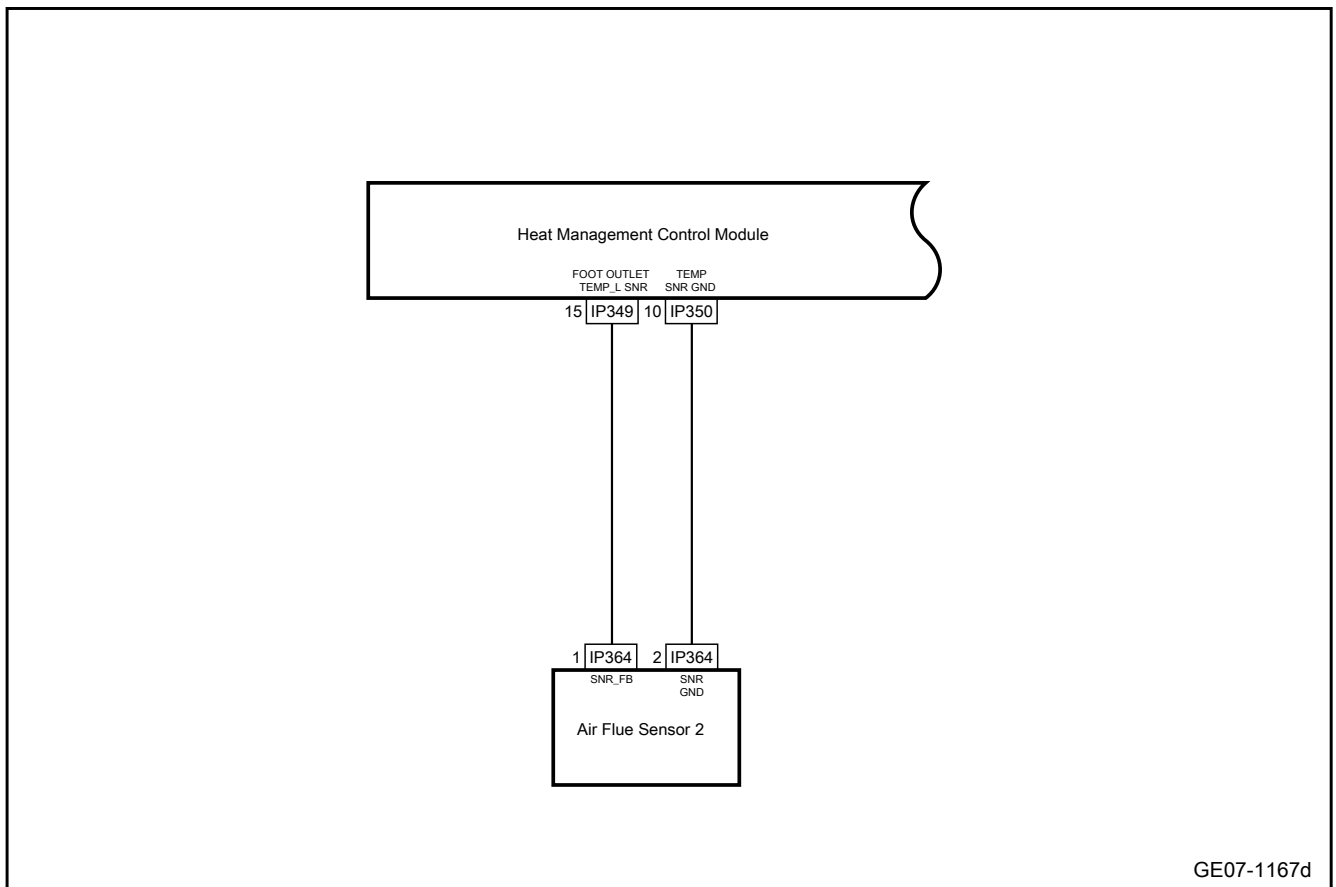
1. DTC description:

Diagnostic Trouble Code	Description
B11E911	Driver side foot-blowing temperature sensor is short-circuited to GND
B11E915	Driver side foot-blowing temperature sensor is short-circuited to power supply or open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E811	It has been detected for 500ms that the voltage value detected by the foot-blowing air outlet sensor at driver side is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 2
B11E815	It has been detected for 500ms that the voltage value detected by the foot-blowing air outlet sensor at driver side is continuously greater than 4.9V		

3. Schematic circuit diagram:



GE07-1167d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the air duct sensor 2 for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and air duct sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

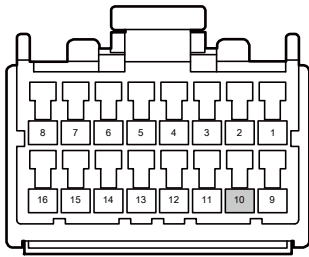
No

Repair or replace the faulty part.

Yes

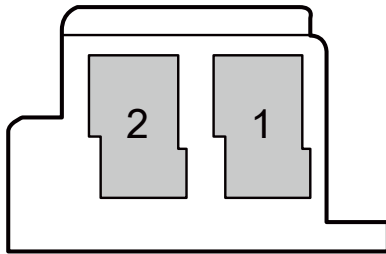
Step 3	Detect whether the wiring harness between the thermal management control module and the air duct sensor 2 is an open circuit.
--------	---

IP350 Heat Management Control Module Harness Connector 4



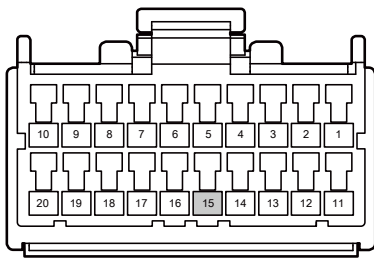
GE07-1334d

IP364 Air Flue Sensor Harness Connector 2



GE07-1335d

IP349 Heat Management Control Module Harness Connector 3



GE07-1336d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP364(2)	Standard resistance: less than 1Ω
IP349(15)	IP364(1)	

- F. Confirm whether the measured value meets the standard.

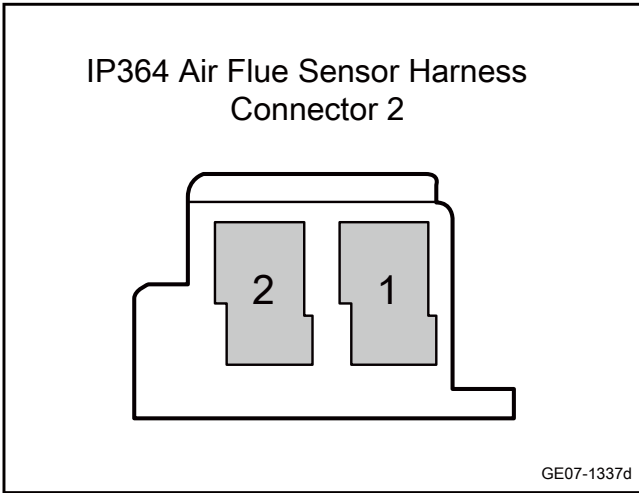
No

Repair or replace the harness.

Yes

Step 4	Detect whether the wiring harness between the thermal management control module and the air duct sensor 2 is short-circuited to the power supply.
--------	---





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP364(2)	Vehicle body is grounded.	Standard voltage: 0V
IP364(1)		

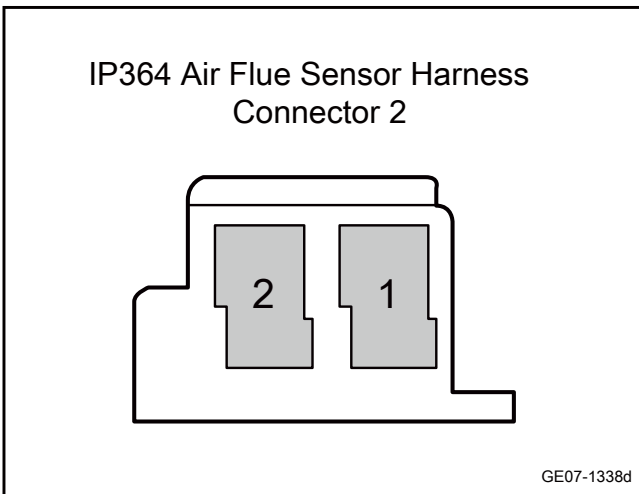
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the wiring harness between the thermal management control module and the air duct sensor 2 is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP364(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP364(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the air duct sensor 2.
--------	--------------------------------

- A. Replace the air duct sensor 2. See [Replacement of Air Duct Sensor 2](#)
- B. Confirm whether the air duct sensor 2 works normally.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

7.2.7.27 Failure of air duct sensor 3

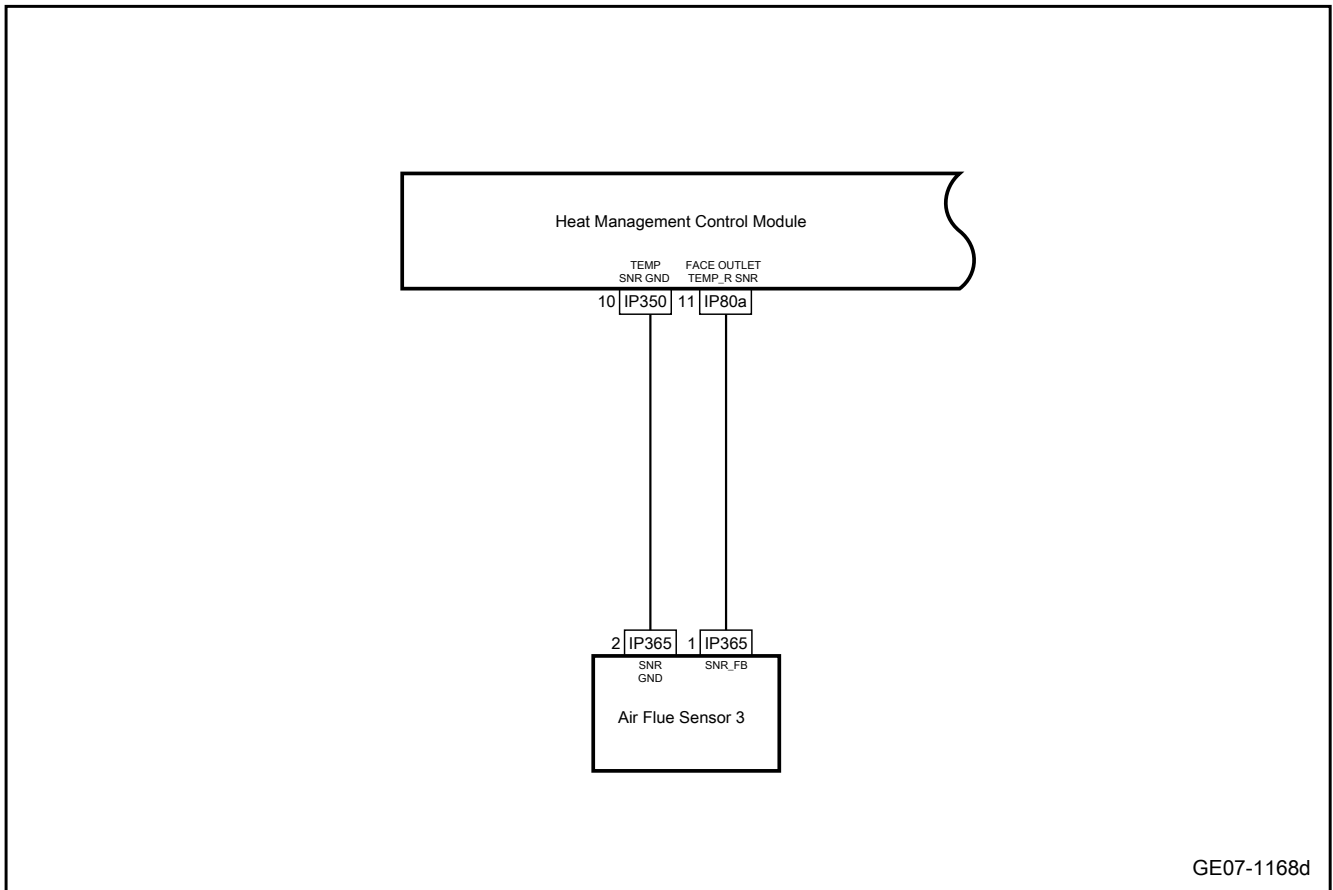
1. DTC description:

Diagnostic Trouble Code	Description
B11EA11	Front passenger side face-blowing temperature sensor is short-circuited to GND
B11EA15	Front passenger side face-blowing temperature sensor is short-circuited to power supply or open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EA11	It has been detected for 500ms that the voltage value detected by the face-blowing air outlet sensor at front passenger side is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 3
B11EA15	It has been detected for 500ms that the voltage value detected by the face-blowing air outlet sensor at front passenger side is continuously greater than 4.9V		

3. Schematic circuit diagram:



## 4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the air duct sensor 3 for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and air duct sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

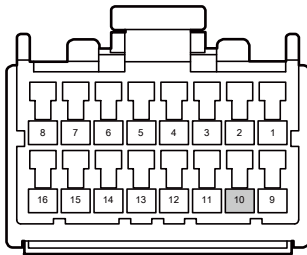
No

Repair or replace the faulty part.

Yes

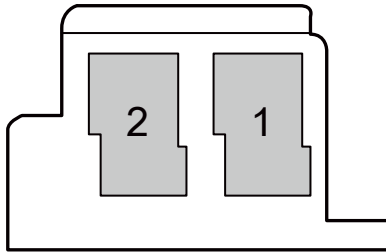
Step 3	Detect whether the wiring harness between the thermal management control module and the air duct sensor 3 is an open circuit.
--------	---

IP350 Heat Management Control Module Harness Connector 4



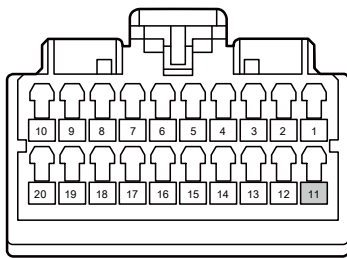
GE07-1339d

IP365 Air Flue Sensor Harness Connector 3



GE07-1340d

IP80a Heat Management Control Module Harness Connector 2



GE07-1341d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP365(2)	Standard resistance: less than 1Ω
IP80a(11)	IP365(1)	

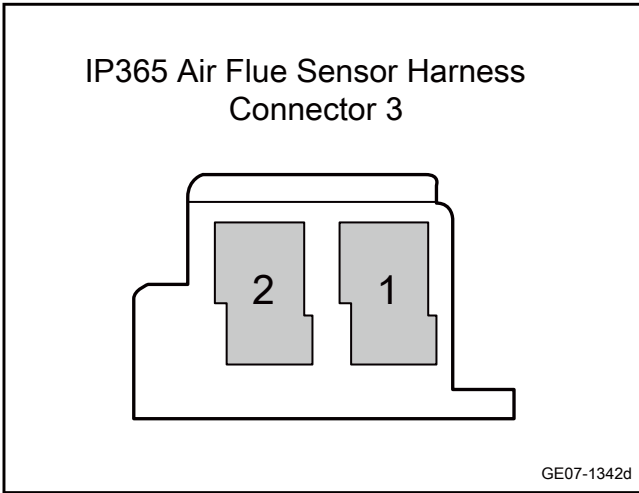
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Detect whether the wiring harness between the thermal management control module and the air duct sensor 3 is short-circuited to the power supply.
--------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP365(2)	Vehicle body is grounded.	Standard voltage: 0V
IP365(1)		

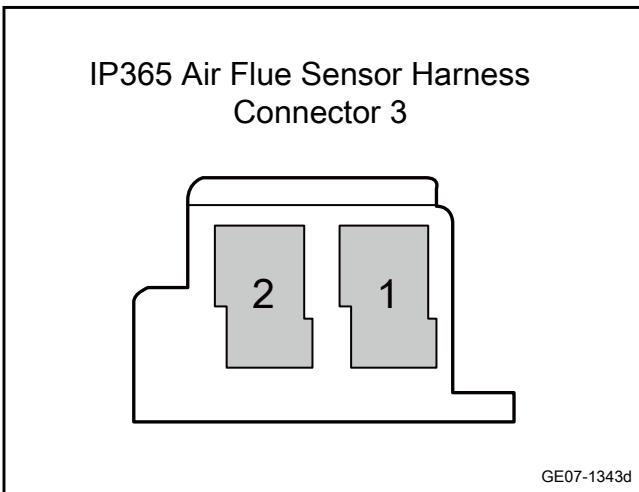
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the wiring harness between the thermal management control module and the air duct sensor 3 is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP365(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP365(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the air duct sensor 3.
--------	--------------------------------

- A. Replace the air duct sensor 3. See [Replacement of Air Duct Sensor 3](#)
- B. Confirm whether the air duct sensor 3 works normally.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------



7.2.7.28 Failure of air duct sensor 4

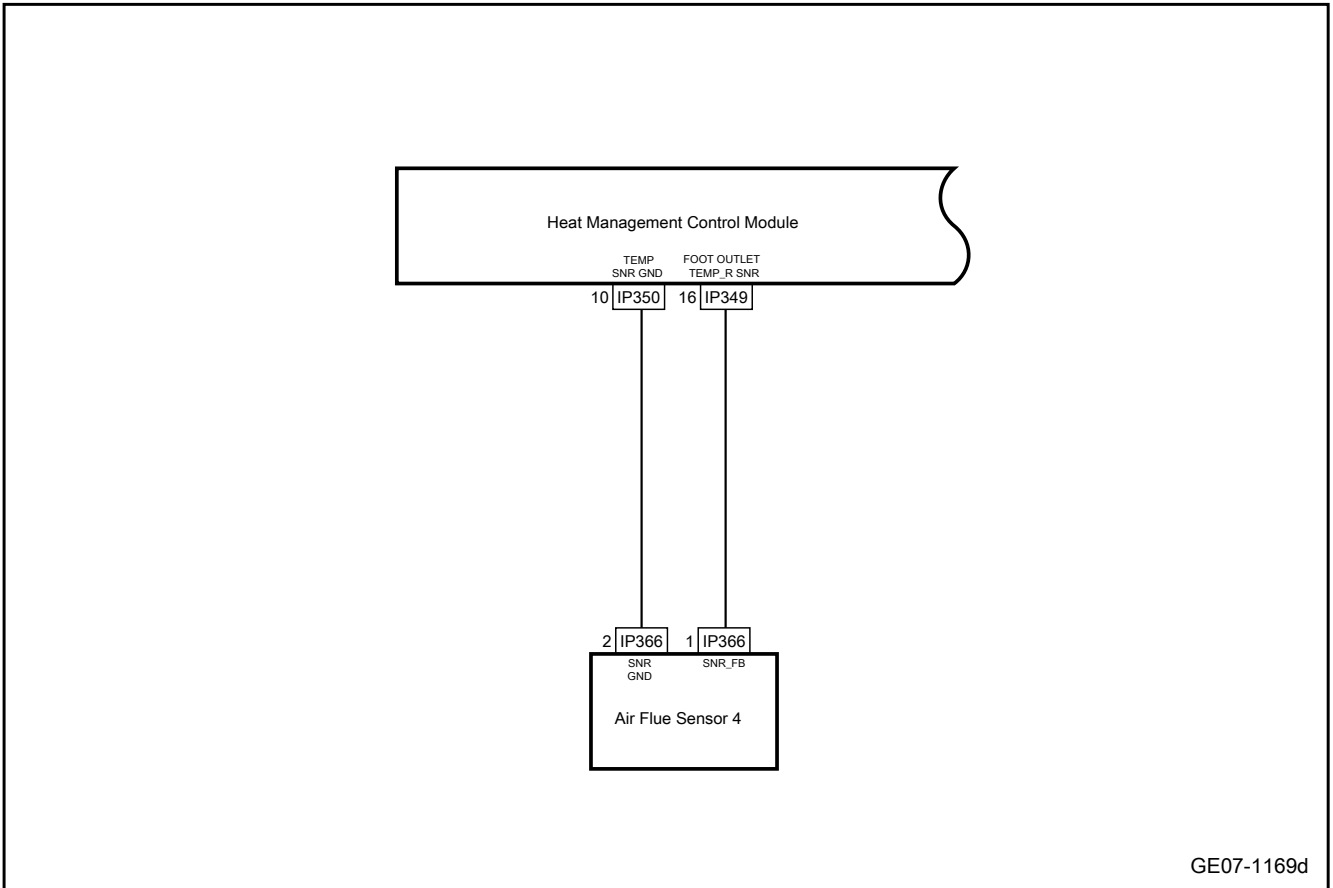
1. DTC description:

Diagnostic Trouble Code	Description
B11EB11	Foot-blowing foot temperature sensor at front passenger side to the ground
B11EB15	Front passenger side foot-blowing temperature sensor is short-circuited to power supply or open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EB11	It has been detected for 500ms that the voltage value detected by the foot-blowing air outlet sensor at front passenger side is continuously less than 0.1V	1. The power supply voltage is within the effective range 2. The state of the vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 4
B11EB15	It has been detected for 500ms that the voltage value detected by the foot-blowing air outlet sensor at front passenger side is continuously greater than 4.9V		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and the air duct sensor 4 for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and air duct sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

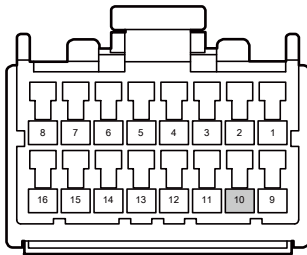
No

Repair or replace the faulty part.

Yes

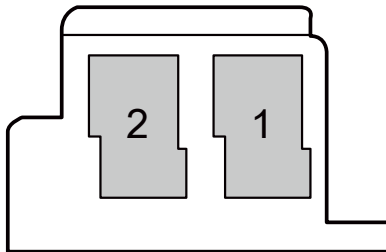
Step 3	Detect whether the wiring harness between the thermal management control module and the air duct sensor 4 is an open circuit.
--------	---

IP350 Heat Management Control Module Harness Connector 4



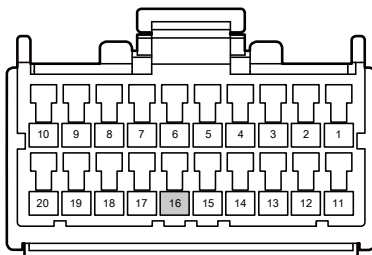
GE07-1344d

IP366 Air Flue Sensor Harness Connector 4



GE07-1345d

IP349 Heat Management Control Module Harness Connector 3



GE07-1346d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP366(2)	Standard resistance: less than 1Ω
IP349(16)	IP366(1)	

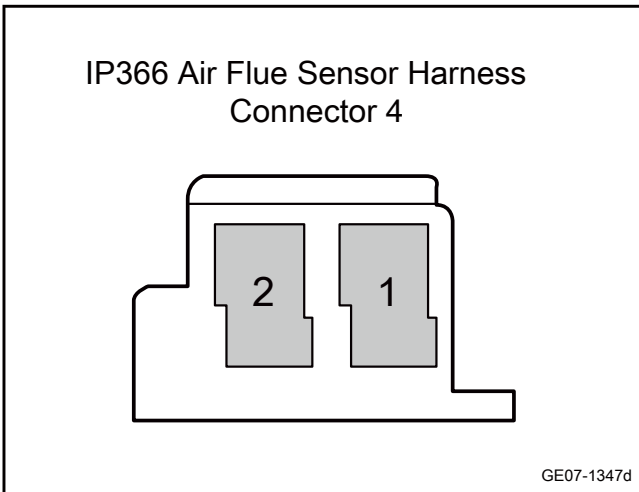
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Detect whether the wiring harness between the thermal management control module and the air duct sensor 4 is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP366(2)	Vehicle body is grounded.	Standard voltage: 0V
IP366(1)		

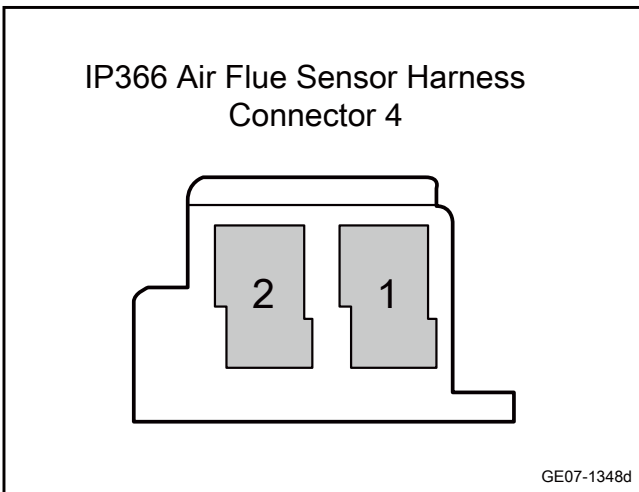
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the wiring harness between the thermal management control module and the air duct sensor 4 is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heat management control module harness connector IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP366(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP366(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the air duct sensor 4.
--------	--------------------------------

- A. Replace the air duct sensor 4. See [Replacement of Air Duct Sensor 4](#)
- B. Confirm whether the air duct sensor 4 works normally.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the power and ground wiring harness of the thermal management control module. Refer to the [Power Fault of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 8	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset heat management control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

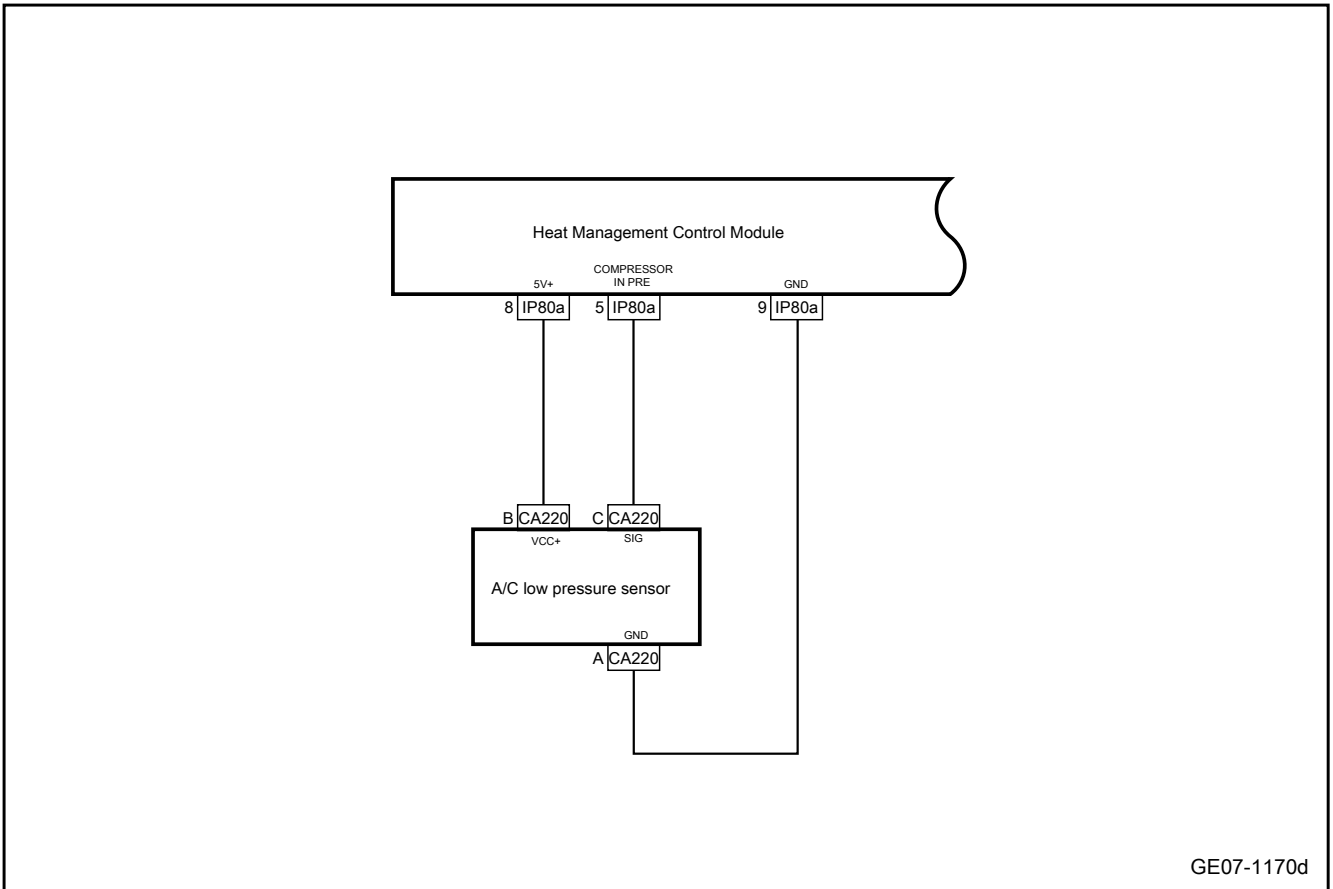
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

7.2.7.29 Air Conditioner Low Pressure Sensor Failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module and the A/C low-pressure sensor for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and A/C low-pressure sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

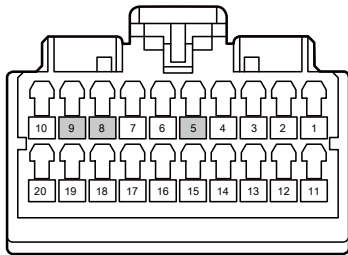
No

Repair or replace the faulty part.

Yes

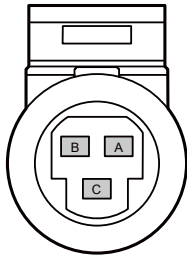
Step 2	Check whether the wiring harness between the thermal management control module and the air conditioner low pressure sensor is normal.
--------	---

IP80a Heat Management Control Module Harness Connector 2



GE07-1349d

CA220 A/C low pressure sensor harness connector



GE07-1350d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect A/C low pressure sensor harness connector CA220.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	CA220(C)	Standard resistance: less than 1Ω
IP80a(8)	CA220(B)	
IP80a(9)	CA220(A)	
IP80a(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(8)		
IP80a(9)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(8)		
IP80a(9)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the A/C low pressure sensor.

- A. Replace the A/C low pressure sensor. Refer to [Replacement of A/C low pressure sensor](#)
- B. Determine whether the A/C low pressure sensor operates normally.

Yes

System is normal.

No

Step 4 Replace the thermal management control module.



- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 5	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

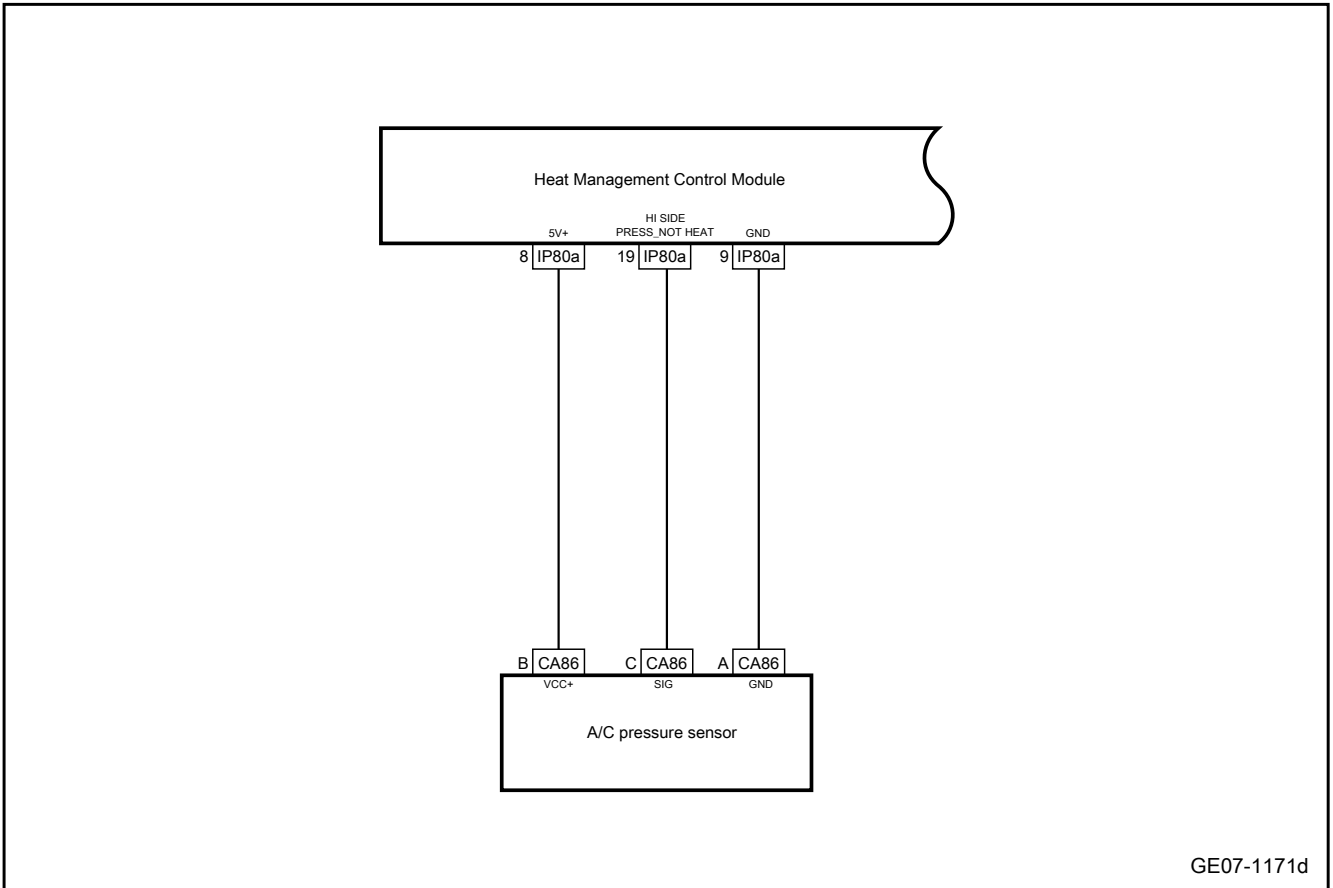
Diagnose according to the output trouble code.
--

No

Step 7	System is normal.
--------	-------------------

### 7.2.7.30 Air Conditioner Pressure Sensor Failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module and the A/C pressure sensor for signs of damage, deformation, stains, or looseness.
- B. Check the harness connector of thermal management control module and A/C pressure sensor for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

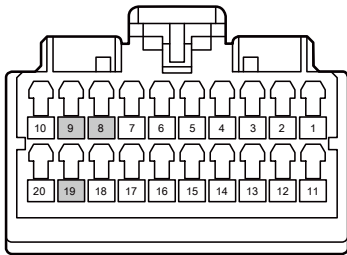
No

Repair or replace the faulty part.

Yes

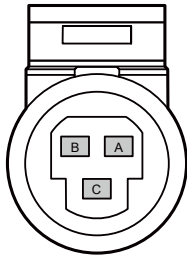
Step 2	Check whether the wiring harness between the thermal management control module and the air-conditioning pressure sensor is normal.
--------	--

IP80a Heat Management Control Module Harness Connector 2



GE07-1351d

CA86 A/C pressure sensor harness connector



GE07-1352d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect A/C pressure sensor harness connector CA220.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(19)	CA86(C)	Standard resistance: less than 1Ω
IP80a(8)	CA86(B)	
IP80a(9)	CA86(A)	
IP80a(19)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(8)		
IP80a(9)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(19)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(8)		
IP80a(9)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the A/C pressure sensor.

- A. Replace the A/C pressure sensor. Refer to [Replacement of A/C pressure sensor](#)
- B. Determine whether A/C pressure sensor operates normally.

Yes

System is normal.

No

Step 4 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 5 Reprogram and reset heat management control module.

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

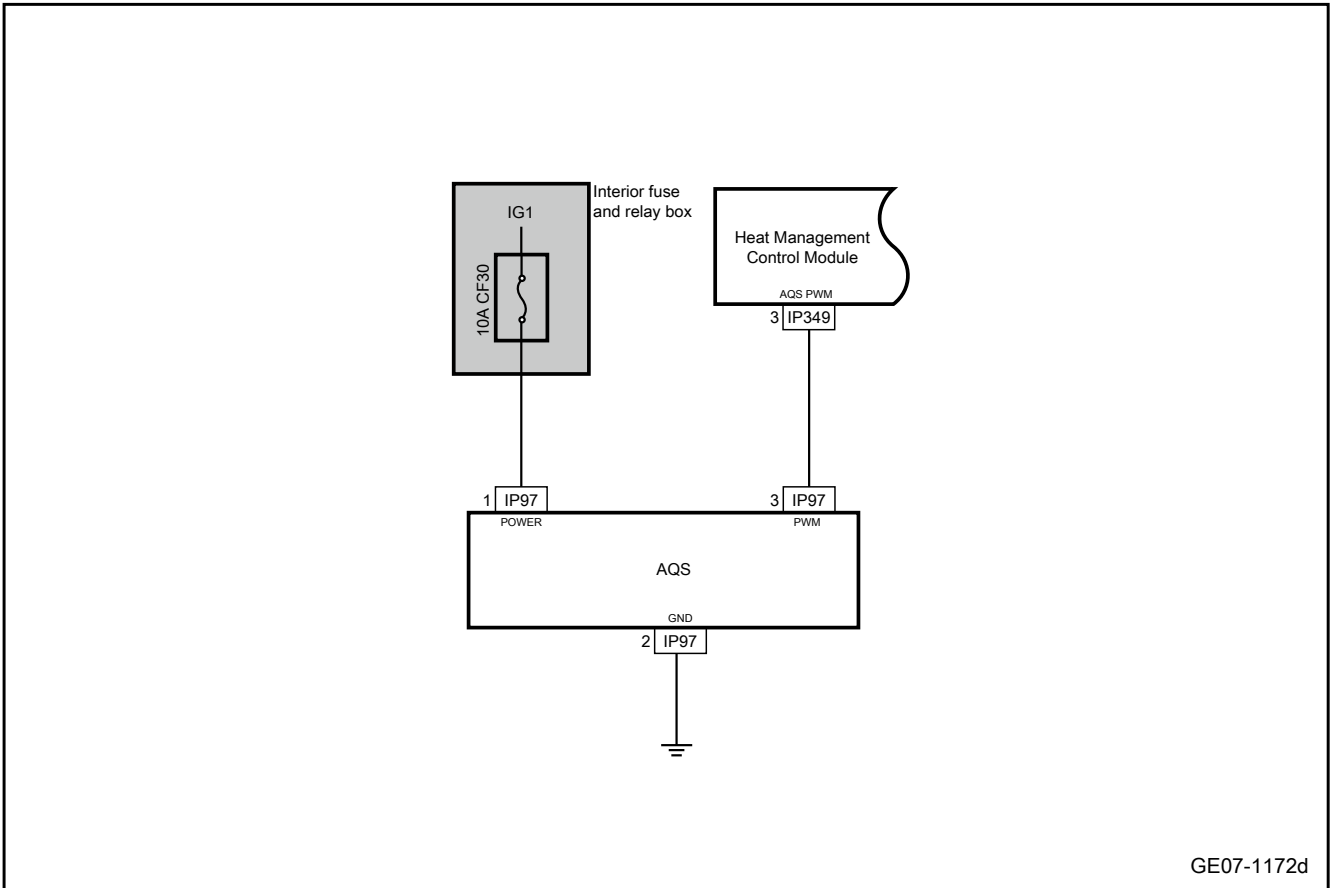
Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 7.2.7.31 AQS fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the AQS for signs of damage, deformation, stain, loosening, etc.
- B. Check the AQS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

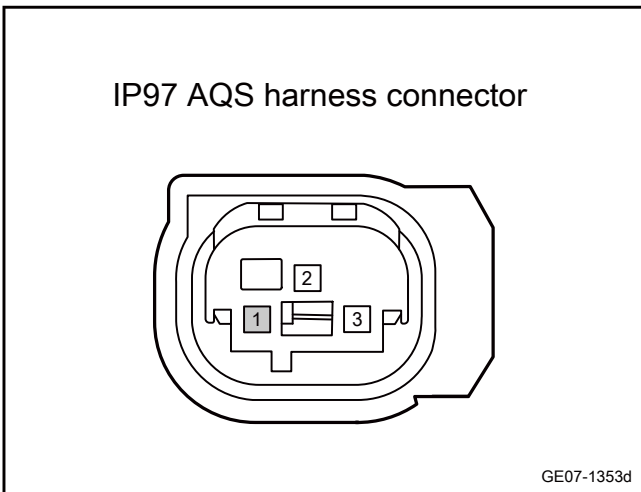
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF30 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the AQS working voltage is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the AQS harness connector IP97.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP97(1)	Vehicle body is grounded.	Standard voltage: 11-14V

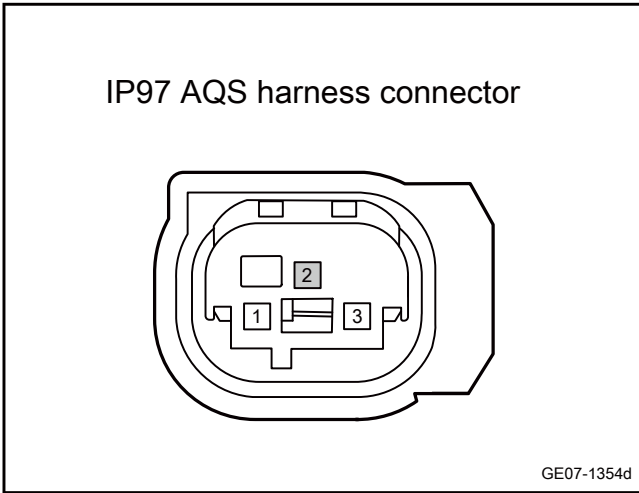
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check whether the AQS grounding harness is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the AQS harness connector IP97.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP97(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

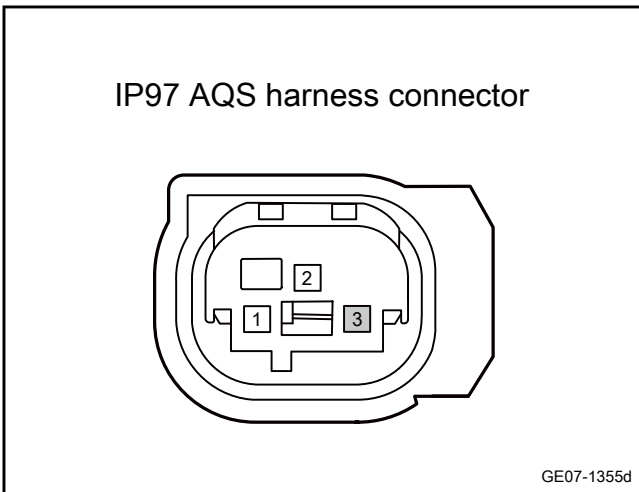
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the AQS and the thermal management control module is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the AQS harness connector IP97.
- C. Disconnect the thermal management control module harness connector IP349.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP97(3)	IP349(3)	Standard resistance: less than 1Ω
IP97(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP97(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.



No

Repair or replace the harness.

Yes

Step 7	Replace the AQS
--------	-----------------

- A. Replace the AQS
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 9	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

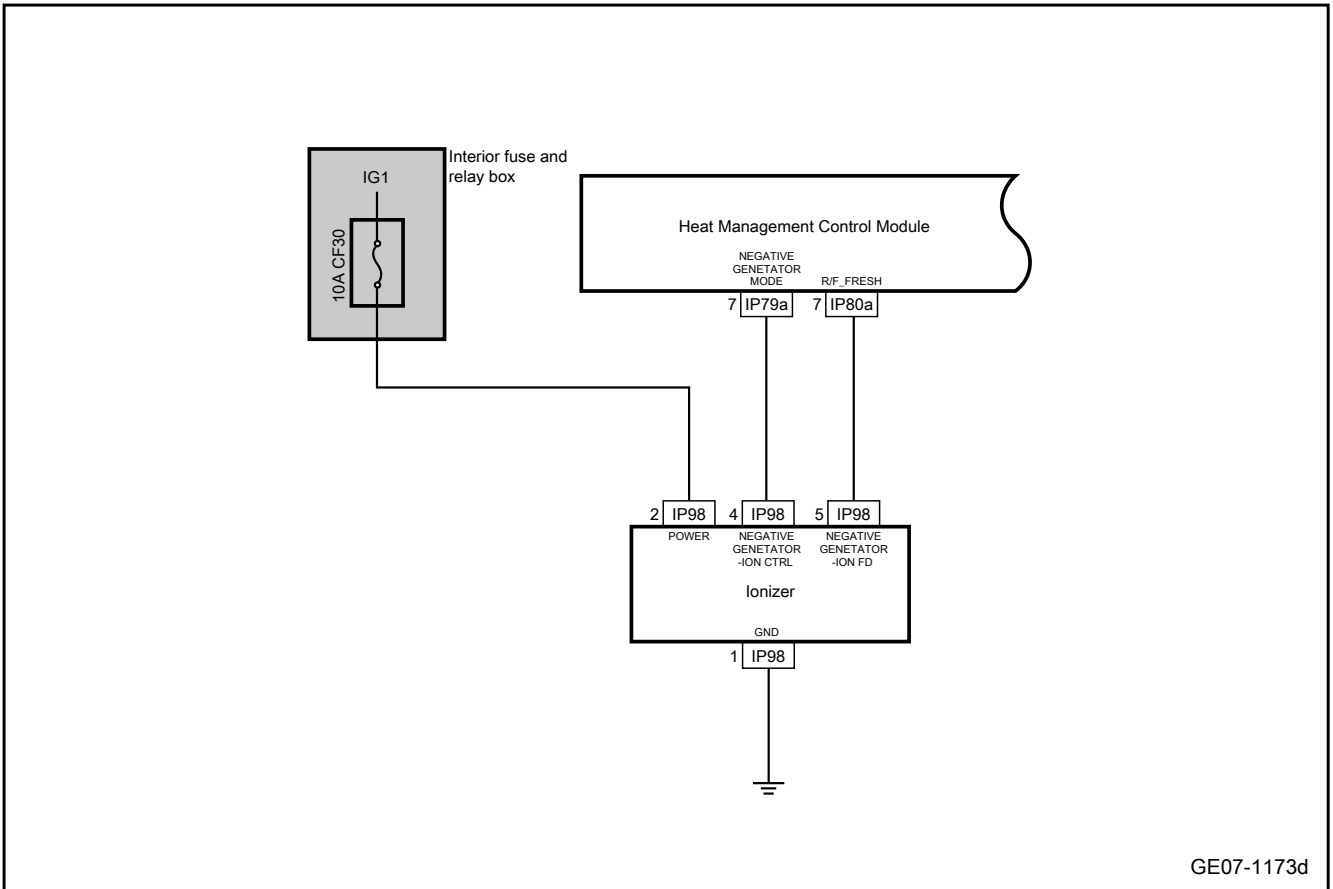
No

Step 11	System is normal.
---------	-------------------



7.2.7.32 Ionizer failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the ion generator for signs of damage, deformation, stain, loosening, etc.
- B. Check the ion generator harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

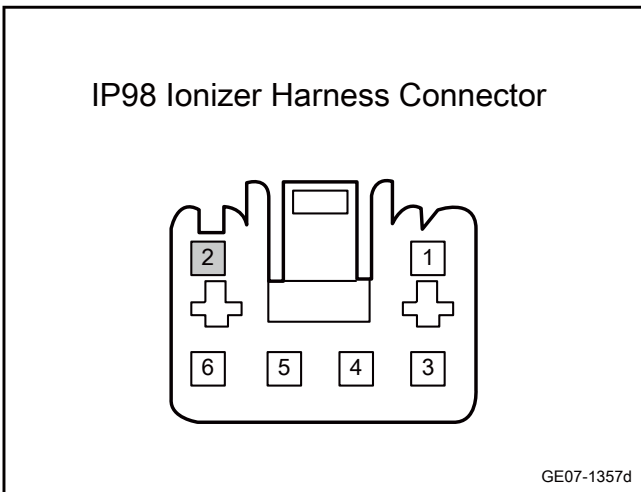
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF30 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the working voltage of the ion generator is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the ionizer harness connector IP98.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP98(2)	Vehicle body is grounded.	Standard voltage: 11-14V

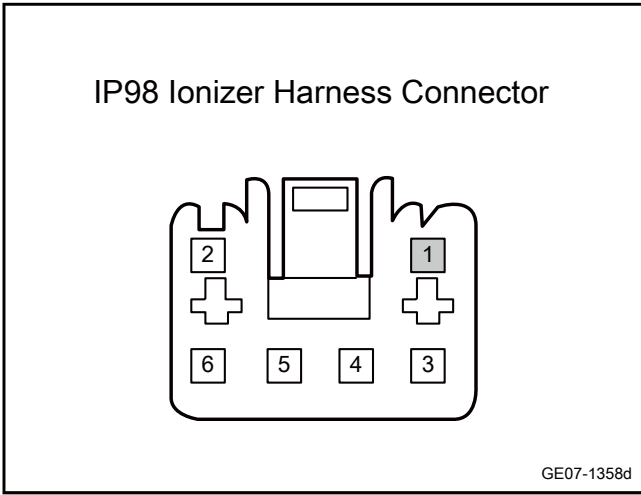
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the grounding harness of the ion generator is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the ionizer harness connector IP98.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP98(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

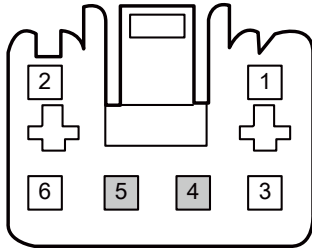
No

Repair or replace the harness.

Yes

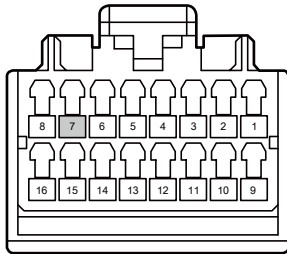
**Step 6** Check whether the circuit between the ionizer and the thermal management control module is normal.

IP98 Ionizer Harness Connector



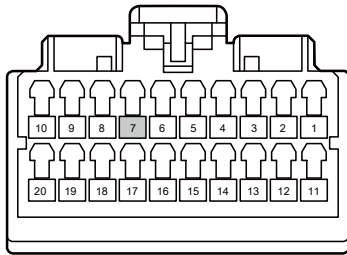
GE07-1359d

IP79a Heat Management Control Module Harness Connector 1



GE07-1360d

IP80a Heat Management Control Module Harness Connector 2



GE07-1361d

Yes

Step 7 Replace the ionizer.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the ionizer harness connector IP98.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the thermal management control module harness connector IP80a.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP98(4)	IP79a(7)	Standard resistance: less than 1Ω
IP98(5)	IP80a(7)	
IP98(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP98(5)		

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP98(4)	Vehicle body is grounded.	Standard voltage: 0V
IP98(5)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 9 Reprogram and reset heat management control module.

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

### 7.2.7.33 PM2.5 sensor failure

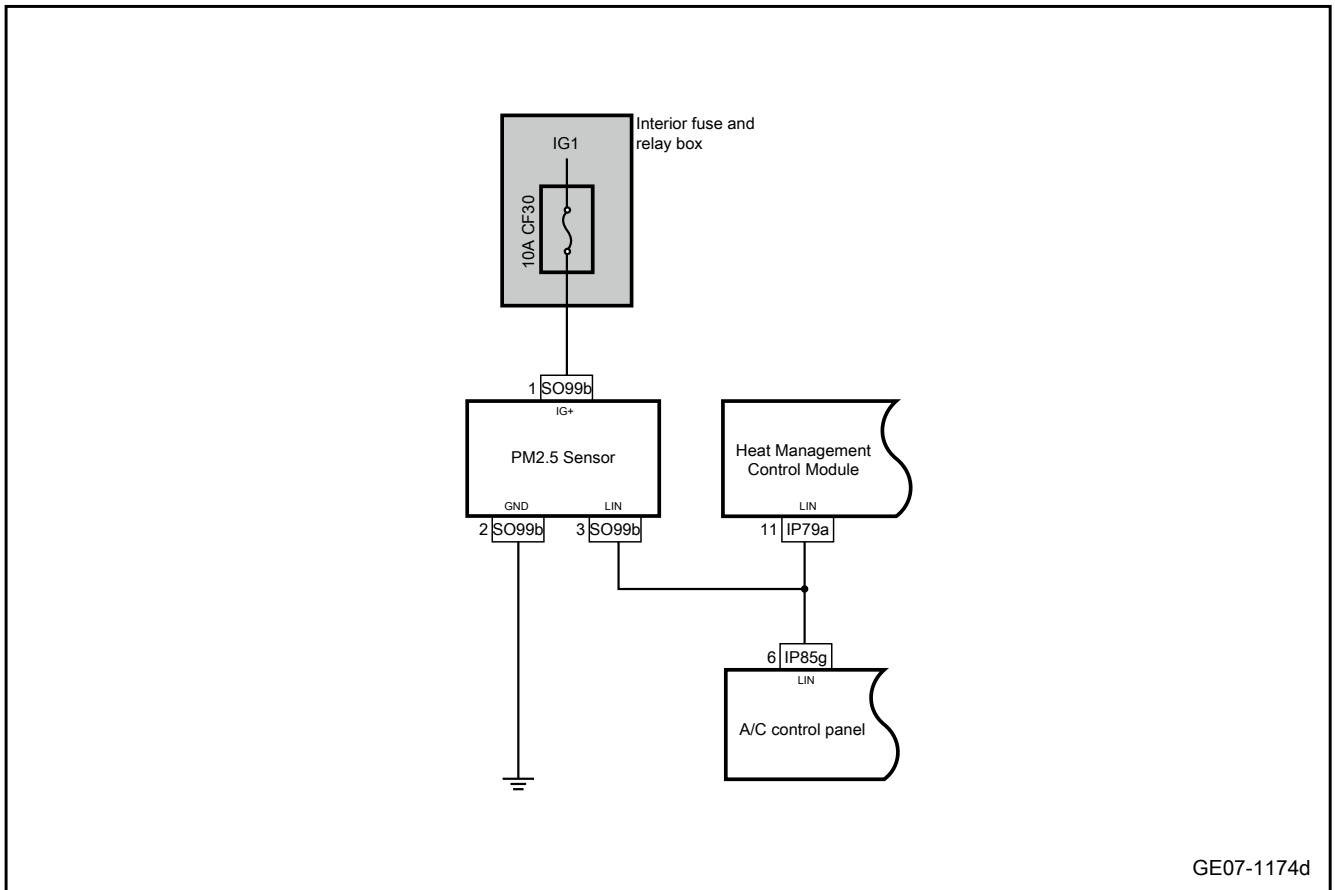
1. DTC description:

Diagnostic Trouble Code	Description
U02A387	Communication with PM2.5 AQM is lost

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U02A387	Loss of PM2.5 (ID=0x04) information lasts for 5T	1. The power supply voltage of the host is within the range of 9-16V. 2 satisfies the conditions of TDiagEnable. 3. The ignition state should be IGN ON 4. The PM2.5 module in AC_ F101 is configured to have ro, and AQM is configured to have '	1. Battery 2. Circuit 3. Fuse 4. PM2.5 sensor

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the PM2.5 sensor for signs of damage, deformation, stain, loosening, etc.
- B. Check the PM2.5 sensor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

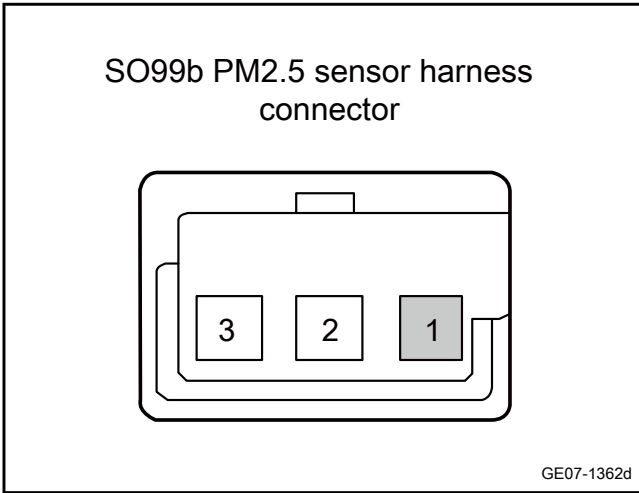
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF30 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the working voltage of the PM2.5 sensor is normal.
--------	--



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(1)	Vehicle body is grounded.	Standard voltage: 11-14V

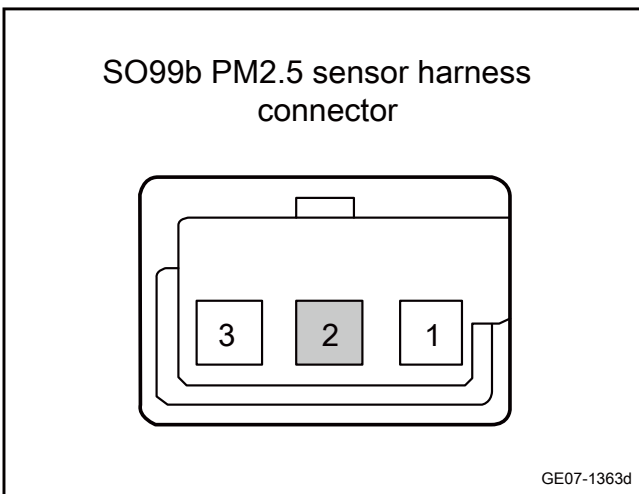
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check whether the grounding harness of PM2.5 sensor is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

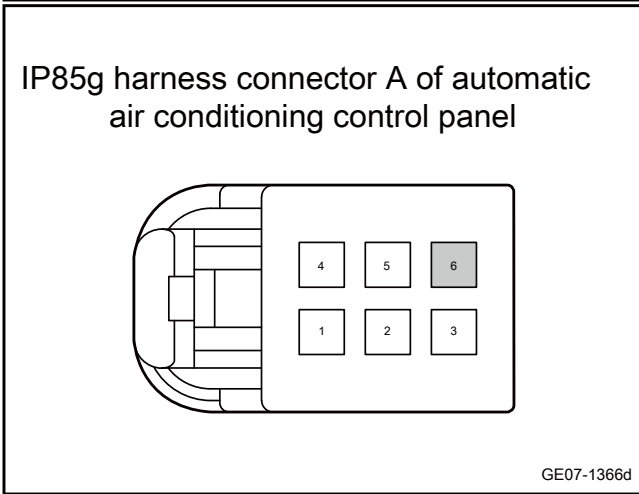
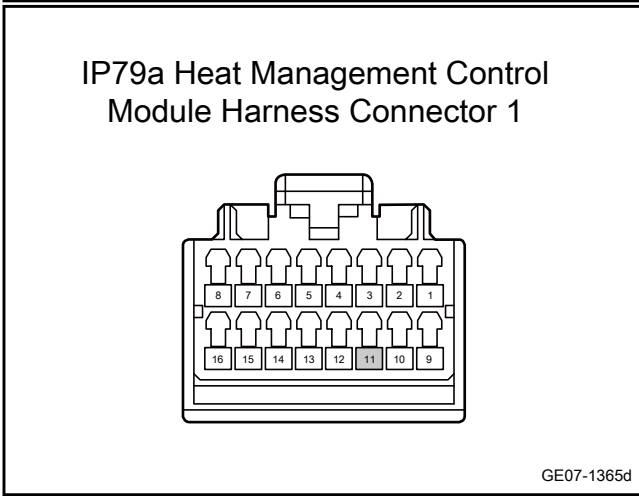
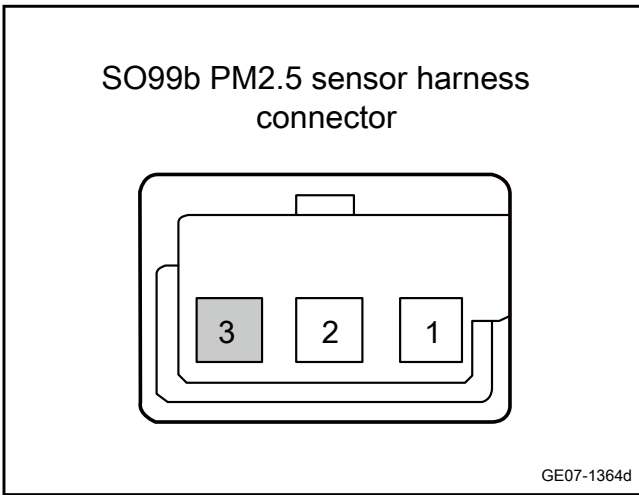
No

Repair or replace the harness.

Yes

**Step 6** | Check whether the LIN communication harness of the PM2.5 sensor is normal.





- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(3)	IP79a(11)	Standard resistance: less than 1Ω
SO99b(3)	IP85g(6)	
SO99b(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(3)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace automatic air-conditioning control panel.

- A. Replace automatic air-conditioning control panel. Refer to Replacement of automatic air-conditioning control panel
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8	Replace the PM2.5 sensor.
--------	---------------------------

- A. Replace the PM2.5 sensor. Refer to [Replacement of PM2.5 sensor](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.34 A/C Compressor Failure

1. DTC description:

Diagnostic Trouble Code	Description
B11A417	Compressor standby over-voltage fault
B11A416	Compressor standby undervoltage fault
B118F19	Compressor overcurrent protection
B118F16	Compressor underpressure fault
B118F17	Compressor over-voltage fault
B118F44	Compressor RAM failure
B118F45	Compressor ROM failure
B118F46	Compressor EEPROM failure
B11DA01	High voltage detection circuit failure of compressor
B11DB01	Compressor current detection circuit failure
B11DC01	Compressor motor current detection circuit failure
B11DC19	Compressor motor current abnormality protection
B11DD01	Basic temperature sensor failure of compressor
B11DD98	Low temperature protection of compressor basic temperature
B11DE01	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature sensor failure
B11DE98	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature overheating abnormality protection
B11DF01	Compressor drive circuit failure
B118F96	Compressor failure
B11E096	Compressor rotor action abnormality protection

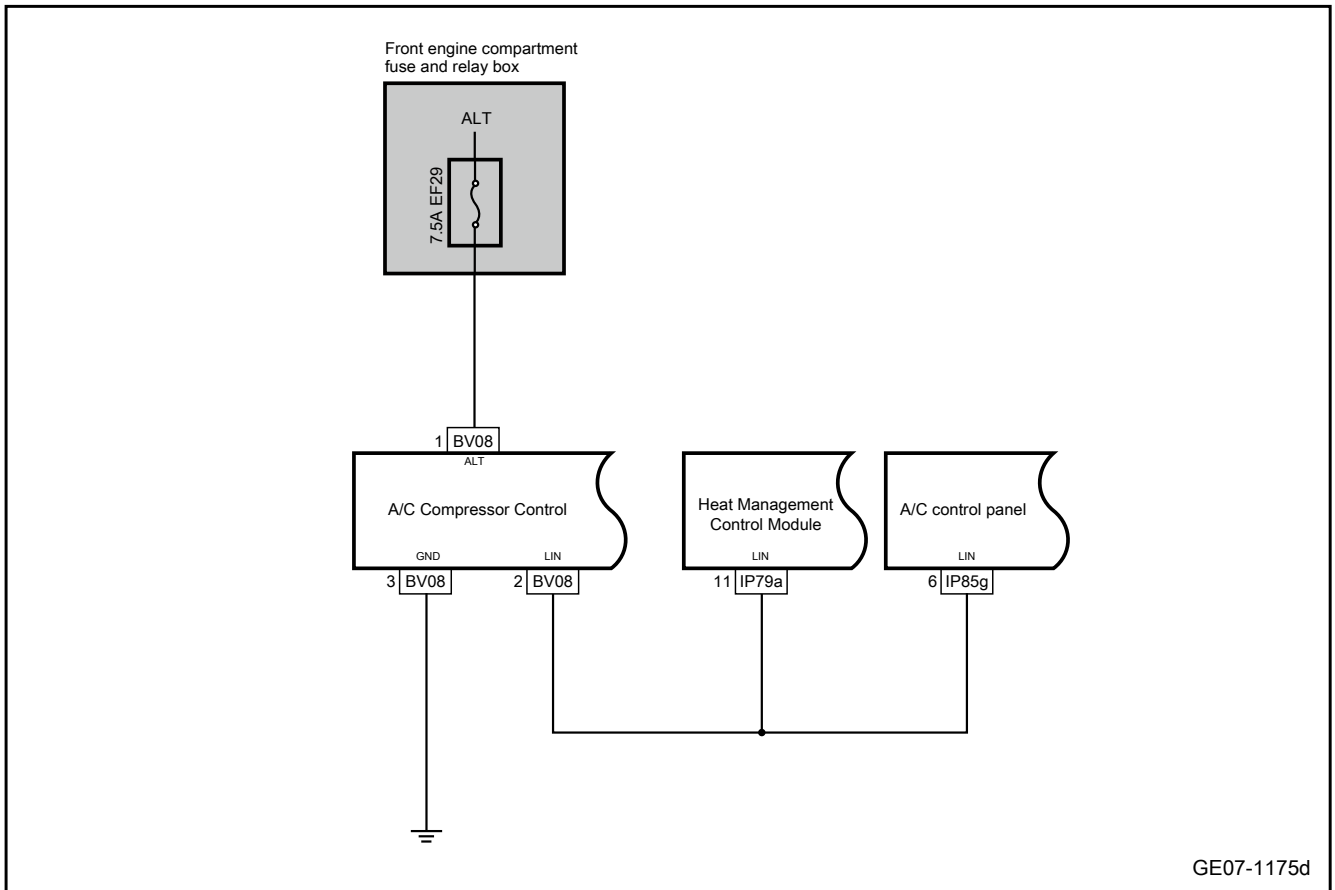
2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A417	Compressor fault signal continuously received by AC 2s is 'standby overvoltage' (ID:0x0D, 6.2 ~ 6.3=2)	1. The power supply voltage is within the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. A/C compressor
B11A416	Compressor fault signal continuously received by AC 2s is 'standby undervoltage' (ID:0x0D, 6.2 ~ 6.3=2)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118F19	Compressor fault signal continuously received by AC for 2s is 'overcurrent protection' (ID:0x0D, 6.5=1)		
B118F16	Compressor fault signal continuously received by AC for 2s is 'undervoltage fault' (ID:0x0D, 6.0 ~ 6.1=1)		
B118F17	Compressor fault signal continuously received by AC for 2s is 'overvoltage fault' (ID: 0x0D,6.0 ~ 6.1=2)		
B118F44	Compressor fault signal continuously received by AC for 2s is 'RAM failure' (ID:0x0D, 5.0=1)		
B118F45	Compressor fault signal continuously received by AC for 2s is 'ROM fault' (ID:0x0D, 5.1=1)		
B118F46	Compressor fault signal continuously received by AC for 2s is 'EEPROM fault' (ID:0x0D, 5.2=1)		
B11DA01	Compressor fault signal continuously received by AC for 2s is 'high voltage detection circuit failure' (ID:0x0D, 4.0=1)		
B11DB01	Compressor fault signal continuously received by AC for 2s is 'current detection circuit fault' (ID:0x0D, 4.1=1)		
B11DC01	Compressor fault signal continuously received by AC for 2s is 'motor current detection circuit failure' (ID:0x0D, 4.2=1)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11DC19	Compressor fault signal continuously received by AC for 2s is 'motor current abnormality protection' (ID:0x0D, 6.4=1)		
B11DD01	Compressor fault signal continuously received by AC for 2s is 'compressor basic temperature sensor failure' (ID:0x0D, 4.3=1)		
B11DD98	Compressor fault signal continuously received by AC for 2s is 'basic temperature low-temperature protection' (ID:0x0D, 6.6=1)		
B11DE01	Compressor fault signal continuously received by AC for 2s is 'IGBT temperature sensor failure' (ID:0x0D, 4.4=1)		
B11DE98	Compressor fault signal continuously received by AC for 2s is 'IGBT temperature overheating protection' (ID:0x0D, 6.7=1)		
B11DF01	Compressor fault signal continuously received by AC for 2s is 'drive circuit failure' (ID:0x0D, 4.5=1)		
B118F96	Air conditioner compressor failure signal receives 'L_ACCM_CompFitSta' continuously for 2 seconds		
B11E096	Compressor fault signal continuously received by AC for 2s is 'rotor operation abnormal protection' (ID:0x0D, 5.4=1)		

3. Schematic circuit diagram:



GE07-1175d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the A/C compressor for signs of damage, distortion, stain, loosening, etc.
- B. Check the A/C compressor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF29 of the front engine bay. Check whether the fuse EF29 is blown.

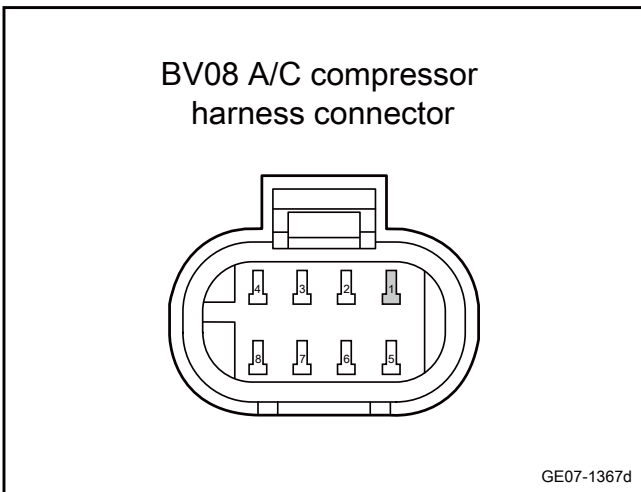
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the working voltage of the air conditioner compressor is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the A/C compressor harness connector BV08.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(1)	Vehicle body is grounded.	Standard voltage: 11-14V

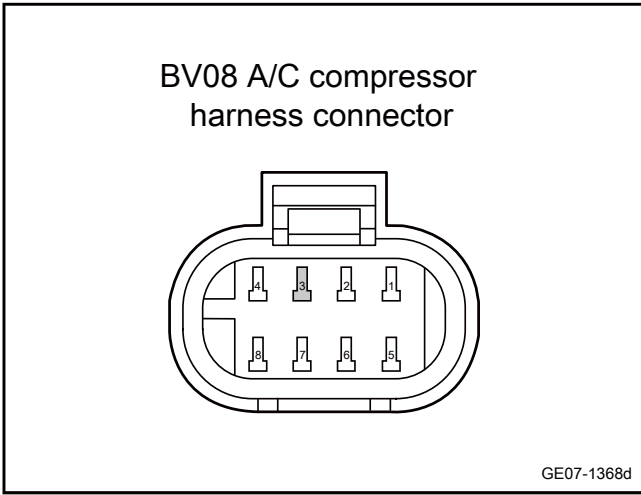
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check whether the grounding harness of the air conditioner compressor is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the A/C compressor harness connector BV08.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

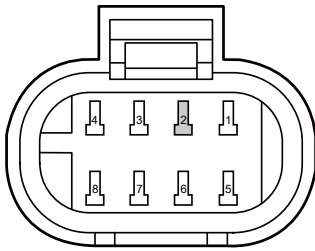
Repair or replace the harness.

Yes

**Step 6** | Check whether the LIN communication harness of the air conditioner compressor is normal.

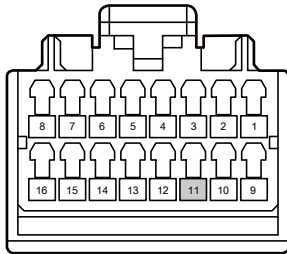


BV08 A/C compressor harness connector



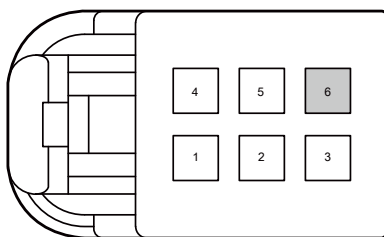
GE07-1369d

IP79a Heat Management Control Module Harness Connector 1



GE07-1370d

IP85g harness connector A of automatic air conditioning control panel



GE07-1371d

Yes

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(2)	IP79a(11)	Standard resistance: less than 1Ω
BV08(2)	IP85g(6)	
BV08(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(2)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 7** Replace automatic air-conditioning control panel.

- A. Replace automatic air-conditioning control panel. Refer to Replacement of automatic air-conditioning control panel
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8	Replace the A/C compressor.
--------	-----------------------------

- A. Replace the A/C compressor. Refer to [Replacement of A/C compressor](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.35 Heating water pump failure

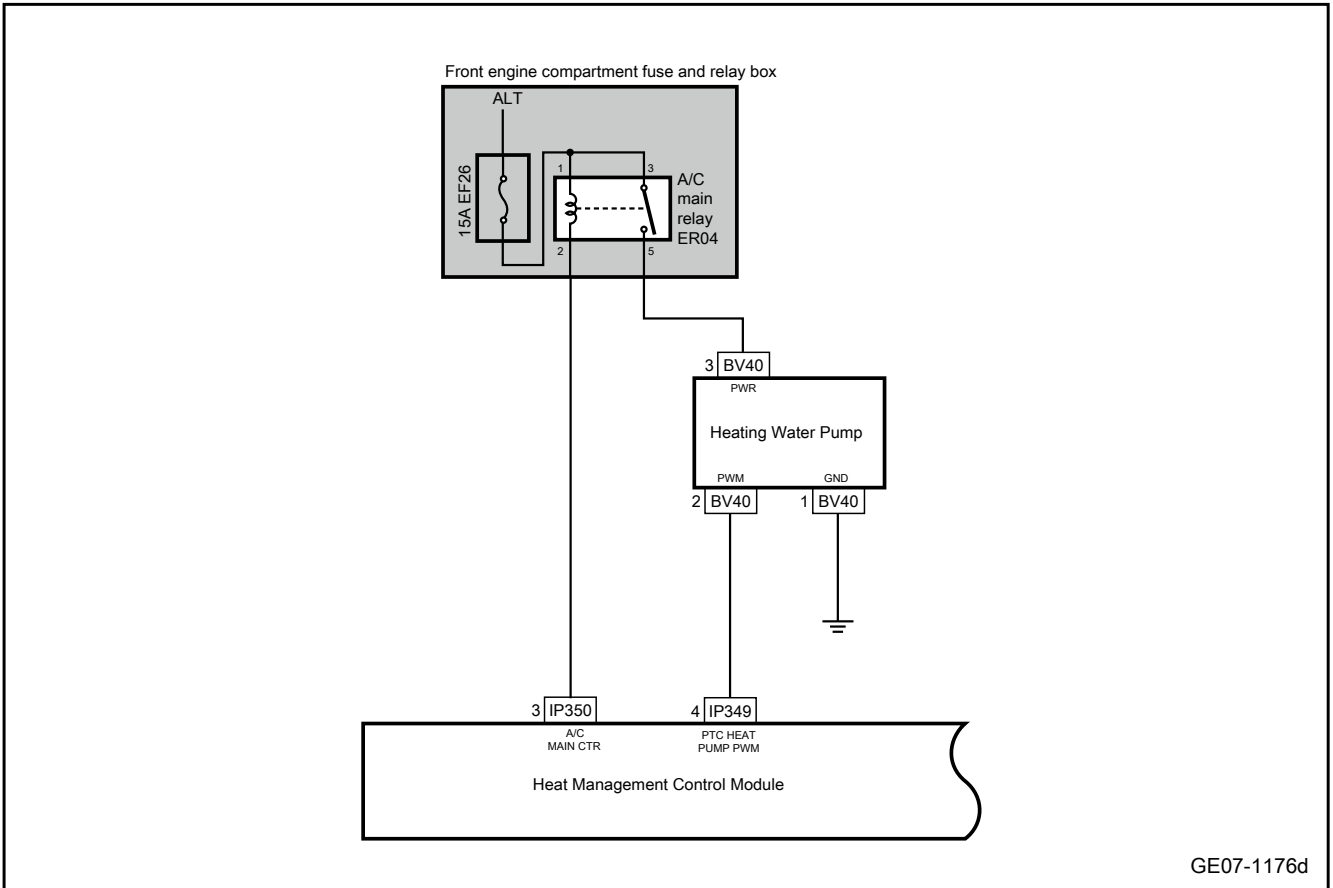
1. DTC description:

Diagnostic Trouble Code	Description
B11917B	Electric heating water pump no-load
B119197	Electric heating water pump blocked/overcurrent
B119198	Electric heating water pump shuts down due to over temperature
B119117	Electric heating water pump overvoltage protection

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11917B	AC receives no-load PWM signal of heating electric water pump	1. Ignition status is "Ignition ON". 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heating water pump
B119197	AC received the locked-rotor/over-current PWM signal of the heating electric water pump		
B119198	AC received the PWM signal of the heating electric water pump over temperature and shut down		
B119117	AC receives the PWM signal that electric heating water pump shuts down due to over temperature		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the main relay ER04 of air conditioner.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

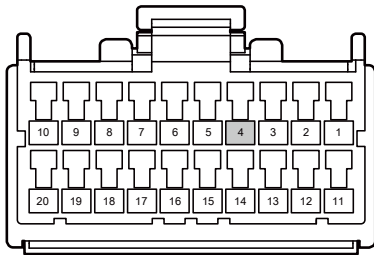
Yes

System is normal.

No

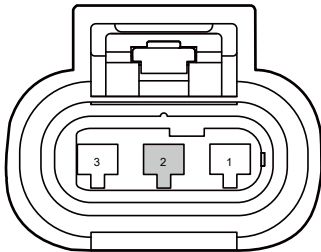
Step 5 | Check whether the wiring harness between the thermal management control module and the heating water pump is normal.

IP349 Heat Management Control Module Harness Connector 3



GE07-1372d

BV40 Heating Water Pump Harness Connector



GE07-1373d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP349.
- C. Disconnect the heating water pump harness connector BV40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(4)	BV40(2)	Standard resistance: less than 1Ω
IP349(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP349(4)	Vehicle body is grounded.	Standard voltage: 0V

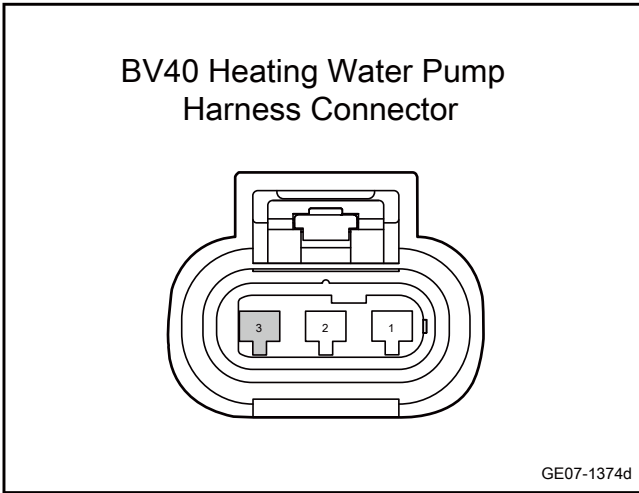
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the wiring harness between the heating water pump and the air conditioning relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the heating water pump harness connector BV40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV40(3)	ER04(5)	Standard resistance: less than 1Ω
BV40(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV40(3)	Vehicle body is grounded.	Standard voltage: 0V

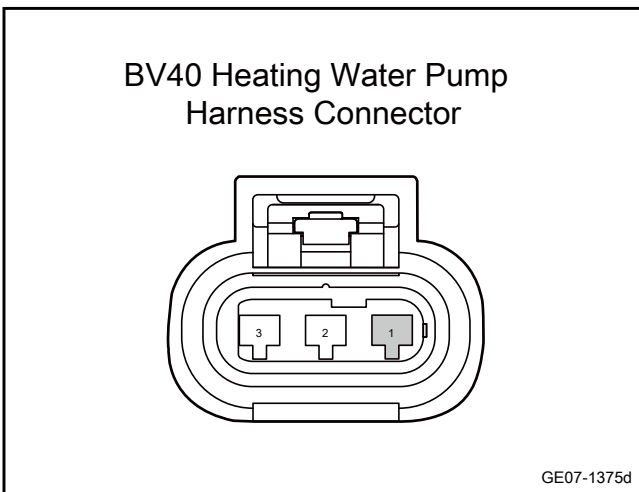
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the heating water pump grounding harness is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the heating water pump harness connector BV40.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV40(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the heating water pump.
--------	---------------------------------

- A. Replace the heating water pump. Refer to [Replacement of Heating Water Pump](#)
- B. Confirm whether the heating water pump is working normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 12	System is normal.
------------	-------------------

### 7.2.7.36 Battery-powered cooling water pump failure

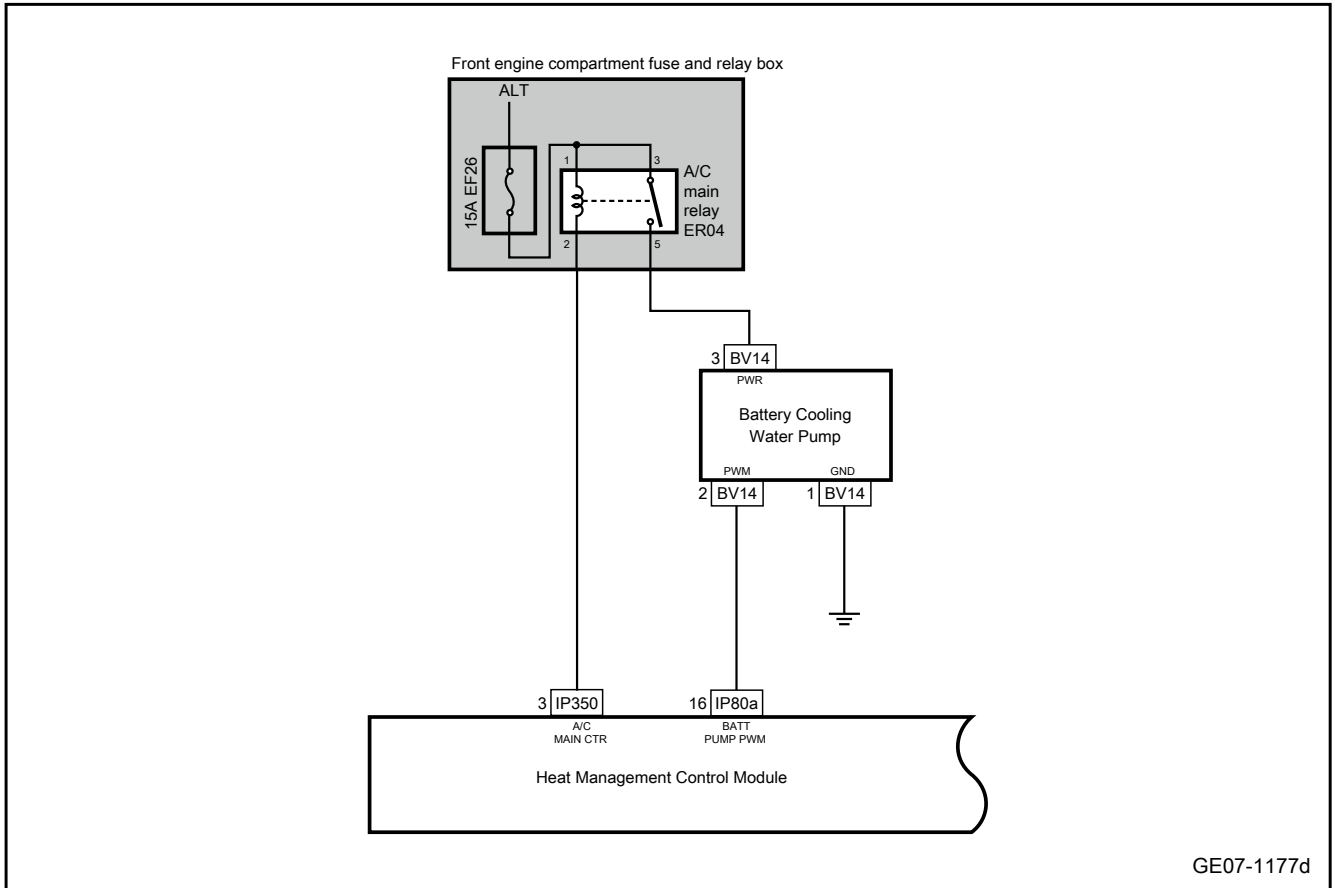
1. DTC description:

Diagnostic Trouble Code	Description
B11927B	Battery-powered coolant electronic water pump no-load
B119297	Battery-powered coolant electronic water pump blocked/overcurrent
B119298	Battery-powered coolant electronic water pump shuts down due to over temperature
B119217	Battery-powered coolant electronic water pump overvoltage protection

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11927B	AC receives no-load PWM signal of battery-powered cooling electric water pump	1. Ignition status is "Ignition ON". 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Battery cooling water pump
B119297	AC received the PWM signal of battery-powered coolant electronic water pump blocked/overcurrent		
B119298	AC receives the PWM signal that the battery-powered coolant electronic water pump shuts down due to over temperature		
B119217	AC receives the PWM signal of battery-powered cooling electric water pump overvoltage protection		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the main relay ER04 of air conditioner.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

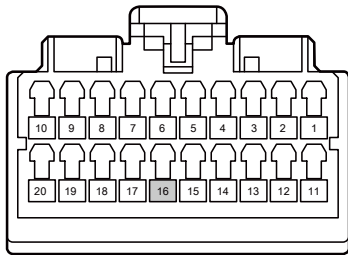
Yes

System is normal.

No

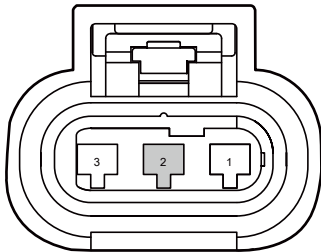
Step 5 | Check whether the wiring harness between the thermal management control module and the battery cooling water pump is normal.

IP80a Heat Management Control Module Harness Connector 2



GE07-1376d

BV14 Battery Cooling Water Pump Harness Connector



GE07-1377d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP80a.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	BV14(2)	Standard resistance: less than 1Ω
IP80a(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	Vehicle body is grounded.	Standard voltage: 0V

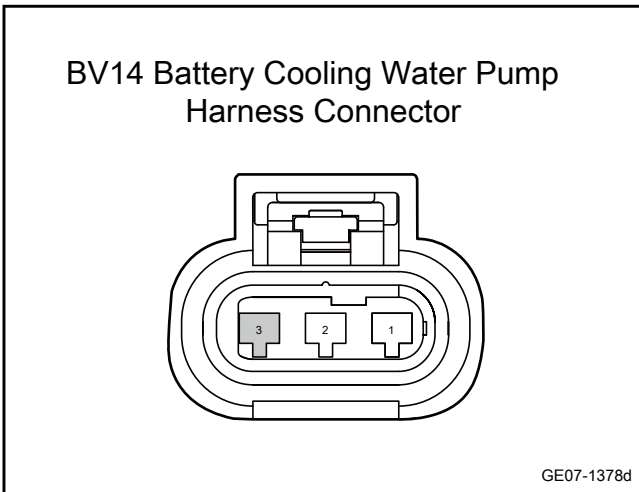
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the wiring harness between the battery cooling water pump and the air conditioner relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the harness connector BV14 of battery cooling water pump.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	ER04(5)	Standard resistance: less than 1Ω
BV14(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	Vehicle body is grounded.	Standard voltage: 0V

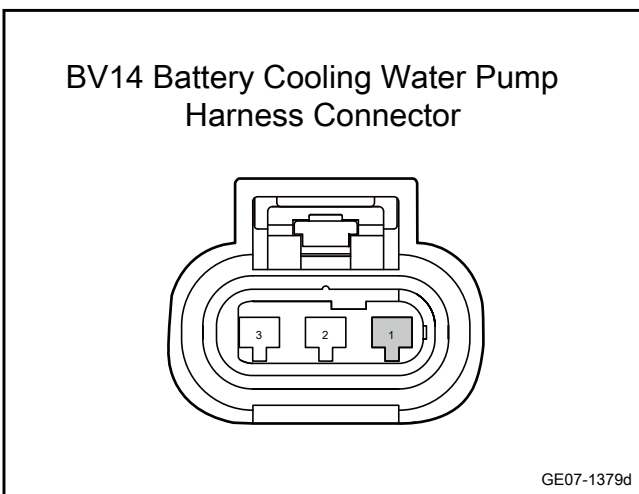
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the grounding harness of the battery cooling water pump is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV14 of battery cooling water pump.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV14(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the battery cooling water pump.
--------	---

- A. Replace the battery cooling water pump. See [Replacement of Battery-powered Cooling Water Pump](#)
- B. Confirm whether the battery-powered cooling water pump is working properly.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.37 PTC heating controller failure

1. DTC description:

Diagnostic Trouble Code	Description
B119817	Heater DC/DC overvoltage at low-voltage terminal
B119919	Heater overcurrent at high voltage terminal
B119A15	Heater IGBT short circuit/open circuit
B119B41	Heater memory error
B119C98	Heater cooling temperature is too high
B119D16	High and low voltage alarm at heater hardware interface
B119E16	Heater undervoltage alarm
B119E17	Heater overvoltage alarm at high-voltage terminal
B119F02	Heater LIN communication
B11A098	Heater hardware overheated
B11A009	Heater hardware protection
B11A109	Temperature sensor error at the coolant inlet of the heater
B11A209	Temperature sensor error at the coolant outlet of the heater
B11A309	Heater core temperature sensor error

2. Trouble code setting and fault location:

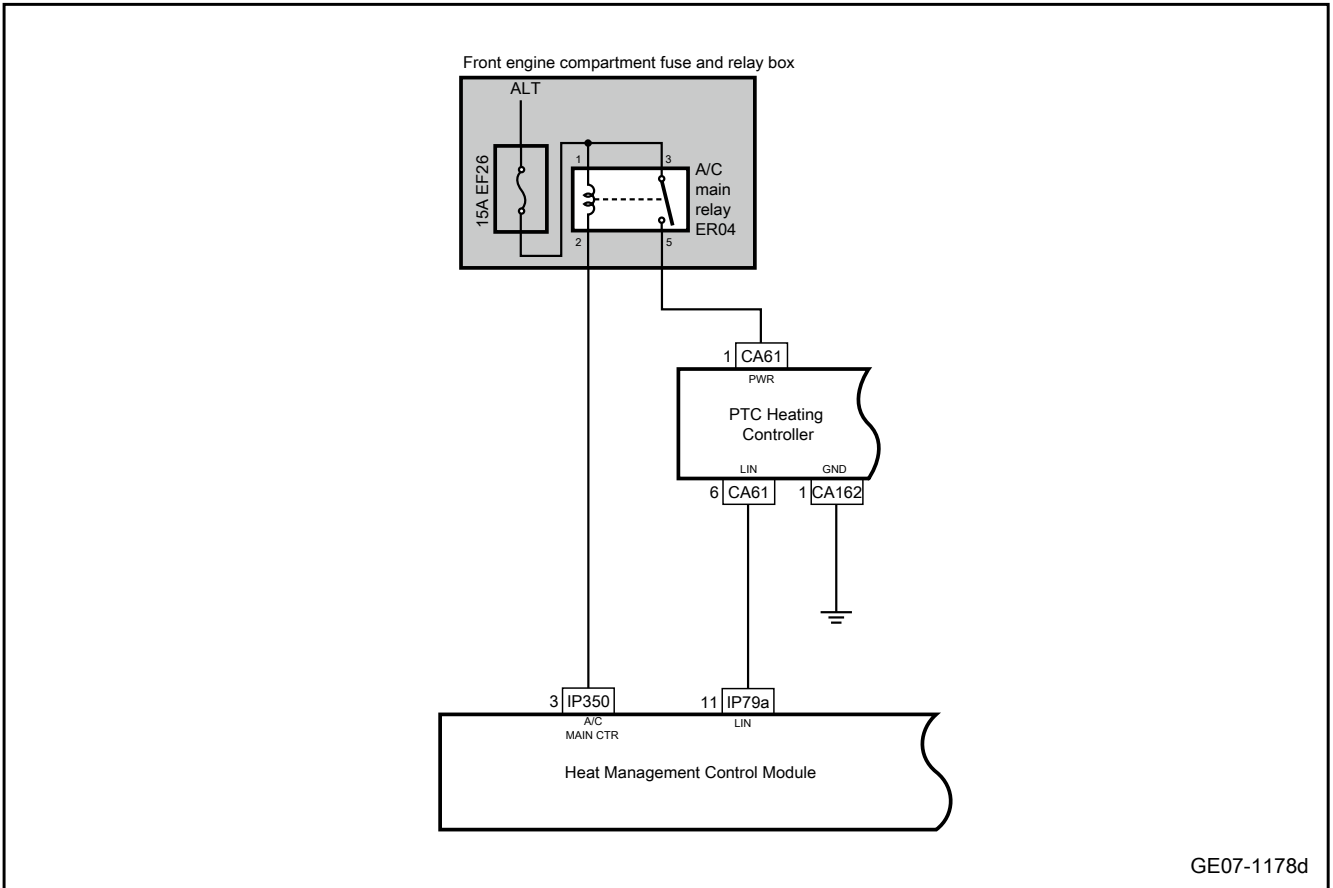
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119817	It is abnormal that AC continuously receives the signal of heater DC/DC overvoltage at low-voltage terminal (ID:0x27, 0.3=1) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5.PTC heating controller
B119919	It is abnormal that AC continuously receives the signal of overcurrent at high voltage terminal (ID:0x27, 0.1=1) for 2s		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119A15	It is abnormal that AC continuously receives the signal of heater IGBT short circuit/open circuit (ID:0x27, 0.0=1) for 2s		
B119B41	It is abnormal that AC continuously receives the signal of heater memory error (ID:0x27, 0.2=1) for 2s		
B119C98	It is abnormal that AC continuously receives the signal of heater cooling temperature too high (ID:0x27, 5.0=1) for 2s		
B119D16	It is abnormal that AC continuously receives the signal of high and low voltage alarm at the heater hardware interface (ID: 0x27, 5.1=1) for 2s		
B119E16	It is abnormal that AC continuously receives heater undervoltage alarm signal (ID:0x27, 5.5=1) for 2s		
B119E17	It is abnormal that AC continuously receives the signal of overvoltage alarm at high-voltage terminal of heater (ID:0x27, 5.4=1)		
B119F02	It is abnormal that AC continuously receives the signal of heater LIN communication (ID:0x27, 5.7=1) for 2s		
B11A098	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=1) for 2s		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A009	It is abnormal that AC continuously receives the signal of heater hardware protection (ID:0x27, 6.0=1) for 2s		
B11A109	It is abnormal that AC continuously receives the signal of temperature sensor error at the coolant inlet of the heater (ID:0x27, 6.4=1) for 2s		
B11A209	It is abnormal that AC continuously receives the signal of temperature sensor error at the coolant outlet of the heater (ID: 0x27, 6.5=1) for 2s	Power supply within the range of 1.9V-16V 2. The state of the vehicle is in IGN ON mode	
B11A309	It is abnormal that AC continuously receives the signal of heater core temperature sensor error (ID: 0x27, 6.7=1) for 2s		

3. Schematic circuit diagram:



GE07-1178d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the main relay ER04 of air conditioner.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

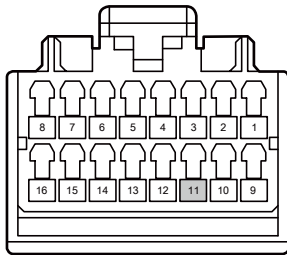
Yes

System is normal.

No

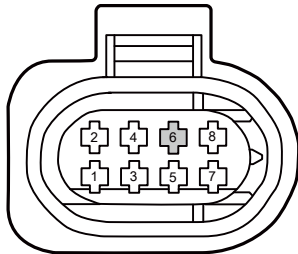
Step 5 Check whether the wiring harness between the thermal management control module and the PTC heating controller is normal.

**IP79a Heat Management Control Module Harness Connector 1**



GE07-1380d

**CA61-PTC Heating Controller Harness Connector 2**



GE07-1381d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the PTC heating control unit harness connector CA61.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA61(6)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

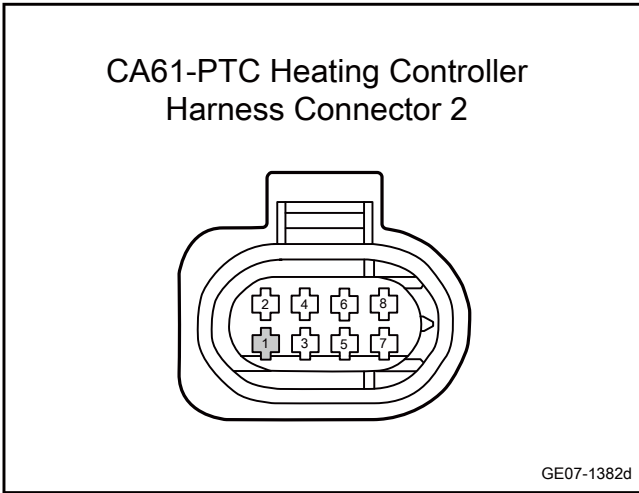
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the wiring harness between the PTC heating controller and the air conditioning relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the PTC heating control unit harness connector CA61.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA61(1)	ER04(5)	Standard resistance: less than 1Ω
CA61(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA61(1)	Vehicle body is grounded.	Standard voltage: 0V

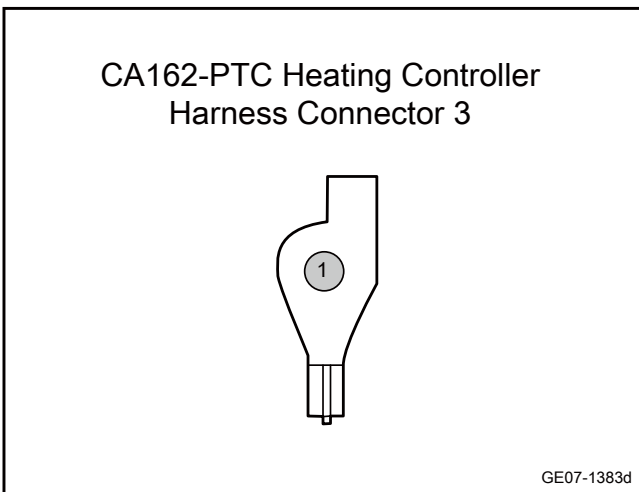
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** | Check whether the PTC heating control unit grounding harness is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the PTC heating controller harness connector CA162.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA162(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the PTC heating controller.
--------	-------------------------------------

- A. Replace the PTC heating controller. Refer to [Replacement of the PTC heating control unit](#)
- B. Confirm whether the PTC heating controller is working normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.38 Solenoid valve failure

1. DTC description:

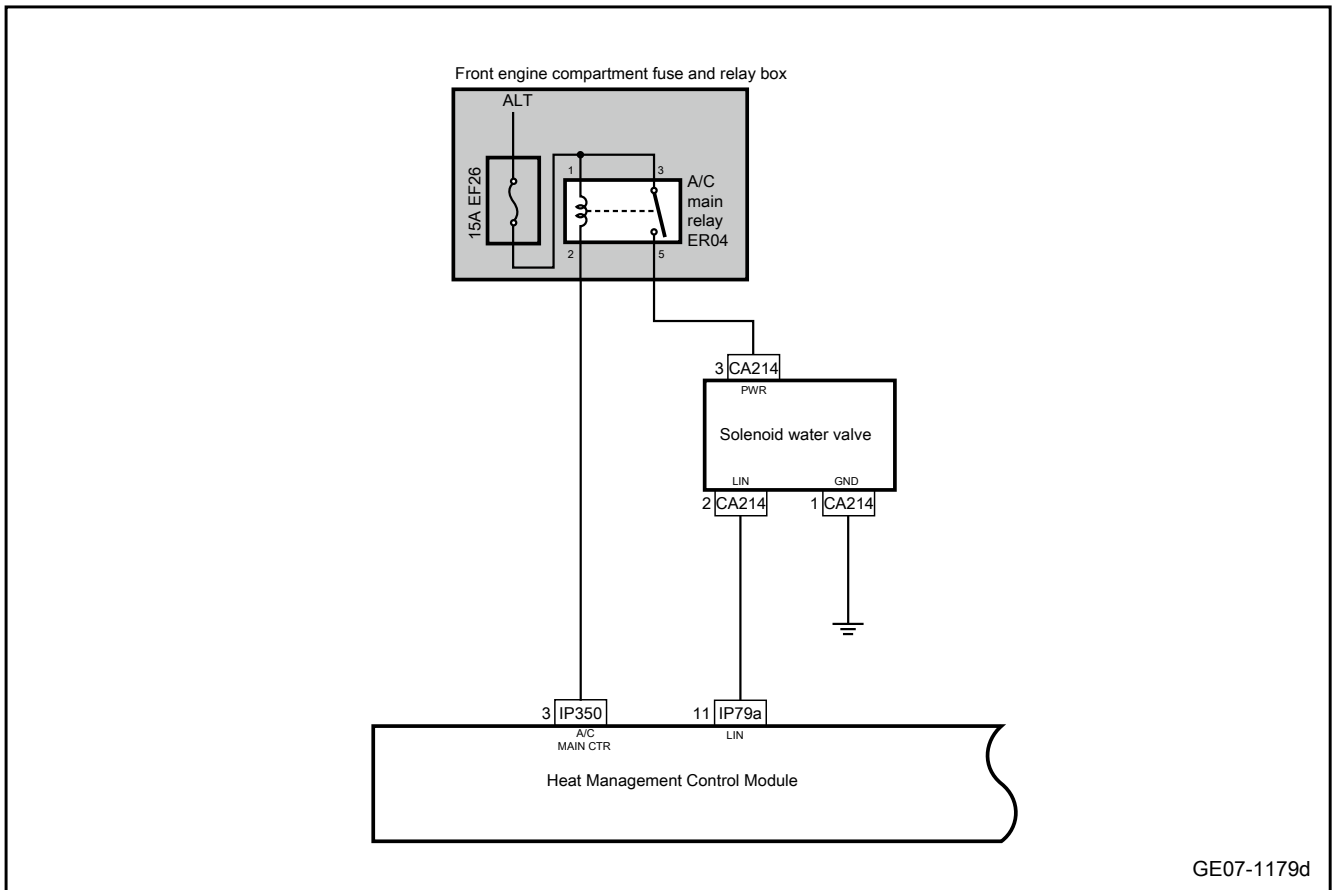
Diagnostic Trouble Code	Description
B11AA12	Short circuit of water valve 2 coil
B11AA13	Water valve 2 coil is open circuit
B11AA16	Water valve 2 underpressure
B11AA17	Water valve 2 overpressure
B11AA97	Water valve 2 shuts off at over temperature
B11AA98	Water valve 2 over-temperature alarm

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AA12	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'coil short circuit' (ID:0x0A, 0.1 ~ 0.3=1)	1. The power supply voltage is within the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Solenoid water valve
B11AA13	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'coil open circuit' (ID:0x0A, 0.1 ~ 0.3=2)		
B11AA16	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'underpressure (ID:0x0A, 0.6 ~ 0.7=2)		
B11AA17	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'overpressure (ID:0x0A, 0.6 ~ 0.7=1)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AA97	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'shuts off at over temperature' (ID: 0x0A,0.1 ~ 0.3=3)		
B11AA98	The fault signal continuously received by AC from water valve 2 for 2 seconds is 'over-temperature alarm' (ID: 0x0A,0.4 ~ 0.5=1)		

3. Schematic circuit diagram:



4. Diagnosis steps



Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the main relay ER04 of air conditioner.
--------	---

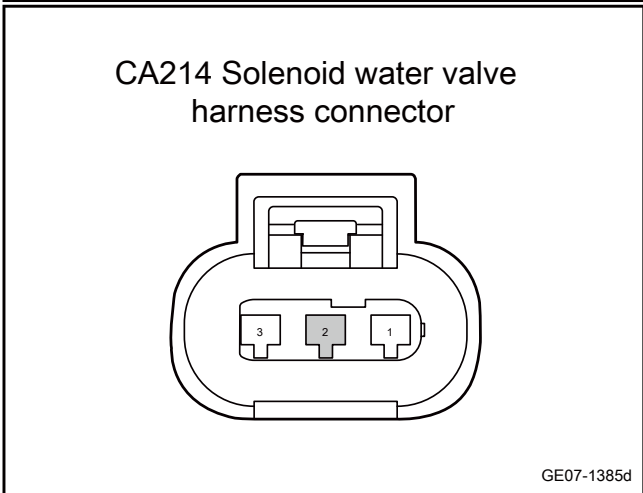
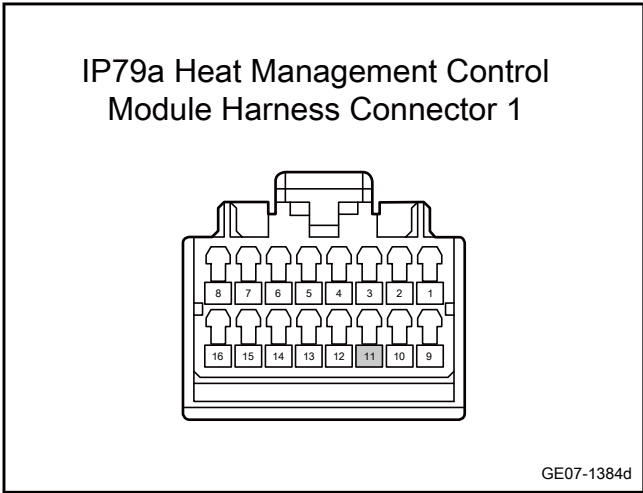
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 5** Check whether the wiring harness between the thermal management control module and the solenoid water valve is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the solenoid water valve harness connector CA214.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA214(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

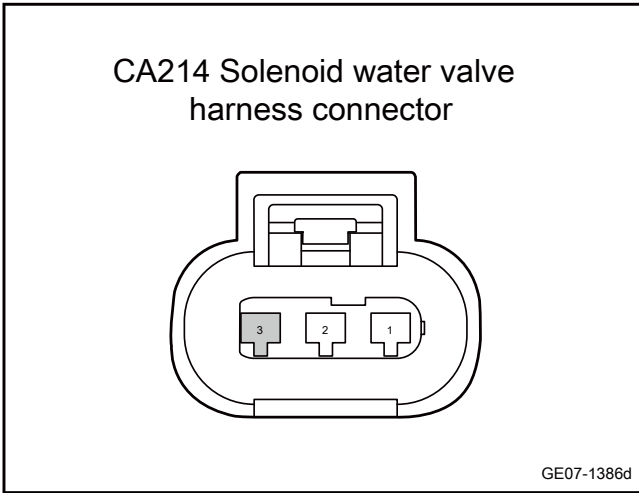
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the wiring harness between the solenoid water valve and the air-conditioning relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the solenoid water valve harness connector CA214.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA214(3)	ER04(5)	Standard resistance: less than 1Ω
CA214(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA214(3)	Vehicle body is grounded.	Standard voltage: 0V

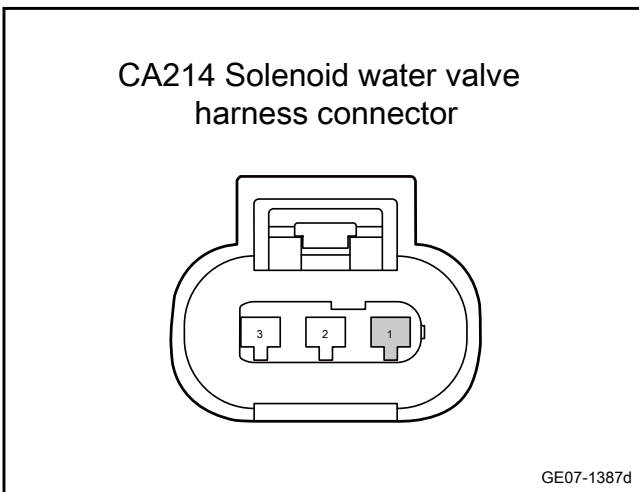
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the grounding harness of the solenoid water valve is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the solenoid water valve harness connector CA214.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA214(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the solenoid water valve.
--------	-----------------------------------

- A. Replace the solenoid water valve. Refer to [Replacement of the solenoid water valve](#)
- B. Confirm whether the solenoid water valve is working properly.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 7.2.7.39 Heat exchanger solenoid valve failure

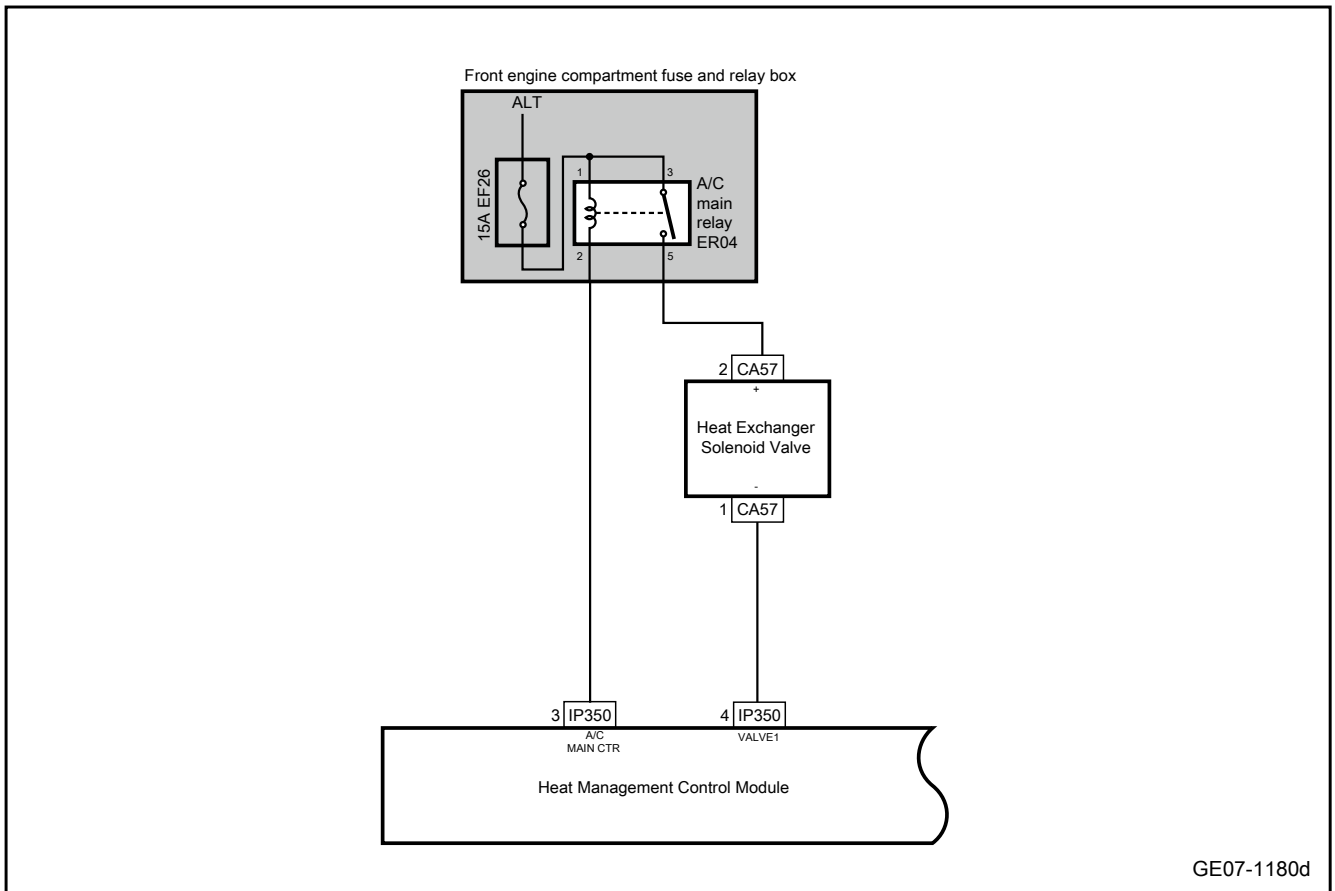
1. DTC description:

Diagnostic Trouble Code	Description
B11EE96	Solenoid valve 1 control circuit failure
B11EF96	Solenoid valve 2 control circuit failure
B11F096	Solenoid valve 3 control circuit failure
B11F196	Solenoid valve 4 control circuit failure
B11F296	Solenoid valve 5 control circuit failure

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EE96	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=71) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve
B11EF96	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=72) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	
B11F096	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=73) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	
B11F196	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=74) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	
B11F296	It is abnormal that AC continuously receives the signal of the heater hardware overheating (ID:0x27, 6.1=75) for 2s	1. Ignition status is "Ignition ON". 2. AC power relay ON	

3. Schematic circuit diagram:



GE07-1180d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to put the vehicle on the READY gear.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the main relay ER04 of air conditioner.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

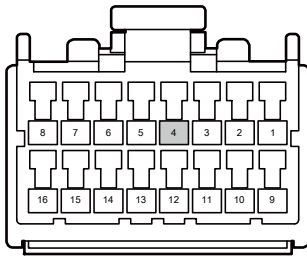
Yes

System is normal.

No

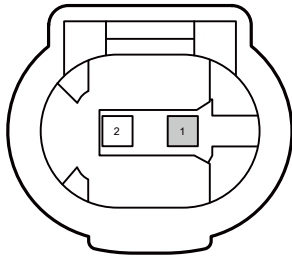
Step 5 | Check whether the wiring harness between the thermal management control module and the heat exchanger solenoid valve is normal.

IP350 Heat Management Control Module Harness Connector 4



GE07-1388d

CA57 Heat Exchanger Solenoid Valve Harness Connector



GE07-1389d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the heat management control module harness connector IP350.
- C. Disconnect the heat exchanger solenoid valve harness connector CA57.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(4)	CA57(1)	Standard resistance: less than 1Ω
IP350(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to put the vehicle on the READY gear.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP350(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

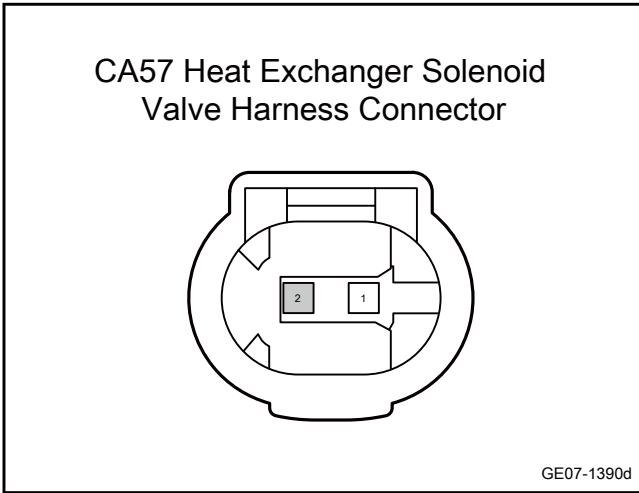
No

Repair or replace the harness.

Yes

Step 6	Check whether the wiring harness between the heat exchanger solenoid valve and the air conditioner relay is normal.
--------	---





- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect the heat exchanger solenoid valve harness connector CA57.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA57(2)	ER04(5)	Standard resistance: less than 1Ω
CA57(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to put the vehicle on the READY gear.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA57(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 7** | Replace the heat exchanger solenoid valve.

- A. Replace the heat exchanger solenoid valve. See Replacement of Heat Exchanger Solenoid Valve.
- B. Confirm whether the heat exchanger solenoid valve is working properly.

Yes → System is normal.

No

**Step 8** | Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 9	Reprogram and reset heat management control module.
--------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to put the vehicle on the READY gear.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 7.2.7.40 Electronic expansion valve failure

#### 1. DTC description:

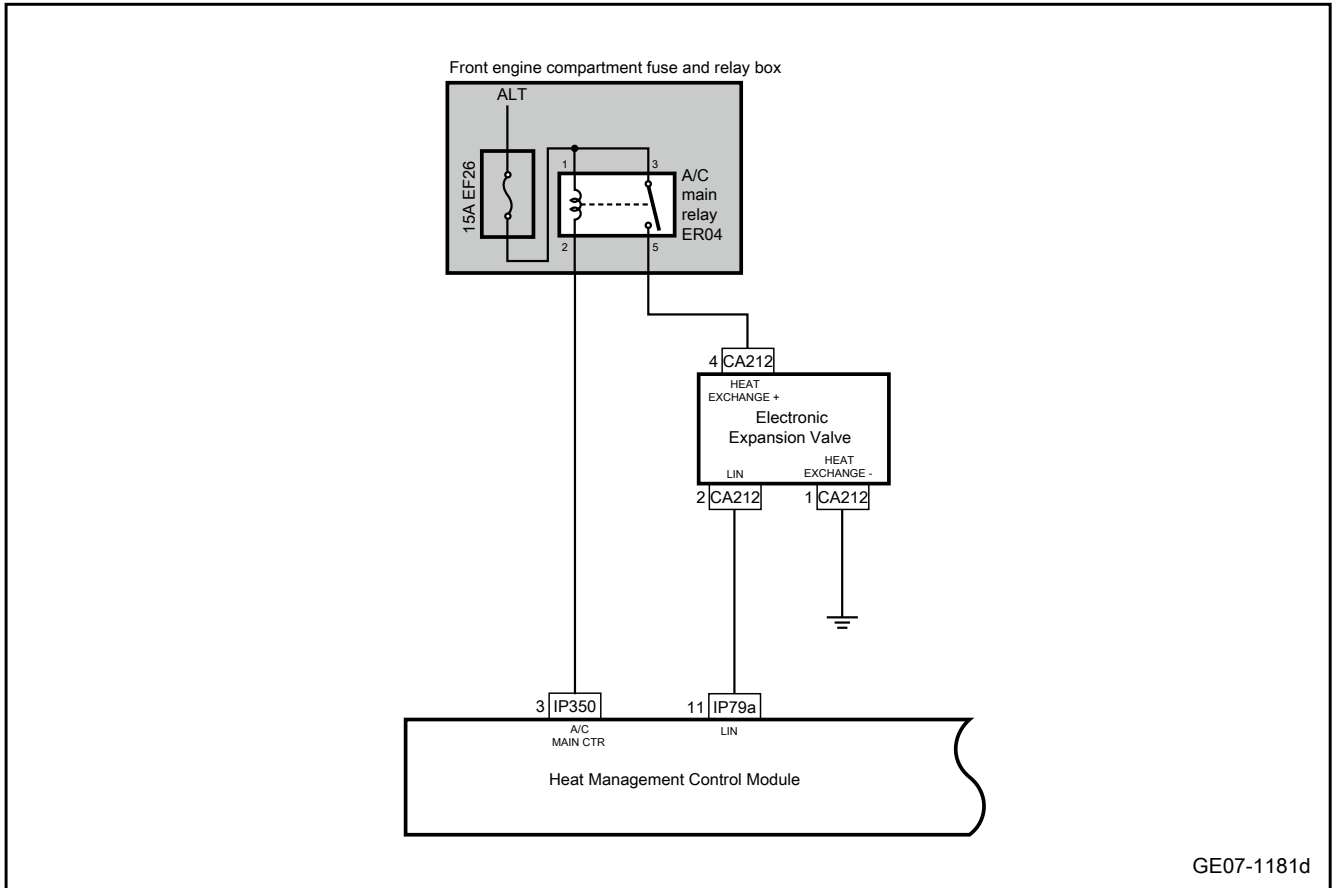
Diagnostic Trouble Code	Description
B11EC15	Electronic expansion valve 1 short circuit or open circuit
B11EC98	Electronic expansion valve 1 over temperature protection or over temperature alarm
B11EC16	Electronic expansion valve 1 working power supply undervoltage
B11EC17	Electronic expansion valve 1 working power supply overvoltage
U022B87	The thermal management controller loses communication with the electronic expansion valve 1
B11ED15	Electronic expansion valve 2 short circuit or open circuit
B11ED98	Electronic expansion valve 2 over temperature protection or over temperature alarm
B11ED16	Electronic expansion valve 2 working power supply undervoltage
B11ED17	Electronic expansion valve 2 working power supply overvoltage
U022C87	The thermal management controller loses communication with the electronic expansion valve 2

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EC15	AC continuously receives the electronic expansion valve 1 fault signal of 'short circuit or open circuit' (ID:0x18, 2.3 ~ 2.5=2 or 1) for 2s	1. The power supply voltage is within the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Electronic expansion valve
B11EC98	AC continuously receives the electronic expansion valve 1 fault signal of 'over-temperature protection' (ID:0x18, 2.3 ~ 2.5=3) for 2s		
B11EC16	AC continuously receives the electronic expansion valve 1 fault signal of 'undervoltage' (ID:0x18, 2.0 ~ 2.1=1) for 2s		
B11EC17	AC continuously receives the electronic expansion valve 1 fault signal of 'overvoltage' (ID:0x18, 2.0 ~ 2.1=2) for 2s		
U022B87	Loss of EXV1 (ID=0x18) information 5T (T is the message cycle)		
B11ED15	AC continuously receives the electronic expansion valve 1 fault signal of 'short circuit or open circuit' (ID:0x19, 2.3 ~ 2.5=2 or 1) for 2s	1. The power supply voltage is within the effective range 2. AC power relay ON	
B11ED98	AC continuously receives the electronic expansion valve 2 fault signal of 'over-temperature protection' (ID:0x19, 2.3 ~ 2.5=3) for 2s		
B11ED16	AC continuously receives the electronic expansion valve 1 fault signal of 'undervoltage' (ID:0x19, 2.0 ~ 2.1=1) for 2s		
B11ED17	AC continuously receives the electronic expansion valve 2 fault signal of 'overvoltage' (ID:0x19, 2.0 ~ 2.1=2) for 2s		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U022C87	Loss of EXV2 (ID=0x19) information 5T (T is the message cycle)		

3. Schematic circuit diagram:



GE07-1181d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, stains, looseness, etc.
- B. Check the harness connector of thermal management control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF26 of the front engine bay. Check whether the fuse EF26 is blown.  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the main relay ER04 of air conditioner.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner and replace it with a new main relay of the same specification.
- C. Confirm whether the trouble is removed.

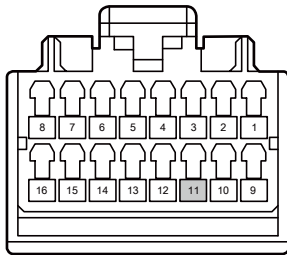
Yes

System is normal.

No

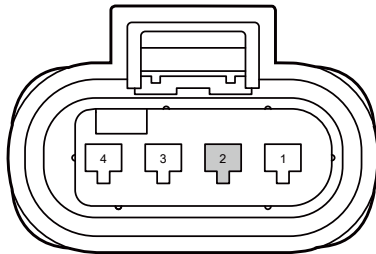
Step 5 | Check whether the wiring harness between the thermal management control module and the electronic expansion valve is normal.

**IP79a Heat Management Control Module Harness Connector 1**



GE07-1391d

**CA212 Electronic Expansion Valve Harness Connector 1**



GE07-1392d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect electronic expansion valve harness connector CA212.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA212(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

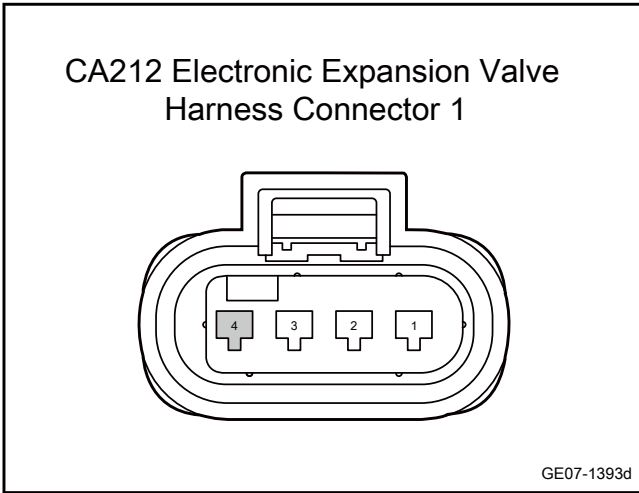
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

<b>Step 6</b>	Check whether the wiring harness between the electronic expansion valve and the air conditioning relay is normal.
---------------	---



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER04 of air conditioner.
- C. Disconnect electronic expansion valve harness connector CA212.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA212(4)	ER04(5)	Standard resistance: less than 1Ω
CA212(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA212(4)	Vehicle body is grounded.	Standard voltage: 0V

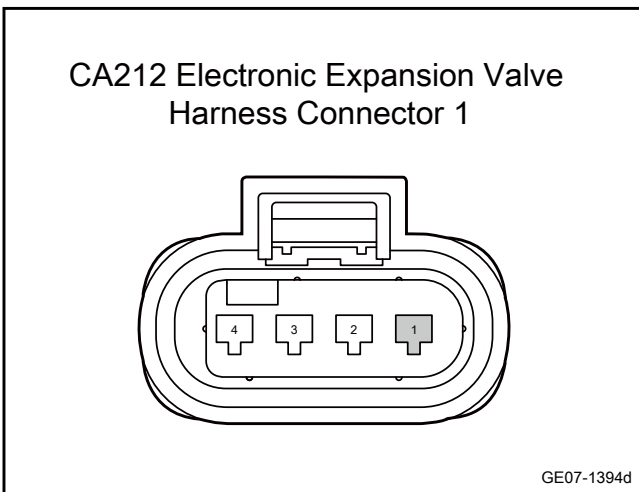
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the grounding harness of the electronic expansion valve is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect electronic expansion valve harness connector CA212.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA212(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8	Replace the electronic expansion valve.
--------	---

- A. Replace the electronic expansion valve. See [Replacement of Electronic Expansion Valve](#)
- B. Confirm whether the electronic expansion valve is working properly.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of thermal management control module](#)

Next Step

Step 10	Reprogram and reset heat management control module.
---------	---

- A. Reprogram and reset the thermal management control module, refer to [Programing and setting of each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 12	System is normal.
------------	-------------------

### 7.2.7.41 Recovery and filling of air conditioner refrigerant

The operation efficiency and service life of air conditioning (A/C) system depend on the chemical stability of the cooling system. When the refrigerating system is contaminated with foreign matters (such as dust, air, or moisture), contaminants can change the stability of the refrigerant and 100PG compressor oil. It also affects the relationship between pressure and temperature, reduces work efficiency, and can lead to internal corrosion and abnormal worn of components. Please operate as follows to ensure the chemical stability of the system:

1. Before the joint is opened, clean the oil at and around the joint to reduce the possibility of oil entering the system.
2. After the joint is disconnected, the two sides of joints are sealed by cap, plug or tape to prevent oil, foreign matter and moisture from entering.
3. Keep all tools clean and dry, including manifold pressure gauge components and all replacements.
4. Add 100PG refrigerant oil with clean, dry conveyors and containers to ensure that the refrigerant oil is as free from moisture as possible.
5. Minimize exposure time of A/C system interior to air during operation.
6. A/C system interior must be emptied and refilled after exposed to the air. All repair parts are dried and sealed before delivery. These sealed parts should only be opened when the installation is about to begin. Before unpacking, all parts should be kept at room temperature to prevent moisture in the air from condensing on the parts and entering the system, and resealed as soon as possible.

### 1. Procedures for discharge, adding of lubrication oil, emptying and filling of A/C system.

#### Warning

Refer to “Warning of inhaling R-134a” in the “Warnings and Notice”. Other health and safety information is available from refrigerant and lubrication oil manufacturers.

#### Warning

Refer to “Warning regarding goggles and gloves” in the “Warnings and Notice”

The discharge, adding of lubrication oil, emptying and filling of A/C system can be completed by one connection of filling machine. The refrigerant is filtered during both recovery and emptying to ensure that the refrigerant pumped into the A/C system is clean and dry.

1. R-12 filling machine is prohibited to fill R-134a system. The refrigerants and refrigerant oil of the two systems are not compatible and should never be mixed. Even small amounts are not allowed. Mixing with residual refrigerants can damage the equipment.
2. Reducing joints are prohibited to ensure internal sealing of the system.

### 2. Installation and maintenance of filling machine

There are many types of filling machine. All filling machines perform various tasks such as A/C system discharge, refrigerant recovery, system emptying, refrigerant oil rationing and refrigerant refilling. Refer to the operation instructions of filling machine and master the initial installation and maintenance procedures.

### 3. Function of control panel

The operator can control and monitor the operation process with the control button and indicator light on the filling machine. For details, please refer to the operation instrument of filling machine. Operation instructions should include:

1. Main power supply switch: the main power switch supplies power to the control panel.
2. Display screen: the display shows the programmed vacuuming time and the weight of the refilled refrigerant. Refer to the operation instrument of manufacturer and know the detailed program information
3. Low pressure side manifold pressure gauge: this gauge shows the pressure at the low pressure side of the system.
4. High pressure side manifold pressure gauge: this gauge shows the pressure at the high pressure side of the system.
5. Control panel: it includes control buttons to control various operation functions.
6. Low pressure side valve: this valve is used to connect the low pressure side of A/C system and the filling machine.
7. Humidity indicator lamp: this indicator lamp indicates whether the refrigerant is moist or not.
8. High pressure side valve: this valve is used to connect the high pressure side of A/C system and the filling machine.

#### 4. Refrigerant recovery

##### Caution

Use only refrigerant tanks specially designed for filling machine. The anti- overcharge mechanism of filling machine is specifically calibrated for the use of this refrigerant tank. The tank valve of the refrigerant tank is also specially manufactured for the device.

1. Check the high pressure side and low pressure side gauges on the control panel of the filling machine to ensure that there is pressure in the A/C system. If there is no pressure, there is no recyclable refrigerant in the system.
2. Open high pressure side and low pressure side valves.
3. Open the gas and liquid valves on the refrigerant tank.
4. Drain refrigerant oil from oil separator.
5. Close the drain valve.
6. Connect the filling machine to an appropriate power outlet.
7. Switch on the main power supply switch.

##### Caution

Do not mix used refrigerant oil with new oil refrigerant. Used refrigerant oil may contain precipitated aluminum or other foreign matters. Be sure to use a new refrigerant oil when the A/C system is refilled. Scrap used refrigerant oil correctly.

##### Caution

Some of the 100PG lubrication oil in the A/C system may be recycled along with the refrigerant. The amount of recovered lubrication oil is variable. The filling machine can separate the lubrication oil from the refrigerant so that the amount of lubrication oil recovered can be determined. Add equal amount of lubrication oil when the system is refilled. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

1. Start the recovery process. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
2. Wait for 5 minutes, and then check the low pressure side pressure gauge on the control panel. If the A/C system maintains vacuum, the recovery is completed.

##### Caution

If the control panel indicator light indicates that the refrigerant tank is full during the recovery period. After the filling machine is closed, install an empty tank to store the refrigerant required for the subsequent steps. Do not use other types of refrigerant tanks.

1. If the number starts from zero on the low pressure side pressure gauge, there are still refrigerants in the system. Recycle the remaining refrigerant. Repeat this step until the system can maintain vacuum for 2 minutes.

## 5. Empty

The refrigerant tank of filling machine must be filled with adequate R-134a refrigerant for filling. Check the amount of refrigerant in the tank. If the refrigerant is less than 3.6kg (8lb), add a new refrigerant to the refrigerant tank. For details, please refer to the operation instrument of filling machine and know the method of adding refrigerant.

1. Check whether the high pressure side and low pressure side hoses are connected to the A/C system and open the high pressure side and low pressure side valves on the control panel of the filling machine.
2. Open the gas and liquid valves on the refrigerant tank.

### Caution

Refer to the operation instrument of manufacturer and know the detailed method of filling machine. The system must be emptied before new refrigerants or recycled refrigerants can be refilled

3. Start the vacuum pump and begin the emptying procedure. During the recovery process, non-condensable gases (mostly air) are discharged automatically from the tank. You will hear the sound of pressure relief.

### Caution

Replace vacuum pump oil frequently. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

4. Check the system for leakage. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

## 6. Lubrication oil filling and replenishment for A/C system

Lubrication oil discharged from the A/C system during recovery must be replenished.

1. Use graduated bottled 100PG lubrication oil specifically for the R-134a system.
2. Refer to the operation instructions of manufacturer, know the detailed method of filling machine and add appropriate amount of 100PG lubrication oil to the system.
3. When the required amount of oil is filled, switch off the valve.

### Caution

Keep the cap on the lubrication oil bottle tightly to prevent moisture or contaminants from entering the lubrication oil. This operation requires a certain degree of vacuum in the A/C system. Do not open the lubrication oil filling valve when there is positive pressure in the A/C system, otherwise it will cause the lubrication oil to flow back through the vent of the oil bottle. When filling or replenishing lubrication oil, the oil level should not be lower than the fluid pipe, otherwise air will enter the A/C system.

## 7. Filling

### Caution

Empty the A/C system before filling.

1. Close the low pressure side valve on the control panel.
2. Close the high pressure side valve on the control panel.
3. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
4. Fill the necessary refrigerant into the A/C system to ensure that the unit of measurement is correct (i.e., kilogram, kilogram or pound).
5. Start filling.

## 8. Refrigerant filling has been successfully completed

1. Close the high and low pressure side valves on the control panel of the filling machine. Both valves should be closed.

2. Start the vehicle and A/C system.
3. Keep the drive motor running until the readings on the high pressure side and low pressure side gauge are stable.
4. Compare readings with system specifications.
5. Check the evaporator outlet temperature to ensure that the operation of A/C system is in accordance with system specifications.
6. Keep A/C running.
7. Close the high pressure side quick joint valve.
8. Disconnect the high pressure side hose on the vehicle.
9. Open the high pressure side and low pressure side valves on the control panel. The system will quickly inhale the refrigerant in the two hoses through the low pressure side hoses.
10. Close the low pressure side quick joint valve.
11. Disconnect the low pressure side hose on the vehicle.

### 9. The refrigerant filling is unsuccessful

Sometimes the refrigerant entering the A/C system does not reach the total filling volume. There are two reasons:

1. The pressure of the refrigerant tank of the filling machine is similar to that of the A/C system, which will cause the filling process to be too slow. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
2. There is not enough refrigerant in the refrigerant tank to refill. it is necessary to recover some of filled refrigerant from the vehicle. empty the A/C system, add refrigerant to the refrigerant tank and refill it. Refer to the operation instrument of manufacture rand know the use of filling machine

#### 7.2.7.42 Controller self-check

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “AC”.
--------	--------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “Controller self-check”.
--------	---------------------------------

Note

The system will prompt: Do you want to perform this operation? Click [YES] to continue, and click [NO] to quit the operation.

Next Step

Step 9	Select “OK” to complete the controller self-check function.
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## 7.2.8 Removal and installation

### 7.2.8.1 Replacement of A/C control panel assembly

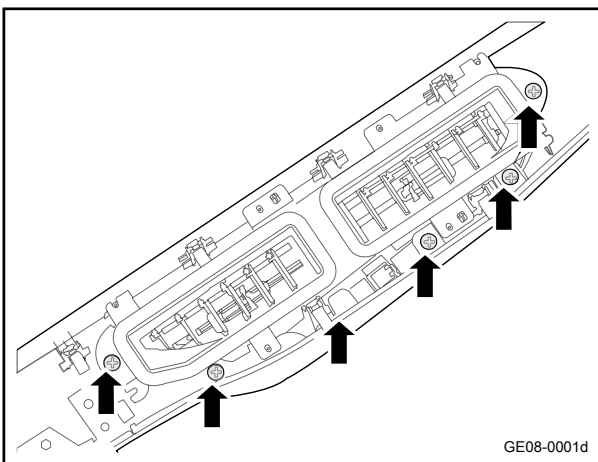
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

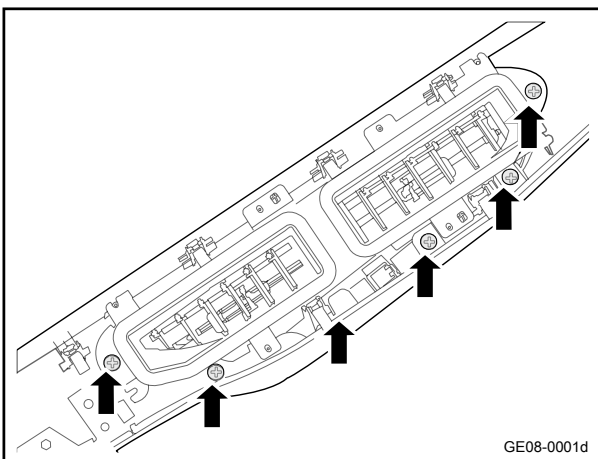
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the right trim assembly of the dashboard. See [Replacement of the right trim assembly of the dashboard](#)
- 3 Remove the 6 fixing screws of the air conditioning control panel assembly.
- 4 Remove the air conditioning control panel assembly.



#### Installation procedure

- 1 Move the air conditioning control panel assembly to the installation location.
- 2 Install the 6 fixing screws of the air conditioning control panel assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Install the right trim panel of the dashboard.
- 4 Connect the negative cable of battery.

### 7.2.8.2 Replacement of thermal management controller

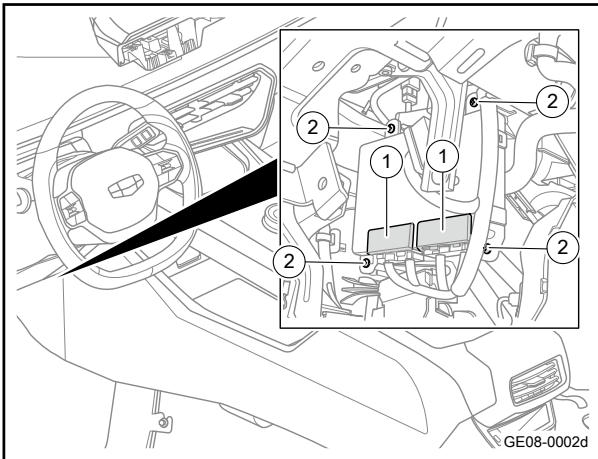
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

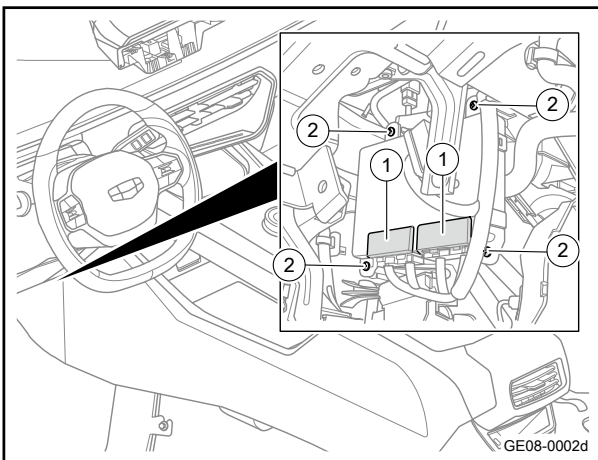
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)
- 3 Disconnect the thermal management control unit harness connector 1.
- 4 Remove the 4 fixing screws 2 of the thermal management controller.
- 5 Remove the thermal management controller.



Installation procedure

- 1 Move the thermal management controller to the installation location.
- 2 Install the 4 fixing screws 2 of the thermal management controller.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Connect the thermal management control unit harness connector 1.



- 4 Install the dashboard body assembly.
- 5 Connect the negative cable of battery.

### 7.2.8.3 Replacement of the air-conditioning heater outlet pipe

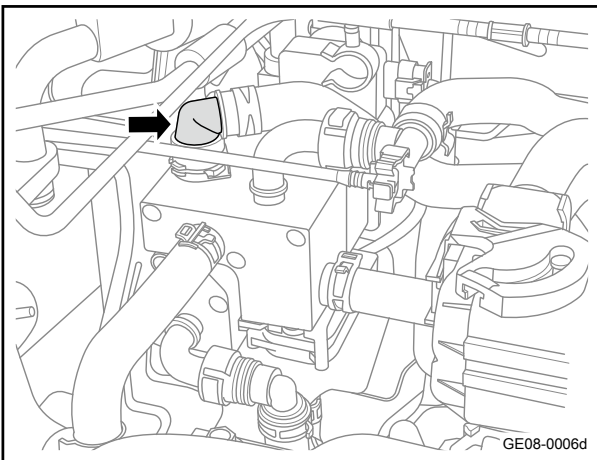
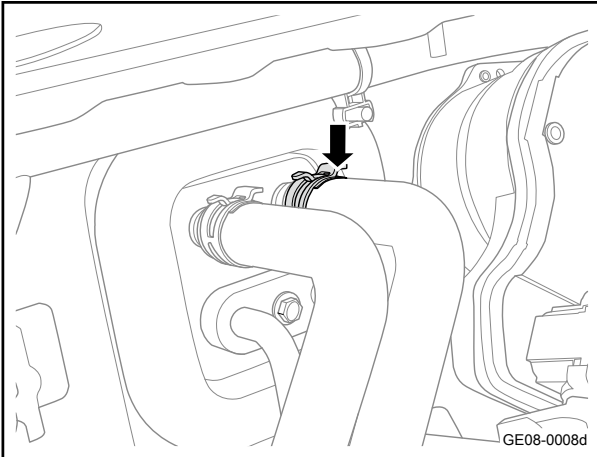
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

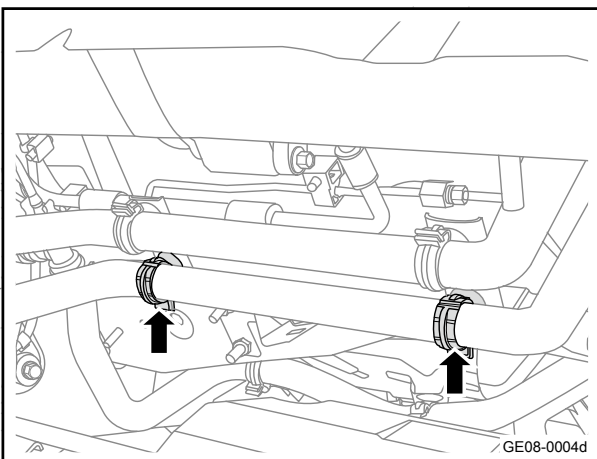
**Warning**

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Remove the air conditioning heater outlet pipe clamp, and disconnect the air conditioner heater outlet pipe.



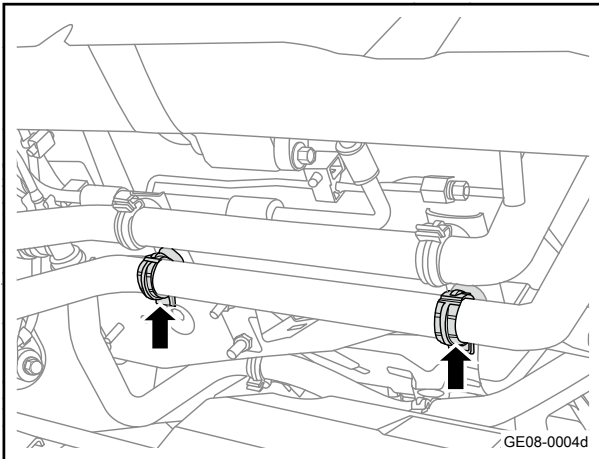
- 4 Disconnect the air-conditioning warm air outlet pipe from the heat exchanger assembly.



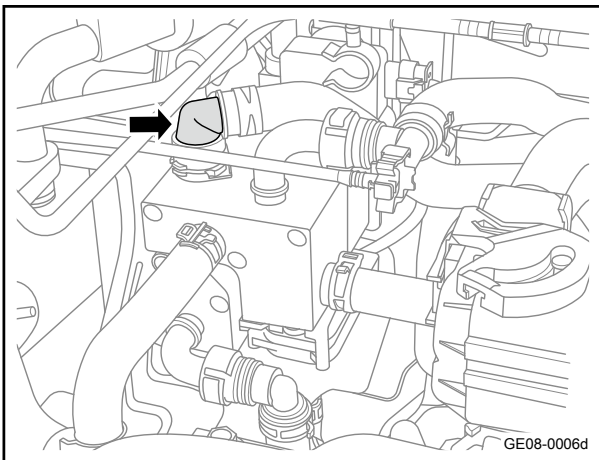
- 5 Remove the fixing pipe clamp of the air-conditioning heater outlet pipe.
- 6 Take off the warm air water pipe of air conditioner.

Installation procedure

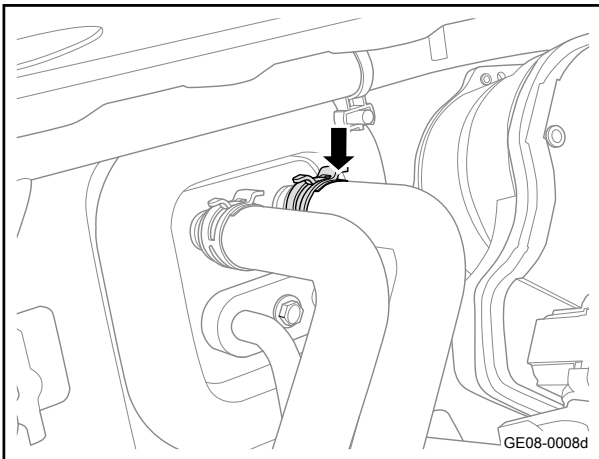




- 1 Move the air-conditioning heater outlet pipe to the installation location.
- 2 Install the fixing pipe clamp of the air-conditioning heater outlet pipe.



- 3 Connect the air-conditioning warm air outlet pipe and the heat exchanger assembly.



- 4 Install the air-conditioning heater outlet pipe clamp and connect the air-conditioning heater outlet pipe.

- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

#### 7.2.8.4 Replacement of the air-conditioning heater inlet pipe

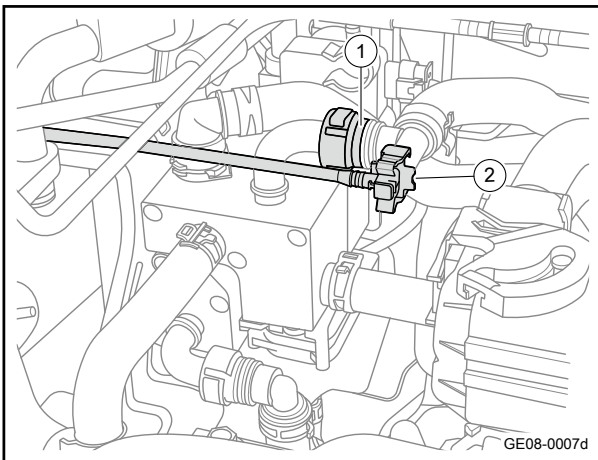
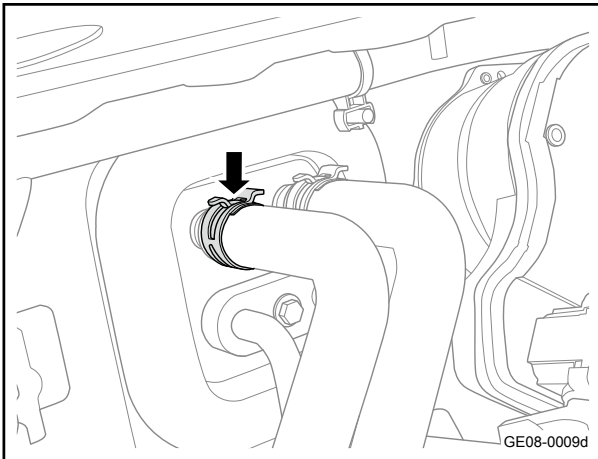
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

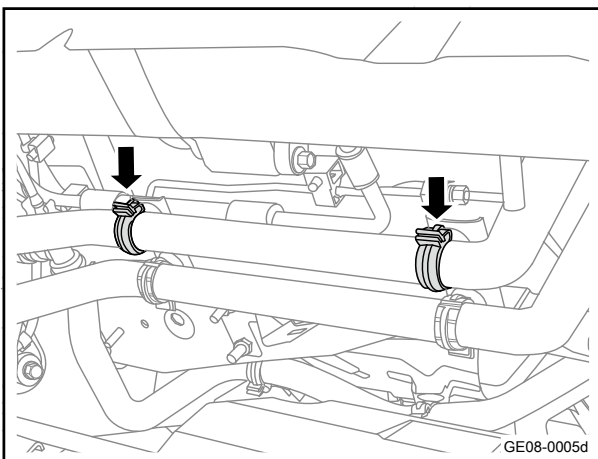
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Remove the air conditioning heater inlet pipe clamp, and disconnect the air conditioner heater inlet pipe.

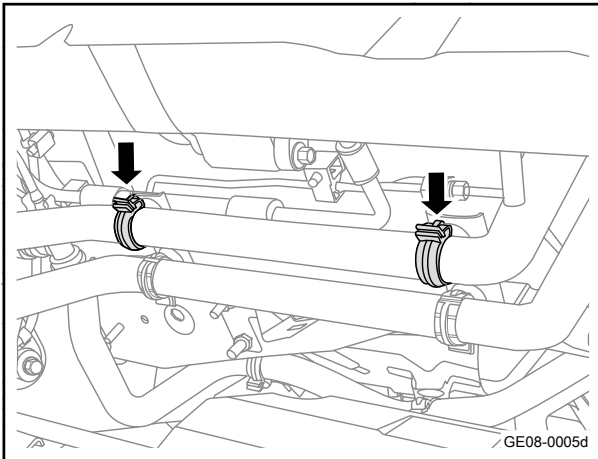


- 4 Disconnect the heat exchanger assembly from the heating water inlet pipe 1 of the air-conditioner.
- 5 Disconnect the air-conditioning warm air inlet pipe from the electric heating vent pipe 2.

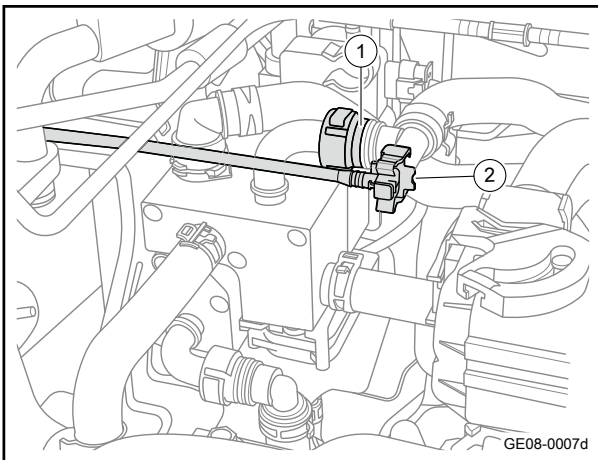


- 6 Remove the fixing pipe clamp of the air-conditioning heater inlet pipe.
- 7 Take off the air conditioner warm air water pipe.

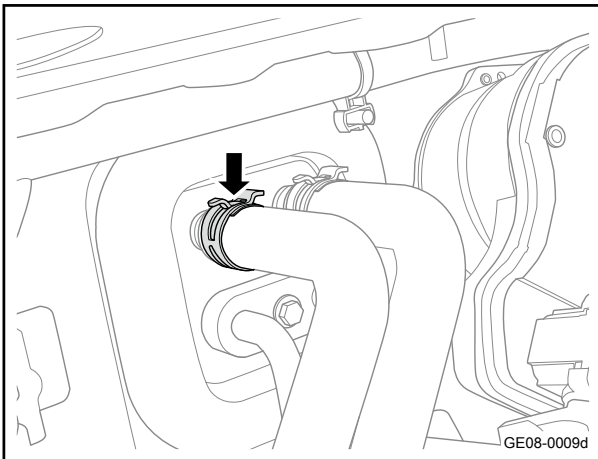
Installation procedure



- 1 Move the air-conditioning heater inlet pipe to the installation location.
- 2 Install the fixed pipe clamp of the air-conditioning heater inlet pipe.



- 3 Connect the air-conditioning warm air inlet pipe and the electric heating vent pipe 2.
- 4 Connect the heat exchanger assembly to the heating water inlet pipe 1 of the air-conditioner.



- 5 Install the air-conditioning heater inlet pipe clamp, and connect the air-conditioning heater inlet pipe clamp.

- 6 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

### 7.2.8.5 Replacement of A/C pressure sensor

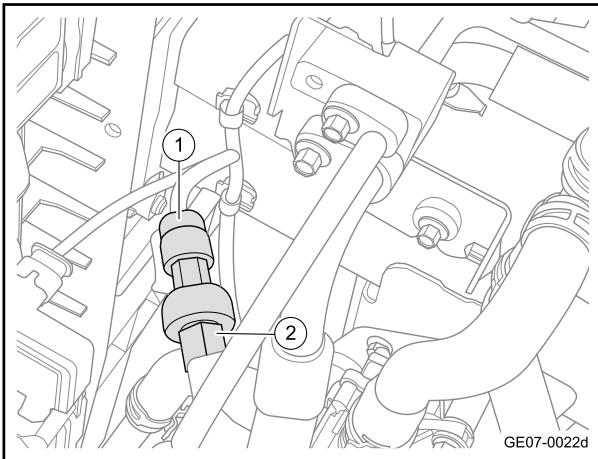
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Disconnect the 1 harness connector 1 of A/C pressure sensor.
- 4 Rotate counterclockwise to separate the air-conditioner pressure sensor 2 from the air-conditioner pipeline.
- 5 Take off the A/C pressure sensor 2.



#### Installation procedure

- 1 Move the air conditioner pressure sensor 2 to the installation position.
- 2 Rotate clockwise to install the air conditioner pressure sensor 2.
- 3 Connect the 1 harness connector 1 of A/C pressure sensor.

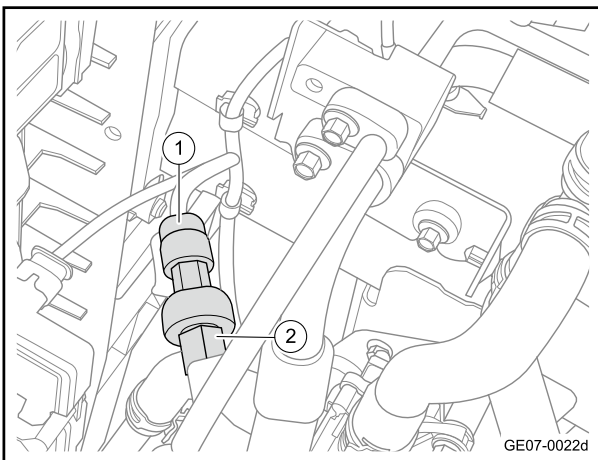
#### Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

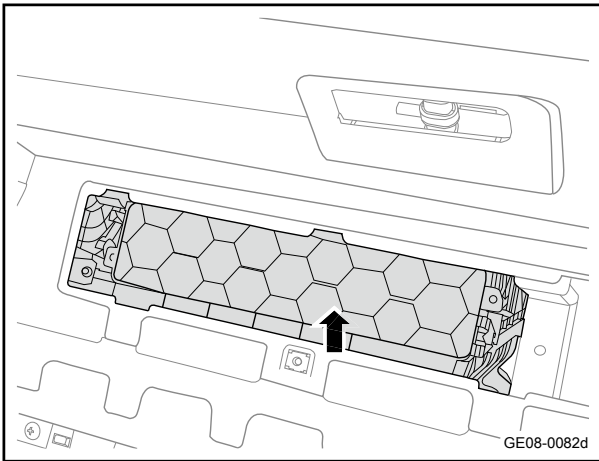
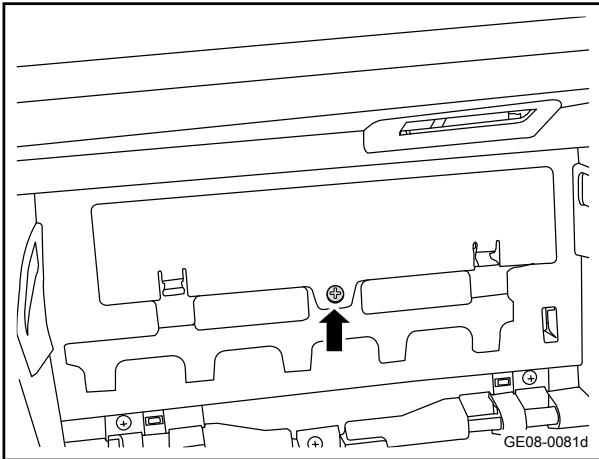
- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

### 7.2.8.6 Replacement of A/C filter element

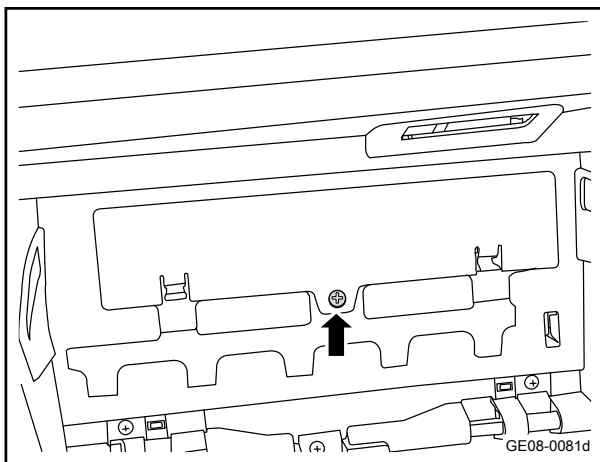
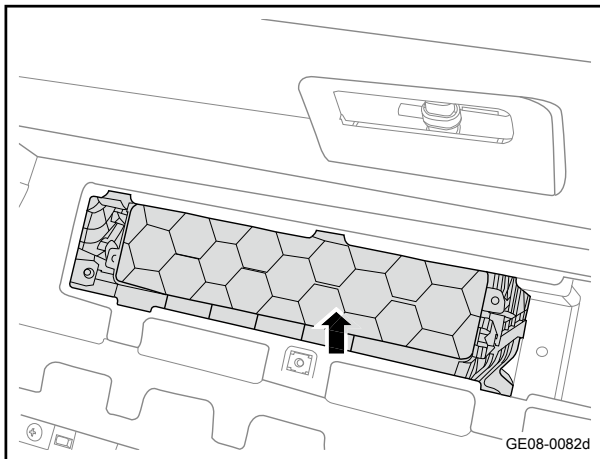
#### Removal procedure



- 1 Disassemble the glove box assembly. See [Disassembly and Replacement of Glove Box Assembly](#)
- 2 Remove the 1 fixing screw of the lower right fender apron of fascia console.
- 3 Remove the front cover of the air conditioner filter element.
- 4 Remove the air conditioner filter element.



Installation procedure



- 1 Move the air-conditioning filter element to the installation position.

- 2 Install the front cover plate of the air conditioning filter element.
- 3 Install the 1 fixing screw of the lower right fender apron of fascia console.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 4 Install the glove box assembly.

### 7.2.8.7 Replacement of air-conditioning unit assembly

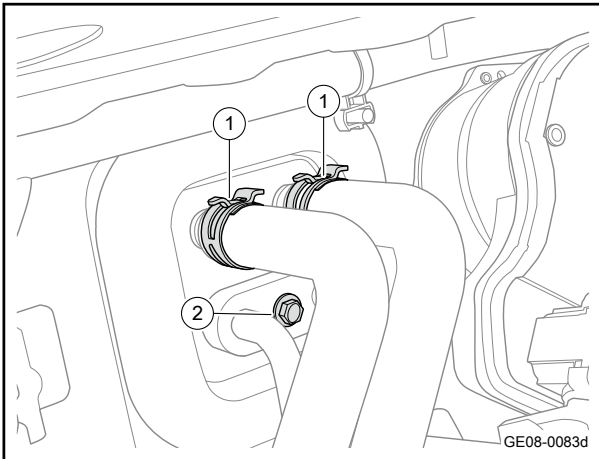
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

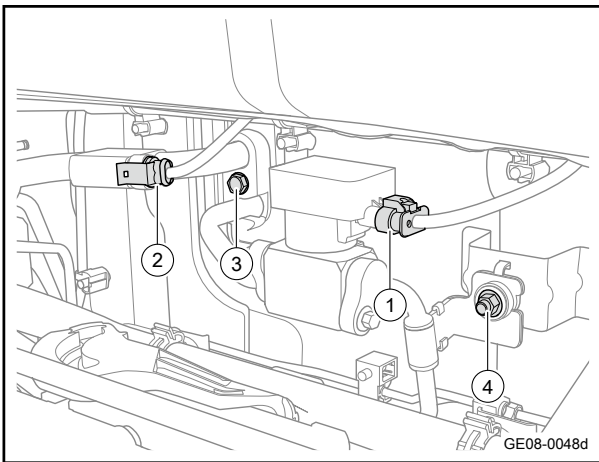
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

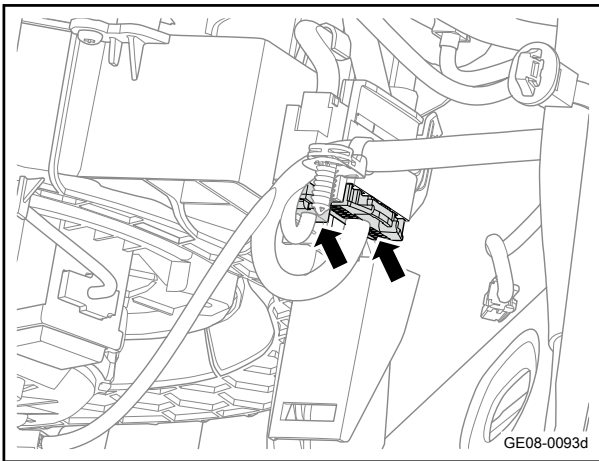
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)
- 5 Remove the instrument panel beam assembly. See [Replacement of Instrument Panel Beam Assembly](#)
- 6 Remove the thermal management controller. Refer to [Replacement of the thermal management control unit](#)



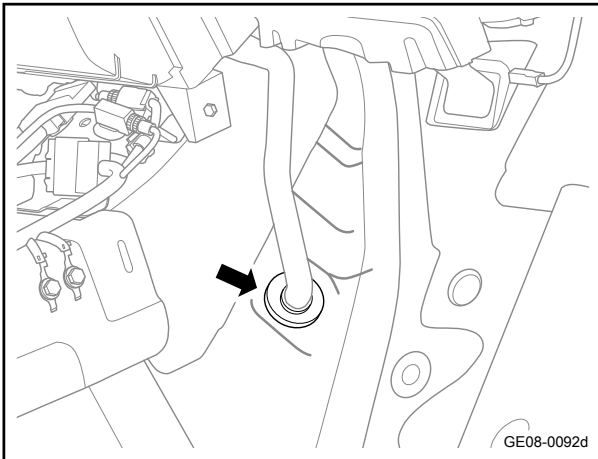
- 7 Remove the clamp 1, disconnect the air-conditioning heater inlet and outlet pipes from the heater tank.
- 8 Remove the 1 fixing bolt 2 of the inlet and outlet pipe assembly of the indoor heat exchanger, and detach the inlet and outlet pipe assembly of the indoor heat exchanger.



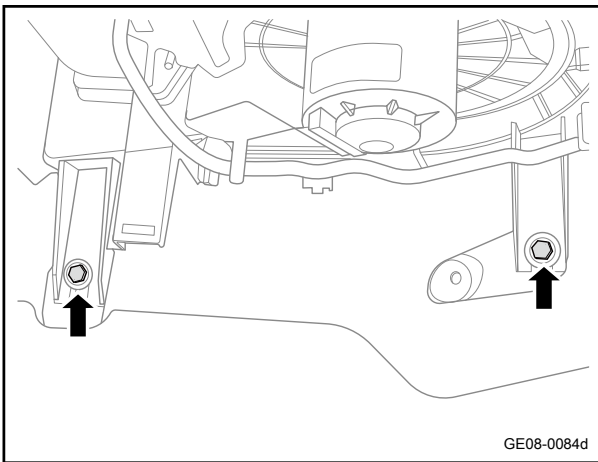
- 9 Disconnect the heat exchanger high-pressure pipe assembly harness connector 1.
- 10 Disconnect the evaporator inlet and outlet pipe assembly harness connector 2.
- 11 Remove the 1 fixing bolt 3 of the evaporator inlet and outlet pipe assembly, and disconnect the evaporator inlet and outlet pipe assembly.
- 12 Remove the 1 fixing nut 4 of heat exchanger high pressure pipe assembly bracket, and detach the heat exchanger high pressure pipe assembly.



- 13 Disconnect the air-conditioning unit assembly harness connector.

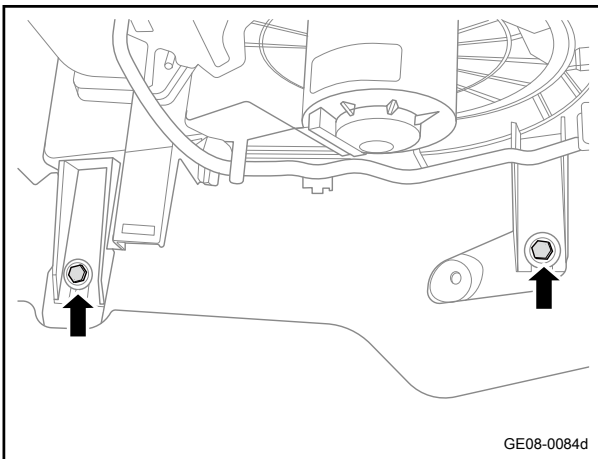


- 14 Disconnect the air conditioner drain pipe.



- 15 Remove 2 fixing bolts of the air-conditioning unit assembly.

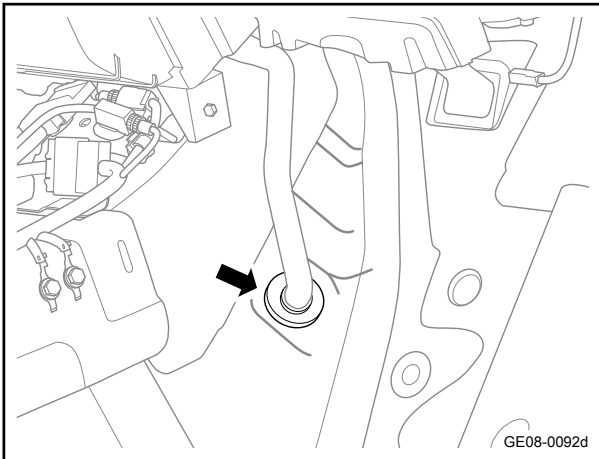
- 16 Take off the air-conditioning unit assembly.



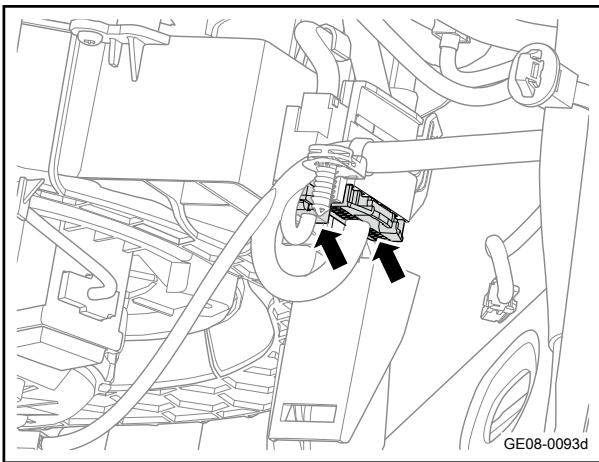
#### Installation procedure

- 1 Move the air conditioning unit assembly to the installation location.
- 2 Install 2 fixing bolt of the air-conditioning unit assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

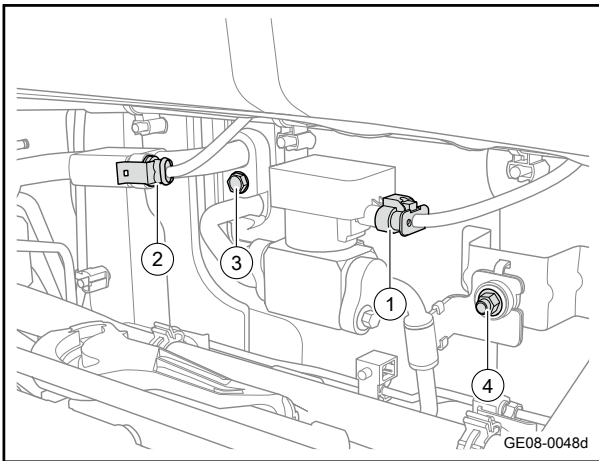




3 Connect the air conditioning drain pipe.



4 Connect the air-conditioning unit assembly harness connector.



5 Connect the heat exchanger high pressure pipe assembly, install the 1 fixing nut 4 of heat exchanger high pressure pipe assembly bracket.

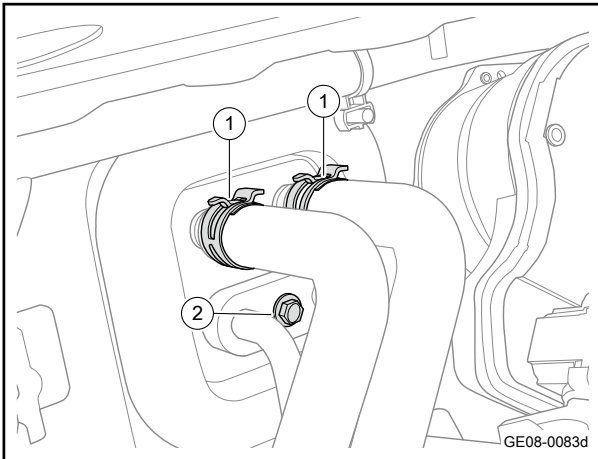
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

6 Connect the evaporator inlet and outlet pipe assembly, install the the 1 fixing nut 3 of evaporator inlet and outlet pipe assembly.

Torque: 9N·m (metric) 6.6lb-ft (imperial system)

7 Connect the evaporator inlet and outlet pipe assembly wiring harness connector 2.

8 Connect the heat exchanger high-pressure pipe assembly wiring harness connector 1.

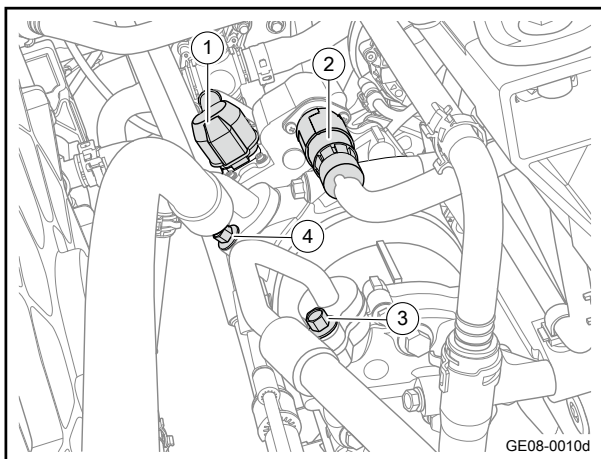


- 9 Connect the indoor heat exchanger inlet and outlet pipe assembly, install the 1 fixing bolt 2 indoor heat exchanger inlet and outlet pipe assembly.  
Torque: 7N·m (metric) 5.2lb-ft (imperial system)
- 10 Connect the heater inlet and outlet pipes of the air conditioner to the heater water tank, and install the clamp 1.
- 11 Install the thermal management controller.
- 12 Install the dashboard beam assembly.
- 13 Install the dashboard body assembly.
- 14 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 15 Refill air conditioner refrigerant.
- 16 Connect the negative cable of battery.

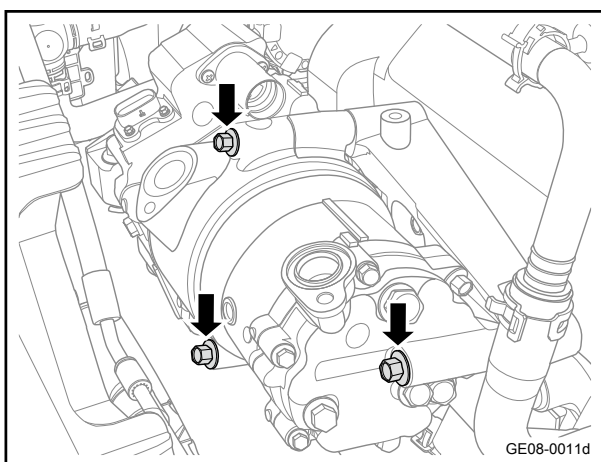
### 7.2.8.8 Replacement of electric compressor assembly

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Disconnect the DC bus assembly (HV/LV charging system side). Refer to the [Replacement of DC Bus Assembly](#)



- 4 Disconnect the low-voltage wiring harness connector 1 of the electric compressor assembly.
- 5 Disconnect the high-voltage wiring harness connector 2 of the electric compressor assembly.
- 6 Remove the 1 fixing nut 3 of the compressor exhaust hose, and disengage the compressor exhaust hose.
- 7 Remove the 1 fixing nut 4 of the compressor intake hose, and disengage the compressor intake hose.



- 8 Remove the 3 fixing bolts of the electric compressor assembly.
- 9 Remove the electric compressor assembly.

Installation procedure

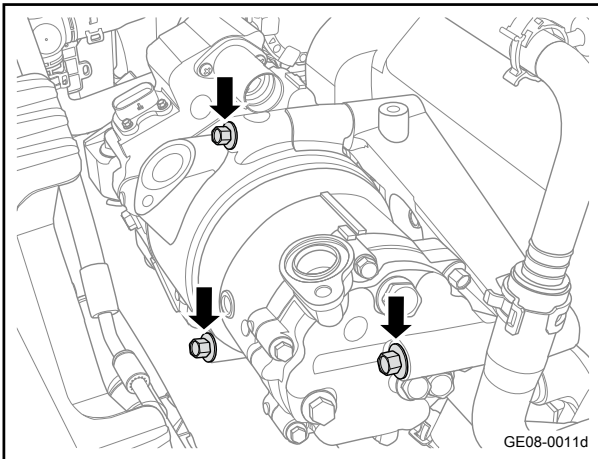
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

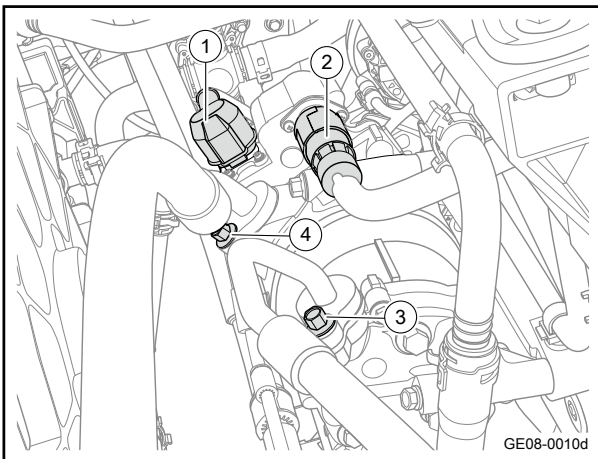
**Caution**

When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



- 1 Move the electric compressor assembly to the installation position.
- 2 Install the 3 fixing bolts of the electric compressor assembly.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)



- 3 Connect the compressor intake hose and install 1 fixing bolt 4 of the compressor intake hose.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 4 Connect the compressor exhaust hose and install 1 fixing bolt 3 of the compressor exhaust hose.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

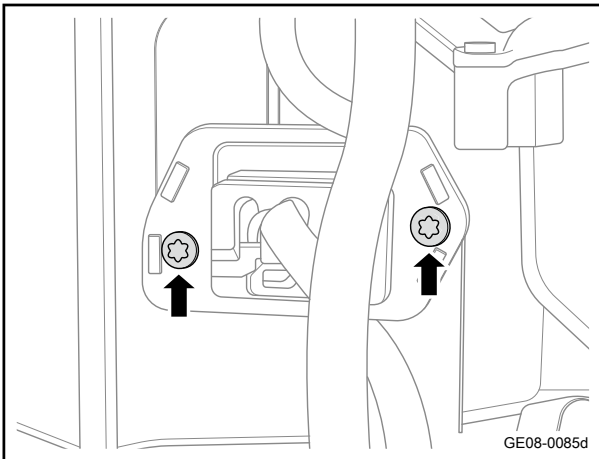
- 5 Connect the high-voltage wiring harness connector 2 of the electric compressor assembly.
- 6 Connect the low-voltage wiring harness connector 1 of the electric compressor assembly.
- 7 Connect the DC bus assembly (at high and low voltage charging system side).

- 8 Refill air conditioner refrigerant.
- 9 Connect the negative cable of battery.

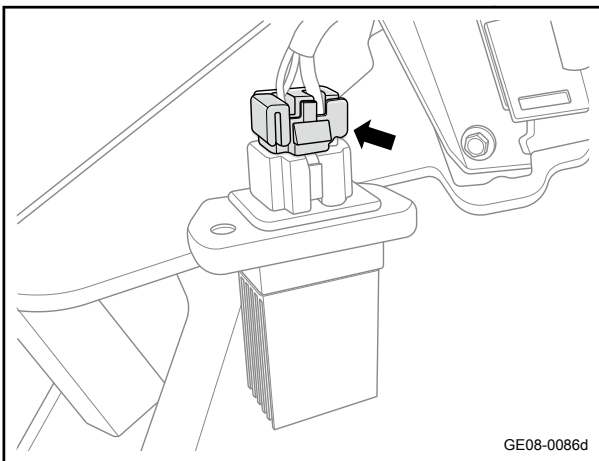
### 7.2.8.9 Replacement of blower speed control module

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the lower right baffle assembly of the dashboard. See [Replacement of the lower right baffle assembly of the dashboard](#)

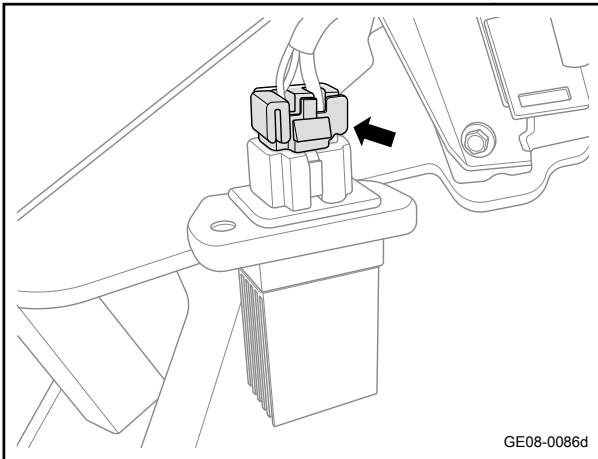


- 3 Remove the 2 fixing screws of the blower speed control module.

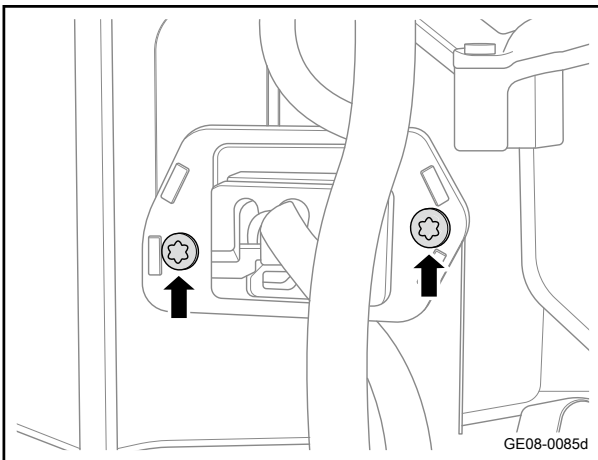


- 4 Disconnect blower speed control module harness connector
- 5 Remove the blower speed control module.

#### Installation procedure



- 1 Move the blower speed control module to the installation position.
- 2 Connect speed control module harness connector



- 3 Install the 2 fixing screws of the blower speed control module.  
Torque: 1.2N·m (metric) 0.9lb-ft (imperial system)

- 4 Install the lower right baffle assembly of the dashboard.
- 5 Connect the negative cable of battery.

### 7.2.8.10 Replacement of blower motor

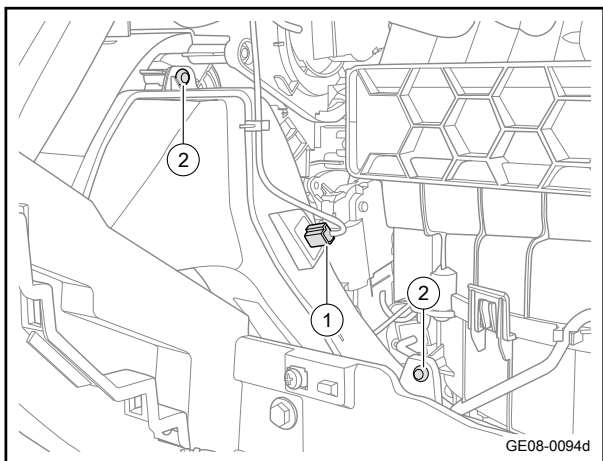
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

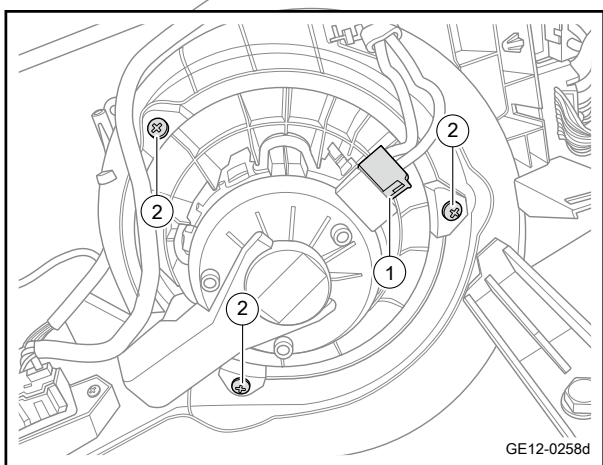
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the lower right guard plate sub-assembly of the instrument panel. See [Replacement of the lower right guard plate sub-assembly of the instrument panel](#)

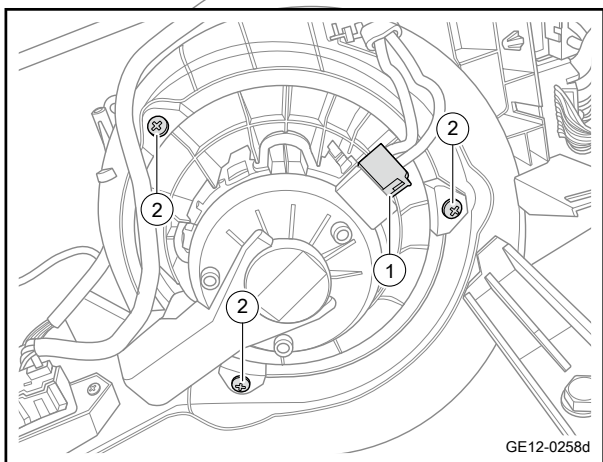


- 3 Disconnect the right front foot-blowing air duct harness connector 1.
- 4 Remove the 2 fixing screws 2 of the right front foot blowing air duct.
- 5 Remove the right front blowing foot air duct.

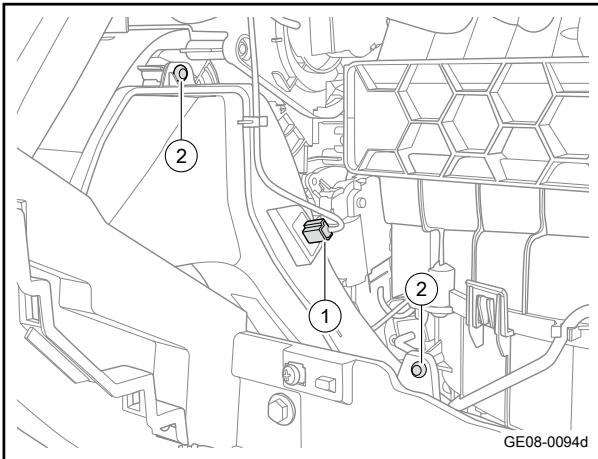


- 6 Disconnect the blower motor harness connector 1.
- 7 Remove 3 fixing screws 2 of the blower motor.
- 8 Remove the blower motor.

Installation procedure



- 1 Move the blower motor to the installation position.
- 2 Install the 3 fixing screws 2 of the blower motor.  
Torque: 1.5N·m (metric system) 1.1 lb-ft (Imperial system)
- 3 Connect the blower motor harness connector 1.



- 4 Move the right front blower air duct to the installation position.
- 5 Install 2 fixing screw 2 of right front foot blowing air duct.  
Torque: 1.2N·m (metric) 0.9lb·ft (imperial system)
- 6 Connect the right front foot-blowing air duct harness connector 1.

- 7 Install the lower right guard plate sub-assembly of the instrument panel.
- 8 Connect the negative cable of battery.

### 7.2.8.11 Middle air outlet assembly of the dashboard

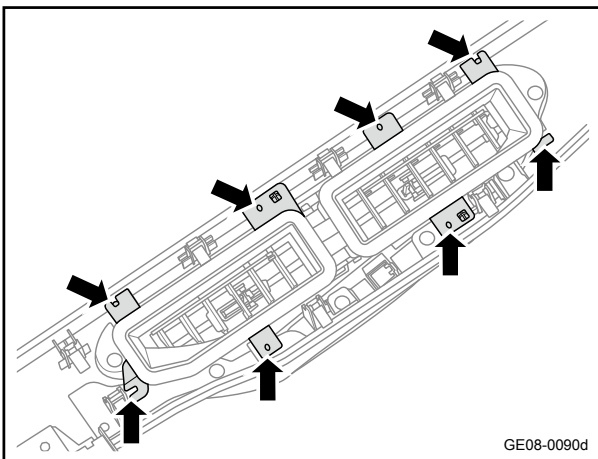
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

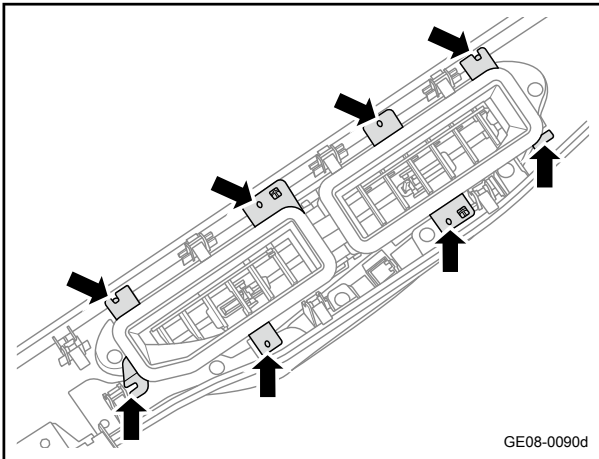
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the right trim assembly of the dashboard. See [Replacement of the right trim assembly of the dashboard](#)
- 3 Remove the 8 fixing screws of the air outlet assembly in the middle of the dashboard.
- 4 Remove the middle air outlet assembly of the dashboard.



#### Installation procedure





- 1 Move the air outlet assembly in the middle of the dashboard to the installation position.
- 2 Install 8 fixing bolts of the middle air outlet of the dashboard.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 3 Install the right trim panel of the dashboard.
- 4 Connect the negative cable of battery.

### 7.2.8.12 Replacement of the right air outlet body

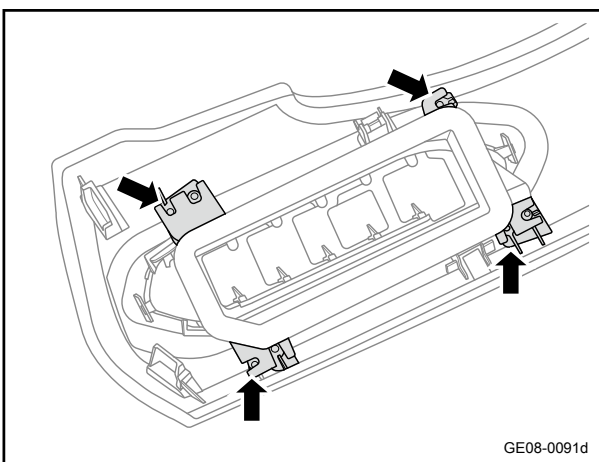
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

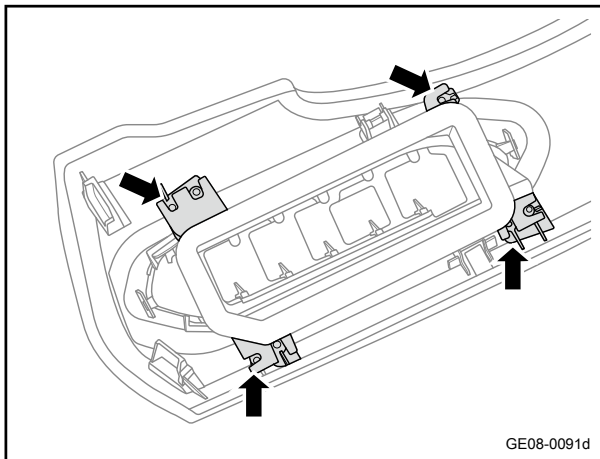
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the right trim assembly of the dashboard. See [Replacement of the right trim assembly of the dashboard](#)
- 3 Remove the 4 fixing screws of the right air outlet body.
- 4 Remove the right air outlet body.



#### Installation procedure



- 1 Move the right air outlet body to the installation position.
- 2 Install the 4 fixing screws of the right air outlet body.  
Torque: 1.5N·m (metric) 1.1lb·ft (imperial system)

- 3 Install the right trim panel of the dashboard.
- 4 Connect the negative cable of battery.

### 7.2.8.13 Replacement of heater assembly

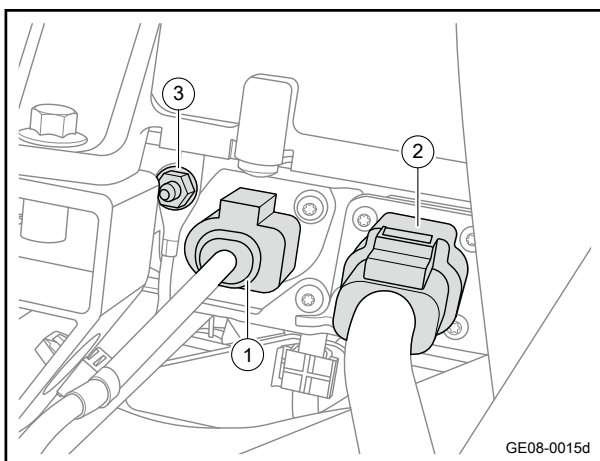
#### Removal procedure

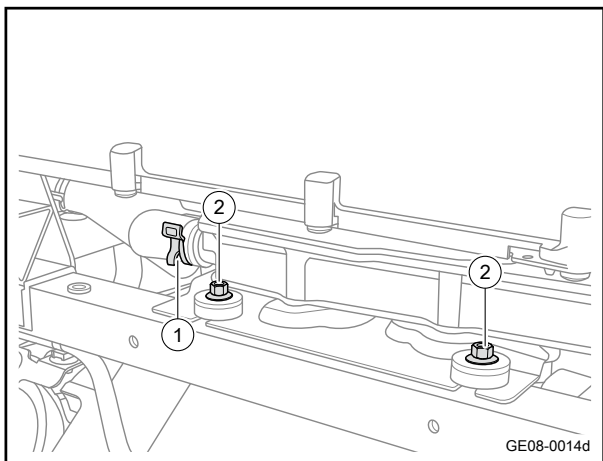
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

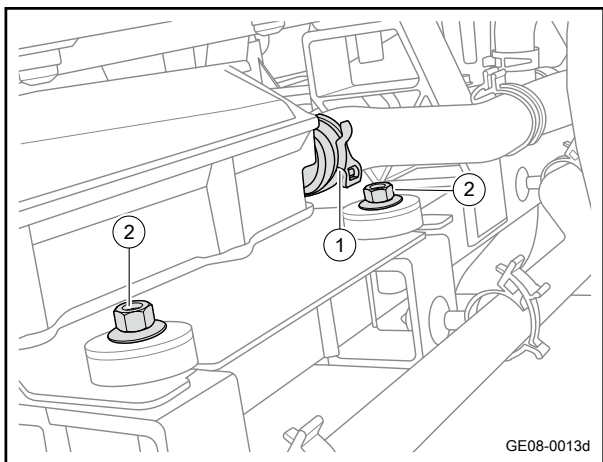
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus assembly (HV/LV charging system side). Refer to the [Replacement of DC Bus Assembly](#)
- 3 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 4 Disconnect the high-voltage harness connector 1 of the heater assembly.
- 5 Disconnect the low-voltage harness connector 2 of the heater assembly.
- 6 Remove the ground wire fixing nut 3 of the heater assembly.

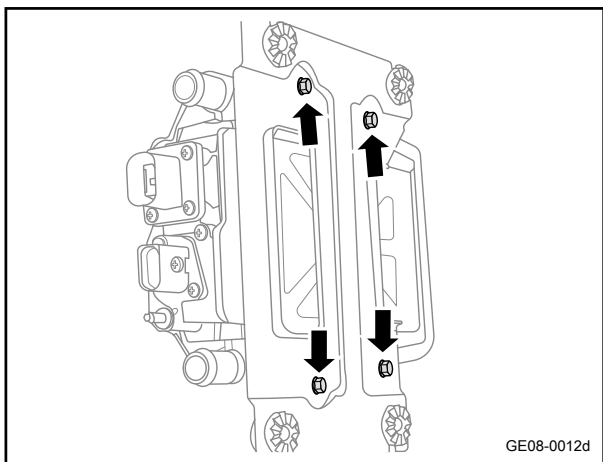




- 7 Disconnect the heater assembly from the heater inlet hose 1.
- 8 Remove the two fixing bolts 2 at the front of the heater assembly bracket.

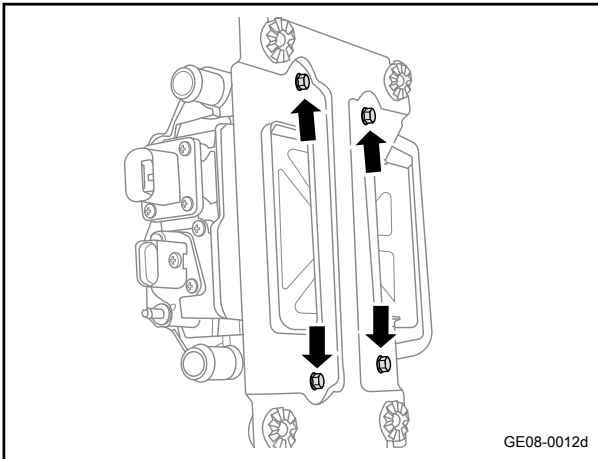


- 9 Disconnect the heater assembly from the heater outlet hose 1.
- 10 Remove the two fixing bolts 2 at the rear of the heater assembly bracket.
- 11 Remove the heater with bracket assembly.

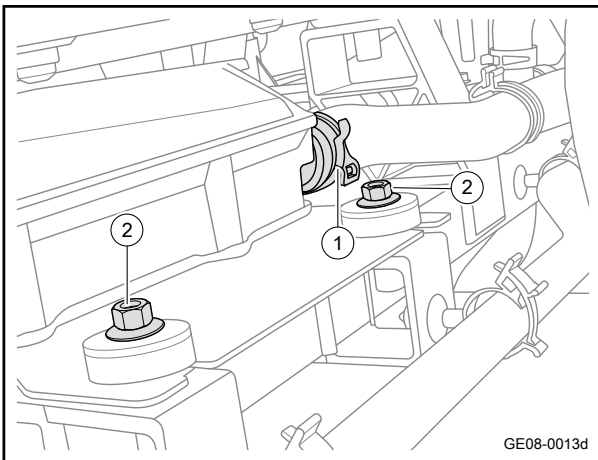


- 12 Remove the 4 fixing screws of the heater assembly.
- 13 Remove the heater assembly.

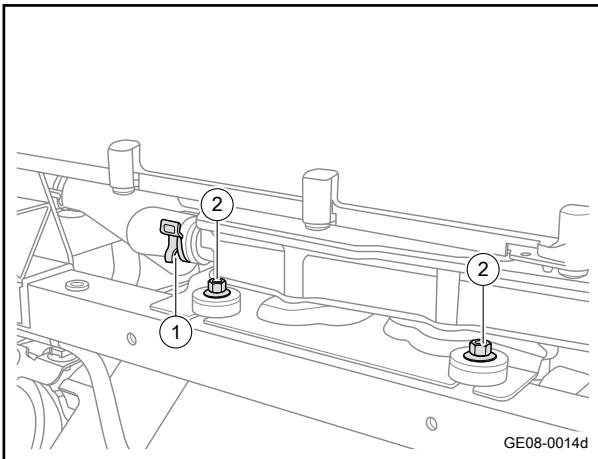
Installation procedure



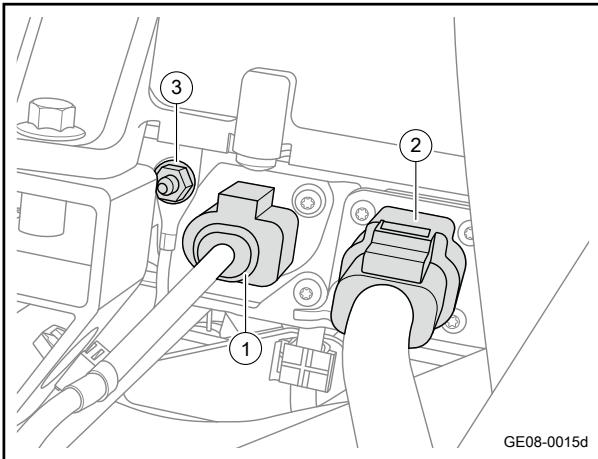
- 1 Move the heater assembly to the installation position.
- 2 Install the 4 fixing screws of the heater assembly.  
Torque: 3N·m (metric) 2.2lb-ft (imperial system)



- 3 Move the heater with bracket assembly to the installation position.
- 4 Install the two fixing bolts 2 at the rear of the heater assembly bracket.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 5 Connect the heater assembly to the heater outlet hose 1.



- 6 Install the two fixing bolts 2 at the front of the heater assembly bracket.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 7 Connect the heater assembly to the heater inlet hose 1.



- 8 Install the ground wire fixing nut 3 of the heater assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 9 Connect the low-voltage wiring harness connector 2 of the heater assembly.
- 10 Connect the high-voltage wiring harness connector 1 of the heater assembly.

- 11 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 12 Connect the DC bus assembly (at high and low voltage charging system side).
- 13 Connect the negative cable of battery.

#### 7.2.8.14 Evaporator core assembly

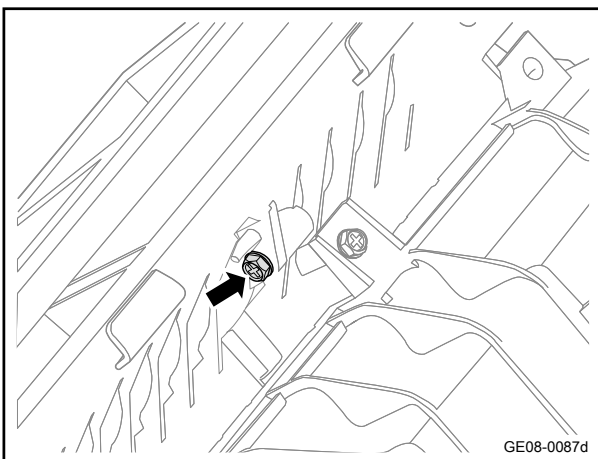
##### Removal procedure

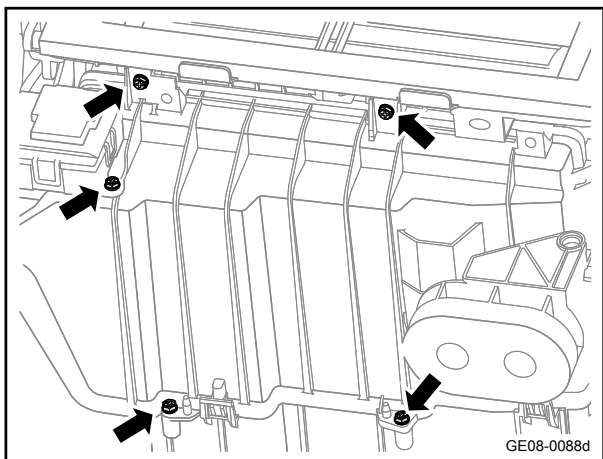
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

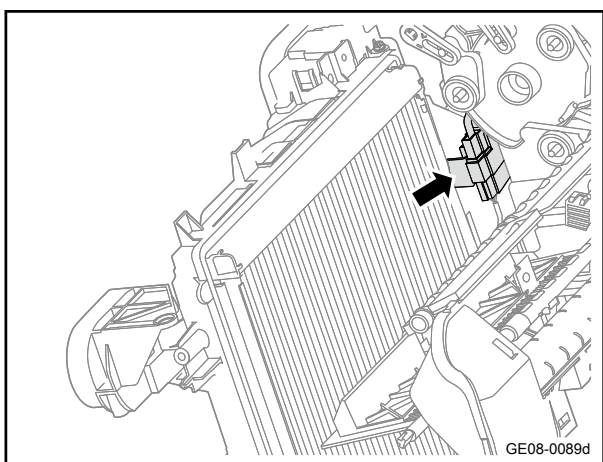
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 4 Remove the air-conditioning unit assembly. Refer to [Replacement of air-conditioning unit assembly](#)
- 5 Remove one fixing bolt from the upper guard plate of the evaporator core.



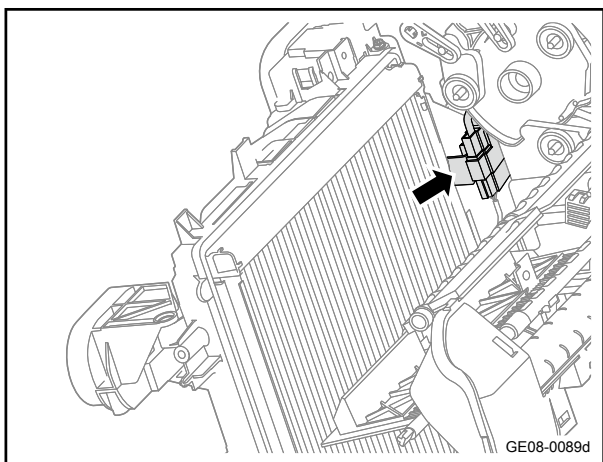


- 6 Remove the 5 fixing screws at the bottom of the evaporator housing.

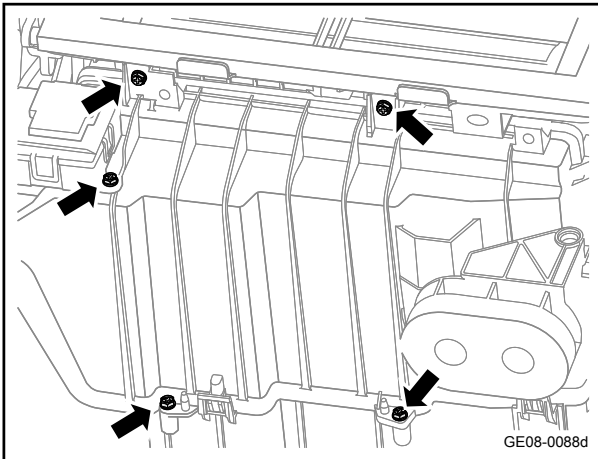


- 7 Disconnect the evaporator temperature sensor harness connector.
- 8 Take out the evaporator core.

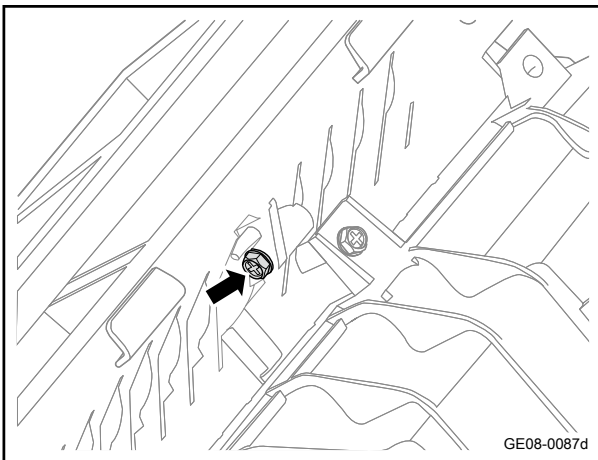
Installation procedure



- 1 Move the evaporator core to the installation position.
- 2 Connect the evaporator temperature sensor harness connector.



- 3 Install the 5 fixing screws at the bottom of the evaporator housing.  
Torque: 1.2N·m (metric) 0.9lb-ft (imperial system)



- 4 Install a fixing bolt on the upper guard plate of the evaporator core.  
Torque 9N·m (metric system) 6.6lb-ft (Imperial system)

- 5 Install air-conditioning assembly.
- 6 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 7 Refill air conditioner refrigerant.
- 8 Connect the negative cable of battery.

### 7.2.8.15 Replacement of condenser

See [Replacement of the Heat Exchanger Outside the Vehicle](#)

### 7.2.8.16 Replacement of outdoor temperature sensor

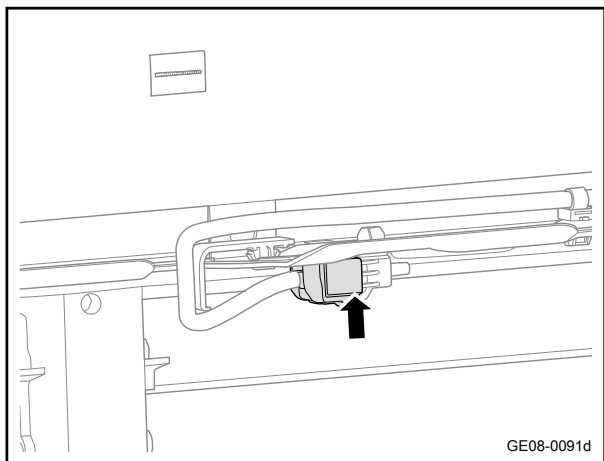
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

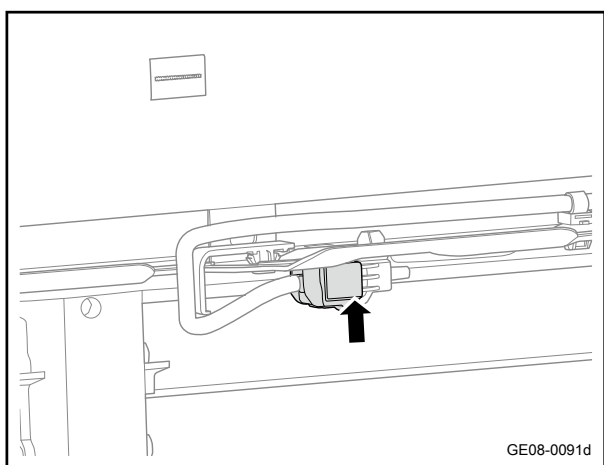
Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)



- 3 Disconnect the external temperature sensor harness connector.
- 4 Remove the external temperature sensor

Installation procedure



- 1 Move the outdoor temperature sensor to the installation location.
- 2 Connect the external temperature sensor harness connector.

- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

**7.2.8.17 Replacement of inside temperature sensor**

Removal procedure

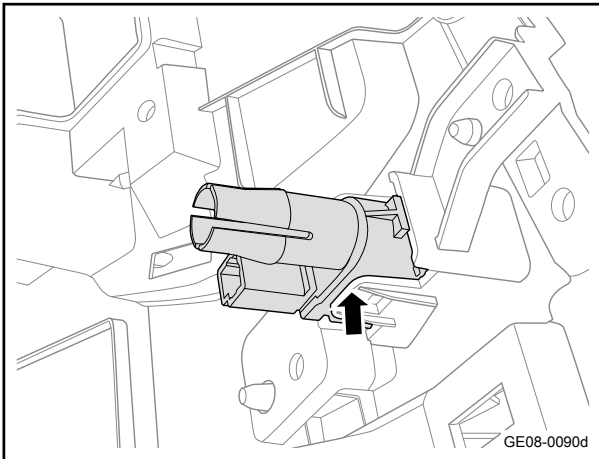


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

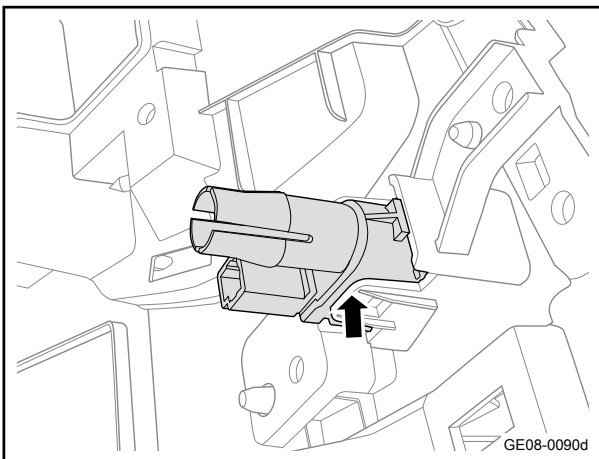
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the middle lower guard plate assembly of the dashboard. See [Replacement of the lower guard plate assembly in the dashboard](#)
- 3 Remove the internal temperature sensor.



Installation procedure

- 1 Install the internal temperature sensor.

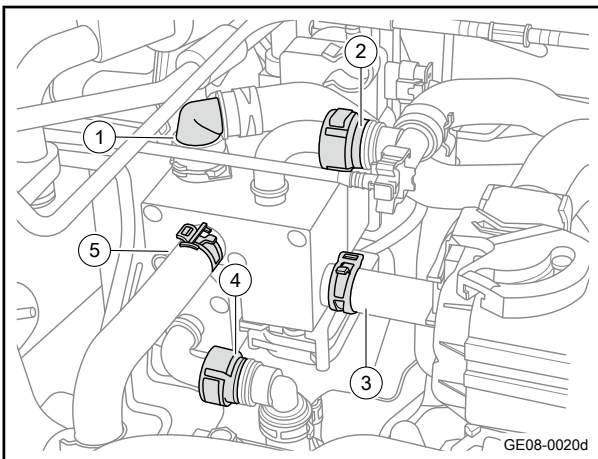


- 2 Install the middle lower fender apron assembly of the dashboard.
- 3 Connect the negative cable of battery.

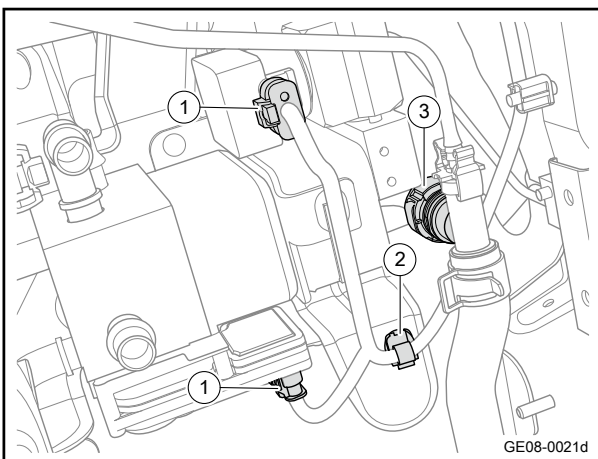
### 7.2.8.18 Replacement of heat exchanger assembly

Removal procedure

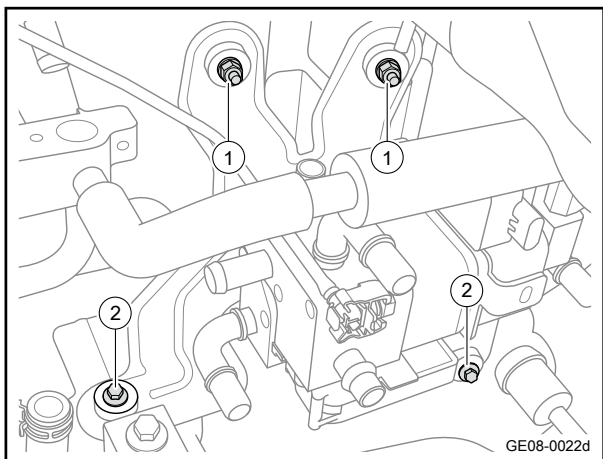
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- Warning
- Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
  - 3 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
  - 4 Remove the high and low pressure hoses of the heat exchanger. See [Replacement of High and Low Pressure Hoses of the Heat Exchanger](#)



- 5 Remove the high-pressure pipe assembly of the heat exchanger. See [Replacement of High-pressure Pipe Assembly of the Heat Exchanger](#)
- 6 Disconnect the heat exchanger assembly from the heating water outlet pipe 1 of the air-conditioner.
- 7 Disconnect the heat exchanger assembly from the heating water inlet pipe 2 of the air-conditioner.
- 8 Remove the water outlet pipe hoop 3 of the heater.
- 9 Disconnect the heat exchanger assembly from the water outlet pipe 4 of the heat exchanger.
- 10 Remove the water inlet hose fixing clamp 5.

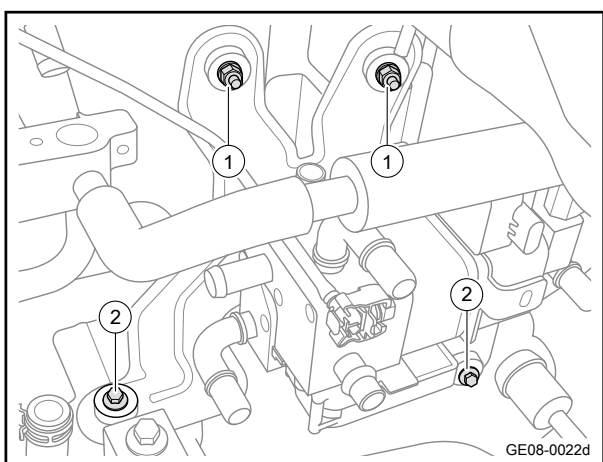


- 11 Disconnect the heat exchanger assembly harness connector 1.
- 12 Disconnect the heat exchanger assembly wire harness buckle 2.
- 13 Disconnect the heat exchanger assembly from the water inlet pipe 3 of the heat exchanger.

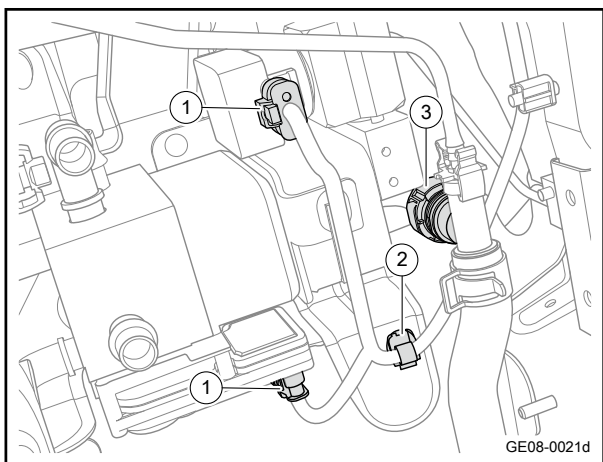


- 14 Remove the 2 fixing nuts 1 of the heat exchanger assembly.
- 15 Remove the 2 fixing bolts 2 of the heat exchanger assembly.
- 16 Remove the heat exchanger assembly.

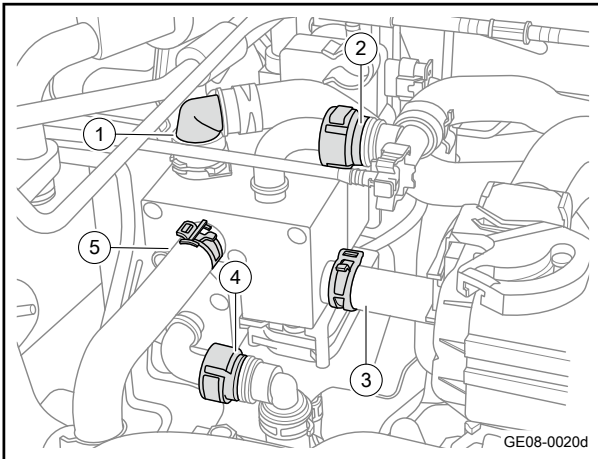
Installation procedure



- 1 Move the heat exchanger assembly to the installation position.
- 2 Install the 2 fixing bolts 2 of the heat exchanger assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install the 2 fixing nuts 1 of the heat exchanger assembly.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 4 Connect the heat exchanger assembly and the water inlet hose 3 of the heat exchanger.
- 5 Install the heat exchanger assembly wiring harness buckle 2.
- 6 Connect the heat exchanger assembly harness connector 1.



- 7 Install the fixing clamp 5 of electric heating water pump front water hose.
- 8 Connect the heat exchanger assembly and the water outlet hose 4 of the heat exchanger.
- 9 Mount the water outlet pipe hoop 3 of the heater.
- 10 Connect the heat exchanger assembly to the heating water inlet pipe 2 of the air-conditioner.
- 11 Connect the heat exchanger assembly to the heating water outlet pipe 1 of the air-conditioner.
- 12 Install the high-pressure pipe assembly of heat exchanger
- 13 Install the heat exchanger high and low pressure hoses.
- 14 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 15 Refill air conditioner refrigerant.
- 16 Connect the negative cable of battery.

### 7.2.8.19 Replacement of the outlet hose of the heat exchanger

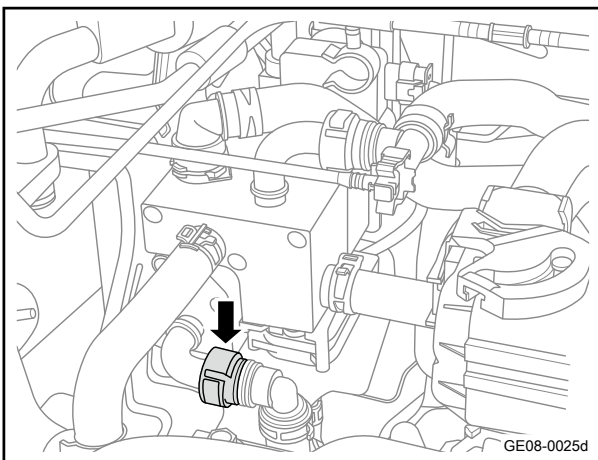
#### Removal procedure

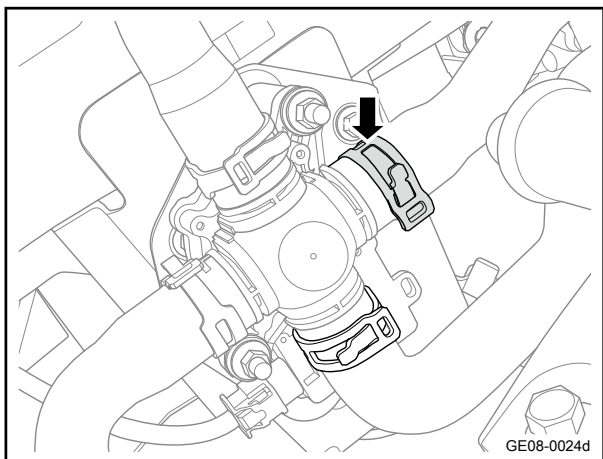
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

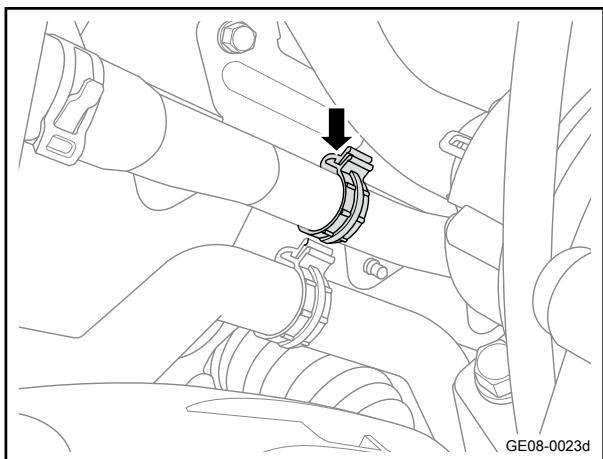
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Disconnect the heat exchanger outlet hose from the heat exchanger.

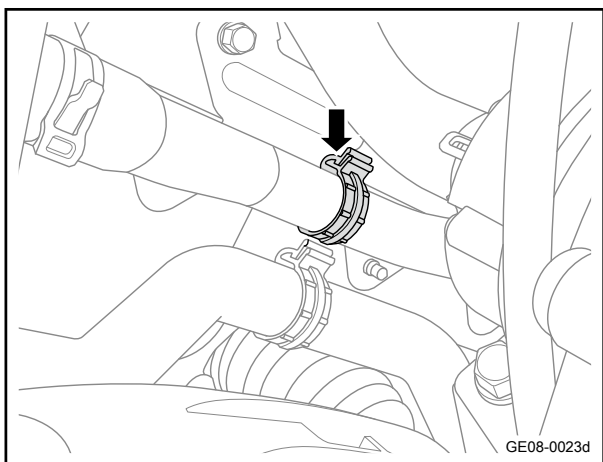




- 4 Remove the heat exchanger outlet hose fixing clamp, and disconnect the heat exchanger outlet hose.

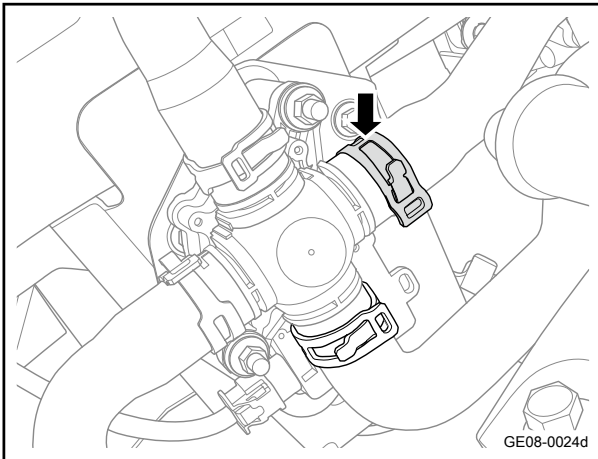


- 5 Remove the fixing pipe clamp of the heat exchanger outlet hose.
- 6 Remove the water outlet hose of the heat exchanger.

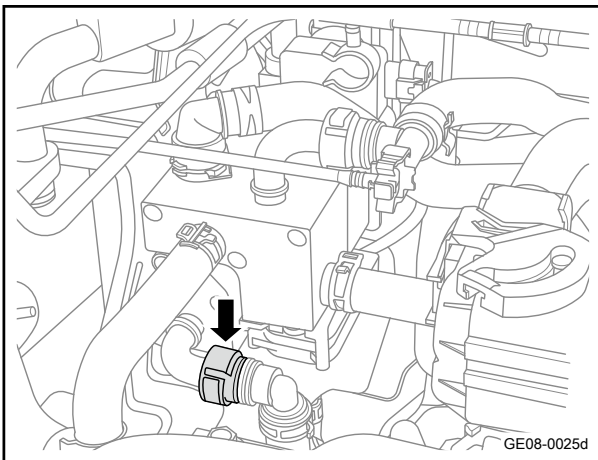


Installation procedure

- 1 Move the heat exchanger outlet hose to the installation position.
- 2 Install the heat exchanger outlet hose fixing pipe clamp.



- 3 Install the heat exchanger outlet hose fixing clamp and connect the heat exchanger outlet hose.



- 4 Connect the heat exchanger outlet hose to the heat exchanger.

- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)

- 6 Connect the negative cable of battery.

### 7.2.8.20 Replacement of the water inlet hose of the heat exchanger

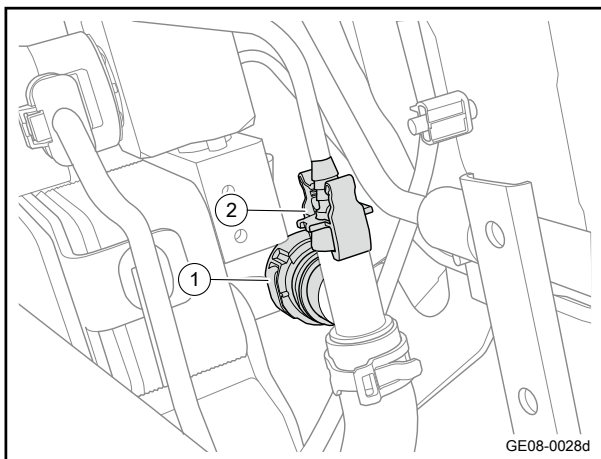
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

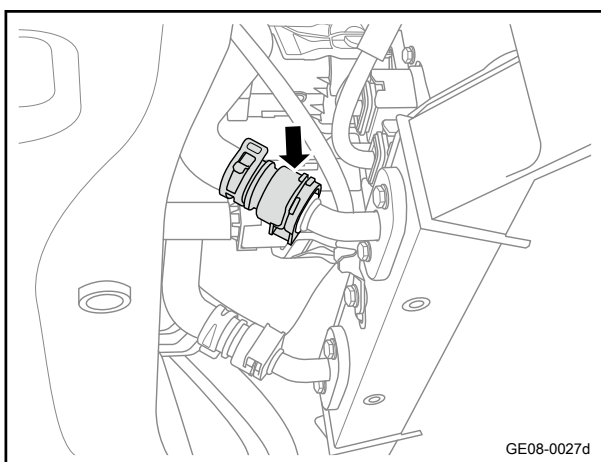
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

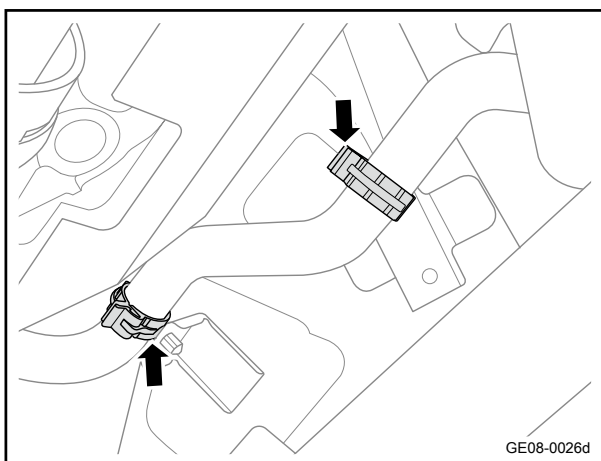
- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 5 Dismount the battery base protection module mounting bracket. See [Replacement of the Battery Protection Module Mounting Bracket](#)



- 6 Disconnect the heat exchanger assembly from the water inlet pipe 1 of the heat exchanger.
- 7 Disconnect the water inlet hose of the heat exchanger and the cooling air pipe 2 of the driving motor.

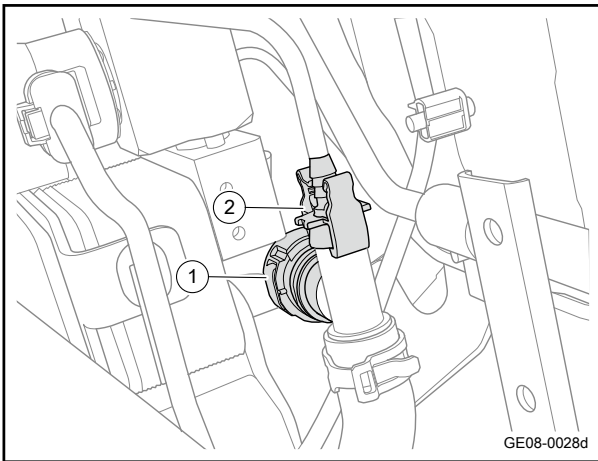
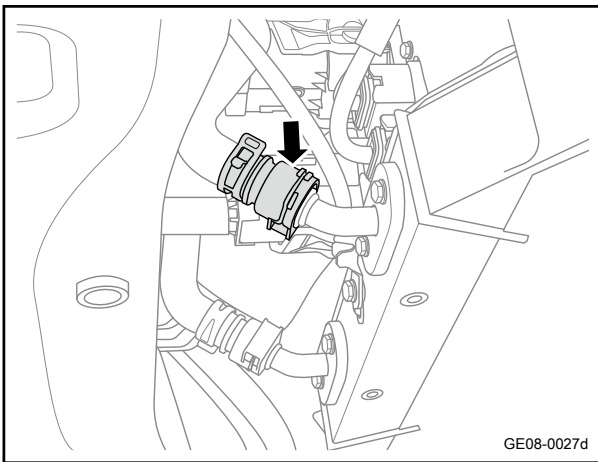
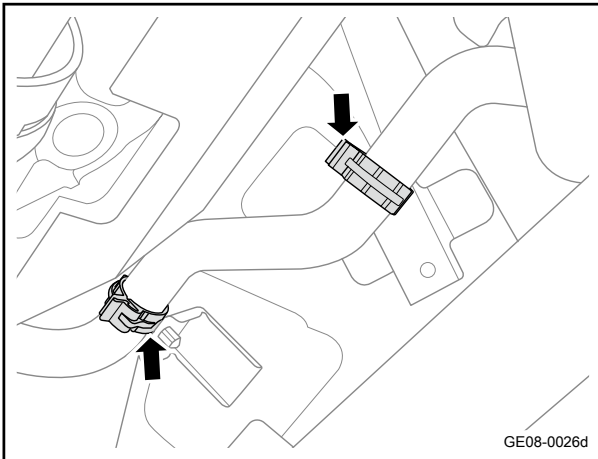


- 8 Disconnect the water inlet hose of the heat exchanger from the power battery.



- 9 Remove the fixing pipe clamp of the water inlet hose of the heat exchanger.
- 10 Remove the water inlet hose of the heat exchanger.

Installation procedure



- 1 Move the water inlet hose of the heat exchanger to the installation position.
- 2 Install the heat exchanger water inlet hose fixing pipe clamp.
- 3 Connect the water inlet hose of the heat exchanger to the power battery.
- 4 Connect the water inlet hose of the heat exchanger to the cooling air pipe 2 of the driving motor.
- 5 Connect the heat exchanger assembly and the water inlet hose 1 of the heat exchanger.
- 6 Mount the battery base protection module mounting bracket.
- 7 Install the front engine bilge guard.
- 8 Lower the vehicle.
- 9 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 10 Connect the negative cable of battery.

### 7.2.8.21 Replacement of four-way valve

Removal procedure

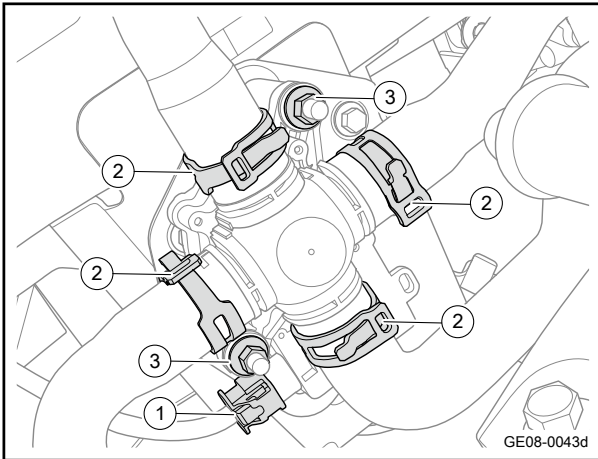


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

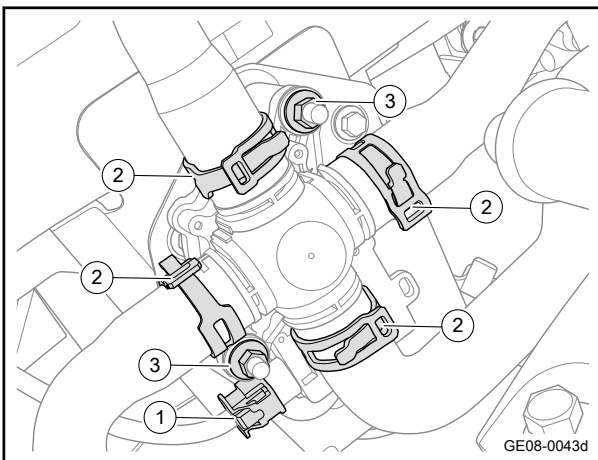
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Discharge of coolant. Refer to the [Coolant Replacement Procedure](#)
- 3 Disconnect the four-way valve harness connector 1.
- 4 Remove the 4 hose clamps 2 connected to the four-way valve and remove the hose.
- 5 Remove the 2 fixing nuts 3 of the four-way valve.
- 6 Remove the four-way valve.



Installation procedure

- 1 Move the four-way valve to the installation position.
- 2 Install 2 fixing nuts 3 for the four-way valve.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Install 4 hose clamps 2 for the four-way valve.
- 4 Connect the four-way valve harness connector 1.



- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

### 7.2.8.22 Replacement of PM2.5 module

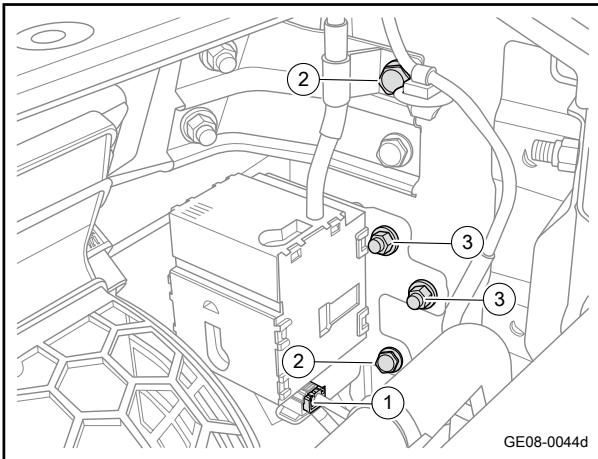
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

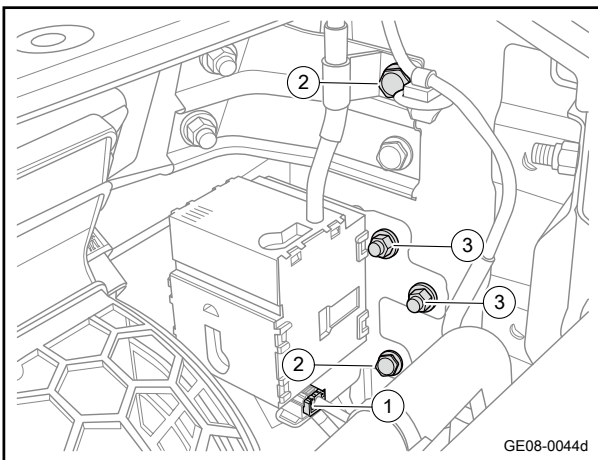
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)
- 3 Disconnect the PM2.5 module harness connector 1.
- 4 Remove the 2 fixing bolts 2 of the PM2.5 module.
- 5 Remove the 2 fixing nuts 3 of the PM2.5 module.
- 6 Remove the PM2.5 module.



#### Installation procedure

- 1 Move the PM2.5 module to the installation location.
- 2 Install 2 fixing nuts 3 for PM2.5 module.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Install the 2 fixing bolts 2 of the PM2.5 module.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 4 Connect the PM2.5 module harness connector 1.
- 5 Install the dashboard body assembly.



- 6 Connect the negative cable of battery.

### 7.2.8.23 Replacement of high-distribution and low pressure hose of heat exchanger

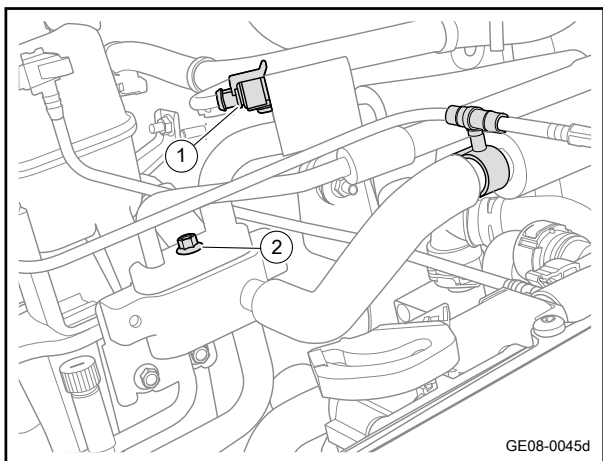
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

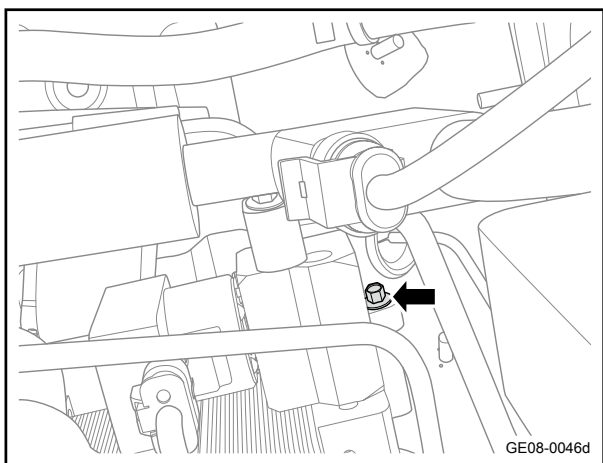
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Disconnect the high-distribution and low pressure hose harness connector 1 of heat exchanger.
- 4 Remove 1 fixing bolt 2 of the high-distribution and low pressure hose of heat exchanger.



- 5 Remove the 1 fixing bolt connecting the high-distribution and low pressure hose of heat exchanger to the heat exchanger assembly.
- 6 Remove the high-distribution and low pressure hose of heat exchanger.

Caution

The sealing ring of the refrigeration pipe is a vulnerable part, and the drag force and speed for disconnecting the refrigeration pipe should not be too large.



Installation procedure

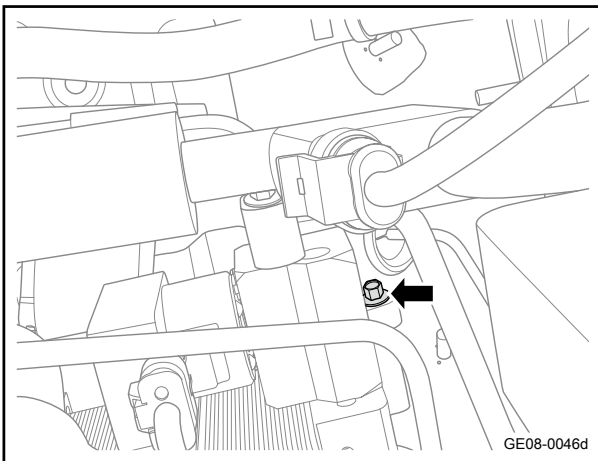
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.

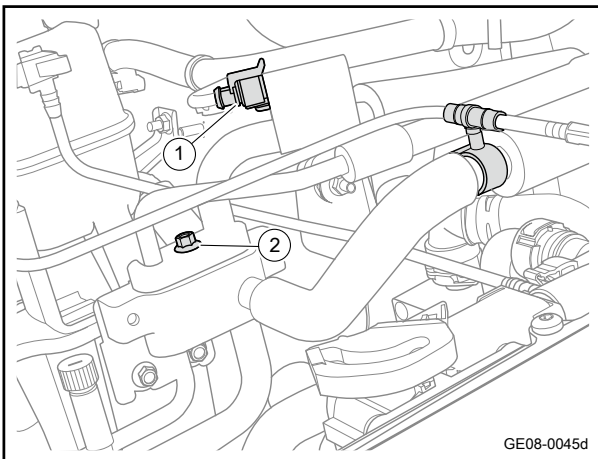


- 1 Move the high-distribution and low pressure hose of heat exchanger to the installation position.
- 2 Install the 1 fixing bolt connecting the high-distribution and low pressure hose of heat exchanger to the heat exchanger assembly.

Torque: 9N·m (metric) 6.6lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



- 3 Install 1 fixing bolt 2 of the high-distribution and low pressure hose of heat exchanger.
- 4 Connect the high-distribution and low pressure hose harness connector 1 of heat exchanger.

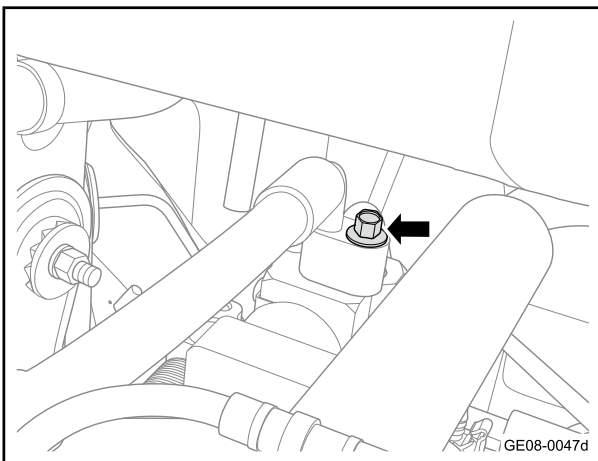
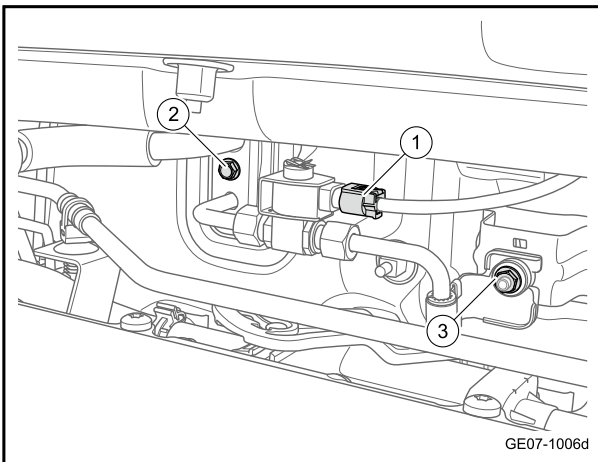
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

### 7.2.8.24 Replacement of heat exchanger high-pressure pipe assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Remove the high and low pressure hoses of the heat exchanger. See [Replacement of High and Low Pressure Hoses of the Heat Exchanger](#)
- 4 Disconnect the 1 harness connector 1 of the heat exchanger high-pressure pipe assembly.
- 5 Remove 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.
- 6 Remove 1 fixing nut 3 of the high-pressure pipe assembly bracket of heat exchanger.



- 7 Remove the 1 fixing bolt connecting the heat exchanger high-pressure pipe assembly and the heat exchanger assembly.
- 8 Remove the heat exchanger high-pressure pipe assembly.

**Caution**

The sealing ring of the refrigeration pipe is a vulnerable part, and the drag force and speed for disconnecting the refrigeration pipe should not be too large.

Installation procedure

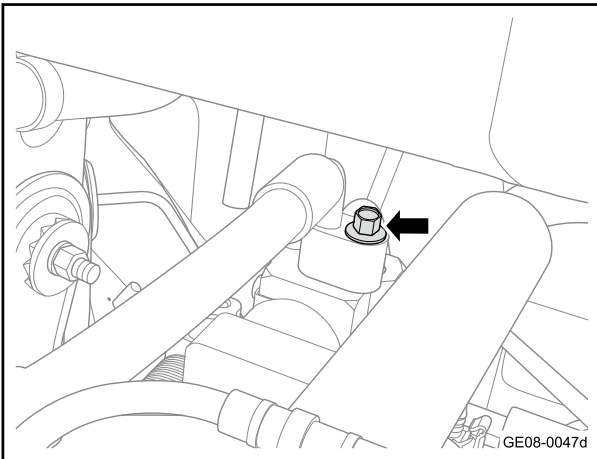
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



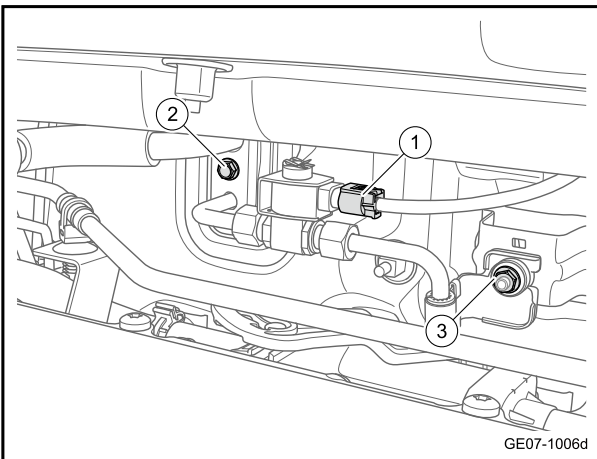
1 Move the heat exchanger high-pressure pipe assembly to the installation position.

2 Remove the 1 fixing bolt connecting the heat exchanger high-pressure pipe assembly and the heat exchanger assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



3 Install 1 fixing nut 3 of the heat exchanger high-pressure pipe assembly bracket.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

4 Install 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

5 Connect a harness connector 1 of the heat exchanger high-pressure pipe assembly.

**Caution**

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

6 Install the heat exchanger high and low pressure hoses.

7 Refill air conditioner refrigerant.

8 Connect the negative cable of battery.

### 7.2.8.25 Replacement of electronic water pump (70W)

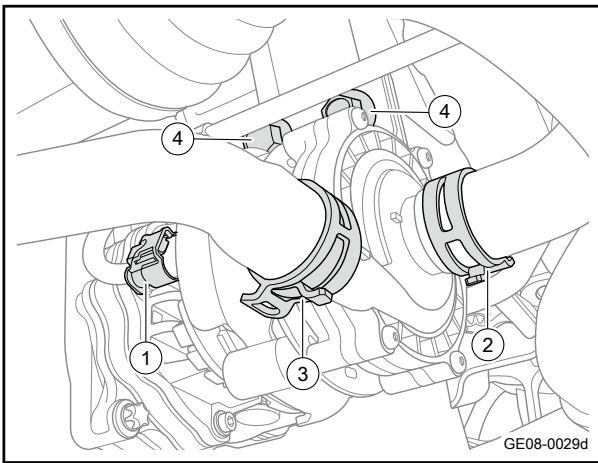
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

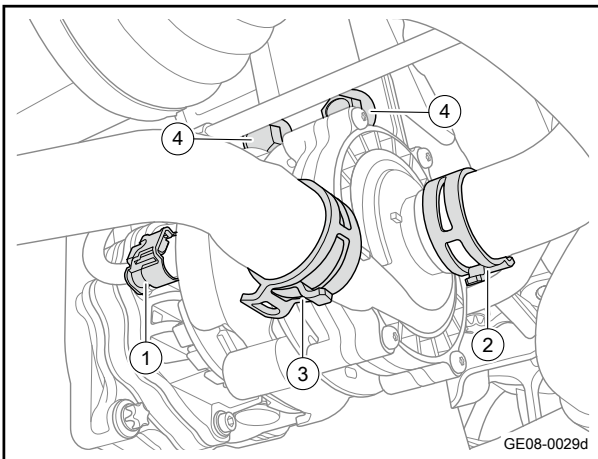
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 5 Disconnect the harness connector 1 of electric water pump.
- 6 Remove the fixing clamp 2 of the battery-powered water pump inlet pipe, and disconnect the battery water pump inlet pipe.
- 7 Remove the fixing clamp 3 of the battery-powered water inlet pipe, and disconnect the battery water inlet pipe.
- 8 Remove the 2 fixing bolts 4 of the electronic water pump.
- 9 Remove the electronic water pump.



Installation procedure

- 1 Move the electronic water pump to the installation location.
- 2 Install 2 fixing bolts 4 of the electronic water pump. Torque: 40N·m (metric) 29.5lb-ft (imperial system)
- 3 Install the battery-powered water inlet pipe fixing clamp 3.
- 4 Install the battery-powered water pump inlet pipe fixing clamp 2.
- 5 Connect the harness connector 1 of electric water pump.
- 6 Install the front engine bilge guard.
- 7 Lower the vehicle.
- 8 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 9 Connect the negative cable of battery.



### 7.2.8.26 Replacement of electronic water pump (20W)

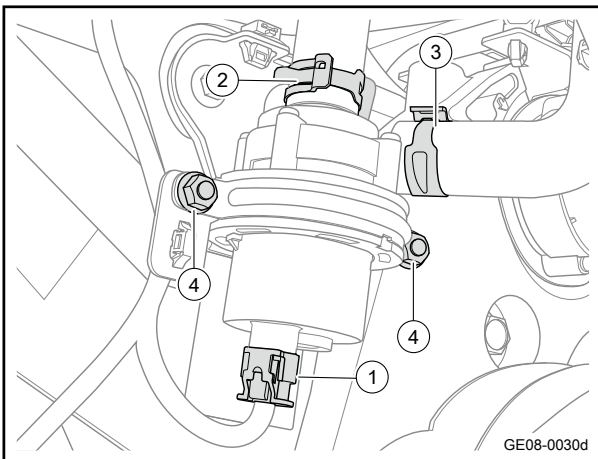
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

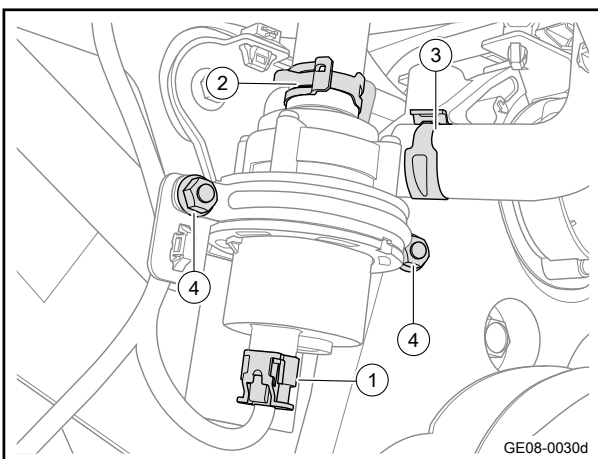
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)
- 5 Disconnect the harness connector 1 of electric water pump.
- 6 Remove the clamp 2, disconnect the electric water pump from the rear water inlet hose of the electric heating water pump.
- 7 Remove the clamp 3, disconnect the electric water pump from the rear water outlet hose of the electric heating water pump.
- 8 Remove the 2 fixing nuts 4 of the electronic water pump.
- 9 Remove the electronic water pump.



#### Installation procedure

- 1 Move the electronic water pump to the installation location.
- 2 Install 2 fixing nuts 4 of the electronic water pump. Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the electronic water pump and the outlet pipe of the electric heating water pump, and install the clamp 3.
- 4 Connect the electronic water pump and the inlet pipe of the electric heating water pump, and install the clamp 3.
- 5 Connect the harness connector 1 of electric water pump.
- 6 Install the front wing liner RH.
- 7 Lower the vehicle.





- 8 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 9 Connect the negative cable of battery.

### 7.2.8.27 Replacement of rear water inlet hose of electric heating water pump

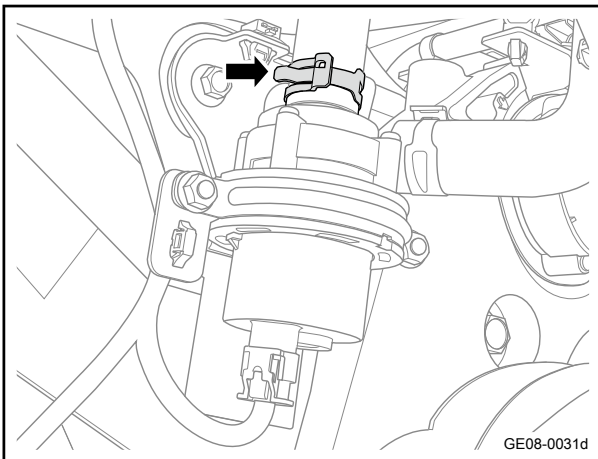
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

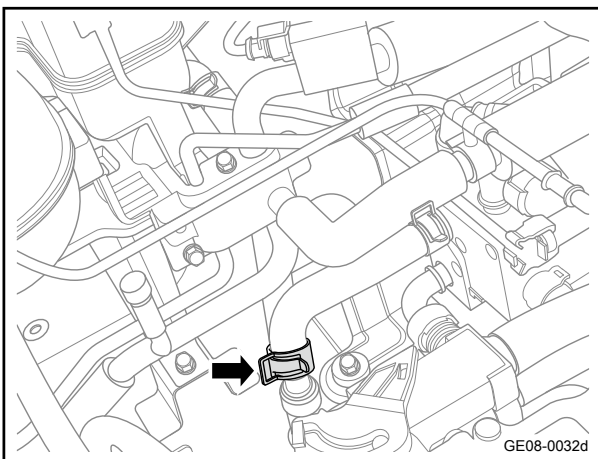
#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

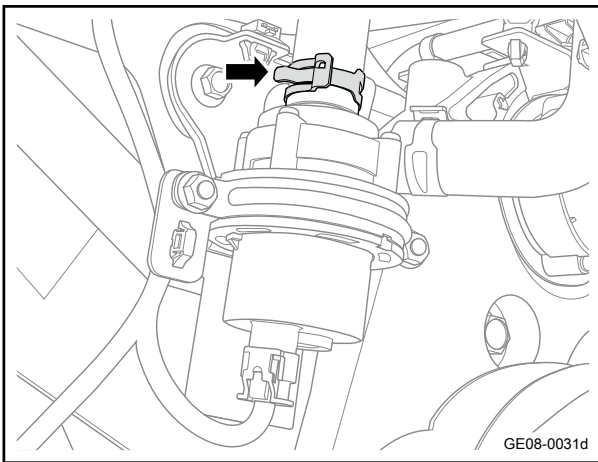
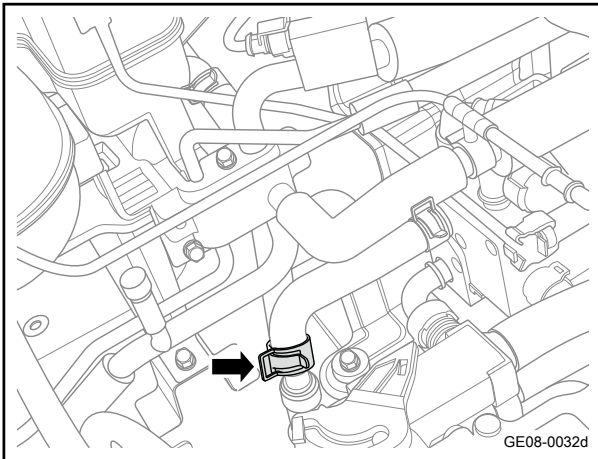
- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)
- 5 Remove the fixing clamp (on the electric water pump side) of rear water inlet hose of electric heating water pump.



- 6 Remove the fixing clamp (on the side of front water inlet hose of the electric water pump) of rear water inlet hose of electric heating water pump.
- 7 Remove the rear water inlet hose of electric heating water pump



#### Installation procedure



- 1 Move the rear water inlet hose of the electric heating water pump to the installation position.
- 2 Connect the rear water inlet hose of the electric heating water pump to the front water inlet hose of the electric heating water pump, and install the fixing clamp.
- 3 Connect rear water inlet hose of the electric heating water pump and the electric water pump, and install the fixing clamp.
- 4 Install the front wing liner RH.
- 5 Lower the vehicle.
- 6 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

### 7.2.8.28 Replacement of front water inlet hose of electric heating water pump

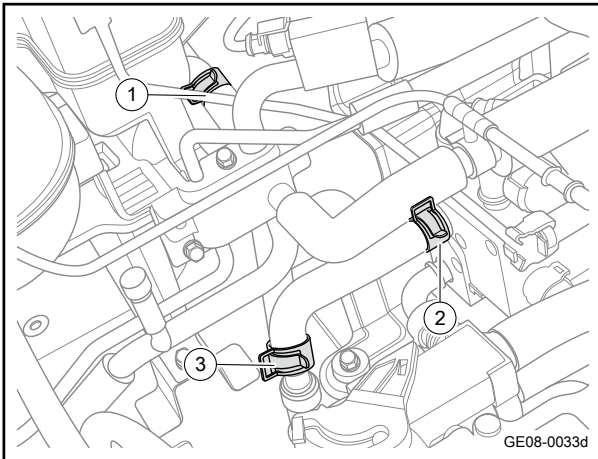
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

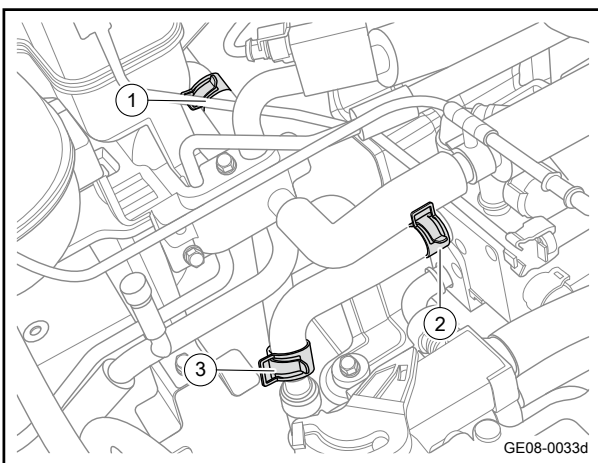
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)



- 3 Remove the clamp 1, disconnect the front water inlet hose of the electric heating water pump from the expansion tank assembly (battery cooling).
- 4 Remove the clamp 2, disconnect the front water inlet hose of the electric heating water pump from the heat exchanger assembly.
- 5 Remove the clamp 3, disconnect the front water inlet hose of the electric heating water pump from the rear water inlet hose of the electric heating water pump.
- 6 Remove the rear water inlet hose of electric heating water pump

Installation procedure



- 1 Move the rear water inlet hose of the electric heating water pump to the installation position.
- 2 Connect the front water inlet hose of the electric heating water pump and the rear water inlet hose of the electric heating water pump, and install the clamp 3.
- 3 Connect the front water inlet hose of the electric heating water pump and the heat exchanger assembly, and install the clamp 2.
- 4 Connect the front water inlet hose of the electric heating water pump and the expansion tank assembly (battery cooling), and install the clamp 1.
- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

7.2.8.29 Replacement of the water outlet pipe of the electric heating water pump

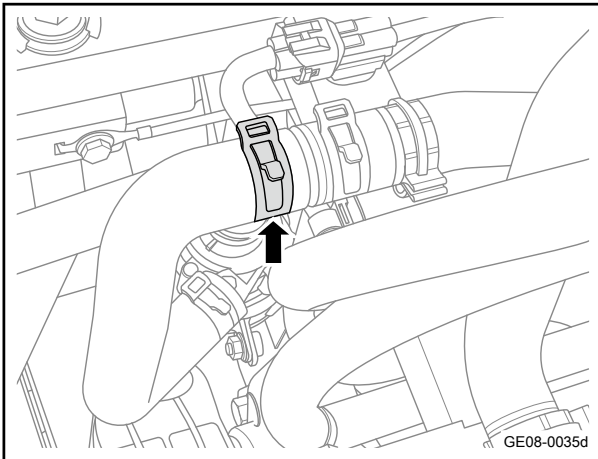
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

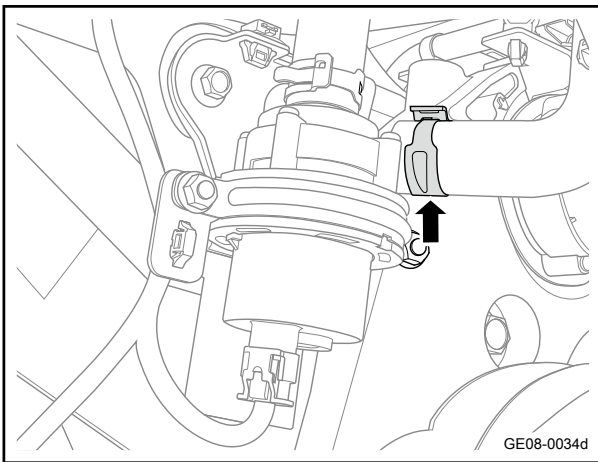
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

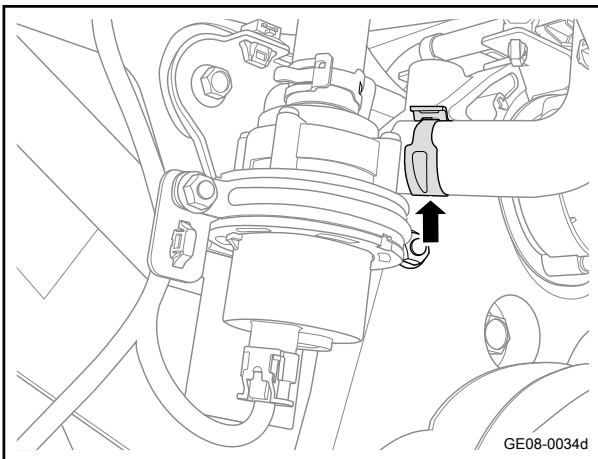
- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)



- 5 Remove the clamp and disconnect the outlet pipe of the electric heating water pump from the water inlet pipe of the heater.

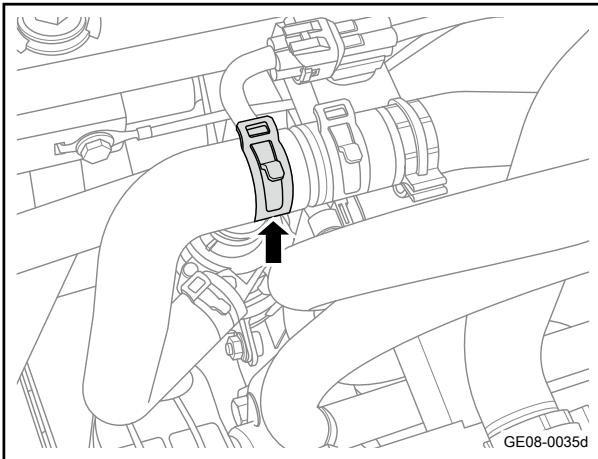


- 6 Remove the clamp and disconnect the outlet pipe of the electric heating water pump from the electronic water pump.
- 7 Remove the water outlet pipe of the electric heating water pump.



#### Installation procedure

- 1 Move the water outlet pipe of the electric heating water pump to the installation position.
- 2 Connect the outlet pipe of the electric heating water pump to the electric water pump, and install the clamp.



- 3 Connect the outlet pipe of the electric heating water pump to the water inlet pipe of the heater, and install the clamp.

- 4 Install the front wing liner RH.
- 5 Lower the vehicle.
- 6 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

### 7.2.8.30 Replacement of the water inlet pipe of the battery-powered water pump

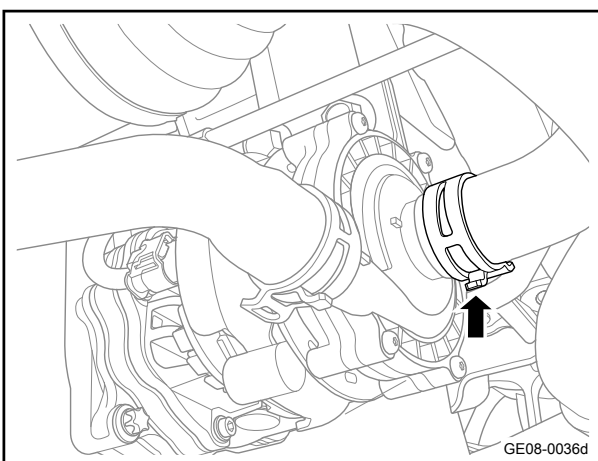
#### Removal procedure

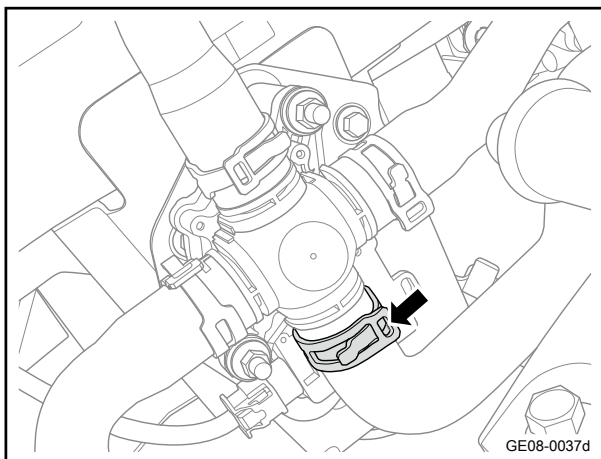
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

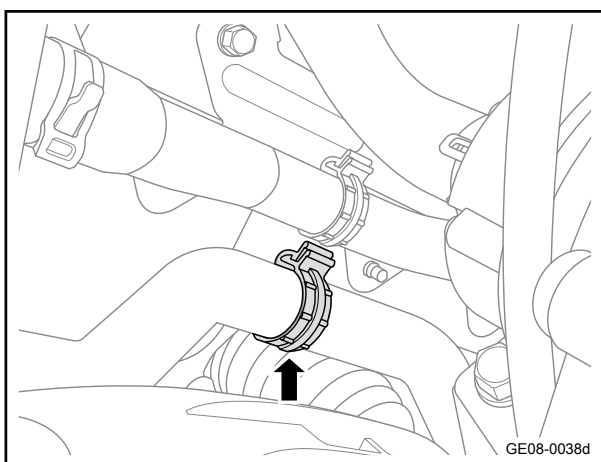
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)
- 5 Remove the clamp and disconnect the battery-powered water pump inlet pipe from the electronic water pump.

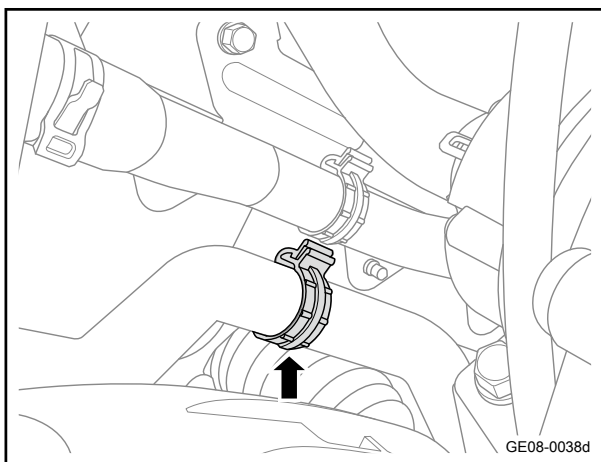




- 6 Remove the clamp and disconnect the battery water pump inlet pipe from the four-way valve.

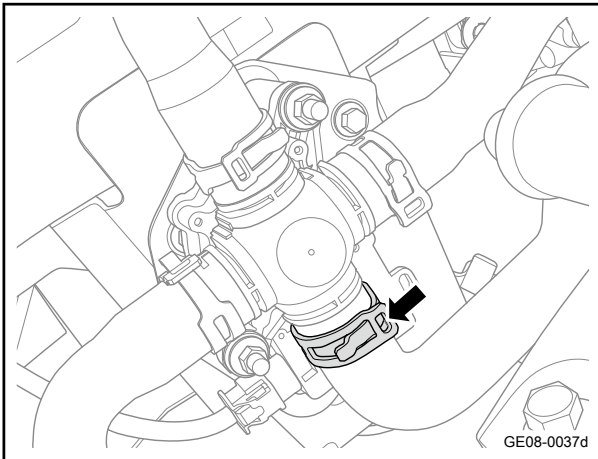


- 7 Remove the fixing pipe clamp of the battery-powered water pump inlet pipe.
- 8 Remove the water inlet pipe of the battery water pump.

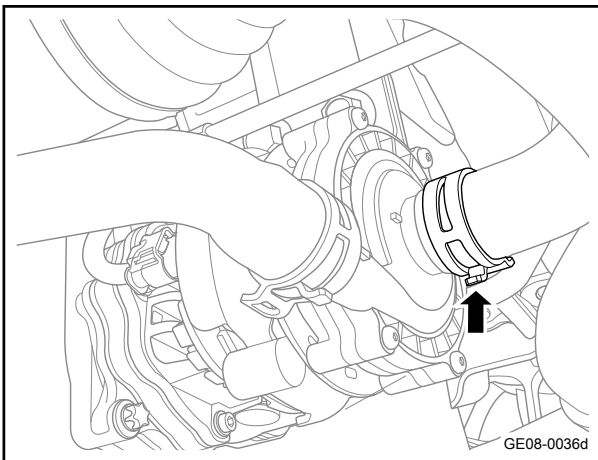


#### Installation procedure

- 1 Move the battery-powered water pump inlet pipe to the installation position.
- 2 Install the battery-powered water pump inlet pipe fixing clamp.



- 3 Connect the battery-powered water pump inlet pipe to the four-way valve, and install the clamp.



- 4 Connect the battery-powered water pump inlet pipe to the electronic water pump, and install the clamp.

- 5 Install the front engine bilge guard.
- 6 Lower the vehicle.
- 7 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 8 Connect the negative cable of battery.

### 7.2.8.31 Replacement of water inlet pipe of battery

#### Removal procedure

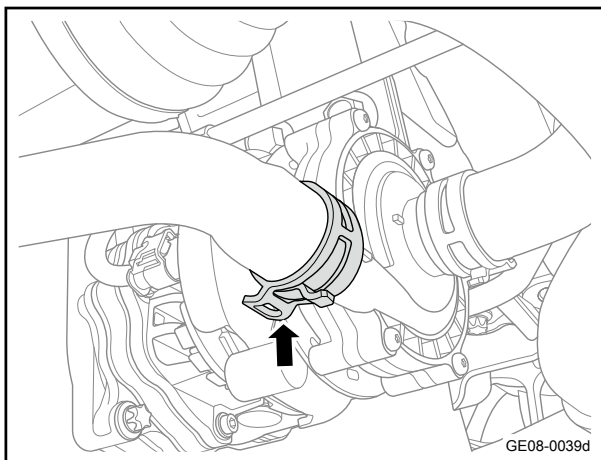
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

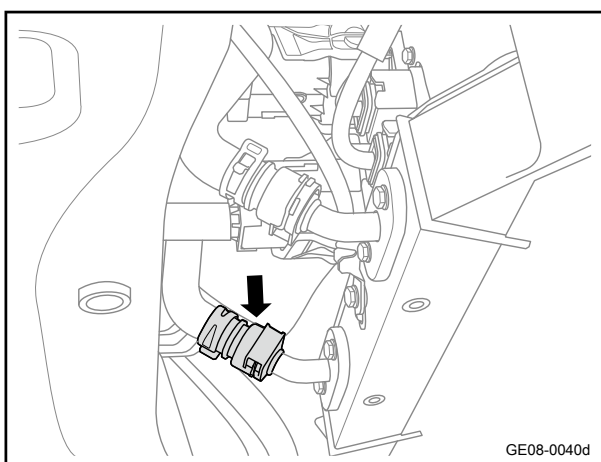
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 4 Remove the front engine bilge guard. Refer to the [Replacement of Front Engine Bilge Guard](#)

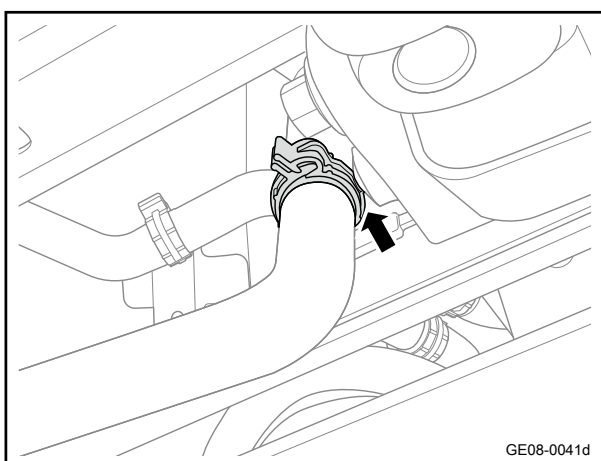
- 5 Dismount the battery base protection module mounting bracket. See [Replacement of the Battery Protection Module Mounting Bracket](#)



- 6 Remove the fixing clamp of the battery water inlet pipe (on the side of the electronic water pump).



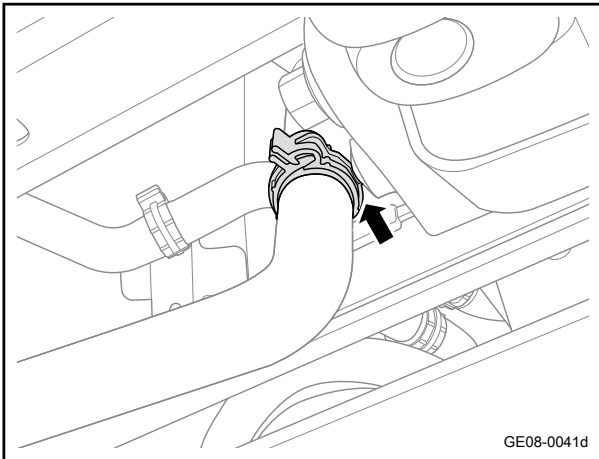
- 7 Remove the battery water inlet pipe fixing clamp (power battery side).



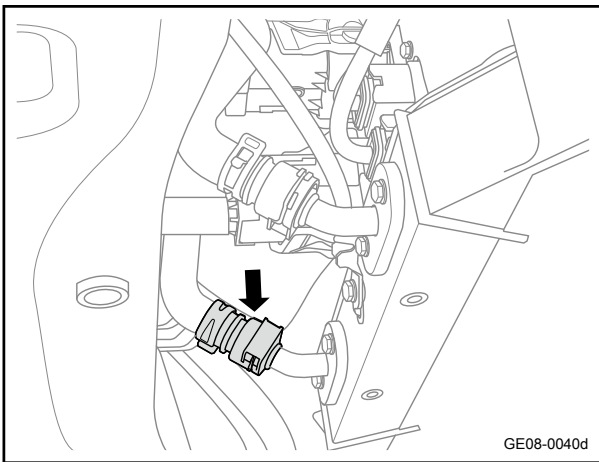
- 8 Remove the fixing clamp of the battery water inlet pipe.
- 9 Remove the battery water inlet pipe.

Installation procedure

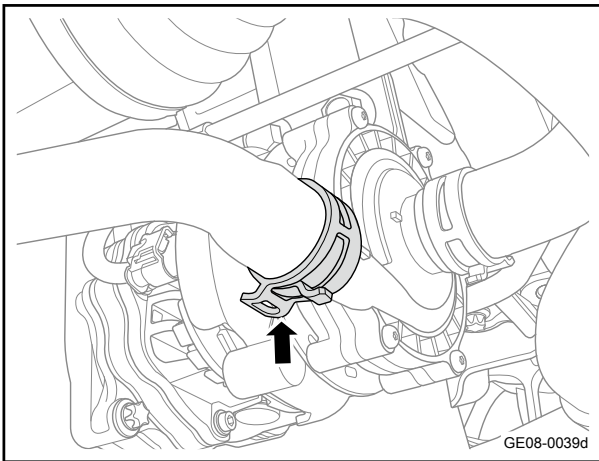




- 1 Move the battery water inlet pipe to the installation position.
- 2 Install the battery water inlet pipe fixing clamp.



- 3 Connect the battery water inlet pipe to the power battery, and install the clamp.



- 4 Connect the battery water inlet pipe to the electronic water pump, and install the clamp.

- 5 Mount the battery base protection module mounting bracket.
- 6 Install the front engine bilge guard.
- 7 Lower the vehicle.
- 8 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 9 Connect the negative cable of battery.

### 7.2.8.32 Replacement of heater outlet hose

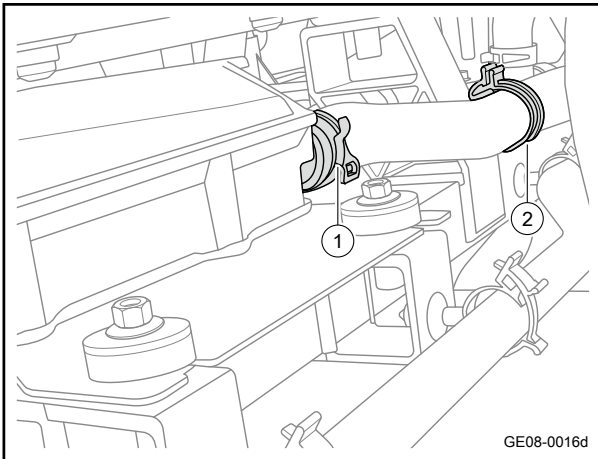
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

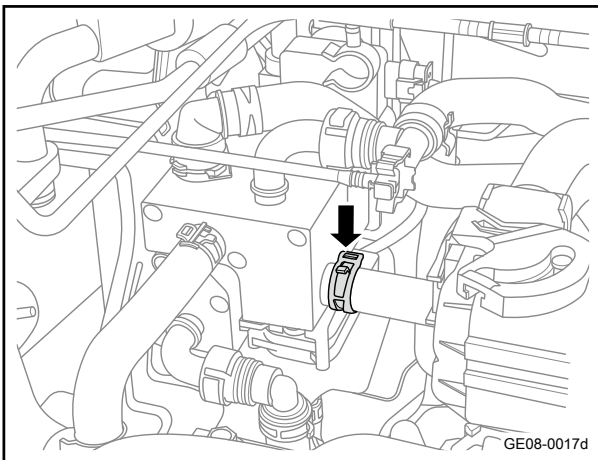
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Remove the heater outlet hose fixing clamp 1 (at heater side).
- 4 Remove the heater outlet hose fixing pipe clamp 2.

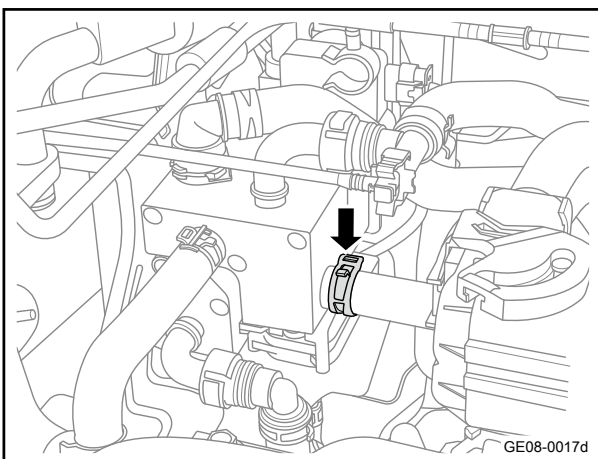


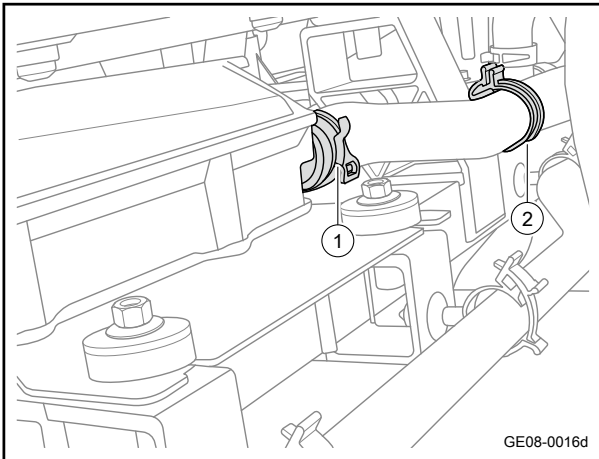
- 5 Remove the heater outlet hose fixing clamp (at heat exchanger assembly side).
- 6 Remove the heater outlet hose.



#### Installation procedure

- 1 Move the heater outlet hose to the installation position.
- 2 Connect the heater outlet hose to the heat exchanger assembly, and install the clamp.





- 3 Install the heater outlet hose fixing clamp 2.
- 4 Connect the heater assembly to the heater outlet hose, and install the clamp 1.

- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

### 7.2.8.33 Replacement of water inlet hose of heater

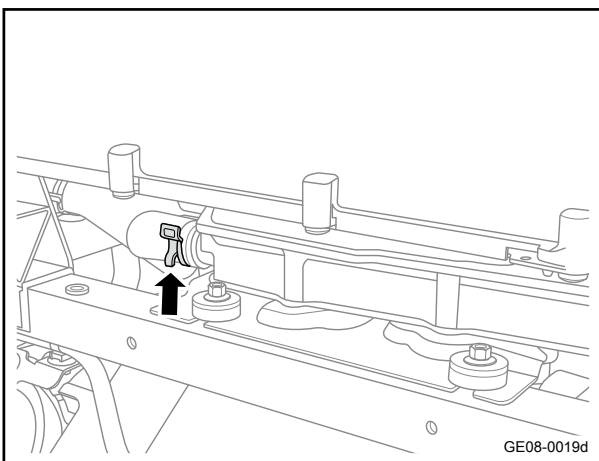
#### Removal procedure

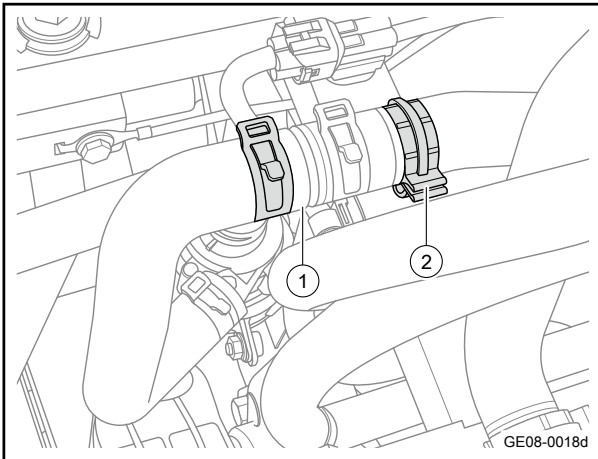
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

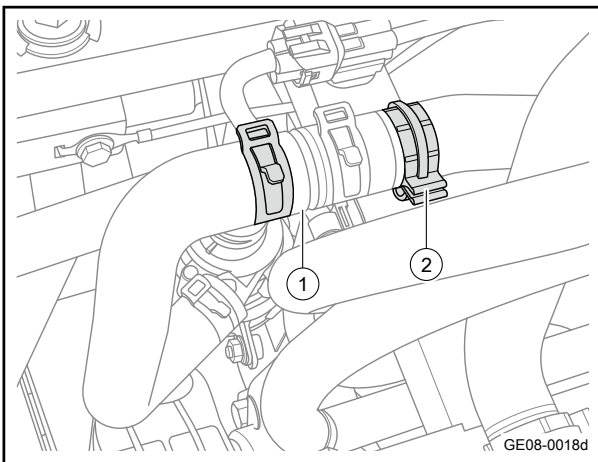
- 2 Drain the coolant from the heating system. Refer to the [Coolant Replacement Procedure](#)
- 3 Remove the clamp and disconnect the heater water inlet hose from the heater assembly.



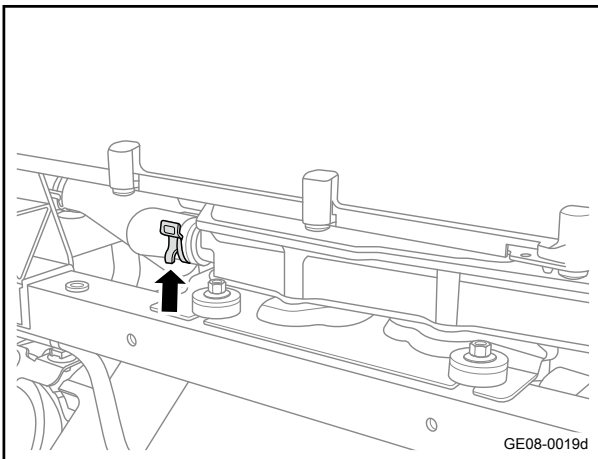


- 4 Remove the clamp 1, disconnect the heater water inlet hose and the electric heating water pump outlet pipe.
- 5 Remove the heater water inlet hose fixing clamp 2.
- 6 Take off the water inlet hose of heater.

#### Installation procedure



- 1 Move the heater water inlet hose to the installation position.
- 2 Install the heater water inlet hose fixing clamp 2.
- 3 Connect the heater water inlet hose and the electric heating water pump outlet pipe, and install the clamp 1.



- 4 Connect the heater inlet hose to the heater assembly, and install the clamp.

- 5 Add the coolant into heating system and exhaust. Refer to the [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

#### 7.2.8.34 Replacement of the condenser outlet pipe (low configuration)

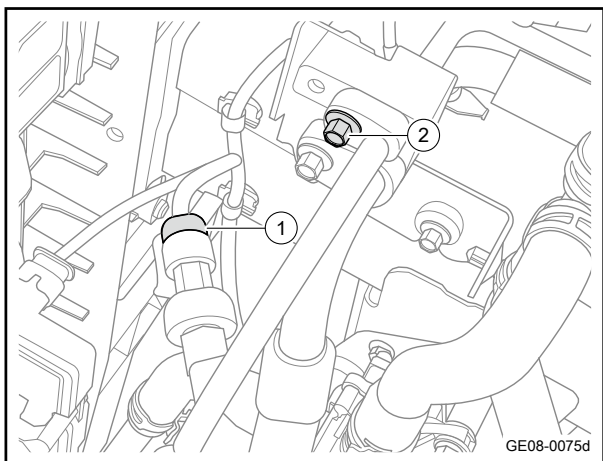
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

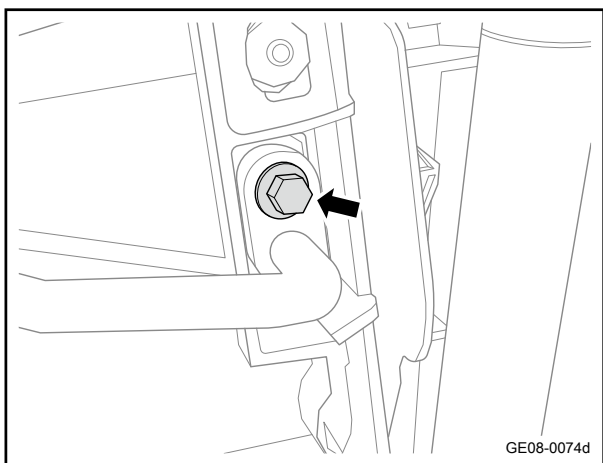
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Disconnect the condenser outlet pipe assembly harness connector 1.
- 4 Remove the 1 fixing bolt 2 connecting the condenser outlet pipe assembly with the evaporator inlet and outlet pipe assembly, and disconnect the condenser outlet pipe assembly.



- 5 Remove the condenser outlet pipe assembly and connect the 1 fixing bolt to the condenser.
- 6 Remove the condenser outlet pipe assembly.



Installation procedure

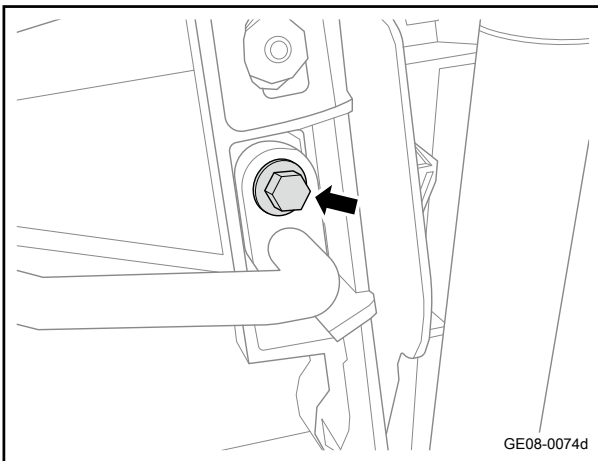
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

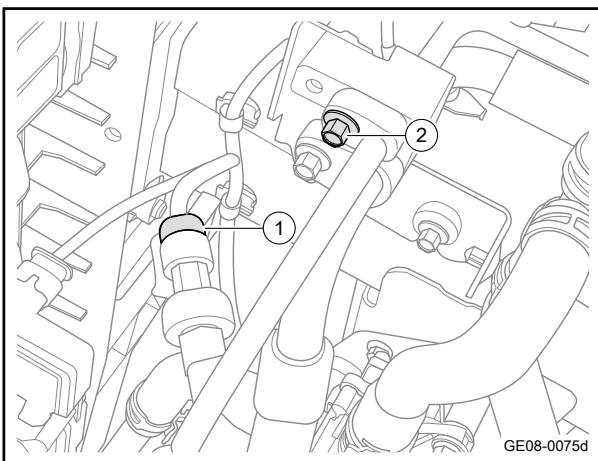
- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



- 1 Move the condenser outlet pipe assembly to the installation position.
- 2 Install the condenser outlet pipe assembly and connect the 1 fixing bolt to the condenser.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



- 3 Connect the condenser outlet pipe assembly, install the 1 fixing bolt 2 connecting the condenser outlet pipe assembly with the evaporator inlet and outlet pipe assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 4 Connect the wiring harness connector 1 of the condenser outlet pipe assembly.
- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

### 7.2.8.35 Replacement of compressor exhaust hose (low configuration)

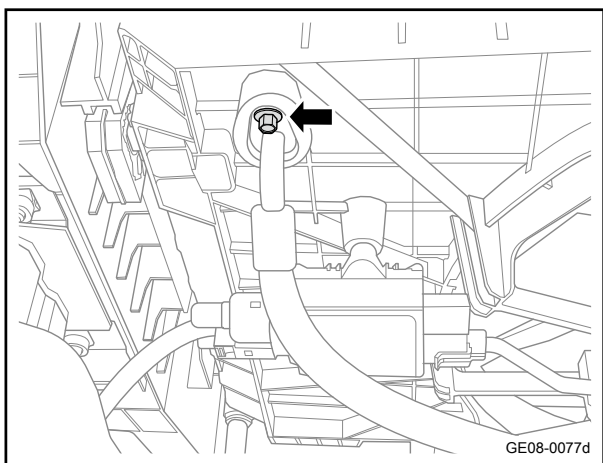
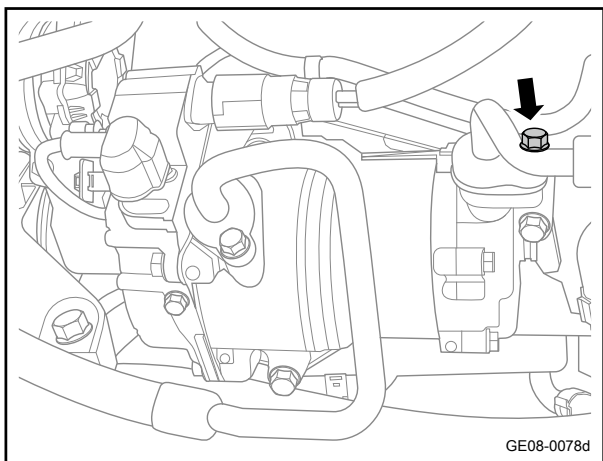
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Remove the 1 fixing bolt connecting the compressor exhaust hose and the electric compressor assembly.



- 4 Remove the 1 fixing bolt connecting the compressor exhaust hose and the condenser.
- 5 Remove the compressor exhaust hose.

Installation procedure

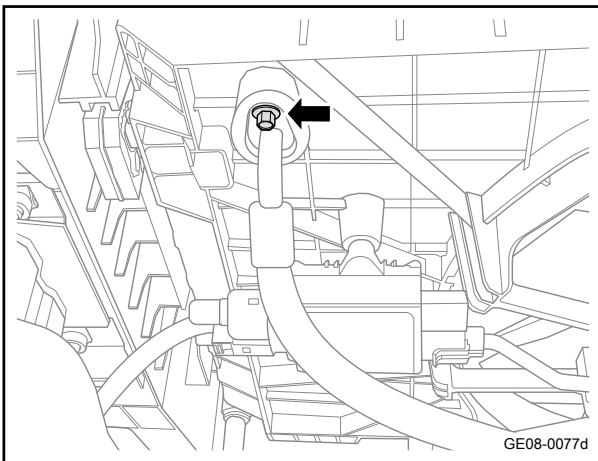
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.

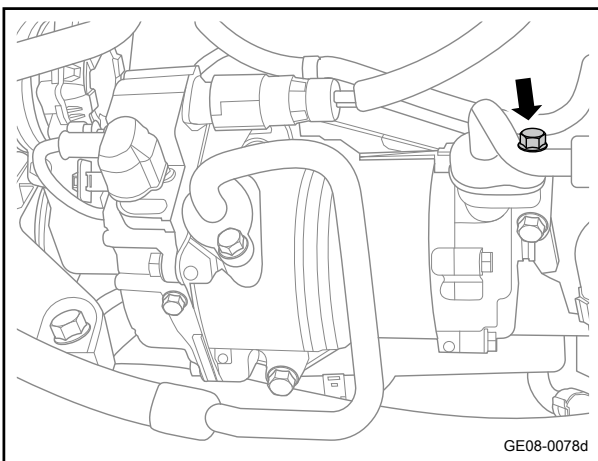


- 1 Move the compressor exhaust hose to the installation position.
- 2 Install a fixing bolt connecting the compressor exhaust hose and the condenser.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



- 3 Install a fixing bolt connecting the compressor exhaust hose and the electric compressor assembly.

Torque: 24N·m (metric) 17.7lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

### 7.2.8.36 Replacement of compressor intake hose (low configuration)

Removal procedure

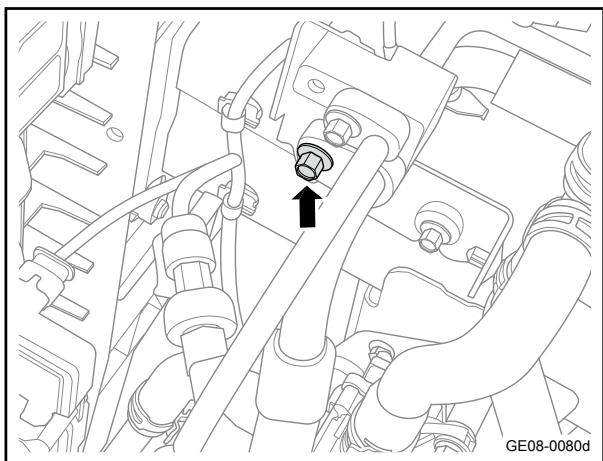


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

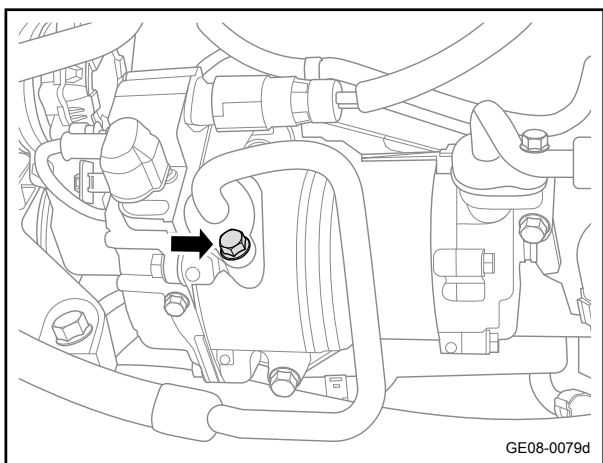
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Remove the 1 fixing bolt connecting the compressor air inlet hose with the evaporator air inlet and outlet pipe assembly, and disconnect the compressor inlet hose.



- 4 Remove the 1 fixing bolt connecting the compressor air intake hose and the electric compressor.
- 5 Remove the compressor intake hose.



Installation procedure

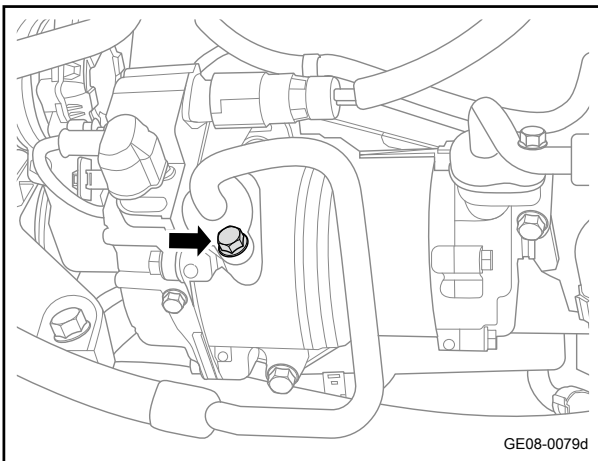
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

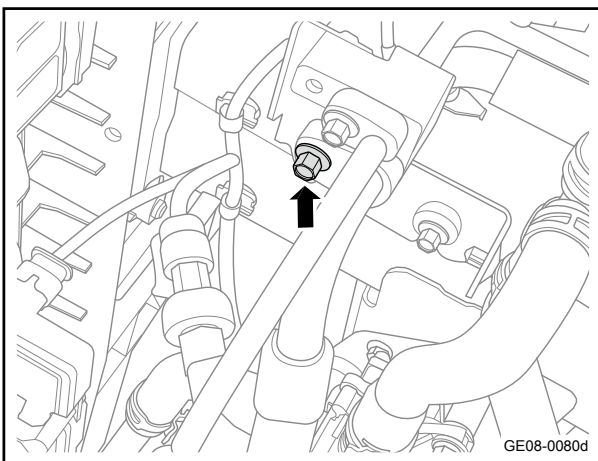
- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



- 1 Move the compressor air intake hose to the installation position.
- 2 Install a fixing bolt connecting the compressor air intake hose and the electric compressor.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



- 3 Connect the compressor air intake hose and install a fixing bolt connecting the compressor air intake hose with the evaporator air inlet and outlet pipe assembly.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

### 7.2.8.37 Replacement of evaporator inlet and outlet pipe assembly

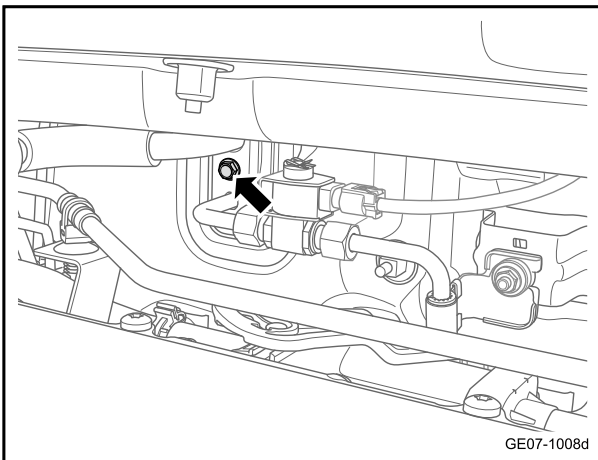
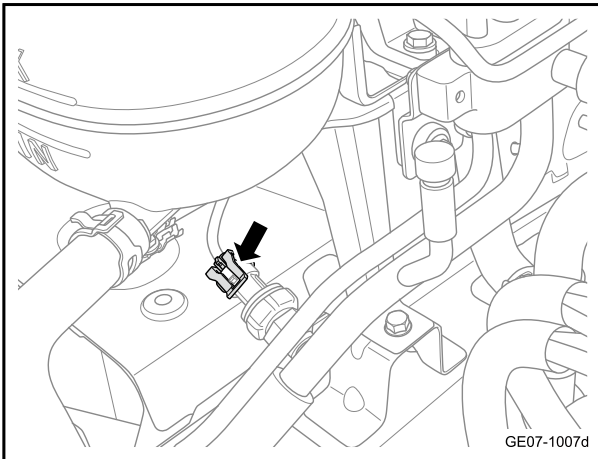
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

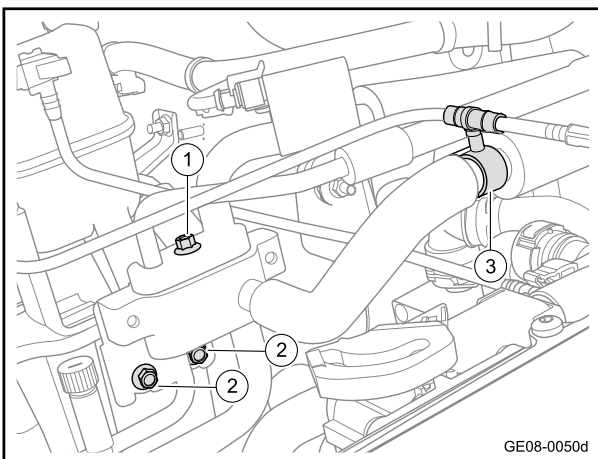
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)
- 3 Disconnect 1 harness connector of the evaporator inlet and outlet pipe assembly.



- 4 Remove 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

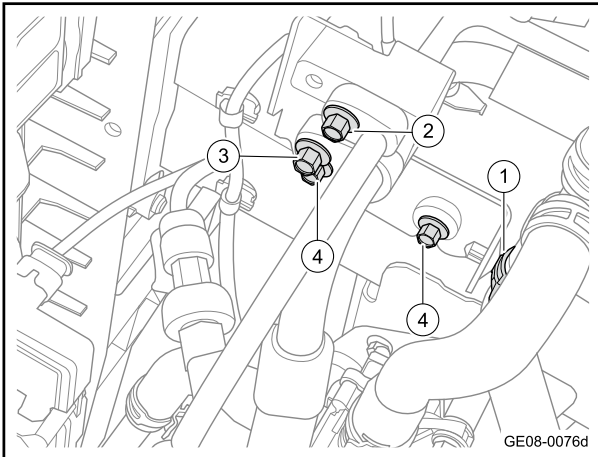


- 5 Remove the 1 fixing bolt 1 connecting the high-voltage distribution low-pressure hose of the heat exchanger to the inlet and outlet pipes of the evaporator, and disconnect the high-voltage distribution low-pressure hoses of the heat exchanger.

Caution

The sealing ring of the refrigeration pipe is a vulnerable part, and the drag force and speed for disconnecting the refrigeration pipe should not be too large.

- 6 Remove the two fixing bolts 2 of the evaporator inlet and outlet pipe assembly bracket.



- 7 Remove the fixing pipe clamp 3 of the driving motor cooling vent pipe.
- 8 Remove the fixed pipe clamp 1 of the water inlet pipe of the electronic water pump.
- 9 Remove the 1 fixing bolt 2 connecting the evaporator inlet and outlet pipe assembly and the condenser outlet pipe assembly, and disconnect the condenser outlet pipe assembly.

#### Caution

The sealing ring of the refrigeration pipe is a vulnerable part, and the drag force and speed for disconnecting the refrigeration pipe should not be too large.

- 10 Remove the 1 fixing bolt 3 connecting the evaporator inlet and outlet pipe assembly and the compressor inlet hose, and disconnect the compressor inlet hose.
- 11 Remove the two fixing bolts 2 of the evaporator inlet and outlet pipe assembly bracket.
- 12 Remove the evaporator inlet and outlet pipe assembly.

#### Installation procedure

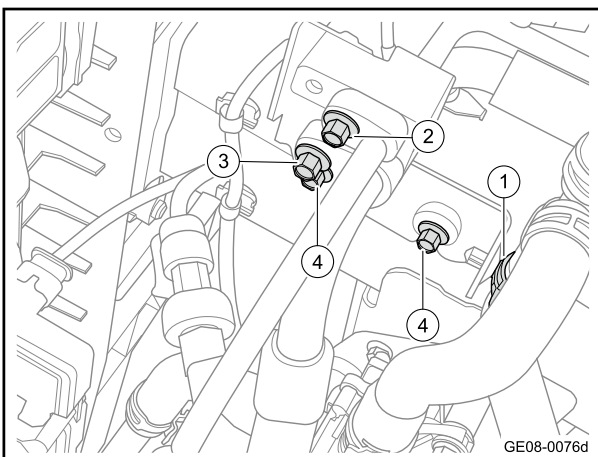
#### Caution

All O-rings involved in the installation process must be replaced with new ones.

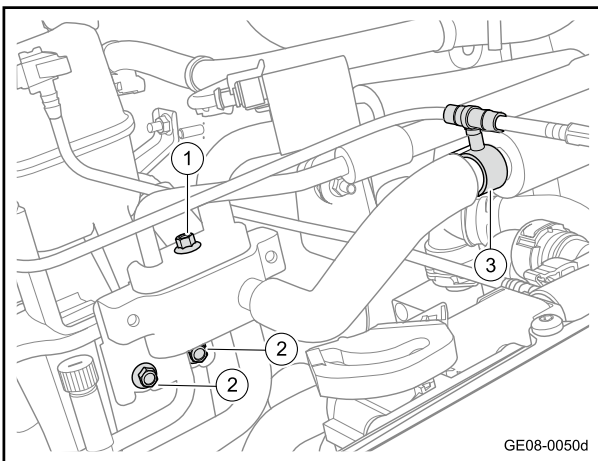
#### Caution

#### When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



- 1 Move the evaporator inlet and outlet pipe assembly to the installation position.
- 2 Install the two fixing bolts 4 of the evaporator inlet and outlet pipe assembly bracket.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)



- 3 Connect the compressor inlet hose, install a fixing bolt 3 connecting the evaporator inlet and outlet pipe assembly and the compressor inlet hose.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 4 Connect the condenser outlet pipe assembly, install a fixing bolt 2 connecting the evaporator inlet and outlet pipe assembly and the condenser outlet pipe assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

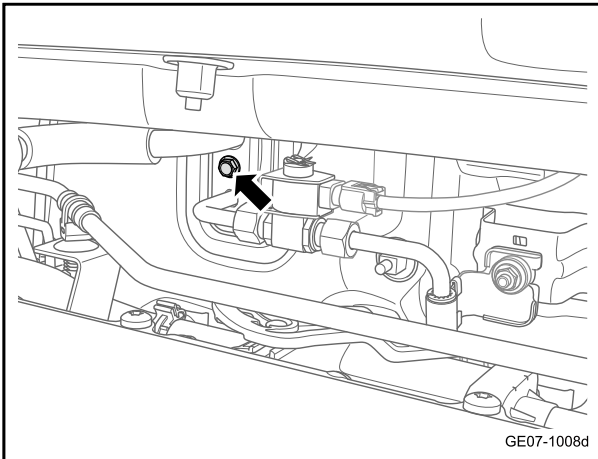
When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 5 Install the fixing pipe clamp 1 of electronic water pump inlet pipe.
  - 6 Install the fixing pipe clamp 3 of drive motor cooling vent pipe.
  - 7 Install the two fixing bolts 2 of the evaporator inlet and outlet pipe assembly bracket.
- 8 Connect the high-voltage distribution low-pressure hoses of the heat exchanger, and install a fixing bolt 1 connecting the high-voltage distribution and low-pressure hose of the heat exchanger to the evaporator inlet and outlet pipe assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

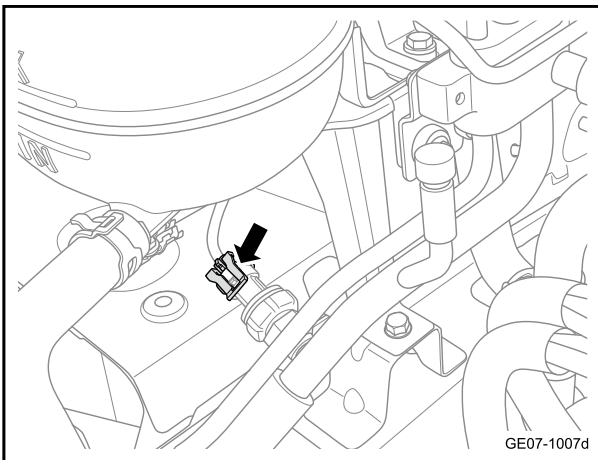


- 9 Install 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

Torque: 10N·m (metric) 7.4lb-ft (imperial system)

#### Caution

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.



- 10 Connect 1 wire harness connector connecting to the evaporator inlet and outlet pipe assembly.

#### Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

- 11 Refill air conditioner refrigerant.  
12 Connect the negative cable of battery.

### 7.2.8.38 Replacement of low-voltage distribution low-pressure hose of heat exchanger

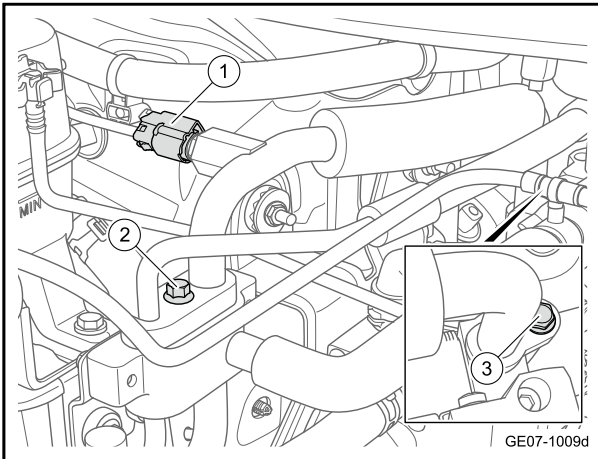
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of Air Conditioner Refrigerant](#)



- 3 Disconnect the harness connector 1 of the low-voltage distribution low-pressure hose of the heat exchanger.
- 4 Remove 1 fixing bolt 2 connecting the low-voltage distribution low-pressure hose of heat exchanger and the evaporator inlet and outlet pipe assembly.
- 5 Remove the 1 fixing bolt 3 connecting the low-voltage distribution low-pressure hose of heat exchanger and the heat exchanger assembly.
- 6 Remove the low-voltage distribution low-pressure hose of heat exchanger.

**Caution**

The sealing ring of the refrigeration pipe is a vulnerable part, and the drag force and speed for disconnecting the refrigeration pipe should not be too large.

Installation procedure

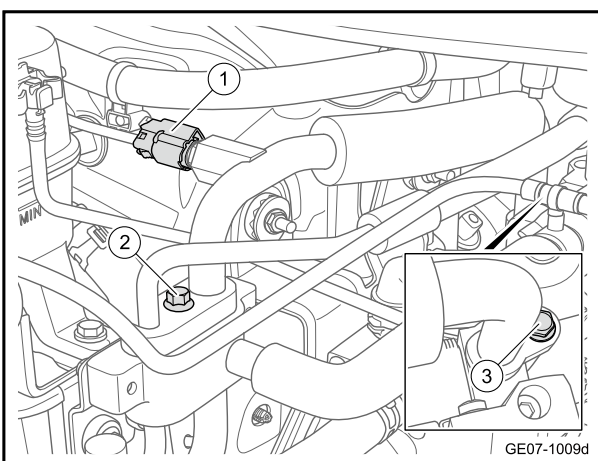
**Caution**

All O-rings involved in the installation process must be replaced with new ones.

**Caution**

When replacing pipes in the air conditioning system:

- If it is needed to replace the suction pipe of a new compressor, add 10ml compressor lubricating oil to the air conditioning system;
- If it is only needed to replace other air-conditioning pipelines, there is no needed to add additional compressor lubricant.



- 1 Move the low-voltage distribution low-pressure hose of heat exchanger to the installation position.
- 2 Install a fixing bolt 3 connecting the low-voltage distribution low-pressure hose of heat exchanger and the heat exchanger assembly.  
Torque: 10N·m (metric) 7.4lb·ft (imperial system)

**Caution**

When installing, first ensure that the refrigeration pipe interface is 'flat and straight', and then install the fixing bolts.

- 3 Install a fixing bolt 2 connecting the low-voltage distribution low-pressure hose of heat exchanger and the evaporator inlet and outlet pipe assembly.  
Torque: 10N·m (metric) 7.4lb·ft (imperial system)

- 4 1 harness connector 1 for connecting the low-voltage distribution low-pressure hose of heat exchanger.

**Caution**

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.



## Safety protection device

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## 8.1 Warnings and Precautions

### 8.1.1 Warnings and Precautions

#### 8.1.1.1 Warnings and Precautions

##### Warning regarding airbag system

###### Warning

This vehicle is equipped with airbag system. Failure to follow the correct operation procedures will result in the following situations:

- The airbag system is accidentally opened.
- The system does not work when the airbag is needed for protection.

###### Warning

Following criteria should be strictly followed to avoid the occurrence of above conditions:

- The airbag system component view should be referred to in order to ensure whether you are maintaining or operating on airbag system components, surrounding, or its circuit.
- If you are performing maintenance operations on airbag system components and its surroundings or its lines, disengage the airbag system. Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

##### Warning regarding high temperature of deployed airbag control unit

###### Warning

After deployment, the metal surfaces of airbag system components may be very hot. To avoid fire and personal injury:

- There should be sufficient cooling time before touching any metal surface of the airbag system components.
- Do not place inflatable airbag system components next to any combustible material.

##### Warning regarding clock spring of airbag system

###### Warning

Improper installation of the clock spring assembly will damage the spiral coil inside the clock spring, which may cause coil failure and make the airbag module unable to work normally, thus leading to personal injury.

##### Warnings regarding safety system module scrapping

###### Warning

To prevent accidental deployment of airbags and personal injury, non-deployed airbag modules should not be disposed of as conventional workshop wastes. If the sealed container damages in the process of scrap, some of the substances contained in the non-deployed modules may cause serious illness or personal injury. Safely scrap non-deployed airbag modules with deployment procedures.

##### Warnings regarding taking and storage of the airbag system

###### Warning

When transporting non-deployed airbag modules:

- Do not lift the wires or connectors on the airbag modules for handling.
- Make sure the airbag opening does not face yourself or someone else.

###### Warning

When storing undeployed airbags, ensure the airbag openings are not toward the surface where the airbag module is placed. The airbag openness should not be downward. It is prohibited to place any object on the airbag modules. There should be enough space around the airbag for accident deployment, otherwise it will hurt people. It is prohibited to immerse the non-deployed airbag modules in water or contact with other liquids. The undeployed airbag should be prohibited from fire sources or high temperatures to avoid accident deployment of the airbag that may hurt people.

##### Warning regarding the treatment of airbag system collision sensor

###### Warning

Do not impact or shake the airbag system collision sensor. Before charging the collision sensor, make sure that the collision sensor is firmly fixed. Failure to follow the correct installation procedure may cause accidental detonation of the airbag system or no effect at the time of detonation, causing personal injury.

## 8.2 Airbag system

### 8.2.1 Specification

#### 8.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of airbag electronic control unit	M6×12	8.5 - 11.5	6.3 - 8.5
Fixing bolt of left air curtain	M6×16	8.5 - 11.5	6.3 - 8.5
Frontal collision sensor fixing bolt	M6×25	8.5 - 11.5	6.3 - 8.5
Side collision sensor fixing bolt	M6×25	8.5 - 11.5	6.3 - 8.5

## 8.2.2 Description and operation

### 8.2.2.1 Instructions and Operations

#### Caution

The airbag system has no function of the seat belt. If the seat belt is not fastened, it may cause serious personal injury when the airbag is detonated. Geely reminds you to wear a seat belt when driving or riding. Only when the seat belt is fastened, the airbag system can better provide auxiliary protection for the passengers in the event of a collision.

#### Airbag system descriptions

The airbag system consists of the following components:

- Airbag fault alarming indicator
- Combination instrument assembly
- Airbag Control Unit (ACU)
- Driver's frontal collision sensor
- Passenger's frontal collision sensor
- Driver side collision sensor
- Passenger side collision sensor
- Passenger test switch
- Driver seat airbag
- Passenger airbag
- Driver's seat belt
- Passenger seat belt
- Front left side airbag
- Front-row right side collision airbag
- Left curtain airbag
- Right curtain airbag
- Clock spring
- Airbag system harness
- Steering wheel and steering column

The airbag system provides auxiliary protection for the passengers in addition to the seat belt, which is a passive safety system. The airbag system has multiple inflatable protection modules distributed in different positions of the vehicle, including the steering wheel, instrument panel, front seat backs, and roof rails. Each inflatable module is equipped with a point blast circuit that is controlled by the airbag control unit. When the airbag electronic control unit detects the impact force of the collision is huge enough, it will control the airbag to deploy. The airbag control unit will continuously diagnose and monitor the electric components of the airbag system. When a circuit failure is detected, the airbag control unit will store a diagnostic trouble code and lighten the airbag

warning lamp to inform the driver. The steering column is of energy absorption type. When front side collision happens, it can be shrunk to reduce the driver injury odds.

The airbag electronic control unit will receive the sensor signals to judge the degree of severity of the collision. When the signal value is bigger than the setting value in the memorizer, the airbag electronic control unit will send out an ignition commands to deploy the corresponding inflator module of the airbag system. In case of a frontal collision with a large enough impact force, the front airbag will deploy; in case of a side collision with a large enough impact force, the front-row side airbag and the safety air curtain will deploy.

## 8.2.3 How the system works

### 8.2.3.1 System Working Principles

#### Airbag fault alarming indicator

Airbag control unit will store a DTC code if a failure is detected, and direct the instrument cluster to turn on an airbag alarming indicator through CAN-BUS serial data bus. After starting the vehicle, ACU will constantly test each circuit. If a failure is detected, the airbag control unit will communicate with the instrument cluster through CAN-CANBUS serial data bus, and the airbag warning lamp will turn on in 5s. If there is any fault in the airbag system, it may prevent deployment of airbags, or cause the deployment of airbags when a collision does not reach the set severity level. If the airbag alarming indicator is turned on, please go to a Geely authorized service station for troubleshooting. Before completing fault repair, the airbag indicator will not go out.

#### Airbag Control Unit (ACU)

##### Caution

The ACU has its own capacitor to store energy, so that even if the battery power harness is cut off in the event of a collision, the airbag ACU can still detonate the actuator and store the collision record. Disconnect the battery negative cable for more than 90s before repairing the airbag system to empty the reserve power supply.

The airbag control unit (ACU) is a microprocessor, which is the control center of the airbag system. When a vehicle collision happens, the airbag control unit will compare the signal from sensor and the value in storage. When the generated signal exceeds the value in the storage, the airbag control unit will issue an ignition command (current signal) to each ignition circuit to deploy the airbags. When the airbags are deployed, the airbag control unit will record the status of the airbag system and turn on the airbag indicator on the instrument cluster. After starting the vehicle, the airbag control unit will perform constant diagnosis monitoring of electrical components and circuits of the airbag system. When a fault of the airbag control unit is detected, it will store a DTC code and turn on the airbag warning lamp to inform drivers of the fault.

#### Frontal collision sensor (left/right)

Frontal impact sensor is used to strengthen performance of the airbag system. The frontal collision sensor is an acceleration sensor, which signals the frontal acceleration of the vehicle to the airbag control unit (ACU). The frontal impact sensor can help to determine the severity of a frontal collision. ACU utilizes measured acceleration value to make calculation, and to compare the calculation value with the

value in the memory. When the generated calculated value exceeds the stored value, the airbag control unit will issue an ignition command (current signal) to frontal ignition circuit to deploy the frontal airbag and seat belt.

#### Driver side collision sensor, passenger side collision sensor

A vehicle acceleration monitor is included in each side collision sensor, so as to send the side acceleration signal of the vehicle to the airbag control unit (ACU). The side collision sensor can confirm the severity of side collision. ACU utilizes measured acceleration value to make calculation, and to compare the calculation value with the value in the memory. When the generated calculated value exceeds the stored value, the airbag control unit will issue an ignition command (current signal) to side ignition circuit to deploy the front-row side airbag.

#### Passenger seat belt buckle switch + passenger detection switch

The passenger seat belt buckle switch and the passenger detection switch are used to indicate the front passenger seat belt and the passenger's sitting status. When the front passenger seat belt is not fastened and the front passenger is not seated, the switch outputs a high resistance value; when the front passenger seat belt is fastened and the front passenger is not seated, the switch outputs a high resistance value; when the front passenger seat belt is fastened and the front passenger is seated, the switch outputs a high resistance value; When there is a passenger in the seat, the switch output is high resistance; when the passenger seat belt is not fastened and the passenger is in the passenger seat, the switch output is low resistance

#### Driver airbag and passenger airbag

The driver airbag and passenger airbag module includes a shell, inflatable airbags, an ignition blasting device and a gas generator. When the frontal collision force of a vehicle collision reaches the set blasting threshold, the airbag control unit will issue an ignition command to deploy the airbag to the frontal ignition circuit. Current flows through the igniter, blasting the gas generator to generate a lot of gas rapidly. The gas generated in the reaction quickly inflates the airbag. Once the airbag is filled with gas, it will quickly deflate through the vent of the airbag. Each airbag electronic control unit wiring harness connector terminal (driver's airbag, passenger's airbag deployment circuit) has a short circuit piece. When the connector is disconnected, the short circuit strip will short circuit the inflation module deployment circuit of the airbag to

prevent accidental deployment of the airbag during the maintenance.

#### Front left side airbag and front right side airbag

Front left side airbag and front right side airbag are located on backrests of the driver seat and the passenger seat respectively. The front side airbag module includes airbag, ignition blasting device and gas generator. The igniter is part of the front side airbag module deployment circuit. When the side impact force in a vehicle collision is strong enough, the side collision sensor will detect that collision and signal to the air control unit. The airbag control unit compares the signal from side collision sensor with the set value in the storage. When the signal value exceeds the stored value, the airbag control unit (ACU) issues an ignition command to deploy the front side airbag. When a side collision happens at the passenger side, it requires not to ignite the front-row left side airbag and left side curtain airbag, but ignite the right side airbag and right side curtain airbag. The airbag control unit constantly monitors deployment circuit for faults. Once a fault happens, the airbag indicator will be turned on. The airbag control unit harness connector terminal (each front-row side curtain airbag deployment circuit) is equipped with a short circuit plate. The short circuit plate can short circuit the front side airbag module deployment circuit to prevent accidental deployment during maintenance.

#### Left curtain airbag and right curtain airbag

The left curtain airbag and the right curtain airbag are respectively located in the left and right side members on the roof of the vehicle. They stretch from A-pillar to C-pillar. The side curtain airbag module on the roof of the vehicle includes curtain airbag, ignition blasting device and gas generator. The igniter is part of the deployment circuit of side curtain airbag on the roof side member of the vehicle. When the side impact force in a vehicle collision is strong enough, the side collision sensor will detect that collision and signal to the air control unit. The airbag control unit compares the signal from side collision sensor with the set value in the storage. When the signal generated exceeds the stored value, the airbag control unit (ACU) issues an ignition command to deploy the curtain airbag. When a side collision happens to the passenger side, it requires the front left side airbag and left side curtain airbag not to ignite, while the right side airbag and right side curtain airbag to ignite. The airbag control unit constantly monitors deployment circuit for faults. Once a fault happens, the airbag indicator will be turned on. The airbag control unit harness connector terminal (each curtain airbag deployment circuit) is equipped with a short-circuit plate. The short circuit plate can short circuit the deployment circuit of side member curtain

airbag module on the roof of the vehicle to prevent accidental deployment during the maintenance.

#### Clock spring

The airbag clock spring is on the steering column and under the steering wheel. The clock spring can keep continuous electrical contact between driver deployment circuit and driver's airbag when the steering wheel is rotating. The connector of the steering wheel clock spring is equipped with a short-circuit plate, which can short circuit the deployment circuit of driver airbag to prevent accidental deployment during the maintenance.

#### Airbag system harness

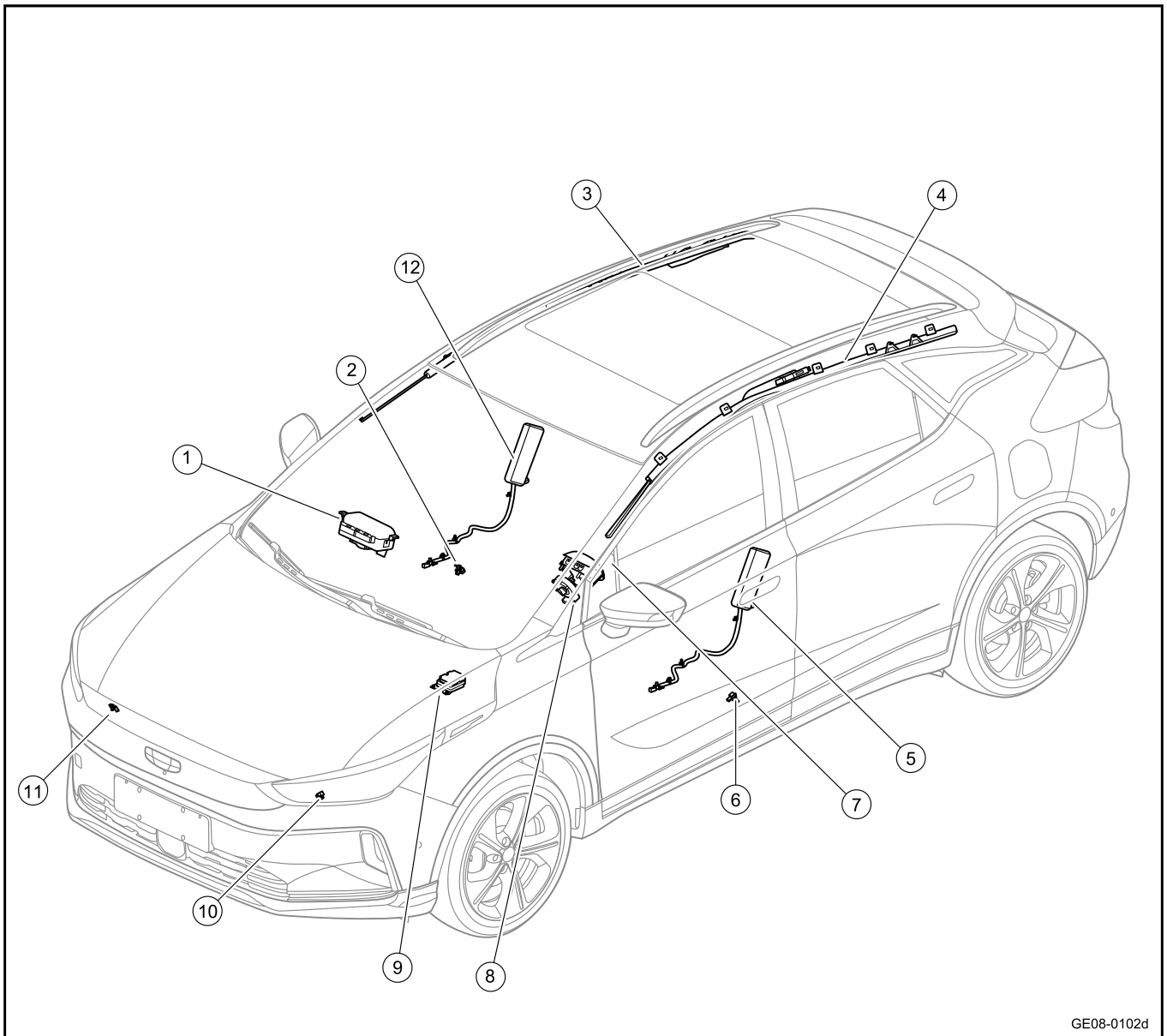
The airbag system harness connects sensor, control unit, inflation module, deployment circuit and CAN bus serial data circuit through water proof connector. The connector of airbag system deployment circuit is designed in yellow for easy identification. Please follow related test and circuit repair procedures in the manual while repairing the airbag system harness.

#### Steering wheel and steering column

Energy absorption design is adopted for the steering wheel and the steering column and energy is absorbed when driver contacts the steering wheel or inflated airbag. When a frontal collision happens to the vehicle, the driver may contact the steering wheel directly, or to load the impact force to the steering wheel and the steering column through an inflated airbag. The steering column will shrink downwards and absorb part of collision energy, so as to help reduce bodily injury to the driver. After collision, it is necessary to check whether there is damage to the steering wheel or steering column.

## 8.2.4 Part location

## 8.2.4.1 Part Position



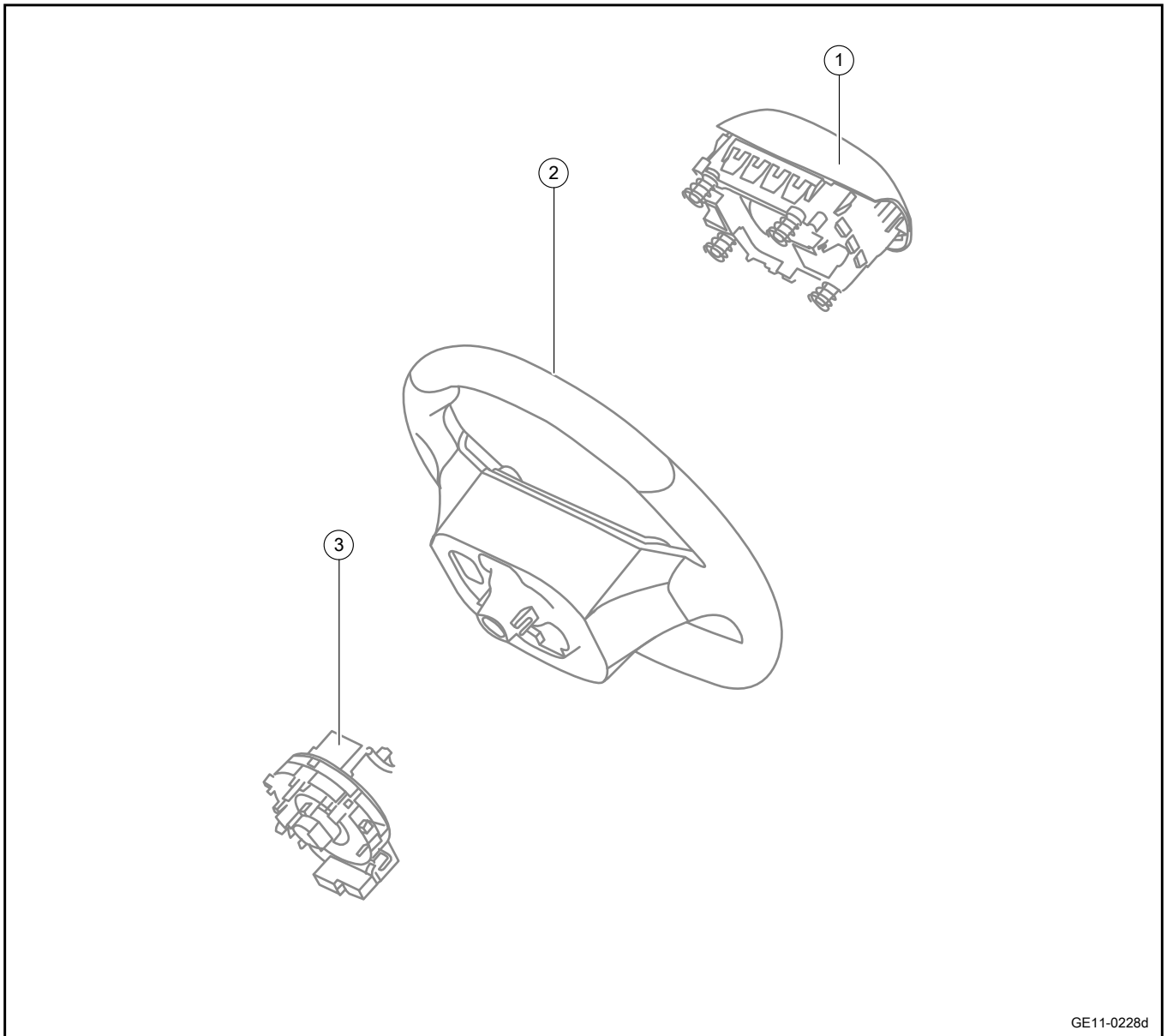
GE08-0102d

- |   |   |
|---|---|
| 1. Passenger airbag                             | 7. Driver airbag                                  |
| 2. Passenger side collision sensor              | 8. Clock spring                                   |
| 3. Right curtain airbag                         | 9. Airbag ECU                                     |
| 4. Left curtain airbag                          | 10. Frontal collision sensor (left/right)         |
| 5. Front-row left side airbag (in the backrest) | 11. Frontal collision sensor (right)              |
| 6. Driver side collision sensor                 | 12. Front-row right side airbag (in the backrest) |



8.2.5 Exploded view

8.2.5.1 Breakdown Drawing



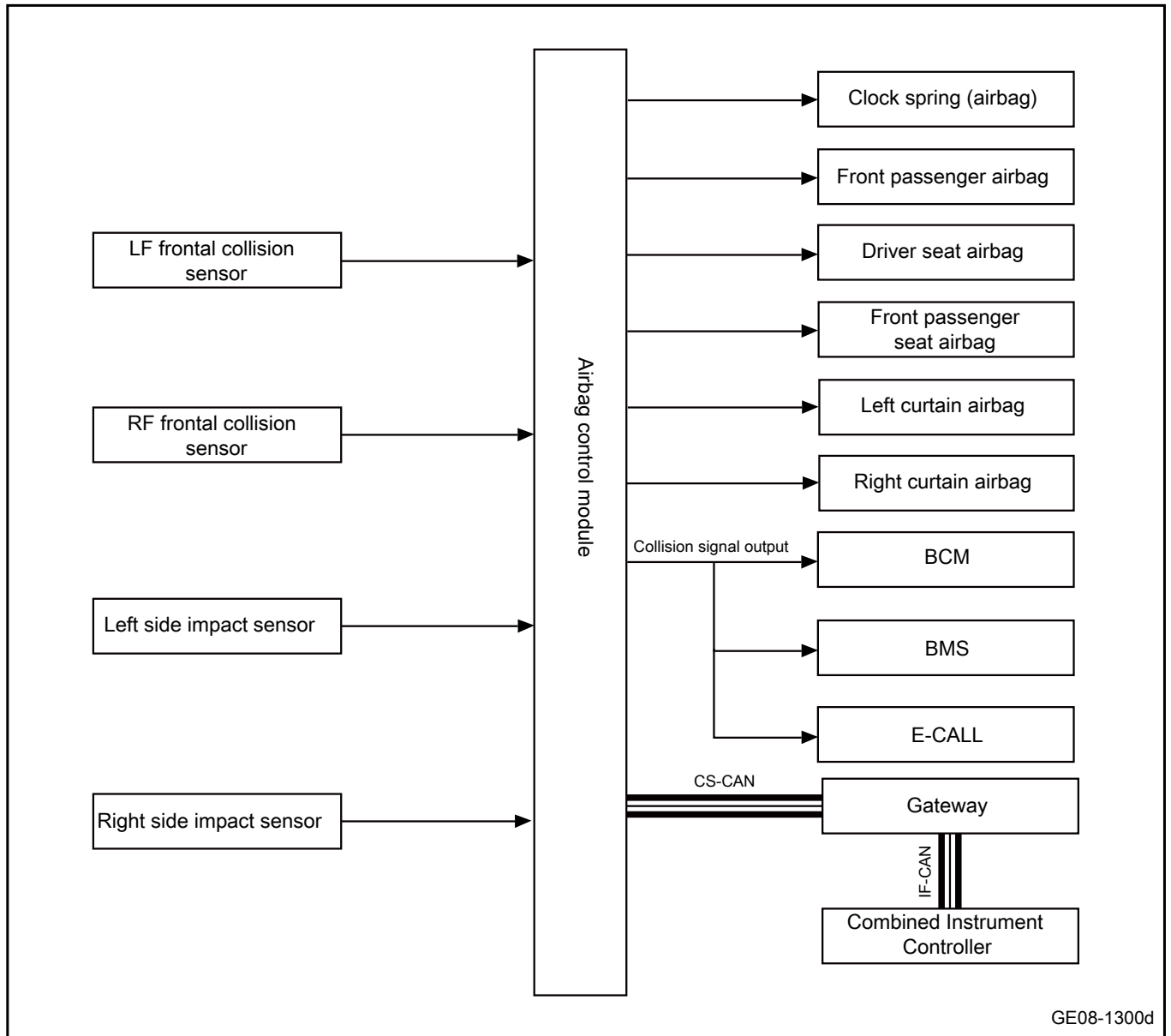
GE11-0228d

- 1. Driver seat airbag
- 2. Steering wheel assembly

- 3. Clock spring

8.2.6 Electrical schematic diagram

8.2.6.1 Schematic diagram of the electrical principle of the airbag system



## 8.2.7 Diagnostic information and steps

### 8.2.7.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

### 8.2.7.2 Routine inspection

- Confirm faults symptoms.

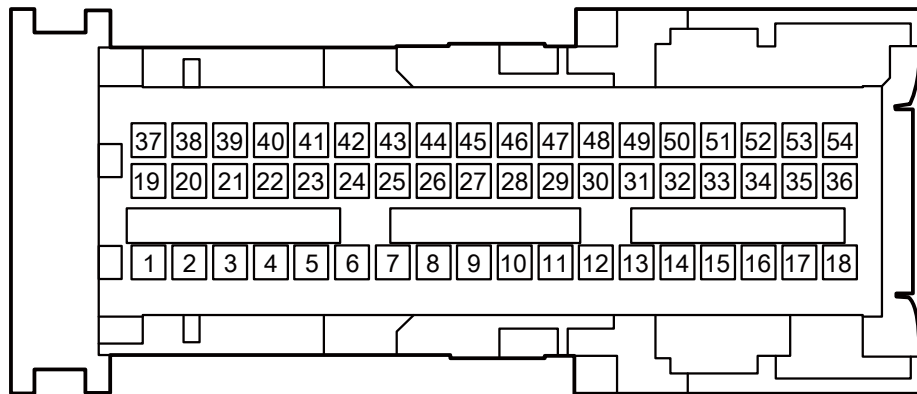
The most difficult situation during diagnostic completed is that no symptoms appear. Under the circumstances, the fault described by the user must be thoroughly analyzed. Then it is needed to simulate the same or similar conditions and environments when the customer's vehicle fault occurs. No matter how experienced and skilled the maintenance personnel is, if the fault symptoms are not confirmed before diagnostic completed, something important during repair will be missed and some wrong guess will be made, which will result in diagnostic completed unable to proceed.

- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
  - Pivot for connector joint and vibration should be the main part subject to a thorough examination. If the fault is caused by vibration, the vibration method is recommended.
1. Gently vibrate the possible fault part with fingers, and check whether the fault occurs.
  2. Gently shake the connector in both vertical and horizontal directions.
  3. Gently shake the harness in both vertical and horizontal directions.

## 8.2.7.3 List of ACU terminals

## SO60c airbag control module harness connector A

### SO60c airbag control module harness connector A



GE08-1321d

Terminal No.	Terminal name	Terminal description
1	-	-
2	CS CAN-H	Chassis CAN high line
3	CS CAN-L	Chassis CAN low line
4	Driver front airbag signal positive	Driver's frontal airbag signal (positive signal)
5	Driver front airbag signal negative	Driver's frontal airbag signal (negative signal)
6	Passenger detecting switch signal positive	Front passenger detecting switch signal (positive signal)
7	-	-
8	Front passenger seat belt buckle switch signal positive	Front passenger seat belt buckle switch signal (positive signal)
9	Driver's seat belt buckle switch signal positive	Driver's seat belt buckle switch signal (positive signal)
10	Collision signal output	Collision signal output

Terminal No.	Terminal name	Terminal description
11	Seat belt buckle, front passenger detection switch signal is negative	Seat belt buckle, front passenger detection switch signal (negative signal)
12	FL frontal impact sensor positive	FL frontal collision sensor (positive signal)
13	FL frontal impact sensor negative	FL frontal collision sensor (negative signal)
14	FR frontal impact sensor negative	RF frontal collision sensor negative (negative signal)
15	FR frontal impact sensor positive	RF frontal collision sensor positive (positive signal)
16	Front passenger front airbag signal negative	Front passenger frontal airbag signal (negative signal)
17	-	-
18	Ground connection	Airbag module grounding circuit
19	-	-
20	Left side curtain airbag positive	Left air curtain signal (positive signal)
21	Left side curtain airbag negative	Left air curtain signal (negative signal)
22	Driver side airbag signal negative	Driver's side airbag signal (negative signal)
23	Driver side airbag signal positive	Driver's side airbag signal (positive signal)
24	The right middle seat belt buckle switch signal is positive	Right middle side seat belt buckle switch signal (positive signal)
25	The left rear seat belt buckle switch signal is positive	Left rear seat belt buckle switch signal (positive signal)
26	-	-
27	The signal of the rear right seat belt buckle switch is positive	Rear right seat belt buckle switch signal (positive signal)
28	-	-
29	-	-
30	Right side impact sensor positive	Right side collision sensor (positive signal)
31	Right side impact sensor negative	Right side collision sensor (negative signal)

Terminal No.	Terminal name	Terminal description
32	Left side impact sensor negative	Left side collision sensor (negative signal)
33	Left side impact sensor positive	Left side collision sensor (positive signal)
34	Front passenger front airbag signal positive	Front passenger frontal airbag signal (positive signal)
35	-	-
36	IG1 power supply	Airbag module ACC\ON\START power supply
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	-	-
49	-	-
50	-	-
51	Front passenger side airbag negative	Front passenger side airbag signal (negative signal)
52	Front passenger side airbag positive	Front passenger side airbag signal (positive signal)
53	Right side curtain airbag signal positive	Right air curtain signal (positive signal)
54	Right side curtain airbag signal negative	Right air curtain signal (negative signal)

#### 8.2.7.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Airbag control module power supply failure	1. Harness and connector	Refer to the <a href="#">Power Failure for Airbag Control Module</a>
	2. Battery	
	3. Fuse	
	4.ACUC	
Internal Failure of Airbag Control Module	1. ACUC	See <a href="#">Internal Failure of Airbag Control Module</a>
Airbag control module communication failure	1. Harness and connector	See <a href="#">Communication Failure of Airbag Control Module</a>
	2.ACUC	

Fault Symptom	Suspected fault location	Maintenance plan
	3. Gateway	
Airbag warning indicator lamp failure	1. Harness and connector	See <a href="#">Airbag Warning Lamp Failure</a>
	2.ACUC	
	3. Gateway	
	4. Instrument cluster control unit	
Collision signal failure	1. Harness and connector	See <a href="#">Collision signal failure</a>
	2.ACUC	
	3.BCM	
	4.E-CALL	
	5.BMS	
Collision sensor failure	1. Harness and connector	Refer to <a href="#">Collision sensor failure</a>
	2.ACUC	
	3. Impact sensor	
Driver seat airbag fault	1. Harness and connector	Refer to <a href="#">Driver airbag failure</a>
	2.ACUC	
	3. Driver seat airbag	
Front passenger airbag failure	1. Harness and connector	Refer to <a href="#">Front passenger airbag failure</a>
	2.ACUC	
	3. Front passenger airbag	
Driver side airbag fault	1. Harness and connector	Refer to <a href="#">Driver side airbag failure</a>
	2.ACUC	
	3. Driver side airbag	
Left curtain airbag	1. Harness and connector	See <a href="#">Left Air Curtain Failure</a>
	2.ACUC	
	3. Left curtain airbag	
Front passenger side airbag fault	1. Harness and connector	Refer to <a href="#">Front passenger side airbag failure</a>
	2.ACUC	
	3. Front passenger side airbag	
Right curtain airbag failure	1. Harness and connector	See <a href="#">Right Air Curtain Failure</a>
	2.ACUC	
	3. Right curtain airbag	

### 8.2.7.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller voltage is low.	Refer to the <a href="#">Power Failure for Airbag Control Module</a>
U300617	Controller voltage is high.	
U007300	CAN bus off	See <a href="#">Communication Failure of Airbag Control Module</a>
U011087	Communication with IPU module is lost	
U012287	Communication with ESP module is lost	
U012687	Communication with SAS module is lost	
U015587	Communication with IPK module is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method	
U014087	Communication with BCM module is lost		
U111487	Communication with VCU module is lost		
U130055	ACU configuration words are not written in	See <a href="#">Internal Failure of Airbag Control Module</a>	
B120009	Internal error		
B120168	Front impact burst		
B120354	IMU calibration is not performed		
B120392	IMU Calibration failed		
B120468	Side impact burst		
B120568	Back impact burst		
U130155	Node configuration code is not written		
B121C52	EDR Locked		
B000111	Driver side airbag is short to the GND		Refer to <a href="#">Driver airbag failure</a>
B000112	Driver side airbag is short-circuited to power supply		
B00011A	Driver side airbag with low resistance		
B00011B	Driver side airbag with high resistance		
B00014A	Driver's airbag circuit plug-in connection error		
B000195	Driver side airbag configuration error		
B000211	Front passenger airbag is short-circuited to the GND	Refer to <a href="#">Front passenger airbag failure</a>	
B000212	Front passenger airbag is short-circuited to power supply		
B00021A	Front passenger airbag with low resistance		
B00021B	Front passenger airbag with high resistance		
B00024A	Front passenger's airbag circuit plug-in connection error		
B000295	Front passenger airbag configuration error		
B002011	The left airbag of the first row is short-circuited to ground	Refer to <a href="#">Driver side airbag failure</a>	
B002012	The left airbag of the first row is short-circuited to the power supply		
B00201A	Low resistance of the left airbag in the first row		



Diagnostic Trouble Code	Description	Fault location/elimination method
B00201B	High resistance of the left airbag in the first row	
B00204A	The connector of the left airbag circuit of the first row is incorrectly plugged in	
B002095	Wrong configuration of the left airbag in the first row	
B002111	The left air curtain is short-circuited to ground	See <a href="#">Left Air Curtain Failure</a>
B002112	The left air curtain is short-circuited to the power supply	
B00211A	Left curtain airbag with low resistance	
B00211B	Left curtain airbag with high resistance	
B00214A	The left air curtain circuit plug-in is incorrectly connected	
B002195	Incorrect configuration of the left air curtain	
B002811	The right airbag of the first row is short-circuited to ground	Refer to <a href="#">Front passenger side airbag failure</a>
B002812	The right airbag of the first row is short-circuited to the power supply	
B00281A	Low resistance of the right airbag in the first row	
B00281B	High resistance of the right airbag in the first row	
B00284A	The connector of the right airbag circuit of the first row is incorrectly plugged in	
B002895	Wrong configuration of the right airbag in the first row	
B002911	The right air curtain is short-circuited to ground	See <a href="#">Right Air Curtain Failure</a>
B002912	The right air curtain is short-circuited to the power supply	
B00291A	Right curtain airbag with low resistance	
B00291B	Right curtain airbag with high resistance	
B00294A	The right air curtain circuit plug-in is incorrectly connected	
B002995	Incorrect configuration of the right air curtain	
B009011	Left front frontal collision sensor is short to ground	Refer to <a href="#">Left front frontal collision sensor failure</a>

Diagnostic Trouble Code	Description	Fault location/elimination method
B009013	The front left frontal collision sensor is disconnected or is short-circuited to the power supply	
B009055	Left front frontal collision sensor configuration error	
B009081	Left front frontal collision sensor communication error	
B009086	Internal error of left front frontal collision sensor	
B009111	The left center column side collision sensor is short-circuited to ground	Refer to <a href="#">Left side collision sensor failure</a>
B009113	The left center column side collision sensor is disconnected or is short-circuited to the power supply	
B009155	Left middle column side collision sensor configuration error	
B009181	Left middle column side collision sensor communication error	
B009186	Internal error of left middle column side collision sensor	Refer to <a href="#">Right front frontal collision sensor failure</a>
B009511	Right front frontal collision sensor is short to ground	
B009513	The front right frontal collision sensor is disconnected or is short-circuited to the power supply	
B009555	Right front frontal collision sensor configuration error	
B009581	Right front frontal collision sensor communication error	
B009586	Internal error of right front frontal collision sensor	Refer to <a href="#">Right side collision sensor failure</a>
B009611	The right center column side collision sensor is short-circuited to ground	
B009613	The right center column side collision sensor is disconnected or is short-circuited to the power supply	
B009655	Right middle column side collision sensor configuration error	
B009681	Right middle column side collision sensor communication error	

Diagnostic Trouble Code	Description	Fault location/elimination method
B009686	Internal error of right middle column side collision sensor	
B00D296	Fault of system warning lamp	See <a href="#">Airbag Warning Lamp Failure</a>
B121E96	Hard wire collision output configuration error	See <a href="#">Collision signal failure</a>
B121E13	Hard wire collision output open circuit	
B121E12	Hard wire collision output is short-circuited to the power supply	
B121E11	Hard wire collision output is short-circuited to ground	

### 8.2.7.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 8.2.7.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

**8.2.7.8 Data stream list**

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Mileage before the first fault	0-999999	Km

**8.2.7.9 Airbag warning indicator lamp failure**

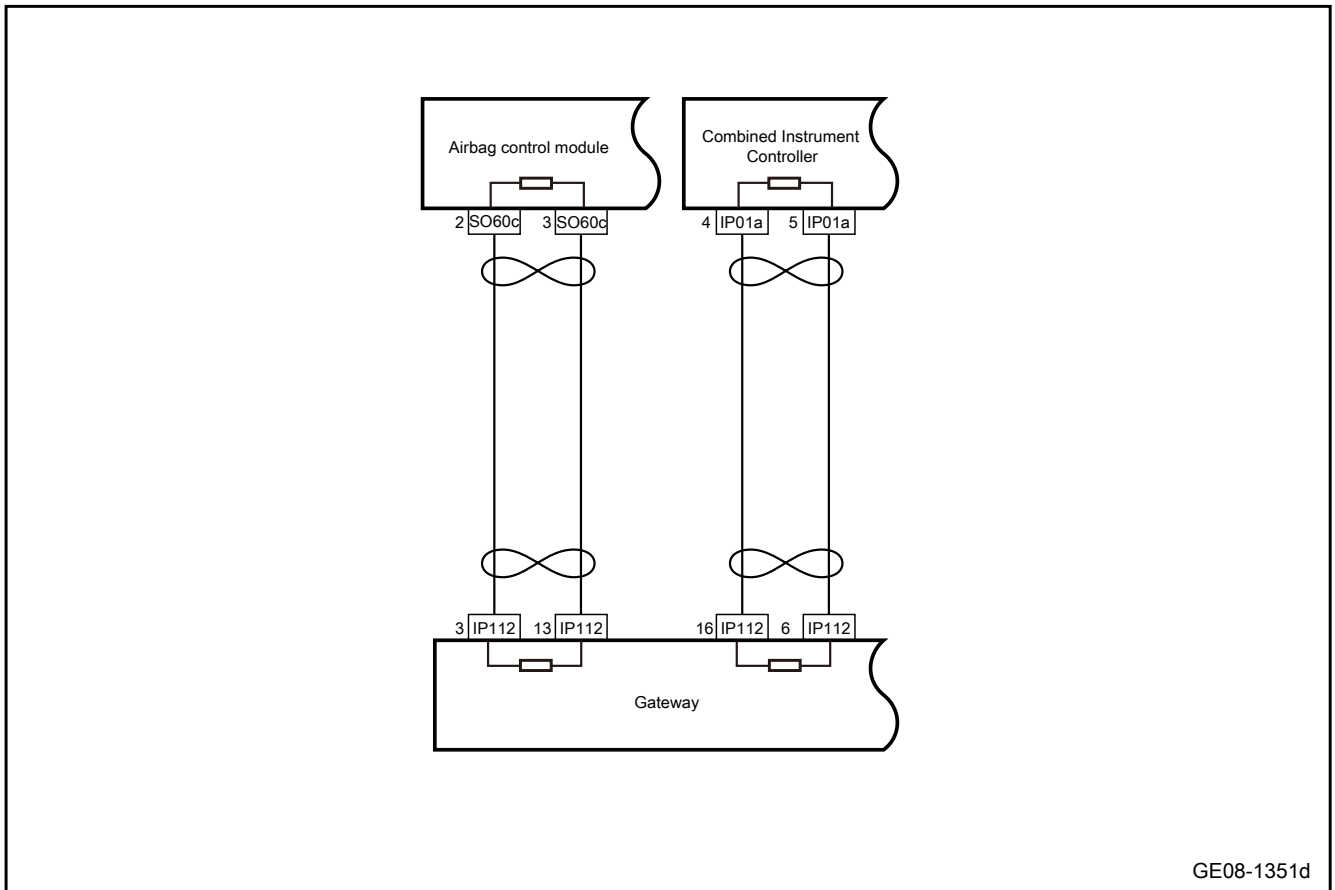
1. DTC description:

Diagnostic Trouble Code	Description
B00D296	Fault of system warning lamp

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B00D296	1. The warning lamp status sent by IP is 0x03 2. The warning lamp status sent by the IP and received by ABM is inconsistent with the warning lamp status sent by it.	Ignition voltage is normal for 7 seconds, power supply is 9V-16V	1. Communication circuit 2. Supplementary restraint system

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the instrument cluster control unit, gateway and airbag control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the instrument cluster, gateway, and airbag control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5	Replace the instrument cluster controller.
--------	--

- A. Check the instrument cluster power supply and grounding harness. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller. Refer to [Replacement of instrument cluster controller](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 7	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 9	System is normal.
--------	-------------------

### 8.2.7.10 Fault of left front frontal impact sensor

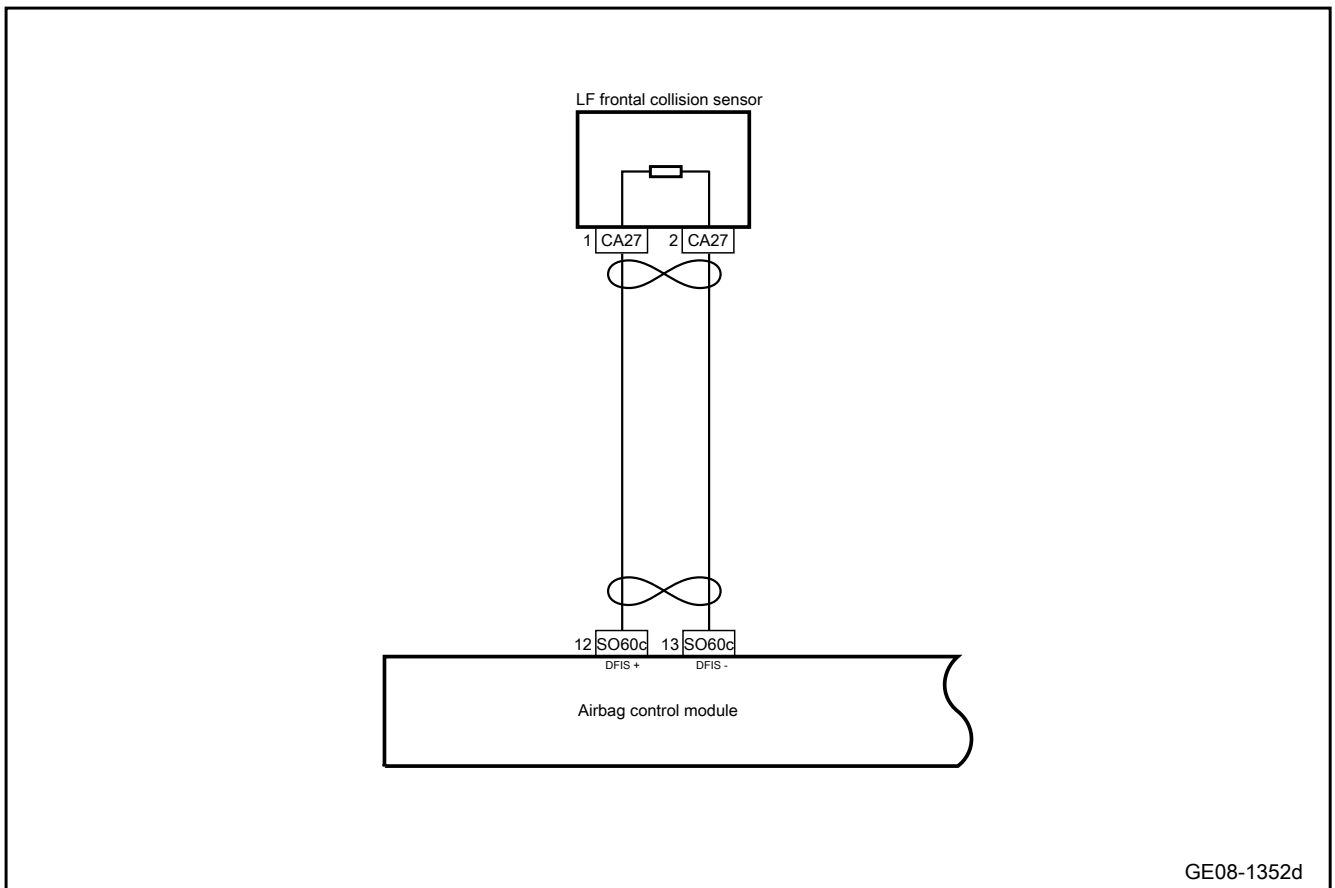
1. DTC description:

Diagnostic Trouble Code	Description
B009011	Left front frontal collision sensor is short to ground
B009013	The front left frontal collision sensor is disconnected or is short-circuited to the power supply
B009055	Left front frontal collision sensor configuration error
B009081	Left front frontal collision sensor communication error
B009086	Internal error of left front frontal collision sensor

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009011	The driver/front left restraint sensor is short-circuited to ground (200MSX5)	Power supply voltage is 9V-16V.	1. Circuit 2. Left front frontal impact sensor 3. Supplementary restraint system
B009013	The driver/front left restraint sensor is open-circuited or short-circuited to the battery (200MSX5)		
B009055	Driver/front left restraint sensor configuration error (200MSX5)		
B009081	Driver/Left Front Restraint Sensor Communication Error RSU Data Corresponding Position Error (200MSX5)		
B009086	The driver/front left restraint sensor data is not within the specified range (200MSX5)		

3. Schematic circuit diagram:





## 4. Diagnosis steps

## Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and left front frontal collision sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and left front frontal collision sensor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

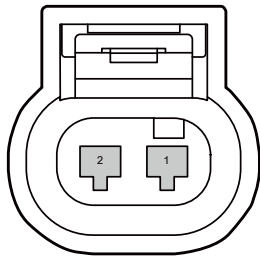
No

Repair or replace the faulty part.

Yes

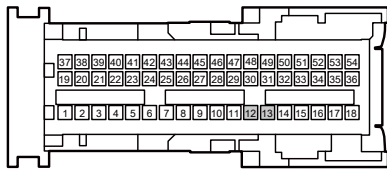
Step 3	Detect whether the harness between left front frontal impact sensor and airbag control module is open.
--------	--

CA27 harness connector of front left impact sensor



GE08-1451d

SO60c airbag control module harness connector A



GE08-1452d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	SO60c(12)	Standard resistance: less than 1Ω
CA27(2)	SO60c(13)	

- E. Confirm whether the measured value meets the standard.

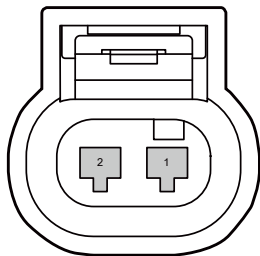
No

Repair or replace the harness.

Yes

**Step 4** Detect whether the harness between left front frontal impact sensor and airbag control module is short to power supply.

CA27 harness connector of front left impact sensor



GE08-1453d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	Vehicle body is grounded.	Standard voltage: 0V
CA27(2)		

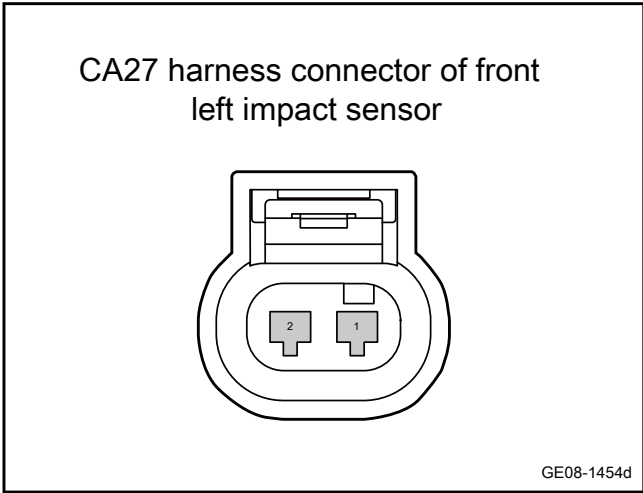
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the harness between left front frontal impact sensor and airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA27(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left front frontal impact sensor.

- A. Replace the left front frontal impact sensor. Refer to [Replacement of left front frontal collision sensor](#)
- B. Confirm whether the left front frontal impact sensor is in normal operation.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 8** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.11 FR frontal collision sensor faults

#### 1. DTC description:

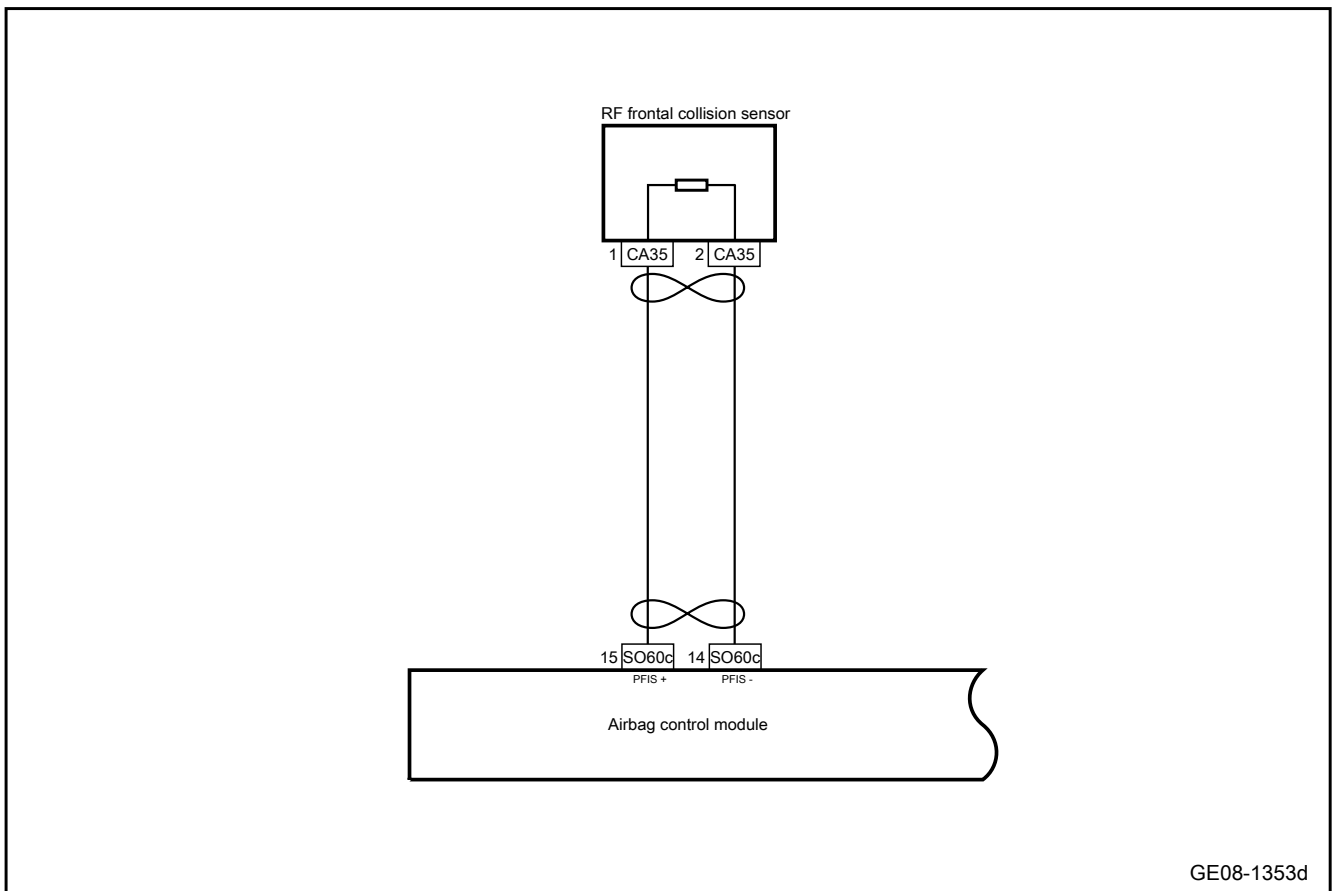
Diagnostic Trouble Code	Description
B009511	Right front frontal collision sensor is short to ground
B009513	The front right frontal collision sensor is disconnected or is short-circuited to the power supply
B009555	Right front frontal collision sensor configuration error
B009581	Right front frontal collision sensor communication error
B009586	Internal error of right front frontal collision sensor

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009511	Passenger/front right restraint sensor is short-circuited to ground (200MSX5)	Power supply voltage is 9V-16V.	1. Circuit 2. FR frontal collision sensor 3. Supplementary restraint system

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009513	Passenger/front right restraint sensor open circuit or short-circuited to battery (200MSX5)		
B009555	Passenger/front right restraint sensor configuration error (200MSX5)		
B009581	Passenger/Right Front Restraint Sensor Communication Error RSU Data Corresponding Position Error (200MSX5)		
B009586	Passenger/front right restraint sensor data is not within the specified range (200MSX5)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and right front frontal collision sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and the harness connector of the FR frontal collision sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

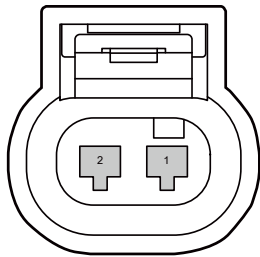
No

Repair or replace the faulty part.

Yes

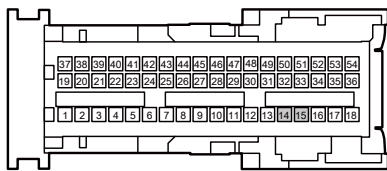
Step 3	Detect whether the harness between the FR frontal collision sensor and the airbag control module is circuit open.
--------	---

CA35 harness connector of front right impact sensor



GE08-1455d

SO60c airbag control module harness connector A



GE08-1456d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal collision sensor CA35.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	SO60c(15)	Standard resistance: less than 1Ω
CA35(2)	SO60c(14)	

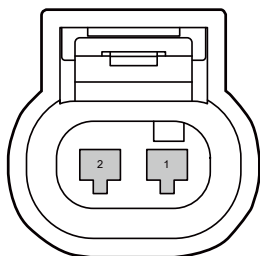
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 4** Detect whether the harness between the FR frontal collision sensor and the airbag control module is shorted to power supply.

CA35 harness connector of front right impact sensor



GE08-1457d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal collision sensor CA35.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	Vehicle body is grounded.	Standard voltage: 0V
CA35(2)		

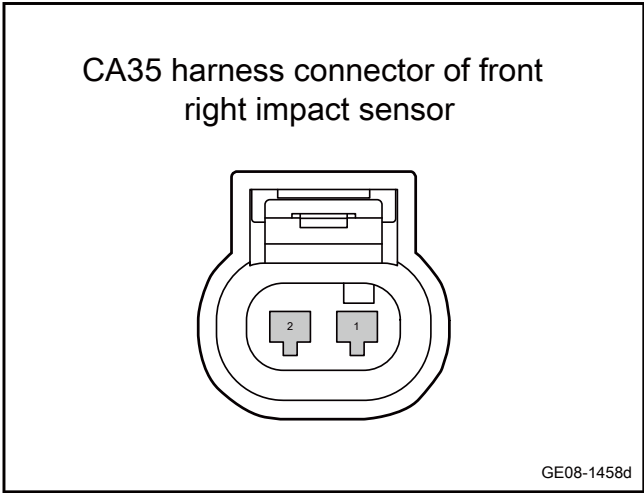
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the harness between the FR frontal collision sensor and the airbag control module is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal collision sensor CA35.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA35(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the FR frontal collision sensor.

- A. Replace the FR frontal collision sensor. Refer to [Replacement of the right front frontal collision sensor](#)
- B. Confirm whether the FR frontal collision sensor operates normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step



Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 8.2.7.12 Left collision sensor fault

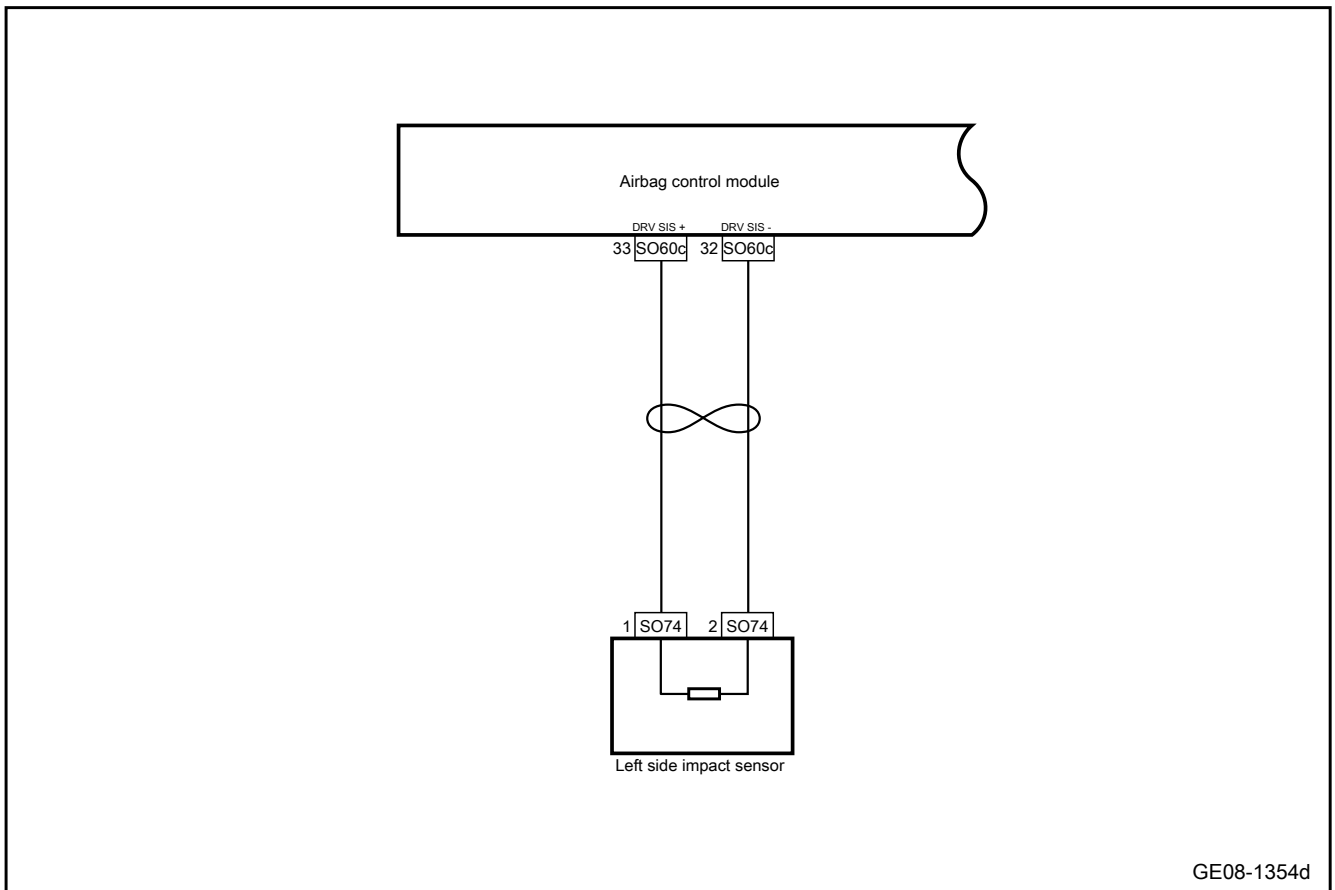
1. DTC description:

Diagnostic Trouble Code	Description
B009111	The left center column side collision sensor is short-circuited to ground
B009113	The left center column side collision sensor is disconnected or is short-circuited to the power supply
B009155	Left middle column side collision sensor configuration error
B009181	Left middle column side collision sensor communication error
B009186	Internal error of left middle column side collision sensor

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009111	The driver/front left restraint sensor is short-circuited to ground (200MSX5)	Power supply voltage is 9V-16V.	1. Circuit 2. Left collision sensor 3. Supplementary restraint system
B009113	The driver/front left restraint sensor is open-circuited or short-circuited to the battery (200MSX5)		
B009155	Driver/front left restraint sensor configuration error (200MSX5)		
B009181	RSU data corresponding position error (200msx5)		
B009186	The data is not within the specified range (200msx5)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the airbag control module and left side collision sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and harness connector of left collision sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

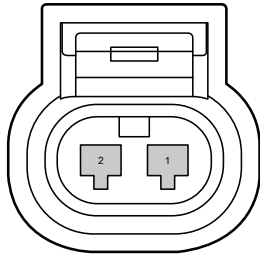
No

Repair or replace the faulty part.

Yes

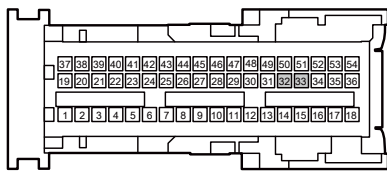
Step 3 Check whether harnesses between the left collision sensor and the airbag control module are open.

SO74 harness connector of left impact sensor



GE08-1459d

SO60c airbag control module harness connector A



GE08-1460d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left collision sensor SO74.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	SO60c(33)	Standard resistance: less than 1Ω
SO74(2)	SO60c(32)	

- E. Confirm whether the measured value meets the standard.

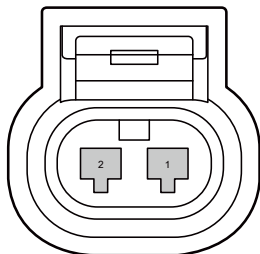
No

Repair or replace the harness.

Yes

**Step 4** Check whether harnesses between the left collision sensor and the airbag control module are shorted to power supply.

SO74 harness connector of left impact sensor



GE08-1461d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left collision sensor SO74.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	Vehicle body is grounded.	Standard voltage: 0V
SO74(2)		

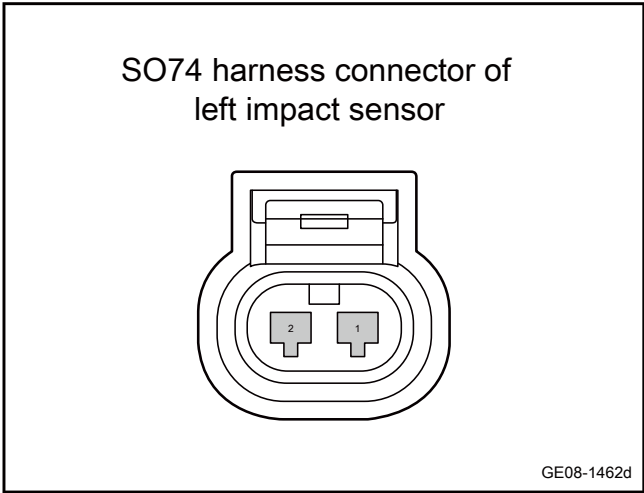
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether harnesses between the left collision sensor and the airbag control module are shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left collision sensor SO74.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO74(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replacement of the left collision sensor.

- A. Replacement of the left collision sensor. Refer to [Replacement of left side collision sensor](#)
- B. Confirm whether the left collision sensor works properly.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 8** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 8.2.7.13 Right side collision sensor fault

1. DTC description:

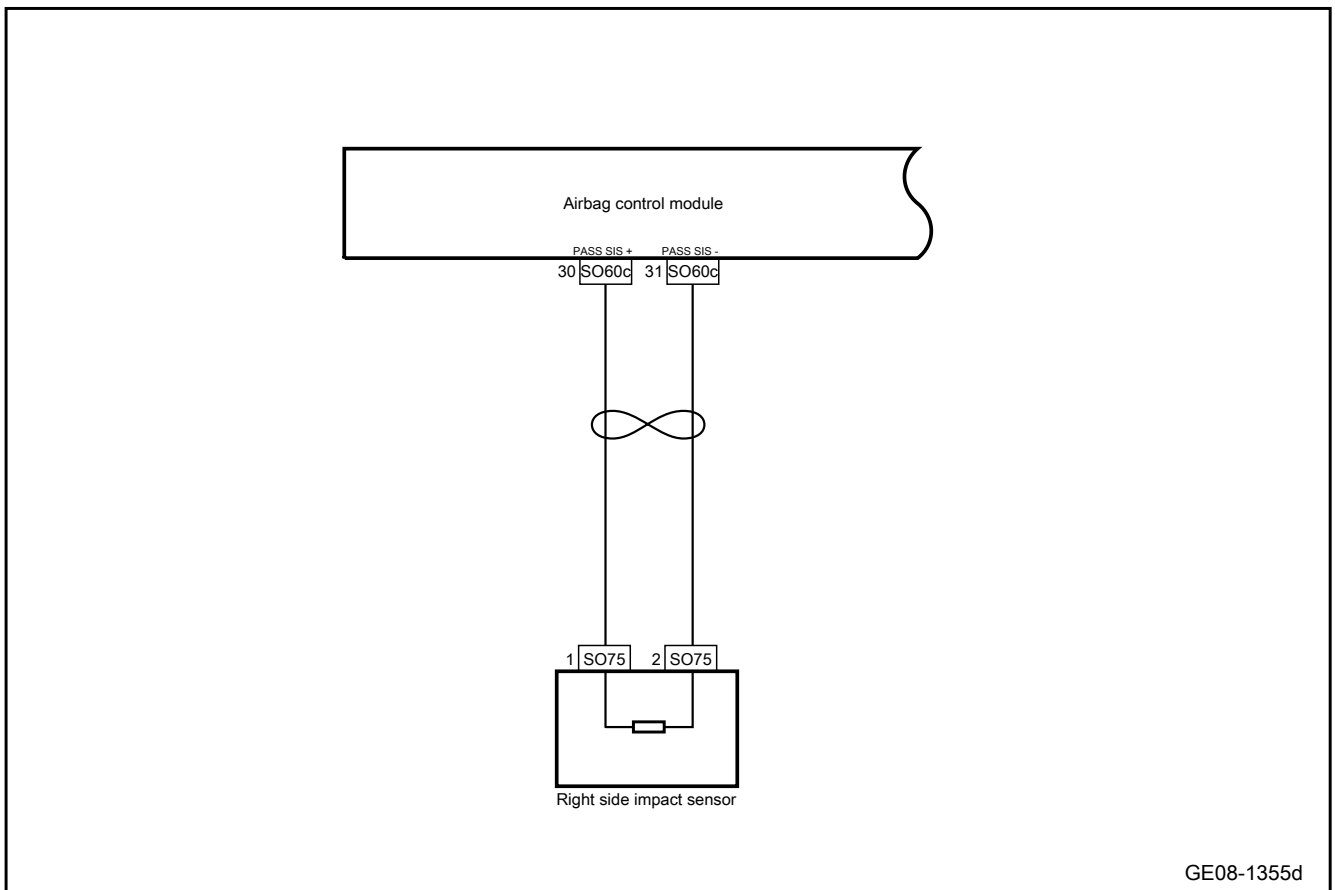
Diagnostic Trouble Code	Description
B009611	The right center column side collision sensor is short-circuited to ground
B009613	The right center column side collision sensor is disconnected or is short-circuited to the power supply
B009655	Right middle column side collision sensor configuration error
B009681	Right middle column side collision sensor communication error
B009686	Internal error of right middle column side collision sensor

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009611	Passenger/right restraint sensor is short-circuited to ground (200MSX5)	Power supply voltage is 9V-16V.	1. Circuit 2. Right side collision sensor 3. Supplementary restraint system

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009613	Passenger/right restraint sensor open circuit or short-circuited to battery (200MSX5)		
B009655	Passenger/right restraint sensor configuration error (200MSX5)		
B009681	Passenger/Right Restraint Sensor Communication Error RSU Data Corresponding Position Error (200MSX5)		
B009686	Passenger/right restraint sensor data is not within the specified range (200MSX5)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and right side collision sensor for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module, harness connector of the right collision sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

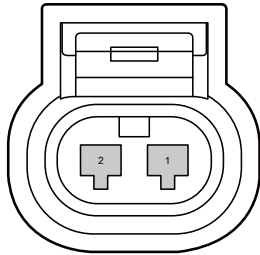
Repair or replace the faulty part.

Yes

Step 3	Detect whether the harness between the right side collision sensor and the airbag control module is open.
--------	---

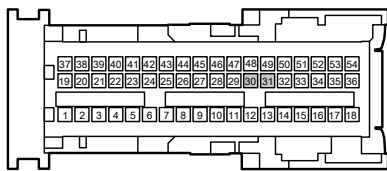


SO75 harness connector of right impact sensor



GE08-1463d

SO60c airbag control module harness connector A



GE08-1464d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right collision sensor SO75.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	SO60c(30)	Standard resistance: less than 1Ω
SO75(2)	SO60c(31)	

- E. Confirm whether the measured value meets the standard.

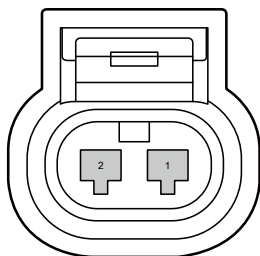
No

Repair or replace the harness.

Yes

**Step 4** Detect whether the harness between the right side collision sensor and the airbag control module is short to power supply.

SO75 harness connector of right impact sensor



GE08-1465d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right collision sensor SO75.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	Vehicle body is grounded.	Standard voltage: 0V
SO75(2)		

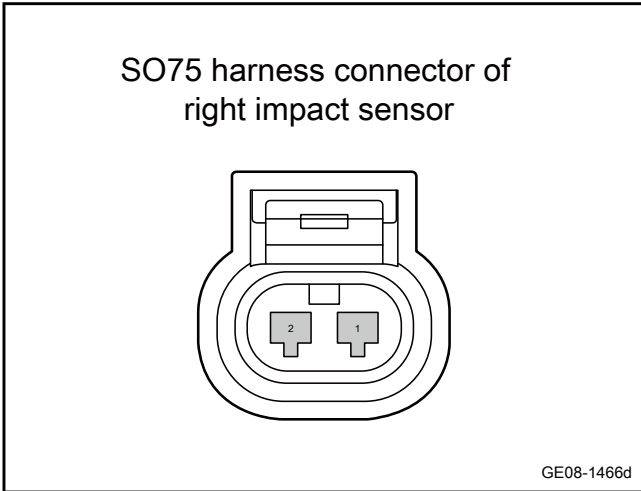
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the harness between the right side collision sensor and the airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right collision sensor SO75.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO75(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right side collision sensor.

- A. Replace the right side collision sensor. Refer to [Replacement of right side collision sensor](#)
- B. Confirm whether the right side collision sensor is in normal operation.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 8** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.14 Driver seat airbag fault

1. DTC description:

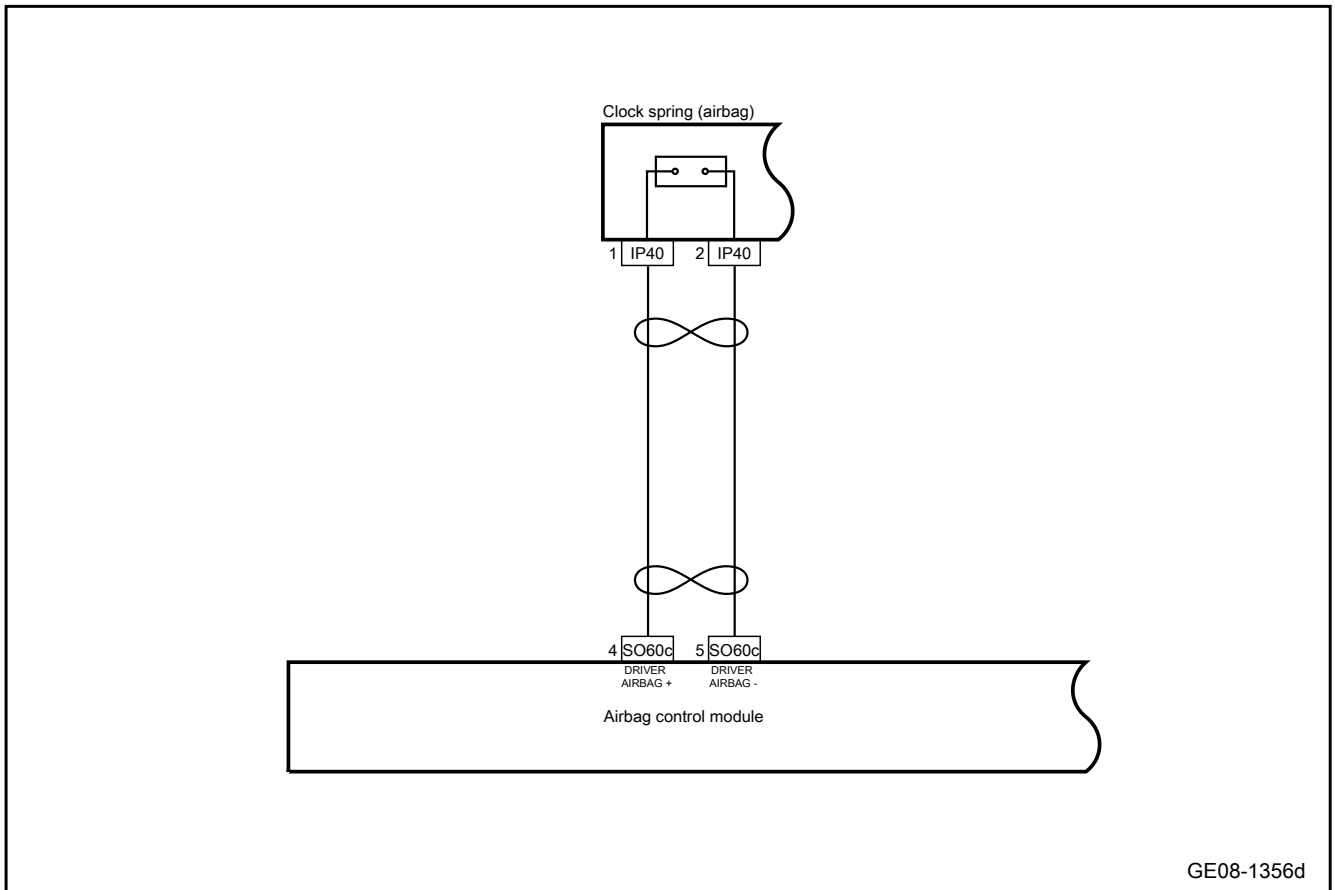
Diagnostic Trouble Code	Description
B000111	Driver side airbag is short to the GND
B000112	Driver side airbag is short-circuited to power supply
B00011A	Driver side airbag with low resistance
B00011B	Driver side airbag with high resistance
B00014A	Driver's airbag circuit plug-in connection error
B000195	Driver side airbag configuration error

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000111	The driver/left front airbag electric squib is short-circuited to ground for 2 seconds (500 milliseconds*4)	ACU's normal working voltage range: 9 V-16V	1. Circuit 2. Clock spring (airbag) 3. Supplementary restraint system

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000112	The driver/left front airbag electric squib is short-circuited to the power line for 2 seconds (500 milliseconds*4)		
B00011A	Driver/Left front airbag electric electric squib low resistance 2s (500ms*4) RES		
B00011B	Driver/Left front airbag electric electric squib 2 seconds high resistance (500ms*4) RES: 611OHM		
B00014A	The power supply terminal of the electric squib of the driver/left front airbag is connected in series with the power supply terminal of the other airbag, and the series resistance is less than 1000ohm for 2s (500ms*4)		
B000195	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



GE08-1356d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

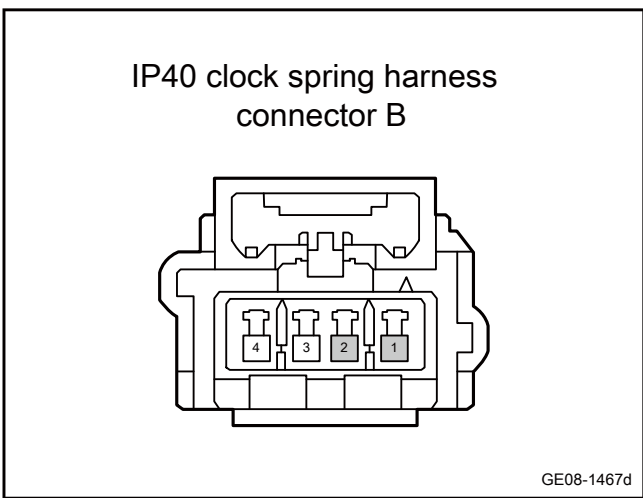
- A. Check the airbag control module and clock spring (airbag) for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and clock spring (airbag) harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

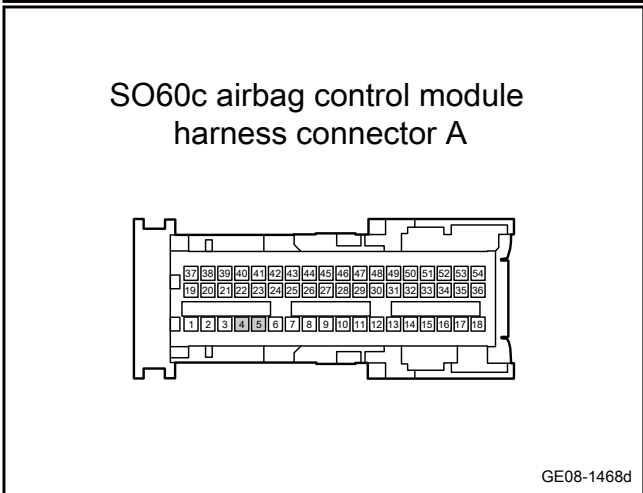
**Step 3** Check whether the harness between the clock spring (airbag) and the airbag control module is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (airbag) harness connector IP40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP40(2)	SO60c(5)	Standard resistance: less than 1Ω
IP40(1)	SO60c(4)	

- E. Confirm whether the measured value meets the standard.

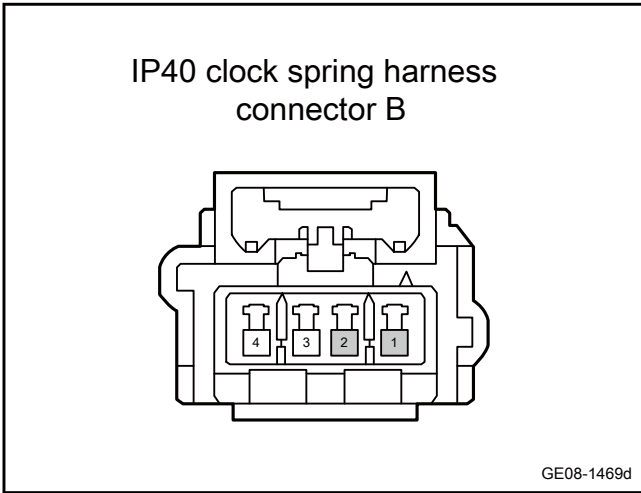


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the clock spring (airbag) and the airbag control module is short-circuited to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (airbag) harness connector IP40.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

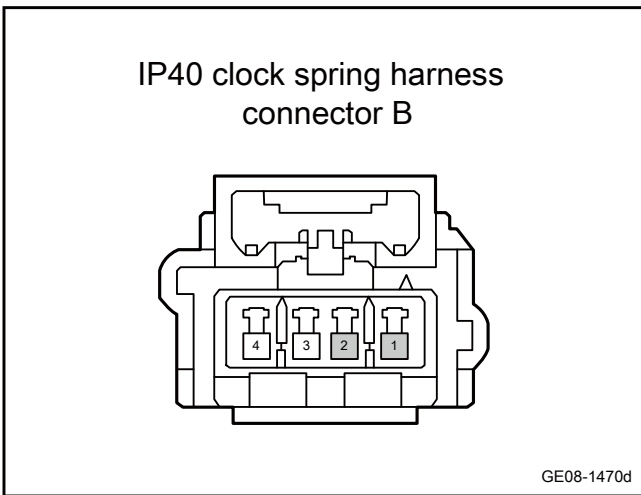
Measure terminal 1	Measure terminal 2	Standard value
IP40(2)	Vehicle body is grounded.	Standard voltage: 0V
IP40(1)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 5</b>	Check whether the harness between the clock spring (airbag) and the airbag control module is short-circuited to GND.
---------------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (airbag) harness connector IP40.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP40(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP40(1)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 6</b>	Replace the clock spring (airbag).
---------------	------------------------------------

- A. Replace the clock spring (airbag). See [Replacement of Clock Spring \(Airbag\)](#)
- B. Confirm whether the clock spring (airbag) works normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.



### 8.2.7.15 Front passenger airbag failure

#### 1. DTC description:

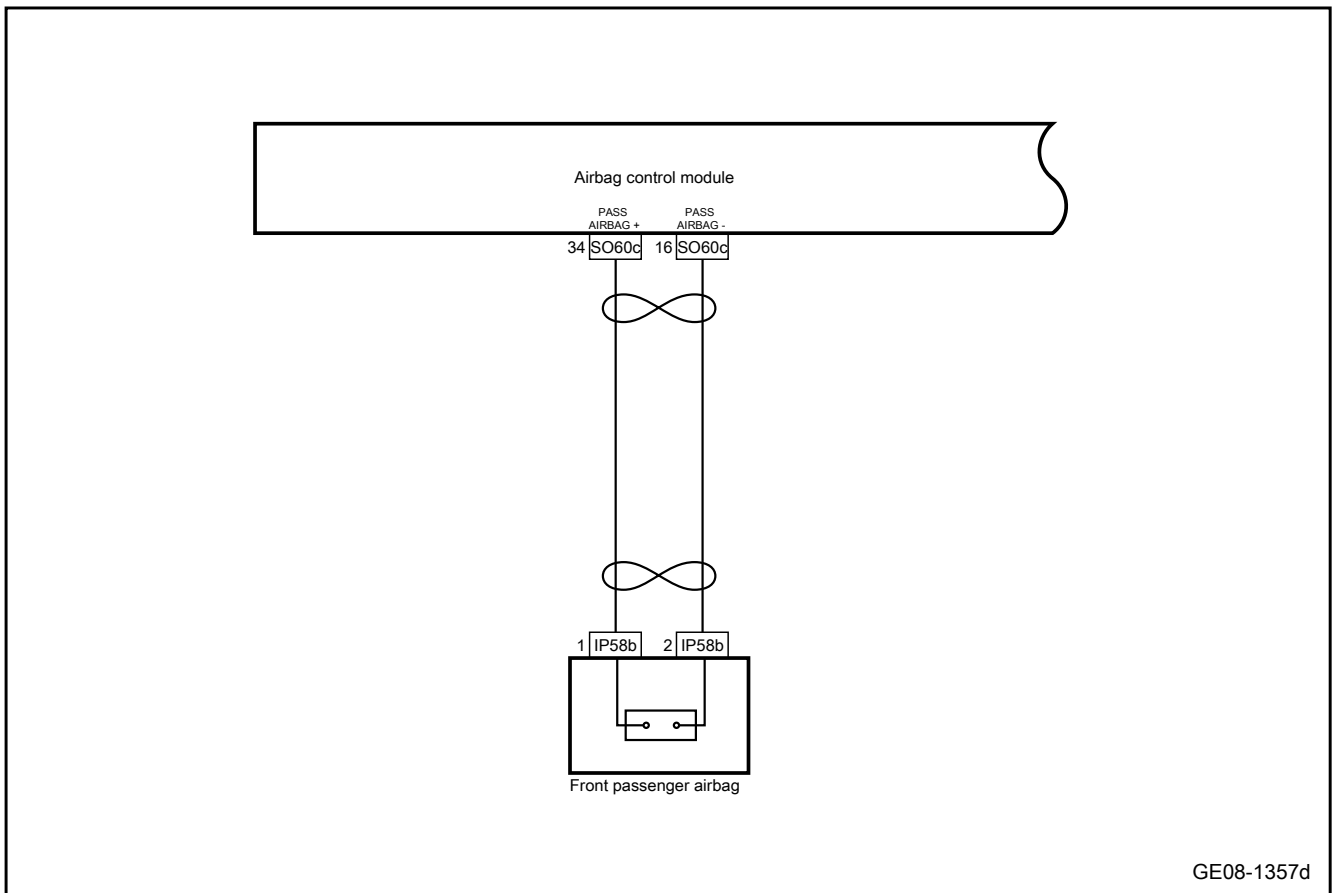
Diagnostic Trouble Code	Description
B000211	Front passenger airbag is short-circuited to the GND
B000212	Front passenger airbag is short-circuited to power supply
B00021A	Front passenger airbag with low resistance
B00021B	Front passenger airbag with high resistance
B00024A	Front passenger's airbag circuit plug-in connection error
B000295	Front passenger airbag configuration error

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000211	Passenger/right front airbag electric squib is short-circuited to ground 2.0s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Front passenger airbag 3. Supplementary restraint system
B000212	Passenger/right front airbag electric squib is short-circuited to power line 2.0s (500ms*4)		
B00021A	Passenger/right front airbag electric squib low resistance 2.0s (500ms*4) RES < 1.56OHM		
B00021B	Passenger/right front airbag electric squib high resistance 2.0s (500ms*4) Re>5.4 ohm		
B00024A	The power supply terminal of the electric blast tube of the passenger/right front airbag is connected in series with the power supply terminal of another airbag, and the series resistance is less than 1000ohm for 2.0s (500ms*4)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000295	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and front passenger airbag for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and front passenger airbag harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

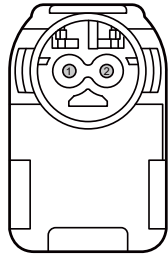
No

Repair or replace the faulty part.

Yes

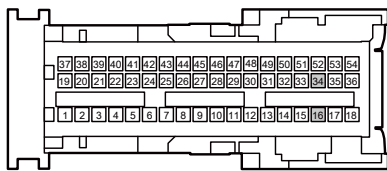
Step 3	Check whether the harness between the front passenger airbag and airbag control module is open circuit.
--------	---

IP58b front passenger airbag harness connector



GE08-1471d

SO60c airbag control module harness connector A



GE08-1472d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	SO60c(34)	Standard resistance: less than 1Ω
IP58b(2)	SO60c(16)	

- E. Confirm whether the measured value meets the standard.

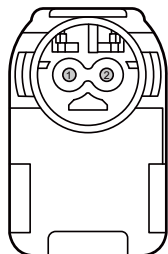
No

Repair or replace the harness.

Yes

Step 4 | Check whether the harness between front passenger airbag and airbag control module is short to power supply.

IP58b front passenger airbag harness connector



GE08-1473d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP58b(2)		

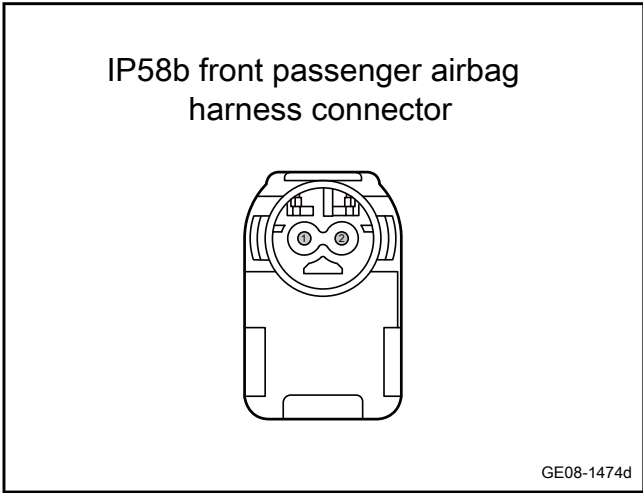
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the front passenger airbag and airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP58b(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the front passenger airbag.

- A. Replace the front passenger airbag. Refer to replacement of front passenger airbag
- B. Check whether the front passenger airbag works normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 8** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.16 Driver side airbag fault

#### 1. DTC description:

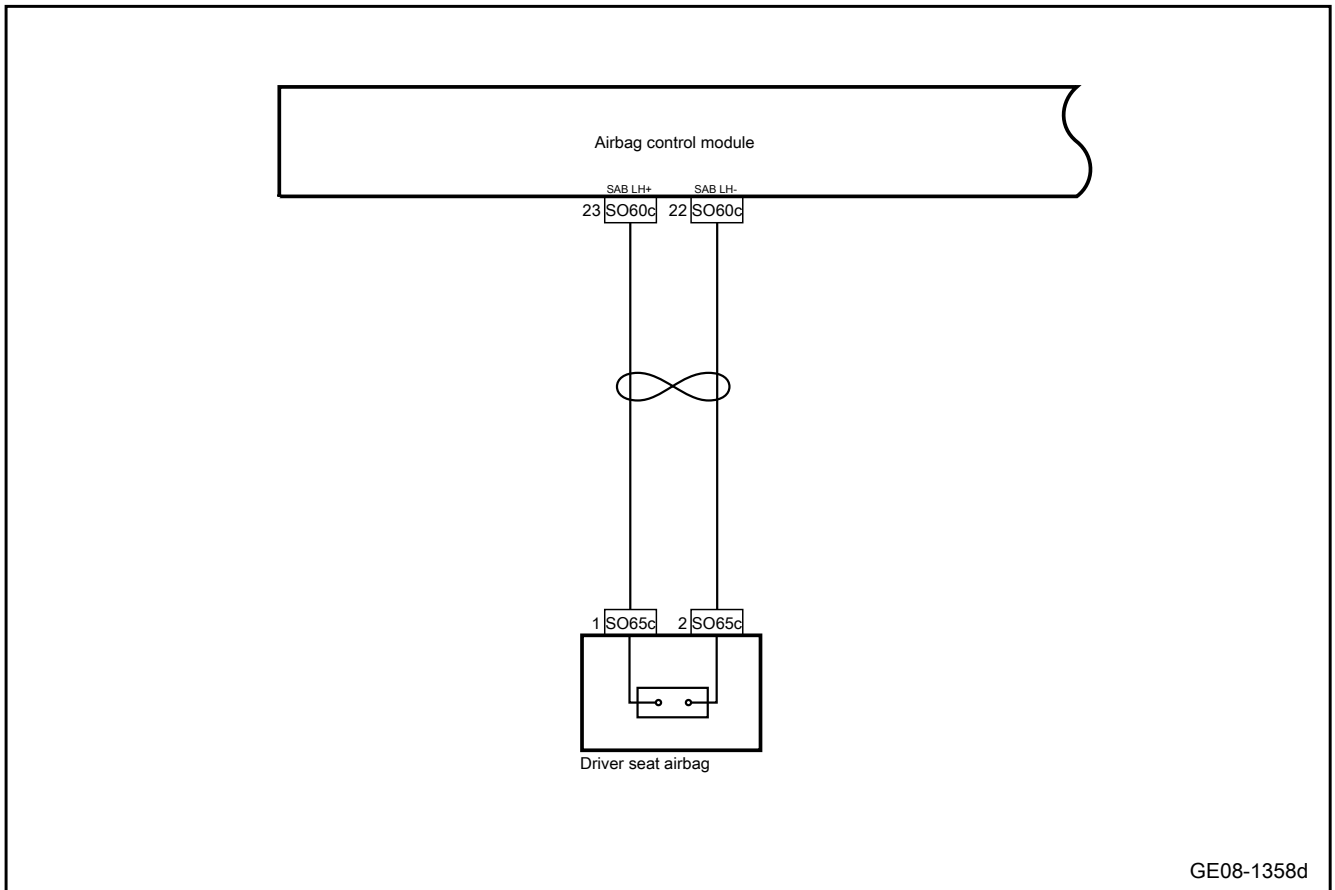
Diagnostic Trouble Code	Description
B002011	The left airbag of the first row is short-circuited to ground
B002012	The left airbag of the first row is short-circuited to the power supply
B00201A	Low resistance of the left airbag in the first row
B00201B	High resistance of the left airbag in the first row
B00204A	The connector of the left airbag circuit of the first row is incorrectly plugged in
B002095	Wrong configuration of the left airbag in the first row

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002011	The driver/left airbag electric squib is short-circuited to the ground for 2.0s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Driver side airbag 3. Supplementary restraint system

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002012	The passenger/right airbag electric squib is short-circuited to the power line for 2.0s (500ms*4)		
B00201A	Passenger/right airbag electric squib low resistance 2.0s (500ms*4) RES < 1.56OHM		
B00201B	Passenger/right airbag electric squib high resistance 2.0s (500ms*4) Re>5.4 ohm		
B00204A	The power supply terminal of the electric blast tube of the passenger/right airbag is connected in series with the power supply terminal of the other airbag, and the series resistance is less than 1000ohm for 2.0s (500ms*4)		
B002095	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------



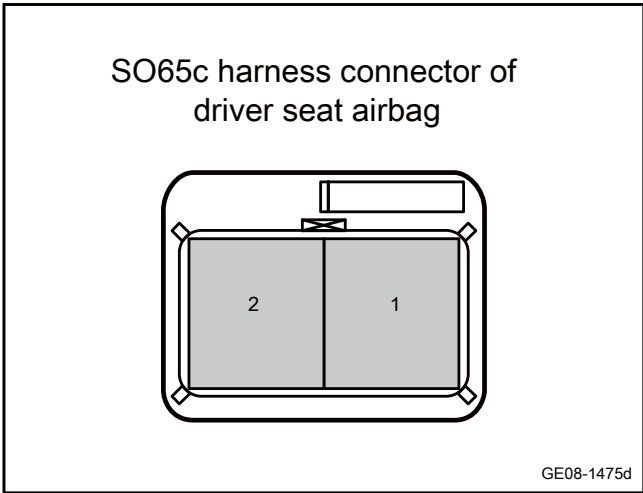
- A. Check the airbag control module and driver side airbag for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and driver side airbag harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

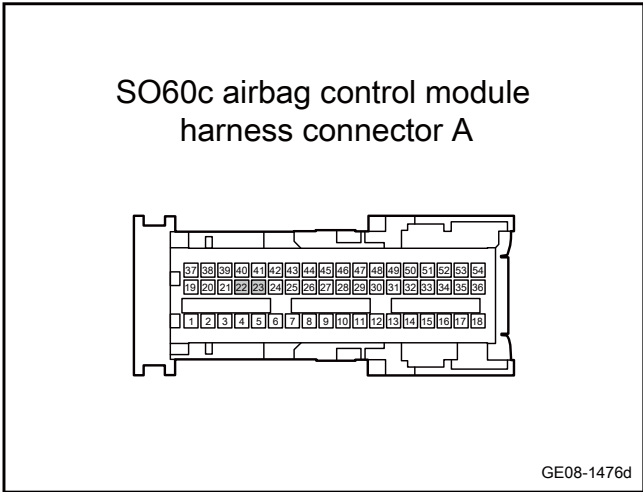
**Step 3** Check whether the harness between the driver side airbag and the airbag control module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	SO60c(23)	Standard resistance: less than 1Ω
SO65c(2)	SO60c(22)	

- E. Confirm whether the measured value meets the standard.

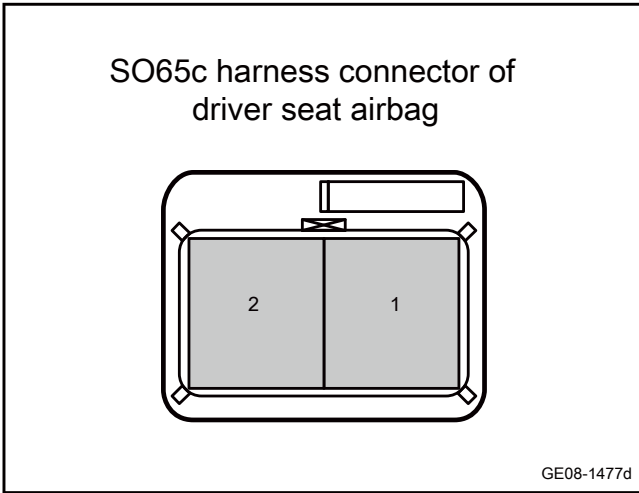


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the driver side airbag and the airbag control module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

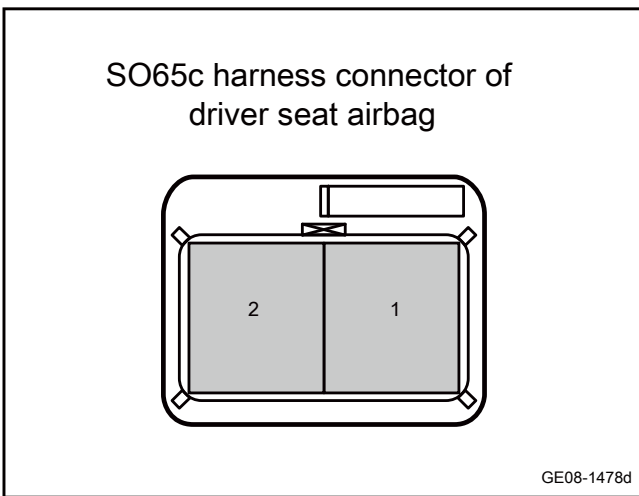
Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	Vehicle body is grounded.	Standard voltage: 0V
SO65c(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the driver side airbag and the airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO65c(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the driver side airbag.

- A. Replace the driver side airbag. Refer to [Replacement of driver side airbag](#)
- B. Confirm whether the driver side airbag works normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.17 Left curtain airbag

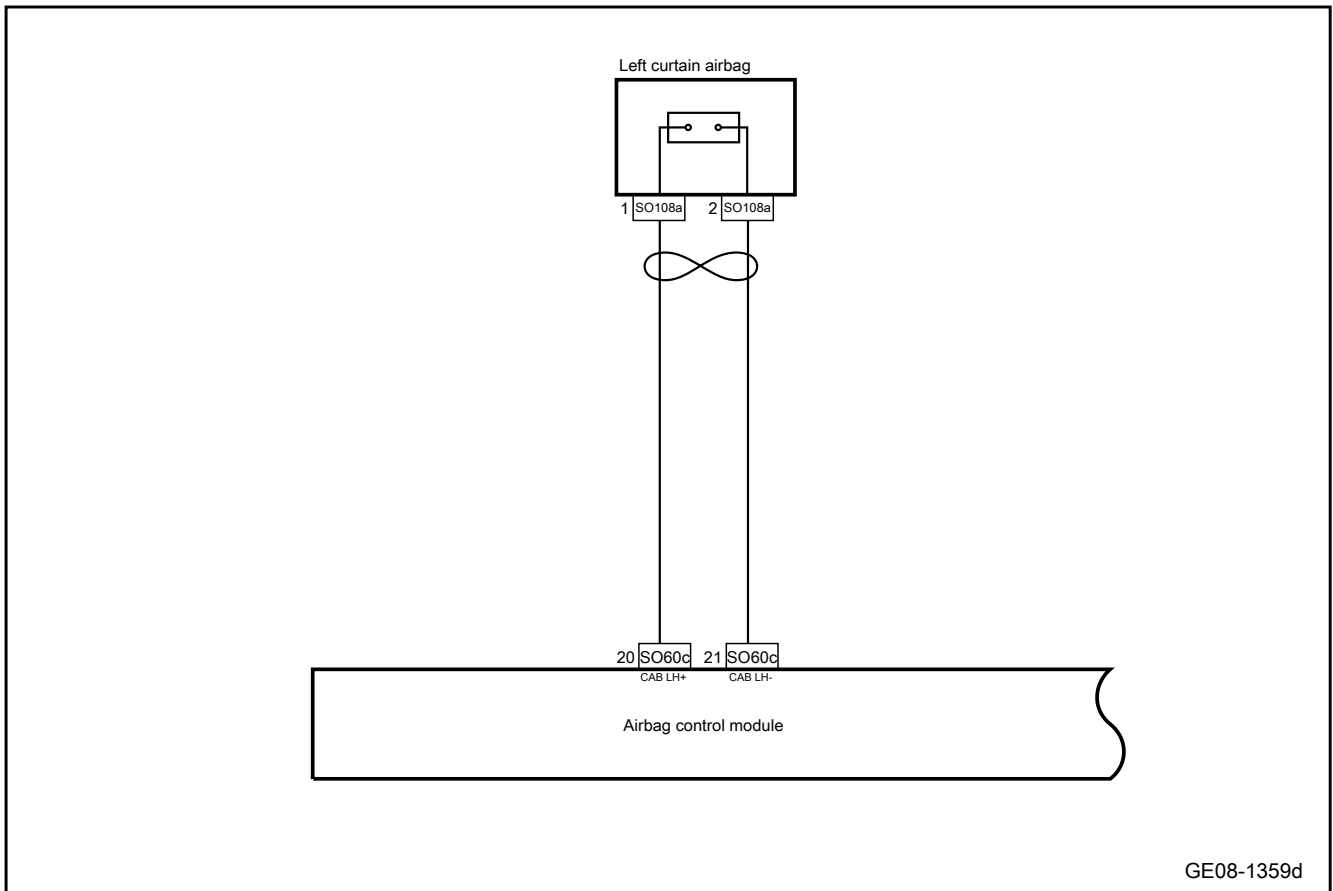
1. DTC description:

Diagnostic Trouble Code	Description
B002111	The left air curtain is short-circuited to ground
B002112	The left air curtain is short-circuited to the power supply
B00211A	Left curtain airbag with low resistance
B00211B	Left curtain airbag with high resistance
B00214A	The left air curtain circuit plug-in is incorrectly connected
B002195	Incorrect configuration of the left air curtain

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002111	The driver/left curtain airbag electric squib is short-circuited to the ground for 2.0s (500ms*4)	ACU's normal working voltage range: 9 V-16V	1. Circuit 2. Left curtain airbag 3. Supplementary restraint system
B002112	The driver/left curtain airbag electric squib is short-circuited to the power line for 2.0s (500ms*4)		
B00211A	Driver/left curtain airbag electric squib low resistance 2.0s (500ms*4) RES < 1.56OHM		
B00211B	Driver/left curtain airbag electric squib high resistance 2.0s (500ms*4) Re>5.4 ohm		
B00214A	The power supply terminal of the driver/left curtain airbag electric igniter is connected in series with the power supply terminal of the other airbag, and the series resistance is less than 1000ohm for 2.0s (500ms*4)		
B002195	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

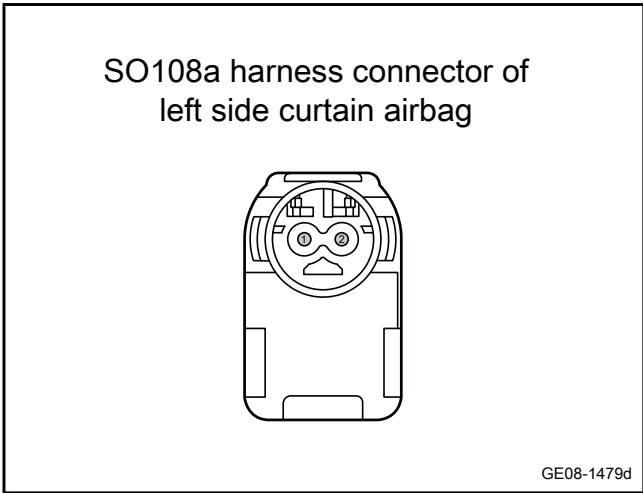
- A. Check the airbag control module and left curtain airbag for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and left curtain airbag harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

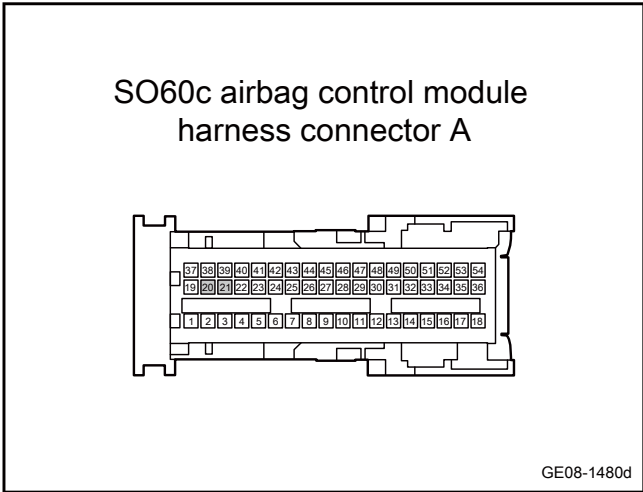
**Step 3** Check whether the circuit between left curtain airbag and airbag control module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left curtain airbag harness connector SO108a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO108a(2)	SO60c(21)	Standard resistance: less than 1Ω
SO108a(1)	SO60c(20)	

- E. Confirm whether the measured value meets the standard.

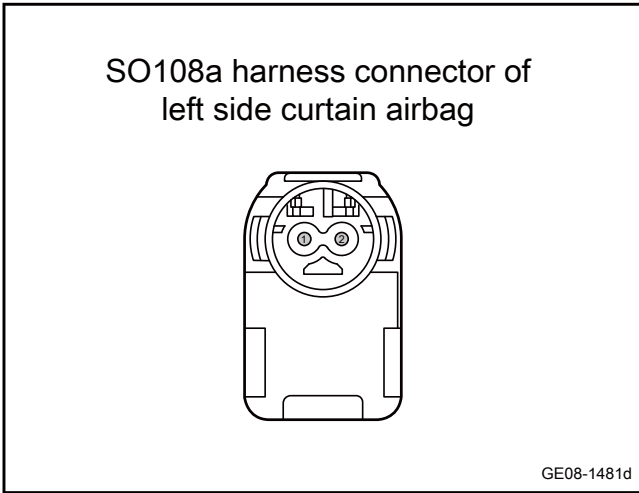


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between left curtain airbag and airbag control module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left curtain airbag harness connector SO108a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO108a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO108a(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Check whether the harness between left curtain airbag and airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left curtain airbag harness connector SO108a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO108a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO108a(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Replace the left curtain airbag.

- A. Replace the left curtain airbag. Refer to [Replacement of the left curtain airbag](#)
- B. Check whether the left curtain airbag works normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.18 Front passenger side airbag fault

1. DTC description:

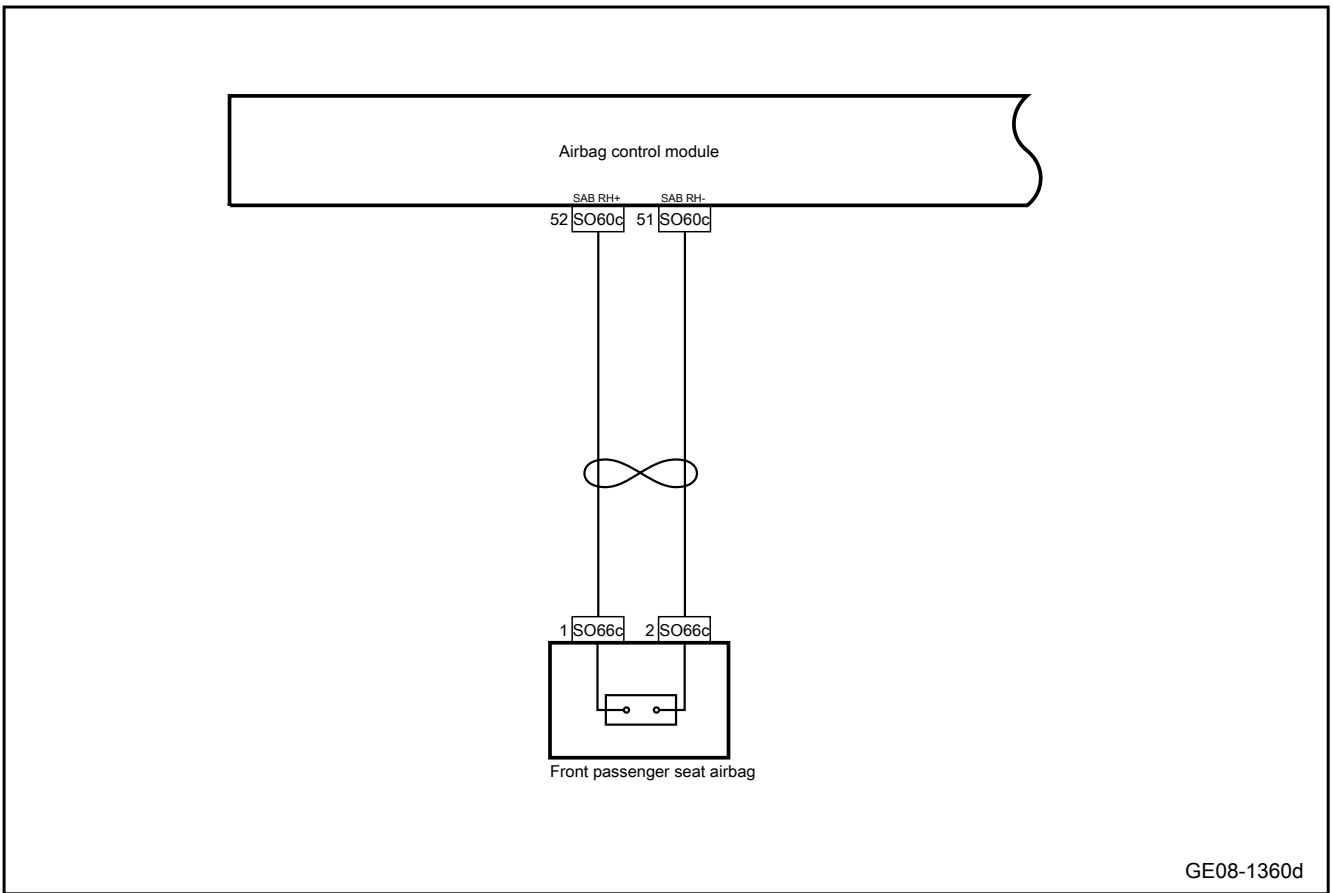


Diagnostic Trouble Code	Description
B002811	The right airbag of the first row is short-circuited to ground
B002812	The right airbag of the first row is short-circuited to the power supply
B00281A	Low resistance of the right airbag in the first row
B00281B	High resistance of the right airbag in the first row
B00284A	The connector of the right airbag circuit of the first row is incorrectly plugged in
B002895	Wrong configuration of the right airbag in the first row

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002811	Passenger/right airbag electric squib is short-circuited to ground 2.0s (500ms*4)	ACU's normal working voltage range: 9 V-16V	1. Circuit 2. Front passenger side airbag 3. Supplementary restraint system
B002812	The passenger/right airbag electric squib is short-circuited to the power line for 2.0s (500ms*4)		
B00281A	Passenger/right airbag electric squib low resistance 2.0s (500ms*4) RES < 1.56OHM		
B00281B	Passenger/right airbag electric squib high resistance 2.0s (500ms*4) Re>5.4 ohm		
B00284A	The power supply terminal of the electric blast tube of the passenger/right airbag is connected in series with the power supply terminal of the other airbag, and the series resistance is less than 1000ohm for 2.0s (500ms*4)		
B002895	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤

Refer to [Intermittent Trouble Check](#)

Yes ➤

Step 2	Primary check.
--------	----------------

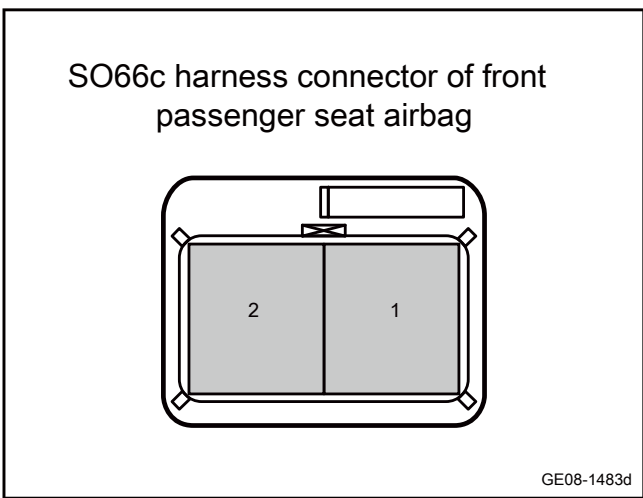
- A. Check the airbag control module and front passenger airbag for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and harness connector of front passenger side airbag for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

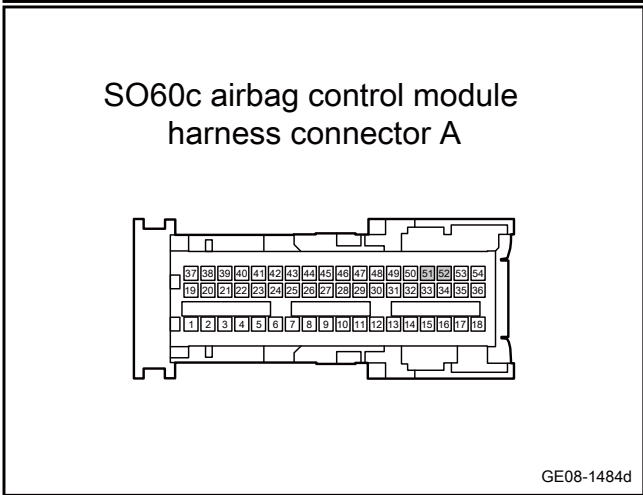
**Step 3** Check the harness between the front passenger side airbag and the airbag control module for an open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	SO60c(52)	Standard resistance: less than 1Ω
SO66c(2)	SO60c(51)	

- E. Confirm whether the measured value meets the standard.



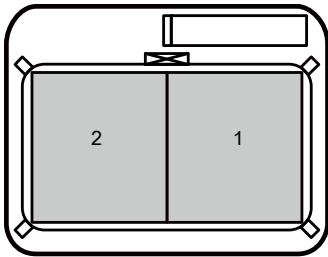
No

Repair or replace the harness.

Yes

**Step 4** Detect the harness between the front passenger side airbag and the airbag control module for a short to power supply.

SO66c harness connector of front passenger seat airbag



GE08-1485d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	Vehicle body is grounded.	Standard voltage: 0V
SO66c(2)		

- F. Confirm whether the measured value meets the standard.

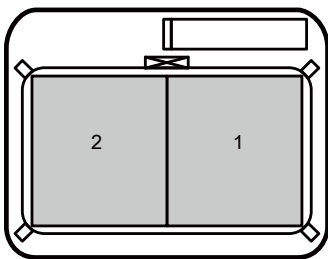
No

Repair or replace the harness.

Yes

Step 5 Check the harness between the front passenger side airbag and the airbag control module for a short to ground.

SO66c harness connector of front passenger seat airbag



GE08-1486d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO66c(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the front passenger side airbag.

- A. Replace the front passenger side airbag. Refer to [Replacement of front passenger airbag](#)
- B. Confirm that the front passenger side airbag operates properly.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.19 Right curtain airbag failure

#### 1. DTC description:

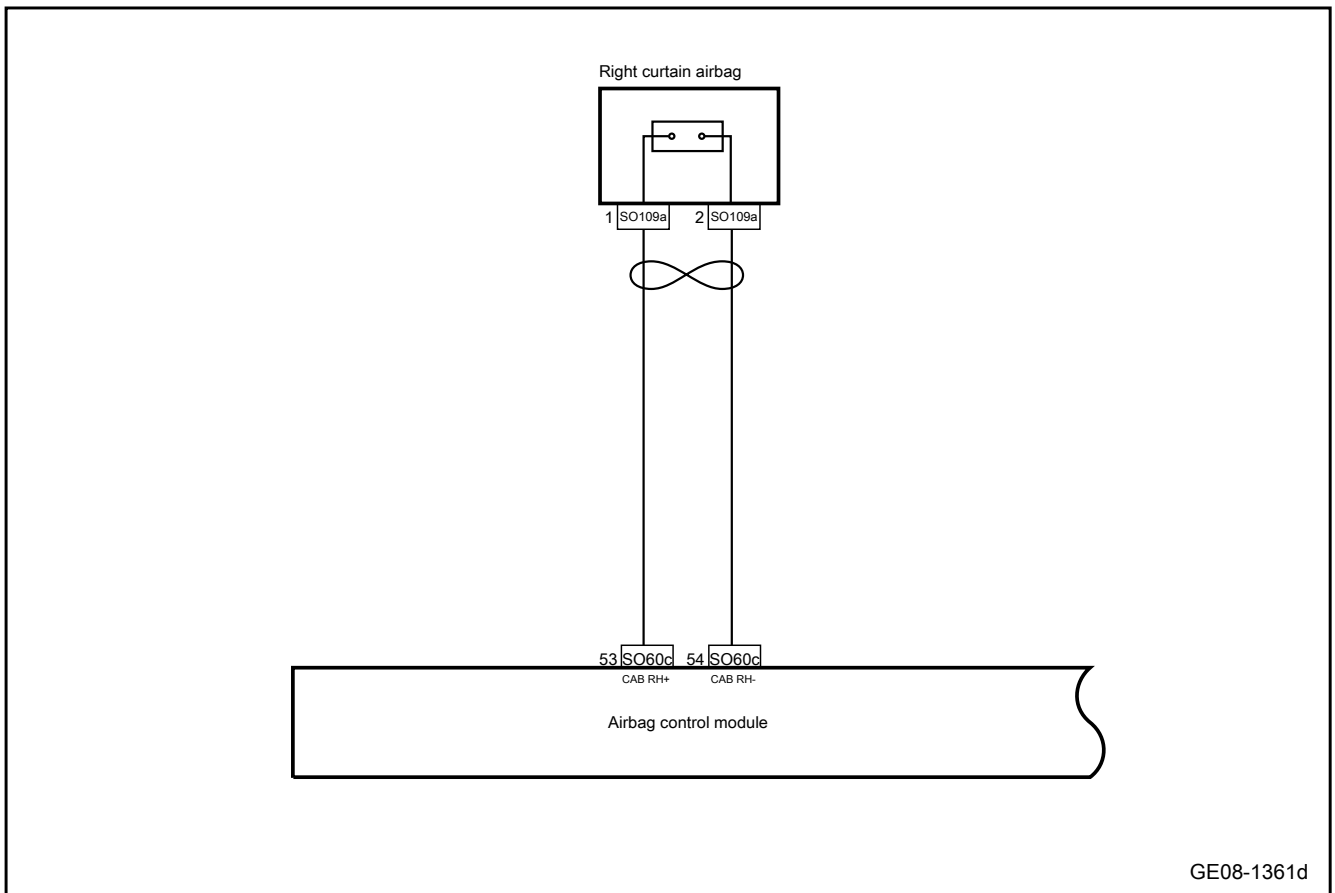
Diagnostic Trouble Code	Description
B002911	The right air curtain is short-circuited to ground
B002912	The right air curtain is short-circuited to the power supply
B00291A	Right curtain airbag with low resistance
B00291B	Right curtain airbag with high resistance
B00294A	The right air curtain circuit plug-in is incorrectly connected
B002995	Incorrect configuration of the right air curtain

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002911	Passenger/right curtain airbag electric squib is short-circuited to ground 2.0s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Right curtain airbag 3. Supplementary restraint system
B002912	The passenger/right curtain airbag electric squib is short-circuited to the power line for 2.0s (500ms*4)		
B00291A	Passenger/right curtain electric squib low resistance 2.0s (500ms*4) RES < 1.56OHM		
B00291B	Passenger/right curtain electric blast tube high resistance 2.0s (500ms*4) Re>5.4 ohm		
B00294A	The power supply terminal of the passenger/right curtain airbag electric igniter is connected in series with the power supply terminal of another airbag, and the series resistance is less than 1000ohm for 2.0s (500ms*4)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002995	There is the airbag, and the controller has been connected to the airbag through the wire harness, the controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and right curtain airbag for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and right curtain airbag harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

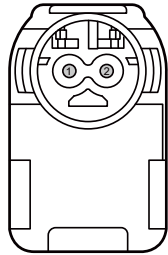
Repair or replace the faulty part.

Yes

Step 3	Check whether the harness between right curtain airbag and airbag control module is open circuit.
--------	---

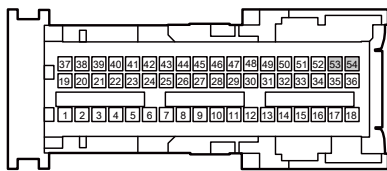


SO109a harness connector of right side curtain airbag



GE08-1487d

SO60c airbag control module harness connector A



GE08-1488d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right curtain airbag harness connector SO109a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	SO60c(53)	Standard resistance: less than 1Ω
SO109a(2)	SO60c(54)	

- E. Confirm whether the measured value meets the standard.

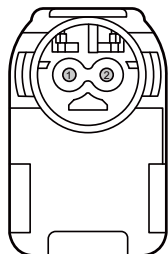
No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between right curtain airbag and airbag control module is short to power supply.

SO109a harness connector of right side curtain airbag



GE08-1489d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right curtain airbag harness connector SO109a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO109a(2)		

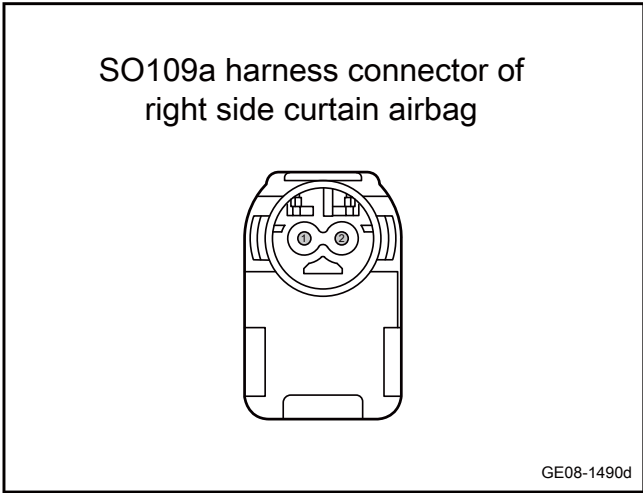
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between right curtain airbag and airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right curtain airbag harness connector SO109a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO109a(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right curtain airbag.

- A. Replace the right curtain airbag. Refer to [Replacement of right curtain airbag](#)
- B. Confirm whether the right curtain airbag works normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 8** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.2.7.20 Internal Failure of Airbag Control Module

1. DTC description:

Diagnostic Trouble Code	Description
U130055	ACU configuration words are not written in
B120009	Internal error
B120168	Front impact burst
B120354	IMU calibration is not performed
B120392	IMU Calibration failed
B120468	Side impact burst
B120568	Back impact burst
U130155	Node configuration code is not written
B121C52	EDR Locked

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U130055	ACU configuration words are not written in	Power supply voltage is 9V-16V.	1. Supplementary restraint system
B120009	ACU internal fault	CAN self-diagnosis activated	
B120168	Front impact burst		
B120354	External IMU calibration is not performed	Power supply voltage is 9V-16V.	
B120392	The external IMU calibration result failed 1. The initialization data of the IMU700 chip itself exceeds the normal range, and the calibration fails to compensate		
B120468	Side impact burst	CAN self-diagnosis activated	
B120568	Back impact burst		
U130155	ACU is in node unconfigured mode	Power supply voltage is 9V-16V.	
B121C52	A collision occurs and the EDR is locked	-	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module for signs of damage, distortion, stain, loosening, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 4** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 5** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 6** System is normal.

8.2.7.21 Airbag control module power supply failure

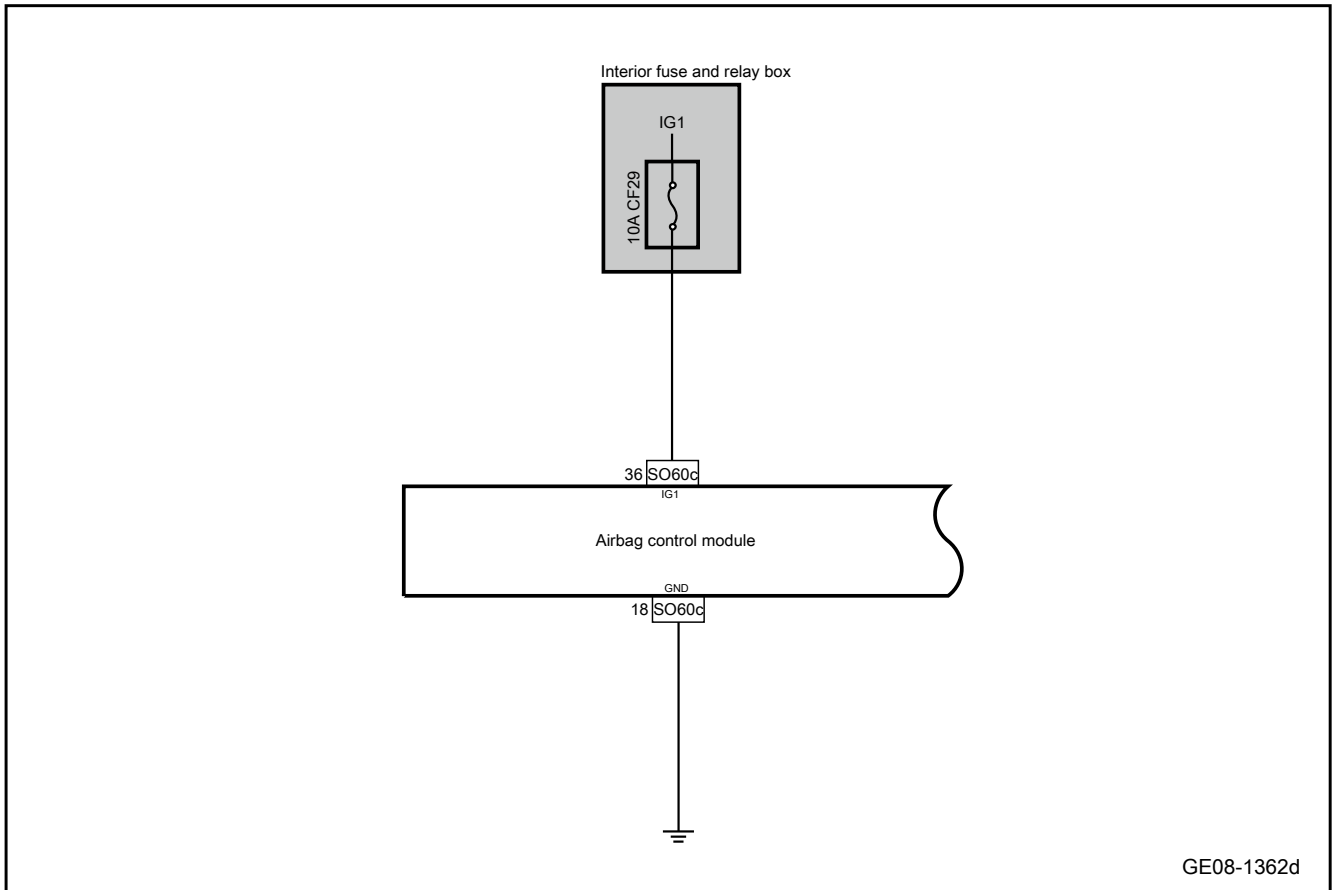
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is low.
U300617	Controller voltage is high.

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Voltage measurement value <9V for 6s	Voltage is normal	1. Fuse 2. Circuit 3. Supplementary restraint system
U300617	Voltage measurement value >16V for 6s		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Primary check.

- A. Check the airbag control module for signs of damage, distortion, stain, loosening, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the fuse CF29.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove fuse CF29 and check if it is blown.

Rated fuse capacity: 10A

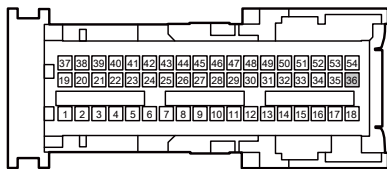
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the working voltage of the airbag control module is normal.

SO60c airbag control module harness connector A



GE08-1491d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(36)	Vehicle body is grounded.	Standard voltage: 11-14V

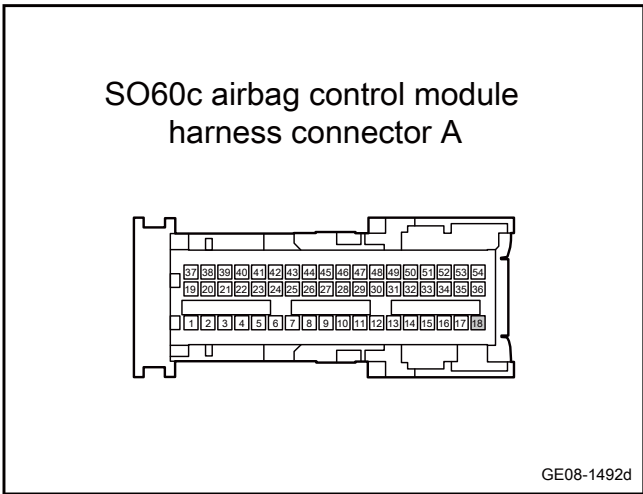
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the airbag control module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(18)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the airbag control module.

- A. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 6** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 8.2.7.22 Airbag control module communication failure

1. DTC description:

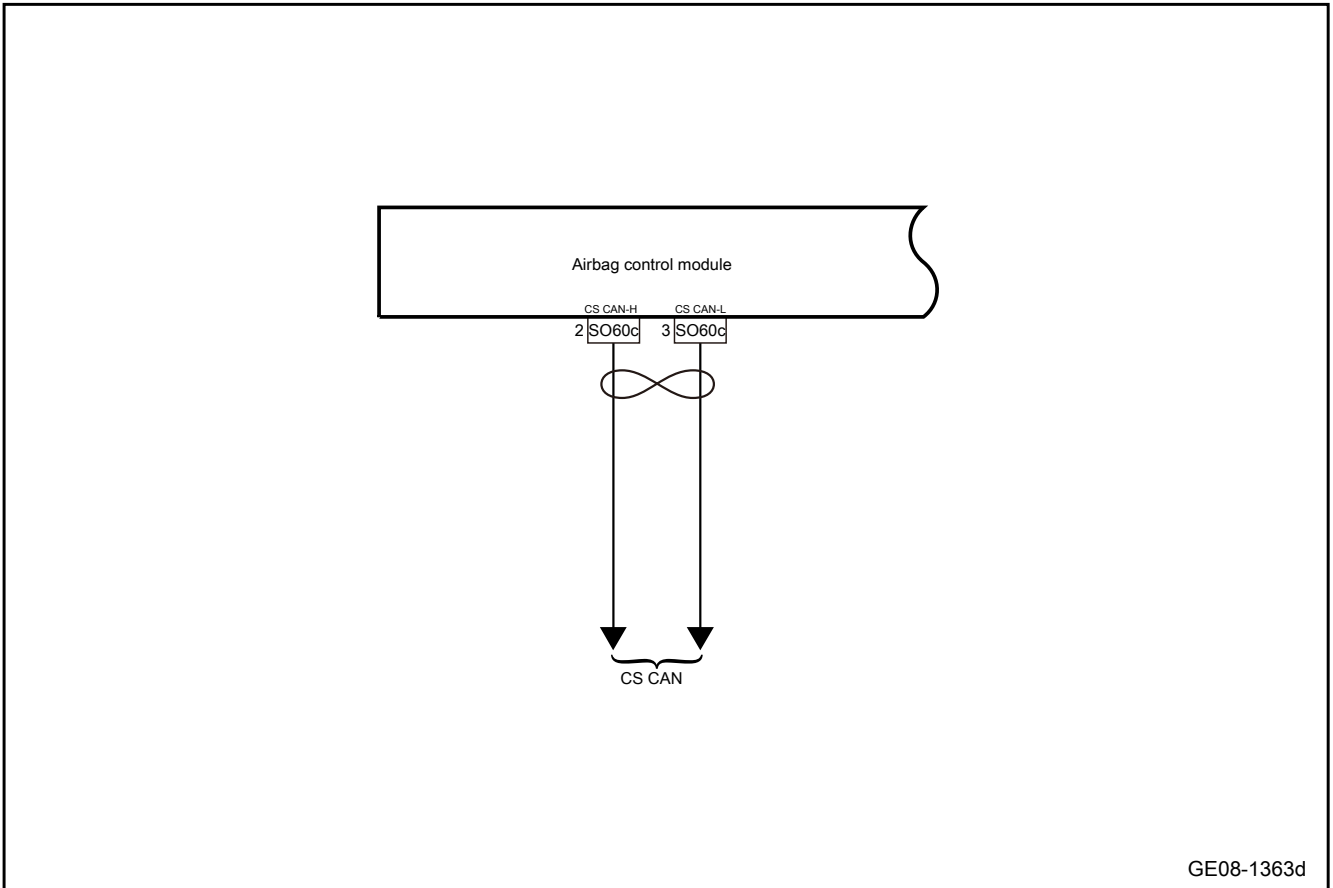
Diagnostic Trouble Code	Description
U007300	CAN bus off
U011087	Communication with IPU module is lost
U012287	Communication with ESP module is lost
U012687	Communication with SAS module is lost
U015587	Communication with IPK module is lost
U014087	Communication with BCM module is lost
U111487	Communication with VCU module is lost

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus disconnection lasting for 1s is detected	1. CAN wakeup 2. Power supply voltage is 9V-16V. 3. No bus off occurs	1. Communication circuit 2. Supplementary restraint system
U011087	Message from VCU lost for 250 milliseconds (0x0A8)	1. Ignition lasts for 3 seconds; 2. Power supply voltage is 9V-16V; 3. No bus off occurs 4. F110 bit IPU=1	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	Message from ESC lost for 250 milliseconds (0x122, 0x125).	<ol style="list-style-type: none"> <li>1. Ignition lasts for 3 seconds;</li> <li>2. Power supply voltage is 9V-16V;</li> <li>3. No bus off occurs</li> <li>4. F110 bit ESP=1</li> </ol>	
U012687	Message from SAS lost for 250 milliseconds (0x1D0E0)	<ol style="list-style-type: none"> <li>1. Ignition lasts for 3 seconds;</li> <li>2. Power supply voltage is 9V-16V;</li> <li>3. No bus off occurs</li> <li>4. F110 bit SAS=1</li> </ol>	
U015587	Message from IPK lost for 500 milliseconds (0x26D) Or message from IPK lost for 5 milliseconds (0x3F1)	<ol style="list-style-type: none"> <li>1. Ignition lasts for 3 seconds;</li> <li>2. Power supply voltage is 9V-16V;</li> <li>3. No bus off occurs</li> <li>4. F110 bit IPK=1</li> </ol>	
U014087	Message from TCU lost for 500 milliseconds (0x1D284)	<p>“Ignition lasts for 3 seconds The supply voltage is 9V-16V; No bus disconnection occurs F110 bit BCM=1’</p>	
U111487	The message from the VCU has been lost for 250 milliseconds (0x165 or 0x1A5 or 0x0A6)	<ol style="list-style-type: none"> <li>1. Ignition lasts for 3 seconds;</li> <li>2. Power supply voltage is 9V-16V;</li> <li>3. No bus off occurs</li> <li>4. F110 bit VCU = 1</li> </ol>	

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module for signs of damage, distortion, stain, loosening, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 8.2.7.23 Collision signal failure

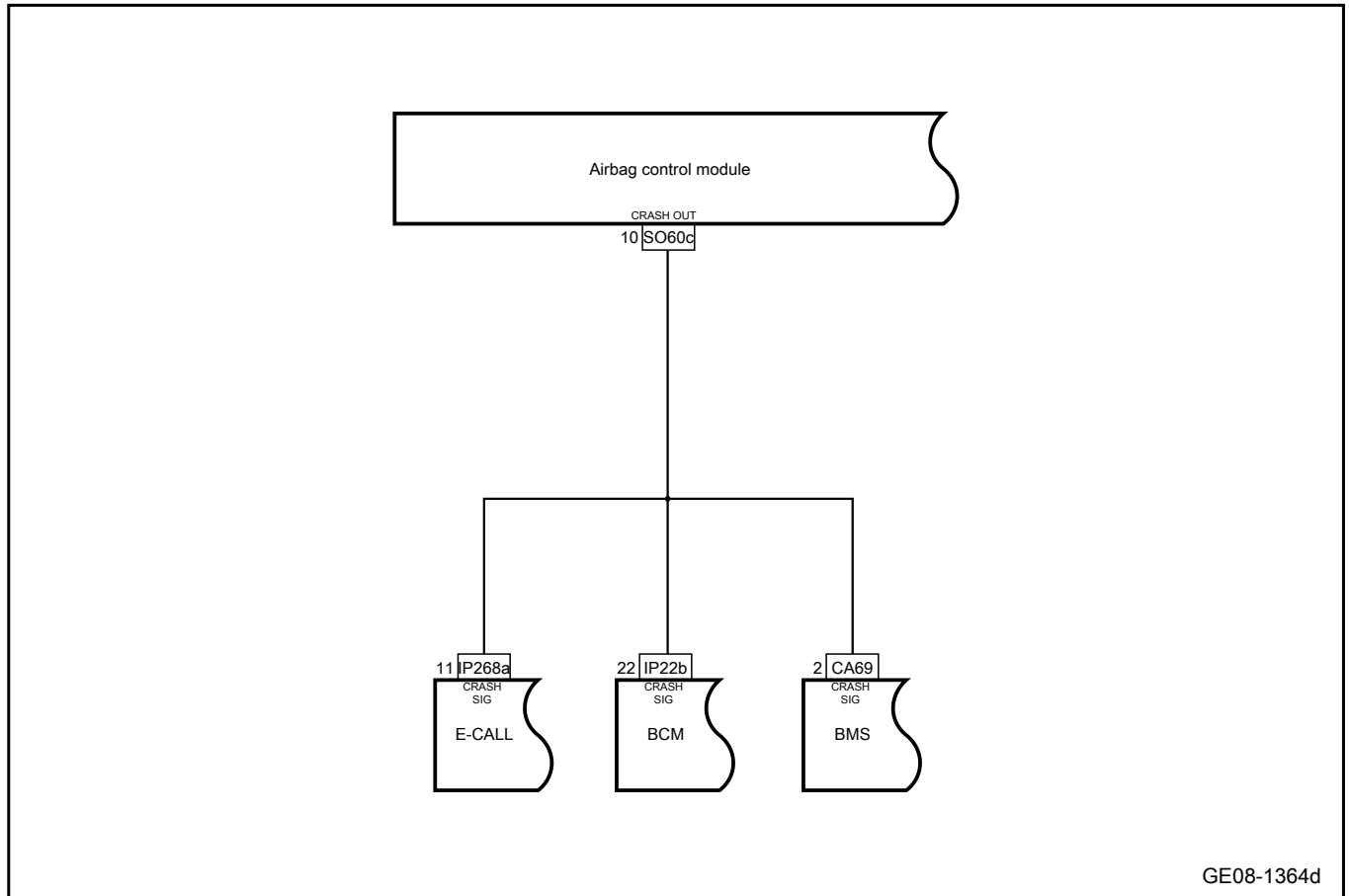
1. DTC description:

Diagnostic Trouble Code	Description
B121E96	Hard wire collision output configuration error
B121E13	Hard wire collision output open circuit
B121E12	Hard wire collision output is short-circuited to the power supply
B121E11	Hard wire collision output is short-circuited to ground

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B121E96	ACU No hard-wire collision output is configured, but the peripheral device has been connected for a duration of 3175ms	Power supply voltage is 9V-16V.	1. Supplementary restraint system 2. Circuit 3.BCM 4.E-CALL 5.BMS
B121E13	ACU Hard wire collision output signal is open circuit for 3175ms		
B121E12	ACU Hard-wire collision output signal has been short-circuited to the power supply for 3175ms		
B121E11	ACU Hard-wire collision output signal has been short-circuited to ground for 3175ms		

## 3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module, BCM, E-CALL and BMS for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module, BCM, E-CALL and BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

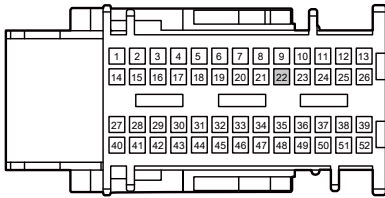
No

Repair or replace the faulty part.

Yes

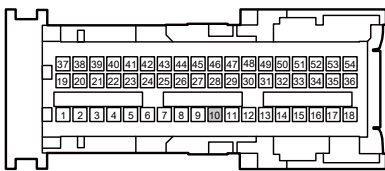
Step 3 | Check whether the harness between airbag control module and BCM, E-CALL, BMS is open circuit.

IP22b body control module  
harness connector 3



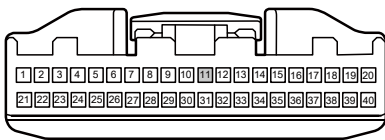
GE08-1493d

SO60c airbag control module  
harness connector A



GE08-1494d

IP268a E-CALL harness connector



GE08-1495d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Disconnect the E-CALL harness connector IP268a.
- E. Disconnect the BMS harness connector CA69.
- F. Use a multimeter to measure each terminal according to the following table:

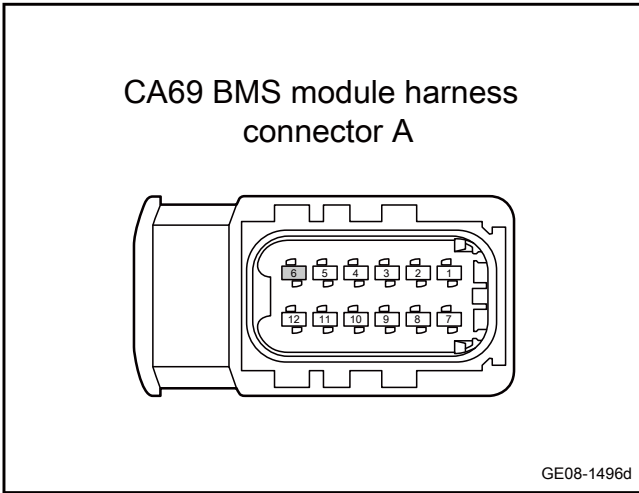
Measure terminal 1	Measure terminal 2	Standard value
IP22b(22)	SO60c(10)	Standard resistance: less than 1Ω
IP268a(11)		
CA69(6)		

- G. Confirm whether the measured value meets the standard.

No

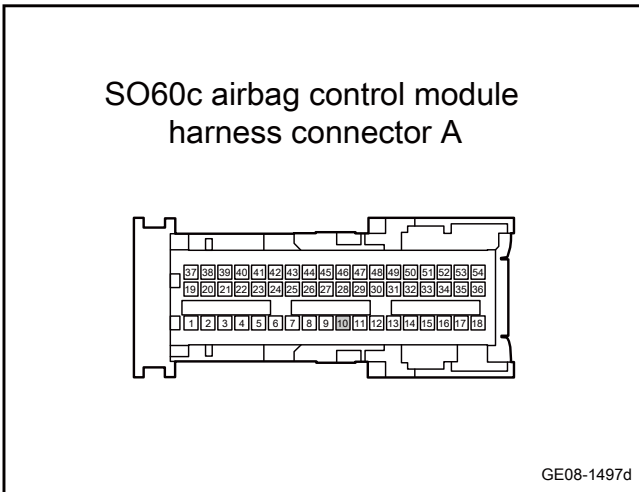
Repair or replace the harness.





Yes

**Step 4** Check whether the harness between airbag control module and BCM, E-CALL, BMS is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Disconnect the E-CALL harness connector IP268a.
- E. Disconnect the BMS harness connector CA69.
- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(10)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

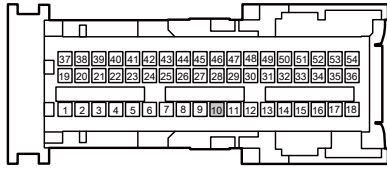
No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between airbag control module and BCM, E-CALL, BMS is short to ground.

SO60c airbag control module harness connector A



GE08-1498d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Disconnect the E-CALL harness connector IP268a.
- E. Disconnect the BMS harness connector CA69.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the BCM

- A. Check the BCM power supply and grounding harness. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace E-CALL.

- A. Check the E-CALL power supply and grounding harness. Refer to [E-CALL power supply fault](#)
- B. Replace the E-CALL, refer to [Replacement of E-CALL](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8 Replacement of BMS.

- A. Check the BMS power supply and grounding harness. Refer to [BMS power failure](#)
- B. Replace BMS, refer to [Replacement of BMS](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 10	Reprogramme and reset the airbag control module.
---------	--

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

### 8.2.7.24 Yaw sensor calibration

#### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the main interface of the relevant vehicle diagnostic instrument to scan the entire vehicle.
--------	--

Next Step

Step 3	Select a special operation.
--------	-----------------------------

Next Step

Step 4	Select "yaw sensor calibration"
--------	---------------------------------

Next Step

Step 5	Enable "yaw angle sensor calibration".
--------	--

Next Step

Step 6	Read the yaw angle sensor calibration status.
--------	---

Next Step

Step 7	Security authentication.
--------	--------------------------

Next Step

Step 8	Start calibration.
--------	--------------------

Next Step

Step 9	Wait for 500ms.
--------	-----------------

Next Step

Step 10	Read the calibration status.
------------	------------------------------

Next Step

Step 11	Exit calibration.
---------	-------------------

Next Step

Step 12	Clear the trouble code.
------------	-------------------------

Next Step

Step 13	ACU reset.
------------	------------

Next Step

Step 14	Exit calibration and return to the main interface.
------------	--

## 8.2.8 Removal and installation

### 8.2.8.1 Replacement of airbag control unit

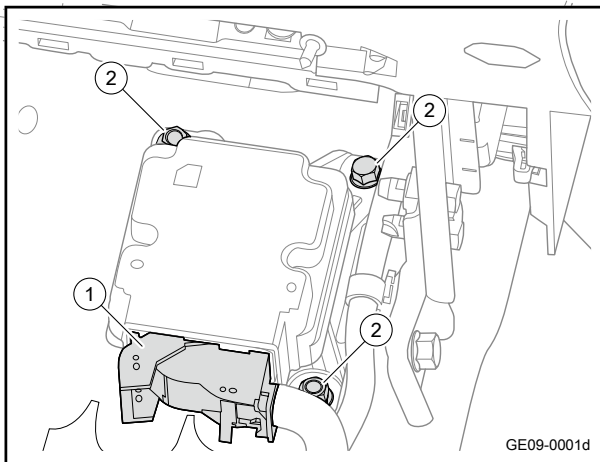
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

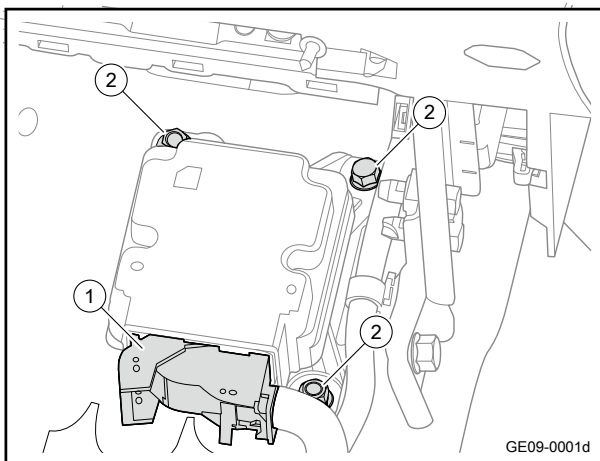
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disassemble the auxiliary fascia console body assembly. See [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 3 Disconnect the harness connector 1 of the ACU.
- 4 Remove the 3 fixing bolts 2 of the ACU.
- 5 Take off the ACU.



#### Installation procedure

- 1 Move the airbag electronic control unit to the installation position.
- 2 Install the 3 fixing bolts 2 of the ACU.  
Torque: 10N·m (metric) 7.4lb·ft (imperial system)
- 3 Connect the harness connector 1 of the ACU.



- 4 Install the auxiliary fascia console assembly.
- 5 Connect the negative cable of battery.

### 8.2.8.2 Replacement of the clock spring coil

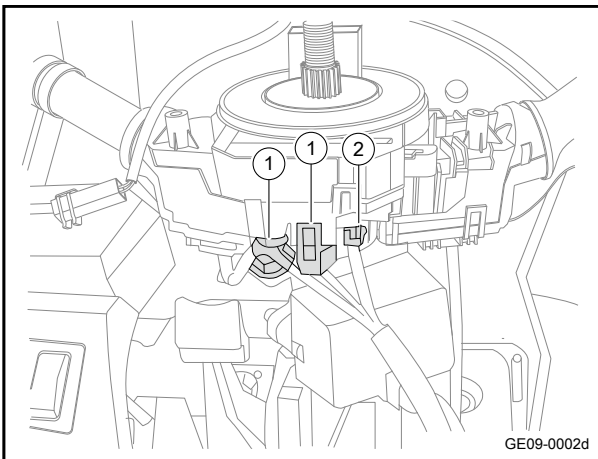
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

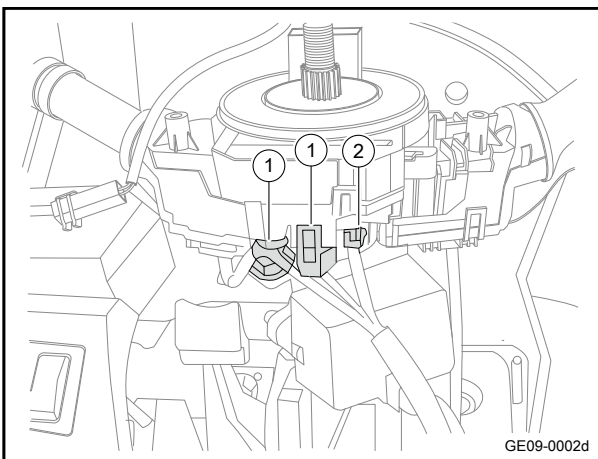
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the steering wheel. See [Replacement of Steering Wheel](#)
- 3 Remove the steering column lower cover assembly. See [Replacement of Steering Column Lower Cover Assembly](#)
- 4 Disconnect the harness connector 1 of the clock spring.
- 5 Disconnect the steering angle sensor harness connector 2.
- 6 Take off the clock spring.



#### Installation procedure

- 1 Move the clock spring to the installation position.
- 2 Connect the steering angle sensor harness connector 2.
- 3 Connect the harness connector 1 of the clock spring.



- 4 Install the steering column lower cover assembly.
- 5 Install the steering wheel assembly.
- 6 Connect the negative cable of battery.

### 8.2.8.3 Replacement of airbag for passenger seat

See [Replacement of dashboard body assembly](#)

### 8.2.8.4 Replacement of the left curtain airbag

#### Removal procedure

**Caution**

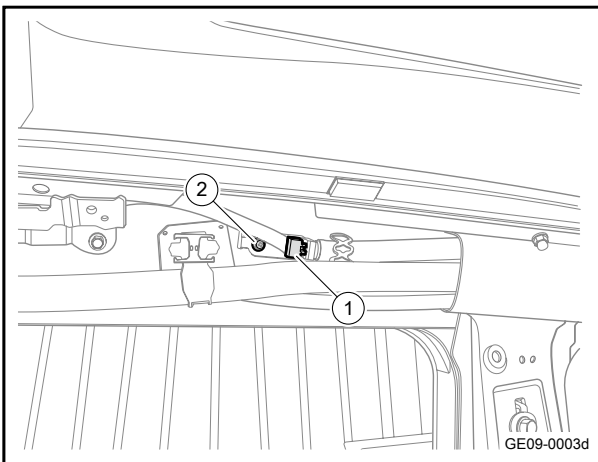
The removal method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

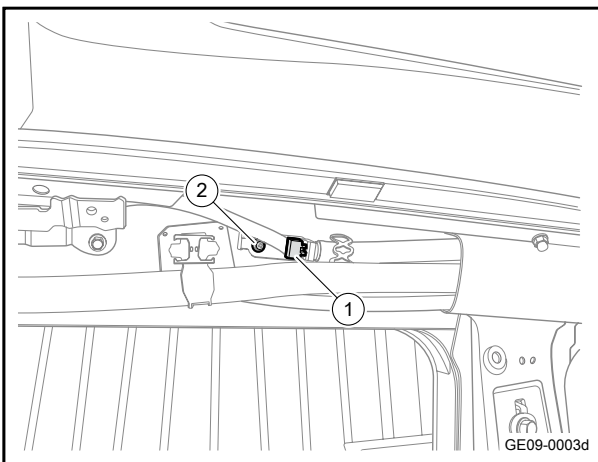
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the interior trim panel of the top cover. Refer to [Replacement of the interior trim panel of the roof](#)
- 3 Disconnect the left curtain airbag harness connector 1.
- 4 Remove the 1 fixing bolts 2 of left curtain airbag.
- 5 Unhook the buckle on the left side air curtain and remove the left air curtain.

**Installation procedure**

- 1 Move the left air curtain to the installation position.
- 2 Install the 1 fixing bolt 2 of left air curtain.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the left curtain airbag harness connector 1.



- 4 Install the interior trim panel of top cover.
- 5 Connect the negative cable of battery.

**8.2.8.5 Replacement of front impact sensor****Removal procedure**

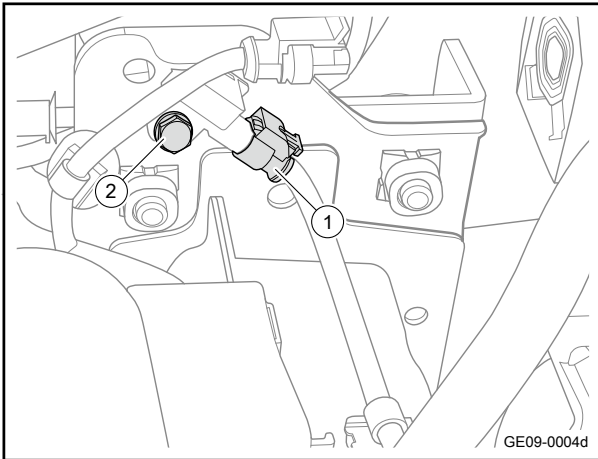


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

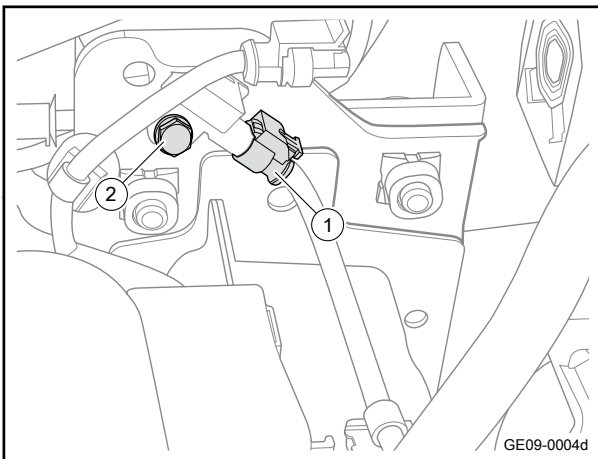
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 4 Disconnect the harness connector 1 of the frontal collision sensor.
- 5 Remove the frontal collision sensor fixing bolt 2.
- 6 Remove the frontal collision sensor.



#### Installation procedure

- 1 Move the frontal impact sensor to the installation position.
- 2 Install the frontal collision sensor fixing bolt 2.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the frontal collision sensor harness connector 1.



- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

### 8.2.8.6 Replacement of side collision sensor

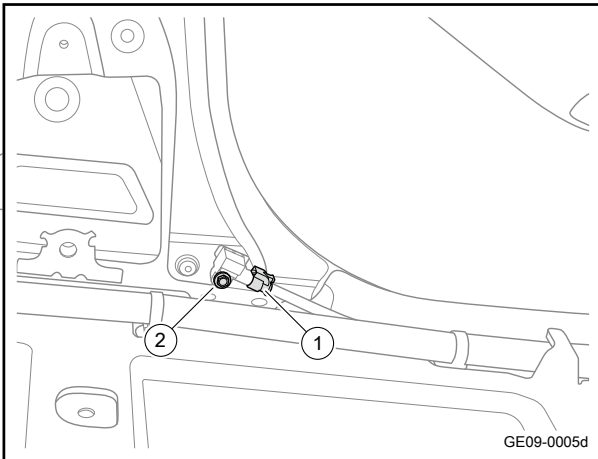
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

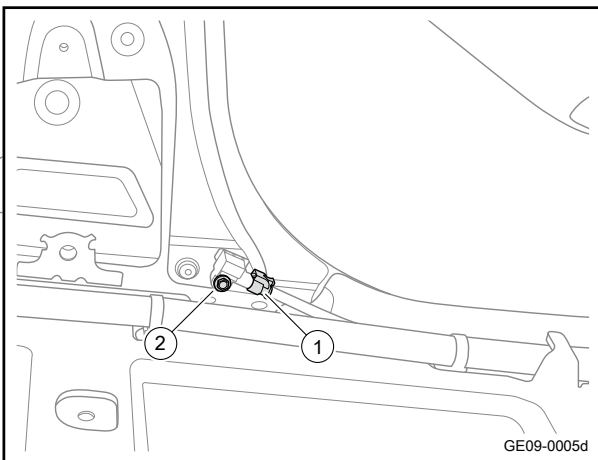
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the left B-pillar lower trim panel. Refer to [Replacement of left B-pillar lower trim panel assembly](#)
- 3 Disconnect the harness connector 1 of the side collision sensor.
- 4 Remove the side collision sensor fixing bolt 2.
- 5 Remove the side collision sensor.



**Installation procedure**

- 1 Move the side impact sensor to the installation position.
- 2 Install the side collision sensor fixing bolt 2.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the side collision sensor harness connector 1.



- 4 Install the left B-pillar lower trim panel.
- 5 Connect the negative cable of battery.

### 8.2.8.7 Replacement of driver's seat airbag

See [Replacement of the Driver's Seat](#)

## 8.3 Seat belt system

### 8.3.1 Specification

#### 8.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of rear left buckle	M12	40 - 50	29.5 - 36.9
Fixing nut of rear centre and right buckle assembly	M12	40 - 50	29.5 - 36.9
Fixing nut under the rear seat left/right seat belt	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9
Front seat belt height adjuster fixing bolt	M10×24	30 - 40	22.1 - 29.5
Fixing bolt of seat belt assembly	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9
Fixing bolt of seat belt assembly in the middle row	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of shoulder guide ring in seat belt assembly	7/16"-20UNF-2A Grade 8.8	40 - 50	29.5 - 36.9

## 8.3.2 Description and operation

### 8.3.2.1 Instructions and Operations

#### Seat Belt

Seat belts are provided for the front-row seats, middle-row seats, and rear-row seats of the vehicle, which are the main means to protect passengers. In the following situations, seat belts can keep passengers in the passenger compartment and gradually reduce the collision force:

- Front collision
- Rear collision
- Side collision
- Overturn caused collision

All vehicles are equipped with a retractor with an emergency lock nut function. The locking function is activated when the seat belt is quickly pulled out of the retractor quickly. The locking function prevents the seat belt from being pulled out beyond the allowable retracted position. The vehicle is also equipped with an airbag system, refer to the description and operation in “Airbag System”.

#### Seat belt warning lamp

The front and rear seat belts share one warning lamp, which is located on the instrument cluster to remind passengers to wear seat belts.

#### Child seat protection system

##### Warning

Do not use the rear-mounted child protective device on the passenger seat of the vehicle. When the passenger front airbag is inflated, the child in the rear-mounted child protective device sitting on the passenger seat will be seriously injured. If a forward-style child protective device is suitable for your child, be sure to move the front passenger seat as far back as possible before installing the child protective device. Ensure that the location of the child protective device does not conflict with any additional requirements of the manufacturer. For details, please refer to the user’s manual and the instruction manual attached to the child protective device.

The child seat can only be used in the forward seating position. The child seat should be installed and fixed in accordance with the instructions of the manufacturer. If there is an upper strap on the child seat, the seat needs to be fixed. If the seat belt on the seat is used to fix the child seat, no passengers are allowed on the seat.

### 8.3.3 How the system works

#### 8.3.3.1 System Working Principles

##### Front seat safety belt system

Front-row seat belt system includes the driver and passenger seat belt retractor, passenger identification sensor and two front-row seat belt switches. Passenger identification sensor is applied to check whether passengers are in the seats. If it is found that no one is seated, the front seat belt warning lamp goes out. Two front-row seat belt switches are located in the seat buckles, and they are used to control the seat belt warning indicator lamp and the buzzer.

##### Seat belt warning lamp

- When the switch power of the start and stop button is ON and the seat belt of the driver/passenger is not fastened, after the airbag control unit (ACU) detects the driver/passenger seat belt status, it will send the signal to the instrument cluster assembly through the CAN bus. The seat belt alarming indicator on the instrument cluster assembly will light up to remind the driver to fasten seat belts.
- After the switch power mode is turned on, the passenger identification sensor detects whether the passenger seat is occupied and sends a signal to the airbag electronic control unit. The airbag electronic control unit detects the condition of the seat belt of the passenger and sends a signal to the instrument assembly, and the instrument cluster assembly makes the warning lamp for the seat belt not fastened to light up.

##### Rear seat belt system

Rear-row seat belt system includes the following components:

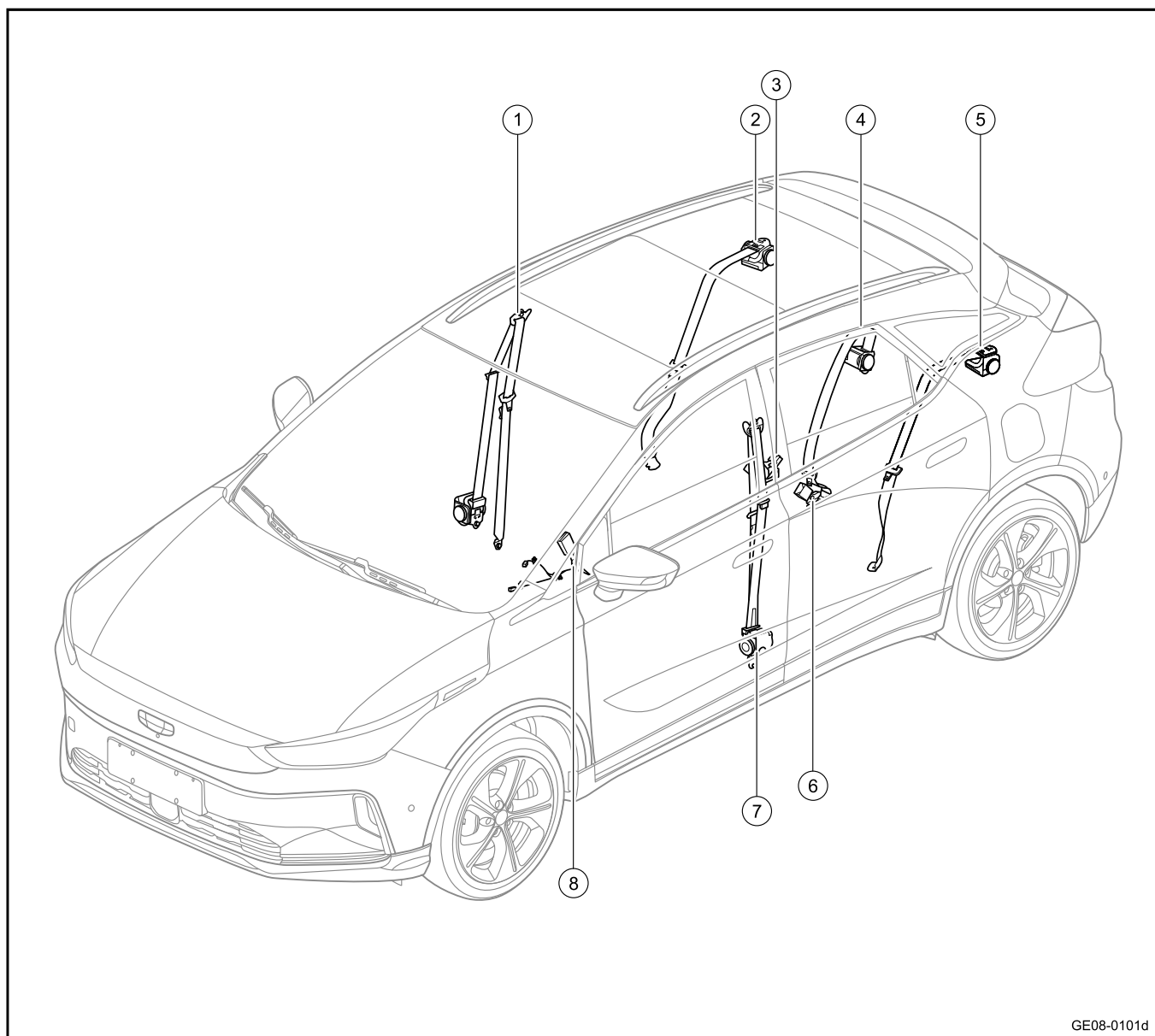
- The rear seat belt retractor and the seat belt assembly; the seat belt retractor is located under the trim panel of the rear shelf, and the lower part of the seat belt is fixed on the bottom plate.
- Rear seat belt buckle; the buckle is fixed to the floor by steel plates.

##### Seat belt warning lamp

- After the switch power mode is turned on, when the rear door is closed, the rear seat belt is not fastened, and the warning lamp on the combined instrument assembly is not fastened, to remind the rear passengers to fasten the seat belt.

## 8.3.4 Part location

## 8.3.4.1 Part Position

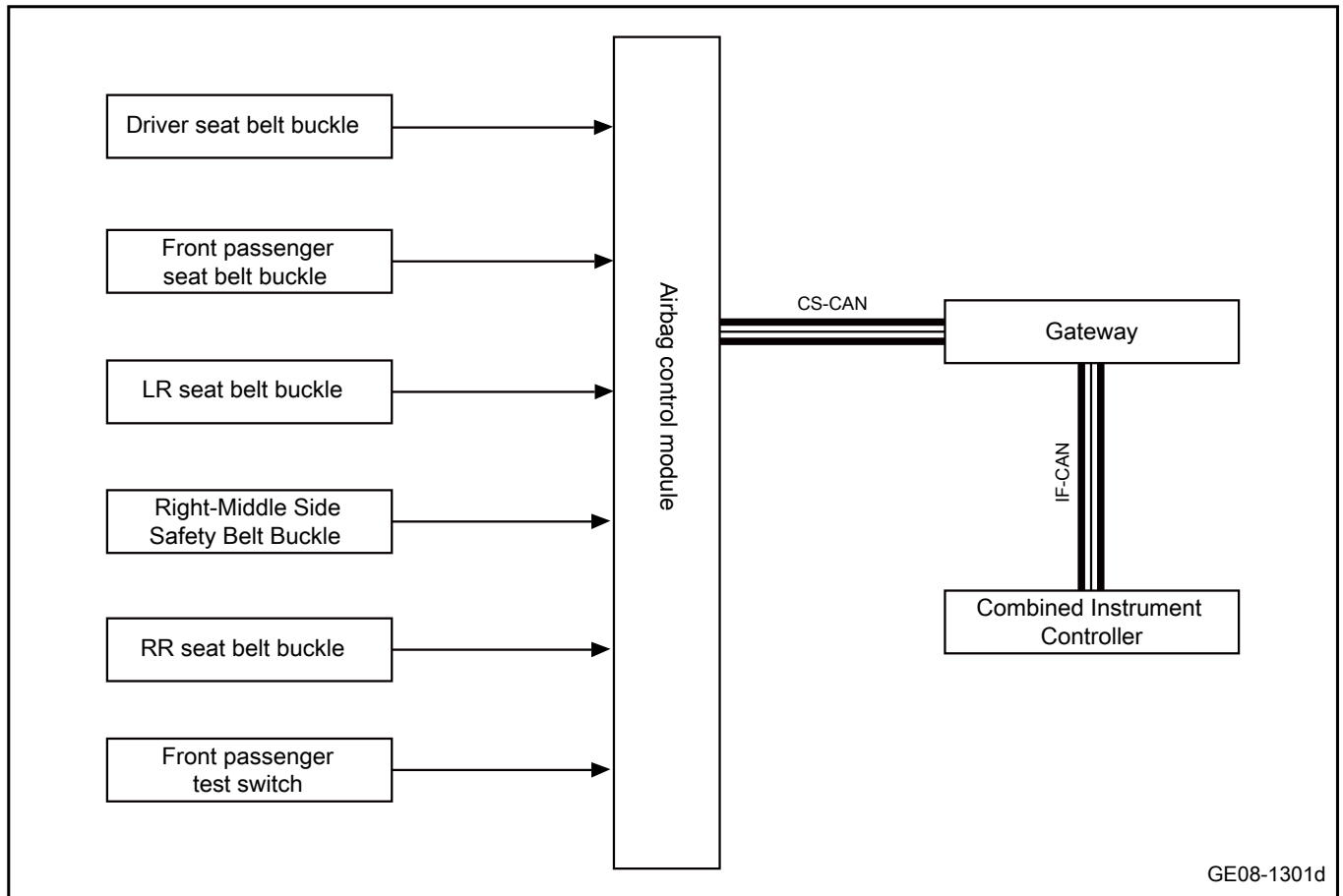


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- |  |  |
|--|--|
| 1. Passenger seat belt                 | 5. Rear left seat belt                           |
| 2. Rear right seat belt                | 6. Replacement of rear-row left seat belt buckle |
| 3. Rear middle and right lock assembly | 7. Driver's seat belt                            |
| 4. Rear middle seat belt               | 8. Front seat belt buckle assembly               |

8.3.5 Electrical schematic diagram

8.3.5.1 Electrical Schematic Diagram



## 8.3.6 Diagnostic information and steps

### 8.3.6.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 8.3.6.2 Routine inspection

Confirm trouble symptom

The most difficult situation during diagnostic completed is that no symptoms appear. Under such a condition, the fault described by distributors must be completely analyzed. Then simulate the same or similar condition and circumstance when the distributor's vehicle has faults. No matter how experienced and skillful maintenance personnel are, if eliminating faults without confirming fault symptoms, something important will be ignored in the maintenance, and wrong conjectures will be made in some places. It will make trouble shooting to fail.

Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

Connector joints and fulcrums of vibration should be the main parts to be checked, and if the fault may be caused by vibration, the vibration method is recommended:

- a. Gently vibrate the possible fault part with fingers, and check whether the fault occurs.
- b. Gently shake the connector in both vertical and horizontal directions.
- c. Gently shake the harness in both vertical and horizontal directions.

Vehicle inspection

Check the front-row seat belt warning lamp:

#### 1. Driver's side

- a. Operate the start and stop button to switch the power supply mode to "ON" status.
- b. When the driver's seat belt is loosened, check whether the driver seatbelt warning lamp on the instrument cluster is flashing.
- c. When the driver's seat belt is tightened, check whether the driver seatbelt warning lamp on the instrument cluster is off.

#### 2. The front passenger's side

- a. Operate the start and stop button to switch the power supply mode to "ON" status.
- b. When the passenger occupies the seat without fastening the seat belt, check whether the driver's seatbelt warning lamp on the instrument cluster is flashing.
- c. When the passenger occupies the seat and fastens the seat belt, check whether the driver's seatbelt warning lamp on the instrument cluster is off.

### 8.3.6.3 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Driver seat belt buckle fault	1. Harness and connector	Refer to <a href="#">Driver's seat belt buckle failure</a>
	2.ACUC	
	3. Driver seat belt buckle	
Front passenger belt buckle fault	1. Harness and connector	Refer to <a href="#">Front passenger seat belt buckle failure</a>
	2.ACUC	



Fault Symptom	Suspected fault location	Maintenance plan
	3. Front passenger seat belt lock	
Front passenger detection switch fault	1. Harness and connector	Refer to <a href="#">Front passenger detection switch failure</a>
	2.ACUC	
	3. Front passenger detection switch	
Failure of the left seat belt buckle switch in the second row	1. Harness and connector	See <a href="#">Failure of Left Seat Belt Buckle Switch in the Second Row</a>
	2.ACUC	
	3. Left seat belt buckle of the second row	
Failure of the middle seat belt buckle switch in the second row	1. Harness and connector	See <a href="#">Failure of the Middle Seat Belt Buckle Switch in the Second Row</a>
	2.ACUC	
	3. Middle seat belt buckle of the second row	
Failure of the right seat belt buckle switch in second row	1. Harness and connector	See <a href="#">Failure of the Right Seat Belt Buckle Switch in Second Row</a>
	2.ACUC	
	3. Right seat belt buckle of the second row	

#### 8.3.6.4 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B005012	The driver's seat belt buckle switch is short-circuited to the power supply	Refer to <a href="#">Driver's seat belt buckle failure</a>
B005212	The passenger seat belt buckle is short-circuited to the power supply	Refer to <a href="#">Front passenger seat belt buckle failure</a>
B00B712	The passenger detection is short-circuited to power supply	Refer to <a href="#">Front passenger detection switch failure</a>
B005312	The left seat belt buckle switch in the second row is short-circuited to the power supply	See <a href="#">Failure of Left Seat Belt Buckle Switch in the Second Row</a>
B005412	The middle seat belt buckle switch of the second row is short-circuited to the power supply	See <a href="#">Failure of the Middle Seat Belt Buckle Switch in the Second Row</a>
B005512	The right seat belt buckle switch in the second row is short-circuited to the power supply	See <a href="#">Failure of the Right Seat Belt Buckle Switch in Second Row</a>

#### 8.3.6.5 Diagnosis system

##### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 8.3.6.6 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 8.3.6.7 Driver seat belt buckle fault

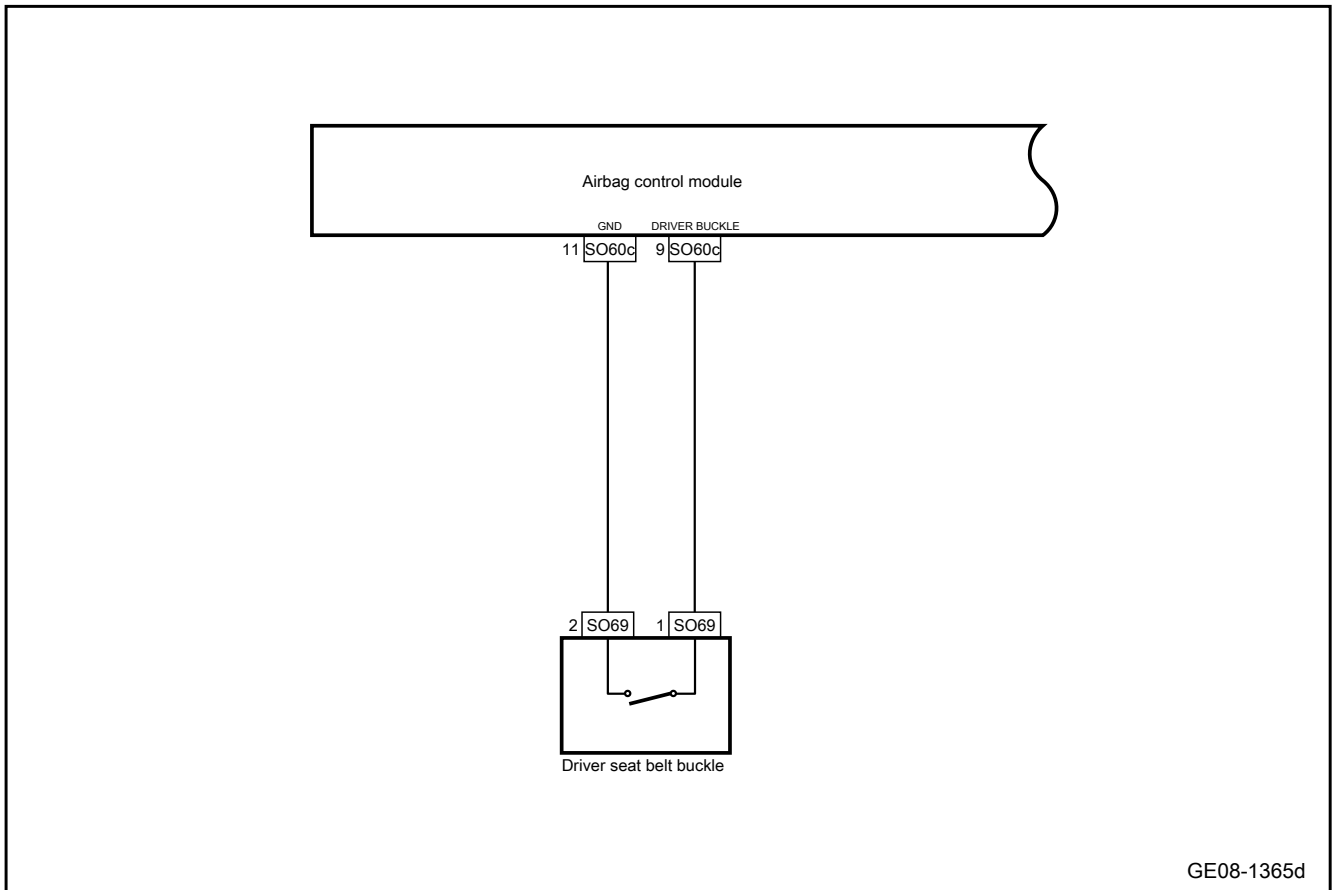
#### 1. DTC description:

Diagnostic Trouble Code	Description
B005012	The driver's seat belt buckle switch is short-circuited to the power supply

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005012	The driver's seat belt buckle switch circuit is shorted to high voltage, lasting for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Driver seat belt buckle 3. Supplementary restraint system

#### 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

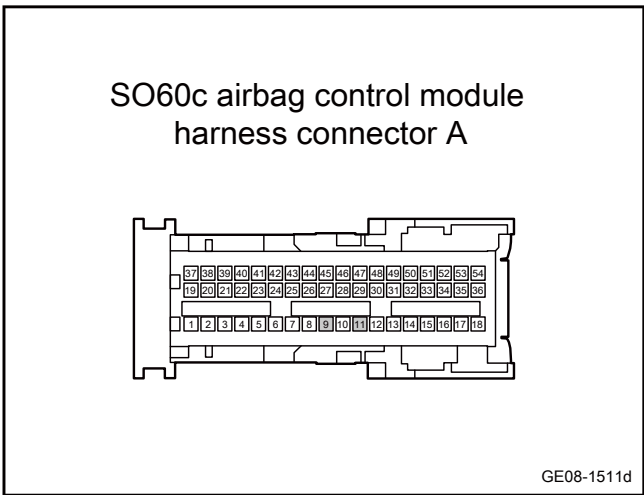
- A. Check the airbag control module and driver's seat belt buckle for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and driver seat belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

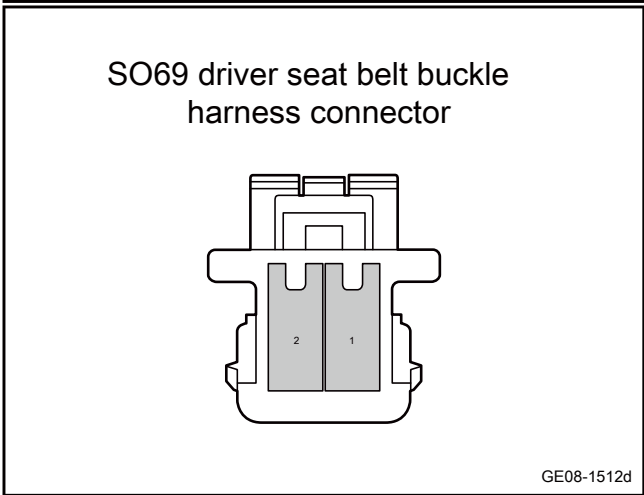
Step 3 Check whether the harness between the driver seat belt buckle and airbag control module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	SO69(1)	Standard resistance: less than 1Ω
SO60c(11)	SO69(2)	

- E. Confirm whether the measured value meets the standard.

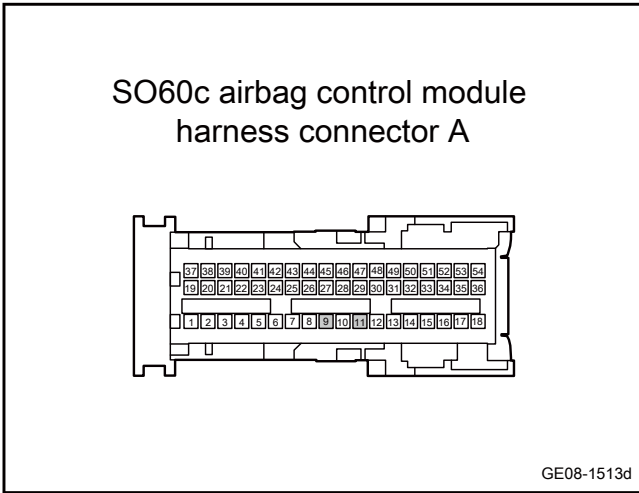


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver seat belt buckle and airbag control module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

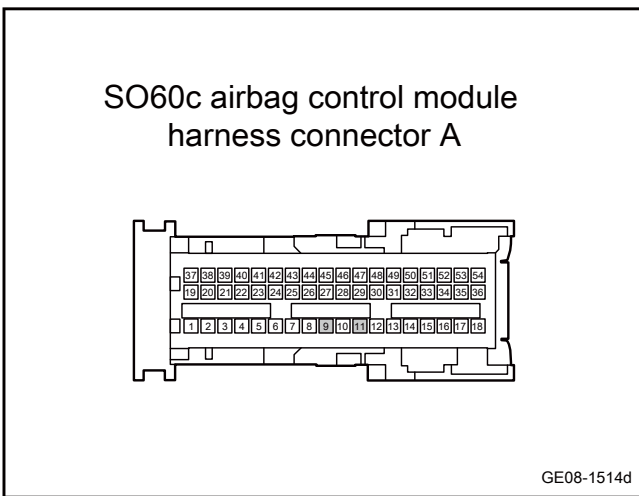
Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the driver seat belt buckle and airbag control module is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the driver seat belt buckle.

- A. Replace the driver seat belt buckle. Refer to [Replacement of driver's seat belt buckle](#)
- B. Confirm whether the driver seat belt buckle works normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.3.6.8 Front passenger belt buckle fault

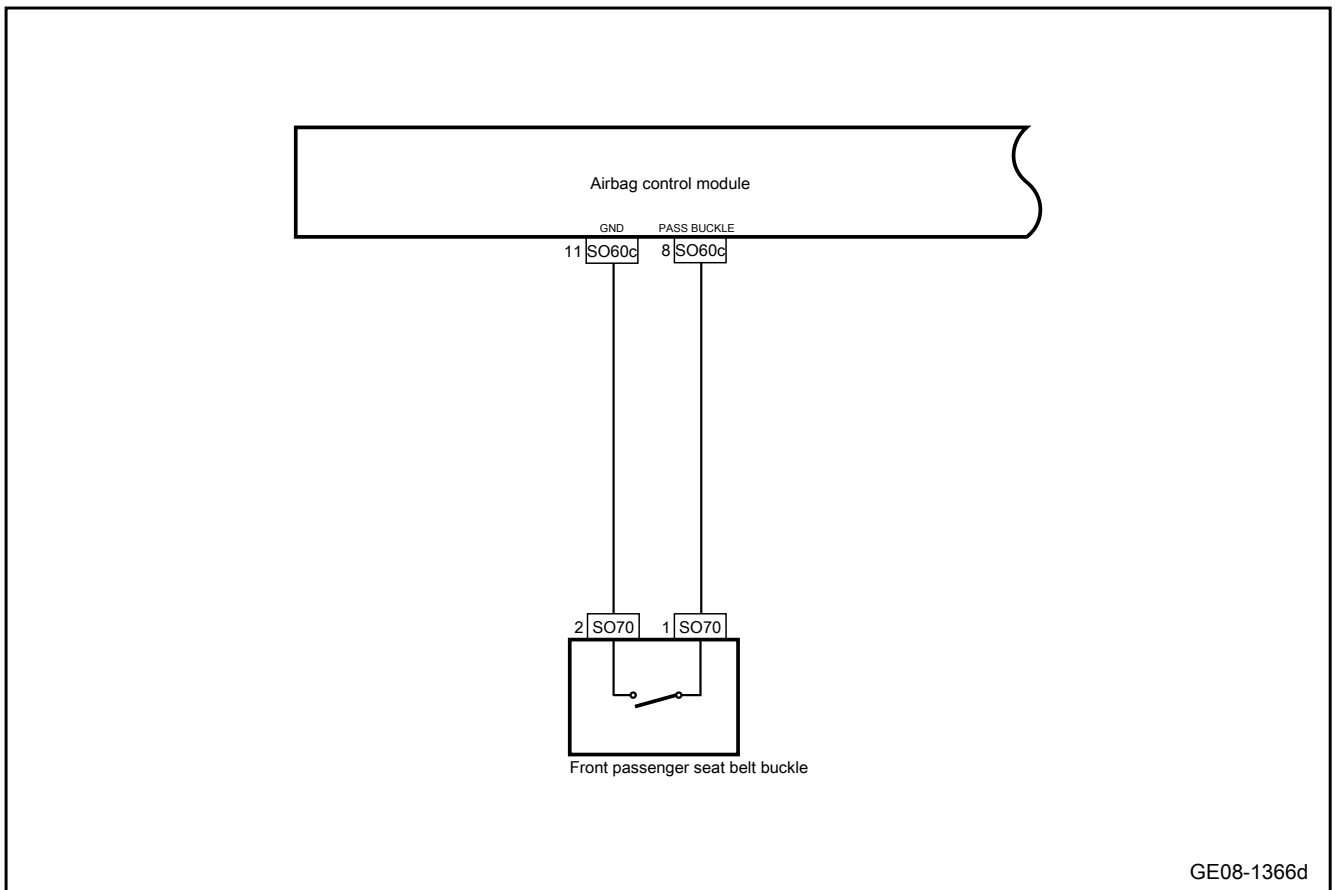
1. DTC description:

Diagnostic Trouble Code	Description
B005212	The passenger seat belt buckle is short-circuited to the power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005212	The passenger's seat belt buckle circuit is shorted to high voltage, lasting for 3.2s	Power supply voltage is 9V-16V.	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2. Front passenger belt buckle</li> <li>3. Supplementary restraint system</li> </ol>

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and front passenger's seat belt buckle for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and front passenger belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

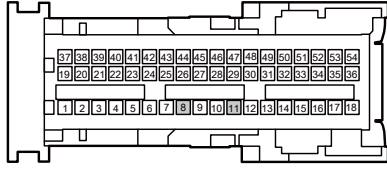
Repair or replace the faulty part.

Yes

Step 3	Check whether the harness between the front passenger belt buckle and the airbag control module is open.
--------	--

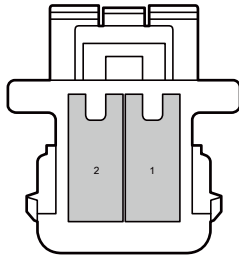


SO60c airbag control module harness connector A



GE08-1515d

SO70 Front passenger seat belt buckle harness connector



GE08-1516d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	SO70(1)	Standard resistance: less than 1Ω
SO60c(11)	SO70(2)	

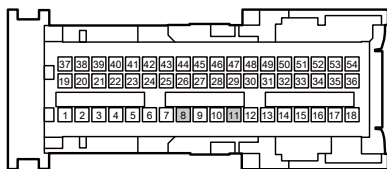
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Detect whether the harness between the front passenger belt buckle and the airbag control module is shorted to power supply.

SO60c airbag control module harness connector A



GE08-1517d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

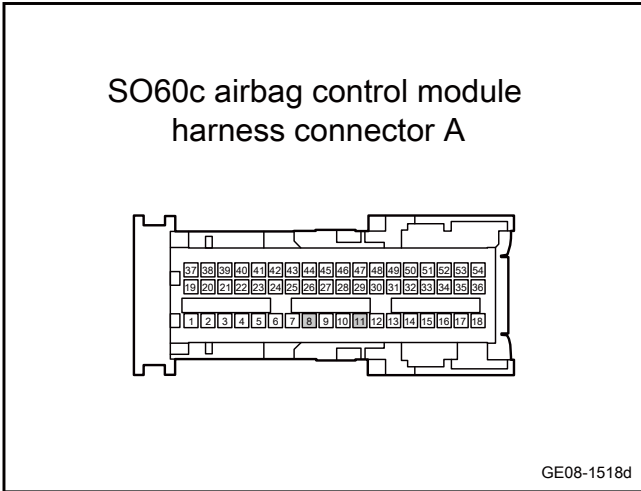
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Detect whether the harness between the front passenger belt buckle and the airbag control module is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the front passenger belt buckle.

- A. Replace the front passenger belt buckle. Refer to [Replacement of front passenger seat belt buckle](#)
- B. Confirm whether the front passenger belt buckle operates normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes
System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 8.3.6.9 Front passenger detection switch fault

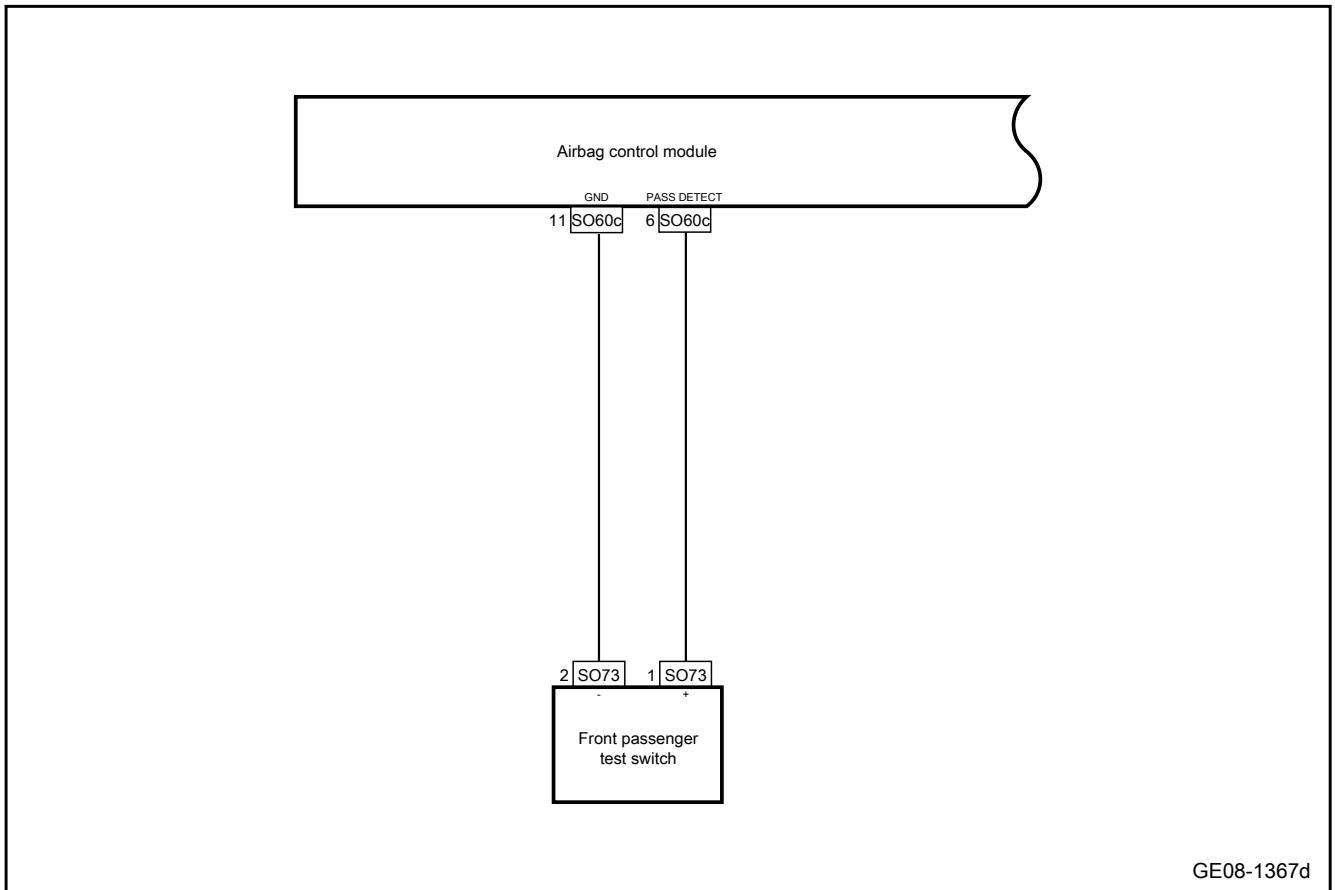
1. DTC description:

Diagnostic Trouble Code	Description
B00B712	The passenger detection is short-circuited to power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B00B712	The passenger's seat detection circuit is shorted to high voltage, lasting for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Front passenger detection switch 3. Supplementary restraint system

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

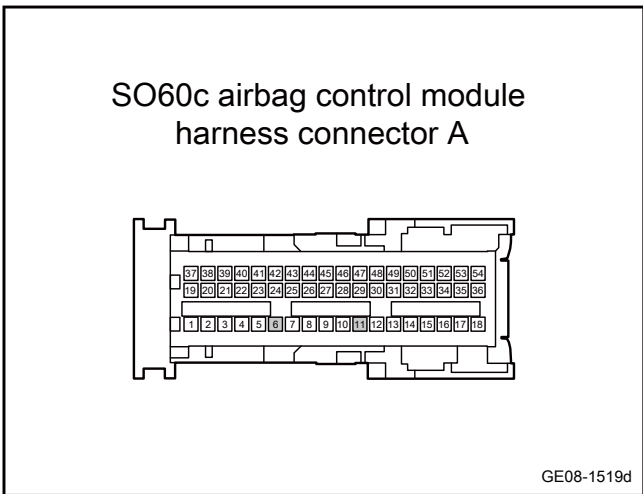
- A. Check the airbag control module and front passenger detection switch for signs of damage, deformation, stain, loosening, etc.
- B. Check the airbag control module and front passenger detection switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

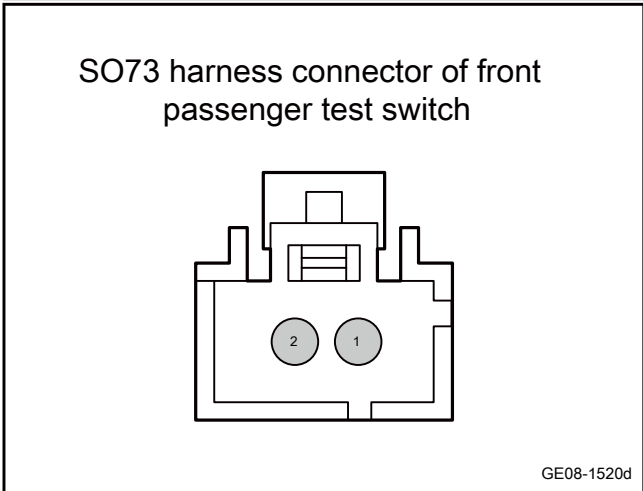
**Step 3** Test whether the harness between the front passenger detection switch and the airbag control module is circuit opened.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connectors SO73.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	SO73(1)	Standard resistance: less than 1Ω
SO60c(11)	SO73(2)	

- E. Confirm whether the measured value meets the standard.

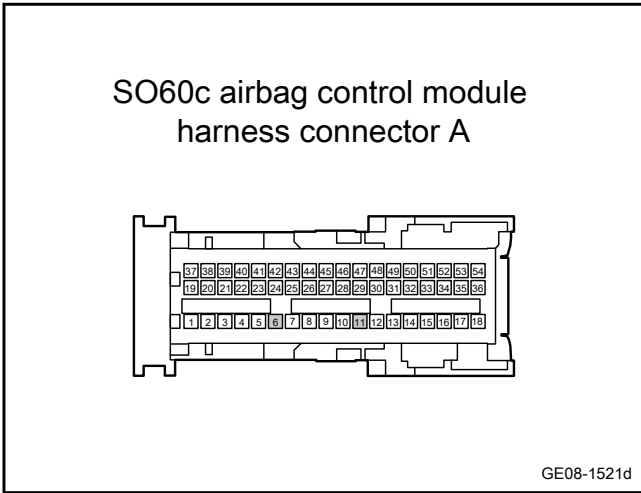


No

Repair or replace the harness.

Yes

**Step 4** Test whether the harness between the front passenger detection switch and the airbag control module is shorted to power.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connectors SO73.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

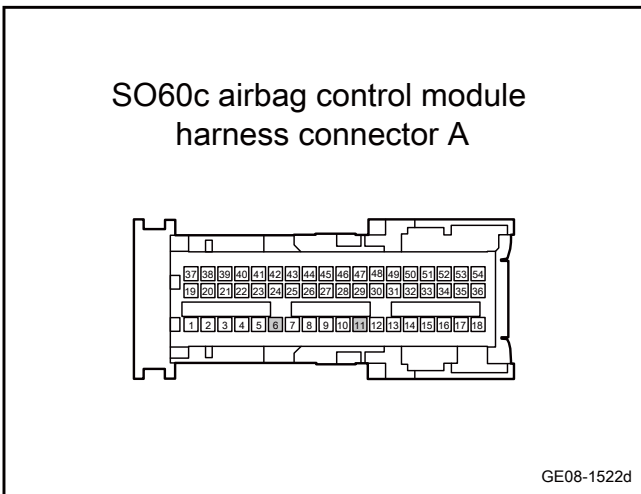
Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Test whether the harness between the front passenger detection switch and the airbag control module is shorted to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connectors SO73.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the front passenger detection switch.

- A. Replace the front passenger detection switch. Refer to [Replacement of front passenger detection switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 8.3.6.10 Failure of left seat belt buckle in rear row

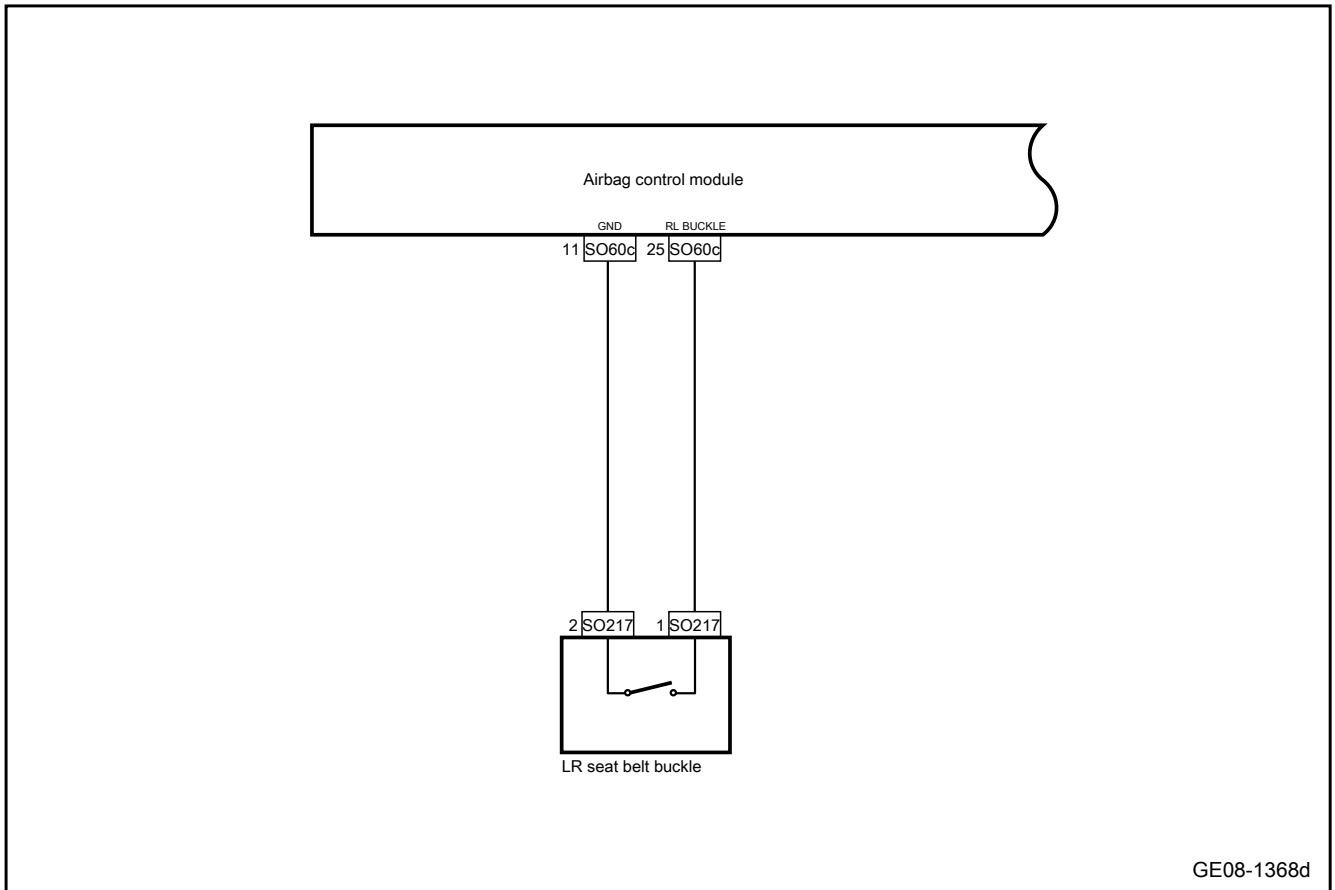
1. DTC description:

Diagnostic Trouble Code	Description
B005312	The left seat belt buckle switch in the second row is short-circuited to the power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005312	The left seat belt buckle switch in the second row is short-circuited to the power supply and connected to a high voltage for 3.2s	Power supply voltage is 9V-16V.	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2. Rear left seat belt buckle</li> <li>3. Supplementary restraint system</li> </ol>

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and left rear seat belt buckle for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and left rear seat belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

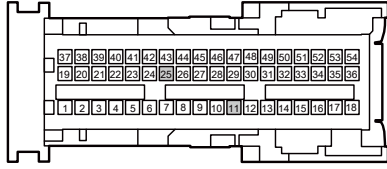
No

Repair or replace the faulty part.

Yes

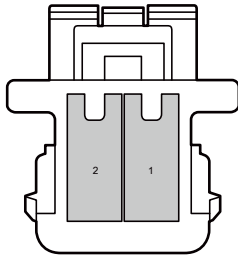
Step 3	Check whether the harness between the left rear seat belt buckle and airbag control module is open circuit.
--------	---

SO60c airbag control module harness connector A



GE08-1499d

SO217 Left rear seat belt buckle harness connector

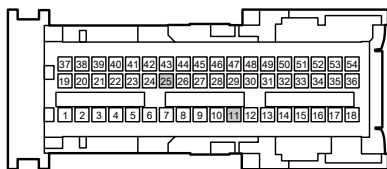


GE08-1500d

Yes

Step 4 Check whether the harness between the left rear seat belt buckle and airbag control module is short-circuited to power supply.

SO60c airbag control module harness connector A



GE08-1501d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left rear seat belt buckle harness connector SO217.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(25)	SO217(1)	Standard resistance: less than 1Ω
SO60c(11)	SO217(2)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left rear seat belt buckle harness connector SO217.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(25)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

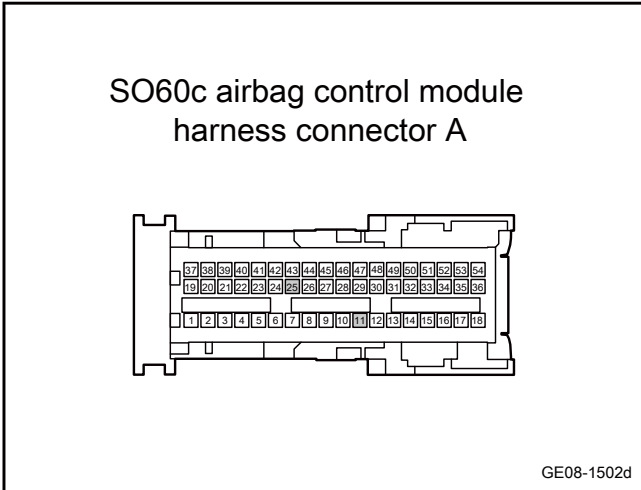
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the left rear seat belt buckle and airbag control module is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left rear seat belt buckle harness connector SO217.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(25)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left rear seat belt buckle.

- A. Replace the left rear seat belt buckle. See [Replacement of the Rear Left Seat Belt Buckle](#)
- B. Confirm whether the left rear seat belt buckle works normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 8.3.6.11 Failure of middle seat belt buckle in rear row

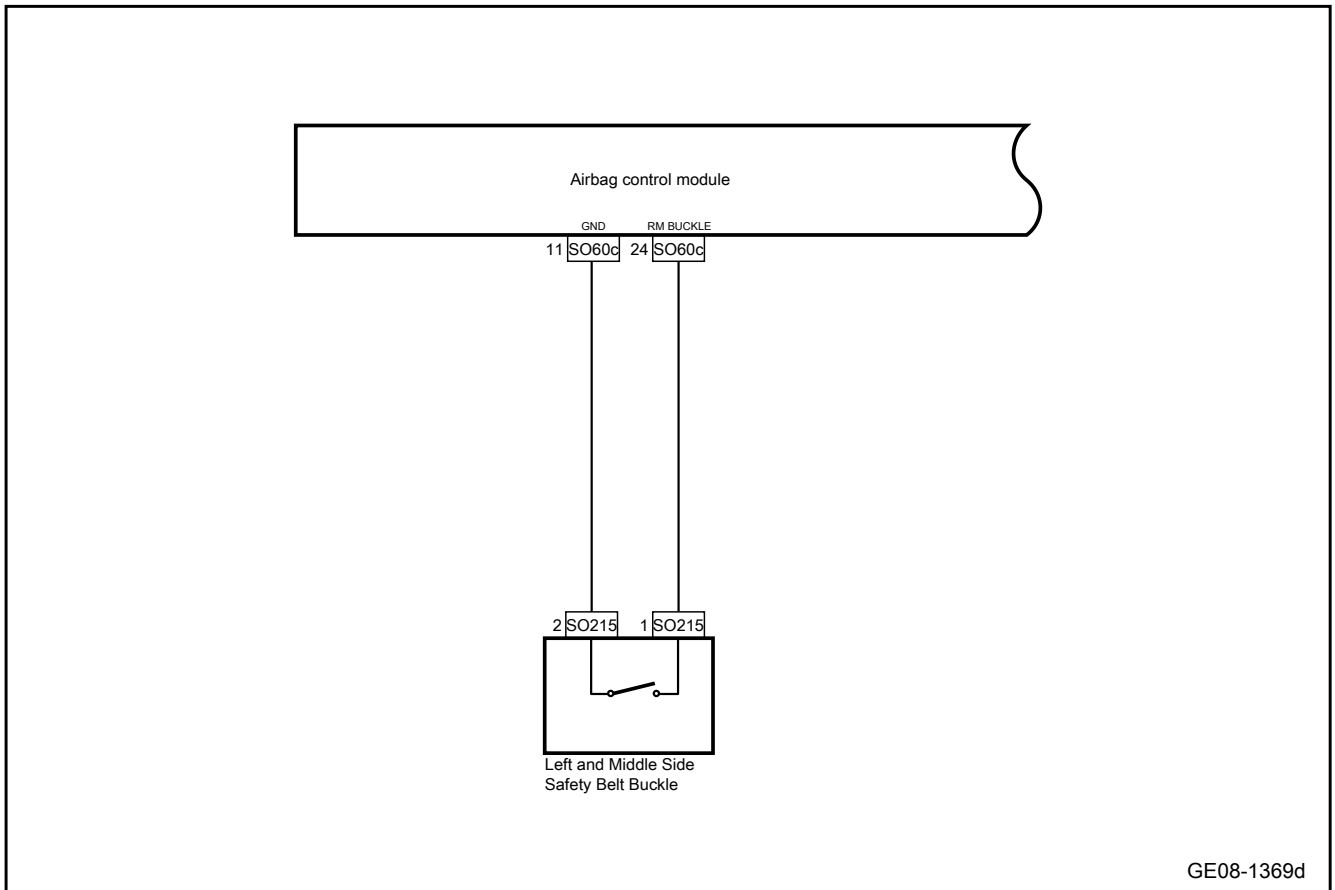
#### 1. DTC description:

Diagnostic Trouble Code	Description
B005412	The middle seat belt buckle switch of the second row is short-circuited to the power supply

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005412	The middle seat belt buckle switch of the second row is short-circuited to high voltage for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. The right middle seat belt buckle 3. Supplementary restraint system

#### 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

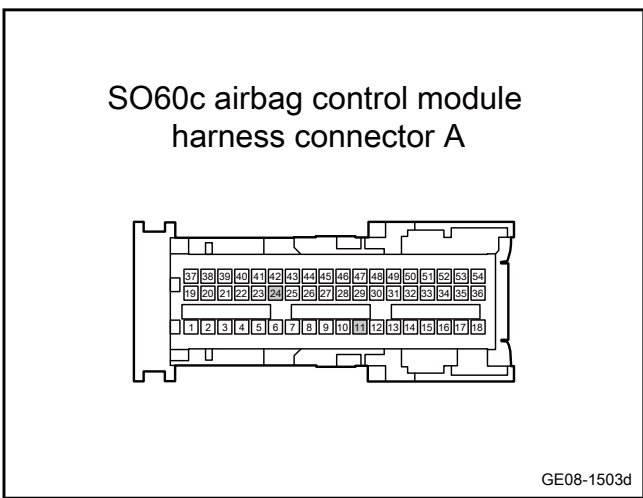
- A. Check the airbag control module and right middle seat belt buckle for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and right middle seat belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

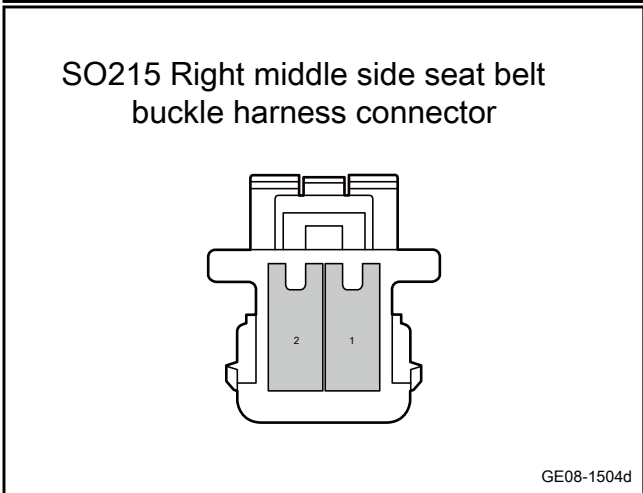
**Step 3** Check whether the harness between the right middle seat belt buckle and airbag control module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right middle seat belt buckle harness connector SO215.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(24)	SO215(1)	Standard resistance: less than 1Ω
SO60c(11)	SO215(2)	

- E. Confirm whether the measured value meets the standard.



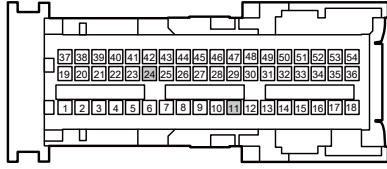
No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the right middle seat belt buckle and airbag control module is short to power supply.

SO60c airbag control module harness connector A



GE08-1505d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right middle seat belt buckle harness connector SO215.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(24)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

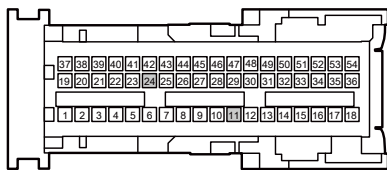
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the right middle seat belt buckle and airbag control module is short to the ground.

SO60c airbag control module harness connector A



GE08-1506d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right middle seat belt buckle harness connector SO215.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the right middle seat belt buckle

- A. Replace the right middle seat belt buckle See [Replacement of Right Middle Seat Belt Buckle](#)
- B. Confirm whether the right middle seat belt buckle works normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.



### 8.3.6.12 Failure of rear right seat belt buckle

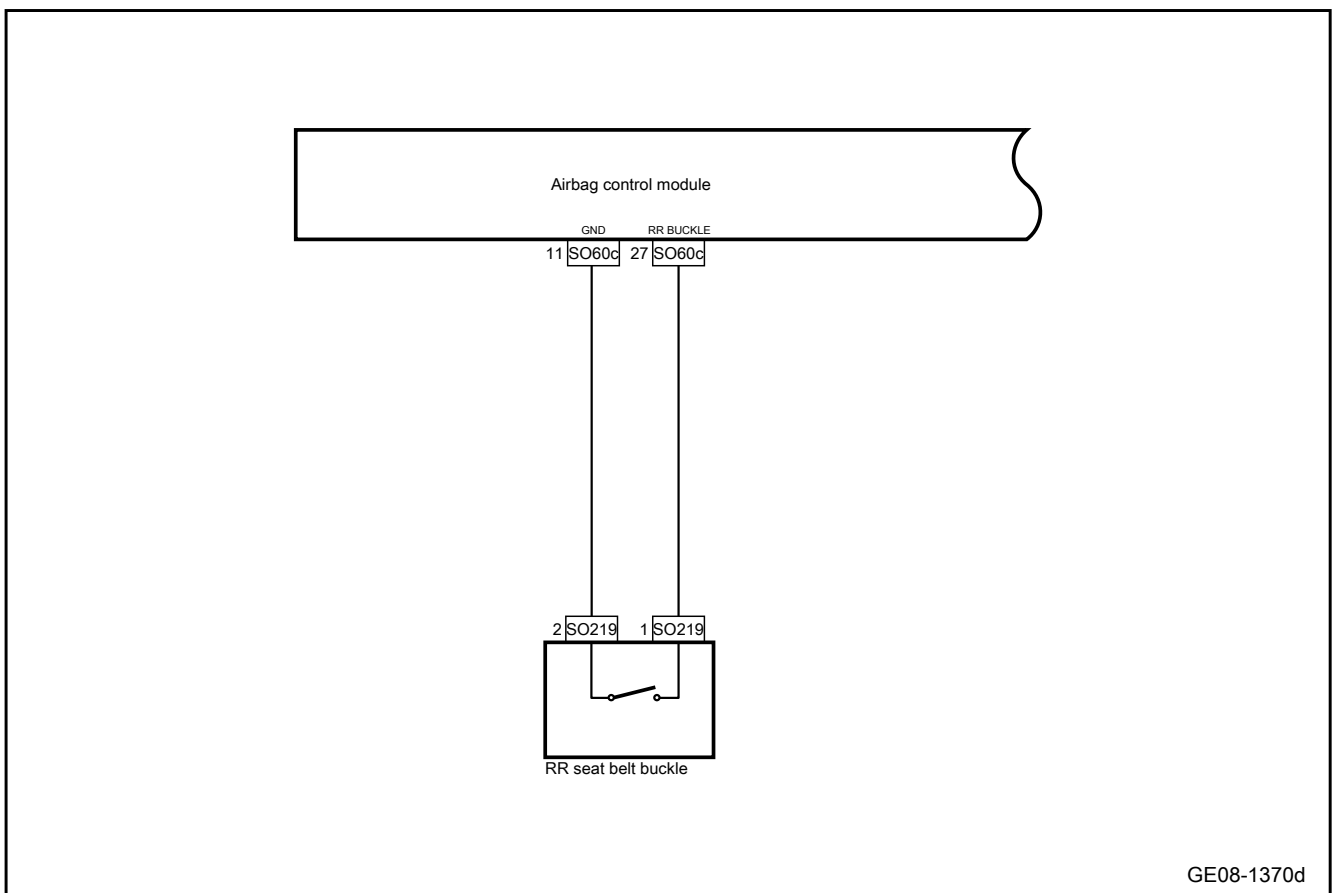
1. DTC description:

Diagnostic Trouble Code	Description
B005512	The right seat belt buckle switch in the second row is short-circuited to the power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005512	The right seat belt buckle switch in the second row is short-circuited to the power supply for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Rear right seat belt buckle 3. Supplementary restraint system

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the airbag control module and right rear seat belt buckle for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and right rear seat belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

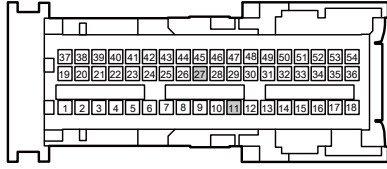
No

Repair or replace the faulty part.

Yes

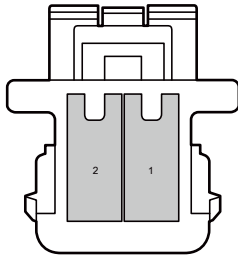
Step 3 Check whether the harness between the right rear seat belt buckle and airbag control module is open circuit.

SO60c airbag control module harness connector A



GE08-1507d

SO219 Right rear seat belt buckle harness connector



GE08-1508d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right rear seat belt buckle harness connector SO219.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(27)	SO219(1)	Standard resistance: less than 1Ω
SO60c(11)	SO219(2)	

- E. Confirm whether the measured value meets the standard.

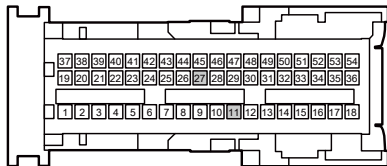
No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the right rear seat belt buckle and airbag control module is short-circuited to power supply.

SO60c airbag control module harness connector A



GE08-1509d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right rear seat belt buckle harness connector SO219.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(27)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

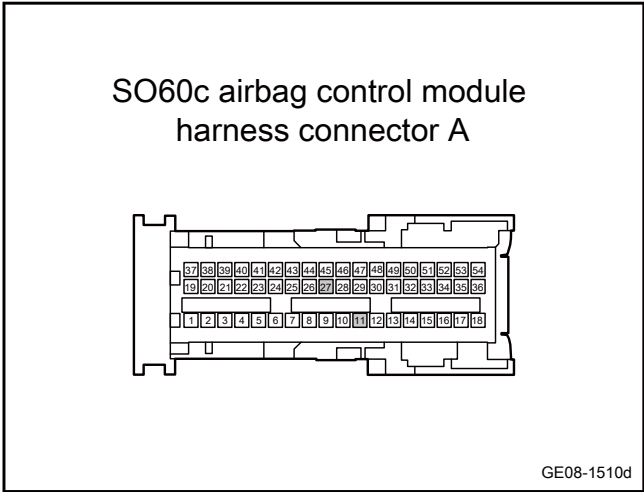
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the right rear seat belt buckle and airbag control module is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right rear seat belt buckle harness connector SO219.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(27)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the rear right seat belt buckle.

- A. Replace the rear right seat belt buckle. See [Replacement of the Rear Right Seat Belt Buckle](#)
- B. Confirm whether the right rear seat belt buckle works normally.

Yes

System is normal.

No

**Step 7** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

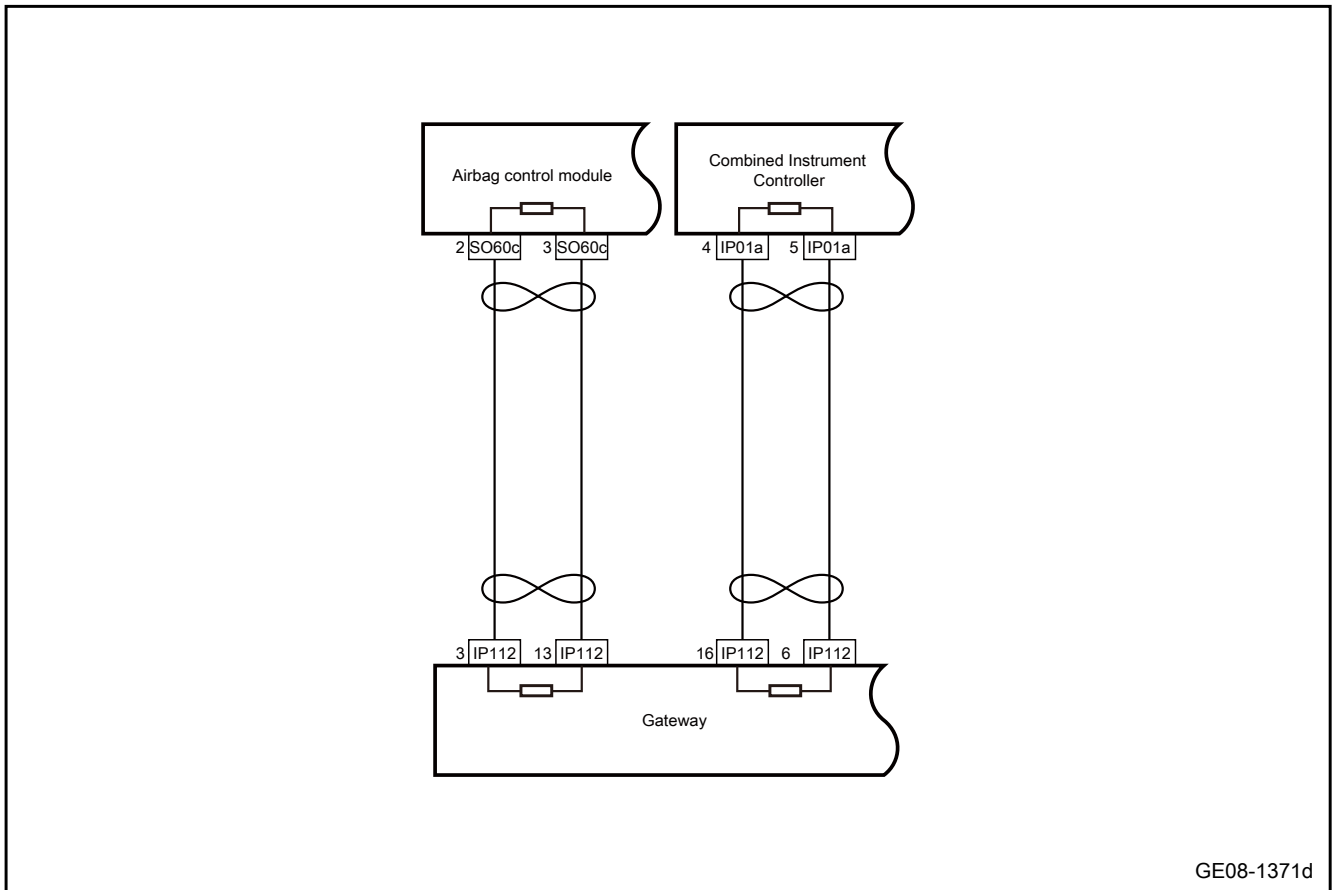
Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 8.3.6.13 Seat belt warming lamp

1. Schematic circuit diagram:



## 2. Diagnosis steps

### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster control unit, gateway and airbag control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the instrument cluster, gateway, and airbag control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. Perform CS-CAN network integrity check, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

**Step 3** Check the IF-CAN network integrity.

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

**Step 4** Replace the instrument cluster controller.

- A. Check the instrument cluster power supply and grounding harness. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller. Refer to [Replacement of instrument cluster controller](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 5** Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 6** System is normal.

### 8.3.7 Removal and installation

#### 8.3.7.1 Replacement of the front seat belt buckle assembly

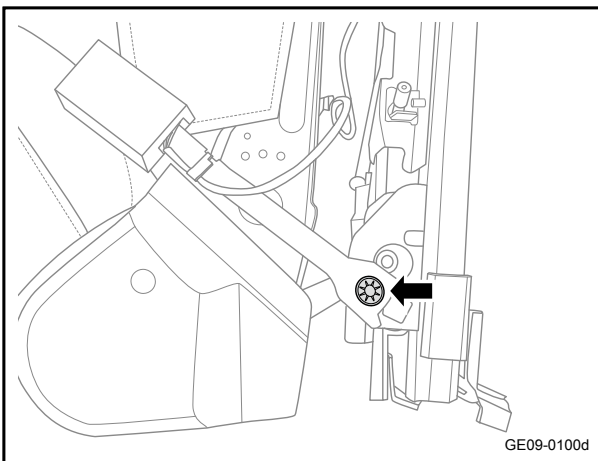
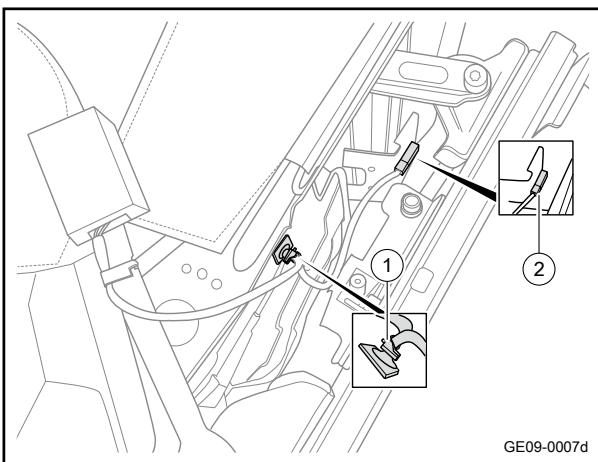
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

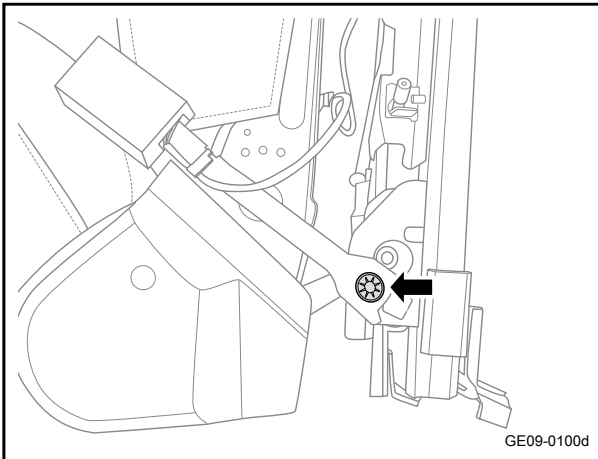
- 2 Remove the left front seat assembly. See [Replacement of left front seat assembly](#)
- 3 Disconnect the harness fixing clip 1 of the front seat belt buckle.
- 4 Disconnect the front left seat belt warning sensor harness connector 2.



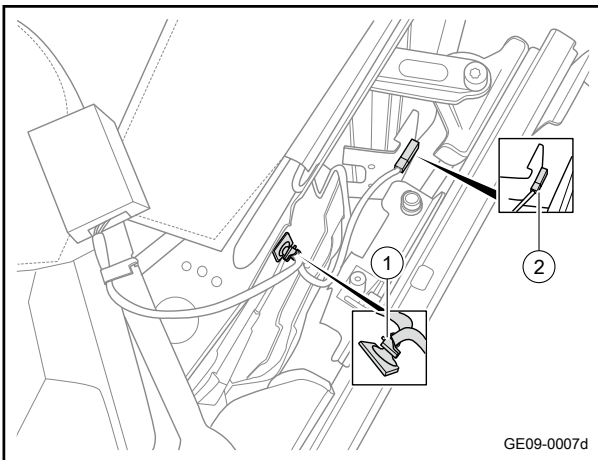
- 5 Remove the 1 fixing bolt of the the front seat belt buckle and take off the seat belt buckles of front seats.

##### Installation procedure





- 1 Move the front seat belt buckle assembly to the installation position, install and tighten 1 fixing bolt of the front seat belt buckle.



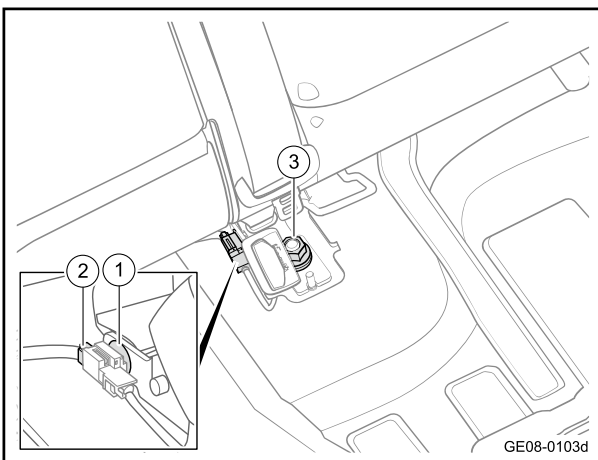
- 2 Connect to the front left seat belt warning sensor harness connector 2.
- 4 The harness fixing clip 1 for fixing the front seat belt buckle.

- 5 Install the left front seat assembly.
- 6 Connect the negative cable of battery.

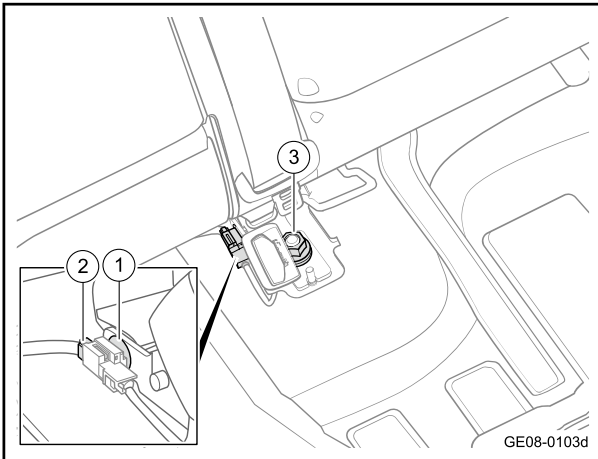
### 8.3.7.2 Replacement of rear-row left seat belt buckle

#### Removal procedure

- 1 Remove the rear-row seat cushions. See [Replacement of rear seat cushions](#)
- 2 Pry off the 1 fixing buckle 1 of the rear left seat belt buckle harness.
- 3 Disconnect the 1 harness connector 2 of the rear left seat belt buckle.
- 4 Remove the 1 fixing bolt 3 of rear-row left seat belt buckle.
- 5 Remove the rear-row left seat belt buckle.



#### Installation procedure



- 1 Move the left rear seat belt buckle to the installation position.
- 2 Install one fixing nut 3 on the left seat belt buckle of the rear row.  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)
- 3 Connect 1 harness connector 2 to the left seat belt buckle of the rear row.

#### Caution

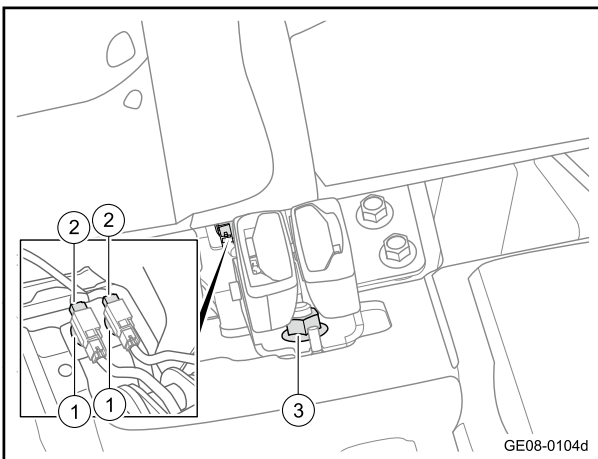
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install 1 fixed buckle 1 of the rear left seat belt buckle harness.
- 5 Install the rear-row seat cushions.

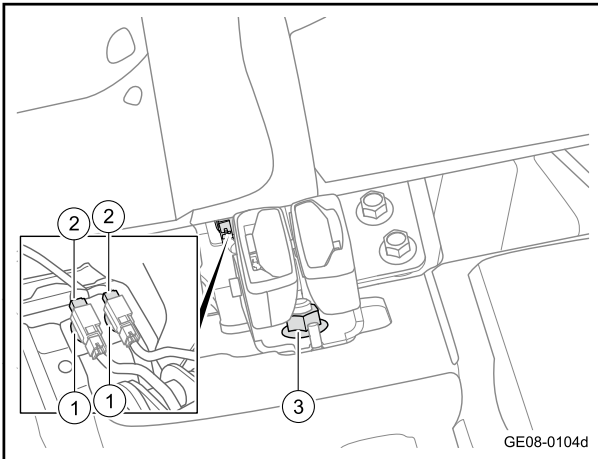
### 8.3.7.3 Replacement of rear middle and right lock catch assembly

#### Removal procedure

- 1 Remove the rear-row seat cushions. See [Replacement of rear seat cushions](#)
- 2 Remove the right mounting plate liner of the luggage compartment carpet. See [Replacement of the Left Mounting Plate Liner of the Luggage Compartment Carpet](#)
- 3 Pry off the 2 fixed buckles 1 of the middle and right lock latch harness in the rear row.
- 4 Disconnect the 2 harness connectors 2 of the middle and right lock catches in the rear row.
- 5 Remove the 1 fixing nut 3 of the middle and right lock catches in the rear row.
- 6 Remove the middle and right lock catches in the rear row.



#### Installation procedure



- 1 Move the middle and right lock catches in the rear row to the installation position.
- 2 Install the 1 fixing nut 3 of the middle and right lock catches in the rear row.  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)
- 3 Connect the 2 wire harness connectors 2 of the middle and right lock catches in the rear row.

#### Caution

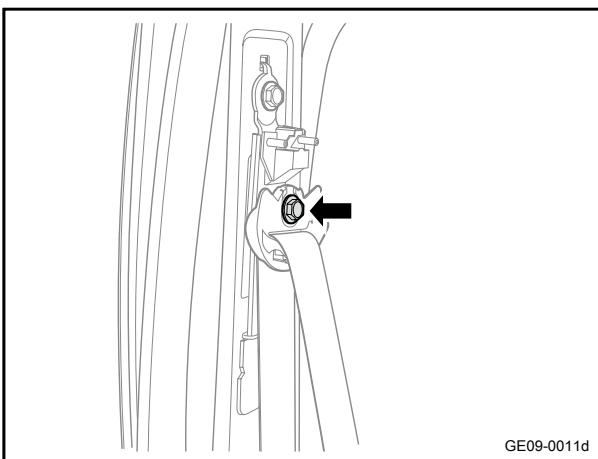
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

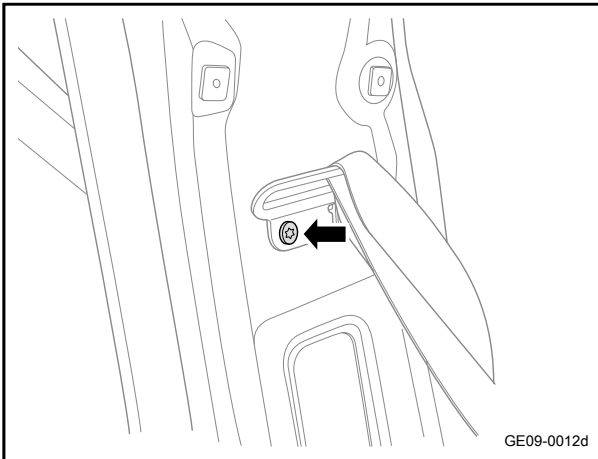
- 4 Install the 2 fixed buckles 1 of the rear middle and right lock catch harness.
- 5 Install the right mounting plate liner of the luggage compartment carpet.
- 6 Install the rear-row seat cushions.

### 8.3.7.4 Replacement of front-row left seat belt assembly

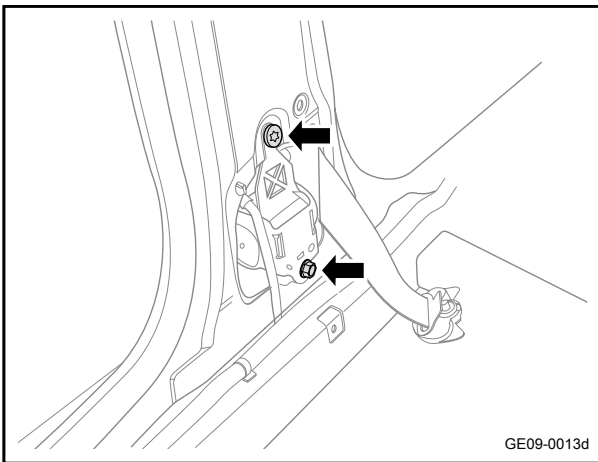
#### Removal procedure

- 1 Remove the upper trim panel assembly on the left B-column. Refer to [Replacement of B-pillar upper trim panel assembly](#)
- 2 Remove the lower decorative panel assembly of the right B-pillar. Refer to [Replacement of left B-pillar lower trim panel assembly](#)
- 3 Remove the 1 fixing bolt of the shoulder guide ring of seat belt assembly.

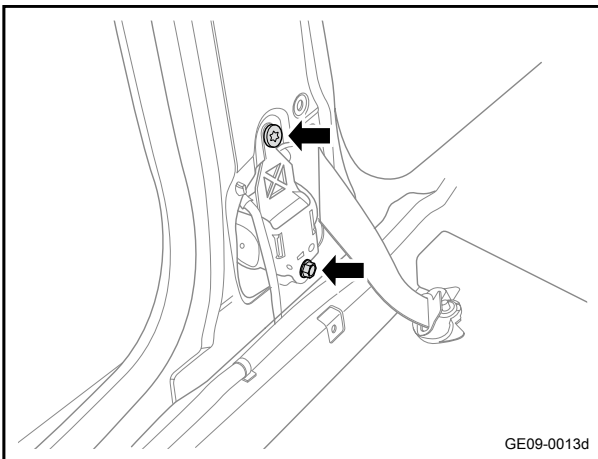




- 4 Remove 1 fixing bolt from the middle column of the seat belt assembly.

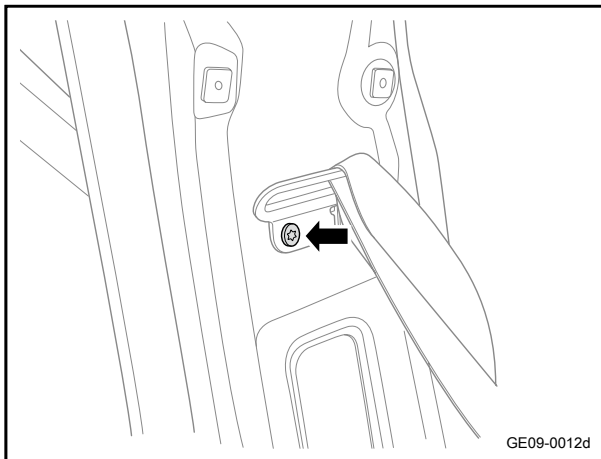


- 5 Remove 2 fixing bolts of the seat belt assembly.
- 6 Remove the front left seat belt assembly.



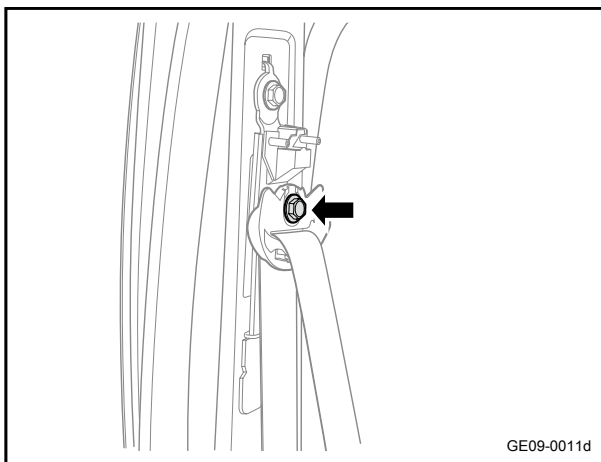
#### Installation procedure

- 1 Move the front left seat belt assembly to the installation position.
- 2 Install 2 fixing bolts of the seat belt assembly.  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)



- 3 Install 1 fixing bolt on the middle column of the seat belt assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 4 Install 1 fixing bolt on the shoulder guide ring of the seat belt assembly.

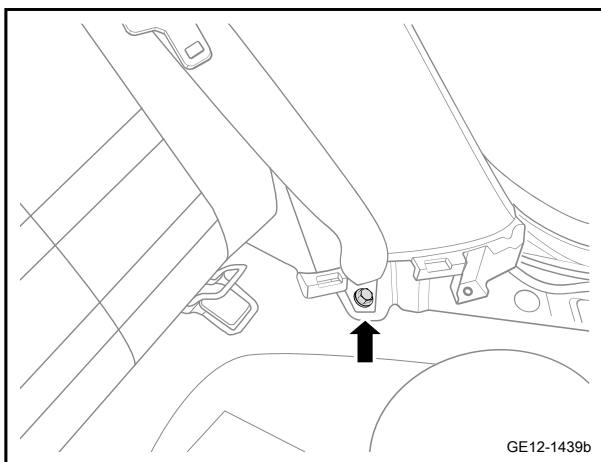
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)

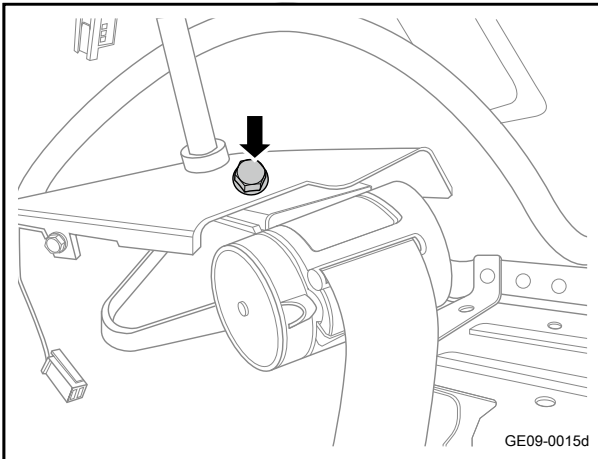
- 5 Install the left B-pillar lower trim panel assembly.
- 6 Install the left B-pillar upper trim panel assembly.

### 8.3.7.5 Replacement of third-row left seat belt assembly

#### Removal procedure

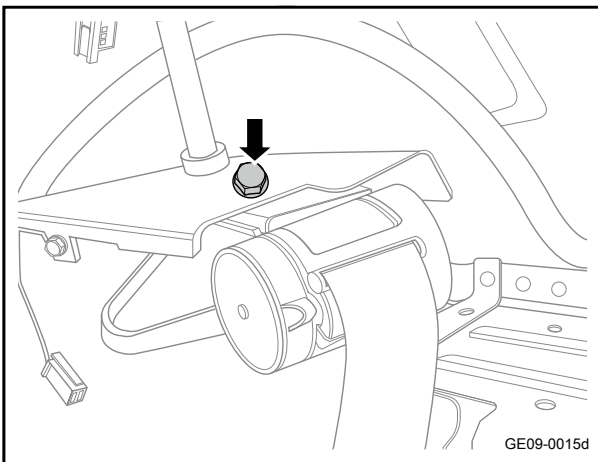
- 1 Remove the trim panel assembly in the left rear column.  
See [Replacement of Trim Panel in the Left Rear Column](#)
- 2 Remove 1 fixing bolt at the lower fixing point of the left seat belt of the rear seat.



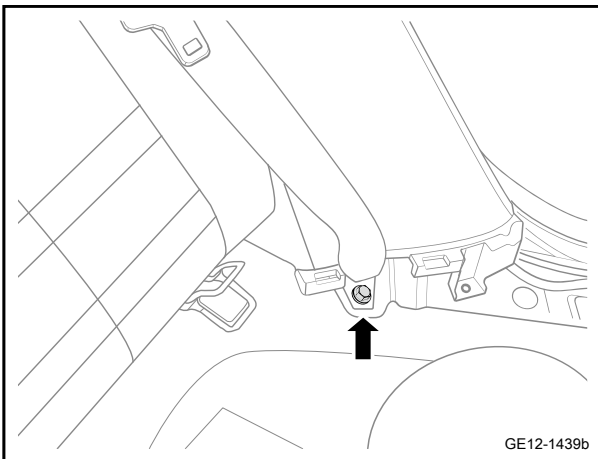


- 3 Remove the 1 fixing bolt of the left seat belt of the rear seat.
- 4 Remove the left seat belt of the rear seat.

#### Installation procedure



- 1 Move the left seat belt of the rear seat to the installation position.
- 2 Install a fixing bolt on the left seat belt of the rear seat.  
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



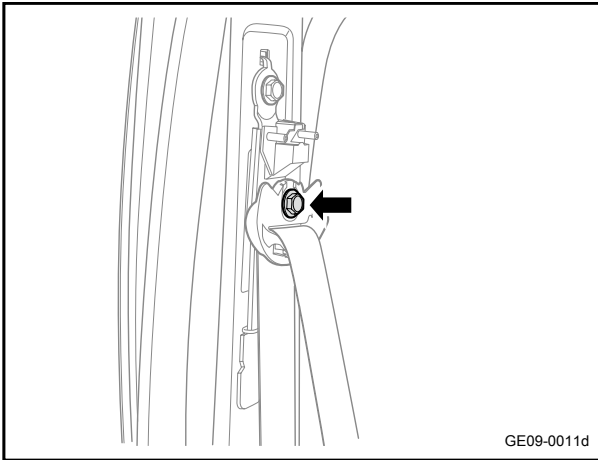
- 3 Install the lower fixing point bolts of the left seat belt of the rear seat.  
Torque: 45N·m (metric system) 33.2lb-ft (imperial system)

- 4 Install the rear left column middle trim panel assembly.

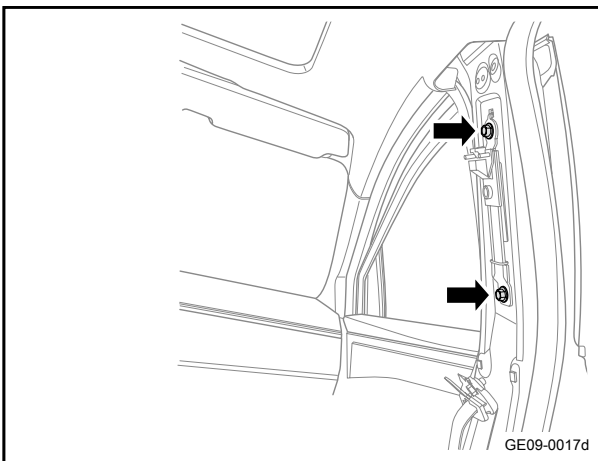
### 8.3.7.6 Replacement of front seat belt height adjuster

#### Removal procedure

- 1 Remove the upper trim panel assembly on the left B-column. Refer to [Replacement of B-pillar upper trim panel assembly](#)



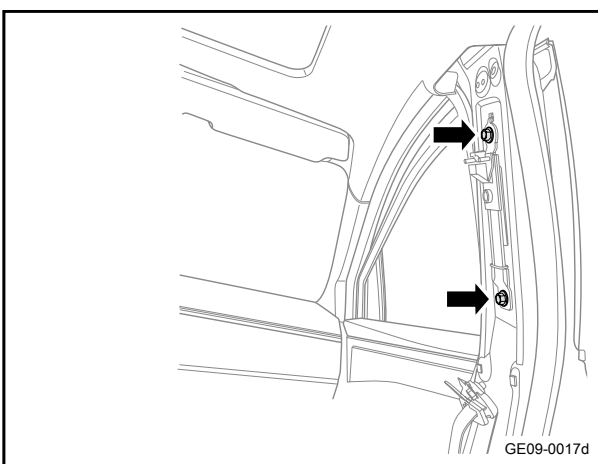
- 2 Remove 1 fixing bolt at the fixing point on the lower part of the front-row seat belt.

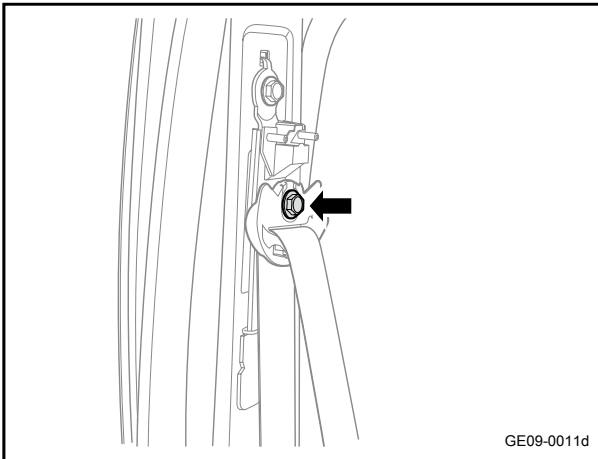


- 3 Remove 2 fixing bolts of front seat belt height adjuster.
- 4 Remove the front-row seat belt height adjuster.

Installation procedure

- 1 Move the front seat belt height adjuster to the installation position.
- 2 Install 2 fixing bolts of front seat belt height adjuster.  
Torque: 35N·m (metric system) 25.8lb-ft (Imperial system)





- 3 Install 1 fixing bolt at the fixing point on the lower part of the front-row seat belt.

- 4 Install the left B-pillar upper trim panel assembly.



## 8.4 Active safety system

### 8.4.1 Specification

#### 8.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screw of front millimeter-wave radar	ST4.8×16	1.3 - 1.7	1 - 1.3

## 8.4.2 Description and operation

### 8.4.2.1 Instructions and Operations

#### Automatic emergency brake (AEB) system

The automatic emergency braking system monitors the distance and relative speed of the target ahead. When the driver brakes too late, the braking force is too small, or there is no braking at all, the system will take measures to assist the driver in avoiding or mitigating the collision. The AEB system includes two modules: alarm and emergency braking.

The automatic emergency braking system is a safety system. In every ignition cycle, the function is turned on by default. After the automatic emergency braking system is turned on, the alarm function of the automatic emergency braking system can be turned on and its sensitivity can be selected. The sensitivity will remember the driver's choice. There is no need to make a selection every time you get in the vehicle. When the sensitivity is low, the alarm is relatively late, when the sensitivity is high, the alarm is relatively early, and the medium-sensitivity alarm is between the above two. If the driver thinks that the alarm is too frequent, he can choose a lower sensitivity.

1. The automatic emergency braking system (AEB) has the following sub-functions:

##### 1. Brake pre-fill

The brake pre-fill function should control the ESC to eliminate the gap between the brake pad and the brake disc, reduce the response time and shorten the braking distance during emergency braking.

##### 2. Adjustment of hydraulic brake assist level

The hydraulic brake assist function is used to assist the driver in braking in an emergency. This function is based on the preset parameters as the judgment condition. When the driver's braking rate meets the conditions, full braking is adopted to achieve the optimal braking distance.

The hydraulic brake assist level adjustment function can control the ESC to adjust its HBA preset parameters according to different degrees of danger, so as to assist the driver to take full braking to avoid collisions in emergency situations.

##### 3. Safe distance alarm

The safe distance alarm function works in a non-emergency state (if it remains in this state, there is no risk of collision), and is used to remind the driver that the distance following the vehicle in front is too small, and the driver should adjust his

driving behavior and maintain a reasonable distance between vehicles.

##### 4. Pre-alarm

The pre-alarm function should be used as the first-level alarm to prompt the driver to react when a dangerous situation occurs.

##### 5. Emergency alarm

The emergency alarm function should be used as a second-level alarm (a little brake) to prompt the driver to react when the dangerous situation is more urgent.

##### 6. Emergency brake assist

The emergency brake assist function should provide additional braking force to the driver with insufficient auxiliary braking force in an emergency, so as to avoid or reduce the risk of collision.

##### 7. Medium speed emergency braking

The medium-speed automatic emergency braking function should actively control the braking system to apply braking force if the driver does not take measures after the pre-collision alarm function is enabled, in order to increase the driver's reaction time and reduce the relative speed.

##### 8. Low-speed emergency braking

The low-speed automatic emergency braking function should actively control the braking system to brake with full force in the case of an imminent collision at a lower speed to avoid or reduce the damage to the driver from the collision.

##### 9. Pedestrian brake pre-fill

The brake pre-fill function should control the ESC to eliminate the gap between the brake pad and the brake disc, reduce the response time and shorten the braking distance during emergency braking.

##### 10. Pedestrian hydraulic brake assist level adjustment

The pedestrian hydraulic brake assist function is used to assist the driver in braking in an emergency. This function is based on the preset parameters as the judgment condition. When the driver's braking rate meets the conditions, full braking is adopted to achieve the optimal braking distance.

The pedestrian hydraulic brake assist level adjustment function can control the ESC to adjust its HBA preset parameters according to different degrees of danger, so as to

assist the driver to take full braking to avoid collisions in emergency situations.

#### 11. Pedestrian pre-alarm

The pedestrian pre-alarm function alerts the driver when a pedestrian is detected and there is an emergency collision risk, so that the driver can react in time to reduce the risk of collision. The pedestrian pre-warning function should not only meet the requirements for test scenario of E-NCAP VRU, that is, the moving pedestrian on the trajectory in front of the vehicle, but also respond to the stationary pedestrian on the trajectory in front of the vehicle.

#### 12. Automatic emergency braking for pedestrians

The automatic emergency braking function for pedestrians should actively control the braking system to apply braking force if the driver does not take measures after the pre-collision alarm function is enabled, in order to increase the driver's reaction time and reduce the relative speed.

#### Caution

- The related functions of AEB pedestrian protection can only be triggered when the camera can observe pedestrians.
  - When the function of pedestrian protection is triggered, and the overall system will be more cautious than the AEB vehicle system, the alarm and braking will be relatively late, and the braking force will be relatively strong.
2. In some cases, AEB function will be inhibited. The conditions for inhibiting are as follows:
- The driver takes the initiative to steer.
  - The driver's active throttle reaches a certain threshold (85%).
  - The driver's active braking reaches a certain threshold.
  - The radar has detected a malfunction.
  - The system is abnormal.
  - Engage the N gear.
  - The vehicle is in an unstable state.
  - The ESC function is not available.
  - The driver man-machine interface selects the shutdown function.
  - Driver's seat belt is not fastened.
  - The main driver's door opens.

#### Caution

Most of the inhibitions are temporary (such as braking, throttle steering, etc.). When the driver stops steering, throttle, braking, etc., the function will automatically resume.

3. In some cases, the AEB function activation will be suspended and the suspension conditions are as follows:

- The driver takes the initiative to steer.
- The driver's active throttle reaches a certain threshold (85%).
- The radar has detected a malfunction.
- The system is abnormal.
- The vehicle is in an unstable state.
- The ESC function is not available.
- Driver's seat belt is not fastened.
- The main driver's door opens.

#### Caution

Suspension of activation means that the function has been triggered. If the driver does the above operation, the system will suspend the work of AEB and respond to the driver's operation request.

#### Lane Keeping Assist (LKA)

The lane keeping assist system consists of lane departure warning, lane departure assist, and lane keeping assist. The system uses a front-view camera to identify the lane lines and calculates the distance between the vehicle and the left and right lane lines. When the vehicle deviates from the lane, the system will provide active correction to prevent it from deviating from the lane, or remind the driver to control the vehicle in the lane. This function is suitable for expressways or similar main roads.

#### Lane Departure Warning (LDW)

The Lane Departure Warning (LDW) warns the driver in the event of an unintentional lane departure of his/her own vehicle. Unintentional lane departure includes lane departure that has already occurred, as well as lane departure that is about to occur.

#### Lane Departure Prevention (LDP)

Lane Departure Prevention (LDP) When the vehicle is approaching the lane line and there is a risk of departure, the system will actively control the vehicle back to the lane by applying torque to the steering wheel.

#### Lane Keeping Assist (LKS)

Lane Keeping Assist (LKS) will actively manipulate the vehicle to stay in the middle of the lane by applying torque to the steering wheel. LKS can only work when it recognizes the left and right lane lines at the same time.

### Speed limit information function (SLIF)

When the speed limit reminder system (SLIF) exceeds the speed limit value of the current road, the system will give an alarm in time to assist the driver in standard driving. The driver can check whether to enable this function in the setting interface of the central control screen.

#### 1. Sources of speed limit data

The front camera can recognize the speed limit sign about 70m ahead. When the vehicle passes the plane where the sign is located, the speed limit information will be displayed on the instrument and HUD.

The navigation system can provide the electronic eye speed limit information about 700m/300m ahead. When the vehicle is 700m/300m in front of the electronic eye, the electronic eye speed limit value will be displayed on the instrument and HUD.

#### 2. System working mode

Fusion mode:

The Speed Limit Information Function (SLIF) system will enter the fusion mode when the camera system and the navigation system are working normally. The fusion mode is the normal mode of SLIF. In this mode, SLIF can recognize the speed limit sign and the electronic eye speed limit information.

Camera only mode:

When the Speed Limit Information Function (SLIF) fails in the navigation system, the camera system can still work. At this time, it will enter the camera-only mode, but only the speed limit sign can be recognized in this mode, and the driver cannot obtain the electronic eye speed limit information.

Navigation only mode:

The Speed Limit Information Function (SLIF) can still work after the camera system sends an occlusion fault. At this time, it will enter the navigation-only mode, but in this mode, only the electronic eye speed limit value can be recognized, and the driver cannot obtain the speed limit sign information.

#### 3. Speed limit information display logic

a. Display of electronic eye speed limit (navigation sends electronic eye speed limit logic):

- 700m (highway) and 300m (non-highway) before the speed limit of the electronic eye, continuously send the speed limit value of the electronic eye.

- After the vehicle passes the electronic eye speed limit, the navigation will no longer send the speed limit value.

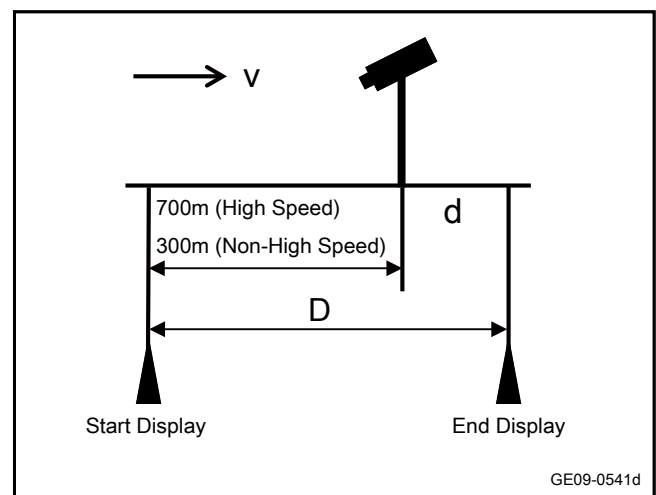
- If there is a continuous electronic eye speed limit, the navigation will send the previous electronic speed limit first and then send the next electronic speed limit.

- The SLIF function sets a delayed keeping distance  $d$  for the speed limit of the electronic eye, and this value is sent by the camera.

The electronic eye speed limit will continue to display a certain distance on the instrument and HUD, namely  $D$ :

The electronic eye speed limit keeping distance when the vehicle is running on the highway:  $D=700+d$ .

The electronic eye speed limit keeping distance when the vehicle is running on a non-high-speed road:  $D=300+d$ .



b. The display of the speed limit sign (the camera sends the speed limit sign logic):

- After the vehicle passes the plane where the speed limit sign is located, it starts to send the speed limit value continuously, and stops sending after keeping a certain distance  $d$ .

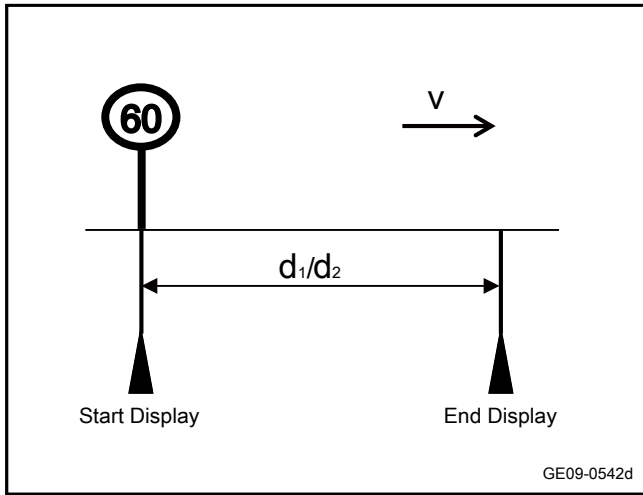
- The displayed distance  $d$  corresponding to different speed limit signs is different. For example, the '50' speed limit sign under a non-highway road keeps displaying 700m, and the '70' speed limit sign keeps displaying 900m.

- Non-high speed  $d_1$ : The minimum is 200m, and the maximum is 1100m.

- High speed  $d_2$ : minimum 400m, maximum 3800m.

Note

The above data is the empirical value defined according to different speed limit values and different working conditions, aiming to optimize the driving experience.



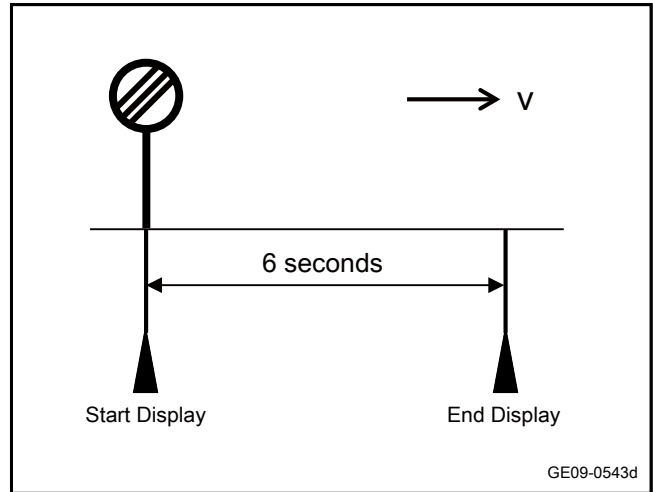
c. Display of 'speed limit cancellation' sign (the camera sends the logic of 'speed limit cancellation sign'):

– After the vehicle passes through the plane where the 'speed limit cancellation' sign is located, it will continue to send the speed limit cancellation signal, and it will stop sending after keeping a period of 6 seconds.

– The holding area of the 'speed limit cancellation' sign is different from other signs. The purpose of the speed limit

cancellation sign is to inform the driver of the current unlimited speed requirements. The display holding area of the sign is more appropriately defined by time.

– The holding area of other speed limit signs is more appropriately defined by distance, so as to avoid stopping the vehicle halfway and causing the display of speed limit signs to end early, which does not serve as a better reminder of the driver's help.



4. Speed limit information display scheme in different modes

The display schemes of various speed limit information in different working modes of SLIF are as follows:

SLIF mode	Electronic eye	Speed limit sign	Speed limit cancellation sign	Description
In fusion mode	Non-high speed: $D=300+d$ High speed: $D=700+d$	Non-high speed: d1 High speed: d2	t=6 seconds	When the navigation is normal, the current road information can be provided, and different speed limit signs can be displayed for high-speed road conditions and non-high-speed roads to obtain a better driving experience.
In camera only mode	Unavailable	All road conditions: d1	t=6 seconds	When the navigation fails, the speed limit information of the electronic eye cannot be obtained, and the current road type cannot be obtained at the same time. The keeping distance for the speed limit sign will be displayed as the keeping distance set for the non-high-speed road under all working conditions.
In navigation only mode	Non-high speed: $D=300$ High speed: $D=700$	Unavailable	Unavailable	When the camera fails, the speed limit sign information cannot be obtained.

#### 5. Display strategy of speed limit information

In real road conditions, the speed limit sign and the electronic eye speed limit do not exist separately, and often appear alternately. The speed limit sign is displayed after passing through its plane and maintains a certain distance, and the electronic eye speed limit is displayed and maintained 700m/300m in advance. During this process, the effective display distance of the speed limit sign and the electronic eye speed limit will inevitably overlap. Therefore, it is necessary to define the corresponding display strategy after the two data overlap. The overlap area should display speed limit data from the navigation or the camera. The specific strategy is defined as follows:

– The speed limit value is displayed in accordance with the updated speed limit value and the distance maintained.

– When the vehicle enters the ramp, the speed limit for ramp is displayed to the driver.

SLIF ramp speed limit display strategy:

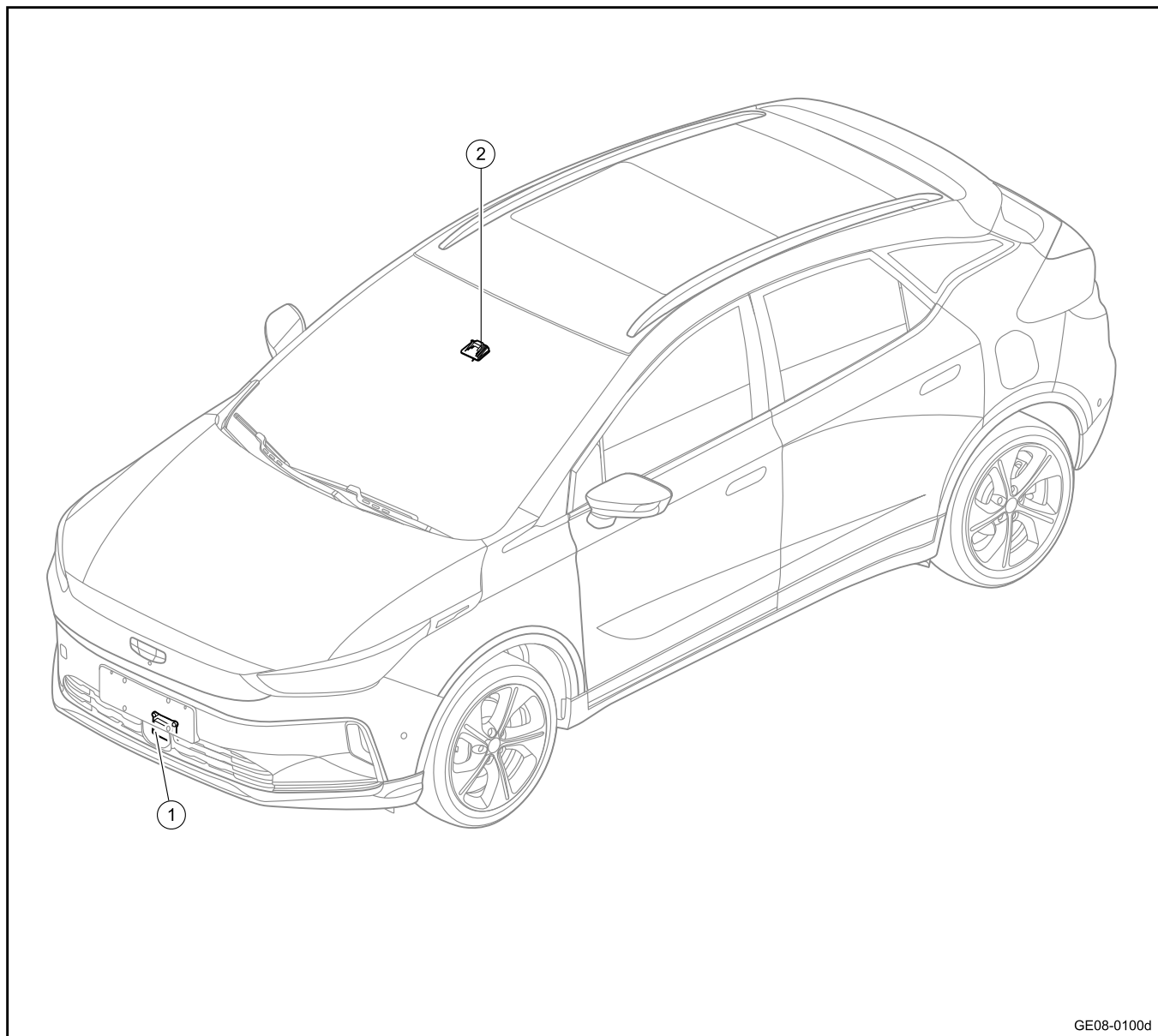
- a. When the vehicle enters the ramp, the speed limit for ramp is displayed to the driver.
- b. When the vehicle just passes through the ramp and continues to drive along the main road, the ramp speed limit is not displayed to the driver.

**Caution**

- When driving on an elevated road section, SLIF may miss and falsely report the ramp speed limit because the navigation does not send the correct road type.
- Due to the limited resolution of the camera, if the auxiliary sign of the ramp speed limit is not recognized, SLIF may miss and falsely report the ramp speed limit.
- The SLIF function mainly recognizes traffic speed limit signs that comply with the Vienna agreement. Other non-standard speed limit signs may be mis-recognized, missed, or even not recognized.

### 8.4.3 Part location

#### 8.4.3.1 Part Position



GE08-0100d

1. Front millimeter wave radar body

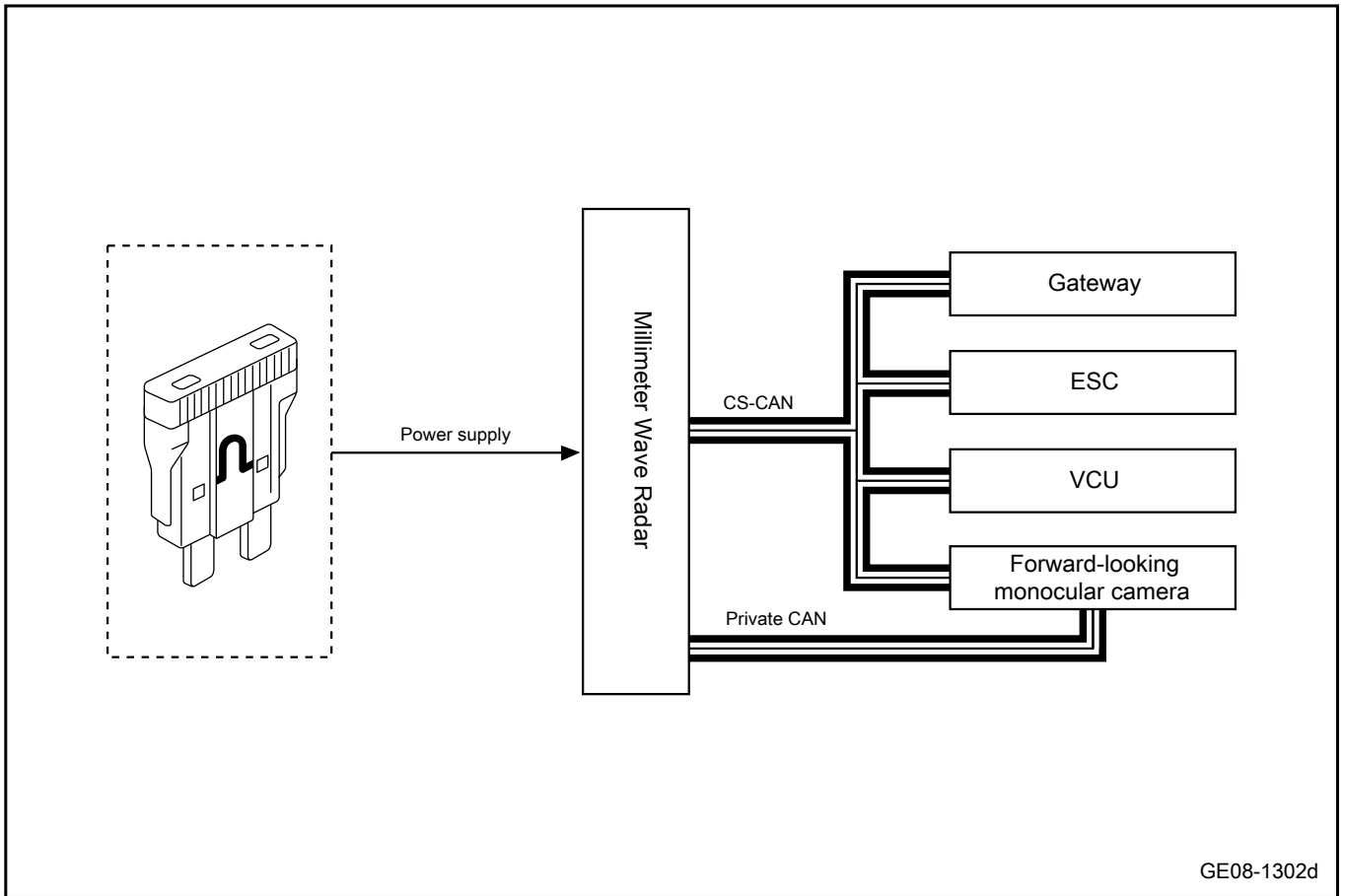
2. Front monocular camera



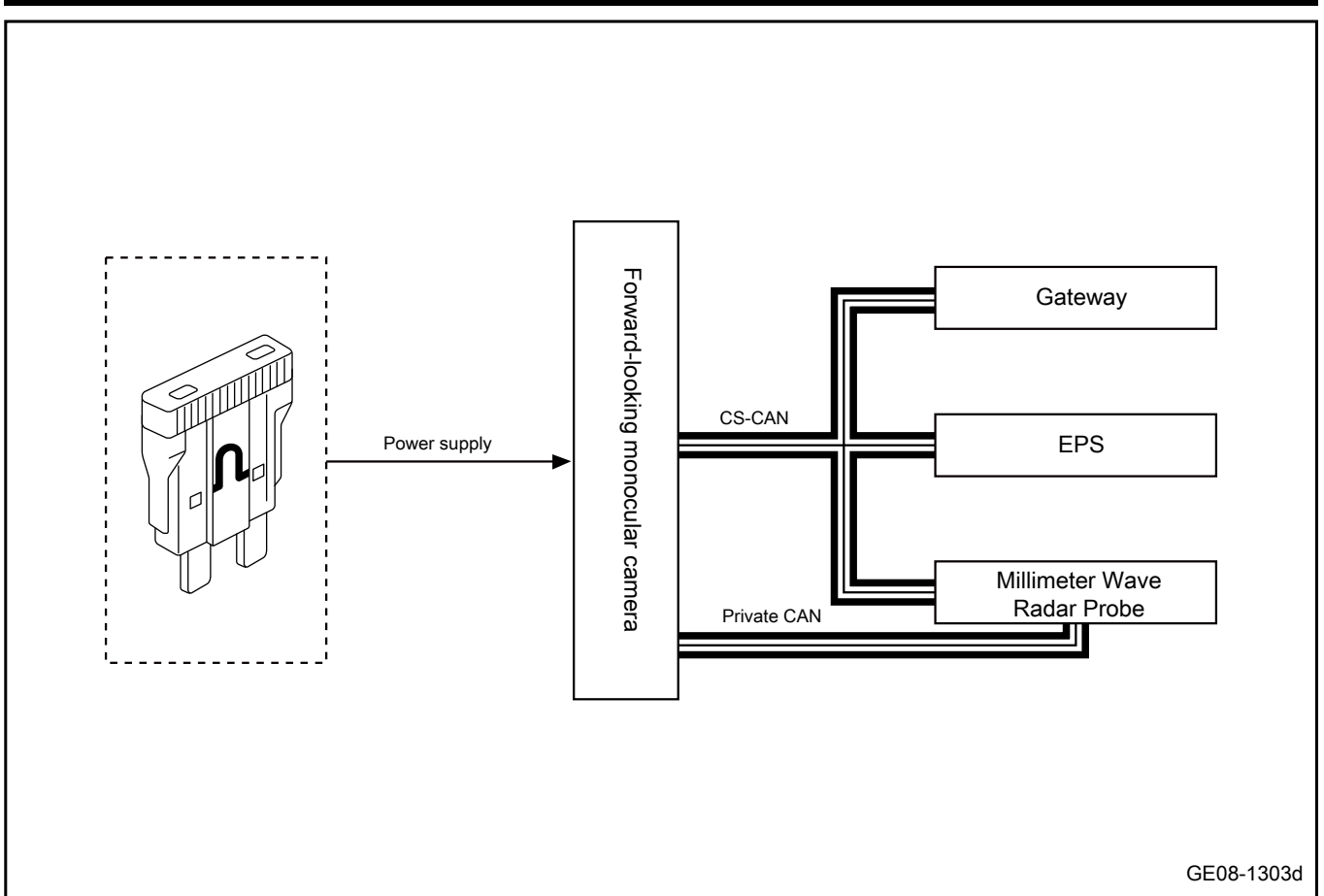
8.4.4 Electrical schematic diagram

8.4.4.1 Electrical schematic diagram of the active safety system

Ready Alert Brakes



Lane departure warning



## 8.4.5 Diagnostic information and steps

### 8.4.5.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

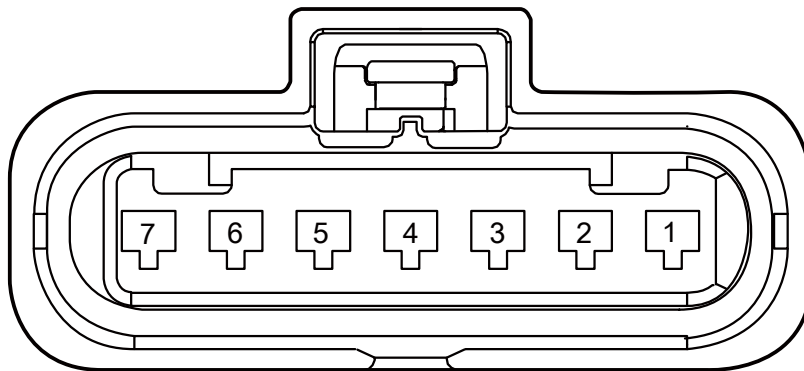
### 8.4.5.2 Routine inspection

1. Check after-sale installations that may affect the operation of the active safety system to ensure that they do not affect the operation of the active safety system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
3. Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 8.4.5.3 List of active safety system terminals

#### CA207 millimeter wave radar probe harness connector

### CA207 Millimeter Wave Radar Probe Harness Connector

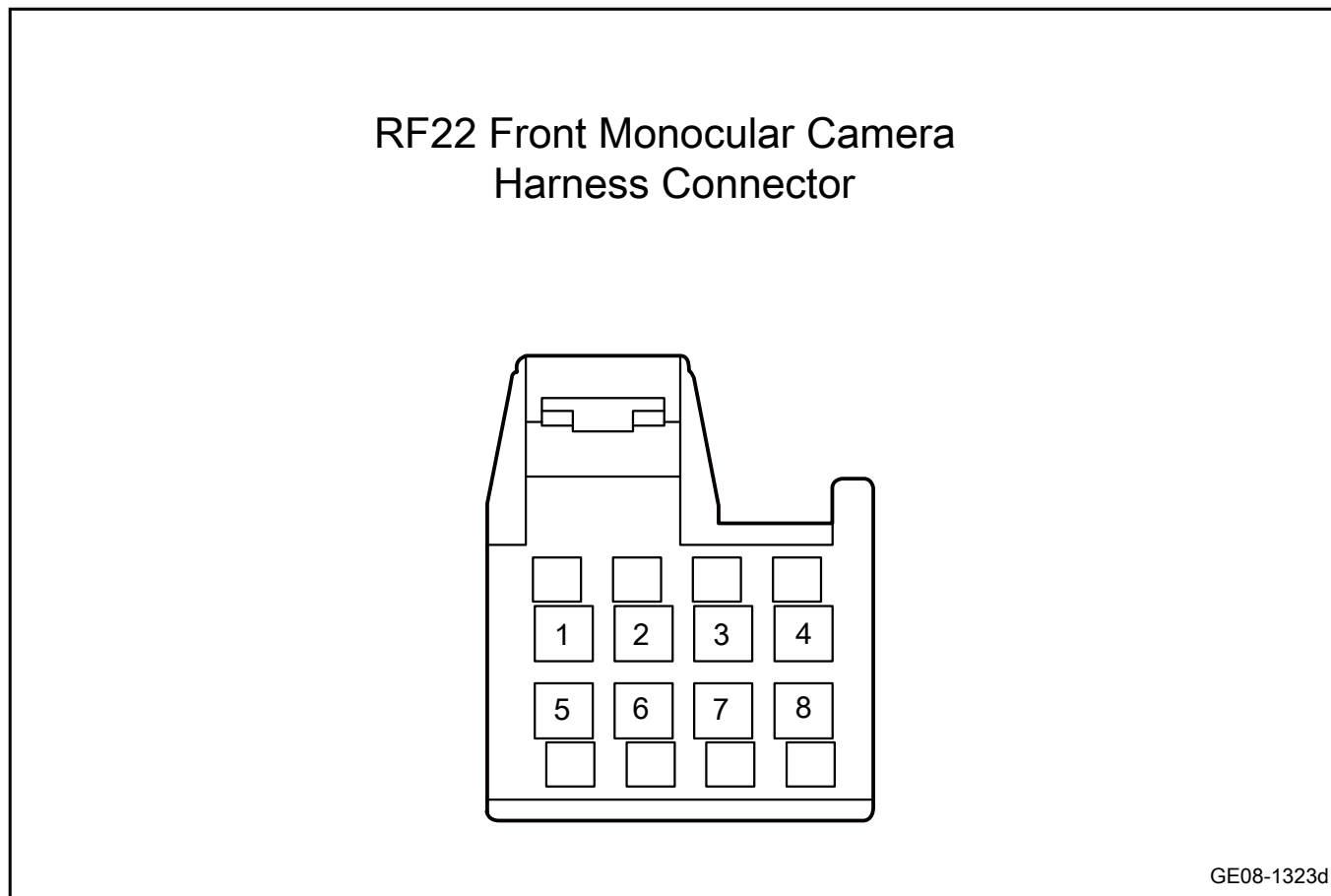


GE08-1322d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Millimeter wave radar probe grounding circuit
2	CS CAN-H	Chassis CAN high line
3	CS CAN-L	Chassis CAN low line
4	IG1 power supply	Millimeter wave radar probe ACC\ON\START power supply
5	CAN-H	Private CAN high line

Terminal No.	Terminal name	Terminal description
6	CAN-L	Private CAN low line
7	-	-

#### RF22 360 front monocular camera harness connector



Terminal No.	Terminal name	Terminal description
1	Ground connection	Front monocular camera grounding circuit
2	CS CAN-L	Chassis CAN low line
3	CS CAN-H	Chassis CAN high line
4	B+Power supply	Front monocular camera battery power supply
5	Ground connection	Front monocular camera grounding circuit
6	-	-
7	CAN-L	Private CAN low line
8	CAN-H	Private CAN high line

#### 8.4.5.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
FRS power failure	1. Fuse	Refer to <a href="#">FRS power failure</a>
	2. Harness and connector	
	3. Millimeter wave radar	
FRS communication fault	1. Harness and connector	Refer to <a href="#">FRS data communication failure</a>
	2. Millimeter wave radar	

Fault Symptom	Suspected fault location	Maintenance plan
	3. Diagnostic interface	
Internal failure of FRS	1. Millimeter wave radar	Refer to <a href="#">Internal failure of FRS</a>
FCS power failure	1. Fuse	Refer to <a href="#">FCS power supply failure</a>
	2. Harness and connector	
	3. Front monocular camera	
FCS communication fault	1. Harness and connector	Refer to <a href="#">FCS communication fault</a>
	2. Front monocular camera	
	3. Diagnostic interface	
Internal fault of FCS	1. Front monocular camera	Refer to <a href="#">Internal fault of FCS</a>
Private CAN Communication Failure of Adaptive Cruise	1. Harness and connector	See <a href="#">Private CAN Communication Failure of Adaptive Cruise</a>
	2. Millimeter wave radar	
	3. Front monocular camera	

#### 8.4.5.5 List of FRS Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Radar ECU power supply voltage is too low	Refer to <a href="#">FRS power failure</a>
U300617	Radar ECU power supply voltage is too high	
C132C78	Radar offline calibration is not completed failure	Refer to <a href="#">Internal failure of FRS</a>
C130009	Radar ECU failure failure	
C133502	Yaw rate deviation fault	
C133602	Reference speed unavailable fault	
C133702	Steering wheel angle deviation fault	
C133802	Abnormal speed	
C133978	Radar calibration error	
C133B04	Radar hardware failure failure	
C133E64	Unreliable radar hardware failure	
C134076	The position of the radar sensor is incorrect.	
C134104	Blindness of radar system	
C134298	Radar temperature exceeds fault	
C134404	Common untrustworthy fault	
C136030	Monitor the quality of radar received waves	
C136038	Monitoring radar step frequency hopping	
C135F09	Power chip control unit failure	
U243D83	YRS1 Checksum	Refer to <a href="#">FRS data communication failure</a>
U243E83	YRS2 Checksum	

Diagnostic Trouble Code	Description	Fault location/elimination method	
U24A283	SAS_Status checksum		
U241283	ESC_Status checksum		
U241683	ESC_RearWheelSpeedsKPH checksum		
U343D82	YRS1 count		
U343E82	YRS2 count		
U34A282	SAS_Status count		
U341282	ESC_Status count		
U341682	ESC_RearWheelSpeedsKPH count		
U045281	Invalid data received from ACU		
U042881	Invalid data received from SAS		
U041681	Invalid data received from ESC		
U012287	ESC communication failure		
U012687	SAS communication failure		
U015187	ACU communication failure		
U000100	Private CAN bus failure		See <a href="#">Private CAN Communication Failure of Adaptive Cruise</a>

#### 8.4.5.6 List of fCS Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U015187	Communication with ACU is lost	Refer to <a href="#">FCS communication fault</a>
U045281	The data received from ACU is illegal	
U045282	The count received from ACU is illegal	
U045283	The check received from ACU is invalid	
U012687	Communication with TCM/SAS is lost	
U042881	The data received from TCM/SAS is illegal	
U042882	The count received from TCM/SAS is illegal	
U042883	The check received from TCM/SAS is invalid	
U013187	Communication with EPS is lost	
U042081	The data received from EPS is illegal	
U042082	The count received from the EPS is illegal	
U042083	The check received from the EPS is invalid	
U012287	Communication with ESC is lost	
U041681	The data received from ESC is illegal	

Diagnostic Trouble Code	Description	Fault location/elimination method
U041682	The count received from the ESC is illegal	
U041683	The check received from the ESC is invalid	
U111487	Loss of communication with VCU	
U140481	VCU signal invalid	
U140482	The count received from the VCU is illegal	
U140483	The check received from the VCU is invalid	
U014087	Communication with BCM is lost	
U042281	The data received from BCM is illegal	
U042282	The count received from the BCM is illegal	
U042283	The check received from the BCM is invalid	
U015687	Communication with MMI is lost	
U015587	Communication with IPK is lost	
U042381	The data received from the IPK is illegal	
U023587	Communication with FRS is lost	
U043381	The data received from FRS is illegal	
U043382	The count received from the FRS is illegal	
U043383	The check received from the FRS is invalid	
U346082	The count received from the FRS is illegal	
U246083	The check received from the FRS is invalid	
U007300	CAN network bus off	
U300616	Control module input voltage is low	
U300617	Control module input voltage is high	Refer to <a href="#">Internal failure of FCS</a>
C120B96	System software failure	
C120449	Internal circuit failure	
C12024B	ECU temperature is out of range	
C120554	No calibration data	
C120197	Camera occlusion	
C120644	Matching parameter error	
C120D96	Application layer logic failure	
C120C96	Data fusion failure	

### 8.4.5.7 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 8.4.5.8 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 8.4.5.9 Data stream list

#### FRS

Serial No.	DID description	Physical value range	Unit
1	Power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Sensor control status	0-254	-
4	FRS temperature	-50-205	°C
5	Calibration monitoring failure	0-255	-

#### FCS

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Mileage before the first fault	0-999999	Km
4	Odometer of the last failure	0-999999	Km



Serial No.	DID description	Physical value range	Unit
5	ECU temperature	-40 - 215	degC
6	Year	2000-2099	-
7	Year	0-255	-
8	Day	0-255	-
9	Hour	0-255	-
10	minute	0-255	-
11	Second	0-255	-

#### 8.4.5.10 Private CAN Communication Failure of Adaptive Cruise

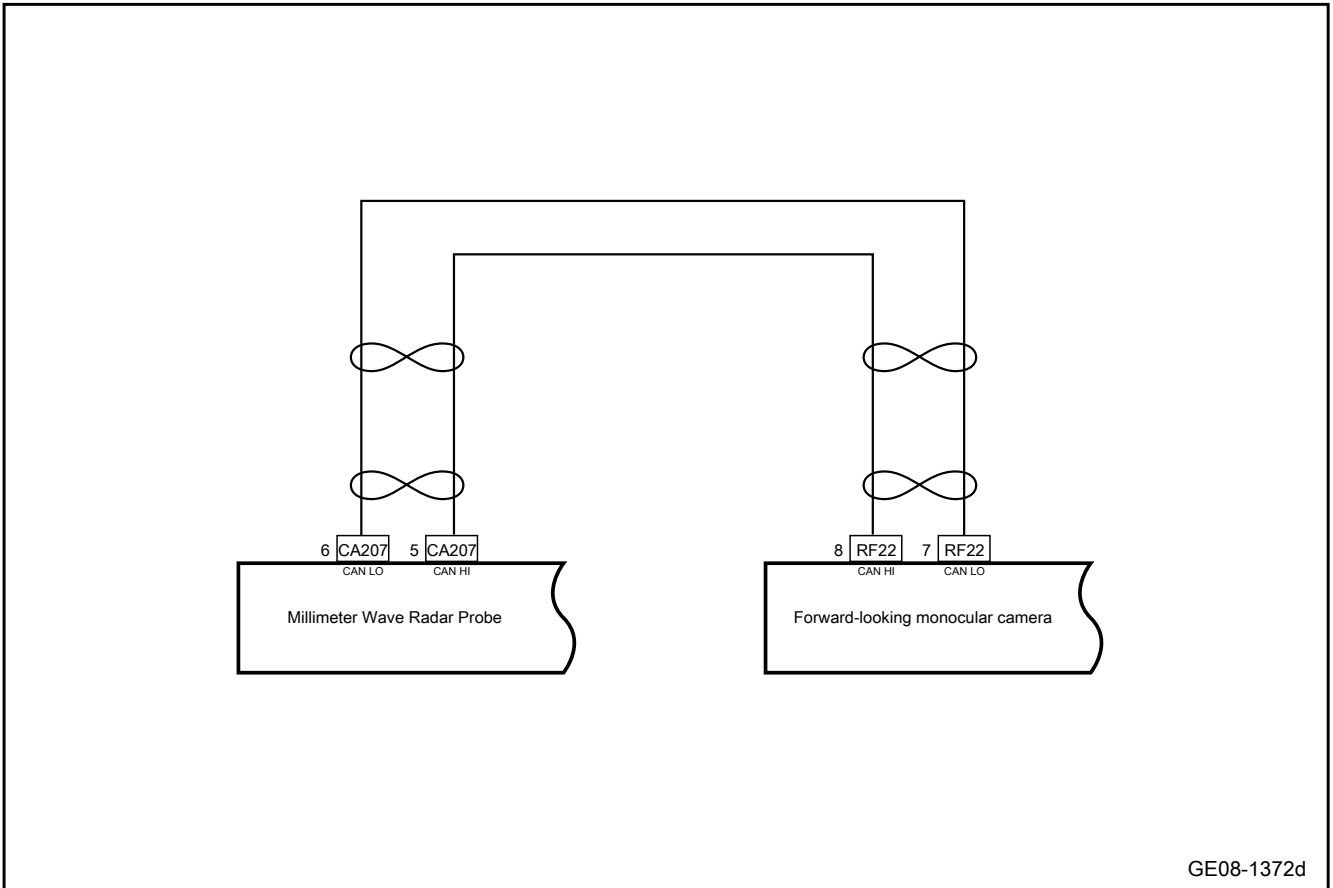
1. DTC description:

Diagnostic Trouble Code	Description
U000100	Private CAN bus failure

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U000100	The bus switching off counter cL1ToL2 equals to 10.	1. After the low voltage fault recovery 2. After the high voltage fault recovery	1. Circuit 2. Front monocular camera 3. Millimeter wave radar

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

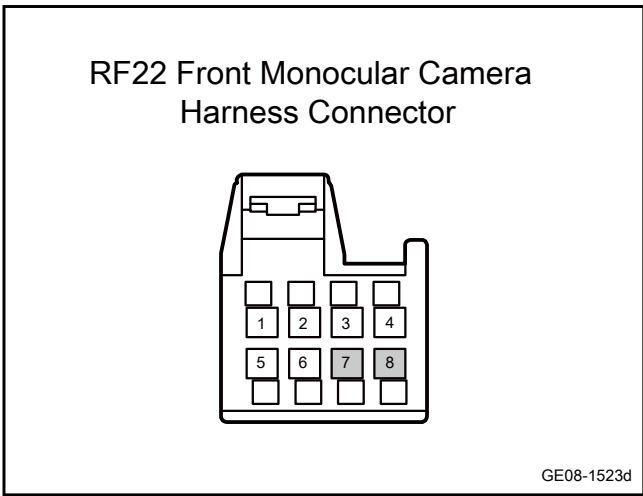
- A. Check the millimeter wave radar and the front monocular camera for signs of damage, deformation, smudges, or looseness.
- B. Check the millimeter-wave radar, front monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

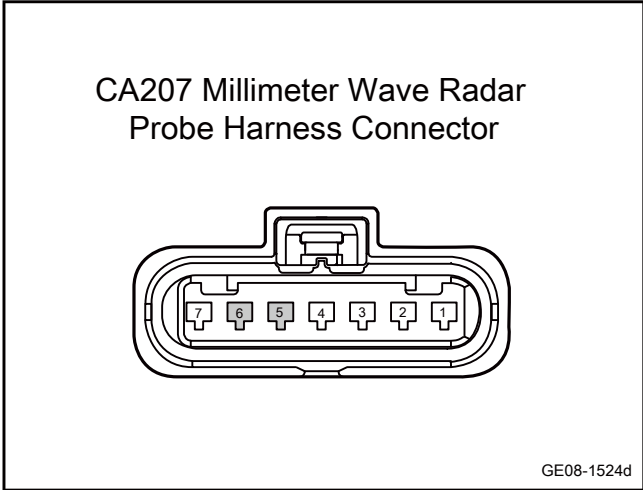
**Step 3** Detect whether the wiring harness between the front monocular camera and the millimeter wave radar is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the millimeter wave radar harness connector CA207.
- C. Disconnect the front monocular camera harness connector RF22.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22(7)	CA207(6)	Standard resistance: less than 1Ω
RF22(8)	CA207(5)	

- E. Confirm whether the measured value meets the standard.

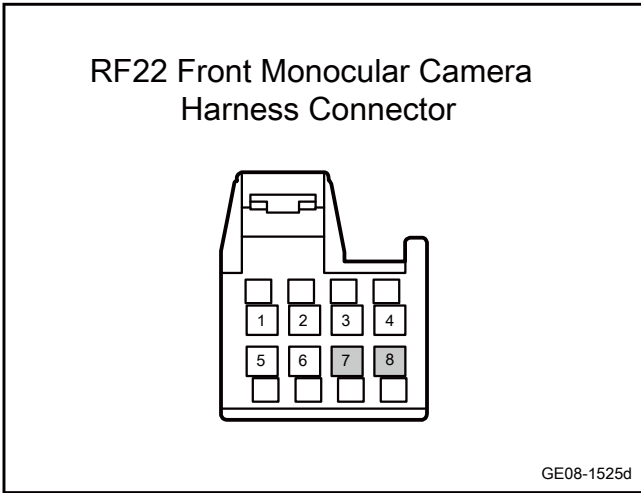


No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the front monocular camera and the millimeter wave radar is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the millimeter wave radar harness connector CA207.
- C. Disconnect the front monocular camera harness connector RF22.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

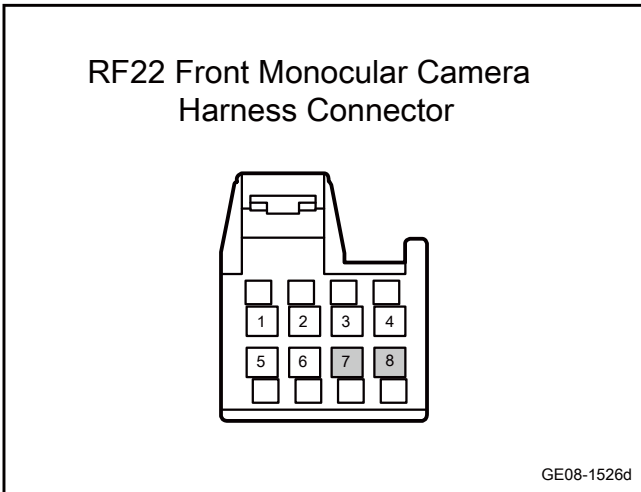
Measure terminal 1	Measure terminal 2	Standard value
RF22(7)	Vehicle body is grounded.	Standard voltage: 0V
RF22(8)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Detect whether the wiring harness between the front monocular camera and the millimeter wave radar is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the millimeter wave radar harness connector CA207.
- C. Disconnect the front monocular camera harness connector RF22.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
RF22(8)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Replace the front monocular camera.

- A. Check the power and grounding harness of the front monocular camera. See [Power Failure of Front Monocular Camera](#)
- B. Replace the front monocular camera. See [Replacement of Front Monocular Camera](#)

Yes

System is normal.

No

**Step 7** Replace the millimeter wave radar.

- A. Check the power supply and grounding harness of the millimeter wave radar. See [Power Failure of Millimeter Wave Radar](#)
- B. Replace the millimeter wave radar. See [Replacement of Millimeter Wave Radar](#)

Next Step

**Step 8** Reprogram and reset the millimeter wave radar.

- A. Reprogram and reset the millimeter wave radar. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Reprogram and reset the front monocular camera.

- A. Reprogram and reset the front monocular camera. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 10** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

### 8.4.5.11 FRS power failure

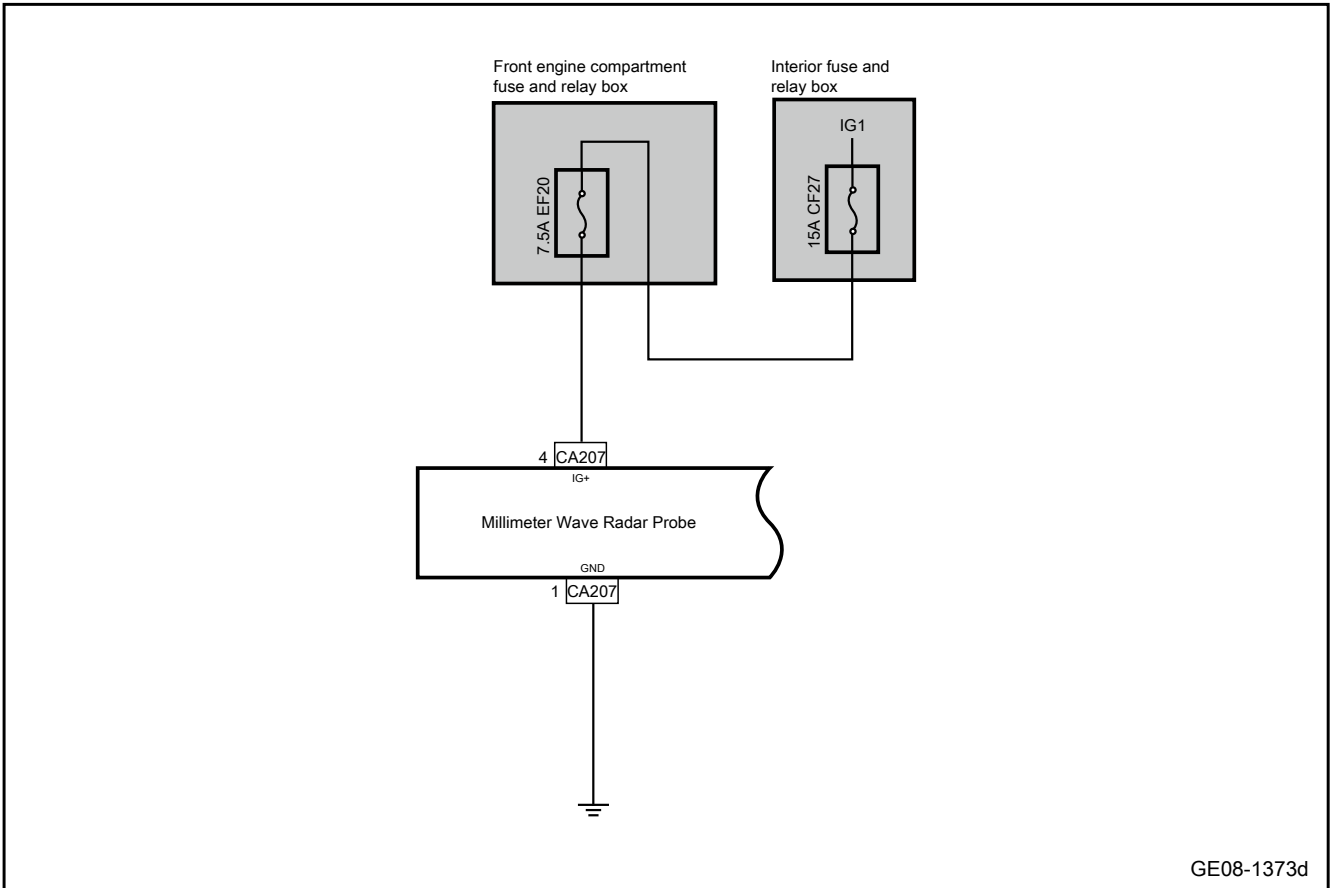
#### 1. DTC description:

Diagnostic Trouble Code	Description
U300616	Radar ECU power supply voltage is too low
U300617	Radar ECU power supply voltage is too high

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage is less than or equal to 9V, and the state is maintained for at least 1s. De-bubbling time: 1000 milliseconds	3000 milliseconds after ignition	<ul style="list-style-type: none"> <li>1. Fuse</li> <li>2. Circuit</li> <li>3. Millimeter wave radar</li> </ul>
U300617	Battery voltage $\geq 16V$ , the state is maintained for at least 1s. De-bubbling time: 1000 milliseconds		

#### 3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the millimeter wave radar for signs of damage, deformation, stains, or looseness.
- B. Check the millimeter-wave radar harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

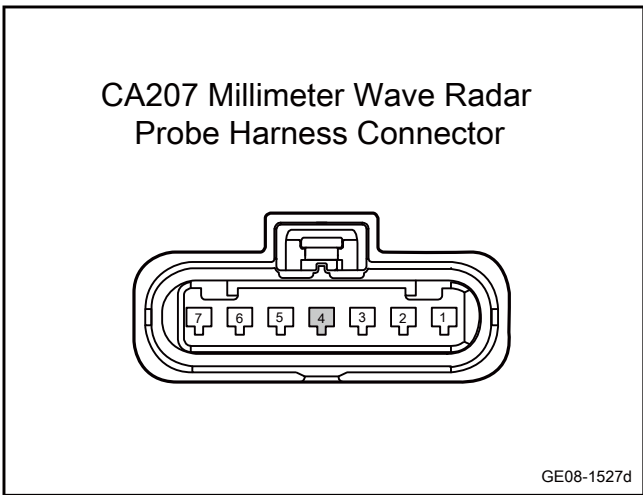
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug interior fuse CF27 and check if it is blown.  
Rated fuse capacity: 15A
- C. Unplug the EF20 fuse in the front engine compartment and check whether the fuse is blown out.  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the working voltage of millimeter wave radar is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the millimeter wave radar harness connector CA207.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA207(4)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

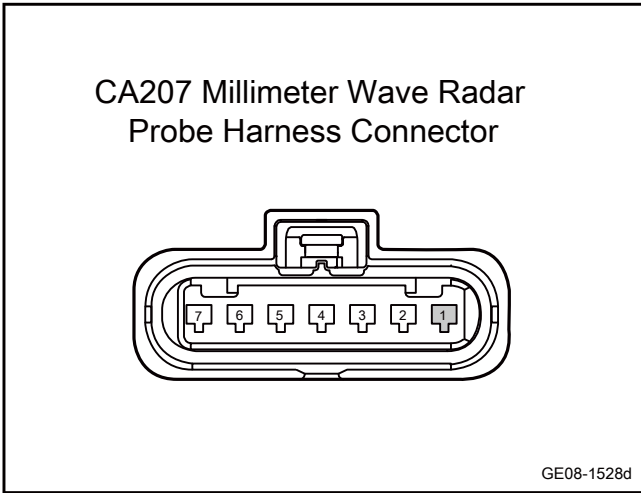
No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the millimeter wave radar is normal.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the millimeter wave radar harness connector CA207.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA207(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Replace the millimeter wave radar.

- A. Replace the millimeter wave radar. See [Replacement of Millimeter Wave Radar](#)

Next Step

**Step 6** Reprogram and reset the millimeter wave radar.

- A. Reprogram and reset the millimeter wave radar. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

#### 8.4.5.12 FRS communication fault

##### 1. DTC description:

Diagnostic Trouble Code	Description
U243D83	YRS1 Checksum
U243E83	YRS2 Checksum
U24A283	SAS_Status checksum
U241283	ESC_Status checksum
U241683	ESC_RearWheelSpeedsKPH checksum
U343D82	YRS1 count
U343E82	YRS2 count
U34A282	SAS_Status count
U341282	ESC_Status count
U341682	ESC_RearWheelSpeedsKPH count
U045281	Invalid data received from ACU
U042881	Invalid data received from SAS
U041681	Invalid data received from ESC
U012287	ESC communication failure
U012687	SAS communication failure
U015187	ACU communication failure

##### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U243D83	YRS1 (0X130) checksum error lasts for 200ms, de-bubbling time: 200ms	1. After the low voltage fault recovery 2. After the high voltage fault recovery 3. No bus disconnection fault 4. 3000 milliseconds after ignition	1. Circuit 2. Millimeter wave radar 3. Diagnostic interface
U243E83	YRS2 (0X131) checksum error lasts for 200ms, de-bubbling time: 200ms		
U24A283	SAS_Status (0x0E0) checksum error lasts for 100ms, de-bubbling time: 100ms		
U241283	ESC_Status(0x125) checksum error lasts for 200ms, de-bubbling time: 200ms		

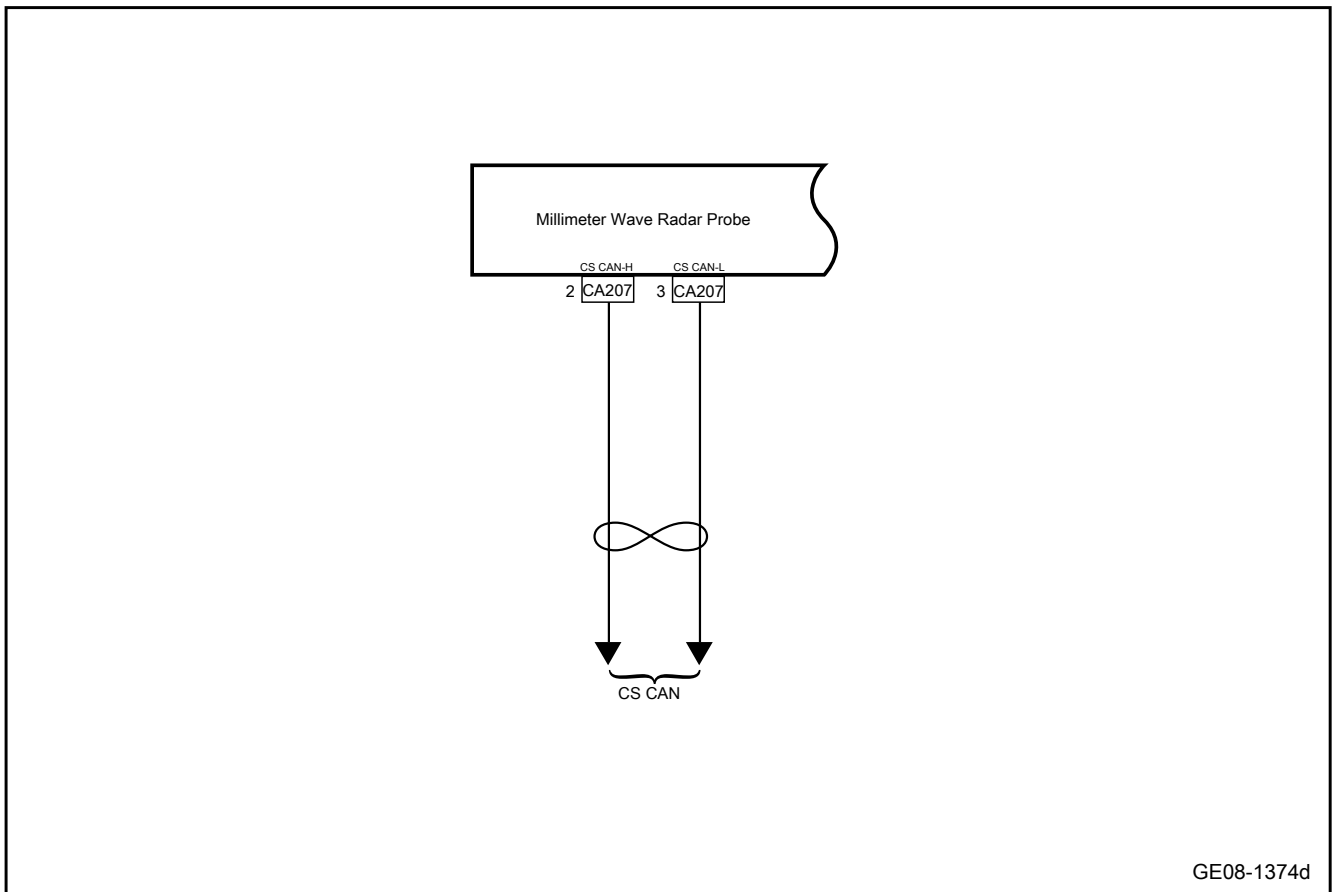
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U241683	ESC_ RearWheelSpeedsKPH (0x123) checksum error lasts for 200ms, de-bubbling time: 200ms		
U343D82	YRS1 (0x130) counter lasts for 200ms unchanged de- bubbling time: 200ms		
U343E82	YRS2 (0x131) counter lasts for 200ms unchanged de- bubbling time: 200ms		
U34A282	SAS_Status (0x0E0) counter lasts for 100ms unchanged de-bubbling time: 100ms		
U341282	ESC_Status (0x125) counter lasts for 200ms unchanged de-bubbling time: 200ms		
U341682	ESC_ RearWheelSpeedsKPH (0x123) The counter lasts for 200ms unchanged de- bubbling time: 200ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U045281	<p>Meet any of the following conditions: YRS_YawRate exceeds the range of 250 milliseconds YRS_YawRateSensorState==250 milliseconds is invalid YRS_LateralAcce exceeds the range of 250 milliseconds YRS_LateralSensorState==250 milliseconds is invalid YRS_longtacce exceeds the range of 250 milliseconds YRS_longtsensorState==250 milliseconds is invalid</p> <p>The definition of exceeding the range is: yaw rate: The value is either less than -180 degrees/sec or greater than 180 degrees/sec. Lateral acceleration: The signal value is less than -2g or greater than 2g. Longitudinal acceleration: The signal value is less than -2g or greater than 2g.</p>		
U042881	<p>Meet any of the following conditions: signal SAS_FailureSts==invalid signal for 250 milliseconds SAS_CalibrationSts==invalid signal for 250 milliseconds</p>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041681	<p>Meet any of the following conditions: Electronic stability control unit vehicle speed is out of range for 250 milliseconds, electronic stability control unit vehicle speed is valid == for 250 milliseconds, electronic stability control unit wheel speed kph is out of range 250 milliseconds, electronic stability control unit wheel speed is invalid == for 250 milliseconds Electronic stability control unit wheel direction invalid == for 250 milliseconds electronic stability control unit wheel speed kph is out of range 250 milliseconds electronic stability control unit wheel speed is invalid== invalid for 250 milliseconds ESC_RRWheelDirection== invalid for 250 milliseconds ESC_FLWheelSpeed KPH out of range for 250 milliseconds ESC_FLWheelSpeedInvalid == Invalid for 250 milliseconds ESC_fWheelSpeedkph out of range For 250 milliseconds ESC_fWheelSpeedInvalid== Invalid for 250 milliseconds ESC_vehicle and still== Invalid for 250 milliseconds</p> <p>The definition of the out-of-range is: vehicle speed: signal less than 0KPH or greater than 460.6875KPH. Wheel speed: signal value is less than 0KPH or greater</p>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
	than 460.6875KPH		
U012287	ESC message loss lasts for 250ms, de-bubbling time: 250ms		
U012687	(0x0E0) SAS message loss lasts for 250ms, de-bubbling time: 250ms		
U015187	ACU signal loss lasts for 250ms, de-bubbling time: 250ms		

3. Schematic circuit diagram:



GE08-1374d

4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the millimeter-wave radar harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the CS-CAN network integrity.

- A. Check the instrument communication network, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

**Step 4** Replace the millimeter wave radar.

- A. Check whether the power supply of millimeter-wave radar and the grounding harness are normal. See [Power Failure of Millimeter Wave Radar](#)
- B. To replace the millimeter wave radar, see [Replacement of Millimeter Wave Radar](#)

Next Step

**Step 5** Reprogram and reset the millimeter wave radar.

- A. Reprogram and reset the millimeter wave radar. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 8.4.5.13 Internal failure of FRS

#### 1. DTC description:

DTC	Trouble description
C132C78	Radar offline calibration is not completed failure
C130009	Radar ECU failure failure
C133502	Yaw rate deviation fault
C133602	Reference speed unavailable fault
C133702	Steering wheel angle deviation fault
C133802	Abnormal speed
C133978	Radar calibration error
C133B04	Radar hardware failure failure
C133E64	Unreliable radar hardware failure
C134076	The position of the radar sensor is incorrect.
C134104	Blindness of radar system
C134298	Radar temperature exceeds fault
C134404	Common untrustworthy fault
C136030	Monitor the quality of radar received waves



DTC	Trouble description
C136038	Monitoring radar step frequency hopping
C135F09	Power chip control unit failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C132C78	Radar calibration is not completed	The calibration process has started, but it did not complete successfully.	1. Millimeter wave radar
C130009	It will fail when severe HW failure occurs continuously within 3 ignition cycles. Write access status to NvM forward! =okNvM status! =okNvM integrity status! =okNvM complete status! = Normal unrolling time: 0 milliseconds		
C133502	It fails when the internal estimated offset compensation value of the input original yaw rate signal is greater than 5°/sec. The error detection time when parking is 3s, and the error detection time when driving is 30min. Construction content defoaming time: 3000 milliseconds		
C133602	One or more wheel speeds have not been updated with valid values for at least 120ms in the past. Deaeration time: 120 milliseconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C133702	When the internally estimated steering wheel angle compensation deviation exceeds 11.8 degrees, an error will be reported. This deviation is calculated by the low-pass filter and requires a driving distance of 10 kilometers (concentration distance: 30 kilometers). The error detection time is 30 minutes. This time is based on the driving process. The longitudinal speed must be greater than 3 meters per second and there is no continuous curve driving condition.		
C133802	If 'the ratio between the speed determined by evaluating the wheel speed and the average speed of the standing object is greater than 10%' 3 times in an ignition cycle, it fails. If the ratio between the speed determined by evaluating the wheel speed and the average speed of the standing object is greater than 10%' 3 times in an ignition cycle, it fails. Longitudinal speed should be greater than 8.33m/s (all 4 wheel speeds are used for calculation), and there should be a standing object ounce counter: 3 events		
C133978	Alignment error.		
C133B04	When the HW defect is invalidated and activated, when a hardware fault occurs, immediately set the fault. This fault diagnosis code has many faults related to the application specific integrated circuit.		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C133E64	Radar antenna temperature value is abnormal		
C134076	When the radar sensor position is incorrect. When the radar has not been calibrated or the radar horizontal deviation is greater than 2.5 degrees or the vertical deviation is greater than 0.5 degrees, an error will be reported		
C134104	When soil/snow/ice is on the sensor, or when in an open environment such as a desert or a tunnel, the radar will have an error		
C134298	When Tempmonfailure is active and lasts for 300 milliseconds, when the measured temperature exceeds the uC operating temperature, 300 milliseconds fail. When the measured temperature exceeds the operating temperature of the microcontroller, taking into account the accuracy of the sensor, the operating temperature: -40°C to 150°C. Operating temperature: -40°C to 150°C, base defoaming time: 300 milliseconds		
C134404	An unexpected hardware-initiated reset was triggered in the last operating cycle. Sudden hardware reset in the previous operating cycle, unwinding time: 0 milliseconds (in event)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C136030	1. One of the following faults is detected 3 times in a row 2. The noise power is too high in at least one RX channel 3. There is a spurious peak in at least one of the RX channels 4. In at least one RX channel, the signal power is too low		
C136038	1. One of the following faults is detected 3 times in a row 2. The intermediate frequency is incorrect; 3. Incorrect frequency 4. Poor quality of the ramp; 5. Poor quality of frequency changes		
C135F09	The value of the related register is incorrectly read		

## 3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the millimeter-wave radar harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

**Step 4** Replace the millimeter wave radar.

- A. Check whether the power supply of millimeter-wave radar and the grounding harness are normal. See [Power Failure of Millimeter Wave Radar](#)
- B. To replace the millimeter wave radar, see [Replacement of Millimeter Wave Radar](#)

Next Step

**Step 5** Reprogram and reset the millimeter wave radar.

- A. Reprogram and reset the millimeter wave radar. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 8.4.5.14 FCS power failure

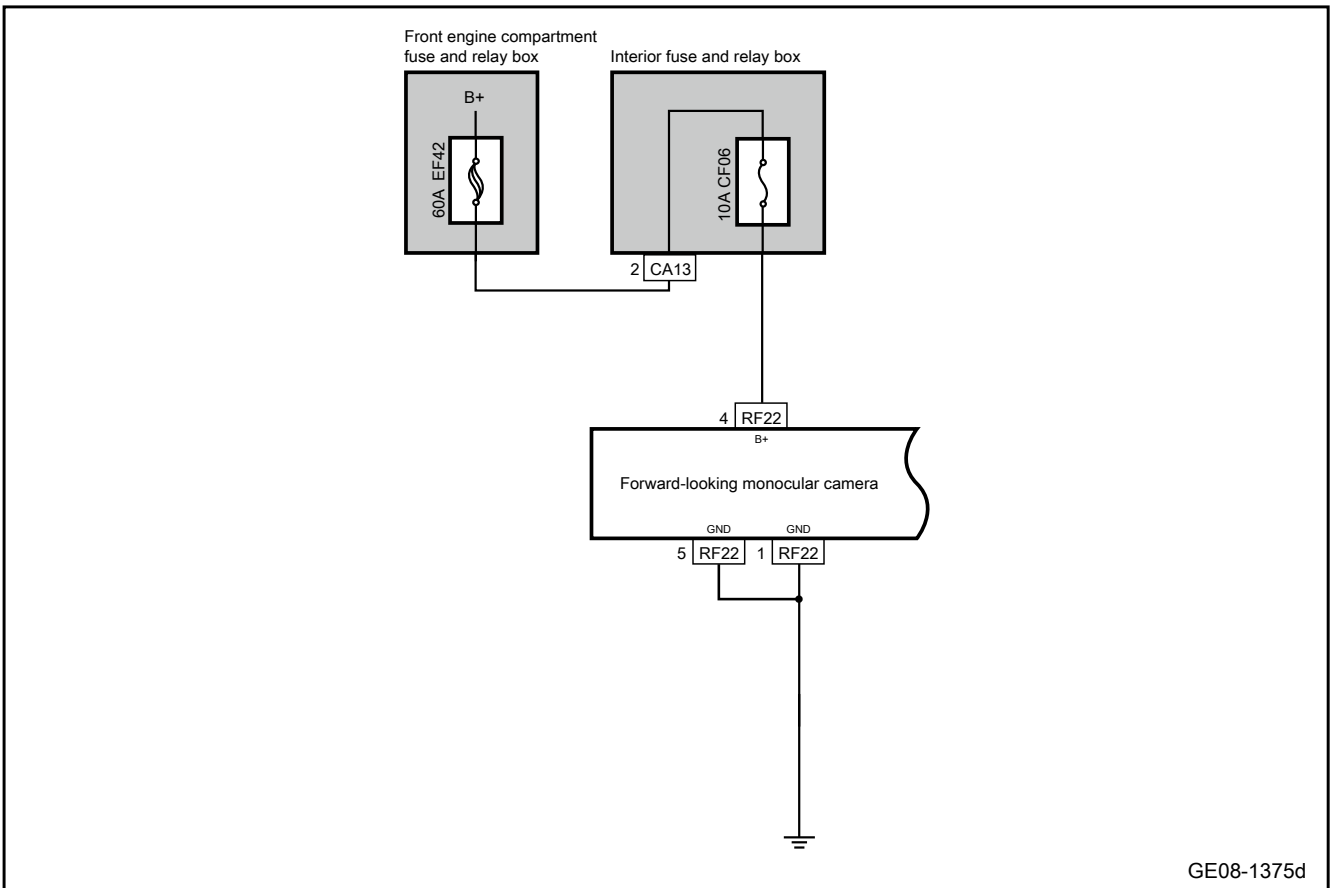
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Battery voltage $\leq 9V$ (+/-0.5V), and keep the state for at least 1s	1. Ignition status is IGN ON	1. Fuse 2. Circuit 3. Front monocular camera
U300617	Battery voltage $\geq 16V$ (+/-0.5V), and keep the state for at least 1s		

3. Schematic circuit diagram:



GE08-1375d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the front monocular camera for signs of damage, deformation, stains, or looseness.
- B. Check the front monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

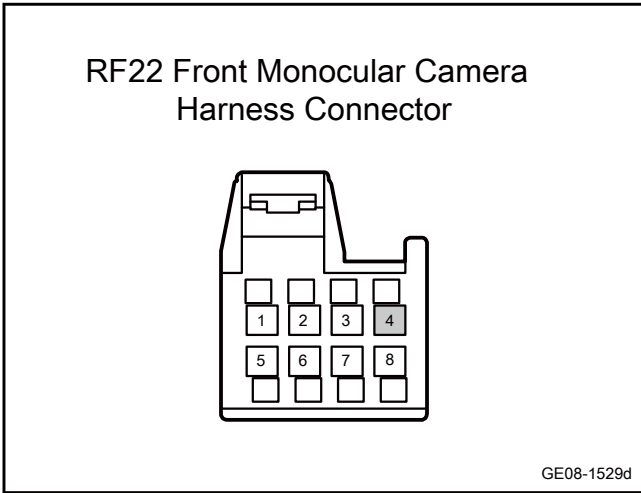
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.  
  
Rated fuse capacity: 60A
- C. Unplug interior fuse CF06 and check if it is blown.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3	Check whether the working voltage of the front monocular camera is normal.
--------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front monocular camera harness connector RF22.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22(4)	Vehicle body is grounded.	Standard voltage: 11-14V

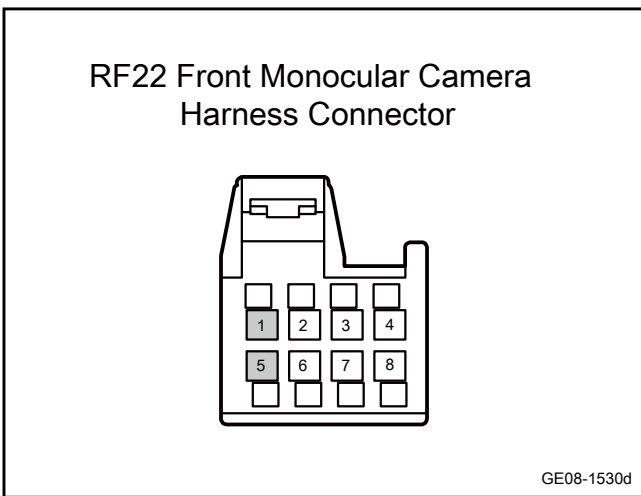
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the front monocular camera is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front monocular camera harness connector RF22.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
RF22(5)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the front monocular camera.

- A. Replace the front monocular camera. See [Replacement of Front Monocular Camera](#)

Next Step

**Step 6** Reprogram and reset the front monocular camera.



- A. Reprogram and reset the front monocular camera. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 8.4.5.15 FCS communication fault

1. DTC description:

Diagnostic Trouble Code	Description
U015187	Communication with ACU is lost
U045281	The data received from ACU is illegal
U045282	The count received from ACU is illegal
U045283	The check received from ACU is invalid
U012687	Communication with TCM/SAS is lost
U042881	The data received from TCM/SAS is illegal
U042882	The count received from TCM/SAS is illegal
U042883	The check received from TCM/SAS is invalid
U013187	Communication with EPS is lost
U042081	The data received from EPS is illegal
U042082	The count received from the EPS is illegal
U042083	The check received from the EPS is invalid
U012287	Communication with ESC is lost
U041681	The data received from ESC is illegal

Diagnostic Trouble Code	Description
U041682	The count received from the ESC is illegal
U041683	The check received from the ESC is invalid
U111487	Loss of communication with VCU
U140481	VCU signal invalid
U140482	The count received from the VCU is illegal
U140483	The check received from the VCU is invalid
U014087	Communication with BCM is lost
U042281	The data received from BCM is illegal
U042282	The count received from the BCM is illegal
U042283	The check received from the BCM is invalid
U015687	Communication with MMI is lost
U015587	Communication with IPK is lost
U042381	The data received from the IPK is illegal
U023587	Communication with FRS is lost
U043381	The data received from FRS is illegal
U043382	The count received from the FRS is illegal
U043383	The check received from the FRS is invalid
U346082	The count received from the FRS is illegal
U246083	The check received from the FRS is invalid
U007300	CAN network bus off

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	Loss of ACU (ID=0x130) information for 250 milliseconds	<ol style="list-style-type: none"> <li>CAN bus mode power supply voltage is between 9V-16V</li> <li>The Tdiagenable (3s-4s) conditions are met</li> <li>No bus disconnection is detected, and there are more than 1000 ms after recovery of last bus disconnection</li> <li>IGN is open</li> </ol>	<ol style="list-style-type: none"> <li>Circuit</li> <li>Front monocular camera</li> <li>Diagnostic interface</li> </ol>

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U045281	Meet any of the following conditions: 0x380 ACU_ drvseattbeltbuckleinvalid== 0x1: invalid for 1000ms 0x130 YRS_ YawRateSensorState==0x1: invalid for 250 milliseconds 0x130 YRS_ LateralSensorState==0x1: invalid for 250 milliseconds 0x131 YRS_ longtsensorstate==0x1: invalid for 250 milliseconds. Note: The error detection time is an accurate value, and the counter is used for denoising		
U045282	Any error alivecounter message from ACU is equal to 10. (0x380 error equals 5)		
U045283	Any error checksum message from ACU is equal to 10. (0x380 error equals 5)		
U012687	Loss of SAS (ID=0x0E0) message for 250 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042881	Meet any of the following conditions: 0x0E0 SAS_SteerWheelAngle==0x7FFF: invalid for 250 milliseconds 0x0E0 SAS_SteerWheelTorSpd==0xFF: invalid for 250 milliseconds 0x0E0 SAS_FailureSts==0x0: invalid for 250 milliseconds 0x0E0 SAS_U calibration ts==0x0: sensor is not calibrated for 250 milliseconds Note: The error detection time is an accurate value, and the counter is used for denoising		
U042882	Any error alivecounter message from TCM/SAS is equal to 10		
U042883	Any checksum error message from TCM/SAS is equal to 10		
U013187	Loss of EPS (ID=0x150) information for 250 milliseconds		
U042081	Meet any of the following conditions: 0x150 EPS_TorsionBarTorqueValid==0x1: invalid for 250 milliseconds 0x150 EPS_LKS_ControlSts==0x3, 0x4, 0x5, 0x6, 0x7 for 250 milliseconds 0x150 EPS_LDW_ControlSts==0x3, 0x4, 0x5, 0x6, 0x7, for 250 milliseconds Note: The error detection time is an accurate value, and the counter is used for denoising		

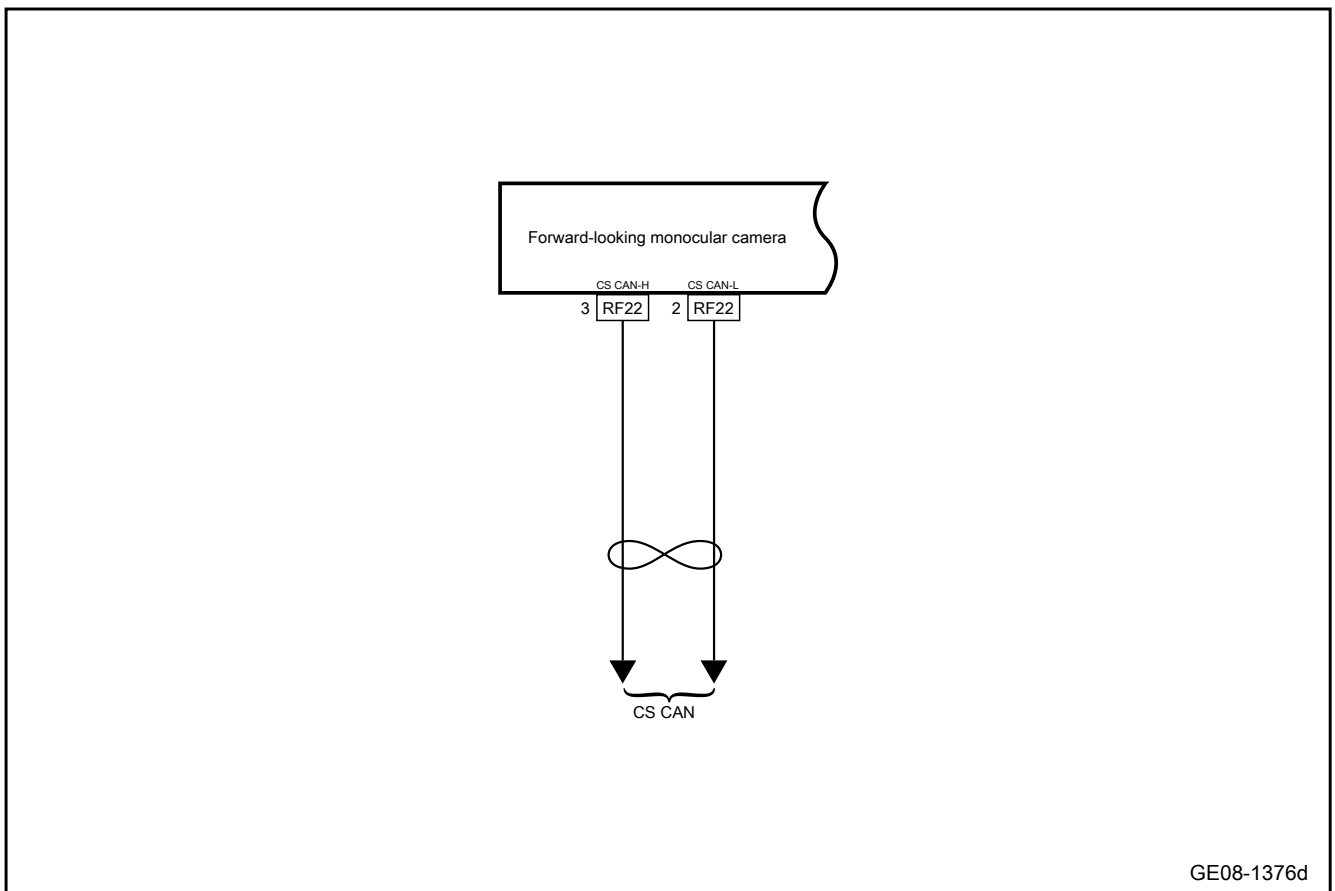
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042082	Any message from EPS, if alivecounter is an error, it is equal to 10		
U042083	Any error checksum message from EPS is equal to 10		
U012287	Lost ESC (ID=0x125) message for 250 milliseconds		
U041681	<p>Meet any of the following conditions: 0x125 Electronic Stability Control Unit Vehicle Speed Valid==0x1: Invalid within 250 milliseconds</p> <p>0x125 ESC_BrakePedalSwitchInvalid==0x1: Invalid within 250 milliseconds</p> <p>0x122 ESC_Mcylinder_PressureInvalid==0x1: Invalid for 250 milliseconds</p> <p>0x125 ESC_ESP Failed==0x1: ESP failed 250 milliseconds</p> <p>0x121 Electronic stability control fails! =0x0: no failure within 250 milliseconds</p> <p>0x122 ESC_FLWheelSpeedInvalid==0x1: invalid for 250 milliseconds</p> <p>0x122 ESC_FRWheelSpeedInvalid==0x1: invalid within 250 milliseconds</p> <p>0x123 ESC_RLWheelSpeedInvalid==0x1: invalid within 250 milliseconds</p> <p>0x123 ESC_RRWheelSpeedInvalid==0x1: invalid for milliseconds</p> <p>Note: The error detection time is an accurate value, and the counter is used for denoising</p>		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041682	Any error alivecounter message from ESC is equal to 10		
U041683	Any error checksum messages from the ESC are equal to 10		
U111487	Lost VCU (ID=0x165) information for 250 milliseconds		
U140481	Meet any of the following conditions: 0x0A6 VCU_AccelPedalPositionInvalid==0x1: Invalid for 250 milliseconds 0x1A4 VCU_limphomets==0x1: Run in LimpHome mode for 250 milliseconds Note: The error detection time is an accurate value, and the counter is used for denoising		
U140482	Any message from VCU, if alivecounter is wrong, it is equal to 10		
U140483	Any error checksum messages from the VCU are equal to 10		
U014087	Loss of vehicle body control module (ID=0x1F0) information for 250 milliseconds		
U042281	Meet any of the following conditions: 0x283 BCM_Set_resumeswinvalidts! Set the recovery switch! =0x0: 500ms normal 0x283 BCM_Cruise WinValidSts! =0x0: 500ms is normal. Note: The error detection time is an accurate value, and the counter is used for denoising		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042282	Any information from the body control module, if alivecounter is wrong, it is equal to 10		
U042283	Any error checksum information from the body control module is equal to 10		
U015687	5T lost MMI (ID=0x3E1) message		
U015587	5T (T analysis) lost IPK (ID=0x3F1) message		
U042381	Meet any of the following conditions: 0x26D IPK_vDisplay==0x1FFF: invalid value of 500 milliseconds 0x26D IPK_Fail==0x1: error lasts for 500 milliseconds Note: The error detection time is an accurate value, and the counter is used for denoising		
U023587	FRS (ID=0x080) message loss for 250 ms		
U043381	Meet any of the following conditions: 0x080 FRS_Status_BlkProg==0x1: FRS blocked for 250 milliseconds 0x080 FRS_Status_HWErr==0x1: Radar failure for 250 milliseconds 0x080 FRS U Status U misalignment! =0x01: Calibrate for 250 milliseconds 0x080 FRS_Fail==0x0: FRS radar does not work for 250 milliseconds Note: The error detection time is an accurate value, and the counter is used for denoising		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U043382	0x080 The message from FRS with error alivecounter is equal to 10		
U043383	0x080 A message from FRS with an error checksum is equal to 10		
U346082	0x080 message of FRS from error alivecounter is equal to 10		
U246083	The 0x080 message with a checksum error from FRS is equal to 10.		
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. The supply voltage of the CAN bus node is in the range of 9-16V. 2. Bus disconnection is detected	

3. Schematic circuit diagram:



GE08-1376d

4. Diagnosis steps



Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the front monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. Check the instrument communication network, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Replace the front monocular camera.
--------	-------------------------------------

- A. Check whether the power supply of monocular camera control module and the grounding harness are normal. See [Power Failure of Front Monocular Camera](#)
- B. To replace the front monocular camera, see [Replacement of the Front Monocular Camera](#)

Next Step

Step 5	Reprogram and reset the front monocular camera.
--------	---

- A. Reprogram and reset the front monocular camera. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

#### 8.4.5.16 Internal failure of FCS

##### 1. DTC description:

DTC	Trouble description
C120B96	System software failure
C120449	Internal circuit failure
C12024B	ECU temperature is out of range
C120554	No calibration data
C120197	Camera occlusion
C120644	Matching parameter error
C120D96	Application layer logic failure
C120C96	Data fusion failure

##### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C120B96	If there is internal software error	-	1. Front monocular camera
C120449	FCS work efficiency		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C12024B	PCB temperature is higher than 105 C or MCU temperature is higher than 145 C or VP temperature is higher than 115 C or imager temperature is higher than 110 C for more than 0.2 seconds		
C120554	1. FCS has not been calibrated or the calibration value is invalid 2. The vehicle identification number has been changed (if the calibration is valid; <->The electronic control unit has been changed to another vehicle) 3. Online calibration is out of range		
C120197	The windshield is dirty or foggy. Block FCS		
C120644	Variable coding is not performed		
C120D96	Due to an internal logic error, shut down any function within a certain period of time. This diagnostic trouble code is not reported	1. The power supply voltage is between 8V-18V 2. IGN is open	
C120C96	Due to the fusion error, any function is turned off. The fusion error includes camera targets, radar targets, self-motion, etc.		

3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the front monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace the front monocular camera.

- A. Check whether the power supply of monocular camera control module and the grounding harness are normal. Refer to [FCS power supply failure](#)
- B. To replace the front monocular camera, see [Replacement of the Front Monocular Camera](#)

Next Step

Step 5 Reprogram and reset the front monocular camera.

- A. Reprogram and reset the front monocular camera. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

## 8.4.6 Removal and installation

### 8.4.6.1 Replacement of the front millimeter-wave radar body

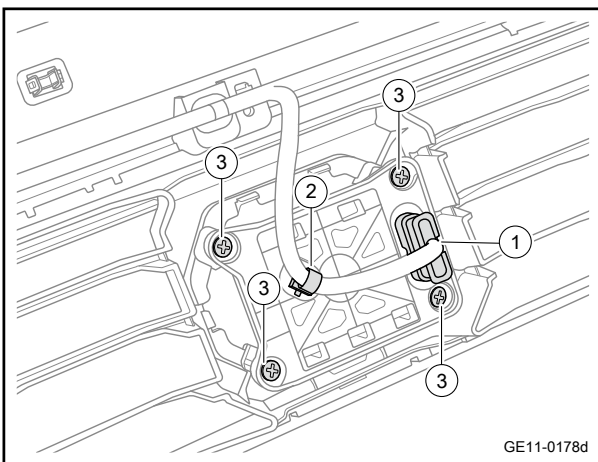
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

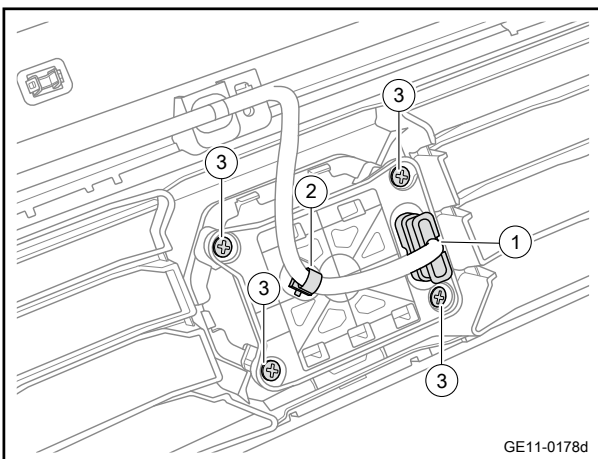
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Disconnect the front millimeter-wave radar body harness connector 1.
- 4 Disengage the harness buckle 2.
- 5 Remove the 4 fixing screws 3 of the front millimeter wave radar.
- 6 Pry down the front millimeter-wave radar body.



#### Installation procedure

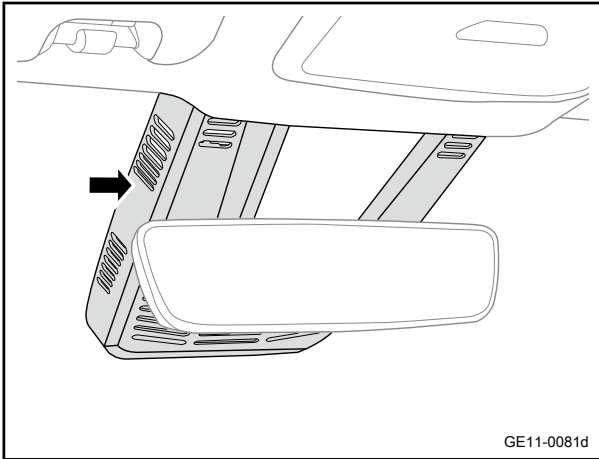
- 1 Move the front millimeter-wave radar body to the installation position.
- 2 Install the four fixing screws 3 of the front millimeter wave radar.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install the wire harness buckle 2.
- 4 Connect the wiring harness connector 1 of the front millimeter wave radar body.



- 5 Install the front bumper assembly.
- 6 Connect the negative cable of battery.

### 8.4.6.2 Replacement of the front monocular camera

#### Removal procedure

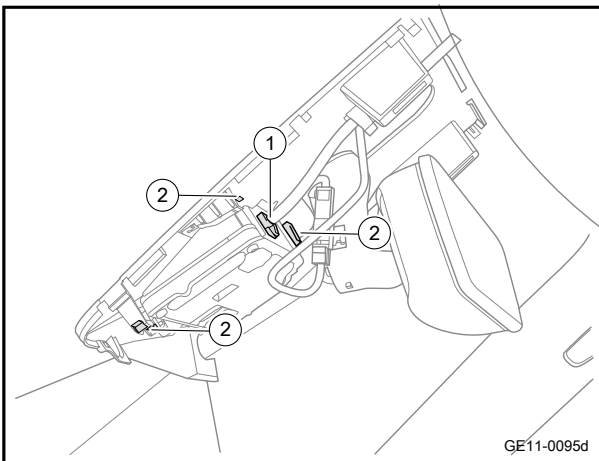


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

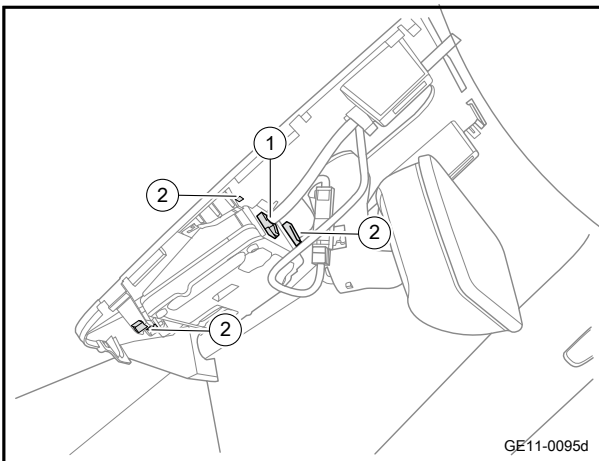
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Pry off the trim cover of interior rearview mirror mounting block.

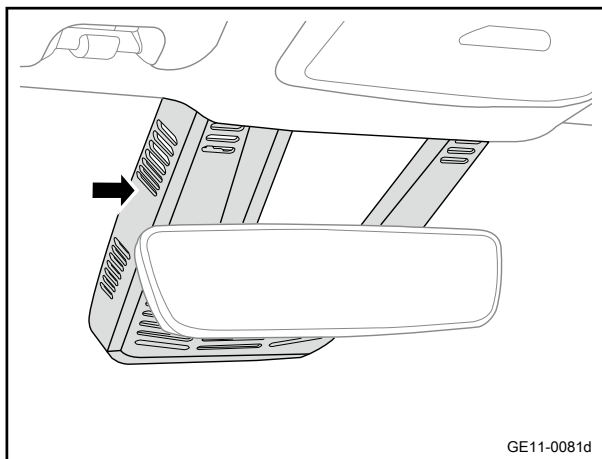


- 3 Disconnect the front monocular camera harness connector 1.
- 4 Take out the 3 fixed diaphragms 2 of the front monocular camera.
- 5 Remove the front monocular camera.

Installation procedure



- 1 Move the front monocular camera to the installation position.
- 2 Install 3 fixed diaphragms 2 of the front monocular camera.
- 3 Connect the front monocular camera harness connector 1.



- 4 Install the trim cover of interior rearview mirror mounting block.

- 5 Connect the negative cable of battery.



## Vehicle control system

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## 9.1 Warnings and Precautions

### 9.1.1 Warnings and Precautions

#### 9.1.1.1 Warnings and Precautions

##### 1. Warnings regarding battery disconnection

###### Warning

Before maintaining any electrical component, the start and stop button power mode should be in the OFF status and all electrical loads must be “OFF” (switch off) unless otherwise stated in the operational program. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violate these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

##### 2. Warnings regarding road test

###### Warning

Road test should be conducted under the premise of ensuring safety and observing all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions can cause serious personal injury and damage the vehicle.

##### 3. Warning about the express window down function

###### Warning

When the driver door operates the electric window switch, the fast up/down function makes the window move extremely fast without stopping, which may result in personal injury.

##### 4. Notices of placing the start and stop button in OFF position when the battery is disconnected

###### Caution

Be sure to put the start switch in the OFF position, whenever connecting or disconnecting battery cables, battery chargers, or jumper cables. Otherwise, the control module or other electrical compartments may be damaged.

##### 5. Notices of the power system control module and electrostatic discharge

###### Caution

Do not touch the connector pins or welding components on the circuit board to prevent electrostatic discharge from damaging the electronic control module on the vehicle.

---

## 9.2 Vehicle Body Control Module (BCM)

### 9.2.1 Specification

#### 9.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of BCM	M6	8.5 - 11.5	6.3 - 8.5

## 9.2.2 Description and operation

### 9.2.2.1 Instructions and Operations

#### External anti-theft

##### 1. Early warning status

Enter the warning status first by anti-theft relief status (3s) At this time, the anti-theft indicator lamp flashes quickly, with a cycle of 160ms on and 160ms off. During this period, if a door/rear compartment door /engine bay lid is open, the warning status will always remain. Otherwise, the system will automatically turn into the anti-theft alert status after three seconds.

##### 2. Alarm issuing status

In the anti-theft alarm state, the anti-theft indicator lamp flashes slowly with a period of 160ms on and 1920ms off. When the vehicle is in an alert status, once there is external illegal action, the body anti-theft alarm system will enter the alarm status.

Under the alarm issuing status, the conditions for triggering the alarm are as follows:

- Open the FL door
- Open the FR door
- Open the RL door
- Open the RR door
- Open the rear compartment
- Open the engine body lid
- Illegal switch ignition

##### 3. Warning status

When the anti-theft system is in warning mode, the alarm cycle is: the right and left turn flashlights flash, then the anti-theft alarm horns sound interactively, with the operation cycle 500ms on, 500ms off, and the horns stop working 30s later, only the left and right flashlights flash for 5 minutes. If the system is in mute mode, the sound of horns will not occur. When receiving the remote locking button, the turn signal lamp will flash once, and the alarm circulation will be terminated with the system entering the anti-theft alert system. In addition, even the same trigger condition occurs again, the alarm cannot be triggered. This trigger condition can be reset only after entering the relief alert.

##### 4. Alert status

When using the remote control lock button to lock the door, but if the door/luggage compartment door/cabin cover is not closed, the turn signal flashes 3 times, the system will enter the alert state, the anti-theft horn will beep twice every 2

seconds, and the system will enter the anti-theft alarm state after 10 seconds. . If all doors are closed within the alert period (10s), the alert state will be suspended, and the anti-theft alarm system will switch to the alarm issuing state or the all-clear state according to the situation. If you press the lock button again within 10s and it still stays in the alert state, it will enter the alarm cycle after 10s. If the remote control unlock button is pressed within 10s, the system will enter the all-clear state from the alert state.

##### 5. Anti-theft relief status

Enter the anti-theft release state by pressing the remote control unlock button. When receiving the remote control unlocking command, the left and right turn signals flash three times, the position lamp turns on for 25s, and the LED stops flashing..

##### 6. Mute mode

When in the anti-theft status, Press down the “lock” and “unlock” buttons on the remote control at the same time for more than 2s, and then the turn signal lamp flashes twice, indicating that the mute status is entered. Then press down the “lock” and “unlock” buttons on the remote control at the same time for more than 2s. At this time, the turn signal lamp flashes twice, indicating that it exits mute status. In mute status, if alarm occurs, the anti-theft horn will not sound

#### Door lock control function

The radio frequency receiver of this vehicle is located at the rear of the vehicle roof to communicate with the BCM through the LIN line. In addition, the body control system provides the following central door locking functions:

##### 1. Smart key locking/unlocking

Start and stop button power supply system OFF status, and press the unlock button on the remote control twice within 500ms to unlock four doors, then the turn signal lamp flashes three times for confirmation, and the internal light fades on, with the position lamp on.

Start and stop button power supply system OFF status, and press down the lock button on the remote control once, to lock four doors, then the turn signal lamp flashes for conformation, and the inside lamp fades off, with the position lamp off.

Start-and-stop button power supply system OFF status, and press down the remote locking button for more than 2s, then the electric vehicle windows will switch off automatically, with its signal transmitted through LIN

## 2. Interior central switch unlocking/locking

Press down the central door control switch locking button, then the BCM will drive to unlock the four doors. When the vehicle speed is greater than 15km/h, the central control unlocking command will be disabled. The inside central control unlocking can be performed only in the anti-theft relief status. If it is in other anti-theft status, it will not respond.

## 3. Driver side door separate unlocking

Turn the mechanical key to the UNLOCK position, the driver side door will be unlocked separately. Press down remote unlock button once within 1s, the driver side door unlock.

## 4. Automatic re-locking

30s after the unlocking by remote control, if any of the four doors and the trunk door is not opened, it will automatically relocked. Inside lamp switch off, and the system enter the alert status

## 5. Automatic locking during driving

When the power supply mode is in ON position and the vehicle speed lasts for more than 0.5s faster than 20km/h, the four-door lock will automatically lock.

## 6. Automatic unlocking upon collision

When the collision signal is obtained from the CAN bus, BCM will trigger the central control unlock twice within 3s, and the left and right turn signal will continue to flash, and the central control lock will fail. Unless a door is open and the power supply mode is in OFF status, as well as the collision signal is out of date (4s).

## 7. Automatic unlocking upon flameout

When the door lock is in lock status and the power supply mode is in OFF status, the four-door will unlock automatically.

## 8. Backdoor unlocking

When the start and stop button is in OFF position, press down the remote control unlock button of backdoor for more than 2s to unlock the backdoor.

## 9. The back door locks automatically

The back door will be automatically locked 1.5s after it is closed. During the automatic relocking process, the back door will also be unlocked.

## 10. Disable backdoor unlocking

When the power supply mode is in ON status and the vehicle speed is faster than 15km/h, the unlocking of backdoor will not be performed.

## 11. Disable remote command

When the power mode is in the ON state, any remote control commands will not be executed.

## 12. Door lock motor overheating protection

The door lock overheating protection function is activated after six consecutive locking or unlocking actions with an interval of not more than 1280 ms. At this point, only the collision automatic unlocking, the other unlock requests can only be executed once, and no other locking/unlocking requests will be executed for 20s.

## Driver alarm information

When the driver has some abnormal operation, the body control system will send CAN message to the instrument, and the instrument will produce buzzer warning to remind the driver. It contains the following functions: warning for light not OFF: the power mode is OFF, the combination switch will turn on the headlights or position lights, if the driver side door is open, the car body control system will produce an alarm signal to the instrument, the instrument will give out sound warning.

## Automatic control of external lighting

Follow me home light: within 10 minutes of the power mode from ON to OFF, rotate the light switch from OFF to small light, or headlight position, or auto light position within 2s, then return to OFF. After the follow me home lighting function is activated, the low beam will be turned on for 30 seconds (30s by default, and the specific lighting time can be set). When the follow me home lighting function is activated, if a door is opened, the low beam light will be delayed for 180 (the delay is reset).

## Remote unlock search lamp function

The power mode is in the OFF state and is in the defense state. Short press the remote key vehicle-searching button twice within 500ms to trigger the vehicle-searching function, and the position lamp will be on for 25s. If within this 25s, door closing occurs, the position lamp will automatically go out 5s after all the doors are closed.

## Automatic lamplight

When the power supply mode is in ON status and the combination switch is in AUTO position, if the environment light sensor is required to light up, the position lamp relay and the headlamp relay will automatically pull in at the request of the sunlight sensor.

When the power supply mode is in ON status and the combination switch is in AUTO position, if the ambient light sensor is required to go off, the position lamp relay and the

headlamp relay will automatically disconnect with a delay of 2s at the request of the sunlight sensor.

When the combined switch is in the AUTO position and the power mode exits the ON state, if the headlight or position lamp is on, it will continue to be on for 60s. If the lock signal is received within 60s, this function will be turned off.

### Turn signals

Turn signal lamp system will use turn light lamp flash signals to react to various body control request. The requests coming from turn signal system are mainly: left turn signal on and off, right turn signal on and off and warning lamp on and off. Other requests coming from external module are mainly: central door control, diagnosis operation, anti-theft alarm system, emergency brake and collision flash. Collision flash has the highest priority, and alarm lamp has the second highest priority.

#### 1. Collision flash

When the power supply mode is in ON status, if BCM receives the collision signal from the hardware, the front, rear, left and right turn signal will flash at the same time at a frequency of 85 times/min. Press the hazard warning lamp switch button again to cancel the warning flash function.

#### 2. Hazard Warning Lamp

No matter what condition the power mode is in, press the warning switch button and the left and right turn signals will flash at the same time at a frequency of 85 times/min. Press the hazard warning lamp switch button again and to cancel the warning flash function.

#### 3. Steering prompt

When the power supply is in ON status, turn on the left turn signal, and it will flash at a frequency of 85 times/min. When the power supply is in ON status, turn on the right turn signal, and it will flash at a frequency of 85 times/min.

#### 4. Self-diagnosis of turn signals

In the turning state, the front and rear turn signals are LEDs. When the output current of the turn signals is less than 110mA, it is regarded as a fault (when the LED turn signal fails, the output waveform of the fault feedback line at the turn signal end is opposite to the output waveform of the BCM switch); other turn signals flash at approximately double the frequency in normal mode. When the alarm is activated, if one of the turn signals is damaged, the turn signals on both sides will flash at a frequency of about 170 times per minute.

#### 5. Lane changing lamp function

When the turn signal lamp switch is turned on and off between 100ms and 700ms, the corresponding turn signal lamp will flash three times as a lane change signal.

#### 6. Emergency brake warning lamp

If the vehicle speed (BCM obtains the speed and brake signal through CAN bus) decreases rapidly due to emergency braking, all turn signals will be activated to flash. If the vehicle speed reduction is completed, the hazard warning lamp function will be canceled.

### Heating function

#### 1. Rear defrosting and rearview mirror heating function

The voltage signal is obtained from the CAN bus. When the battery voltage is greater than 10.7V and the power supply mode is in ON status, rear defrosting/rearview mirrors heating is allowed to operate. When it is detected that the detected battery voltage is less than 10.3V, rear defrosting/rearview mirrors heating is not allowed.

The rear defrosting/rearview mirrors heating switch is an inching button switch. Press down the rear defrosting/rearview mirrors heating switch, the rear defrosting/rearview mirrors heating lasts for 12 minutes; if the rear defrosting/rearview mirrors heating switch is pressed again during rear defrosting/rearview mirrors heating, the rear defrosting/rearview mirrors heating process will stop. Press down the rear defrosting/rearview mirrors heating switch again, and the rear defrosting/rearview mirrors heater will stop heating until 12min after pressing down the rear defrosting/rearview mirrors heating switch for the first time (accumulatively 12min). 36min later, the previous heating time will not be regarded into the time accumulation of the next time.

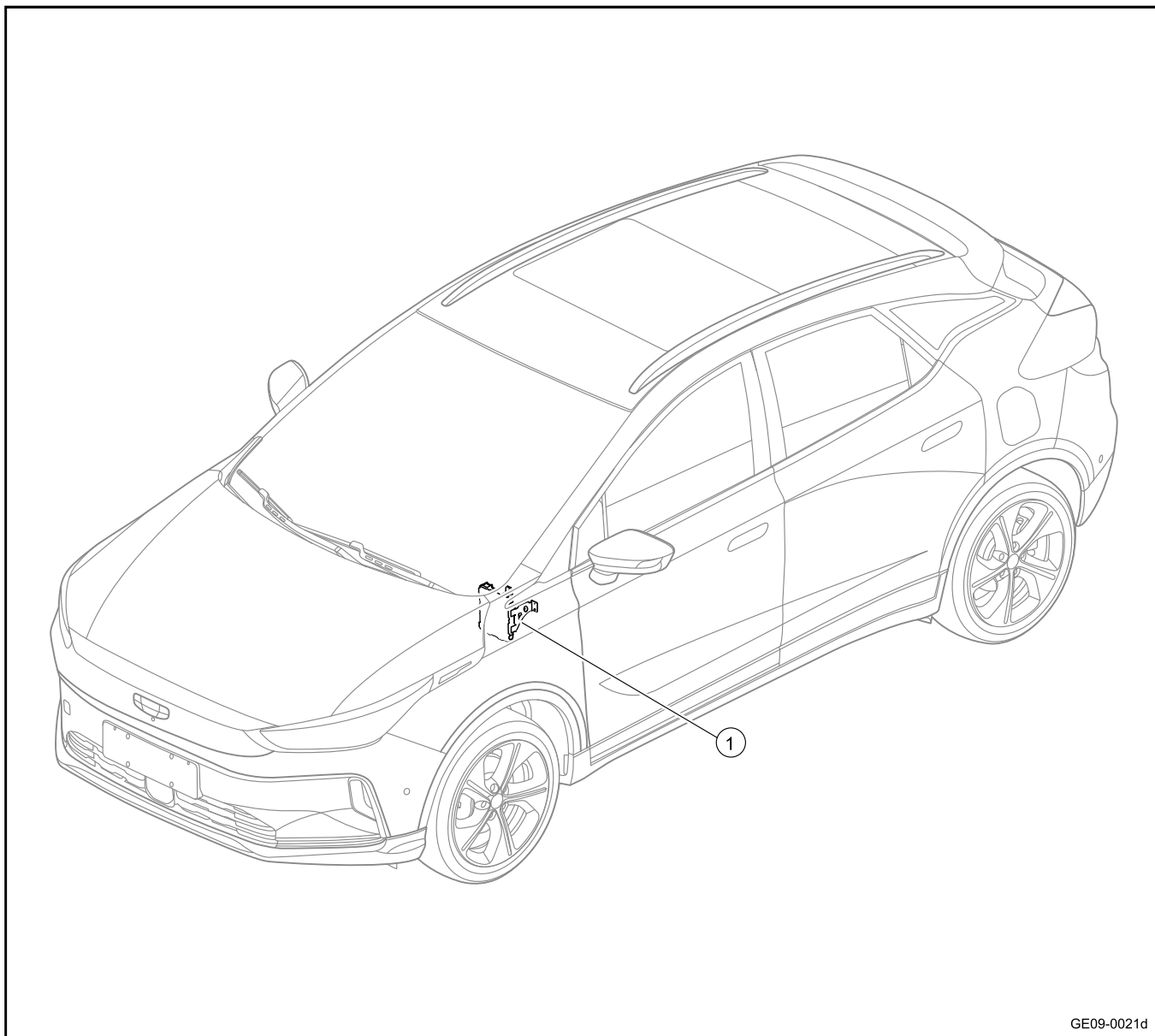
### Vehicle window control

When the power supply mode is in ON status, the windows can be operated. When the power mode is in the ON state, and any of the following conditions is met, the window control is blocked:

- 1min after the power supply mode is in OFF status.
- The power mode is OFF and any door in the front row is opened within one minute.

9.2.3 Part location

9.2.3.1 Part Position



GE09-0021d

1. Vehicle Body Control Module (BCM)



9.2.4 Diagnostic information and steps

9.2.4.1 Diagnosis Description

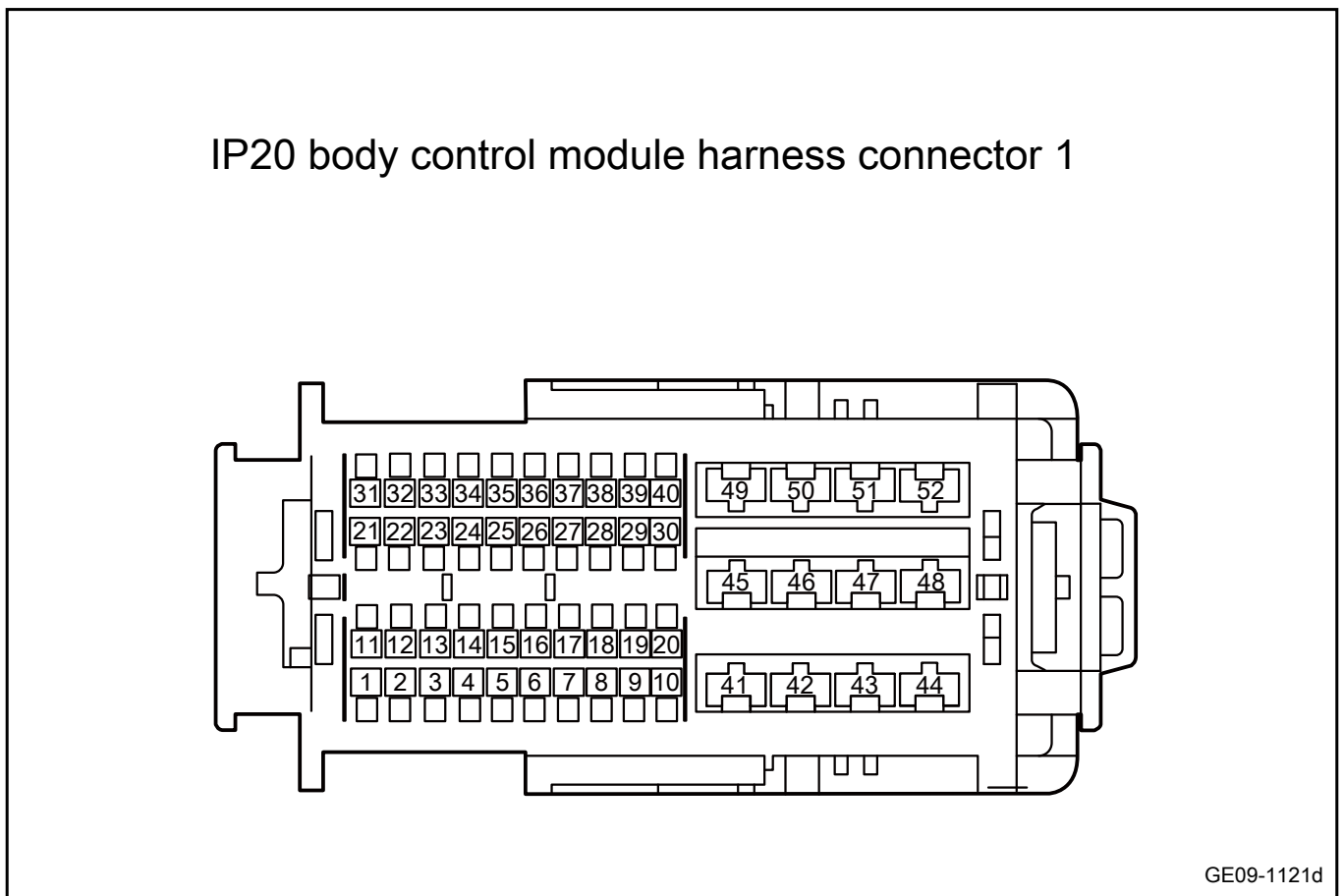
Before diagnosing the fault of the vehicle control system. Refer to [Description and operation](#). Understand and familiarize yourself with the working principle of the vehicle control system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of the vehicle control system should start with visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

9.2.4.2 Routine inspection

1. Check if there is any after-sales installation that may affect the normal operation of BCM, and confirm that BCM can operate normally.
2. Check system components that are easily accessible or visible to ensure that there are no obvious damages or conditions that might cause malfunctions.

9.2.4.3 List of BCM terminals

IP20 vehicle body control module harness connector 1



GE09-1121d

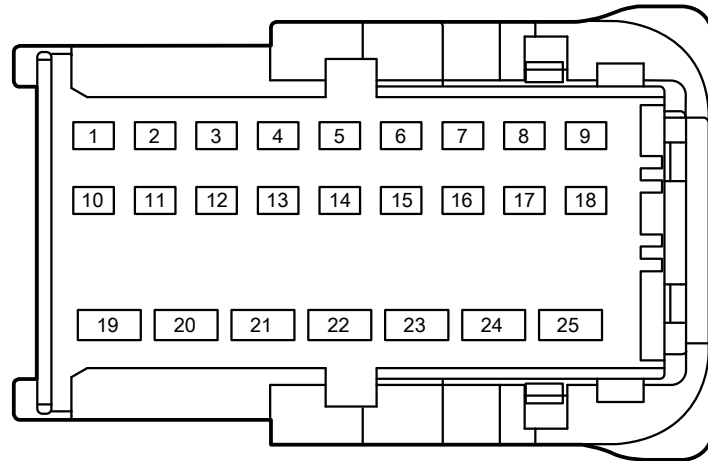
Terminal No.	Terminal name	Terminal description
1	Starting signal	Start signal output
2	IG1 power supply	BCM module ACC\ON\START power supply
3	Brake lamp switch signal	Brake lamp switch signal input
4	-	-
5	-	-

Terminal No.	Terminal name	Terminal description
6	-	-
7	Rear wiper washing switch signal	Rear wiper washing switch signal input
8	-	-
9	Position lamp switch signal	Position lamp switch signal input
10	-	-
11	-	-
12	-	-
13	Front turn signal diagnosis signal	Front turn signal diagnosis signal input
14	Front engine compartment cover contact switch signal	Front engine compartment cover contact switch signal input
15	-	-
16	-	-
17	-	-
18	Front wiper stop position switch input	Front wiper stop position switch input
19	Automatic headlamp switch signal	Automatic headlamp switch signal input
20	High beam lamp switch signal	High beam lamp switch signal input
21	Hazard warning lamp switch signal	Hazard warning lamp switch signal input
22	-	-
23	-	-
24	Turn signal dynamic lighting signal output	Turn signal dynamic lighting signal output
25	-	-
26	Wireless charging enabling	Wireless charging enabling signal
27	-	-
28	Low-speed wiper relay control	Front wiper low-speed relay control
29	High-speed wiper relay control	Front wiper high-speed relay control
30	-	-
31	-	-
32	-	-
33	-	-
34	Horn relay control	Horn relay control signal
35	-	-
36	Rear defroster relay control	Rear defroster relay control signal

Terminal No.	Terminal name	Terminal description
37	-	-
38	-	-
39	-	-
40	High beam switch detection signal output	High beam switch detection signal output
41	-	-
42	Driver side door lock motor, charging port lock motor unlock signal	Driver side door lock motor, charging port lock motor unlock signal output
43	Central door lock power supply	BCM central control door lock battery power supply
44	Central control unlocking signal (except driver side door)	Central control unlocking signal (except driver side door)
45	Ground connection	BCM module grounding circuit
46	Left low beam signal output	Left low beam signal output
47	Central locking signal	Central locking signal
48	-	-
49	Washer power supply	Washer power supply
50	Rear washer signal output	Rear washer signal output
51	Front washer signal output	Front washer signal output
52	External lamp power supply 2	BCM exterior lamp power supply 2 battery power supply

## IP21b vehicle body control module harness connector 2

## IP21b body control module harness connector 2

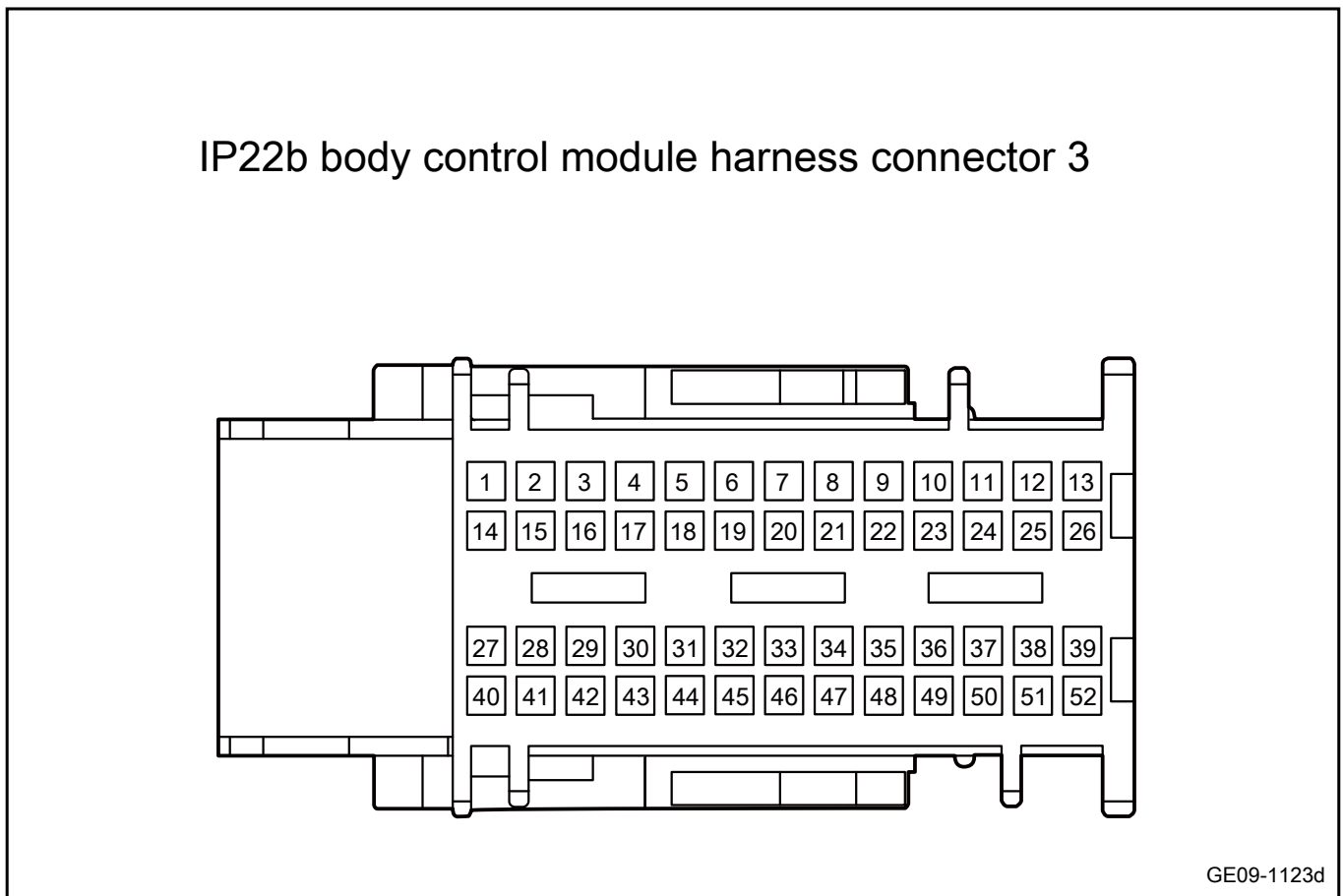


GE09-1122d

Terminal No.	Terminal name	Terminal description
1	Right high beam signal output	Right high beam signal output
2	Left daytime running light signal output	Left daytime running light signal output
3	Backdoor lock motor unlocking	Backdoor lock motor unlocking power supply output
4	High mount brake lamp signal output	High mount brake lamp signal output
5	Economizer relay output	Power saving circuit output
6	Rear fog lamp signal output	Rear fog lamp signal output
7	Brake lamp signal output	Brake lamp signal output
8	Reverse lamp signal output	Reverse lamp signal output
9	Left high beam signal output	Left high beam signal output
10	Reading lamp door control gear	Reading lamp door control gear
11	-	-
12	Right position lamp signal output	Right position lamp signal output

Terminal No.	Terminal name	Terminal description
13	Backlight signal output	Backlight signal output
14	Right turn signal output	Right turn signal output
15	Left turn signal output	Left turn signal output
16	Right daytime running light signal output	Right daytime running light signal output
17	Left position lamp signal output	Left position lamp signal output
18	-	-
19	Ground connection	BCM grounding circuit.
20	Right low beam signal output	Right low beam signal output
21	External lamp power supply 1	BCM exterior lamp power supply 1 battery power supply
22	B+Power supply	BCM battery power supply
23	Turn signal power supply	BCM turn signal battery power supply
24	-	-
25	-	-

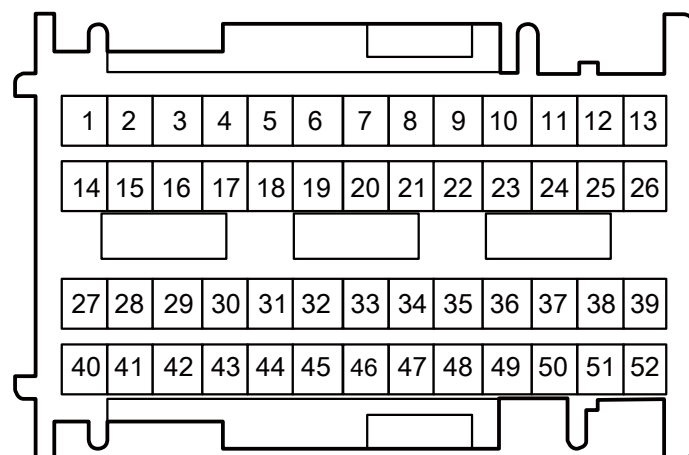
IP22b vehicle body control module harness connector 3



Terminal No.	Terminal name	Terminal description
1	Hazard warning switch indicator	Hazard warning switch indicator lamp control output
2	-	-
3	Low beam lamp switch signal	Low beam lamp switch signal input
4	Courtesy signal	Courtesy lights control output
5	-	-
6	Starting switch backlight signal output	Starting switch backlight signal output
7	-	-
8	-	-
9	Folding of rearview mirrors	Rearview mirror folded positive output
10	Unfolding of rearview mirrors	Rearview mirror unfolded positive output
11	-	-
12	Footlight signal output	Footlight signal output
13	-	-
14	Central lock switch status indicator	Central locking switch status indicator lamp control
15	Electronic parking working indicator signal output	Electronic parking indicator lamp control
16	-	-
17	-	-
18	Trunk lamp signal output	Trunk lamp signal output
19	Ambient light sensor signal	Ambient light sensor signal input
20	ACC power supply	BCM module ACC power supply
21	IG2 power supply	BCM module ACC\ON\START power supply
22	Collision signal	Airbag crash signal input
23	Rear wiper relay control	Rear wiper relay grounding control
24	IG2 relay control	IG2 relay grounding control
25	ACC relay control	ACC relay grounding control
26	-	-
27	-	-
28	-	-
29	LIN1	LIN1 data communication bus
30	Rear wiper switch signal	Rear wiper switch signal input
31	-	-
32	Front wiper intermittent switch signal	Front wiper intermittent switch signal input
33	Right turn switch signal	Right turn signal switch signal input

Terminal No.	Terminal name	Terminal description
34	IG1 relay control	IG1 relay grounding control
35	-	-
36	-	-
37	-	-
38	Green indicator lamp of start and stop switch	Green indicator lamp control of start and stop switch
39	Window locking indicator lamp	Window locking indicator lamp grounding
40	-	-
41	CF CAN-L	Comfort CAN low line
42	CF CAN-H	Comfort CAN high line
43	LIN2	LIN2 data communication bus
44	Rear wiper intermittent switch signal	Rear wiper intermittent switch signal input
45	Rear fog lamp switch signal	Rear fog lamp switch signal input
46	Front wiper high speed switch signal	Front wiper high speed switch signal input
47	Left turn switch signal	Left turn signal switch signal input
48	-	-
49	-	-
50	-	-
51	Yellow indicator lamp of start and stop switch	Yellow indicator lamp of start and stop switch
52	LIN3	LIN3 data communication bus

## SO101a vehicle body control module harness connector 7

SO101a body control module harness  
connector 7

GE09-1124d

Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	-	-
4	Folding signal of exterior rearview mirrors	Exterior rearview mirror folded signal input
5	-	-
6	Backdoor courtesy switch signal	Back gate lock switch status signal input
7	Turn signal fault feedback (tail lamp at body side)	Turn signal fault feedback (tail lamp at body side)
8	Front wiper washer switch signal	Front wiper washer switch signal input
9	Door lock state switch (except driver side)	Door locking state switch signal input (except driver side)
10	-	-
11	Central antenna negative	Central antenna negative circuit
12	PEPS induction coil negative	PEPS induction coil negative circuit



Terminal No.	Terminal name	Terminal description
13	Front passenger side door handle sensor negative	Front passenger side door handle sensor negative circuit
14	Front passenger side window regulating signal	Front passenger side window regulating signal input
15	Rear right window regulating signal	Rear right window regulating signal input
16	-	-
17	-	-
18	-	-
19	RR door control switch signal	Rear right door control switch signal input
20	Driver door lock motor switch signal	Driver door lock motor switch signal input
21	Turn signal fault feedback (combination lamp at backdoor side)	Turn signal fault feedback (combination lamp at backdoor side)
22	RL door control switch signal	Rear left door control switch signal input
23	Front wiper low speed, inching, reset switch signal	Front wiper low speed, inching, reset switch signal input
24	Central antenna positive	Central antenna positive circuit
25	PEPS induction coil positive	PEPS induction coil positive circuit
26	Front passenger side door handle sensor positive	Front passenger side door handle sensor positive circuit
27	Starting switch (switch 1)	Starting switch (switch 1) signal input
28	Cruise switch setting signal	Cruise switch setting signal
29	Backdoor micro switch failure positive	Backdoor micro switch positive signal
30	Central unlocking/locking switch signal	Central locking/unlocking switch signal input
31	Switch common terminal grounding	Common ground of switches
32	-	-
33	-	-
34	Rear left window regulating signal	Rear left window regulating signal
35	Courtesy switch signal at drive side	Driver side door switch signal input
36	Window locking switch signal	Window locking switch signal input

Terminal No.	Terminal name	Terminal description
37	Rear bumper low frequency antenna positive	Rear bumper low-frequency antenna positive circuit
38	Driver side door handle sensor positive	Driver side door handle sensor positive circuit
39	Front antenna positive	Front antenna positive circuit
40	Starting switch (switch 2)	Starting switch (switch 2) signal input
41	Intermittent time adjustment switch positive	Intermittent time adjustment switch positive circuit
42	Cruise switch signal	Cruise switch signal
43	Left front door hidden door handle sensor signal	Left front door hidden door handle position signal
44	-	-
45	-	-
46	-	-
47	Courtesy switch signal at front passenger side	Courtesy switch signal at front passenger side
48	-	-
49	-	-
50	Rear bumper low-frequency antenna negative	Rear bumper low-frequency antenna negative circuit
51	Driver side door handle sensor negative	Driver side door handle sensor negative circuit
52	Front antenna negative	Front antenna negative circuit

#### 9.2.4.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
BCM communication fault	1. Harness and connector	Refer to <a href="#">BCM communication fault</a>
	2. BCM	
BCM power failure	1. Harness and connector	Refer to <a href="#">BCM power failure</a>
	2. Fuse	
	3. BCM	
Internal fault of BCM	1. BCM	Refer to <a href="#">Internal failure of BCM</a>
LIN2 communication fault	1. Harness and connector	Refer to <a href="#">LIN2 communication fault</a>
	2. Sunroof control module	
	3. BCM	
Low beam lamp circuit fault	1. Harness and connector	Refer to <a href="#">Low beam circuit fault</a>
	2. BCM	
	3. Low beam lamp	
High beam lamp circuit fault	1. Harness and connector	Refer to <a href="#">High beam circuit fault</a>
	2. Fuse	
	3. BCM	

Fault Symptom	Suspected fault location	Maintenance plan
	4. High beam lamp	
Rear fog lamp circuit fault	1. Harness and connector	Refer to <a href="#">Rear fog lamp circuit fault</a>
	2. BCM	
	Rear fog lamp	
Reversing light circuit failure	1. Harness and connector	Refer to <a href="#">Reversing lamp circuit fault</a>
	2. BCM	
	3. Reverse lamp	
Brake lamp circuit failure	1. Harness and connector	Refer to <a href="#">Brake lamp circuit fault</a>
	2. BCM	
	3. Rear combination lamp	
Circuit fault of high mounted brake lamp	1. Harness and connector	Refer to <a href="#">High mounted brake lamp circuit fault</a>
	2. BCM	
	3. High mount brake lamp	
Interior lamp circuit failure	1. Harness	Refer to <a href="#">Interior lamp circuit fault</a>
	2. Front reading lamp	
	3. BCM	
Turn signal circuit fault	1. Harness and connector	Refer to <a href="#">Turn signal lamp circuit fault</a>
	2. BCM	
	3. Side turn signal lamp	
Fault of the position lamp circuit	1. Harness and connector	Refer to <a href="#">Position lamp circuit fault</a>
	2. BCM	
	3. Position lamp	
Footlight circuit failure	1. Harness and connector	See <a href="#">Foot Light Circuit Failure</a>
	2. BCM	
	3. Foot lamps on the driver's side	
Courtesy light circuit failure	1. Harness and connector	See <a href="#">Courtesy Light Circuit Failure</a>
	2. BCM	
	3. Courtesy lamp	
License plate lamp circuit failure	1. Harness and connector	See <a href="#">License Plate Lamp Circuit Failure</a>
	2. BCM	
	3. License plate lamp	
Luggage compartment lamp circuit failure	1. Harness and connector	See <a href="#">Luggage Compartment Light Circuit Failure</a>
	2. BCM	
	3. Luggage boot lamp	
Rear antenna is faulty	1. Harness and connector	Refer to <a href="#">Rear antenna fault</a>
	2. Rear antenna	
	3. BCM	
Electronic handbrake indicator lamp circuit failure	1. Harness and connector	See <a href="#">Electronic Handbrake Indicator Circuit Failure</a>
	2. BCM	
	3. EPB switch	

Fault Symptom	Suspected fault location	Maintenance plan
Hazard warning indicator lamp circuit failure	1. Harness and connector	See <a href="#">Hazard Warning Lamp Circuit Failure</a>
	2. BCM	
	3. Hazard warning lamp switch	
Anti-theft indicator circuit failure	1. Harness and connector	Refer to <a href="#">Anti-theft indicator circuit failure</a>
	2. BCM	
	3. Front combination light (anti-theft indicator lamp)	
Daytime running light circuit failure	1. Harness and connector	Refer to <a href="#">Daytime running light circuit failure</a>
	2. BCM	
	3. Left headlamp	
Central control door lock switch indicator lamp failure	1. Harness and connector	See <a href="#">Central Control Door Lock Switch Indicator Lamp Failure</a>
	2. BCM	
	3. Door glass regulation switch at driver side (central locking switch)	
Defroster circuit fault	1. Harness and connector	Refer to <a href="#">Defroster circuit fault</a>
	2. Fuse	
	3. Relay	
	4. BCM	
Middle antenna fault	1. Harness and connector	See <a href="#">Central Antenna Failure</a>
	2. Middle antenna	
	3. BCM	
Horn circuit fault	1. Harness and connector	Refer to <a href="#">Horn circuit fault</a>
	2. Fuse	
	3. Relay	
	4. BCM	
Ambient light and sun light sensor circuit fault	1. Harness and connector	See <a href="#">Ambient Light and Sunlight Sensor Circuit Failure</a>
	2. BCM	
	3. Ambient light and sun light sensor	
FL window anti-pinch module fault	1. Harness and connector	Refer to <a href="#">FL window anti-pinch module fault</a>
	2. Door glass regulator motor at driver side	
	3. BCM	
FR window anti-pinch module fault	1. Harness and connector	Refer to <a href="#">FR window anti-pinch module fault</a>
	2. Front passenger door glass regulator motor	
	3. BCM	
RL window anti-pinch module fault	1. Harness and connector	Refer to <a href="#">RL window anti-pinch module fault</a>
	2. Left rear door window regulator motor	
	3. BCM	
RR window anti-pinch module fault	1. Harness and connector	Refer to <a href="#">RR window anti-pinch module fault</a>
	2. Right rear door glass regulator motor	

Fault Symptom	Suspected fault location	Maintenance plan
	3.BCM	
Sunroof circuit trouble	1. Harness and connector	See <a href="#">Sunroof Circuit Failure</a>
	2. Sunroof control module	
	3.BCM	
Rear wiper circuit fault	1. Harness and connector	Refer to <a href="#">Rear wiper circuit fault</a>
	2. Fuse	
	3. Relay	
	4.BCM	
Front wiper power circuit failure	1. Harness and connector	See <a href="#">Front Wiper Power Circuit Failure</a>
	2. Fuse	
	3. Relay	
	4.BCM	
Front wiper speed control circuit failure	1. Harness and connector	See <a href="#">Front Wiper Speed Control Circuit Failure</a>
	2. Wiper combination switch	
	3.BCM	
High tire temperature	1. Tyre pressure monitoring sensor	See <a href="#">Tire Temperature is High</a>
	2.BCM	
TPMS power failure	1. Harness and connector	Refer to <a href="#">TPMS power failure</a>
	2. Tyre pressure monitoring sensor	
Tire position error	1. Tyre pressure monitoring sensor	See <a href="#">Tire Position Error</a>
	2.BCM	
Low tire pressure failure	1. Tyre pressure monitoring sensor	Refer to <a href="#">Low tire pressure failure</a>
	2.BCM	
Vehicle speed signal failure	1. Harness and connector	See <a href="#">Vehicle Speed Signal Failure</a>
	2.ESC	
	3.BCM	
Hard-line collision PWM signal invalid	1. Harness and connector	See <a href="#">Hard-Line Collision PWM Signal Invalid</a>
	2. Supplementary restraint system	
	3.BCM	
Abnormal feedback signal of turn signal LED	1. Harness and connector	Refer to <a href="#">Abnormal feedback signal of turn signal LED</a>
	2. Front combination lights (turn signal lamps)	
	3.BCM	
Front left antenna fault	1. Harness and connector	Refer to <a href="#">Front left antenna fault</a>
	2. Front left antenna	
	3.BCM	
ACC relay fault	1. Fuse	Refer to <a href="#">ACC relay fault</a>
	2. Relay	
	3.BCM	
IGN1 relay fault	1. Fuse	Refer to <a href="#">IGN1 relay fault</a>

Fault Symptom	Suspected fault location	Maintenance plan
	2. Relay	
	3.BCM	
IGN2 relay fault	1. Fuse	Refer to <a href="#">IGN2 relay fault</a>
	2. Relay	
	3.BCM	
Start and stop button fault	1. Harness and connector	Refer to <a href="#">Start and stop switch fault</a>
	2. Start and stop switch	
	3.BCM	
Fault of the handle sensor of the driver side door	1. Harness and connector	Refer to <a href="#">Driver side door handle sensor failure</a>
	2. Handle sensor of the driver side door	
	3.BCM	
Front passenger side door handle sensor failure	1. Harness and connector	Refer to <a href="#">Front passenger side door handle sensor failure</a>
	2. Front passenger side door handle sensor	
	3.BCM	
LIN communication failure of door handle control module	1. Harness and connector	See <a href="#">LIN Communication Failure of Door Handle Control Module</a>
	2. Door handle control module	
	3.BCM	
Power failure of door handle control module	1. Harness and connector	See <a href="#">Power Supply Failure of Door Handle Control Module</a>
	2. Fuse	
	3. Door handle control module	
Internal failure of door handle control module	1. Door handle control module	See <a href="#">Internal Failure of Door Handle Control Module</a>
Hidden door handle motor failure	1. Harness and connector	See <a href="#">Hidden Door Handle Motor Failure</a>
	2. Door handle control module	
	3. Concealed door handle	
Hidden door handle status sensor failure	1. Harness and connector	See <a href="#">Hidden Door Handle Status Sensor Failure</a>
	2.BCM	
	3. Door handle control module	
	4. Concealed door handle	
LIN1 communication fault	1. Harness and connector	Refer to <a href="#">LIN1 communication fault</a>
	2.BCM	
	3. Door glass regulator motor at driver side	
	4. Left rear door window regulator motor	
	5. Door glass lifter motor at front passenger side	
	6. Right rear door glass regulator motor	

### 9.2.4.5 List of Diagnostic Trouble Codes (DTC)

BCM module

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	CAN bus switch-off fault	Refer to <a href="#">BCM communication fault</a>
U012187	Communication with ABS/ESC is lost	
U012687	Loss of communication with steering angle sensor module	
U042881	Received invalid data from TCM module	
U013187	Communication with power steering column module is lost	
U015187	Communication with airbag control unit is lost	
U015587	Communication with instrument panel control module is lost	
U015687	Communication with multi-media module is lost	
U016487	Communication with air-conditioning module is lost	
U016987	Communication with sunroof control module is lost	
U019887	Communication with T-BOX module is lost	
U019987	Communication with DDM is lost	
U020087	Communication with PDM is lost	
U022287	Loss of communication with FL window anti-clip module is lost	
U022387	Loss of communication with FR window anti-clip module	
U022487	Loss of communication with RL window anti-clip module	
U022587	Loss of communication with RR window anti-clip module	
U023087	Communication with PTG is lost	
U023187	Communication with rainfall light sensor rainfall sensor is lost	
U041681	Received invalid data from the electronic stability control module (wrong counter or checksum)	
U045281	Received invalid data from the airbag module (wrong counter or checksum)	
U111187	Loss of communication with the driving mode switch module	
U111487	Communication with vehicle body control module is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method	
U111587	Communication with OBC is lost		
U120387	Communication with the front camera module is lost.		
U140481	Invalid data received from the vehicle control module (wrong counter or checksum)		
U143381	Received invalid data from the front camera module (wrong counter or checksum)		
U111787	Communication with AVM(CSCAN) is lost		
U023587	Communication with FRS is lost		
U112287	Communication with VCU_CSCAN is lost		
U018087	Communication with ADB is lost		
U023687	Communication with ESCL is lost		
U013387	Communication with BMSL is lost		
U030E87	Communication with WMM is lost		
U013487	Communication with FMDM is lost		
U017087	Communication with RSRS_R is lost		
U011287	Communication with BMSH is lost		
B109C87	Loss of communication with hidden door handle controller		
U015987	Communication with park assist system is lost		
U045A81	Received invalid data from the parking assist system module (wrong counter or checksum)		
B108911	Monochrome ambient light control circuit is short-circuited to the ground		
U110000	LIN1 communication fault		Refer to <a href="#">LIN1 communication fault</a>
U110100	LIN2 communication fault		Refer to <a href="#">LIN2 communication fault</a>
U300616	ECU supply voltage low	Refer to <a href="#">BCM power failure</a>	
U300617	ECU supply voltage high		
B100112	The interior lamp circuit is short to the power supply	Refer to <a href="#">Interior lamp circuit fault</a>	
B108B98	Voice-activated dome light control circuit is over temperature		
B100611	Electronic handbrake indicator lamp circuit is short to the ground	See <a href="#">Electronic Handbrake Indicator Circuit Failure</a>	



Diagnostic Trouble Code	Description	Fault location/elimination method
B10084B	Horn circuit is overload or over temperature	Refer to <a href="#">Horn circuit fault</a>
B100911	The rear fog lamp circuit is short-circuited to ground or overloaded	Refer to <a href="#">Rear fog lamp circuit fault</a>
B100915	The rear fog lamp is short-circuited to the power supply or open circuit	
B100A11	The reversing light circuit is short to ground or overloaded	Refer to <a href="#">Reversing lamp circuit fault</a>
B100A15	The reversing light is short-circuited to the power supply or open circuit	
B100B11	The brake lamp circuit is shorted to ground or overloaded	Refer to <a href="#">Brake lamp circuit fault</a>
B100B15	The brake lamp is shorted to the power supply or open circuit	
B100C11	Foot lamp circuit is short circuited to ground or overloaded	See <a href="#">Foot Light Circuit Failure</a>
B100D11	The high-position brake lamp circuit is short to ground or overloaded	Refer to <a href="#">High mounted brake lamp circuit fault</a>
B100E11	The right turn signal is short to the ground	Refer to <a href="#">Turn signal lamp circuit fault</a>
B100F11	The left turn signal is short-circuited to the ground	
B108C98	Over temperature of steering water lamp control circuit	
B100E13	The right turn signal is open or a bulb is damaged	
B100F13	The left turn signal is open or a bulb is damaged	See <a href="#">Ambient Light and Sunlight Sensor Circuit Failure</a>
B101109	Light sensor general failure	
B101117	Rainfall light sensor overvoltage	
B101149	Rainfall sensor fault	
B10114B	Rainfall light sensor overheating	
B101154	Rainfall light sensor calibration fault	
B101796	Sunlight sensor fault	
B101896	Light sensor hardware failure	Refer to <a href="#">FL window anti-pinch module fault</a>
B101216	Fault of low voltage of FL window anti-pinch module	
B101217	Fault of high voltage of FL window anti-pinch module	

Diagnostic Trouble Code	Description	Fault location/elimination method
B101249	Fault of motor relay of FL window anti-pinch module	
B10124B	Fault of motor overheating of FL window anti-pinch module	
B101264	Left front window anti-pinch module-switch stuck	
B101296	Fault of Hall sensor of FL window anti-pinch module	
B101316	Fault of low voltage of FR window anti-pinch module	Refer to <a href="#">FR window anti-pinch module fault</a>
B101317	Fault of high voltage of FR window anti-pinch module	
B101349	Fault of motor relay of FR window anti-pinch module	
B10134B	Fault of motor overheating of FR window anti-pinch module	
B101364	Right front window anti-pinch module-switch stuck	
B101396	Fault of Hall sensor of FR window anti-pinch module	
B101416	Fault of low voltage of RL window anti-pinch module	Refer to <a href="#">RL window anti-pinch module fault</a>
B101417	Fault of high voltage of RL window anti-pinch module	
B101449	Fault of motor relay of RL window anti-pinch module	
B10144B	Fault of motor overheating of RL window anti-pinch module	
B101464	Left rear window anti-pinch module-switch stuck	
B101496	Fault of Hall sensor of RL window anti-pinch module	
B101516	Fault of low voltage of RR window anti-pinch module	Refer to <a href="#">RR window anti-pinch module fault</a>
B101517	Fault of high voltage of RR window anti-pinch module	
B101549	Fault of motor relay of RR window anti-pinch module	
B10154B	Fault of motor overheating of RR window anti-pinch module	

Diagnostic Trouble Code	Description	Fault location/elimination method
B101564	Right rear window anti-pinch module-switch stuck	
B101596	Fault of Hall sensor of RR window anti-pinch module	
B101616	Sunroof-low voltage failure	See <a href="#">Sunroof Circuit Failure</a>
B101617	Sunroof-high voltage failure	
B101649	Sunroof-motor relay failure	
B101664	Sunroof - switch fault	
B101696	Sunroof - Hall sensor fault	
B101B11	The hazard warning indicator lamp circuit is short to ground or overloaded	See <a href="#">Hazard Warning Lamp Circuit Failure</a>
B101C11	The anti-theft indicator circuit is short-circuited to ground	Refer to <a href="#">Anti-theft indicator circuit failure</a>
B101E11	Left daytime running light circuit is short to GND or overloaded	Refer to <a href="#">Daytime running light circuit failure</a>
B101F11	Right daytime running light circuit is short to GND or overloaded	
B102112	Rear wiper circuit is short to power supply	Refer to <a href="#">Rear wiper circuit fault</a>
B102114	The rear wiper circuit is short to ground or open circuit	
B102171	Rear wiper circuit is blocked	
B103629	Hard-line collision PWM signal is invalid	See <a href="#">Hard-Line Collision PWM Signal Invalid</a>
B103914	The front defrosting circuit is short-circuited to ground or open circuit	Refer to <a href="#">Defroster circuit fault</a>
B10394B	The front defrosting circuit is overloaded or over temperature	
B108798	Front defrosting indicator lamp circuit over temperature	
B100014	The rear defrosting circuit is shorted to ground or open	
B10004B	The rear defrosting circuit is overloaded or over temperature	
B108698	Over temperature of rear defrosting indicator lamp circuit	
B105C01	Right low beam fault	Refer to <a href="#">Low beam circuit fault</a>
B105D01	Left low beam fault	
B106211	Right front turn signal LED feedback line is shorted to ground	Refer to <a href="#">Abnormal feedback signal of turn signal LED</a>

Diagnostic Trouble Code	Description	Fault location/elimination method	
B106215	The front right steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B106511	Left front turn signal LED feedback line is shorted to ground		
B106515	The front left steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B107011	Right rear outer turn signal LED feedback line is shorted to ground		
B107015	The right rear and outer steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B107111	Left rear outer turn signal LED feedback line is shorted to ground		
B107115	The left rear and outer steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B107211	Right rear inner turn signal LED feedback line is shorted to ground		
B107215	The right rear inner steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B107311	Left rear inner turn signal LED feedback line is shorted to ground		
B107315	The left rear inner steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited		
B107412	Wiper ON/OFF circuit is short to power supply		See <a href="#">Front Wiper Speed Control Circuit Failure</a>
B107414	Wiper ON/OFF circuit is short to ground or open circuit		
B101071	Front wiper stuck		
B107512	The high and low-speed circuit of front wiper is short to power supply	See <a href="#">Front Wiper Power Circuit Failure</a>	

Diagnostic Trouble Code	Description	Fault location/elimination method
B107514	Wiper's high-and-low speed circuits are short to ground or open circuit	
B107811	The left high beam circuit is short circuited to ground	Refer to <a href="#">High beam circuit fault</a>
B107911	The right high beam circuit is short-circuited to ground	
B108898	The high beam switch detects the over temperature of the output circuit	
B107A11	Left position lamp circuit short to ground or overloaded	Refer to <a href="#">Position lamp circuit fault</a>
B107B11	Right position lamp circuit short to ground or overloaded	
C160098	High temperature of left front tire high temperature	See <a href="#">Tire Temperature is High</a>
C160198	High temperature of front right tire	
C160298	High temperature of left rear tire	
C160398	High temperature of right rear tire	
C160416	The supply voltage of the front left tire pressure sensor is low	Refer to <a href="#">TPMS power failure</a>
C160516	The supply voltage of the right front tire pressure sensor is low	
C160616	The supply voltage of the rear left tire pressure sensor is low	
C160716	The supply voltage of the rear right tire pressure sensor is low	
C160C8F	Front left tire pressure sensor is lost	See <a href="#">Tire Position Error</a>
C160D8F	Front right tire pressure sensor is lost	
C160E8F	Rear left tire pressure sensor is lost	
C160F8F	Rear right tire pressure sensor is lost	
C161755	Tire ID is not burned	
C161021	Left front tire pressure is low	Refer to <a href="#">Low tire pressure failure</a>
C161121	Right front tire pressure is low	
C161221	Left rear tire pressure is low	
C161321	Right rear tire pressure is low	
C161A27	Front left tyre pressure leaks quickly.	
C161B27	Front right tyre pressure leaks quickly.	
C161C27	Rear left tyre pressure leaks quickly.	
C161D27	Rear right tyre pressure leaks quickly.	
C161529	Receive invalid gear pulse signal	See <a href="#">Vehicle Speed Signal Failure</a>

Diagnostic Trouble Code	Description	Fault location/elimination method
C161531	Fail to receive gear pulse signal	
C161E29	Invalid vehicle speed signal is received	
C161E31	Invalid vehicle speed signal is not received	
B128600	Driver side antenna failure	Refer to <a href="#">Driver side door handle sensor failure</a>
B128700	Front passenger side antenna failure	Refer to <a href="#">Front passenger side door handle sensor failure</a>
B128800	Antenna failure in the front of the vehicle	Refer to <a href="#">Front left antenna fault</a>
B128900	Middle antenna failure in the vehicle	See <a href="#">Central Antenna Failure</a>
B128A00	Trunk antenna failure	Refer to <a href="#">Rear antenna fault</a>
B128B00	Rear bumper antenna failure	
B128200	ACC output failure	Refer to <a href="#">ACC relay fault</a>
B128229	ACC relay control output is invalid	
B128300	IGN1 output failure	Refer to <a href="#">IGN1 relay fault</a>
B128329	Invalid IGN1 relay control output	
B128400	IGN2 output failure	Refer to <a href="#">IGN2 relay fault</a>
B128429	Invalid IGN2 relay control output	
B128500	Starting output failure	Refer to <a href="#">Start and stop switch fault</a>
B10204B	The starting circuit is overloaded or over temperature	
B108E11	Starting switch backlight control circuit is short to ground	
B128C00	SSB input failure	Refer to <a href="#">Internal failure of BCM</a>
B128D00	WPC control output failure	
B101D11	The power-saving circuit is shorted to ground or overloaded	
B104F4B	The button backlight circuit is overloaded or over temperature	
B12AA53	Anti-theft authentication failed	
B108000	RF receiver communication failure	
B10194B	Economic mode indicator circuit is overloaded or over temperature	
B101A4B	The sport mode indicator circuit is overloaded or over temperature	
B108311	The courtesy light control circuit is short to ground	See <a href="#">Courtesy Light Circuit Failure</a>
B108A11	The courtesy light control signal circuit is short to ground	

Diagnostic Trouble Code	Description	Fault location/elimination method	
B108511	The luggage compartment lamp is short to the ground	See <a href="#">Trunk Light Circuit Failure</a>	
B108D11	The door lock status indicator lamp is short-circuited to the ground	See <a href="#">Central Control Door Lock Switch Indicator Lamp Failure</a>	
B108F01	Left front door handle motor failure	See <a href="#">Hidden Door Handle Motor Failure</a>	
B109201	Right front door handle motor failure		
B109501	Left rear door handle motor failure		
B109801	Right rear door handle motor failure		
B109001	The left front door handle limit switch OFF fault	See <a href="#">Hidden Door Handle Status Sensor Failure</a>	
B109101	The left front door handle limit switch ON failure		
B109301	The front right door handle limit switch OFF fault		
B109401	The front right door handle limit switch ON fault		
B109601	The left rear door handle limit switch OFF fault		
B109701	The left rear door handle limit switch ON fault		
B109901	The right rear door handle limit switch OFF fault		
B109A01	The right rear door handle limit switch ON fault		
B109B09	Hidden door handle controller LIN communication error		See <a href="#">LIN Communication Failure of Door Handle Control Module</a>
B109B16	Hidden door handle controller undervoltage		See <a href="#">Power Supply Failure of Door Handle Control Module</a>
B109B17	Hidden door handle controller overvoltage		
B109B04	Hidden door handle controller internal circuit failure	See <a href="#">Internal Failure of Door Handle Control Module</a>	

### 9.2.4.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 9.2.4.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 9.2.4.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km

### 9.2.4.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by BCM can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Connect the scan tool.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Select “BCM”/“action test”.
- e. Refer to the following table and conduct active test.



Diagnostic apparatus display item	Test components	Control range
Position lamp and license plate lamp	Position lamp and license plate lamp	ON/OFF
Low beam lamp	Low beam lamp	ON/OFF
High beam lamp	High beam lamp	ON/OFF
Fog Lamp	Fog Lamp	ON/OFF
Daytime Running Lights	Daytime Running Lights	ON/OFF
Turn signals	Turn signals	ON/OFF
Courtesy lamp*	Courtesy lamp*	ON/OFF
Reverse Lamp	Reverse Lamp	ON/OFF
Rear Fog Lamp	Rear fog lamp	ON/OFF
Braking Lamp	Braking Lamp	ON/OFF
High braking lamp	High braking lamp	ON/OFF
Interior lamp	Interior lamp	ON/OFF
Power saving relay	Power saving relay	ON/OFF
Switch background light	Switch background light	ON/OFF
Front cleaner	Front cleaner	ON/OFF
Front wiper- low speed	Front wiper motor	ON/OFF
Rear Wiper*	Rear wiper motor	ON/OFF
Rear washer	Washer motor	ON/OFF
Anti-theft horn	Horn	ON/OFF
Trunk open	Trunk locked	Turn on
Central locking	Central lock	Locking
Central unlocking	Central lock	Unlocking
Defroster	Rear defroster	ON/OFF
Folding of rearview mirrors	Power Rearview Mirror	fold
Rearview mirrors unfolding	Power Rearview Mirror	Unfold
EPB Indicator*	EPB Indicator*	ON/OFF
Burglar alarm indicator lamp	Burglar alarm indicator lamp	ON/OFF
Economic mode indicator light	Economic mode indicator light	ON/OFF
Sport mode indicator light	Sport mode indicator light	ON/OFF
Hazard warning indicator lamp	Hazard warning indicator lamp	ON/OFF
Door lock (central control lock) status indicator lamp	Door lock (central control lock) status indicator lamp	ON/OFF
Window locking switch indicator lamp	Window locking switch indicator lamp	ON/OFF
Rear defrosting indicator lamp	Rear defrosting indicator lamp	ON/OFF
Activate the one-key starting switch, the yellow LED light flashes	Start and Stop Button	5 flashes

Diagnostic apparatus display item	Test components	Control range
Activate the one-key starting switch, the green LED light flashes	Start and Stop Button	5 flashes
Activate wireless charging output	Wireless charging	ON/OFF

### 9.2.4.10 BCM communication fault

#### 1. DTC description:

Diagnostic Trouble Code	Trouble description
U007300	CAN bus switch-off fault
U012187	Communication with ABS/ESC is lost
U012687	Loss of communication with steering angle sensor module
U042881	Received invalid data from TCM module
U013187	Communication with power steering column module is lost
U015187	Communication with airbag control unit is lost
U015587	Communication with instrument panel control module is lost
U015687	Communication with multi-media module is lost
U016487	Communication with air-conditioning module is lost
U016987	Communication with sunroof control module is lost
U019887	Communication with T-BOX module is lost
U019987	Communication with DDM is lost
U020087	Communication with PDM is lost
U022287	Loss of communication with FL window anti-clip module is lost
U022387	Loss of communication with FR window anti-clip module
U022487	Loss of communication with RL window anti-clip module
U022587	Loss of communication with RR window anti-clip module
U023087	Communication with PTG is lost
U023187	Communication with rainfall light sensor rainfall sensor is lost
U041681	Received invalid data from the electronic stability control module (wrong counter or checksum)
U045281	Received invalid data from the airbag module (wrong counter or checksum)
U111187	Loss of communication with the driving mode switch module
U111487	Communication with vehicle body control module is lost
U111587	Communication with OBC is lost
U120387	Communication with the front camera module is lost.
U140481	Invalid data received from the vehicle control module (wrong counter or checksum)
U143381	Received invalid data from the front camera module (wrong counter or checksum)
U111787	Communication with AVM(CSCAN) is lost
U023587	Communication with FRS is lost
U112287	Communication with VCU_CSCAN is lost
U018087	Communication with ADB is lost
U023687	Communication with ESCL is lost

Diagnostic Trouble Code	Trouble description
U013387	Communication with BMSL is lost
U030E87	Communication with WMM is lost
U013487	Communication with FMDM is lost
U017087	Communication with RSRS_R is lost
U011287	Communication with BMSH is lost
B109C87	Loss of communication with hidden door handle controller
U015987	Communication with park assist system is lost
U045A81	Received invalid data from the parking assist system module (wrong counter or checksum)
B108911	Monochrome ambient light control circuit is short-circuited to the ground

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus disconnection detected	IBC supply voltage is within the range of 9-16V	1. Circuit 2.BCM
U012187	Lost ESC (ID=0x125) message for 250 milliseconds	1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 3. The ignition state is ON mode and meets the conditions of communication enabling.	
U012687	Message from SAS lost for 250 milliseconds (0x0E0)	1. The ignition state is ON mode and meets the conditions of communication enabling.	
U042881	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x281)	2. IBC Power supply The supply voltage is within the range of 9-16V	
U013187	Message from EPS lost for 500 milliseconds (0x2F7)	3. No bus disconnection is detected, and there are more than 1000 ms after recovery of last bus disconnection	
U015187	Messages from ACU are lost for 1s (0x380)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015587	Message from IPK lost for 500 milliseconds (0x26D)		
U015687	Message from MMI lost for 500 milliseconds (0x2A1)		
U016487	Message from AC lost for 500 milliseconds (0x2F1)		
U016987	No more information has been received from the sunroof for more than 250 milliseconds (0x14)	<ol style="list-style-type: none"> <li>1. LIN2 wakes up and meets the communication enable conditions</li> <li>2. IBC Power supply The supply voltage is within the range of 9-16V</li> <li>3. cfg skylight option == 10</li> </ol>	
U019887	Message from T - BOX lost for 500 milliseconds (0x292)	<ol style="list-style-type: none"> <li>1. The ignition state is ON mode and meets the conditions of communication enabling.</li> <li>2. IBC Power supply The supply voltage is within the range of 9-16V</li> <li>3. No bus disconnection is detected, and there are more than 1000 ms after recovery of last bus disconnection</li> </ol>	
U019987	Loss of DDM (ID=0x139) message lasts for 250 milliseconds	<ol style="list-style-type: none"> <li>1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details)</li> <li>2. The ignition state should be ON mode and meet the conditions of communication enabling</li> <li>3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection</li> <li>4. cfg node DCU option==1</li> </ol>	
U020087	Loss of PDM (ID=0x286) message lasts for 500 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U022287	No message received from FL APWL for more than 500 milliseconds (0x10)	1. LIN1 is in the wake-up state and meets the communication enabling conditions 2. IBC Power supply The supply voltage is within the range of 9-16V 3. Cfg APWL option=00	
U022387	No message from FR APWL is received for more than 500 milliseconds (0x11)		
U022487	No message received from RL APWL for more than 500 milliseconds (0x12)		
U022587	No message received from RR APWL for more than 500 milliseconds (0x13)		
U023087	Loss of PTG (ID=0x2C8) message lasts for 500 milliseconds	1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition state should be ON mode and meet the conditions of communication enabling 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. cfg node DCU option==1	
U023187	No message is received from RLS for more than 500 milliseconds (0x15 or 0x16)	1. LIN1 is in the wake-up state and meets the communication enabling conditions 2. IBC Power supply The supply voltage is within the range of 9-16V 3. Cfg APWL option=00	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041681	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x125)	1. The ignition state is ON mode and meets the conditions of communication enabling. 2. IBC Power supply The supply voltage is within the range of 9-16V 3. No bus disconnection is detected, and there are more than 1000 ms after recovery of last bus disconnection	
U045281	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x380)		
U111187	Message from DMS lost for 500 milliseconds (0x228)		
U111487	Message from VCU lost for 250 milliseconds (0x162)		
U111587	500 ms OBC CAN message 0x220 was detected as being lost	1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition state should be ON mode and meet the conditions of communication enabling 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. cfg node DCU option==1	
U120387	Message from FCS lost for 500 milliseconds (0x2E0)	1. The ignition state is ON mode and meets the conditions of communication enabling. 2. IBC Power supply The supply voltage is within the range of 9-16V 3. No bus disconnection is detected, and there are more than 1000 ms after recovery of last bus disconnection	
U140481	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x162)		
U143381	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x2E0)		

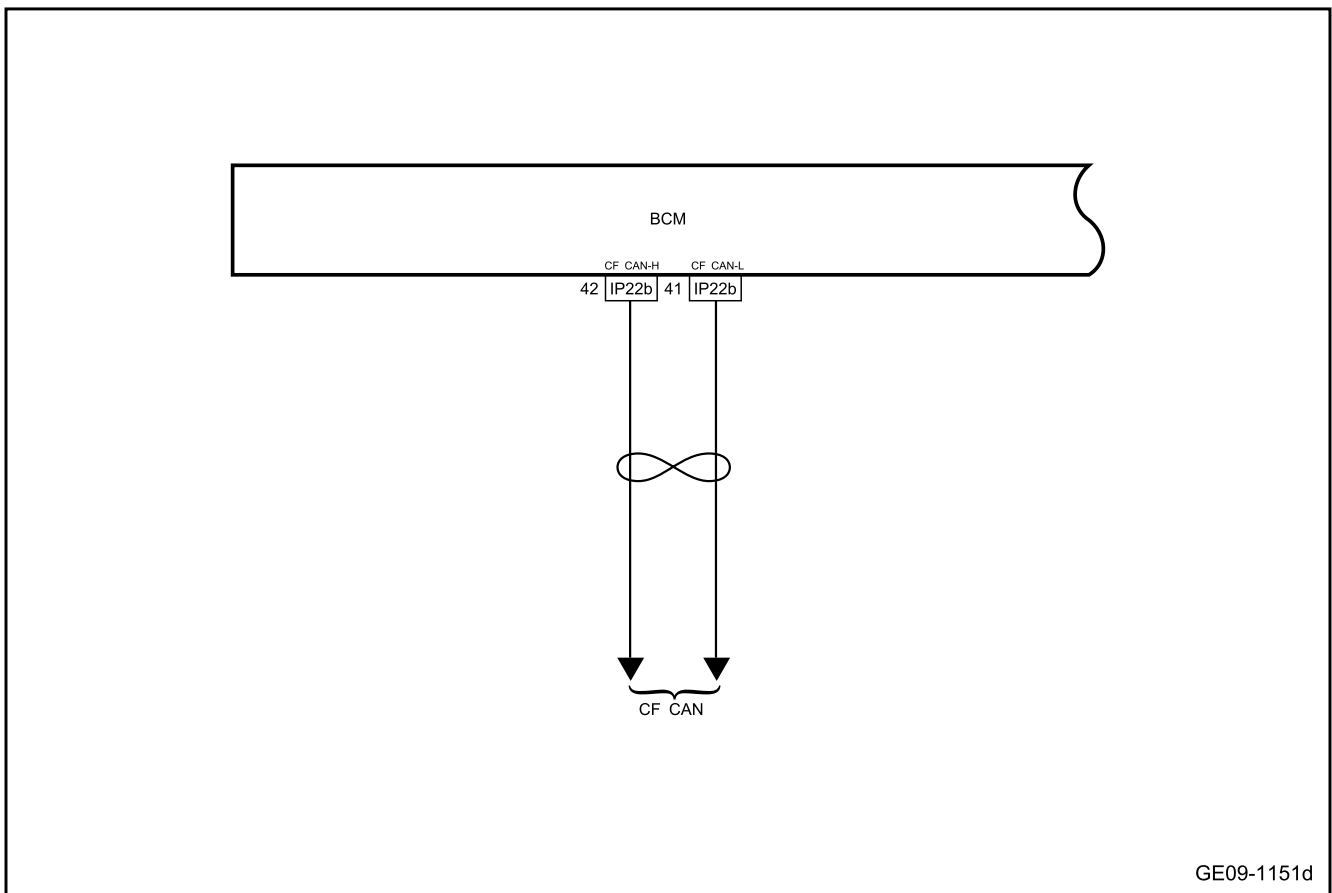
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111787	The signal 'AVM_0x2AB_TimeoutFlag' is encoded as 1, 5 consecutive times	1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition state should be ON mode and meet the conditions of communication enabling 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. cfg node DCU option==1	
U023587	The signal 'FRS_0x1A3_TimeoutFlag' is encoded as 1, 5 consecutive times		
U112287	Loss of VCU-CSCAN (ID=0x165) message lasts for 250 milliseconds		
U018087	Loss of ADB (ID=0x2CD) message lasts for 500 milliseconds		
U023687	Loss of ESCL (ID=0x279) message lasts for 500 milliseconds		
U013387	Loss of Roll (ID=0x17) information lasts for 250 milliseconds	1. LIN2 wakes up and meets the communication enable conditions 2. IBC Power supply The supply voltage is within the range of 9-16V 3. cfgSunroof option == 10	
U030E87	Loss of WMM (ID=0x25) messages lasts for 250 milliseconds	1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition state should be ON mode and meet the conditions of communication enabling 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. cfg node DCU option==1	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U013487	Loss of FMDM (ID=0x20) message lasts for 500 milliseconds	1. The host power supply voltage is within the range of 9-16V 2. Meet the requirements for enabling TDiag 3. The cfg FMDM option is !=0x0	
U017087	RSRS (ID=0x2E4) information loss 5T	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The ignition status should be IGN ON, and meet the conditions for enabling Tdiag 3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection 4. cfg node BSD/RSRS option==1 (F110, byte 5, bit 7==1)	
U011287	Message from BMSH lost for 250 milliseconds (0x17B)	1. IBC Power supply The supply voltage is within the range of 9-16V 2. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection 3. cfg node BMSH option == 1 (F110 byte 3 bit 3 == 1) 4. cfg node VCU option == (F110, bit 5 of byte 3 == 1) 5. cfg node EMS option==0 (F110, byte 0 bit 0==0)	



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109C87	Loss of DHC (ID=0x18) message lasts for 500 milliseconds	<ol style="list-style-type: none"> <li>1. LIN2 is in the wake-up state and meets the conditions for enabling Tdiag.</li> <li>2. IBC's power supply voltage range is 9-16V</li> <li>3. cfg node hidden door handle option==1 (F101, byte 14, the first bit==1)</li> </ol>	
U015987	Loss of PAS (ID=0x291) message lasts for 500 milliseconds	<ol style="list-style-type: none"> <li>1. The IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details)</li> <li>2. The ignition state is ON mode and meets the conditions of communication enabling</li> <li>3. No bus disconnection is detected, and it has been more than 1000 ms after recovery of last bus disconnection</li> <li>4. cfg Rpa option==1</li> </ol>	
U045A81	Message checksum error 3 times successively or activity counter successive keeps the same value 3 times (ID: 0x291)	<ol style="list-style-type: none"> <li>1. The ignition state is ON mode and meets the conditions of communication enabling</li> <li>2. IBC power supply voltage range is 9-16V</li> <li>3. cfg Rpa option==1</li> </ol>	
B108911	The output current will be checked to monitor a short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. Ambient lighting control has been short circuited to ground or overload for 200ms	<ol style="list-style-type: none"> <li>1. IBC的供电电压范围为9-16V</li> <li>2. Ambient lighting function is activated 100ms</li> </ol>	

3. Schematic circuit diagram:



GE09-1151d

4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the CF-CAN network integrity.

- A. Check CF CAN network integrity, refer to [CF CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN network is normal.

No

Check or repair the CF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

**Step 4** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 5** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

9.2.4.11 BCM power failure

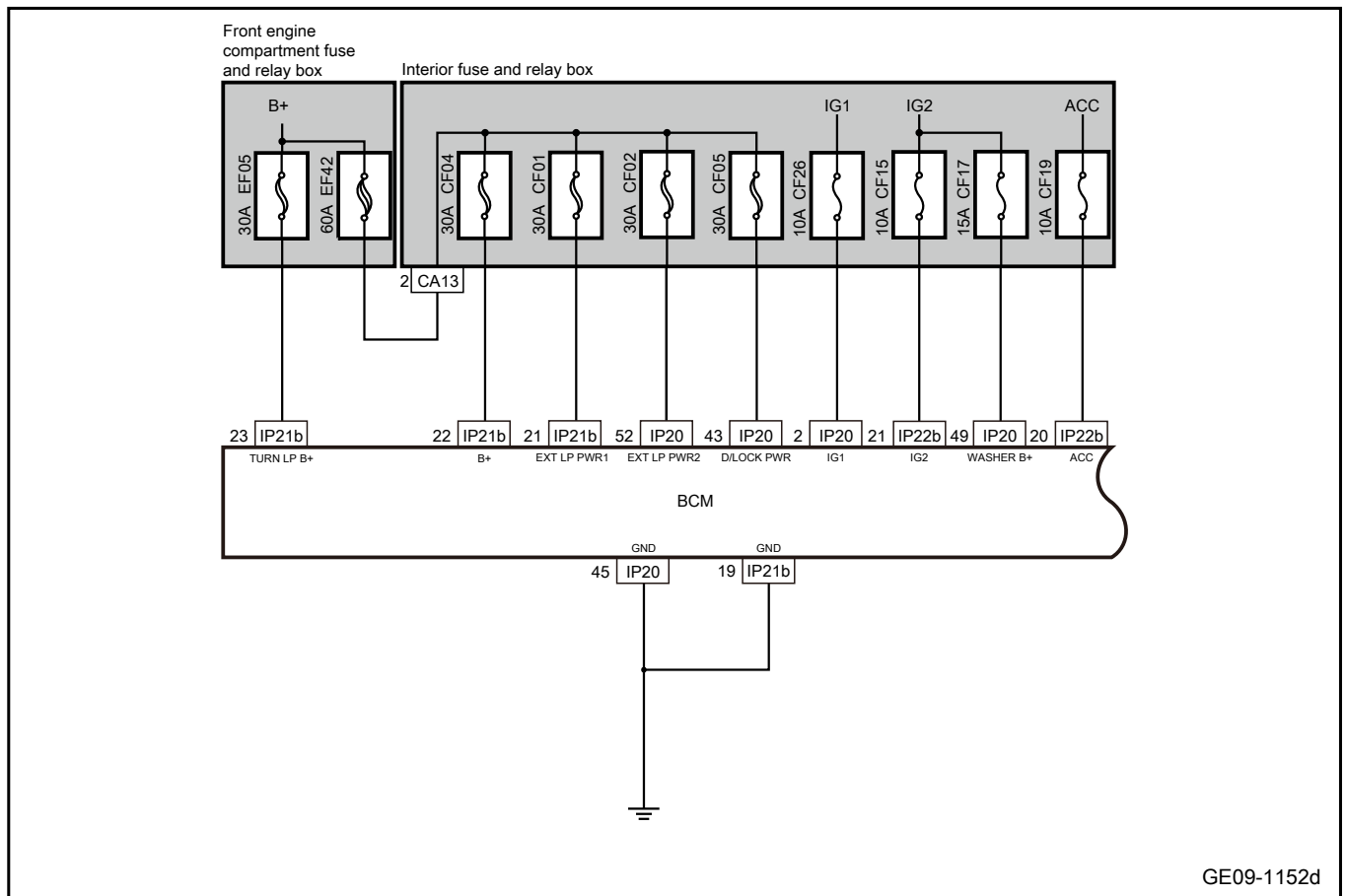
1. DTC description:

Diagnostic Trouble Code	Trouble description
U300616	ECU supply voltage low
U300617	ECU supply voltage high

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measuring voltage <8.5V (±0.5V) for 500ms	1. MCU work	1. Circuit
U300617	Measured voltage value>16.5V (±0.5V) for 500 milliseconds	2. MCU work	2. Fuse 3. BCM

3. Schematic circuit diagram:



GE09-1152d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble! The diagnosis methods of the above fault codes are similar.

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.
--

Yes

Step 4	Inspect the fuse.
--------	-------------------

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the interior fuse relay box, and check whether the fuses CF01, CF02, CF04, CF05 are blown out.

Rated fuse capacity: 30A

- C. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF17 is blown out.

Rated fuse capacity: 15A

- D. Unplug the fuse of the interior fuse relay box, and check whether the fuses CF15, CF19, CF26 are blown out.

Rated fuse capacity: 10A

- E. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF05 is blown out.

Rated fuse capacity: 30A

- F. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF42 is blown out.

Rated fuse capacity: 60A

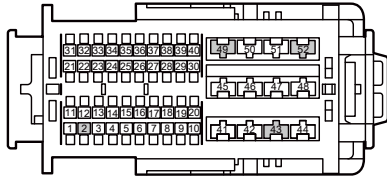
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

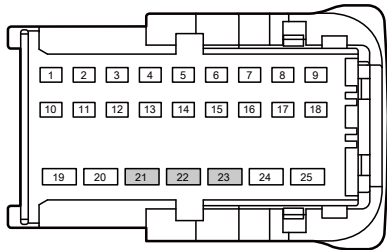
Step 5	Check the power supply circuit of BCM
--------	---------------------------------------

IP20 body control module harness connector 1



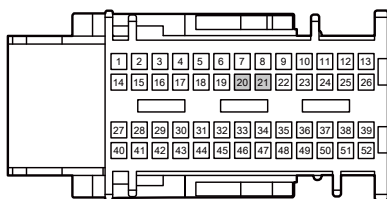
GE09-1251d

IP21b body control module harness connector 2



GE09-1252d

IP22b body control module harness connector 3



GE09-1253d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connectors IP20, IP21b, IP22b.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard voltage: 11-14V
IP20(43)		
IP20(49)		
IP20(52)		
IP21b(21)		
IP21b(22)		
IP21b(23)		
IP22b(20)		
IP22b(21)		

- E. Confirm whether the measured value meets the standard.

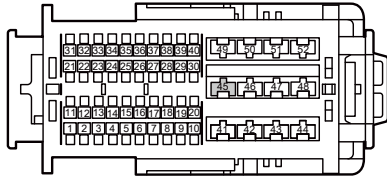
No

Repair or replace the harness.

Yes

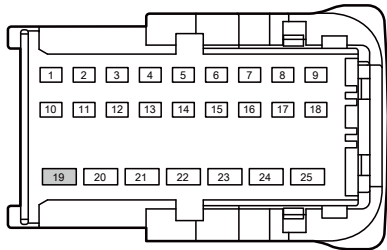
Step 6 Check the BCM ground circuit.

IP20 body control module harness connector 1



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IP21b body control module harness connector 2



GE09-1255d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(45)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP21b(19)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 9.2.4.12 Internal failure of BCM

1. DTC description:

Diagnostic Trouble Code	Trouble description
B128C00	SSB input mismatching fault
B128D00	WPC control output failure
B101D11	The power-saving circuit is shorted to ground or overloaded
B104F4B	The button backlight circuit is overloaded or over temperature
B12AA53	Anti-theft authentication failed
B108000	RF receiver communication failure
B10194B	Economic mode indicator circuit is overloaded or over temperature
B101A4B	The sport mode indicator circuit is overloaded or over temperature

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128C00	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. SSB backlight control is short circuited to ground or overloaded for 200 milliseconds	The power supply voltage is within the normal range (9V~16v)	1.BCM

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128D00	SSBSW1 is pressed, SSBSW2 is not pressed for 100 milliseconds. Detection times: 2 times or SSBSW1 or SSBSW2 remains pressed. Detection time: 2min or check the input voltage. If the voltage is close to 0V, consider SCG failure SSB switch 1/2 short circuit to ground 200ms or check the input voltage, if the voltage is BAT, consider SCG failure SSB switch 1/2 SCB open circuit 200ms	1. The power supply voltage is within the normal range (9V~16v) 2. WirelessPowerChargeOption is enabled 3. ACC output is on	
B101D11	The output current is detected to monitor the output error. When the current is greater than a specific hardware threshold, it is regarded as an output error. WPC muting output circuit is overloaded for 200ms	1. The power supply voltage is 6V-16V 2. Power saving function is activated for 100 milliseconds	
B104F4B	Monitor the overload or over- temperature fault by detecting the output current. When the current is greater than a specific HW threshold, it is considered an overload or over-temperature fault. Backlight circuit is overloaded for 200ms	1. The power supply voltage is 6V-16V 2. The backlight function is activated for 100 milliseconds	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B12AA53	1. Not receive (all 0x00) EMS_PEPS authorization (0x100) within 1.2s after the power mode changed from IG1 to ON 1. Not receive (all 0x00) EMS_PEPS authorization (0x100) within 1.2s after the power mode changed from IG1 to ON	1. IBC Power supply The supply voltage is within the range of 9-16V 2. No bus disconnection failure is detected.	
B108000	1. KLINE is short-circuited to ground and VBAT 2. KLINE open circuit or RFR does not respond	IBC supply voltage is within the range of 9-16V	
B10194B	Monitor the overload or over-temperature fault by detecting the output current. When the current is greater than a specific HW threshold, it is considered an overload or over-temperature fault. ECO mode indicator lamp is overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. ECO mode is activated for 100 milliseconds	
B101A4B	Monitor the overload or over-temperature fault by detecting the output current. When the current is greater than a specific HW threshold, it is considered an overload or over-temperature fault. Sport mode indicator lamp is overloaded for 200 milliseconds		

3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 4	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

9.2.4.13 LIN2 communication fault

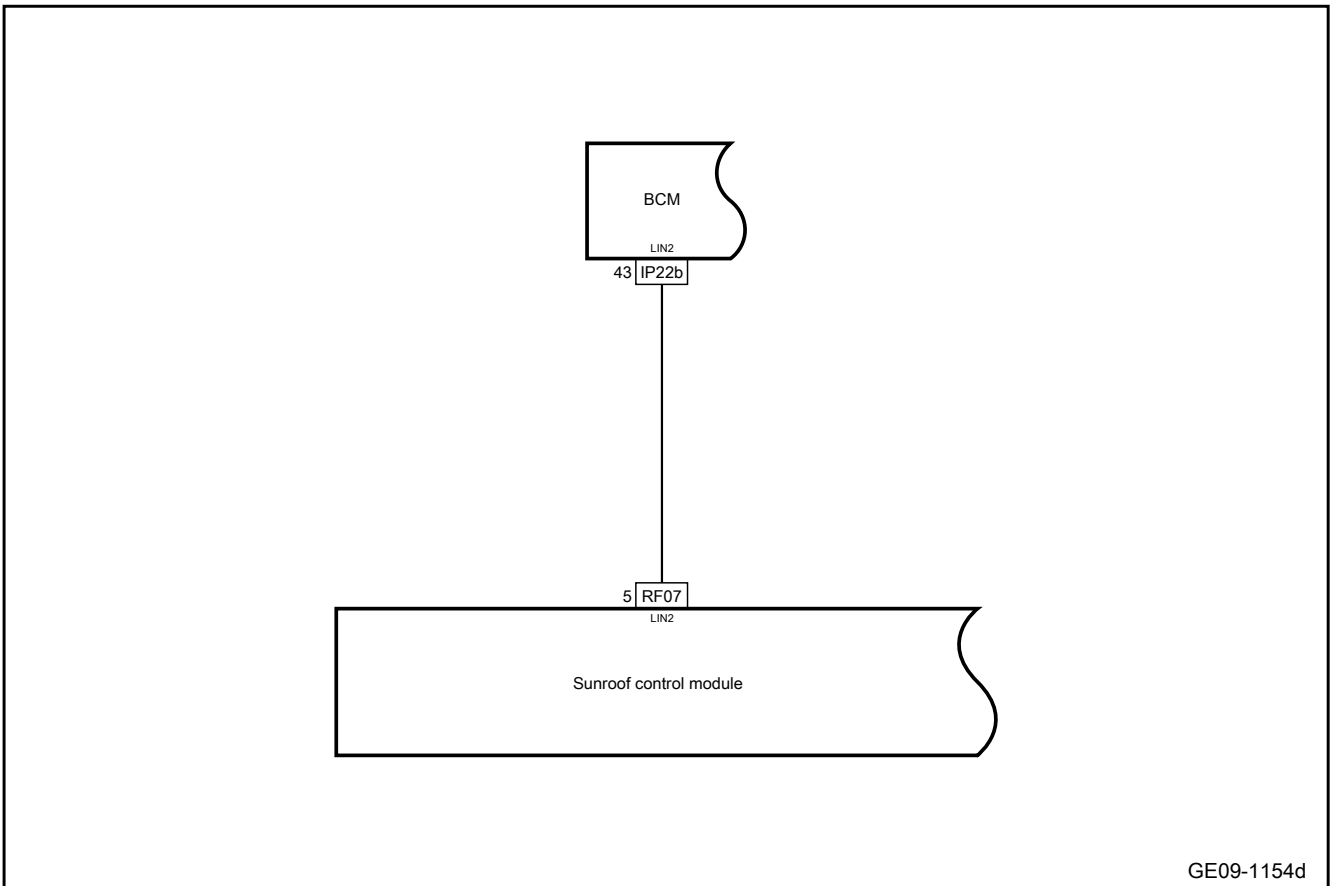
1. DTC description:

Diagnostic Trouble Code	Trouble description
U110100	LIN2 communication fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U110100	The main request transmission failed LIN-2 for 4s	1. LIN2 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Sunroof control module 3. BCM

3. Schematic circuit diagram:



GE09-1154d

## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

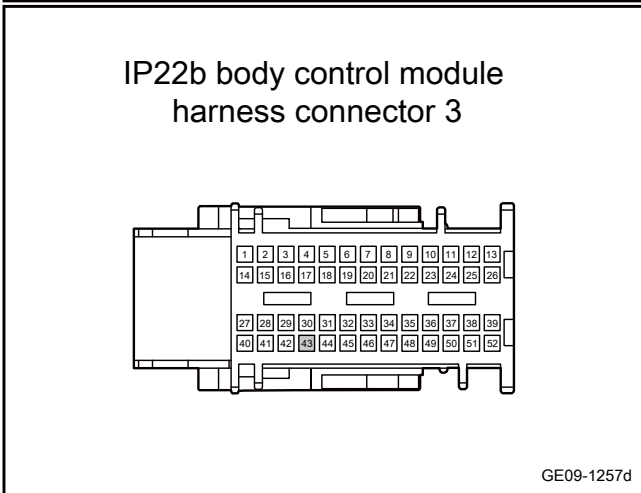
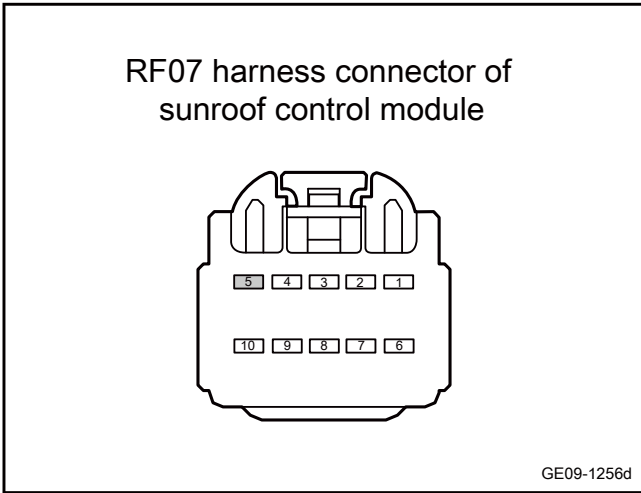
- A. Check the harness connector of sunroof control module for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check whether the LIN circuit between sunroof control module and BCM is open.
--------	---



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	IP22b(43)	Standard resistance: less than 1Ω

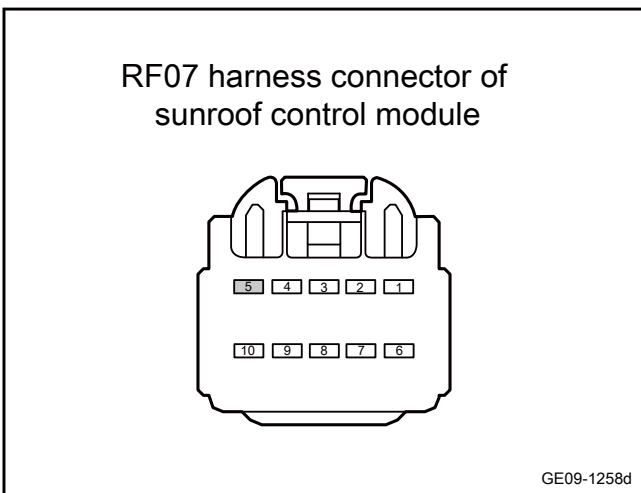
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the LIN circuit between sunroof control module and BCM is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Disconnect the relevant module harness connector of the body LIN2 line.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	Vehicle body is grounded.	Standard voltage: 0V

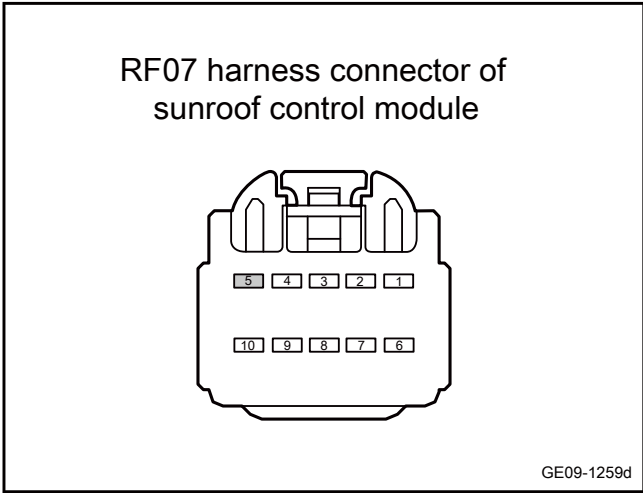
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the LIN circuit between sunroof control module and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace sunroof control module.

- A. Replace sunroof control module. Refer to [Replacement of sunroof control module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Reprogram and reset sunroof control module.

- A. Reprogram and reset sunroof control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 11	System is normal.
---------	-------------------

### 9.2.4.14 Low beam lamp circuit fault

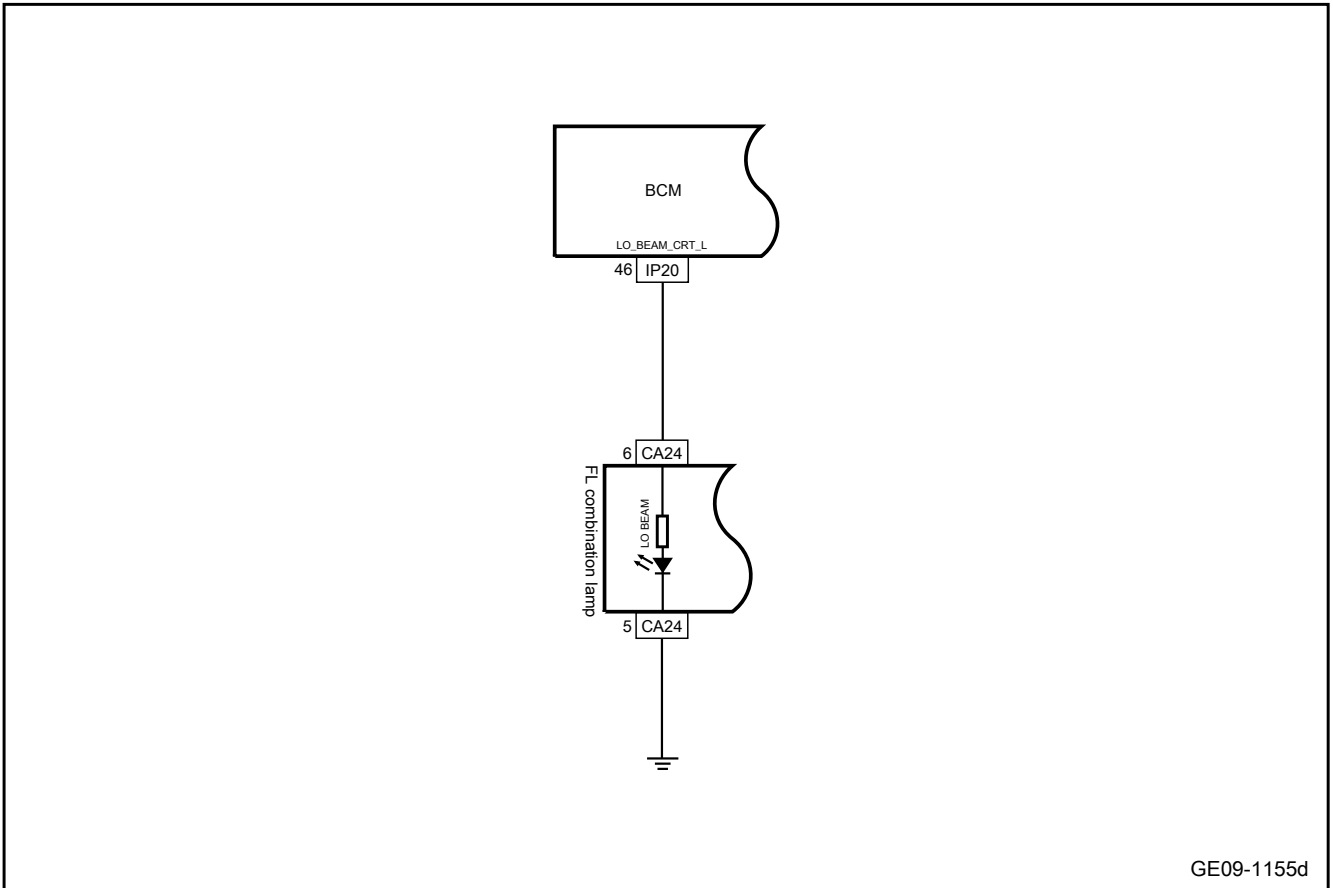
1. DTC description:

Diagnostic Trouble Code	Trouble description
B105C01	Right low beam fault
B105D01	Left low beam fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B105C01	The output current will be checked to monitor the fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a fault. Short-beam is short circuited to ground or overloaded for 200ms	1. The IBC supply voltage is 9-16V 2. The low beam function is activated within 100ms	1. Circuit 2. BCM 3. Low beam lamp
B105D01	The output current will be checked to monitor the fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a fault. The low beam circuit is short-circuited to ground or overloaded for 200 milliseconds		

3. Schematic circuit diagram:



This manual only diagnoses the faults of the left front combination lamp (low beam). The diagnosis of other position lamps is the same as that of the left front combination lamp (low beam).

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

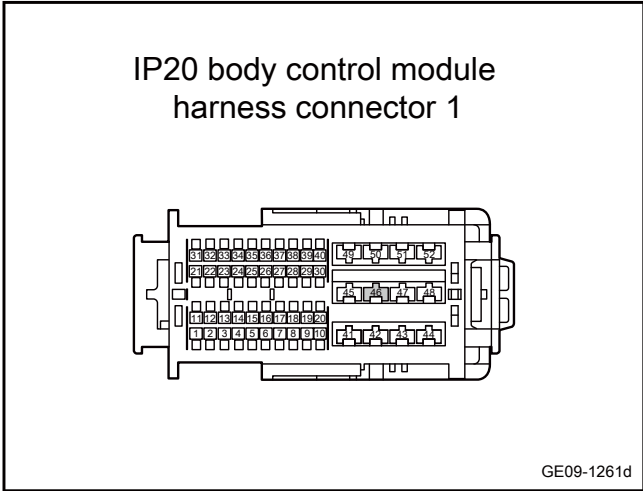
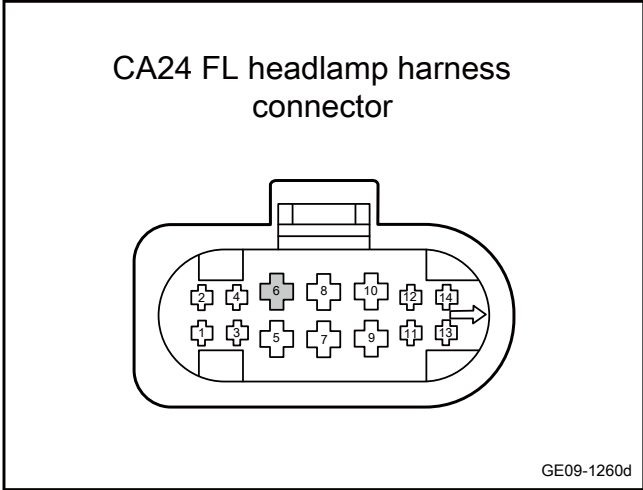
- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the left front combination lamp (low beam) and BCM is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	IP20(46)	Standard resistance: less than 1Ω
CA24(6)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	Vehicle body is grounded.	Standard voltage: equal to 0V

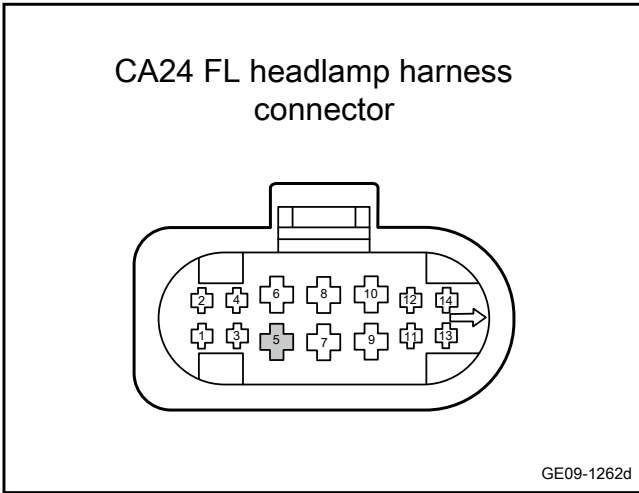
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of the left front combined lamp (low beam).



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5**    Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6**    Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7**    Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.15 High beam lamp circuit fault

#### 1. DTC description:

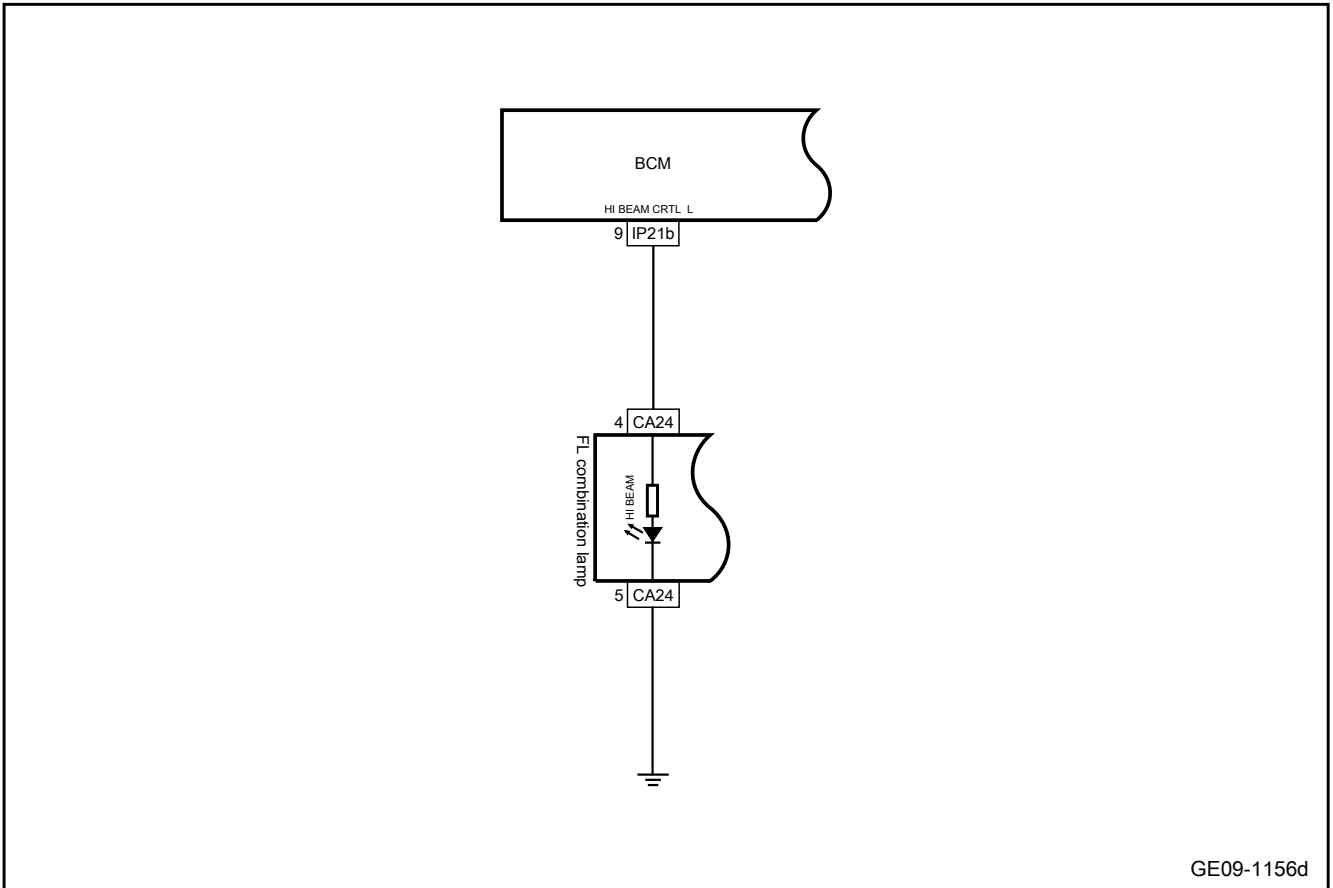
Diagnostic Trouble Code	Trouble description
B107811	The left high beam circuit is short circuited to ground
B107911	The right high beam circuit is short-circuited to ground
B108898	The high beam switch detects the over temperature of the output circuit

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107811	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The high beam is short-circuited to the ground or overloaded for 200 milliseconds	<ol style="list-style-type: none"> <li>1. IBC Power supply The supply voltage is within the range of 9-16V</li> <li>2. The high beam function is activated for 100 milliseconds</li> </ol>	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2. Fuse</li> <li>3. BCM</li> <li>4. High beam lamp</li> </ol>

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107911	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The high beam is short-circuited to the ground or overloaded for 200 milliseconds		
B108898	The output current is detected to monitor the over-temperature fault. When the current is greater than a specific HW threshold, it is regarded as an over-temperature fault. High beam switch detection output overloads for 200ms		

3. Schematic circuit diagram:



This manual only diagnoses the faults of the left front combination lamp (high beam). The diagnosis of other position lamps is the same as that of the left front combination lamp (high beam).

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

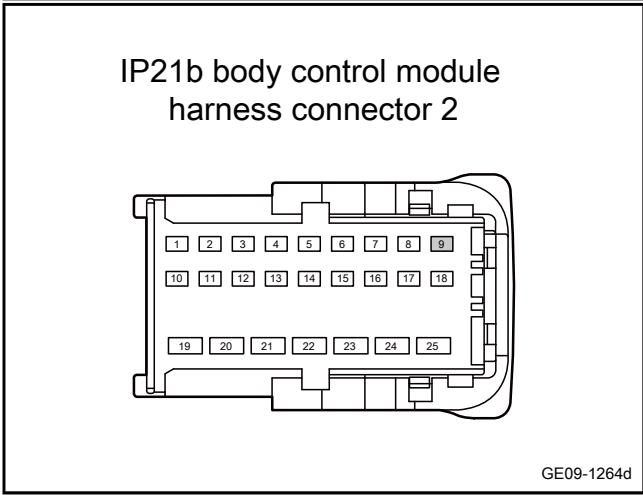
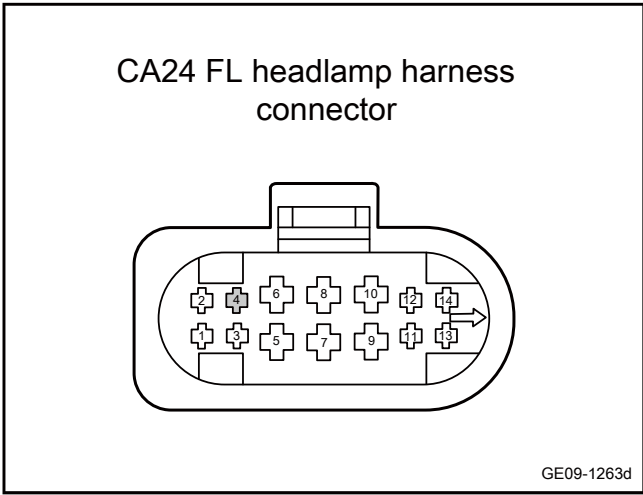


No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the left front combination lamp (high beam) and BCM is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the BCM harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	IP21b(9)	Standard resistance: less than 1Ω
CA24(4)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	Vehicle body is grounded.	Standard voltage: equal to 0V

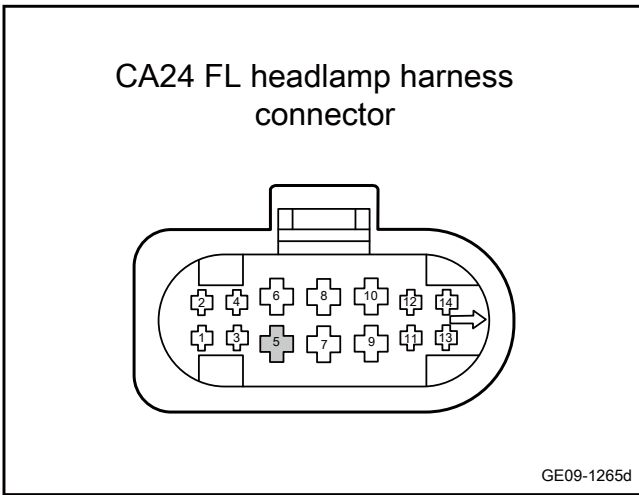
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of the left front combination lamp (high beam).



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5**    Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6**    Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7**    Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.16 Rear fog lamp circuit fault

1. DTC description:

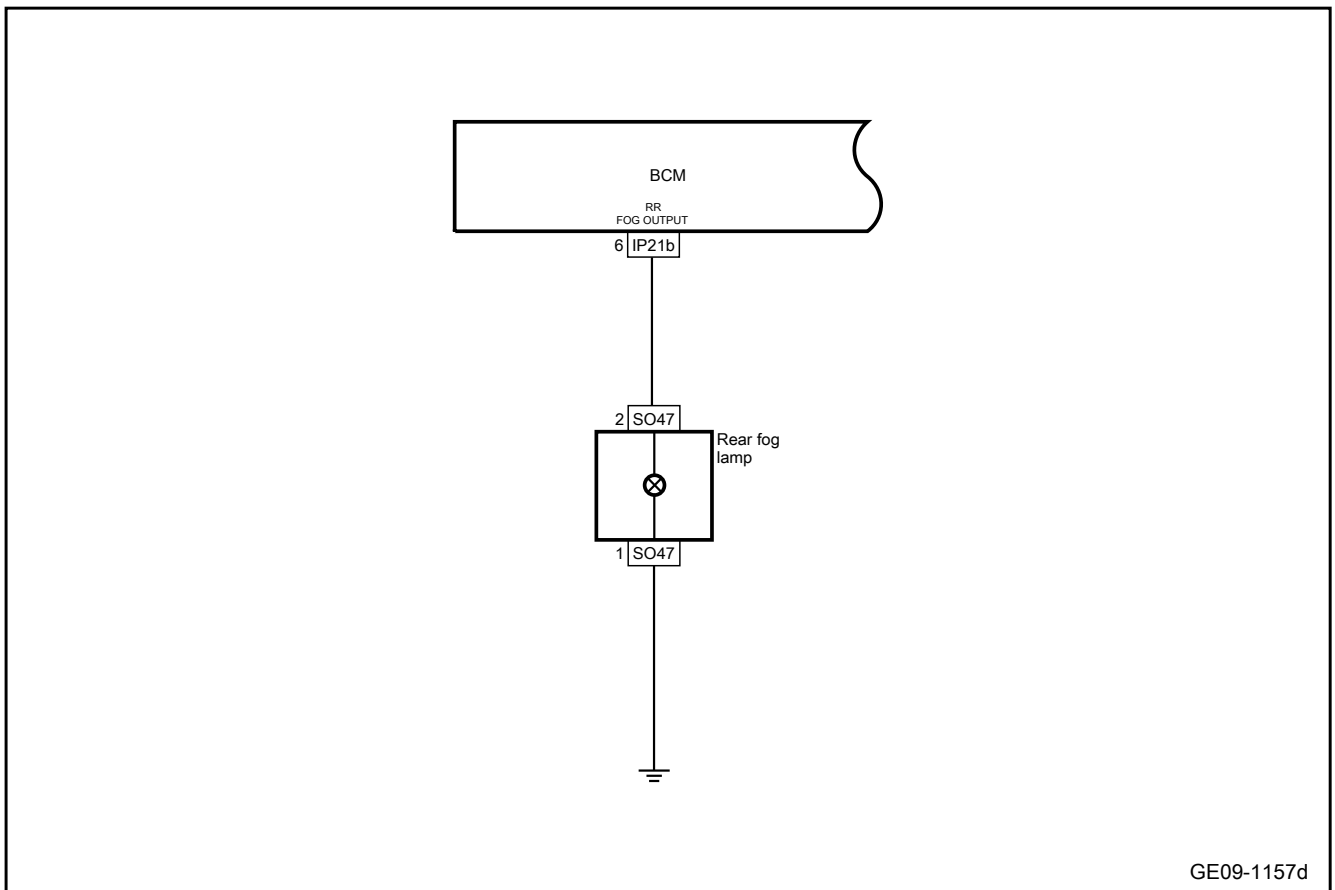
Diagnostic Trouble Code	Trouble description
B100911	The rear fog lamp circuit is short-circuited to ground or overloaded
B100915	The rear fog lamp is short-circuited to the power supply or open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100911	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. The rear fog lamp is short-circuited to the ground or overloaded for 200ms	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The rear fog lamp function is activated for 100 milliseconds	1. Circuit 2. BCM Rear fog lamp

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100915	The output current will be checked to monitor open-circuit loads or short-circuit to the battery. If the current is lower than a specific hardware threshold, it will be regarded as an OL fault or STB fault. Then when the output is not active, check again to confirm the OL fault. The rear fog lamp turns on the load or short-circuits the battery for 200 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the rear fog lamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

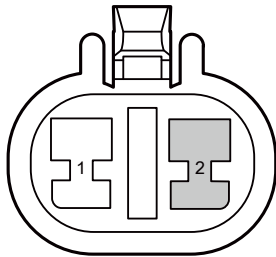
No

Repair or replace the faulty part.

Yes

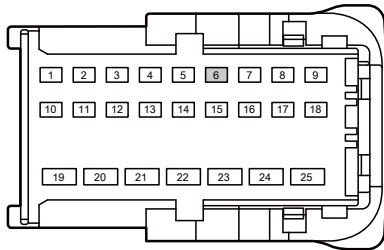
Step 3	Check the power harness of rear fog lamp.
--------	---

SO47 rear fog lamp harness connector



GE09-1266d

IP21b body control module harness connector 2



GE09-1267d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO47(2)	IP21b(6)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

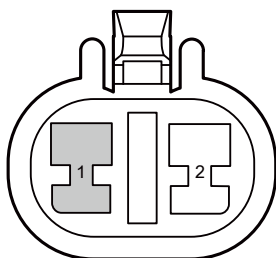
No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of rear fog lamp.

SO47 rear fog lamp harness connector



GE09-1268d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear fog lamp harness connector SO47.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace rear fog lamp.

- A. Replace rear fog lamp. Refer to [replacement of rear fog lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 7 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 9.2.4.17 Reversing light circuit failure

#### 1. DTC description:

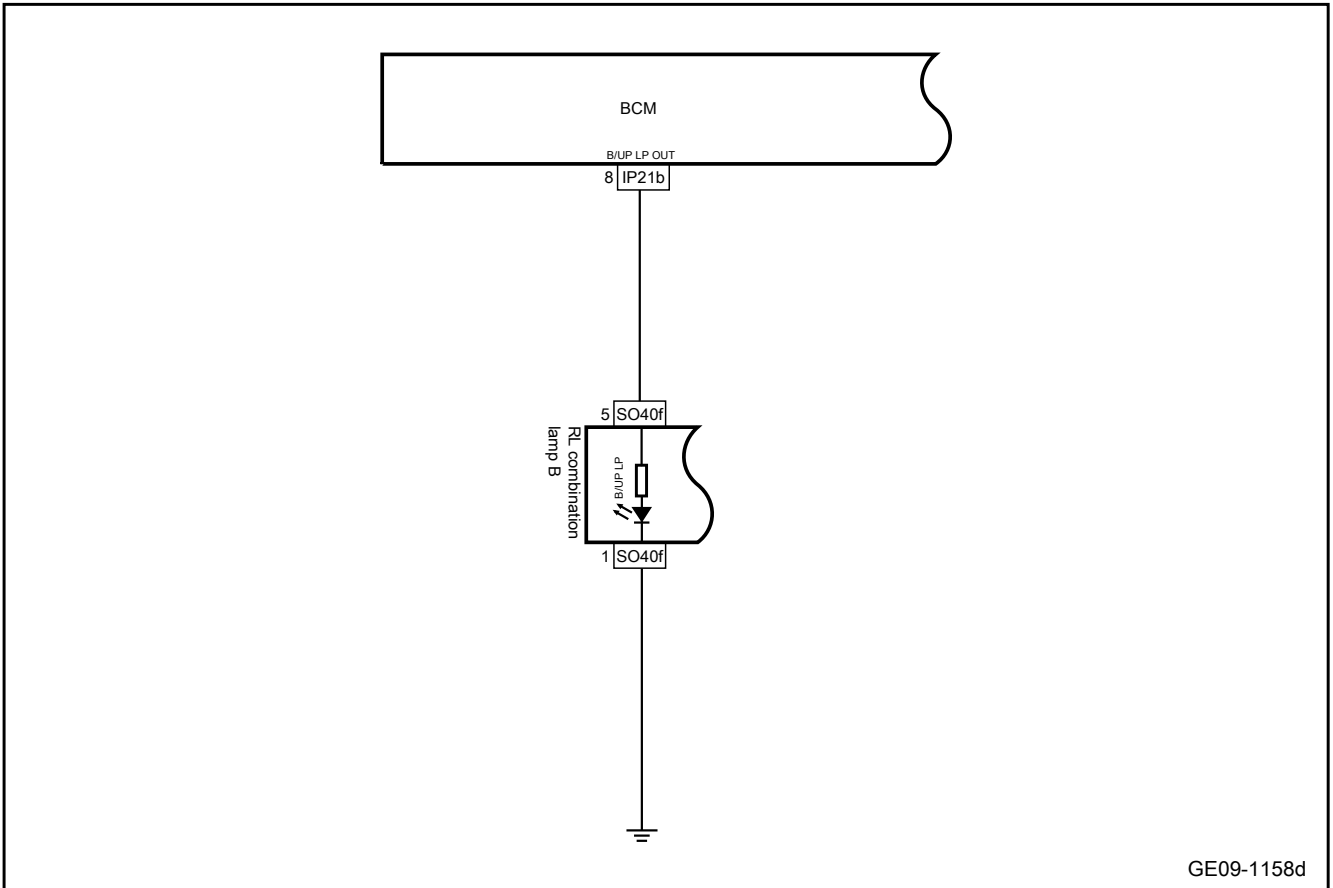
Diagnostic Trouble Code	Trouble description
B100A11	The reversing light circuit is short to ground or overloaded
B100A15	The reversing light is short-circuited to the power supply or open circuit

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100A11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. The reversing light is short-circuited to the ground or overloaded for 200ms	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The reversing light function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Rear left reversing lamp
B100A15	The output current will be checked to monitor open-circuit loads or short-circuit to the battery. If the current is lower than a specific hardware threshold, it will be regarded as an OL fault or STB fault. Then when the output is not active, check again to confirm the OL fault. The reversing light turns on the load or short-circuits the battery for 200 milliseconds		

#### 3. Schematic circuit diagram:





GE09-1158d

The Manual only provides the diagnosis for faults of the left rear combination lamp A (reversing lamp). The diagnosis of other brake lamps is the same as that of the left rear combination lamp A (reversing lamp).

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

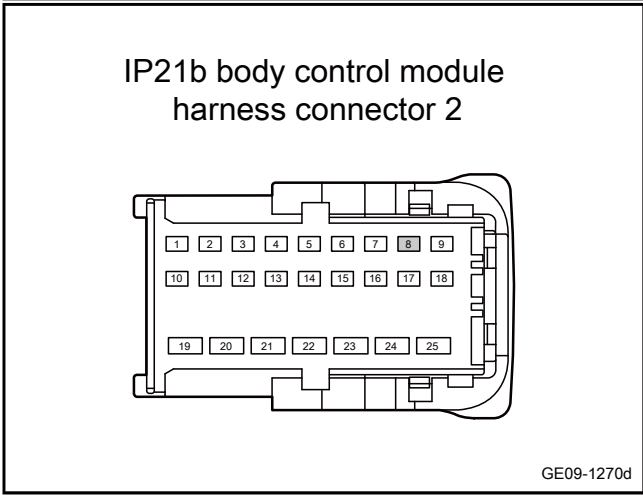
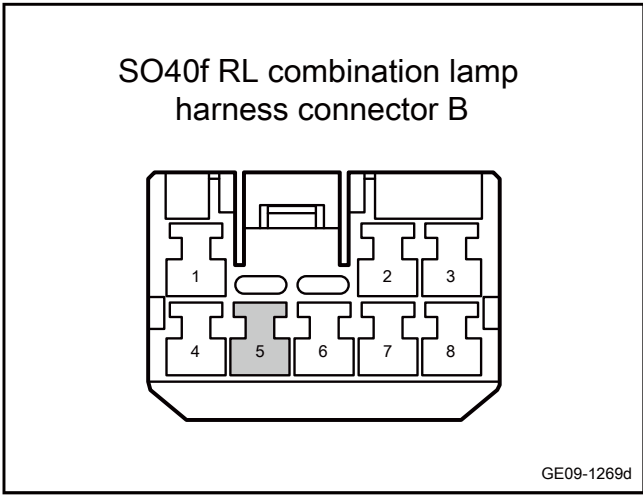
- A. Check the left and right reversing lamps, BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the reversing lamp power supply harness.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect harness connector SO40f of the left rear combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO40f(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO40f(5)	IP21b(8)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO40f(5)	Vehicle body is grounded.	Standard voltage: 0V

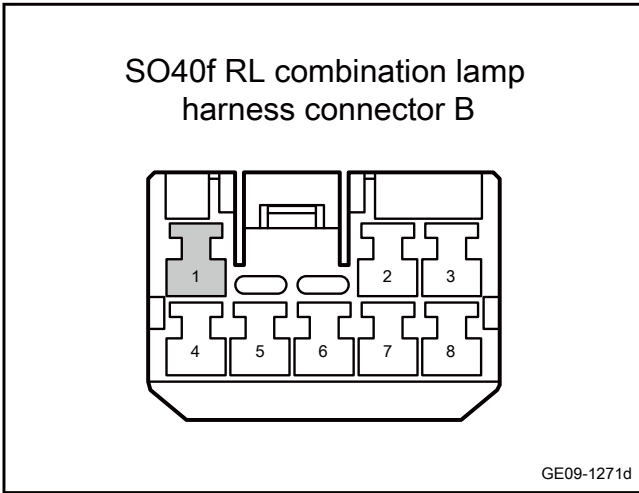
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness for the reverse lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector SO40f of the left rear combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO40f(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Replace the reverse lamp.

- A. Replace the reverse lamp. Refer to [Replacement of rear reversing lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.18 Brake lamp circuit failure

1. DTC description:

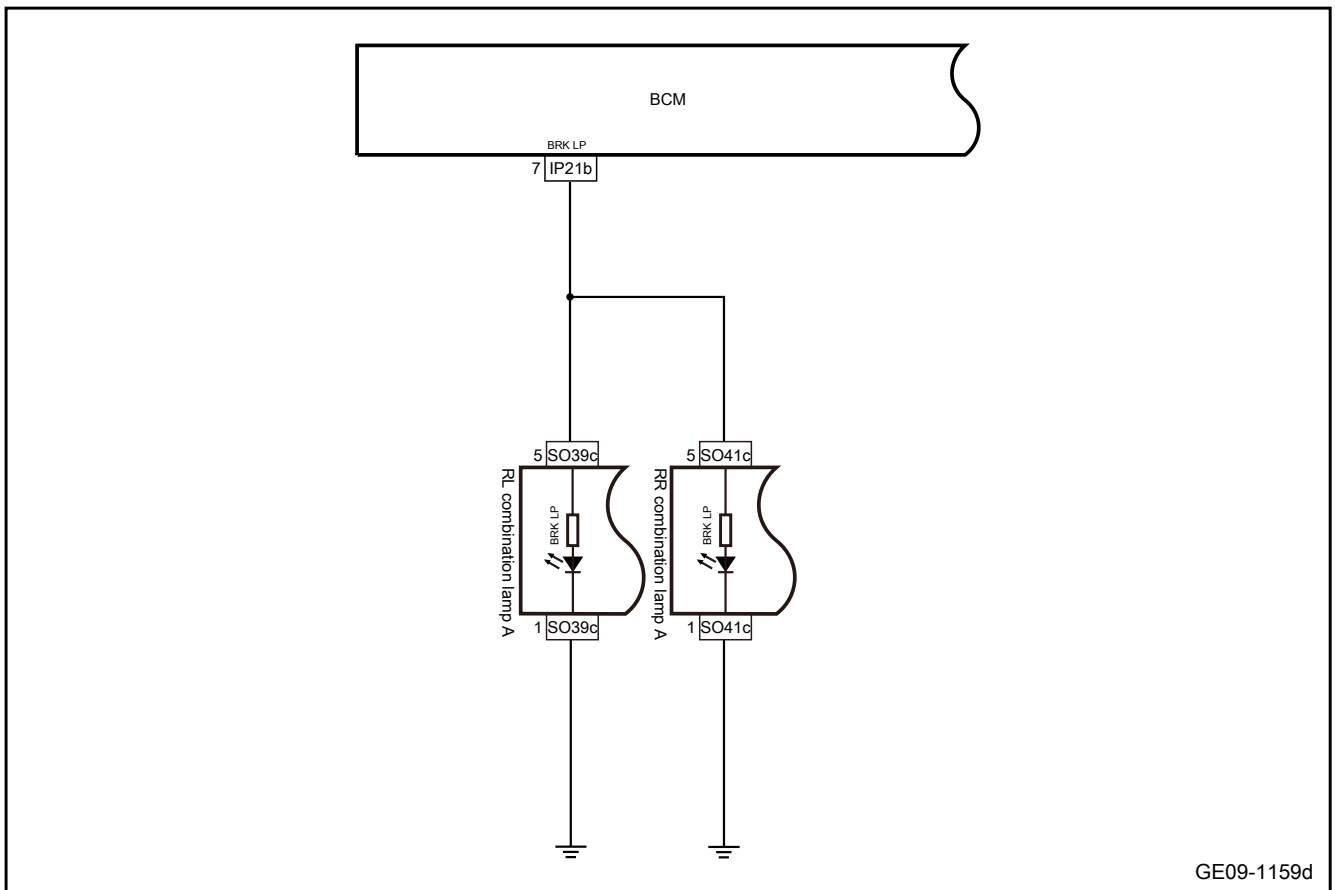
Diagnostic Trouble Code	Trouble description
B100B11	The brake lamp circuit is shorted to ground or overloaded
B100B15	The brake lamp is shorted to the power supply or open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100B11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. The brake lamp is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The brake lamp function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Rear left combination lamp A 4. Rear right combination lamp A

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100B15	<p>The output current will be checked to monitor open-circuit loads or short-circuit to the battery. If the current is lower than a specific hardware threshold, it will be regarded as an OL fault or STB fault. Then when the output is not active, check again to confirm the OL fault. The brake lamp turns on the load or short-circuits the battery for 200 milliseconds</p>		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the left rear combination lamp A, right rear combination lamp A and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

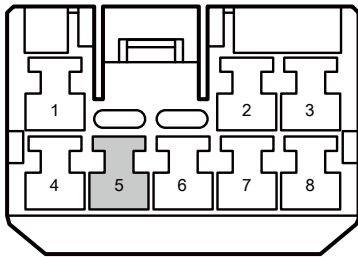
No

Repair or replace the faulty part.

Yes

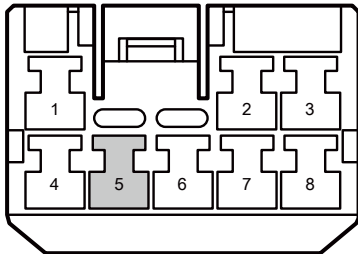
Step 3 Check the power harness of the brake lamp.

SO41c RR combination lamp harness connector A



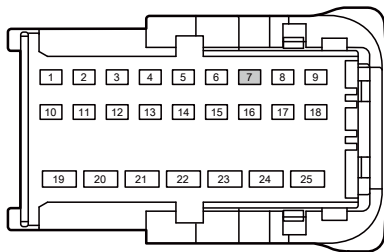
GE09-1272d

SO39c RL combination lamp harness connector A



GE09-1273d

IP21b body control module harness connector 2



GE09-1274d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Disconnect harness connector SO41c of the right rear combination lamp A.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO39c(5)	Vehicle body is grounded.	
SO41c(5)	IP21b(7)	Standard resistance: less than 1Ω
SO39c(5)	IP21b(7)	

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(5)	Vehicle body is grounded.	Standard voltage: 0V
SO39c(5)		

- H. Confirm whether the measured value meets the standard.

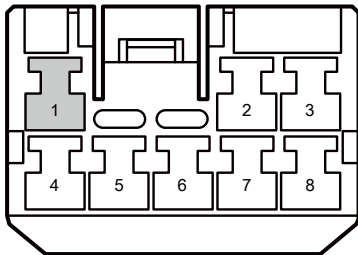
No

Repair or replace the harness.

Yes

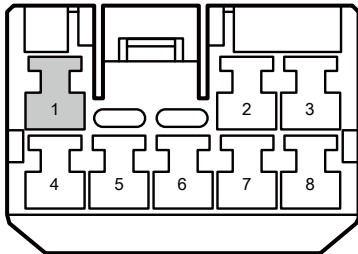
Step 4 | Check the grounding harness of brake lamp.

SO41c RR combination lamp harness connector A



GE09-1275d

SO39c RL combination lamp harness connector A



GE09-1276d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector SO39c of the left rear combination lamp A.
- C. Disconnect harness connector SO41c of the right rear combination lamp A.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO39c(1)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the brake lamp.

- A. Replace the brake lamp. Refer to [replacement of brake lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** Reprogram and reset the BCM.



- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 9** System is normal.

### 9.2.4.19 Circuit fault of high mounted brake lamp

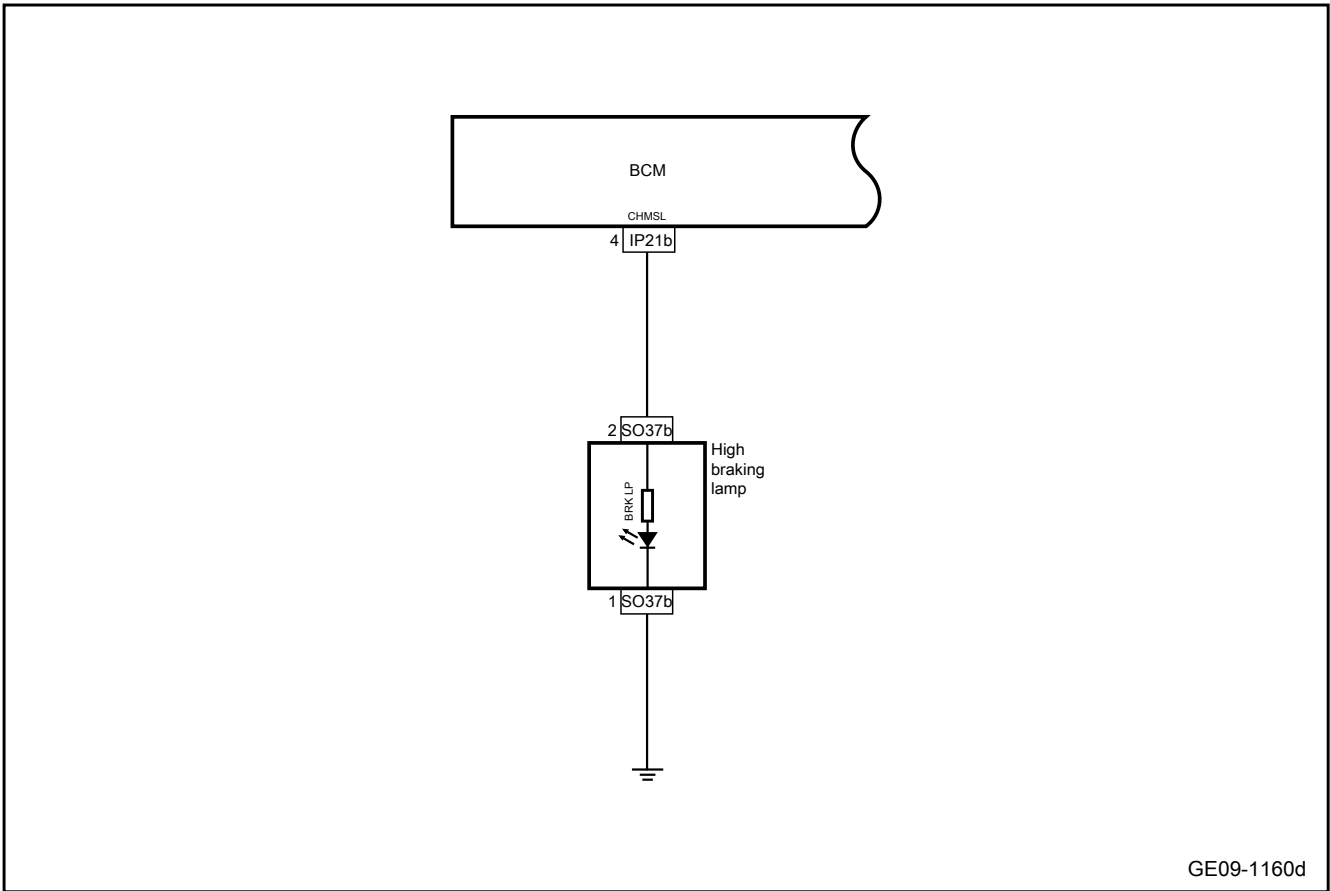
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100D11	The high-position brake lamp circuit is short to ground or overloaded

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100D11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. CHMSL is short circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The CHMSL function is activated for 100 milliseconds	1. Circuit 2. BCM 3. High mount brake lamp

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

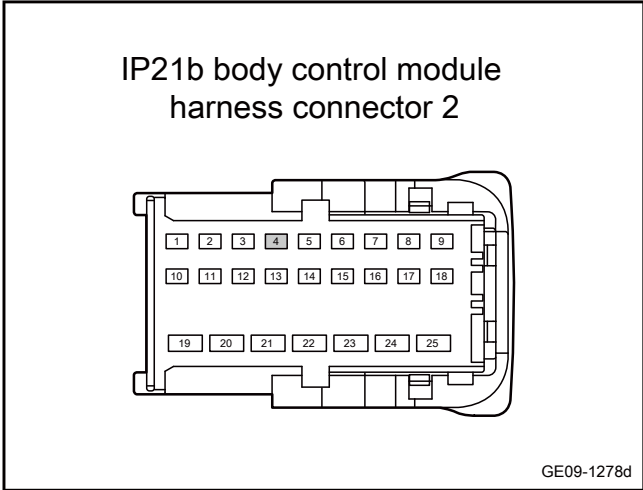
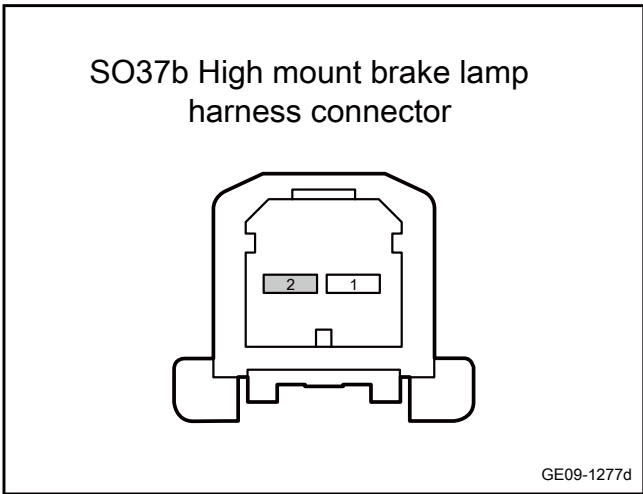
- A. Check the high mounted brake lamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the power harness of high mounted brake lamp



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the high mounted brake lamp harness connector SO37b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO37b(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO37b(2)	IP21b(4)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO37b(2)	Vehicle body is grounded.	Standard voltage: 0V

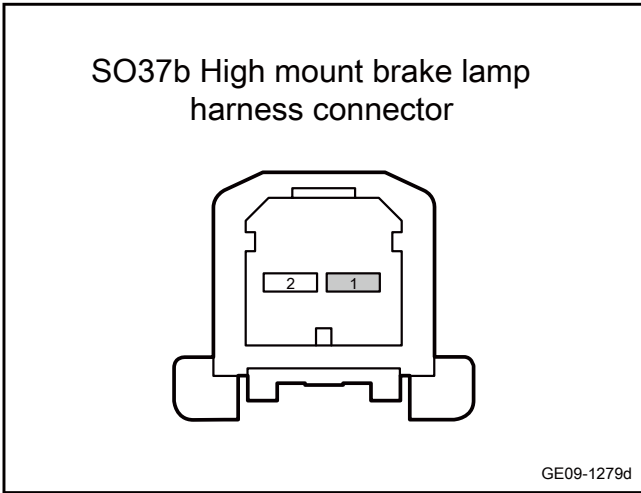
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of brake lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the high mounted brake lamp harness connector SO37b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO37b(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Replace high mounted brake lamp.

- A. Replace high mounted brake lamp. Refer to [replacement of high mounted brake lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.20 Interior lamp circuit failure

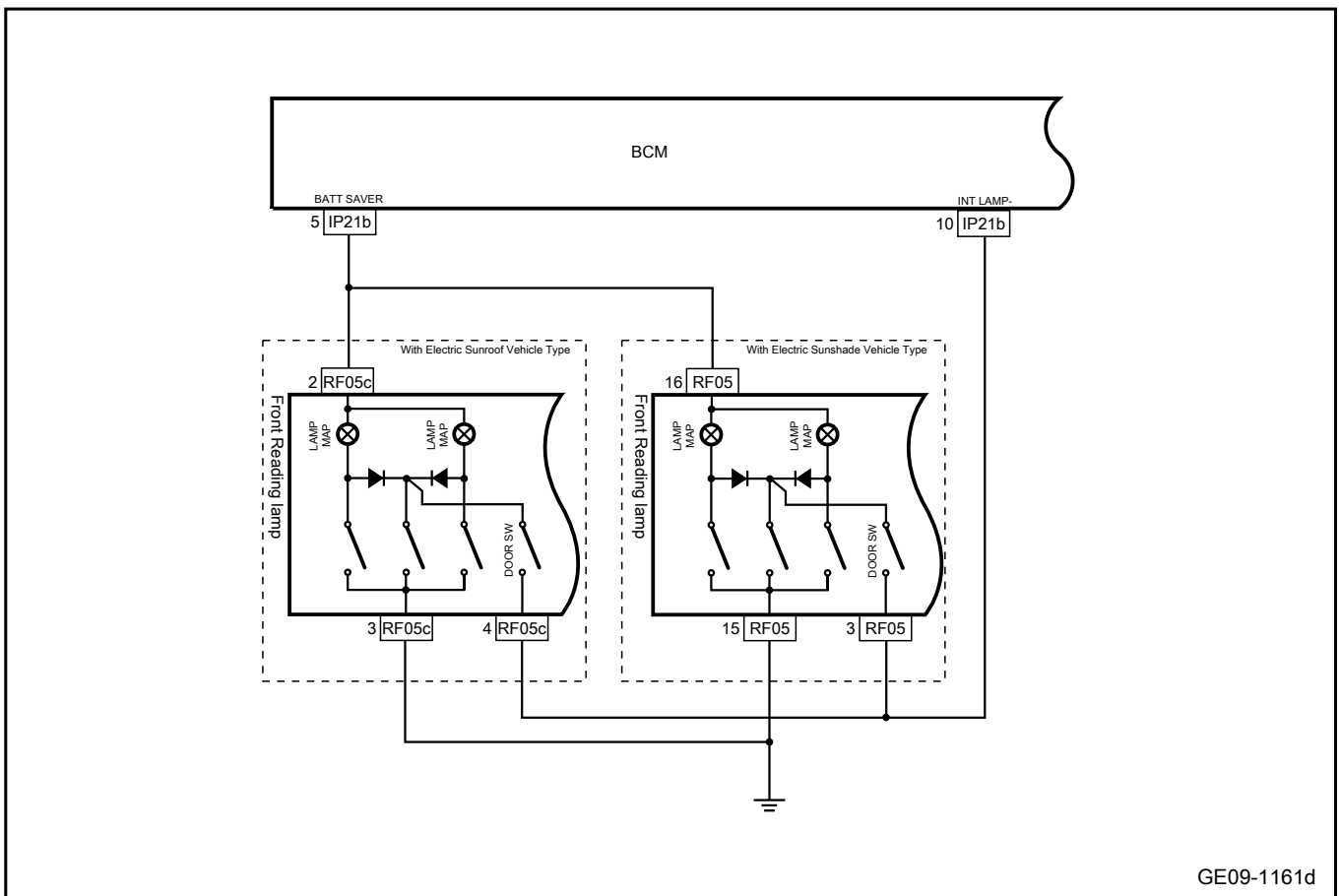
1. DTC description:

Diagnostic Trouble Code	Description
B100112	The interior lamp circuit is short to the power supply
B108B98	Voice-activated dome light control circuit is over temperature

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100112	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short-circuit fault to the battery; the interior lamp circuit is short-circuited to the battery for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The internal function is activated for 100 milliseconds	1. Circuit 2. Front reading lamp
B108B98	The output current is detected to monitor the over-temperature fault. When the current is greater than a specific HW threshold, it is regarded as an over-temperature fault. Audio PWM load control 200ms	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The audio pulse width modulation control function is activated for 100 milliseconds	3. BCM

3. Schematic circuit diagram:



GE09-1161d

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

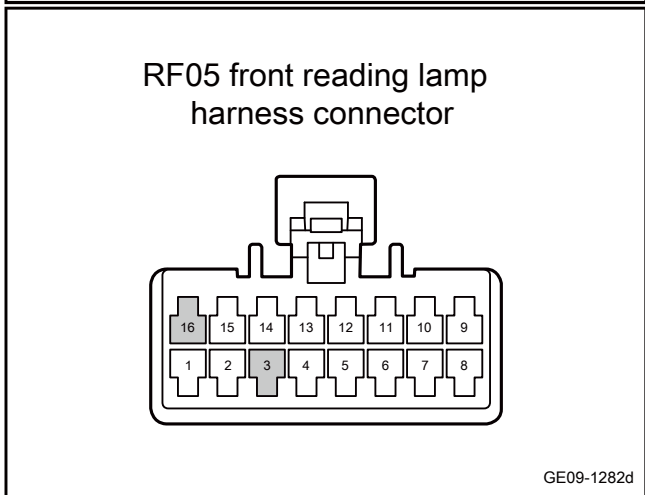
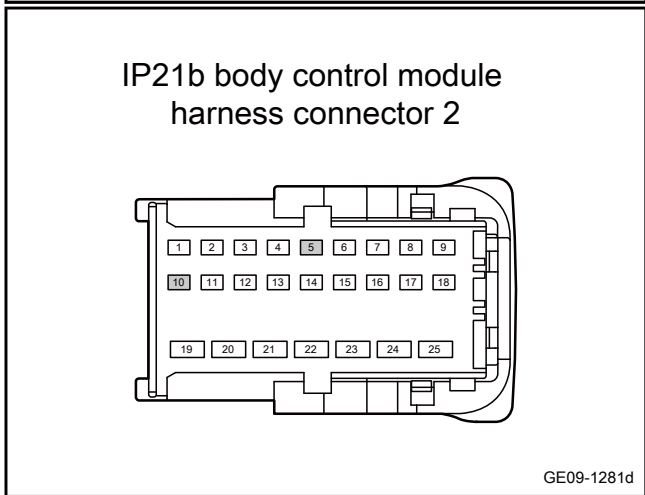
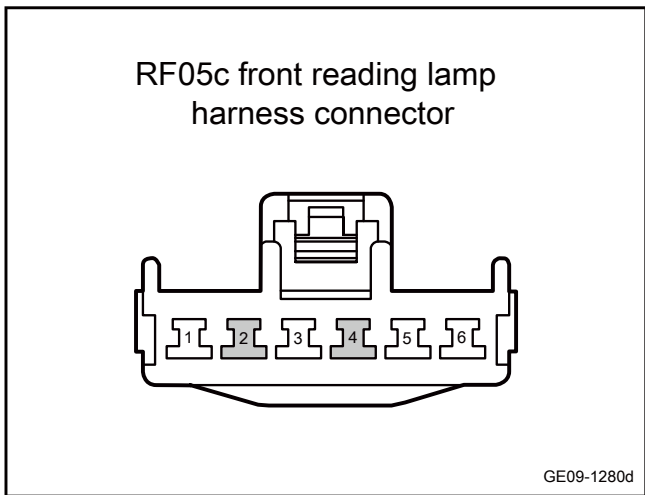
- A. Check the harness connector of front reading lamp for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the front reading lamp and BCM is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connectors RF05, RF05c.
- C. Disconnect harness connector IP21b of body control module.
- D. Use a multimeter to measure each terminal according to the following table:

Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunroof	RF05c(2)	IP21b(5)	Standard resistance: less than 1Ω
	RF05c(4)	IP21b(10)	
	RF05c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
	RF05c(4)	Vehicle body is grounded.	
Models with electric sunshade	RF05(16)	IP21b(5)	Standard resistance: less than 1Ω
	RF05(3)	IP21b(10)	
	RF05(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
	RF05(3)	Vehicle body is grounded.	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunroof	RF05c(2)	Vehicle body is grounded.	Standard voltage: 0V
	RF05c(4)		

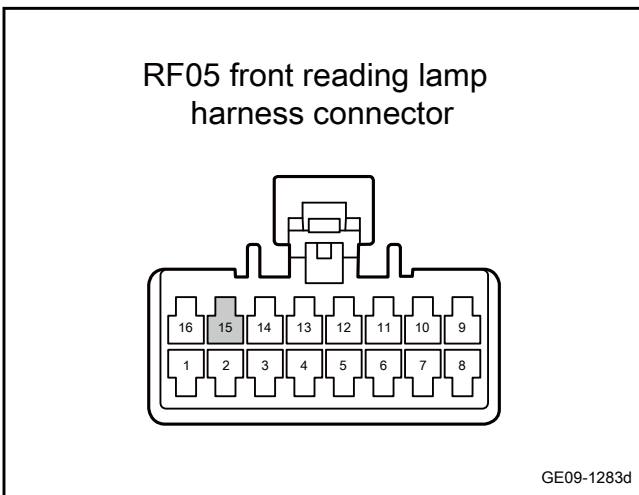
Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunshade	RF05(16)		
	RF05(3)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

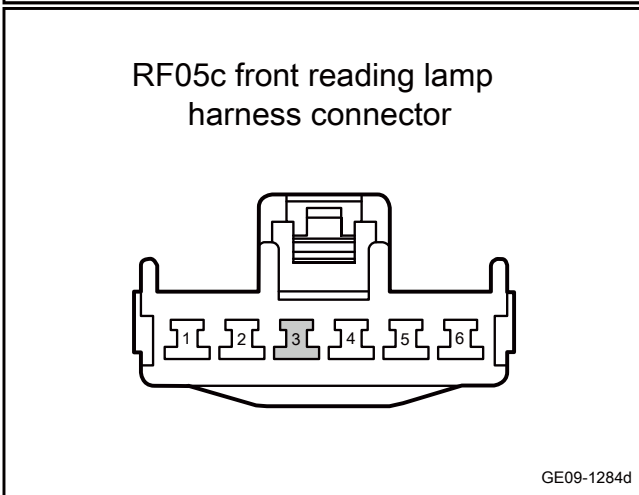
Yes

**Step 4** Check whether the grounding circuit of the front reading lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the front reading lamp harness connector RF05c.
- D. Use a multimeter to measure each terminal according to the following table:

Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunshade	RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
Models with electric sunroof	RF05c(3)		



E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Replace the front reading lamp.



- A. Replace the front reading lamp. Refer to [replacement of front reading lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 7 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 9.2.4.21 Turn signal circuit fault

1. DTC description:

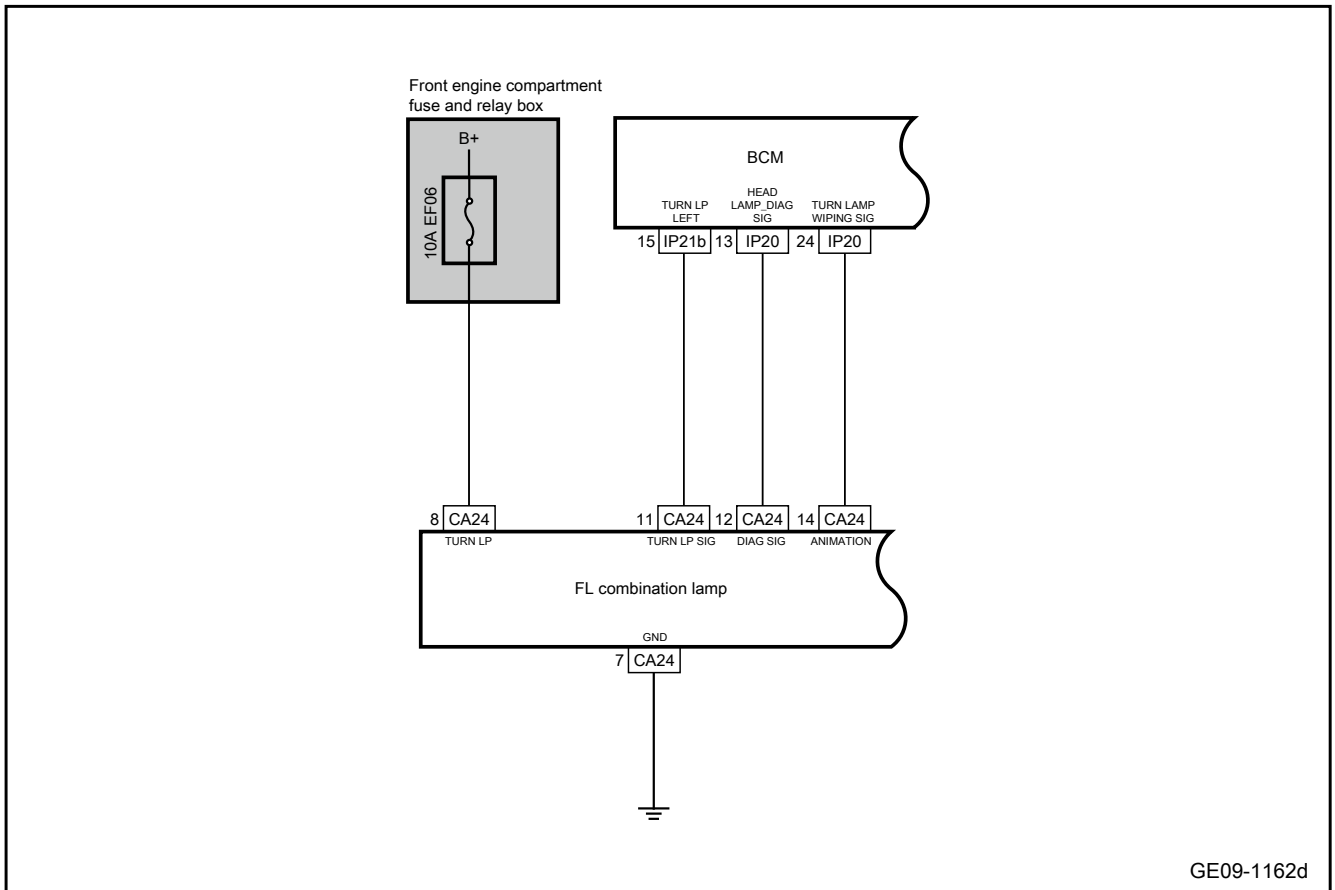
Diagnostic Trouble Code	Trouble description
B100E11	The right turn signal is short to the ground
B100F11	The left turn signal is short-circuited to the ground
B108C98	Over temperature of steering water lamp control circuit
B100E13	The right turn signal is open or a bulb is damaged
B100F13	The left turn signal is open or a bulb is damaged

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100E11	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The right turn signal is short-circuited to the ground or overloaded for 200 milliseconds	The IBC supply voltage is within the range of 9-16V. When the turn signal is flashing or the lane changing function is activated, the right turn signal is activated for 100 milliseconds	1. Circuit 2. BCM 3. Side turn signal lamp
B100F11	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The left turn signal is short-circuited to ground or overloaded for 200 milliseconds	IBC supply voltage is in the range of 9-16V. When the turn signal is flashing or the lane changing function is activated, the left turn signal is activated for 100 milliseconds	
B108C98	The output current is detected to monitor the over-temperature fault. When the current is greater than a specific HW threshold, it is regarded as an over-temperature fault. The animation control output is overloaded for 200 milliseconds	The IBC supply voltage is within the range of 9-16V and the animation control function is activated for 100 milliseconds	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100E13	Check the output current to monitor whether a bulb is powered off, open circuit or short-circuited to the battery. If the current is lower than a specific power threshold (based on HW), the sampling time is 30ms, and the error counter is 10, then a bulb is considered to be power-off, open circuit or short-circuited to the battery.	The IBC supply voltage is within the range of 9-16V. When the turn signal is flashing or the lane changing function is activated, the right turn signal is activated for 100 milliseconds	
B100F13	Check the output current to monitor whether a bulb is powered off, open circuit or short-circuited to the battery. If the current is lower than a specific power threshold (based on HW), the sampling time is 30ms, and the error counter is 10, then a bulb is considered to be power-off, open circuit or short-circuited to the battery.	IBC supply voltage is in the range of 9-16V. When the turn signal is flashing or the lane changing function is activated, the left turn signal is activated for 100 milliseconds	

3. Schematic circuit diagram:



The Manual only provides the diagnosis for faults of left front combination lamp (turn signal lamp). The diagnosis of other turn signal lamps is the same as that of left front combination lamp (turn signal lamp).

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF06 is blown out.

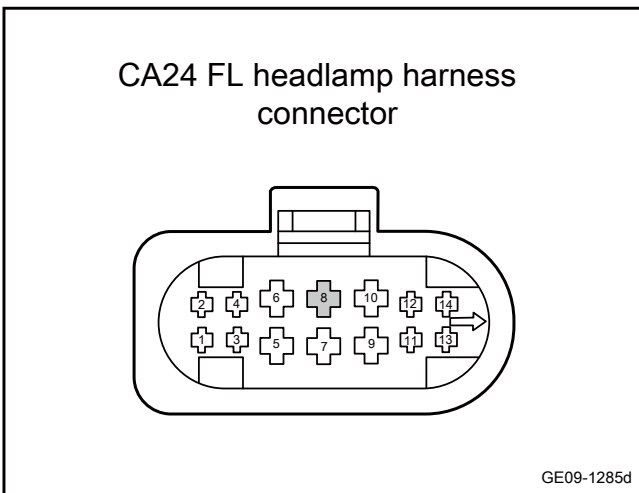
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the grounding circuit of left front combination lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(8)	Vehicle body is grounded.	Standard voltage: 11-14V

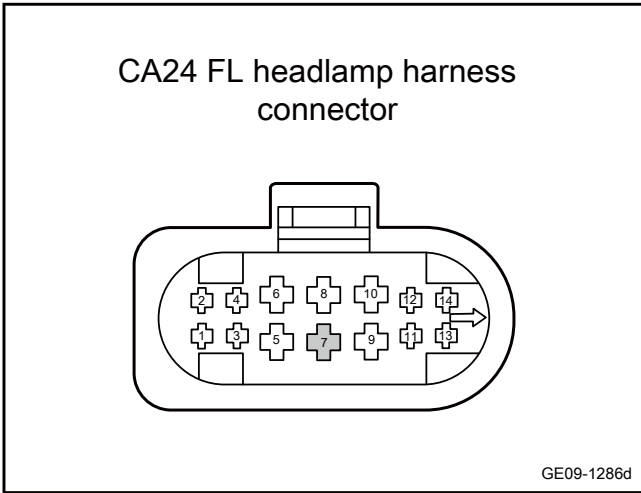
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check whether the grounding line of left front combination lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

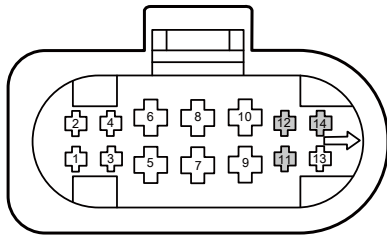
No

Repair or replace the harness.

Yes

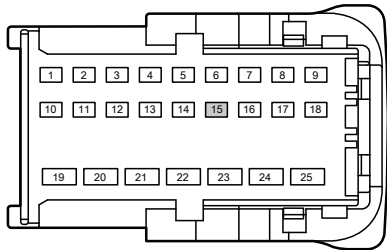
**Step 6** | Check the wiring harness between the turn signal of the left front combined lamp and the body control module.

CA24 FL headlamp harness connector



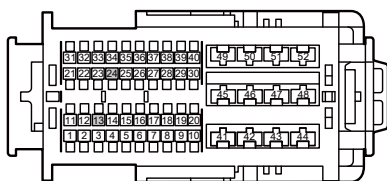
GE09-1287d

IP21b body control module harness connector 2



GE09-1288d

IP20 body control module harness connector 1



GE09-1289d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(12)		
CA24(14)		
CA24(11)	IP21b(15)	Standard resistance: less than 1Ω
CA24(12)	IP20(13)	
CA24(14)	IP20(24)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard voltage: 0V
CA24(12)		
CA24(14)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 9.2.4.22 Fault of the position lamp circuit

#### 1. DTC description:

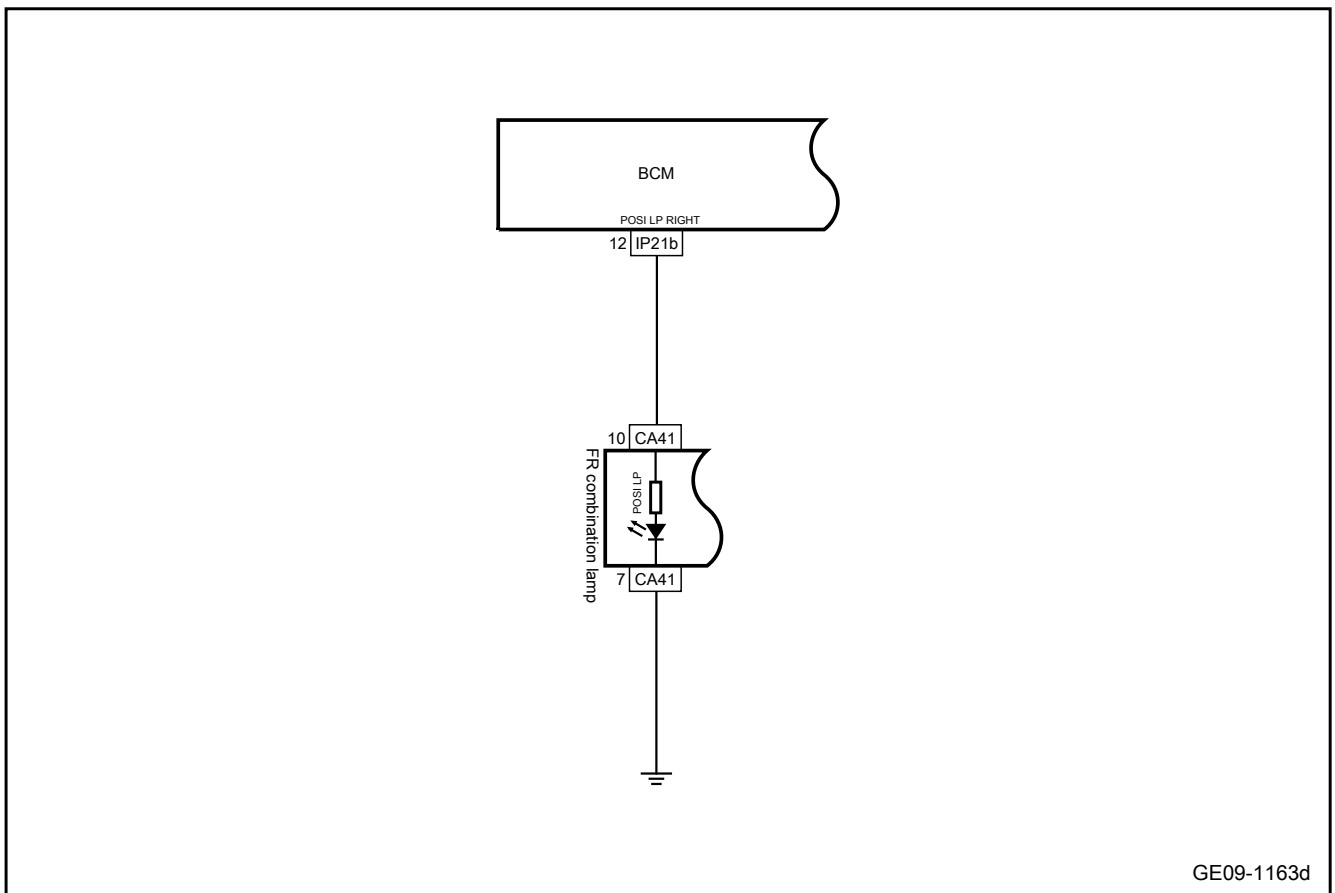
Diagnostic Trouble Code	Trouble description
B107A11	Left position lamp circuit short to ground or overloaded
B107B11	Right position lamp circuit short to ground or overloaded

#### 2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107A11	Current feedback is larger than or equal to the maximum load threshold value.	Output valid.	1. Circuit 2. BCM 3. Position lamp
B107B11	Current feedback is larger than or equal to the maximum load threshold value.	Output valid.	

3. Schematic circuit diagram:



GE09-1163d

This manual only diagnoses the faults of the RF combination lamp (position lamp). The diagnosis of other position lamps is the same as that of the FR combination lamp (position lamp).

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the FR combination lamp and the BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

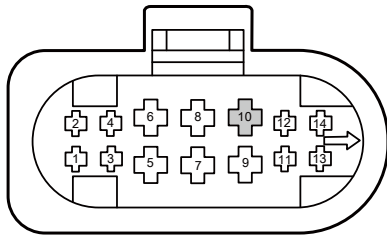
No

Repair or replace the faulty part.

Yes

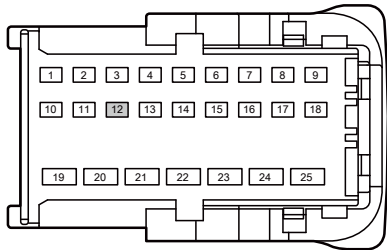
Step 3 Check the power supply harness of the FR combination lamp (position lamp).

CA41 FR headlamp harness connector



GE09-1290d

IP21b body control module harness connector 2



GE09-1291d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA41(10)	IP21b(12)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(10)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

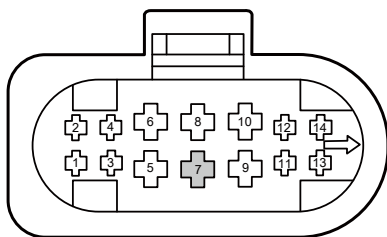
No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the FR combination lamp (position lamp).

CA41 FR headlamp harness connector



GE09-1292d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA41 of RF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(7)	Vehicle body is grounded.	Standard voltage: 0V

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the FR combination lamp
--------	---------------------------------

- A. Replace the FR combination lamp Refer to Replacement of FR Combination Lamp
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 7	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.23 Footlight circuit failure

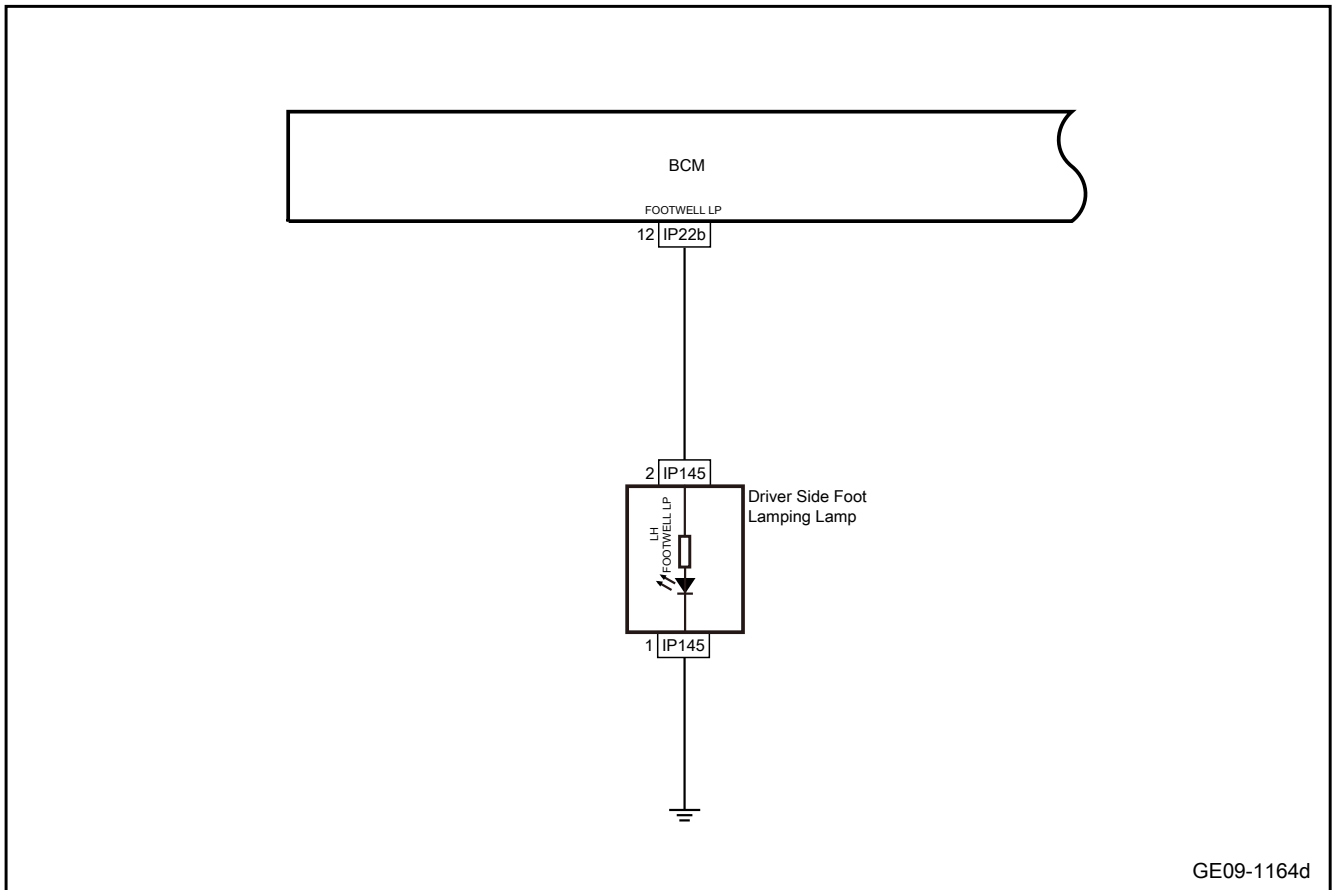
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100C11	Foot lamp circuit is short circuited to ground or overloaded

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100C11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. Foot lamp is short circuited to ground or overload for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The foot lamp function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Foot lamps on the driver's side

3. Schematic circuit diagram:



This manual only diagnoses the fault of the driver's foot lamp. The diagnosis of other foot lamps is the same as that of the driver's foot lamp.

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

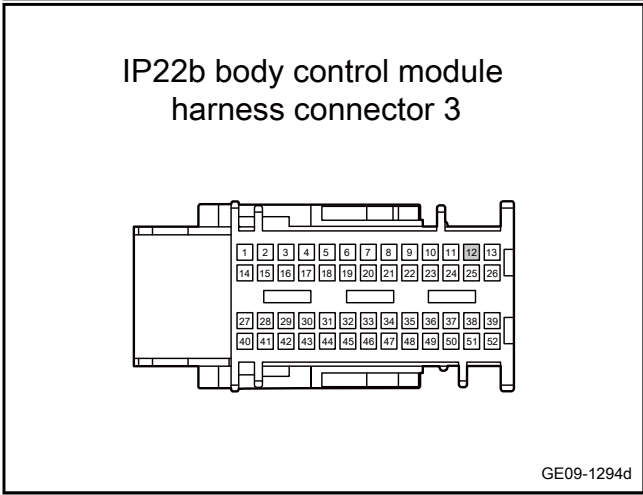
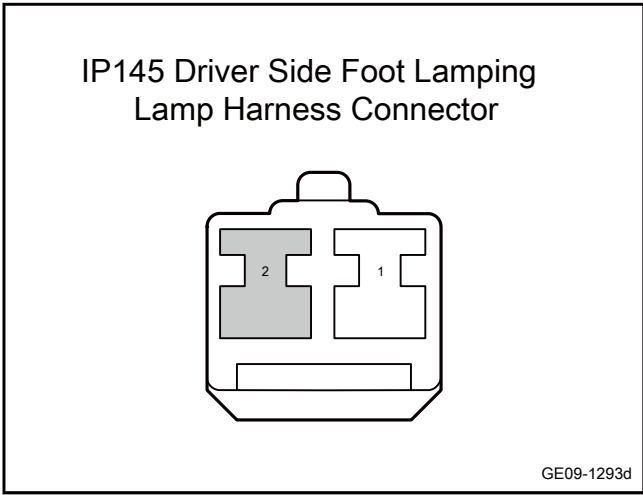
- A. Check the driver's foot floodlight and BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the power wiring harness for the driver's foot lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the driver's footlight harness connector IP145.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP145(2)	IP22b(12)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	Vehicle body is grounded.	Standard voltage: 0V

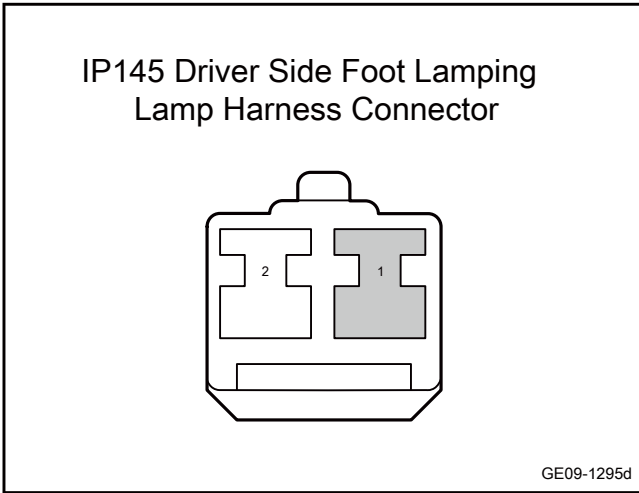
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of the driver's foot lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's footlight harness connector IP145.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

**Step 5** | Replace the foot lamp on the driver's side.

- A. Replace the foot lamp on the driver's side. See [Replacement of Foot Lamp on the Driver's Side](#)
- B. Confirm whether the system is normal.

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.



Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.24 Courtesy light circuit failure

1. DTC description:

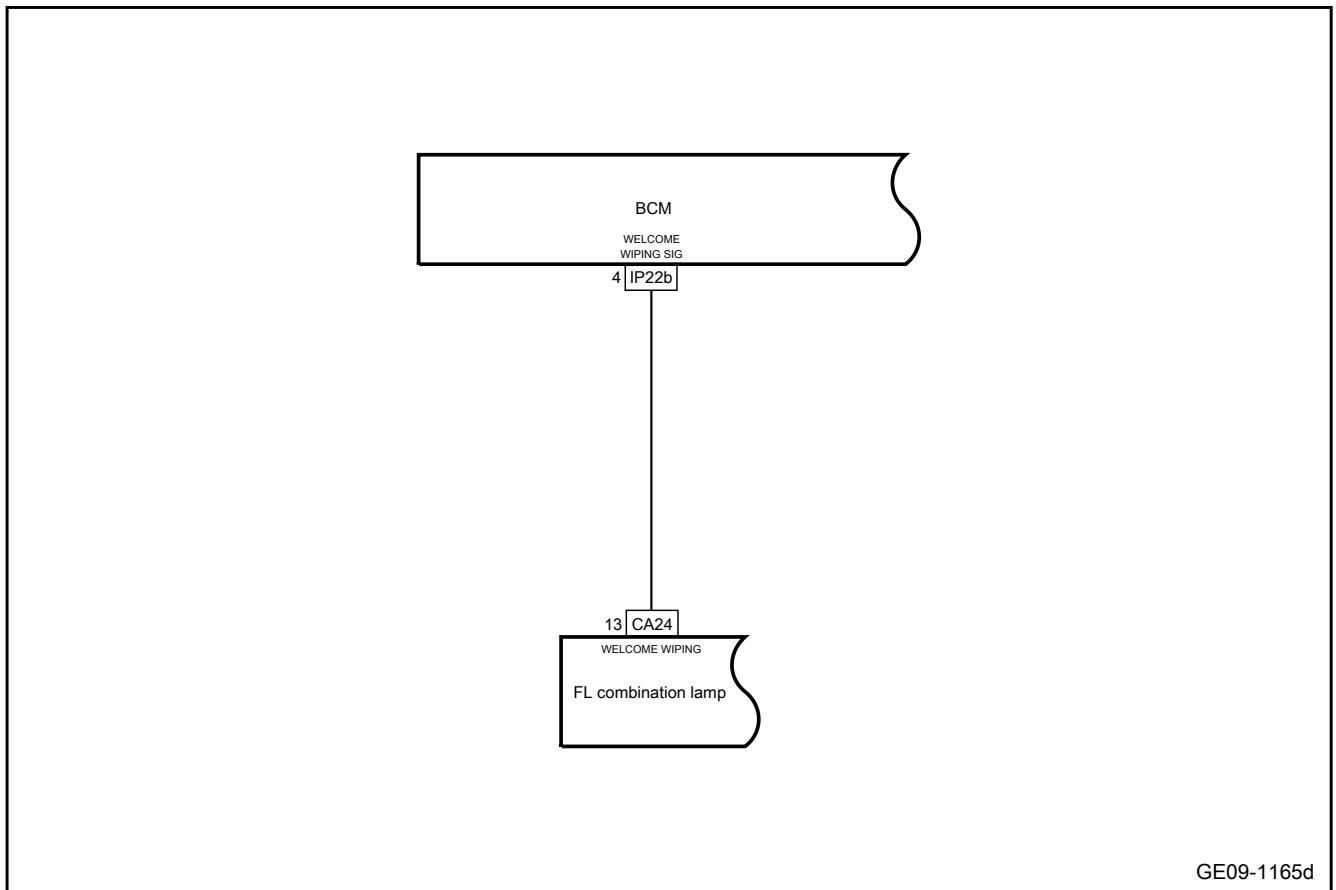
Diagnostic Trouble Code	Trouble description
B108311	The courtesy light control circuit is short to ground
B108A11	The courtesy light control signal circuit is short to ground

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108311	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The courtesy light control is short-circuited to ground or overload for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The courtesy light function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Courtesy lamp

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108A11	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The pulse width modulation signal of the courtesy light is short-circuited to the ground or overloaded for 200 milliseconds		

3. Schematic circuit diagram:



This manual only diagnoses the faults of the left front combination lamp (courtesy lamp). The diagnosis of other position lamps is the same as that of the left front combination lamp (courtesy lamp).

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

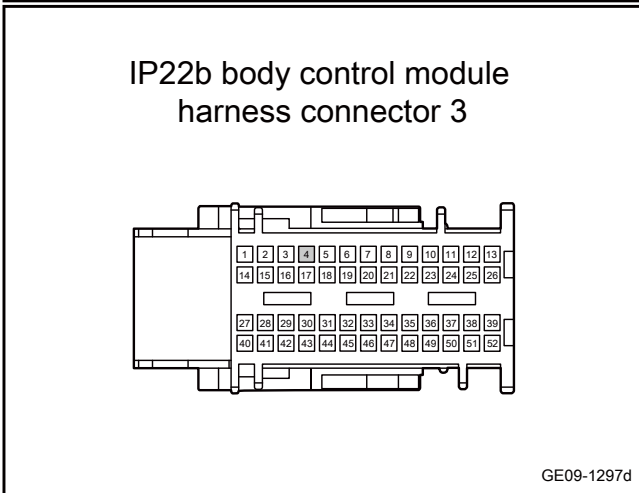
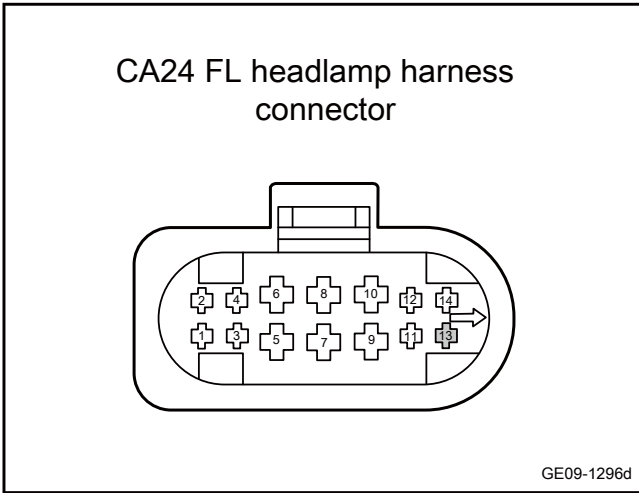
- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the power supply harness of the FL combination lamp.
--------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(13)	IP22b(4)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(13)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 5** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

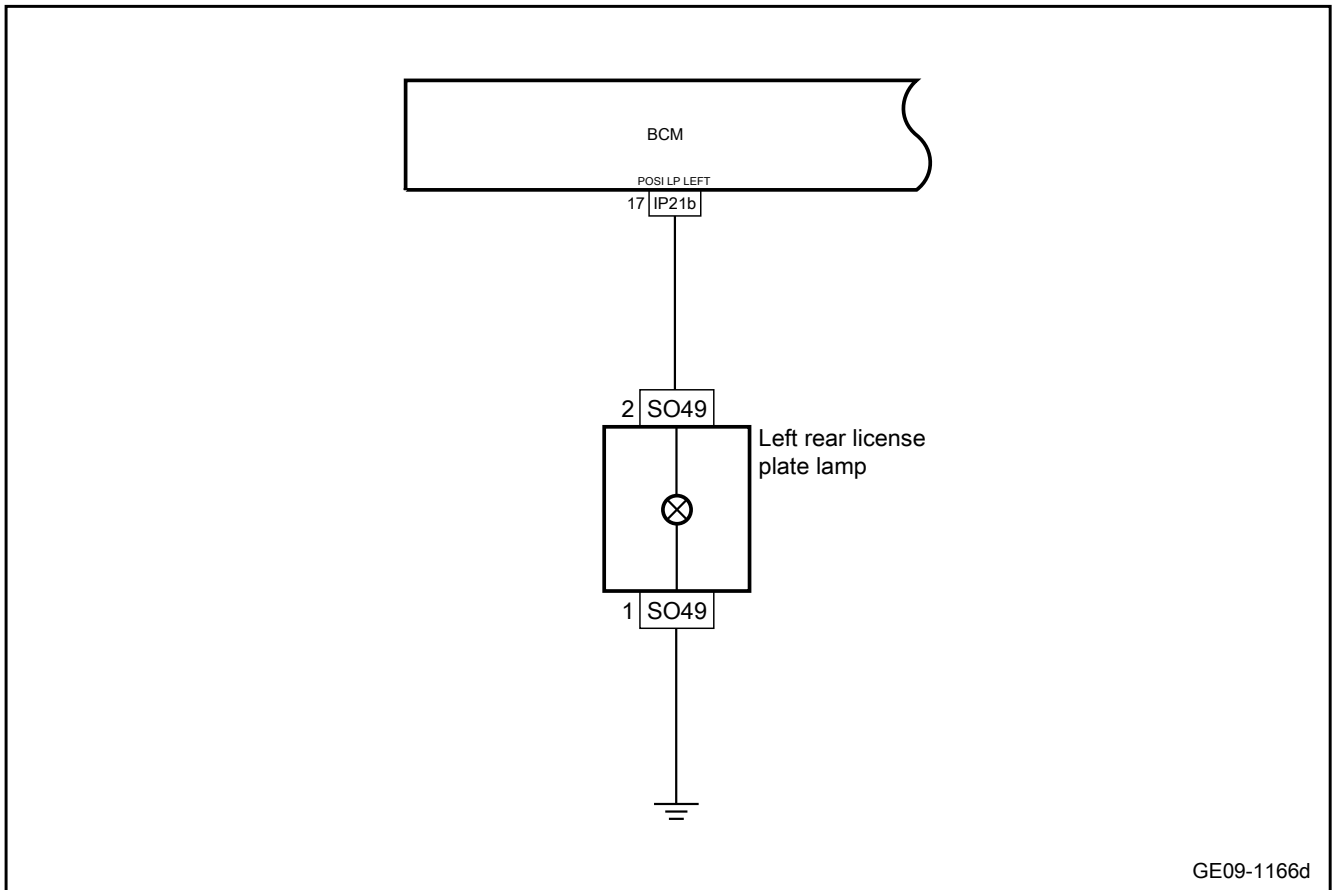
Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.25 License plate lamp circuit failure

1. Schematic circuit diagram:



This manual only diagnoses the faults of the left rear license plate lamp, and the diagnosis of other license plate lamps is the same as that of the left rear license plate lamp.

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear left license plate lamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

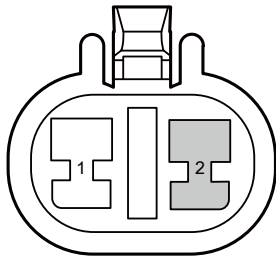
No

Repair or replace the faulty part.

Yes

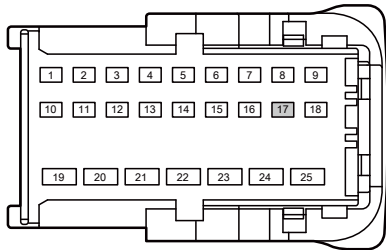
Step 2	Check the power harness of rear left license plate lamp.
--------	--

SO49 Rear left license plate lamp harness connector



GE09-1298d

IP21b body control module harness connector 2



GE09-1299d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector SO49 of RL license plate lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO49(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO49(2)	IP21b(17)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO49(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

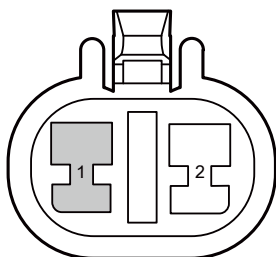
No

Repair or replace the harness.

Yes

Step 3 Check the grounding harness of the left rear license plate lamp.

SO49 Rear left license plate lamp harness connector



GE09-1300d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO49 of RL license plate lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO49(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Replace the rear left license plate lamp.

- A. Replace the rear left license plate lamp. Refer to [Replacement of rear left license plate lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 5** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 7** System is normal.

### 9.2.4.26 Luggage compartment lamp circuit failure

1. DTC description:

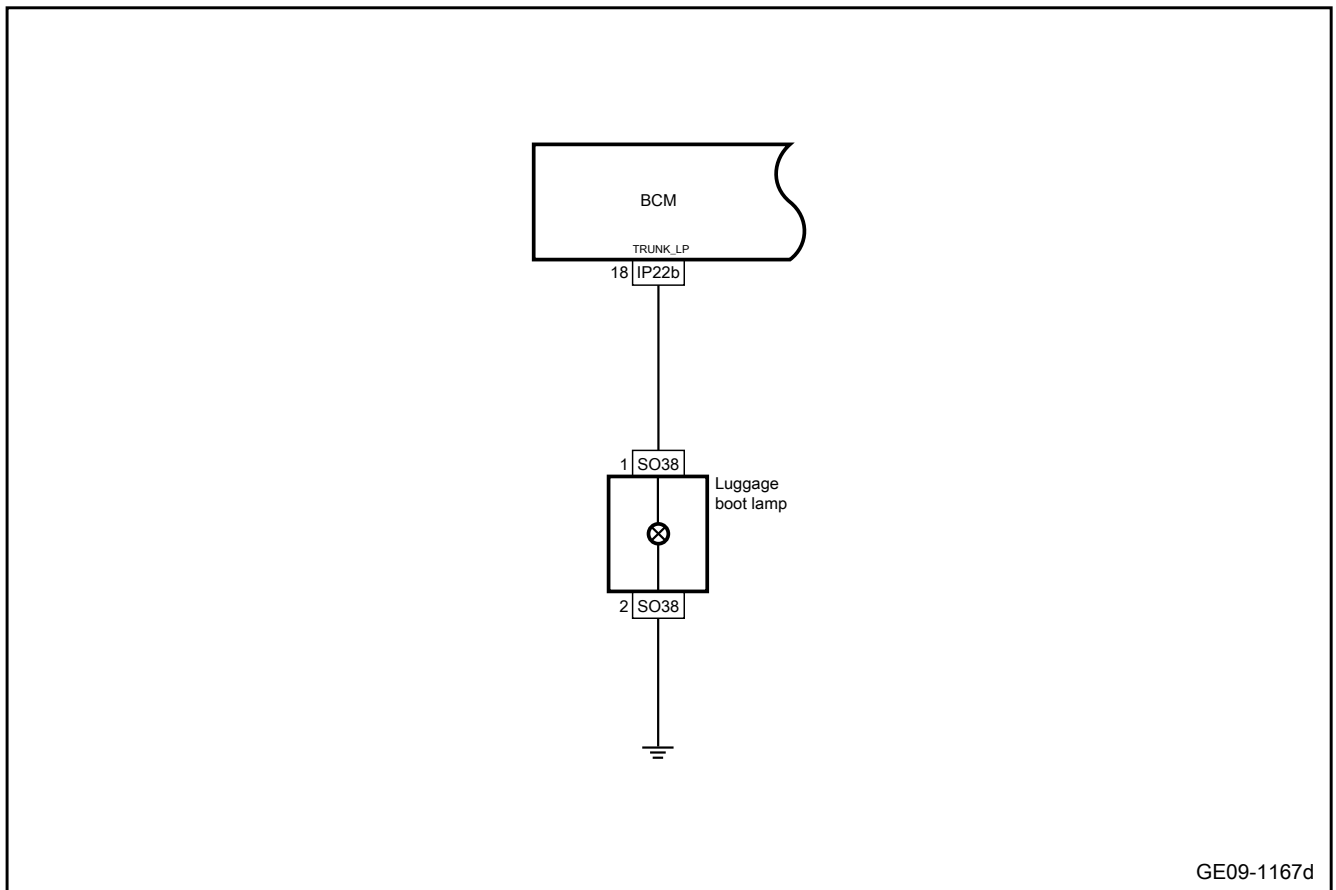
Diagnostic Trouble Code	Trouble description
B108511	The luggage compartment lamp is short to the ground

2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108511	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. The luggage compartment lamp is short-circuited to the ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The luggage compartment lamp function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Luggage boot lamp

3. Schematic circuit diagram:



GE09-1167d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

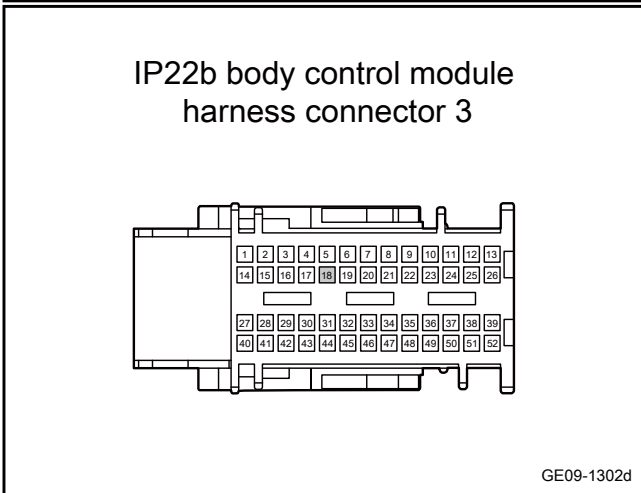
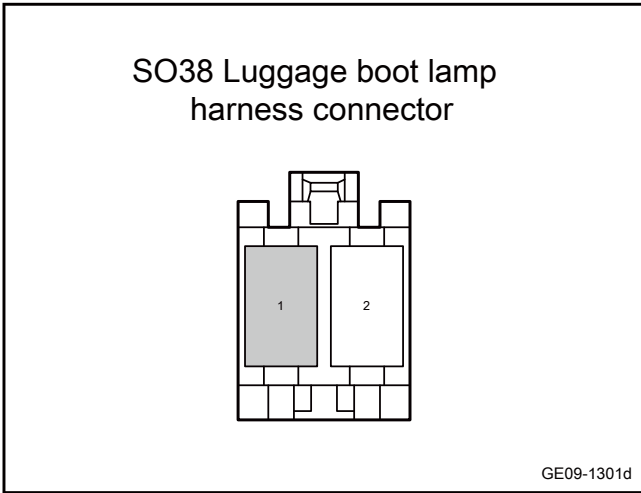
- A. Check the luggage compartment lamp, BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the BCM and the luggage compartment lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	IP22b(18)	Standard resistance: less than 1Ω

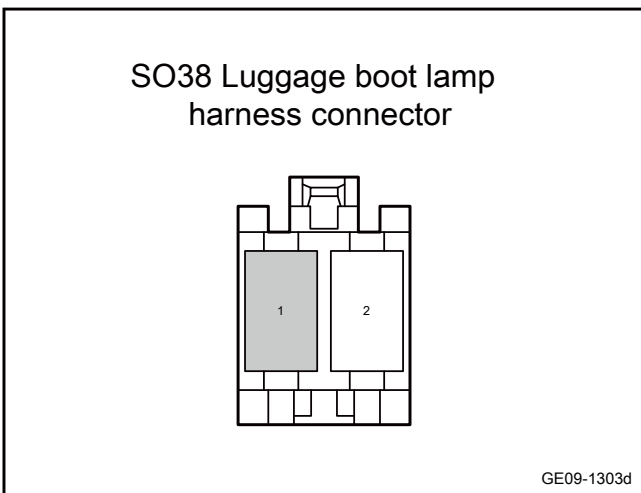
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the BCM and the luggage compartment lamp is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

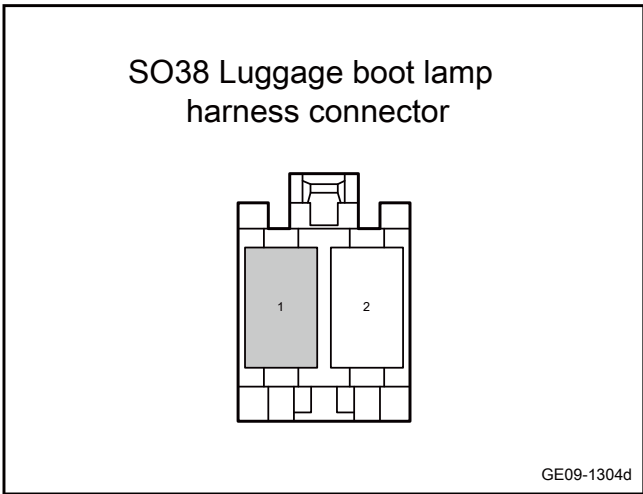
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the BCM and the luggage compartment lamp is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard voltage: 0V

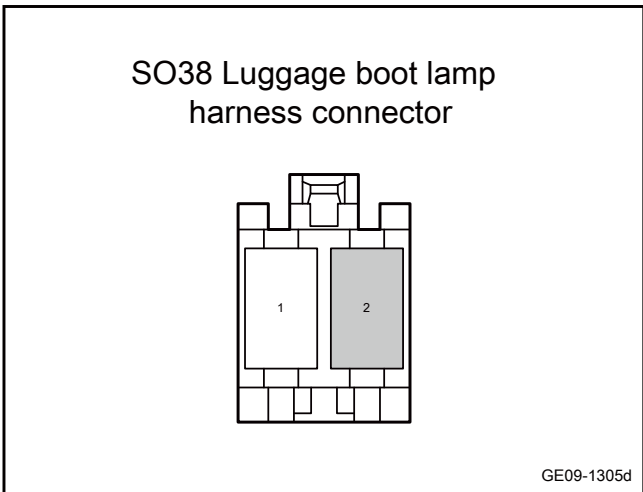
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the grounding circuit of the luggage compartment lamp is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the rear compartment lamp.

- A. Replace the rear compartment lamp. Refer to [Replacement of rear compartment lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 9.2.4.27 Rear antenna is faulty

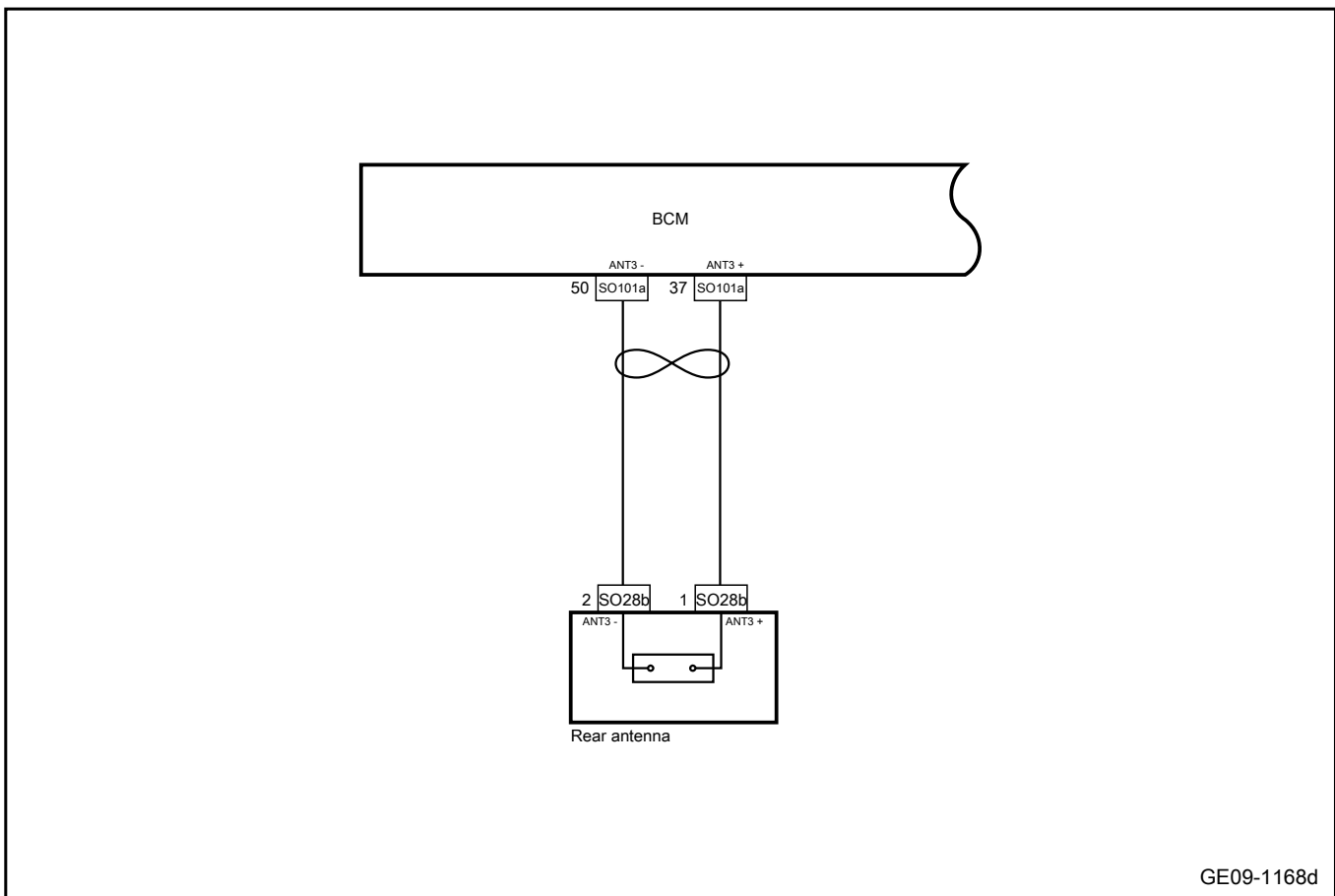
1. DTC description:

Diagnostic Trouble Code	Description
B128A00	Trunk antenna failure
B128B00	Rear bumper antenna failure

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128A00	When the trunk antenna is triggered and it is detected that the antenna is short-circuited to the battery/short-circuited to the ground/open-circuited, or a fault is detected during the antenna self-test (0x61FC), de-bubbling time: 5	1. IBC's power supply voltage is between 9V-16V 2. The relay antenna is configured (Cfg_trunkannen==0x1)	1. Circuit 2. Rear antenna 3. BCM
B128B00	When the bumper antenna is triggered and it is detected that the antenna is short-circuited to the battery/short-circuited to the ground/open-circuited, or a fault is detected during the antenna self-test (0x61FC), de-bubbling time: 5		

## 3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

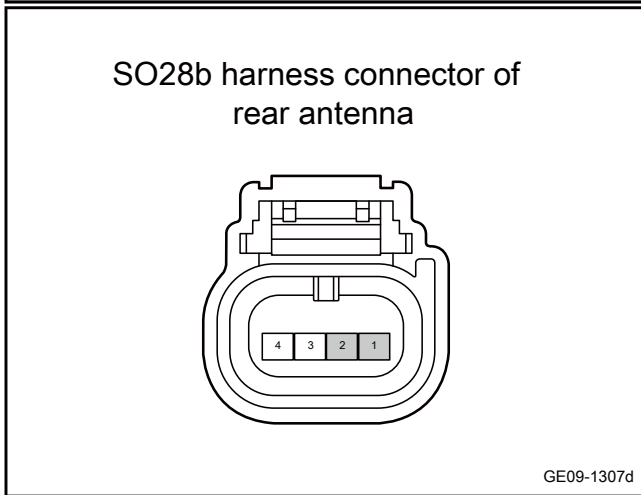
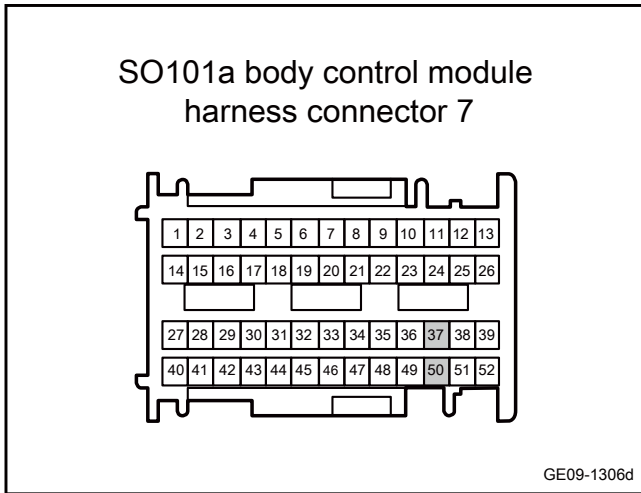
- A. Check the rear antenna, BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the control harness between the rear antenna and the BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Unplug the rear antenna harness connector SO28b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(50)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101a(37)		
SO101a(50)	SO28b(2)	Standard resistance: less than 1Ω
SO101a(37)	SO28b(1)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(50)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(37)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Replace rear antenna.

- A. Replace rear antenna. See [Replacement of the Rear Antenna](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 5** Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.28 Electronic handbrake indicator lamp circuit failure

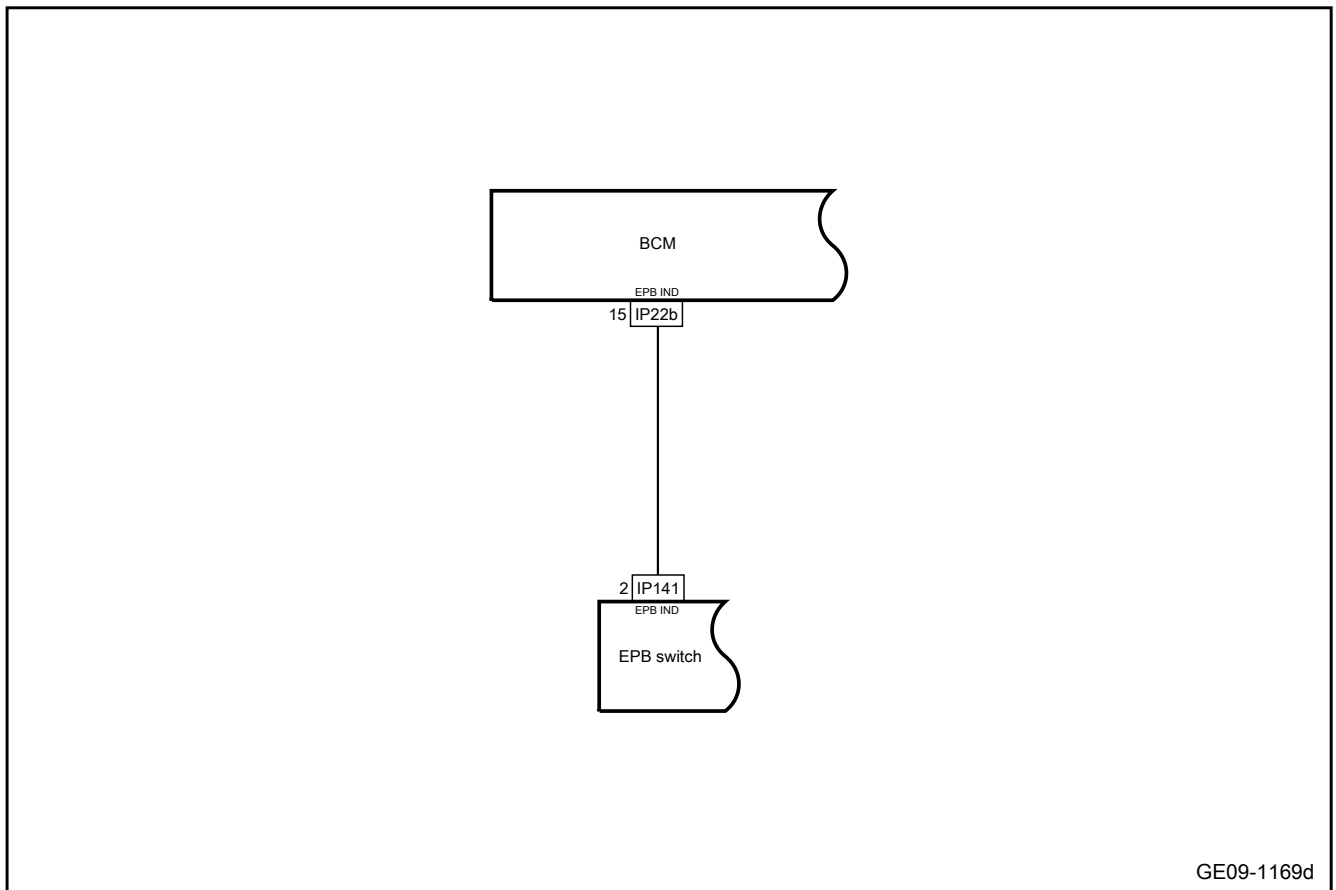
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100611	Electronic handbrake indicator lamp circuit is short to the ground

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100611	The output current will be checked to monitor a short circuited-to-ground fault, and if the current is higher than a specific hardware threshold, it is considered a short circuited-to-ground fault. EPB indicator lamp is short circuited to ground for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The EPB indicator lamp function is activated for 100 milliseconds	1. Circuit 2. BCM 3. EPB switch

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

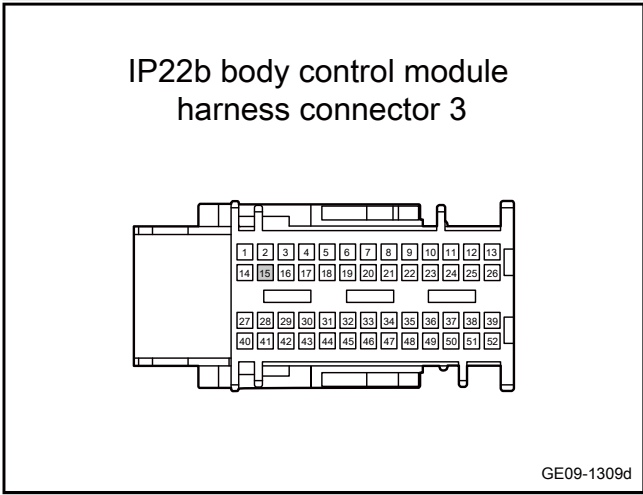
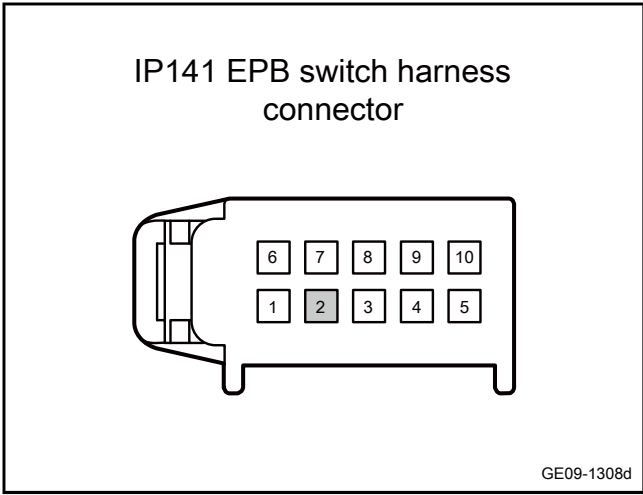
- A. Check the EPB switch and the harness connector of BCM for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check the harness between EPB switch and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect harness connector IP141 of the rear left EPB switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP141(2)	IP22b(15)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP141(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Replace EPB switch.

- A. Replace EPB switch. Refer to Replacement of EPB switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 5	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 6	System is normal.
--------	-------------------

### 9.2.4.29 Hazard warning indicator lamp circuit failure

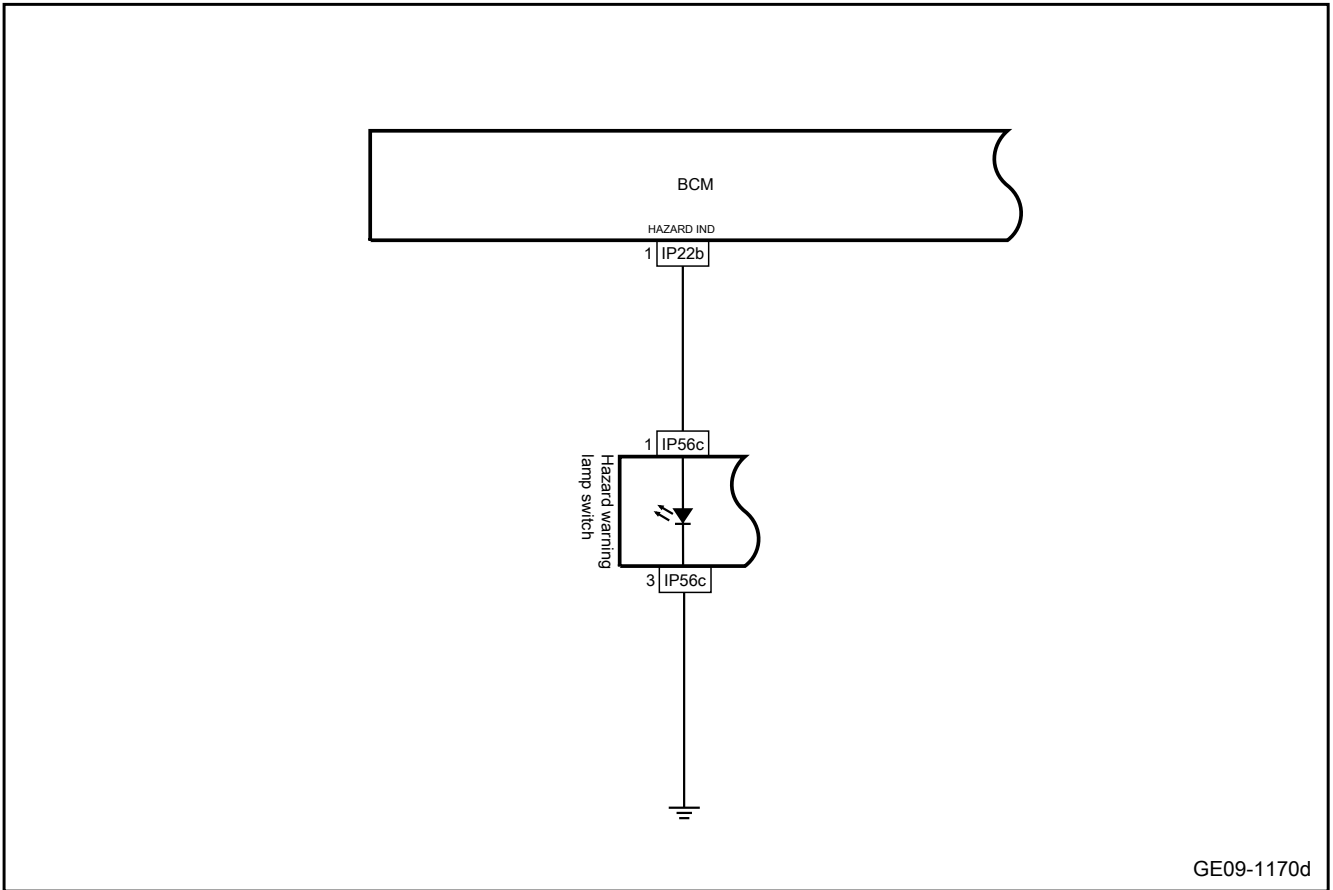
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101B11	The hazard warning indicator lamp circuit is short to ground or overloaded

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101B11	The output current will be checked to monitor a short circuited-to-ground or overload fault, and if the current is higher than a specific hardware threshold, it is considered a short circuited-to-ground or overload fault. Hazard LED is short circuited to ground for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The hazard LED function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Hazard warning lamp switch

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

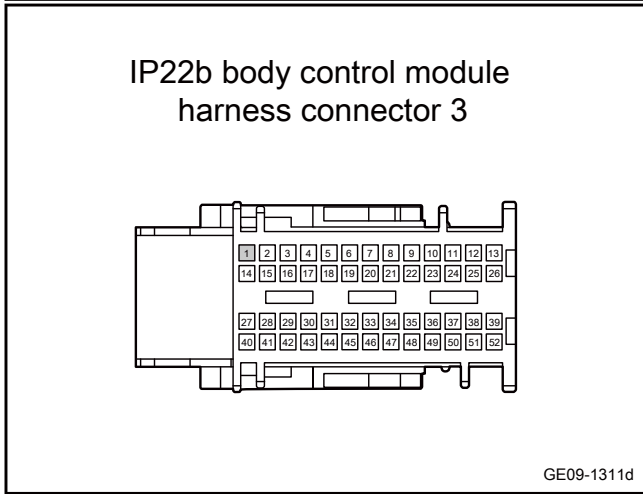
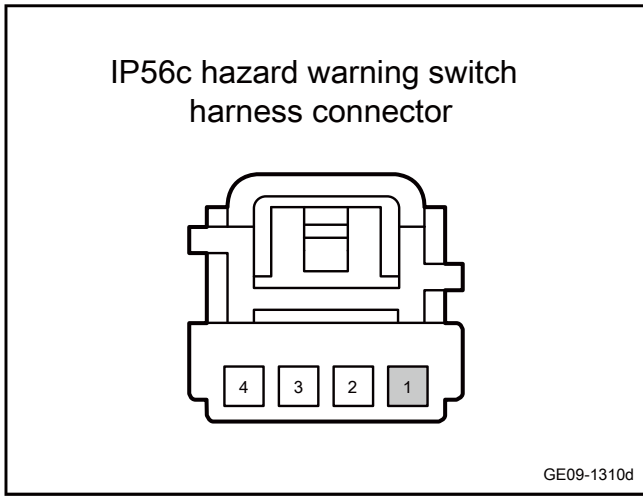
- A. Check the hazard warning switch and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the hazard warning lamp switch power supply wiring harness.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the hazard warning switch harness connector IP56c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP56c(1)	IP22b(1)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(1)	Vehicle body is grounded.	Standard voltage: 0V

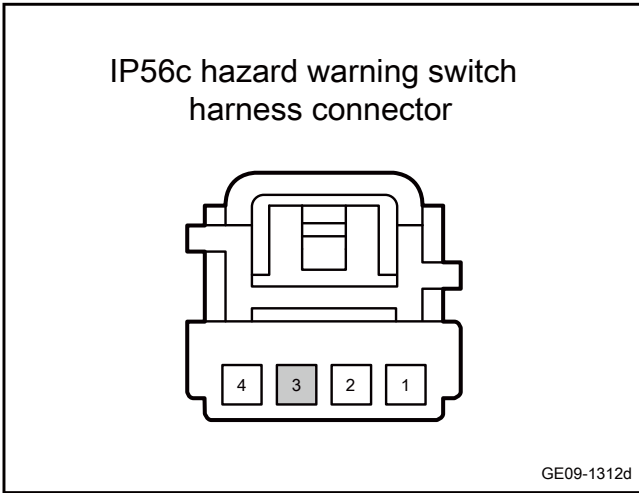
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of the hazard warning lamp switch.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the hazard warning switch harness connector IP56c.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Replace the hazard warning lamp switch.

- A. Replace the hazard warning lamp switch. Refer to [Replacement of hazard warning lamp switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.30 Anti-theft indicator circuit failure

1. DTC description:

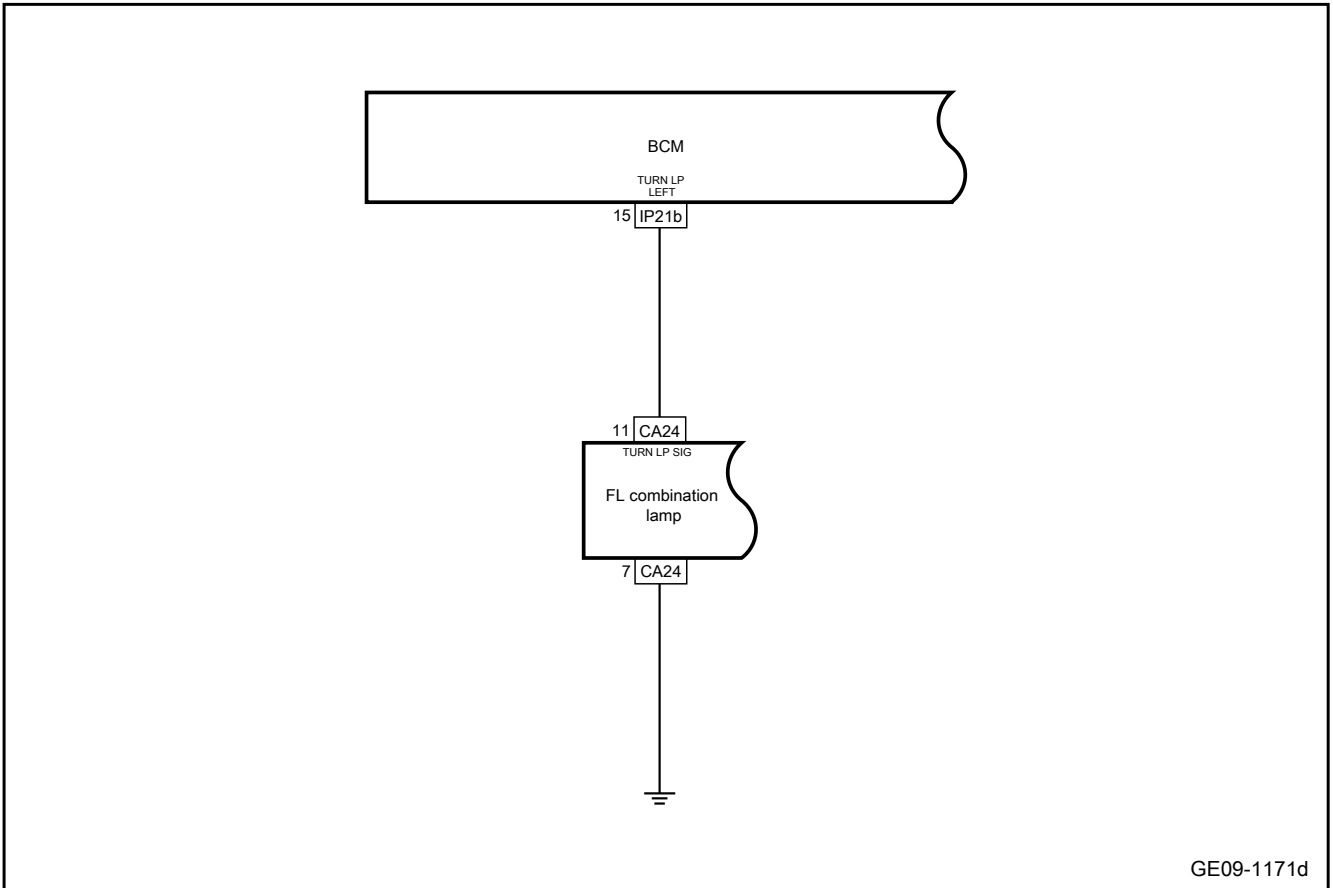
Diagnostic Trouble Code	Trouble description
B101C11	The anti-theft indicator circuit is short-circuited to ground

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101C11	The output current will be checked to monitor a short circuited-to-ground fault, and if the current is higher than a specific hardware threshold, it is considered a short circuited-to-ground fault. ATWS LED is short circuited to ground for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The ATWS LED function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Left front combined lamp (anti-theft indicator lamp)

3. Schematic circuit diagram:





4. Diagnosis steps

The Manual only provides the diagnosis for faults of left front combination lamp (anti-theft indicator lamp). The diagnosis of other turn signal lamps is the same as that of left front combination lamp (anti-theft indicator lamp).

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

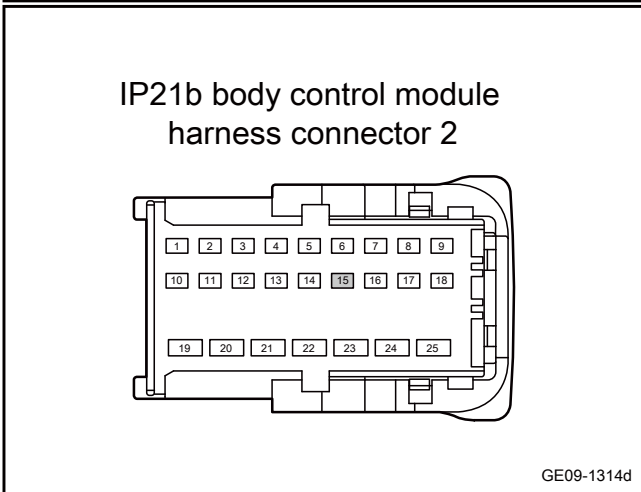
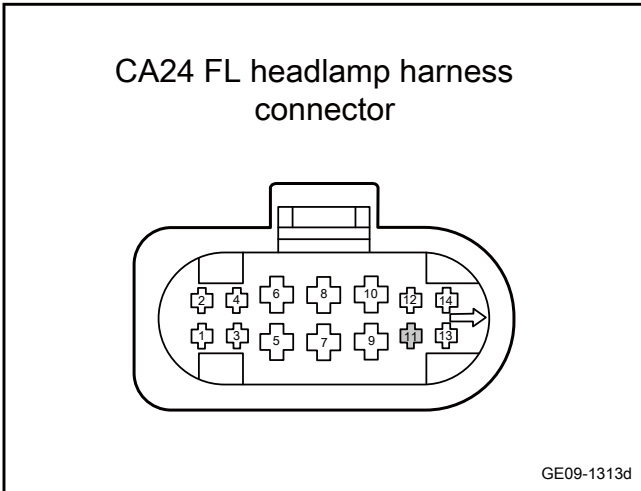
- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the wiring harness between the turn signal of the left front combined lamp and the body control module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(11)	IP21b(15)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard voltage: 0V

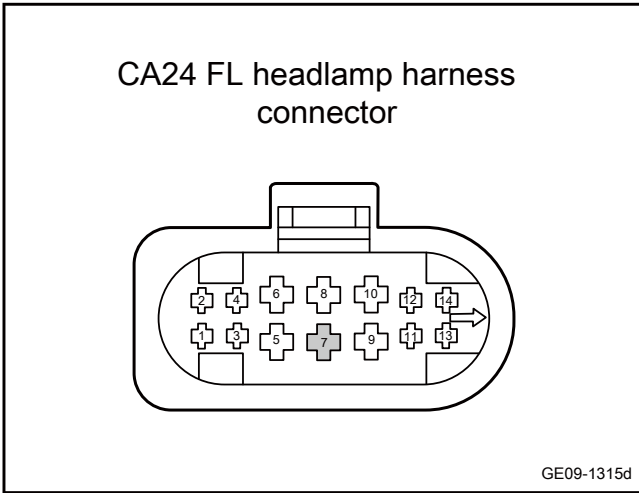
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding line of left front combination lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.31 Daytime running light circuit failure

1. DTC description:

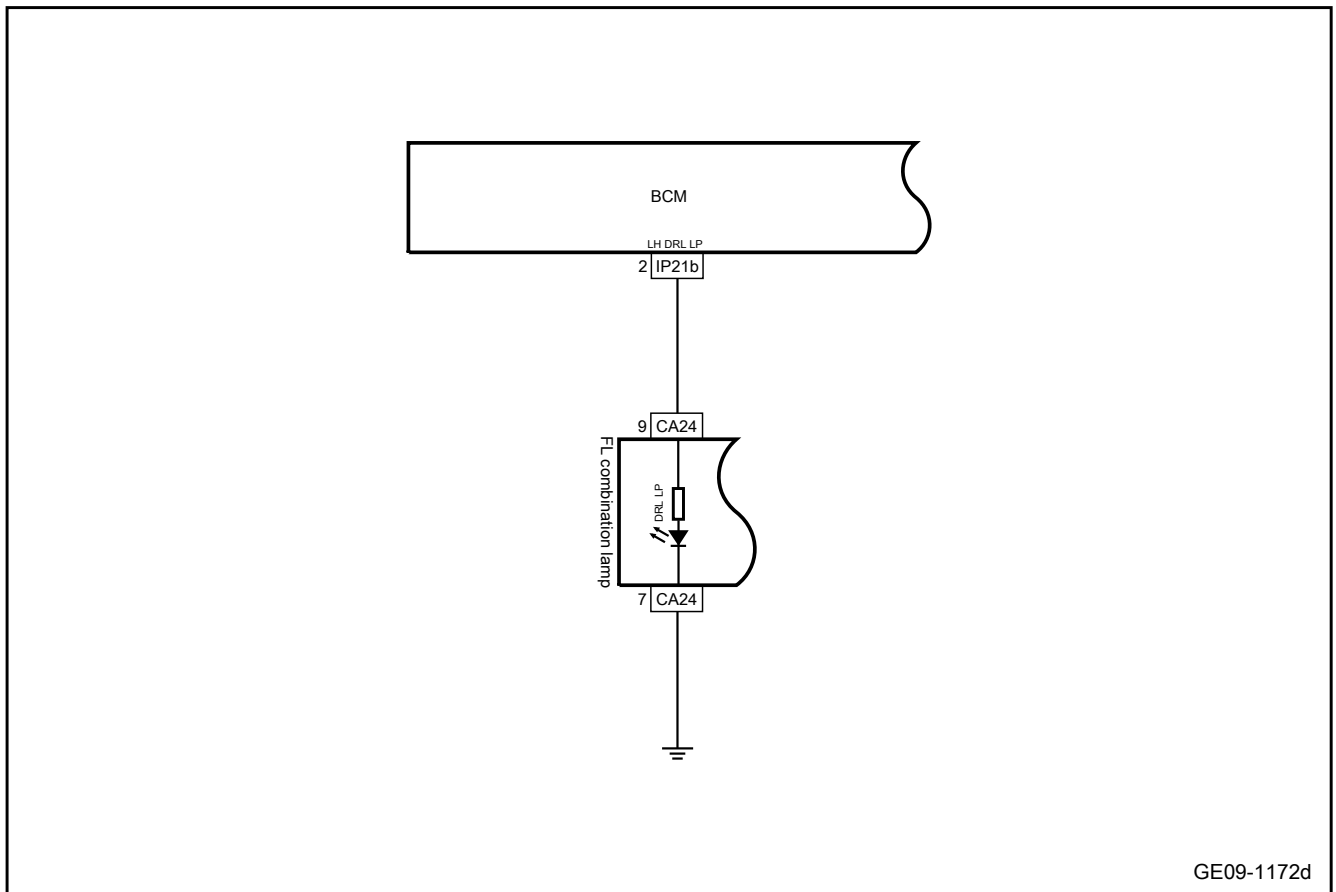
Diagnostic Trouble Code	Trouble description
B101E11	Left daytime running light circuit is short to GND or overloaded
B101F11	Right daytime running light circuit is short to GND or overloaded

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101E11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. The left daytime running light is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The left daytime running light function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Left headlamp

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101F11	Check the output current to monitor a short-to-ground or overload fault. If the current is higher than a certain power threshold (based on hardware), it is considered a short-to-ground or overload fault. The right daytime running light is short-circuited to ground or overloaded for 200 milliseconds		

3. Schematic circuit diagram:



This manual only specifies the diagnosis of the faults of the front left combination lamp (daytime running light). The diagnosis of the front right combination lamp is the same as that of the front left combination lamp (daytime running light).

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

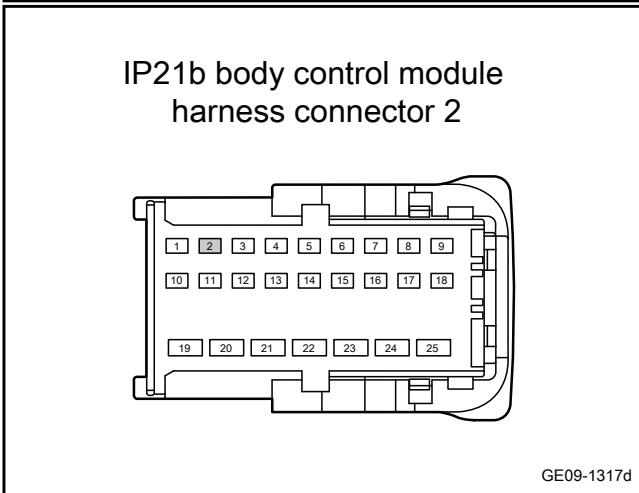
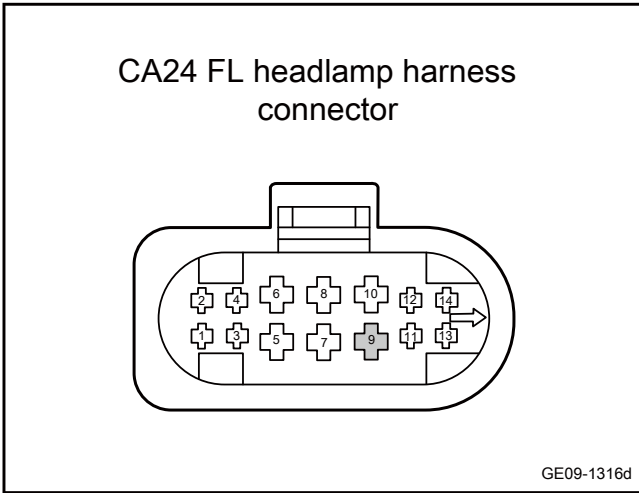
- A. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the power supply harness of the FL combination lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(9)	IP21b(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(9)	Vehicle body is grounded.	Standard voltage: 0V

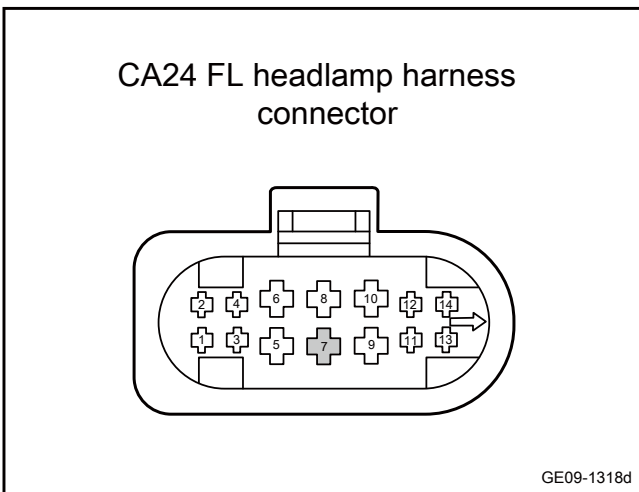
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding circuit of left front combination lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the left headlamp.
--------	----------------------------

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 7	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.



No

Step 9	System is normal.
--------	-------------------

### 9.2.4.32 Central control door lock switch indicator lamp failure

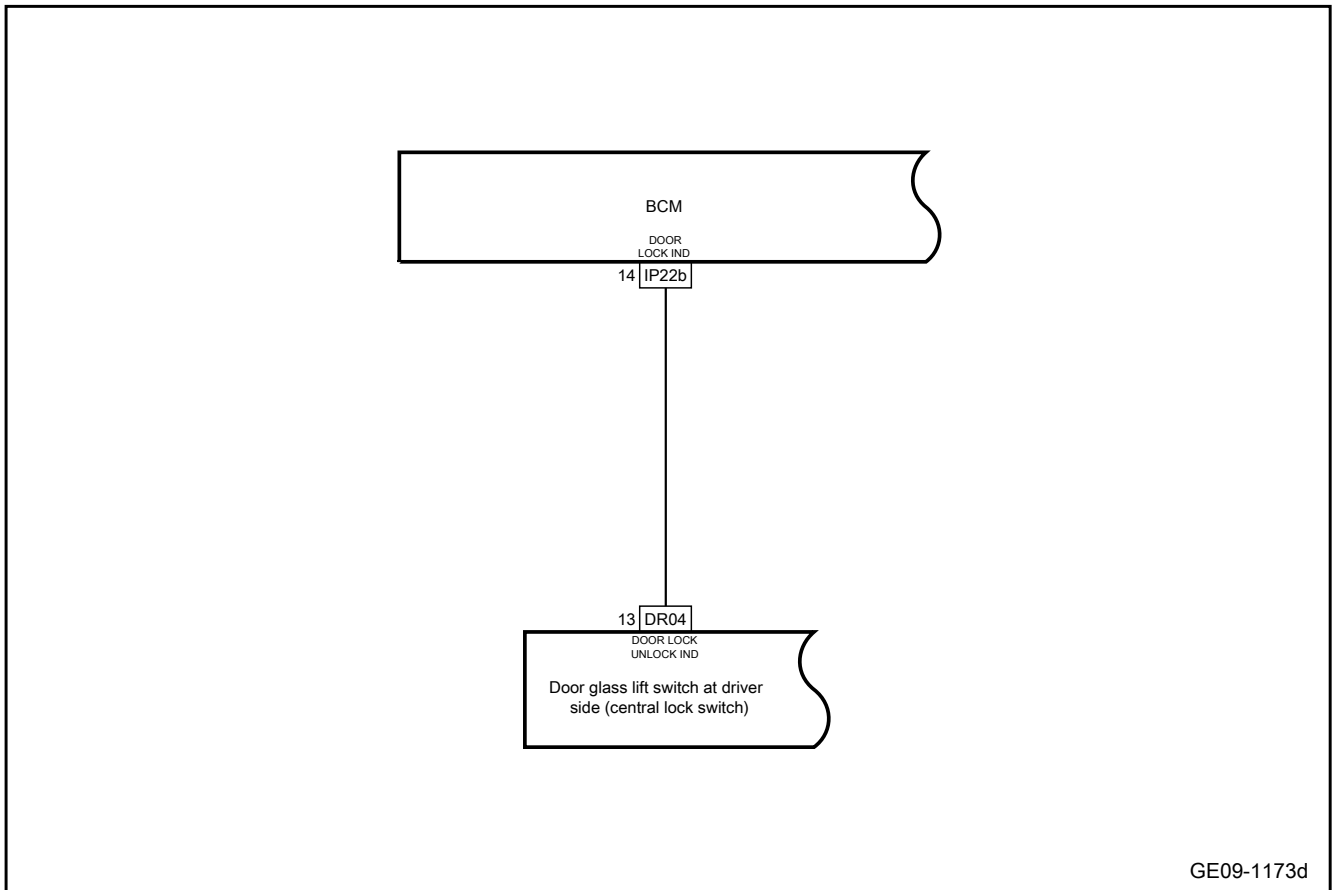
1. DTC description:

Diagnostic Trouble Code	Trouble description
B108D11	The door lock status indicator lamp is short-circuited to the ground
B108D15	The door lock status indicator lamp is open or short-circuited to the power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108D11	The output current will be checked to monitor a short circuited-to-ground fault, and if the current is higher than a specific hardware threshold, it is considered a short circuited-to-ground fault. The lock status indicator lamp is short-circuited to ground for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The lock status indicator lamp function is activated for 100 milliseconds	1. Circuit 2. BCM 3. Door glass regulation switch at driver side (central locking switch)
B108D15	The output current will be checked to monitor open-circuit loads or short-circuit faults to the battery. If the current is lower than a specific HW threshold, it is regarded as an open-circuit load or short-circuit fault to the battery. The lock status indicator lamp turns on the load or short-circuited to the battery for 200 ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check door glass regulation switch at driver side (central locking switch), BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

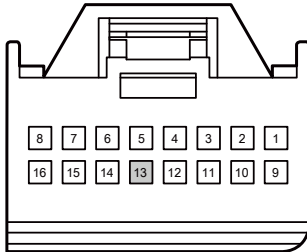
No

Repair or replace the faulty part.

Yes

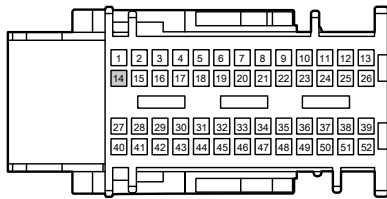
**Step 3** Check whether the circuit between the door glass regulation switch at driver side (central locking switch) and BCM is circuit normal.

DR04 harness connector for door window regulator switch at driver side



GE09-1319d

IP22b body control module harness connector 3



GE09-1320d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR04 of the door glass regulation switch at driver side (central locking switch).
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR04(13)	IP22b(14)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(13)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Replace the door glass regulation switch at driver side (central locking switch).

- A. Replace the door glass regulation switch at driver side (central locking switch). Refer to [Replacement of the door glass regulation switch at driver side \(central locking switch\)](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 9.2.4.33 Defroster circuit fault

#### 1. DTC description:

Diagnostic Trouble Code	Description
B103914	The front defrosting circuit is short-circuited to ground or open circuit
B10394B	The front defrosting circuit is overloaded or over temperature
B108798	Front defrosting indicator lamp circuit over temperature
B100014	The rear defrosting circuit is shorted to ground or open

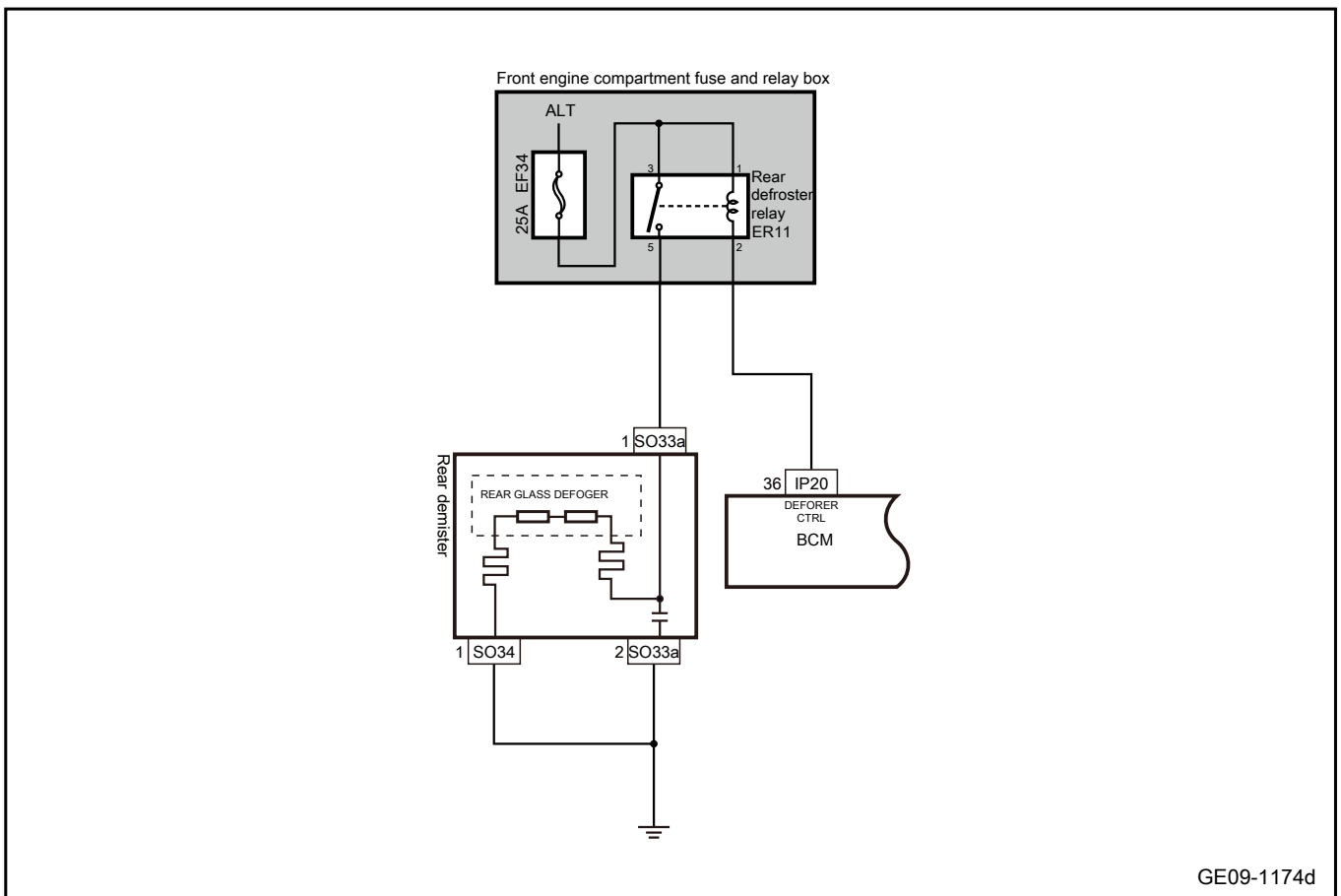
Diagnostic Trouble Code	Description
B10004B	The rear defrosting circuit is overloaded or over temperature
B108698	Over temperature of rear defrosting indicator lamp circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B103914	When the output changes from being activated to being unactivated, a small diagnosis current (based on the hardware threshold) will be turned on and the output voltage will be checked: if it is lower than a specific hardware threshold, consider a short-circuit to ground or open-circuit fault. The front defroster circuit has a short circuit to ground or an open-circuit load that lasts for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The front defrosting function is activated for 100 milliseconds	1. Circuit 2. Fuse 3. Relay 4. BCM
B10394B	Monitor the overload or over-temperature fault by detecting the output current. When the current is greater than a specific HW threshold, it is considered an overload or over-temperature fault. Front defroster circuit overload 200ms		
B108798	The output current is detected to monitor the over-temperature fault. When the current is greater than a specific HW threshold, it is regarded as an over-temperature fault. Front defroster indicator lamp is overloaded for 200ms		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100014	When the output changes from being activated to being unactivated, a small diagnosis current (based on the hardware threshold) will be turned on and the output voltage will be checked: if it is lower than a specific hardware threshold, consider a short-circuit to ground or open-circuit fault. Front defroster indicator lamp is overloaded for 200ms	1. The power supply voltage is 6V-16V 2. The rear defrosting function is activated for 100 milliseconds	
B10004B	The output current is detected to monitor overload or over-temperature faults. When the current is greater than a specific HW threshold, it is regarded as an overload or over-temperature fault. Rear defroster circuit overload for 200ms		
B108698	The output current is detected to monitor the over-temperature fault. When the current is greater than a specific HW threshold, it is regarded as an over-temperature fault. Rear defroster indicator lamp circuit is overloaded for 200ms		

3. Schematic circuit diagram:



GE09-1174d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the rear defroster relay and BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check rear defroster relay.

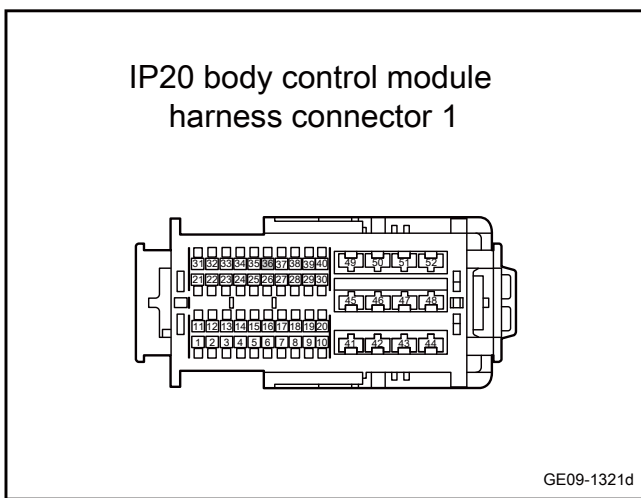
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the rear defroster relay ER11 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Check the control wiring harness between the rear defrost relay and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Unplug rear defroster relay ER11.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(36)	ER11(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.34 Middle antenna fault

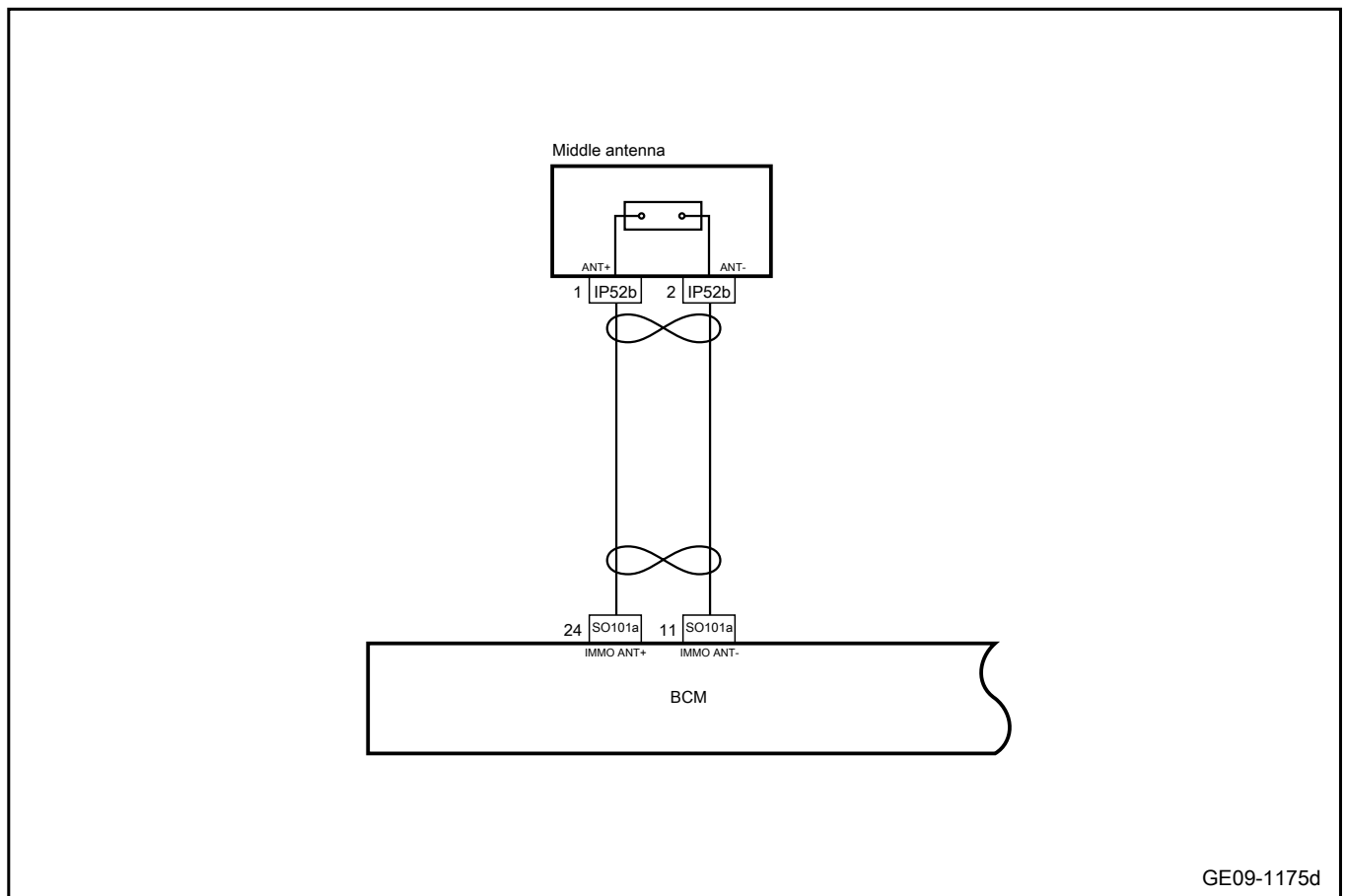
1. DTC description:

Diagnostic Trouble Code	Description
B128900	Middle antenna failure in the vehicle

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128900	When the middle internal antenna is triggered and a short circuit to the battery/short circuit to the ground/open circuit is detected, or a fault is detected during the antenna self-test (0x61FC) debubbling time: 5	1. IBC's power supply voltage is between 9V-16V 2. The Interior2 antenna (Cfg_ Interior2Antenna==0x1) is configured	1. Circuit 2. Middle antenna 3. BCM

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

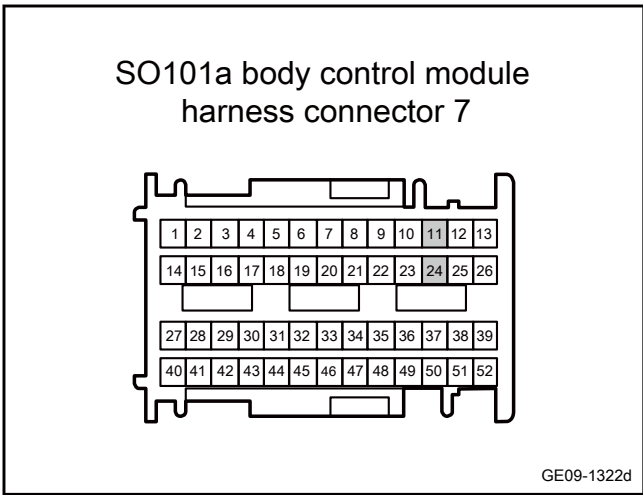
- A. Check the central antenna and BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

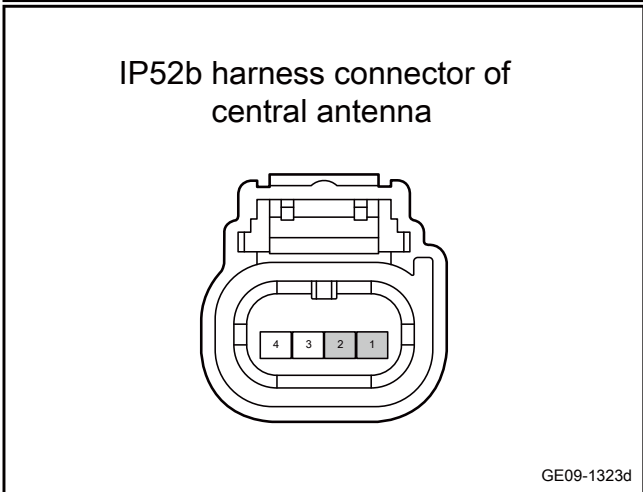
Yes

Step 3 Check the control harness between the central antenna and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Unplug the middle antenna harness connector IP52b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101a(11)		
SO101a(24)	IP52b(1)	Standard resistance: less than 1Ω
SO101a(11)	IP52b(2)	



- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(24)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(11)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace the central antenna.

- A. Replace the central antenna. See [Replacement of the Central Antenna](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.35 Horn circuit fault

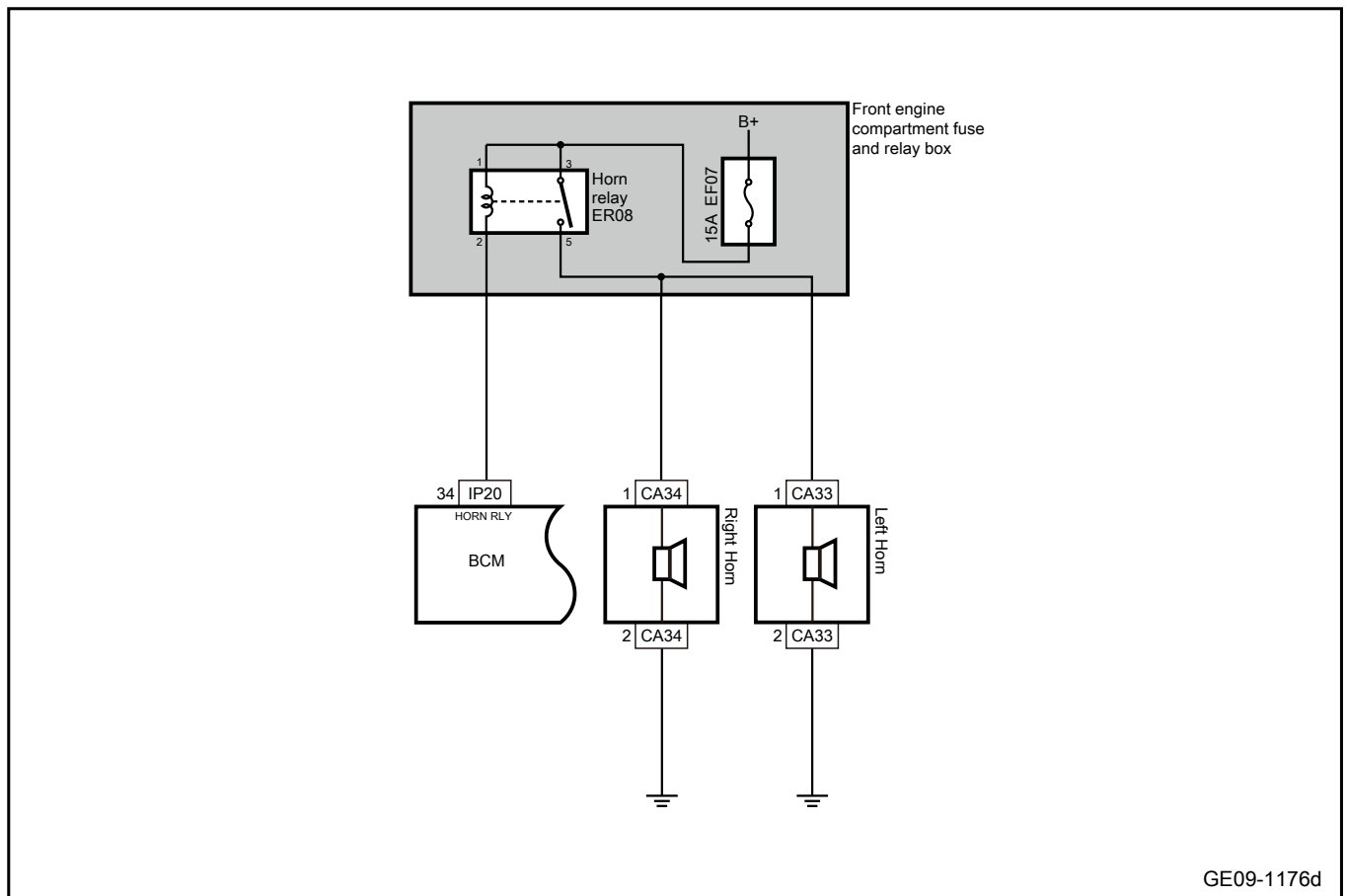
1. DTC description:

Diagnostic Trouble Code	Description
B10084B	Horn circuit is overload or over temperature

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B10084B	The output current is detected to monitor overload or over-temperature faults. When the current is greater than a specific HW threshold, it is regarded as an overload or over-temperature fault. Warning horn circuit is overloaded or over temperature for 200ms	<ol style="list-style-type: none"> <li>The power supply voltage is 6V-16V</li> <li>The warning horn function is activated for 100 milliseconds</li> </ol>	<ol style="list-style-type: none"> <li>Circuit</li> <li>Fuse</li> <li>Relay</li> <li>BCM</li> </ol>

3. Schematic circuit diagram:



GE09-1176d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the horn relay and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the horn relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the horn relay ER08 and replace it with a new relay of the same specification.
- C. Confirm whether the trouble is removed.

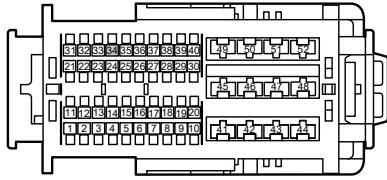
Yes

System is normal.

No

Step 4 Check the control wiring harness between the horn relay and BCM.

IP20 body control module harness connector 1



GE09-1324d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Pull out the horn relay ER08.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(34)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(34)	ER08(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(34)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.36 Ambient light and sun light sensor circuit fault

1. DTC description:

Diagnostic Trouble Code	Trouble description
B101109	Light sensor general failure
B101117	Rainfall light sensor overvoltage
B101149	Rainfall sensor fault
B10114B	Rainfall light sensor overheating
B101154	Rainfall light sensor calibration fault
B101796	Sunlight sensor fault
B101896	Light sensor hardware failure

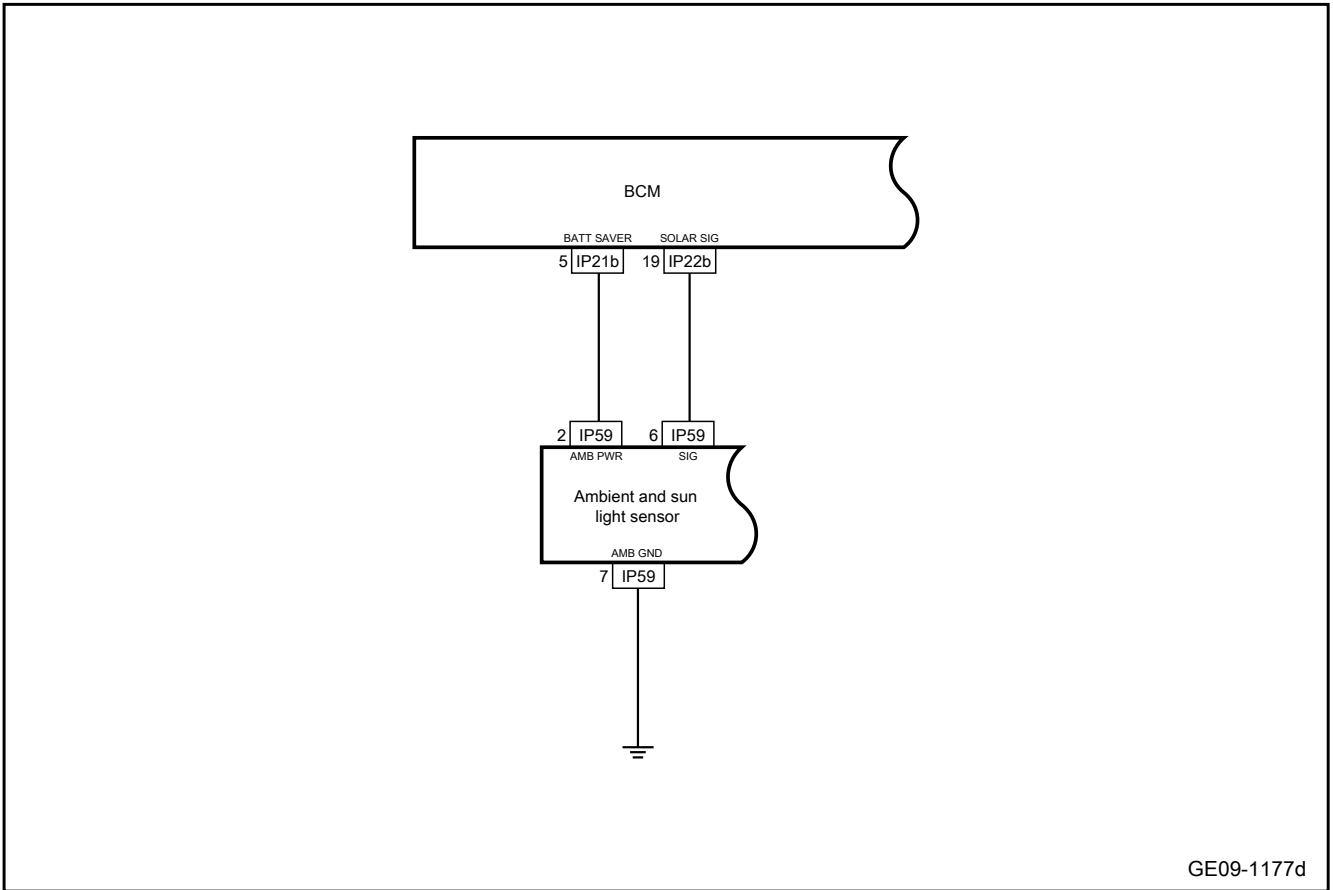
2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101109	The successfully received RLS message indicates this error in the LIN frame (L_Status_Light_Sens=1)	1.LIN1 wakeup 2.IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2.BCM 3. Ambient light and sun light sensor
B101117	The successfully received RLS message indicates this error in the LIN frame (L_Err_State_Over_Volt=1)	3. The ignition state should be ignition ON (PhyTccStsBody==ON) and meet the ignition conditions	



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101149	The successfully received RLS message indicates that this error exists in the Lin frame (L_RS_RainSensorError=1)		
B10114B	The successfully received RLS message indicates this error in the LIN frame (L_Err_State_Over_Temp=1)		
B101154	The successfully received RLS message indicates this error in the LIN frame (L_Err_State_Cal_RS=1)		
B101796	The successfully received RLS message indicates this error in the LIN frame (L_RS_SolarSensorError=1)		
B101896	The successfully received RLS message indicates this error in the LIN frame (L_Err_State_Light_Sens=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

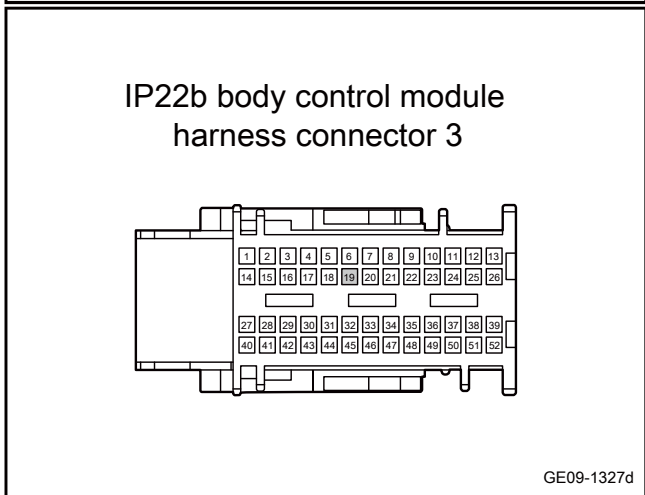
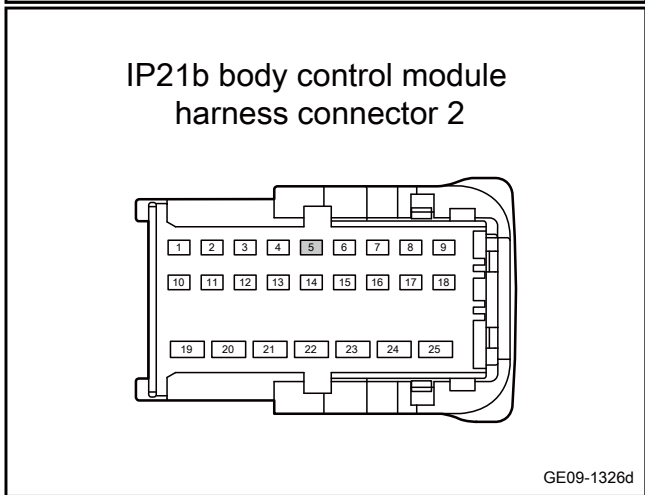
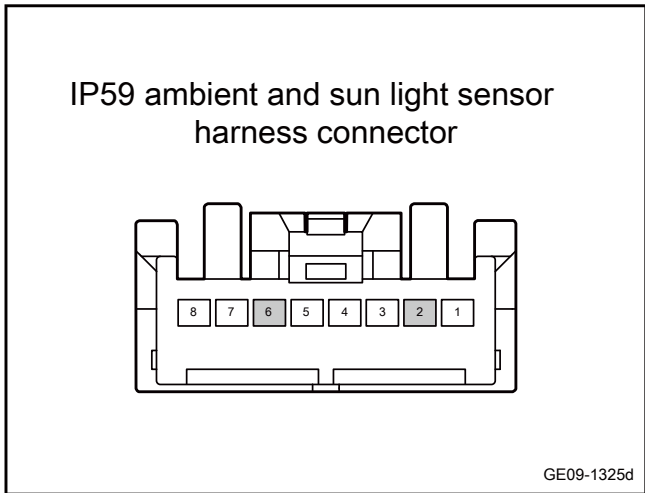
- A. Check the ambient light and sun light sensor, BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the ambient light and sunlight sensor and the BCM is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP22b and IP21b.
- C. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP59(6)		
IP59(2)	IP21b(5)	Standard resistance: less than 1Ω
IP59(6)	IP22b(19)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

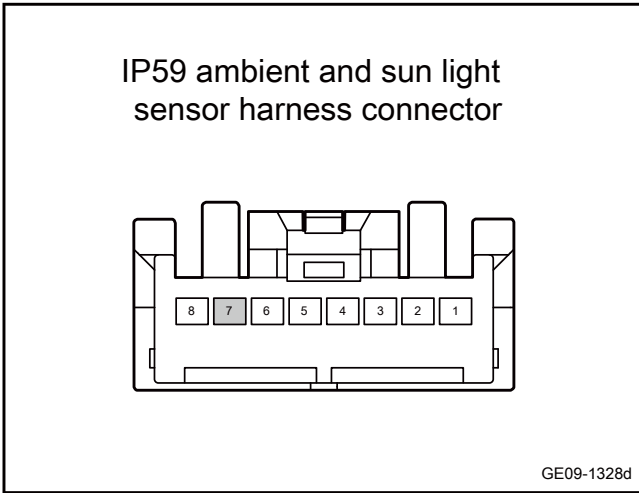
Measure terminal 1	Measure terminal 2	Standard value
IP59(2)	Vehicle body is grounded.	Standard voltage: 0V
IP59(6)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the ambient light and sunlight sensor and the vehicle body ground is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 5** | Replace the ambient light and sun light sensor.

- A. Replace the ambient light and sun light sensor. Refer to [Replacement of ambient light and sun light sensor](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

**Step 6** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

### 9.2.4.37 FL window anti-pinch module fault

1. DTC description:

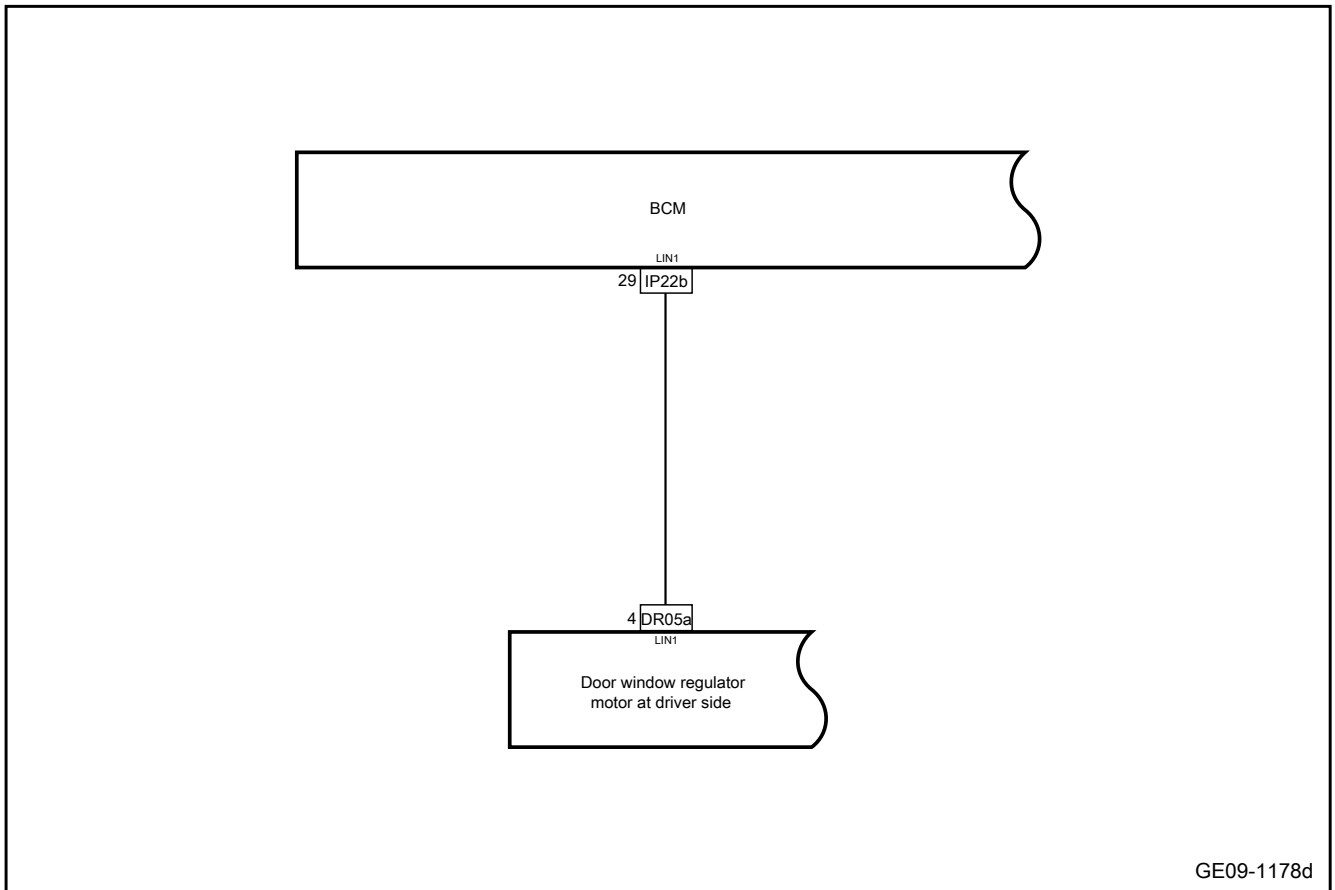
Diagnostic Trouble Code	Trouble description
B101216	Fault of low voltage of FL window anti-pinch module
B101217	Fault of high voltage of FL window anti-pinch module
B101249	Fault of motor relay of FL window anti-pinch module
B10124B	Fault of motor overheating of FL window anti-pinch module
B101264	Left front window anti-pinch module-switch stuck
B101296	Fault of Hall sensor of FL window anti-pinch module

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101216	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Drv_undervoltage=1)	1. LIN1 is in wakeup state and meets the conditions of TdiagEnable 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Door glass regulator motor at driver side 3. BCM
B101217	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Drv_undervoltage=1)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101249	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Drv_Motor_Relay_Error=1)		
B10124B	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Drv_overhat_Protect=1)		
B101264	The FL APWL message was successfully received. Indicate this error in the LIN frame (L U Drv U WdW U center switch=0x7)		
B101296	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Drv_HALL_Error=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

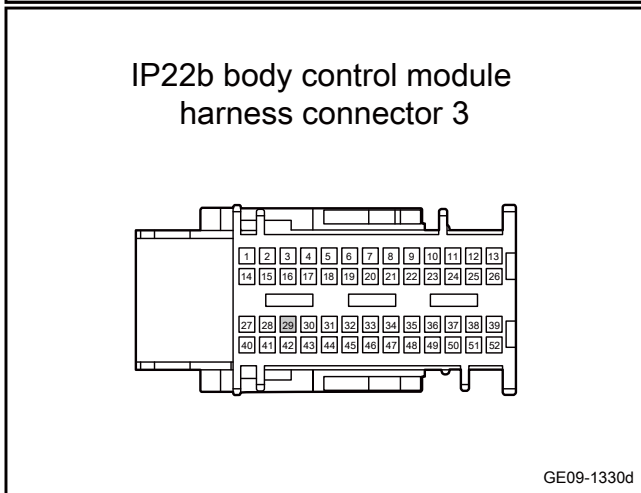
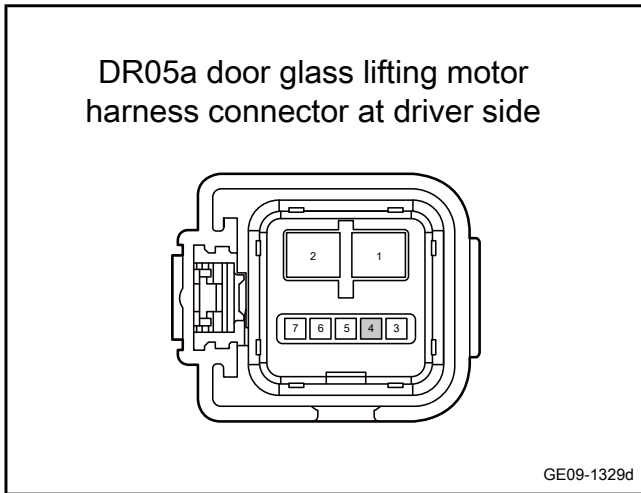
- A. Check driver side door glass regulator motor harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the LIN circuit between the driver side door glass regulator motor and BCM.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- C. Disconnect harness connector IP22b of body control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR05a(4)	IP22b(29)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 4** Replace the glass lifter motor of the driver side door.

- A. Replace the glass lifter motor of the driver side door. Refer to replacement of the glass lifter motor of the driver side door
- B. Confirm whether the system is normal.

Yes → System is normal.

No

**Step 5** Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.38 FR window anti-pinch module fault

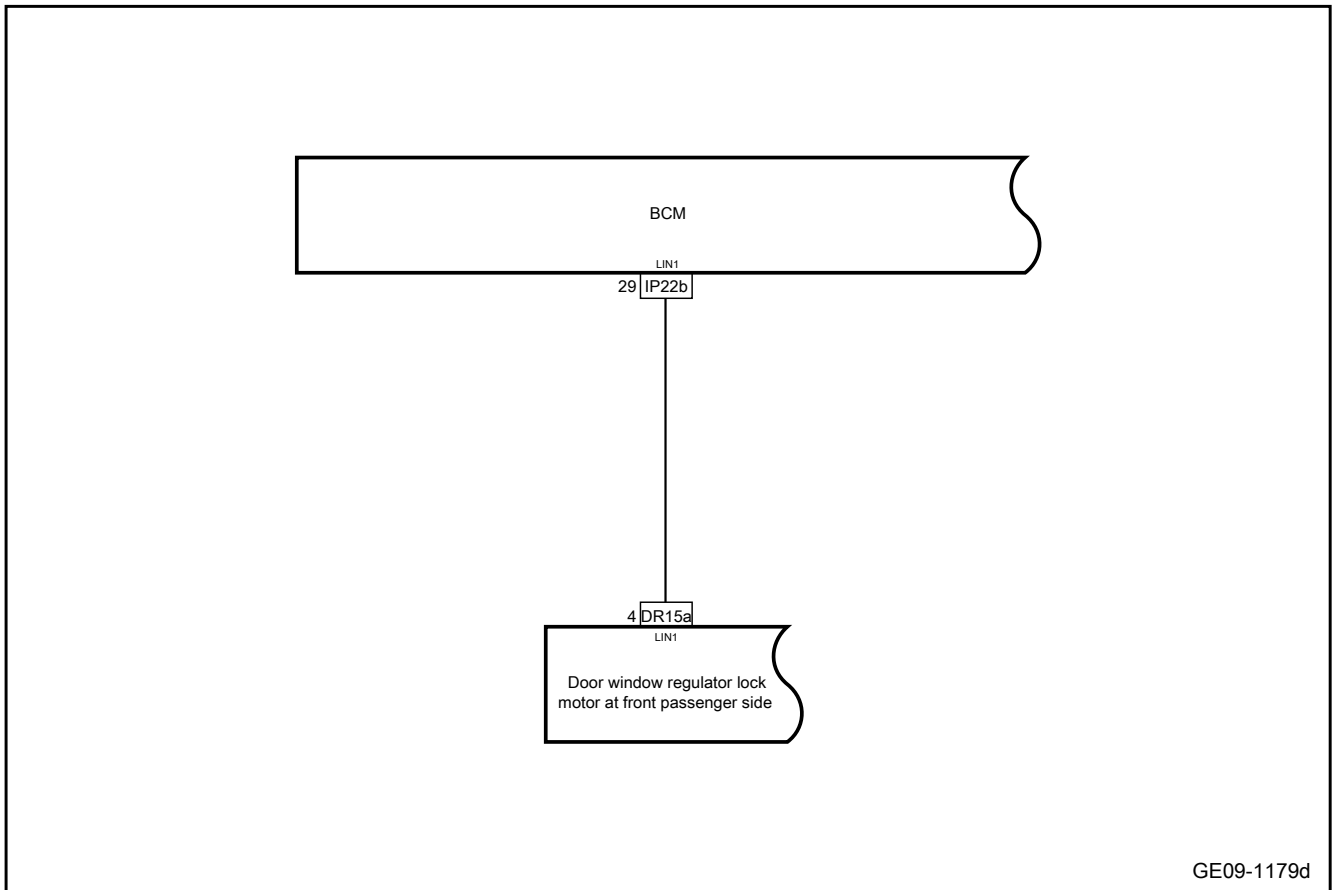
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101316	Fault of low voltage of FR window anti-pinch module
B101317	Fault of high voltage of FR window anti-pinch module
B101349	Fault of motor relay of FR window anti-pinch module
B10134B	Fault of motor overheating of FR window anti-pinch module
B101364	Right front window anti-pinch module-switch stuck
B101396	Fault of Hall sensor of FR window anti-pinch module

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101316	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Pas_undervoltage=1)	1. LIN1 is in wakeup state and meets the conditions of TdiagEnable 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Front passenger door glass regulator motor 3. BCM
B101317	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Pas_Overvoltage=1)		
B101349	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Pas_Motor_Relay_Error=1)		
B10134B	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Pas_overhat_Protect=1)		
B101364	The FL APWL message was successfully received. Indicate this error in the LIN frame (L U Pas U WdW U center switch=0x7)		
B101396	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_Pas_HALL_Error=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

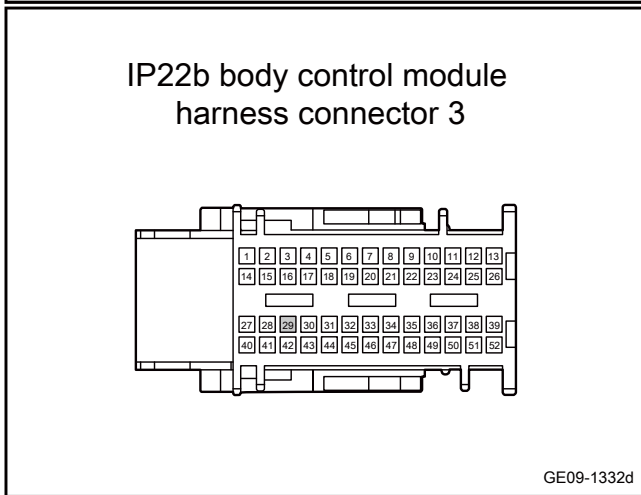
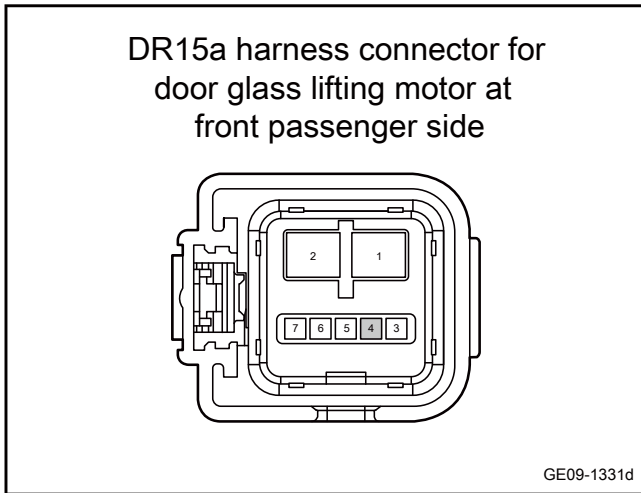
- A. Check front passenger side door glass regulator motor harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the LIN circuit between the front passenger side door glass regulator motor and BCM.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- C. Disconnect harness connector IP22b of body control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR15a(4)	IP22b(29)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Replace the front passenger side door glass lift motor.

- A. Replace the front passenger side door glass lift motor. Refer to replacement of front passenger side door glass lift motor
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 5** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.39 RL window anti-pinch module fault

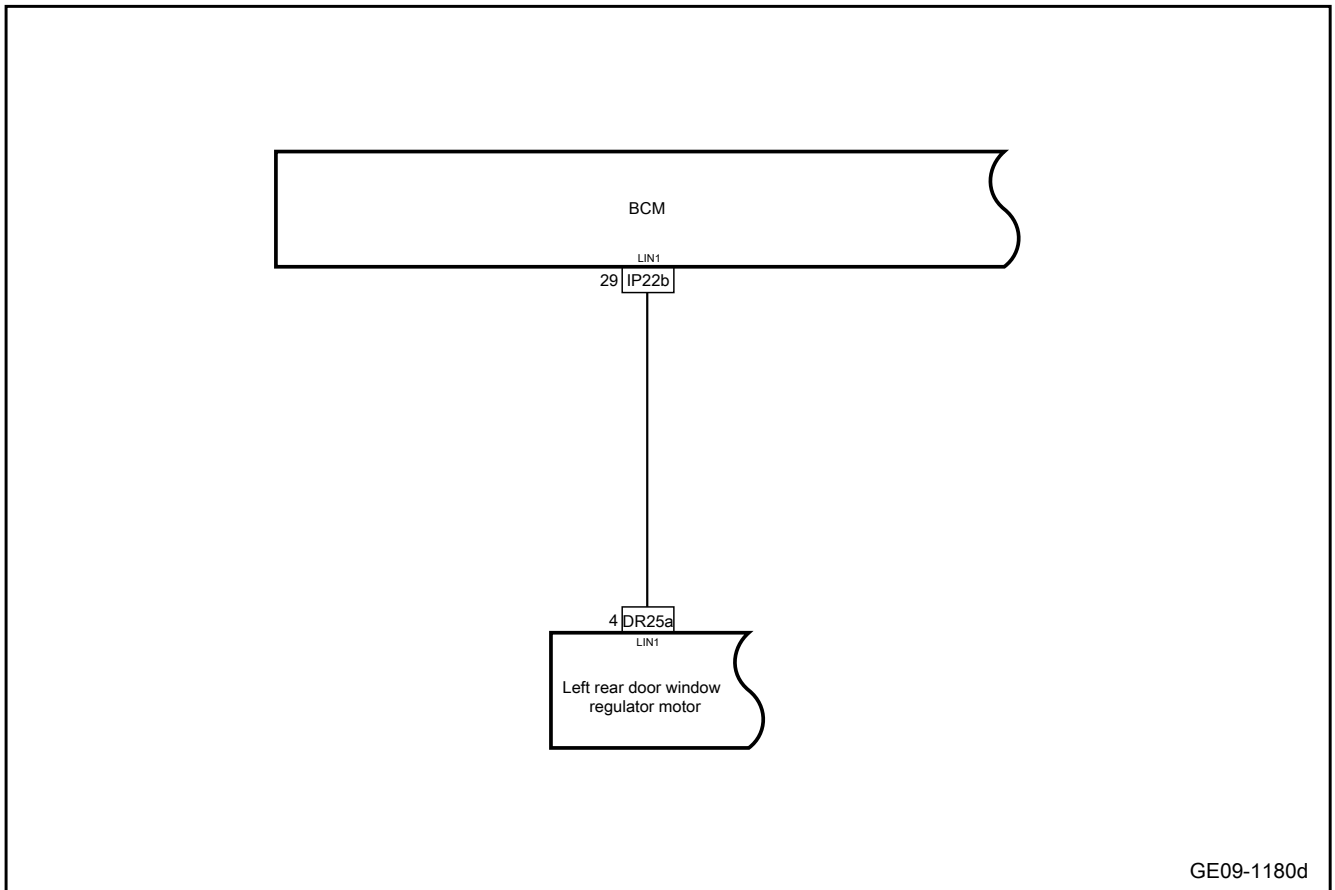
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101416	Fault of low voltage of RL window anti-pinch module
B101417	Fault of high voltage of RL window anti-pinch module
B101449	Fault of motor relay of RL window anti-pinch module
B10144B	Fault of motor overheating of RL window anti-pinch module
B101464	Left rear window anti-pinch module-switch stuck
B101496	Fault of Hall sensor of RL window anti-pinch module

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101416	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RLD_undervoltage=1)	1. LIN1 is in wakeup state and meets the conditions of TdiagEnable 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Left rear door window regulator motor 3. BCM
B101417	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RLD_overnvoltage=1)		
B101449	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RLD_Motor_Relay_Error=1)		
B10144B	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RLD_overnvoltage_Protect=1)		
B101464	The FL APWL message was successfully received. Indicate this error in the LIN frame (L U RLD U WdW U center switch=0x7)		
B101496	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RLD_HALL_Error=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

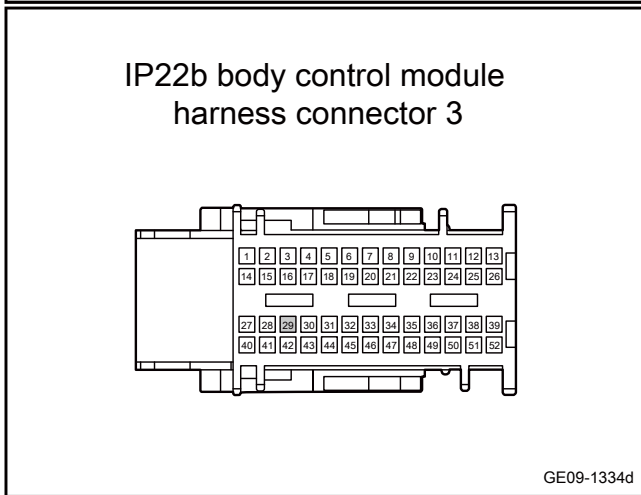
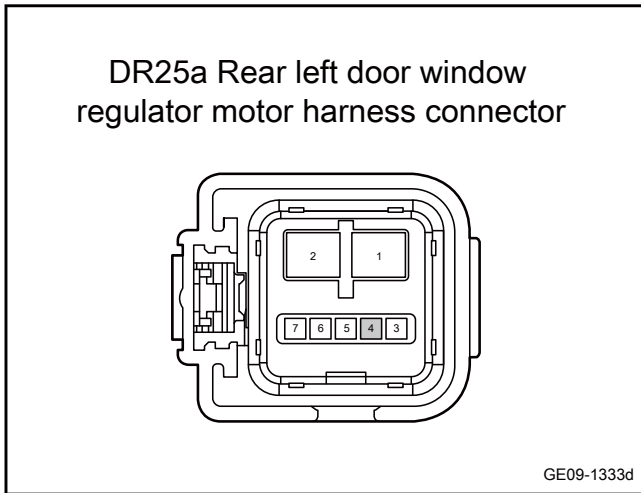
- A. Check rear left door glass regulator motor harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

**Step 3** Check the LIN circuit between the left rear door glass regulator motor and BCM.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the rear left door glass regulator motor harness connector DR25a.
- C. Disconnect harness connector IP22b of body control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR25a(4)	IP22b(29)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Replace the left rear door glass regulator motor.

- A. Replace the left rear door glass regulator motor. Refer to [Replacement of the left rear door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 5** Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.40 RR window anti-pinch module fault

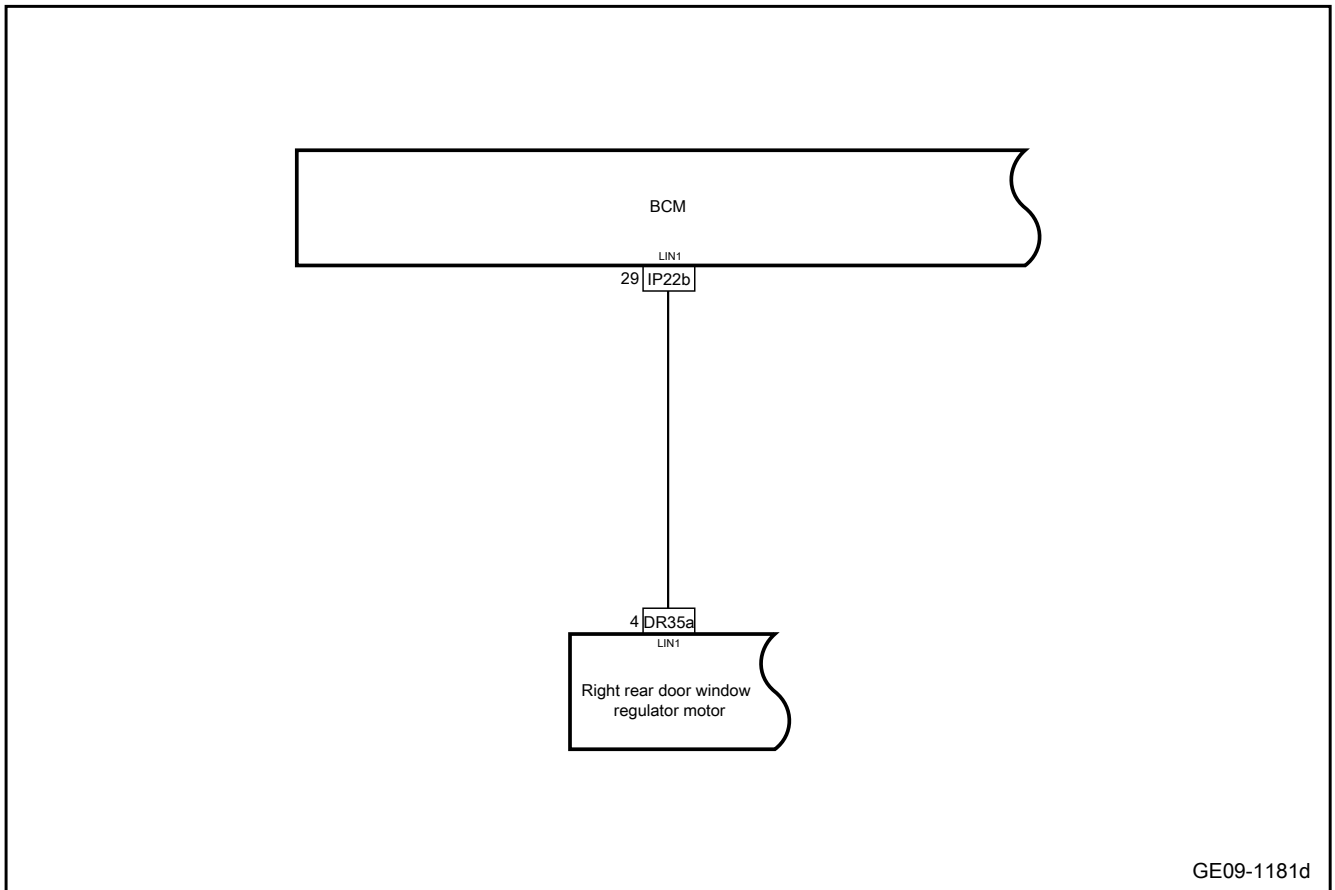
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101516	Fault of low voltage of RR window anti-pinch module
B101517	Fault of high voltage of RR window anti-pinch module
B101549	Fault of motor relay of RR window anti-pinch module
B10154B	Fault of motor overheating of RR window anti-pinch module
B101564	Right rear window anti-pinch module-switch stuck
B101596	Fault of Hall sensor of RR window anti-pinch module

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101516	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RRU_undervoltage=1)	1. LIN1 is in wakeup state and meets the conditions of TdiagEnable 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Right rear door glass regulator motor 3. BCM
B101517	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RRU_Overvoltage=1)		
B101549	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RRU_Motor_Relay_Error=1)		
B10154B	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RRU_overhat_Protect=1)		
B101564	The FL APWL message was successfully received. Indicate this error in the LIN frame (L U RRU U WdW U center switch=0x7)		
B101596	The FL APWL message was successfully received. Indicate this error in the LIN frame (L_RRU_HALL_Error=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

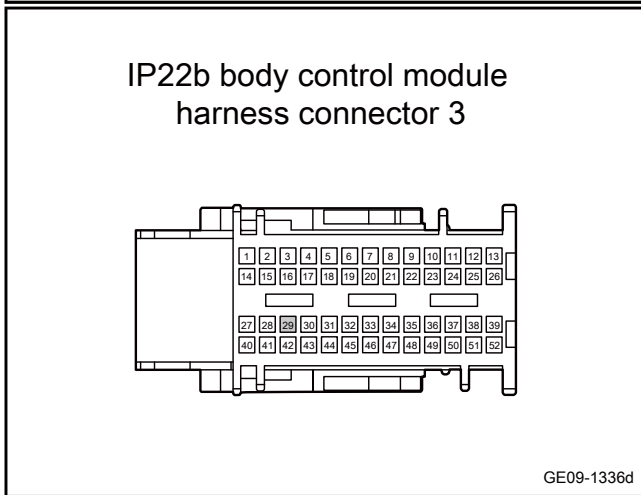
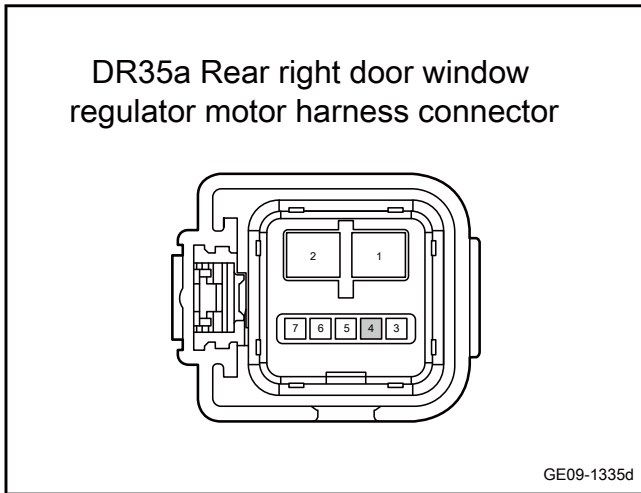
- A. Check rear right door glass regulator motor harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the LIN circuit between the right rear door glass regulator motor and BCM.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the rear right door glass regulator motor harness connector DR35a.
- C. Disconnect harness connector IP22b of body control module.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR35a(4)	IP22b(29)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Replace the right rear door glass regulator motor.

- A. Replace the right rear door glass regulator motor. Refer to [Replacement of the right rear door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 5** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 6** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 9.2.4.41 Sunroof circuit trouble

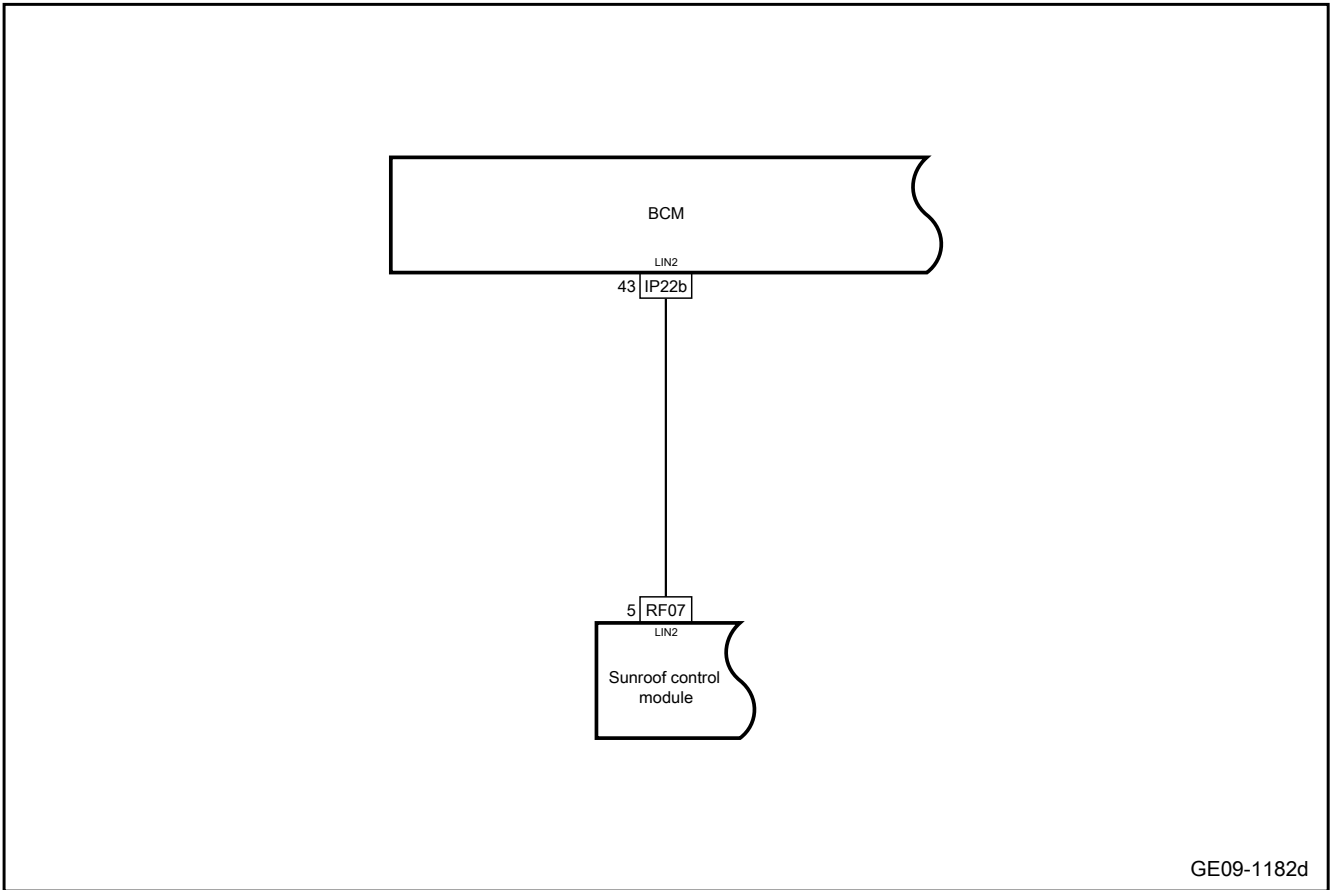
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101616	Sunroof-low voltage failure
B101617	Sunroof-high voltage failure
B101649	Sunroof-motor relay failure
B101664	Sunroof - switch fault
B101696	Sunroof - Hall sensor fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101616	Sunroof information is successfully received. Indicate this error in the LIN frame (sunroof undervoltage=1)	1. LIN2 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Sunroof control module 3. BCM
B101617	Sunroof information is successfully received. Indicate this error in the LIN frame (sunroof overvoltage=1)		
B101649	Sunroof information was successfully received. Indicate this error in the LIN frame (sunroof relay error=1)		
B101664	Sunroof information received successfully. Indicate this error in the LIN frame (sunroof switch error=1)		
B101696	Sunroof information received successfully. Indicate this error in the LIN frame (sunroof module error=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

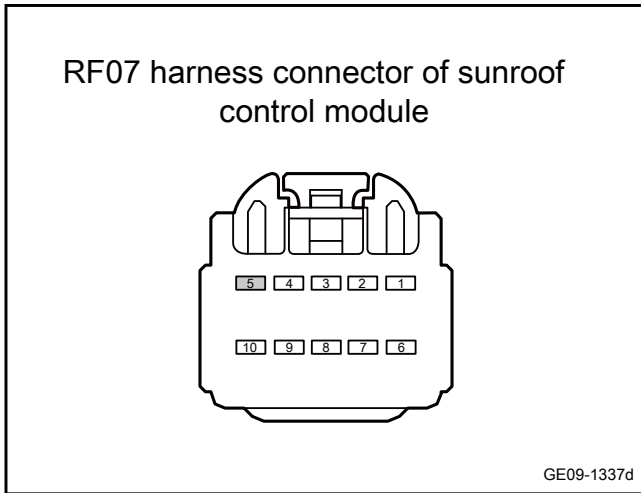
- A. Check the harness connector of sunroof control module for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

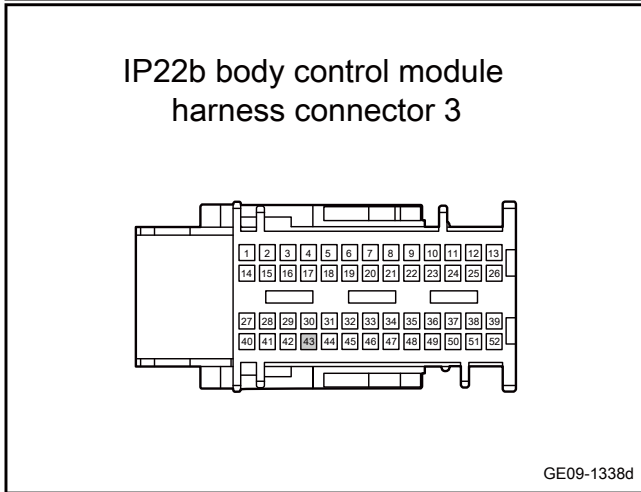
Yes

**Step 3** Check whether the LIN circuit between sunroof control module and BCM is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	IP22b(43)	Standard resistance: less than 1Ω

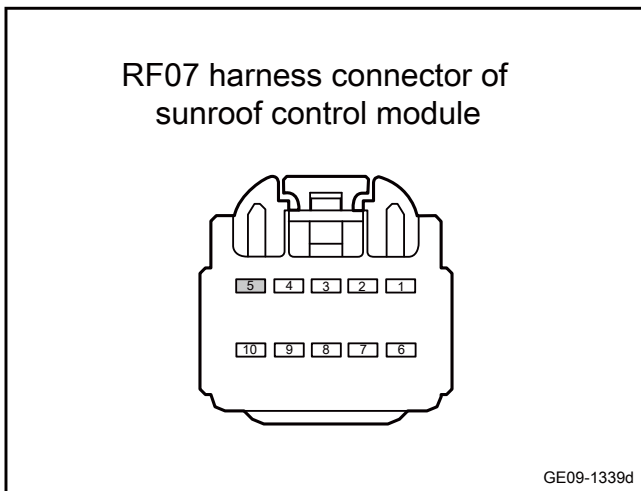


- E. Confirm whether the measured value meets the standard.

No → **Repair or replace the harness.**

Yes

**Step 4** Check whether the LIN circuit between sunroof control module and BCM is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

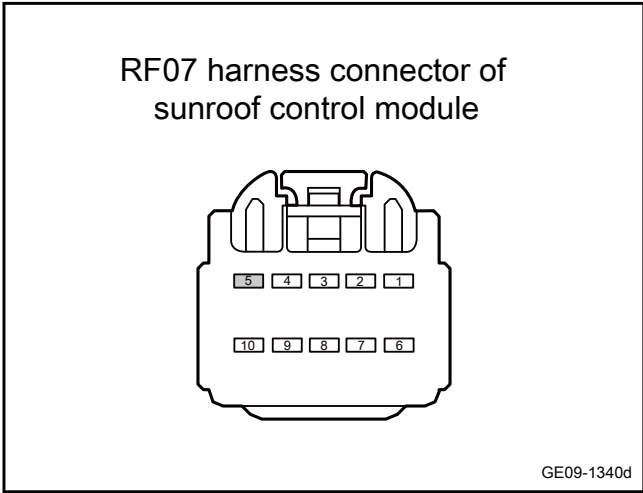


No

Repair or replace the harness.

Yes

**Step 5** Check whether the LIN circuit between sunroof control module and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace sunroof control module.

- A. Replace sunroof control module. Refer to [Replacement of sunroof control module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Reprogram and reset sunroof control module.

- A. Reprogram and reset sunroof control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

#### 9.2.4.42 Rear wiper circuit fault

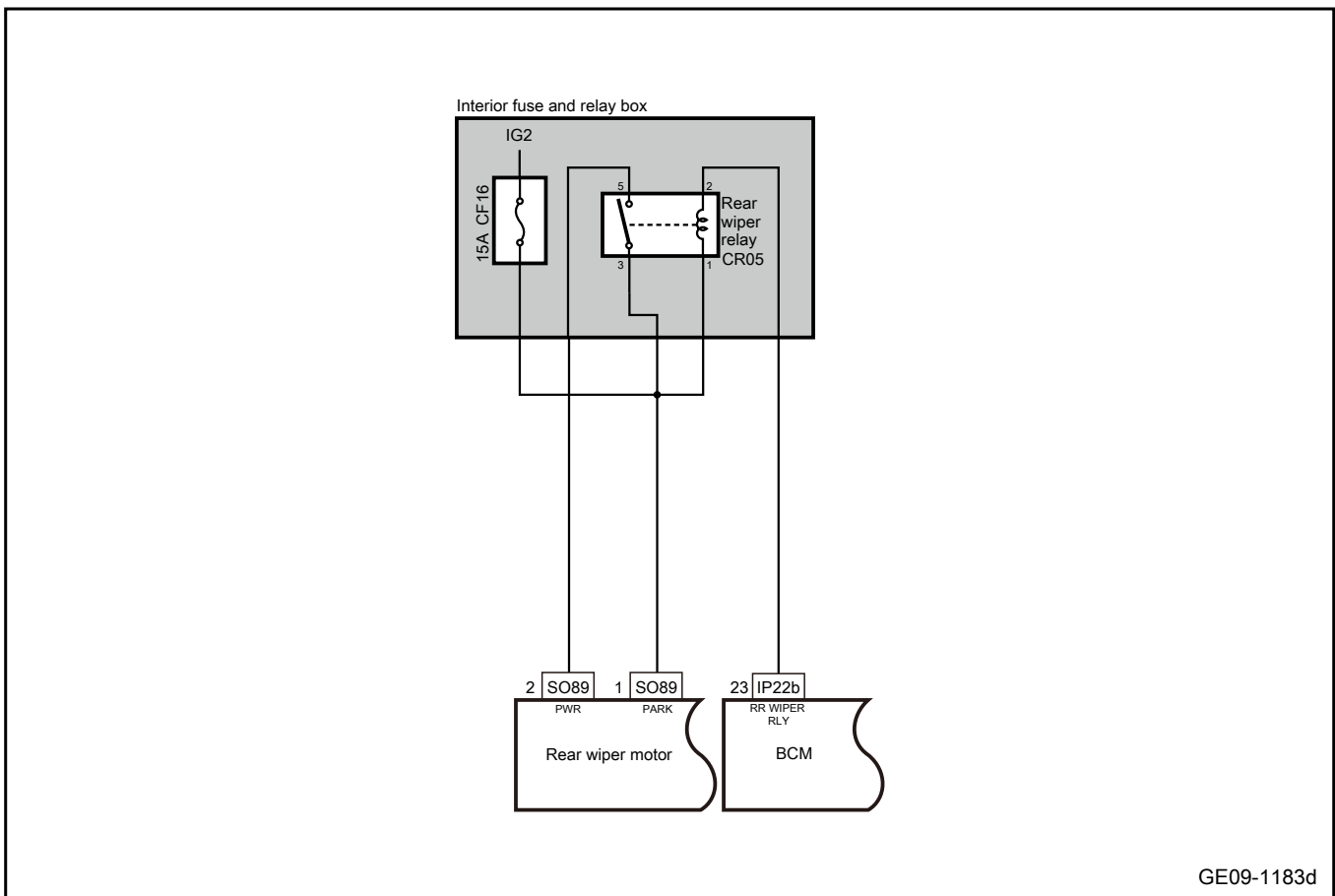
##### 1. DTC description:

Diagnostic Trouble Code	Description
B102112	Rear wiper circuit is short to power supply
B102114	The rear wiper circuit is short to ground or open circuit
B102171	Rear wiper circuit is blocked

##### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B102112	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short-circuit fault to the battery; the rear wiper on/off circuit is short-circuited to the battery for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The rear wiper function is activated for 100 milliseconds	1. Circuit 2. Fuse 3. Relay 4. BCM
B102114	When the output changes from being activated to being unactivated, a small diagnosis current (based on the hardware threshold) will be turned on and the output voltage will be checked: if it is lower than a specific hardware threshold, consider a short-circuit to ground or open-circuit fault. The rear wiper circuit is short-circuited or open-circuited to ground for 200 milliseconds		
B102171	The parking signal of the rear wiper (HW_rear wiper_Park_SW_ST) does not change within 8 seconds (P_t_WiperStall_Detection duration)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the rear wiper relay, BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the rear wiper relay.

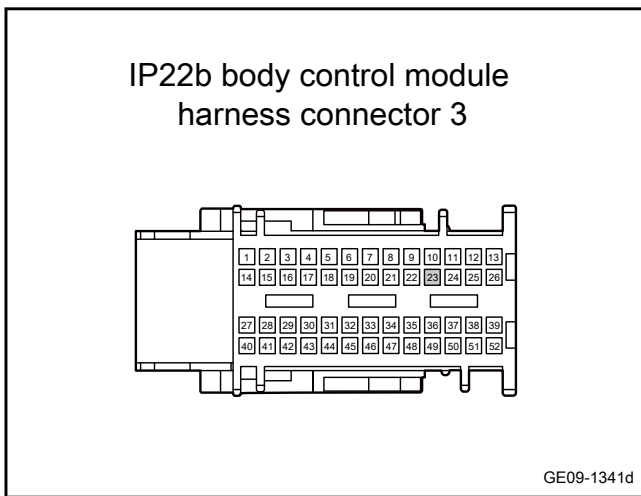
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the rear rain wiper relay CR05 and replace with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 4** Check the control wiring harness between the rear wiper relay and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the rear rain wiper relay CR04
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(23)	CR05(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

#### 9.2.4.43 Front wiper power circuit failure

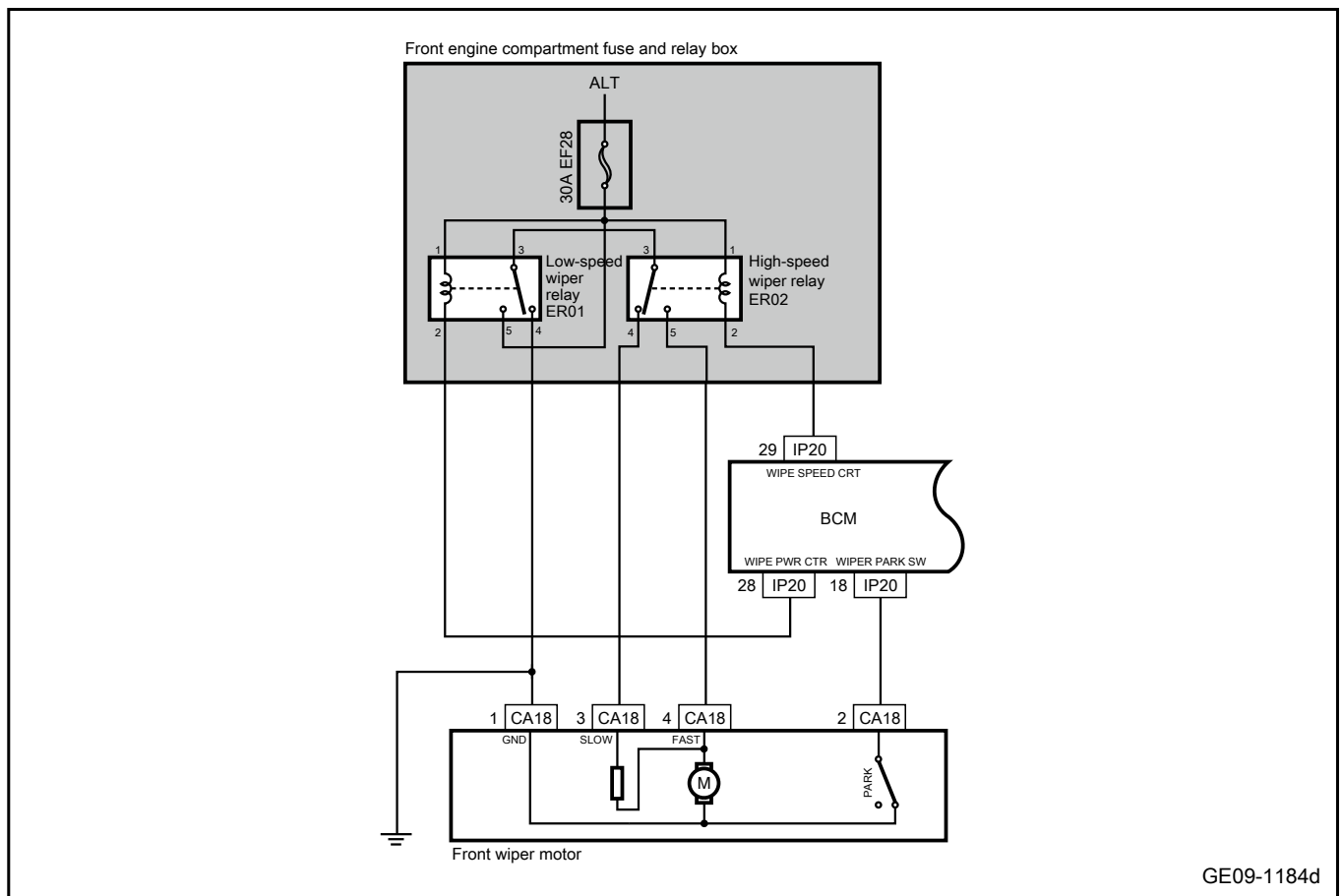
1. DTC description:

Diagnostic Trouble Code	Description
B107512	The high and low-speed circuit of front wiper is short to power supply
B107514	Wiper's high-and-low speed circuits are short to ground or open circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107512	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short-circuit fault to the battery; the wiper high/low circuit short-circuits the battery for 200 milliseconds	<ol style="list-style-type: none"> <li>1. The power supply voltage is 6V-16V</li> <li>2. The wiper function is activated for 100 milliseconds at high speed</li> </ol>	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2. Fuse</li> <li>3. Relay</li> <li>4. BCM</li> </ol>
B107514	Check the output voltage: if it is lower than a specific hardware threshold, consider a short circuited -to-ground or open-circuit fault. Wiper's high/low circuit is short-circuited or open-circuited to ground for 200 milliseconds	<ol style="list-style-type: none"> <li>1. The power supply voltage is 6V-16V</li> <li>2. The wiper function is activated for 100 milliseconds at low speed</li> </ol>	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the low-speed wiper relay, high-speed wiper, BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF28 is blown out.

Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the front wiper relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the trouble is removed.

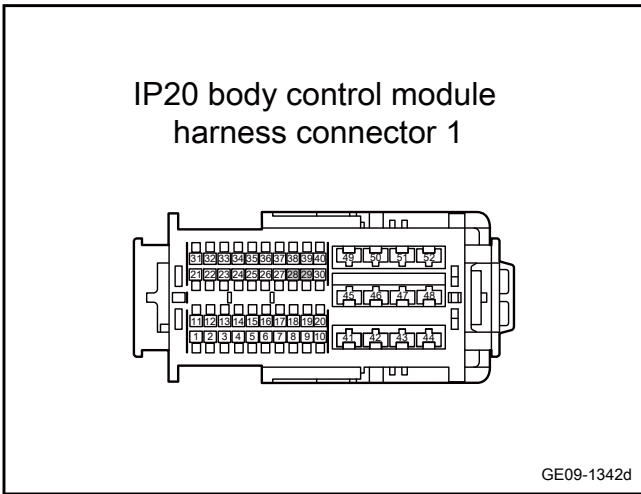
Yes

System is normal.



No

**Step 5** Check the control wiring harness between the front wiper relay and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. Unplug the high speed wiper relay ER02.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(29)		
IP20(28)	ER01(2)	Standard resistance: less than 1Ω
IP20(29)	ER02(2)	

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard voltage: 0V
IP20(29)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 7** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 9** System is normal.

### 9.2.4.44 Front wiper speed control circuit failure

1. DTC description:

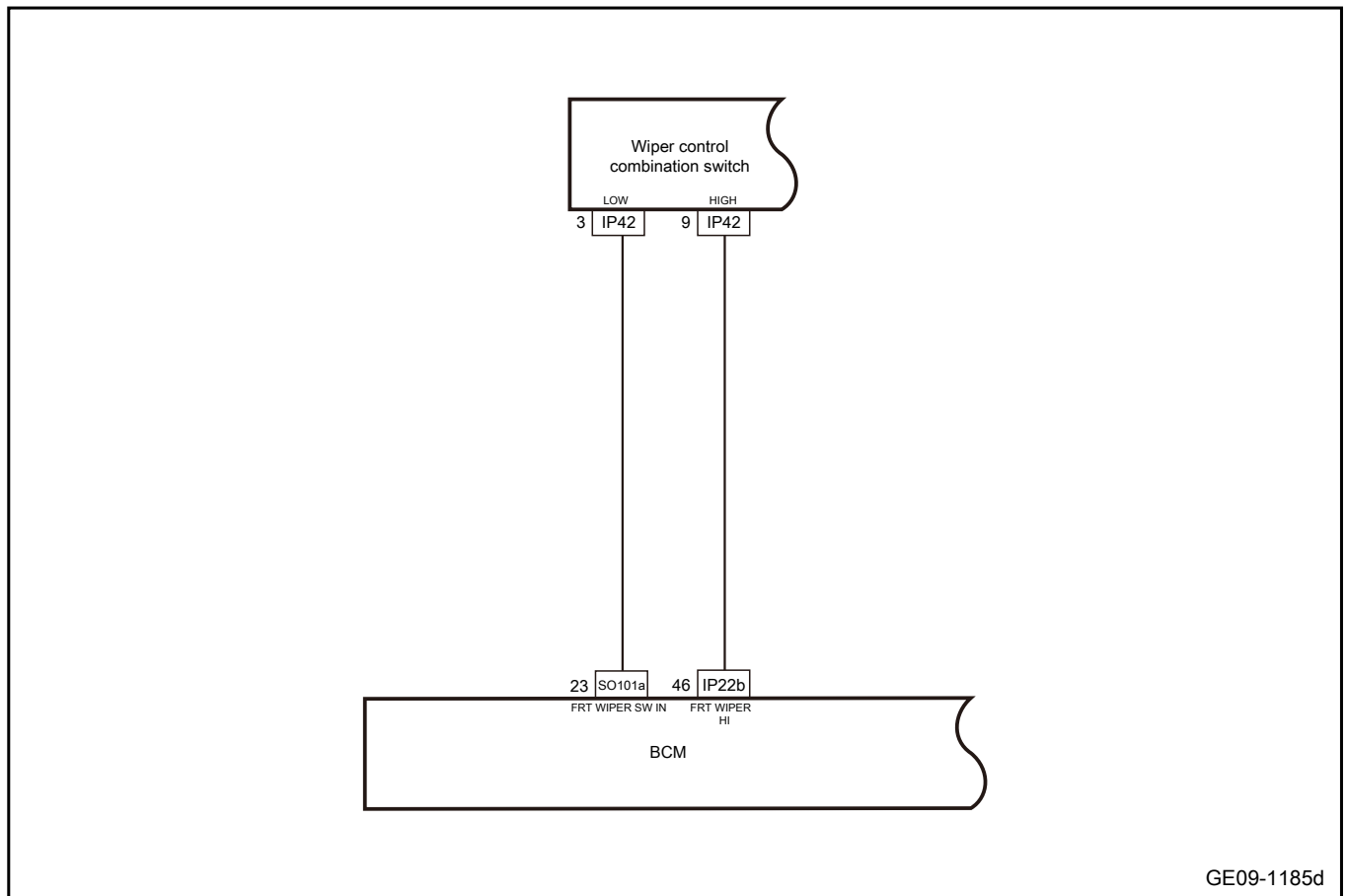
Diagnostic Trouble Code	Description
B107412	Wiper ON/OFF circuit is short to power supply
B107414	Wiper ON/OFF circuit is short to ground or open circuit
B101071	Front wiper stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107412	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short-circuit fault to the battery; the wiper on/off circuit is short-circuited to the battery for 200 milliseconds	1. The power supply voltage is 6V-16V 2. The wiper function is activated for 100 milliseconds	1. Circuit 2. Wiper combination switch 3. BCM

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107414	Check the output voltage: if it is lower than a specific hardware threshold, consider a short circuited -to-ground or open-circuit fault. The wiper on/off circuit is short-circuited or open-circuited to ground for 200 milliseconds		
B101071	The front wiper parking signal remain unchanged for 8 seconds	1. The power supply voltage is 6V-16V 2. The front wiper function is activated	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the wiper combination switch and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

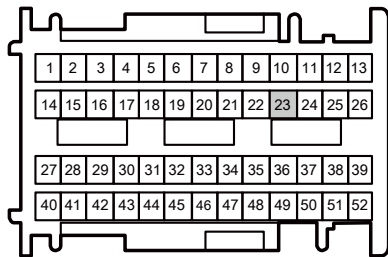
No

Repair or replace the faulty part.

Yes

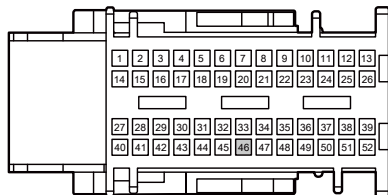
Step 3 Check the control wiring harness between the wiper combination switch and BCM.

SO101a body control module harness connector 7



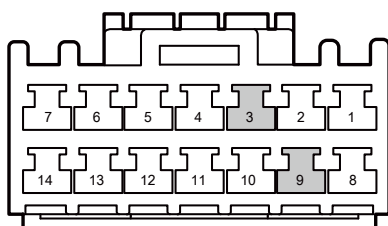
GE09-1343d

IP22b body control module harness connector 3



GE09-1344d

IP42 wiper combination switch harness connector



GE09-1345d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector SO101a and IP22b.
- C. Unplug wiper combination switch harness connector IP42.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(23)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(46)		
SO101a(23)	IP42(3)	Standard resistance: less than 1Ω
IP22b(46)	IP42(9)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(23)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(46)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace wiper combination switch.

- A. Replace wiper combination switch. Refer to [Replacement of wiper combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 9.2.4.45 High tire temperature

#### 1. DTC description:

Diagnostic Trouble Code	Description
C160098	High temperature of left front tire high temperature
C160198	High temperature of front right tire
C160298	High temperature of left rear tire
C160398	High temperature of right rear tire

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C160098	The ECU receives 2 consecutive unexpected radio frequency information from the sensor, and displays the FL temperature > 85 degrees, and then sets the fault diagnosis code	1. Ion on 2. Power supply voltage is 9V-16V.	1. Tyre pressure monitoring sensor 2. BCM
C160198	The electronic control unit receives 2 consecutive pulses of radio frequency information from the sensor, and displays that the radio frequency temperature is >85 degrees		
C160298	ECU receives 2 consecutive pulses of radio frequency information from the sensor, and displays that the RL temperature is >85 degrees		
C160398	The ECU receives 2 consecutive bursts of radio frequency information from the sensor, and displays that the RR temperature is >85 degrees		

3. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Measure tyre pressure with a tyre pressure gauge.
- B. Confirm whether the pressure value is in line with the standard value.

No

Fill the gas so that the air pressure reaches the standard value.

Yes

Step 3 Check the mechanical part of the tyre.

- A. Check the brake caliper for sticking.

Yes

Replace the brake caliper, refer to [Front brake assembly](#)

No

Step 4 Replace the tire pressure monitoring sensor.

- A. Replace the tire pressure monitoring sensor, refer to [Replacement of tire pressure monitoring sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.46 TPMS power failure

1. DTC description:

Diagnostic Trouble Code	Description
C160416	Left front TPMS supply voltage low
C160516	Right front TPMS supply voltage low
C160616	Left rear TPMS supply voltage low
C160716	Right rear TPMS supply voltage low

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C160416	-	IBC supply voltage is within the range of 9-16V	1. Circuit 2. Tyre pressure monitoring sensor
C160516	-		
C160616	-		
C160716	-		

3. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Remove the TPMS.
- B. Check whether the built-in button battery is charged.

No

Check whether the built-in button battery is charged.

Yes

Step 3 Replace the tire pressure monitoring sensor.

- A. Replace the tire pressure monitoring sensor, refer to [Replacement of tire pressure monitoring sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 5 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 9.2.4.47 Tire position error

1. DTC description:

Diagnostic Trouble Code	Description
C160C8F	Left front TPMS is lost
C160D8F	Right front TPMS is lost
C160E8F	Left rear TPMS is lost
C160F8F	Right rear TPMS is lost
C161755	Tire ID is not burned

2. Trouble code setting and fault location:

DTC number	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
C160C8F	Left front TPMS is lost	1. The supply voltage is within the range of 9-16V 2. TPMS has been set	1.BCM 2. Tyre pressure monitoring sensor
C160D8F	Right front TPMS is lost		
C160E8F	Left rear TPMS is lost		
C160F8F	Right rear TPMS is lost		
C161755	The sensor ID is the default value 0xFFFFFFFF or 0x00000000	1. Power mode is ON 1. The supply voltage is within the range of 9-16V 2. TPMS has been set	

3. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check if the TPMS sensor is lost.

Yes

Reinstall the TPMS sensor.

No

Step 3 Replace the tire pressure monitoring sensor.

- A. Replace the tire pressure monitoring sensor, refer to [Replacement of tire pressure monitoring sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 5 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 9.2.4.48 Low tire pressure failure

1. DTC description:

Diagnostic Trouble Code	Description
C161021	Left front tire pressure is low
C161121	Right front tire pressure is low
C161221	Left rear tire pressure is low
C161321	Right rear tire pressure is low
C161A27	Front left tyre pressure leaks quickly.
C161B27	Front right tyre pressure leaks quickly.
C161C27	Rear left tyre pressure leaks quickly.
C161D27	Rear right tyre pressure leaks quickly.

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161021	Left front tire pressure is low	1. Power mode is ON 2. Power supply voltage is 9V-16V.	1. Tyre pressure monitoring sensor 2.BCM
C161121	Right front tire pressure is low		
C161221	Left rear tire pressure is low		
C161321	Right rear tire pressure is low		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161A27	Five continuous air leakage signals greater than 30kPa/min are received from the left front tire		
C161B27	Five continuous air leakage signals greater than 30kPa/min are received from the right front tire		
C161C27	Five continuous air leakage signals greater than 30kPa/min are received from the left rear tire		
C161D27	Five continuous air leakage signals greater than 30kPa/min are received from the right rear tire		

3. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Measure tyre pressure with a tyre pressure gauge.
- B. Confirm whether the pressure value is in line with the standard value.

No

Fill the gas so that the air pressure reaches the standard value.

Yes

Step 3	Check the mechanical part of the tyre.
--------	--

A. Check the brake caliper for sticking.

Yes

Replace the brake caliper, refer to [Replacement of brake caliper](#)

No

Step 4 Replace the tire pressure monitoring sensor.

- A. Replace the tire pressure monitoring sensor, refer to [Replacement of tire pressure monitoring sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 9.2.4.49 Vehicle speed signal failure

#### 1. DTC description:

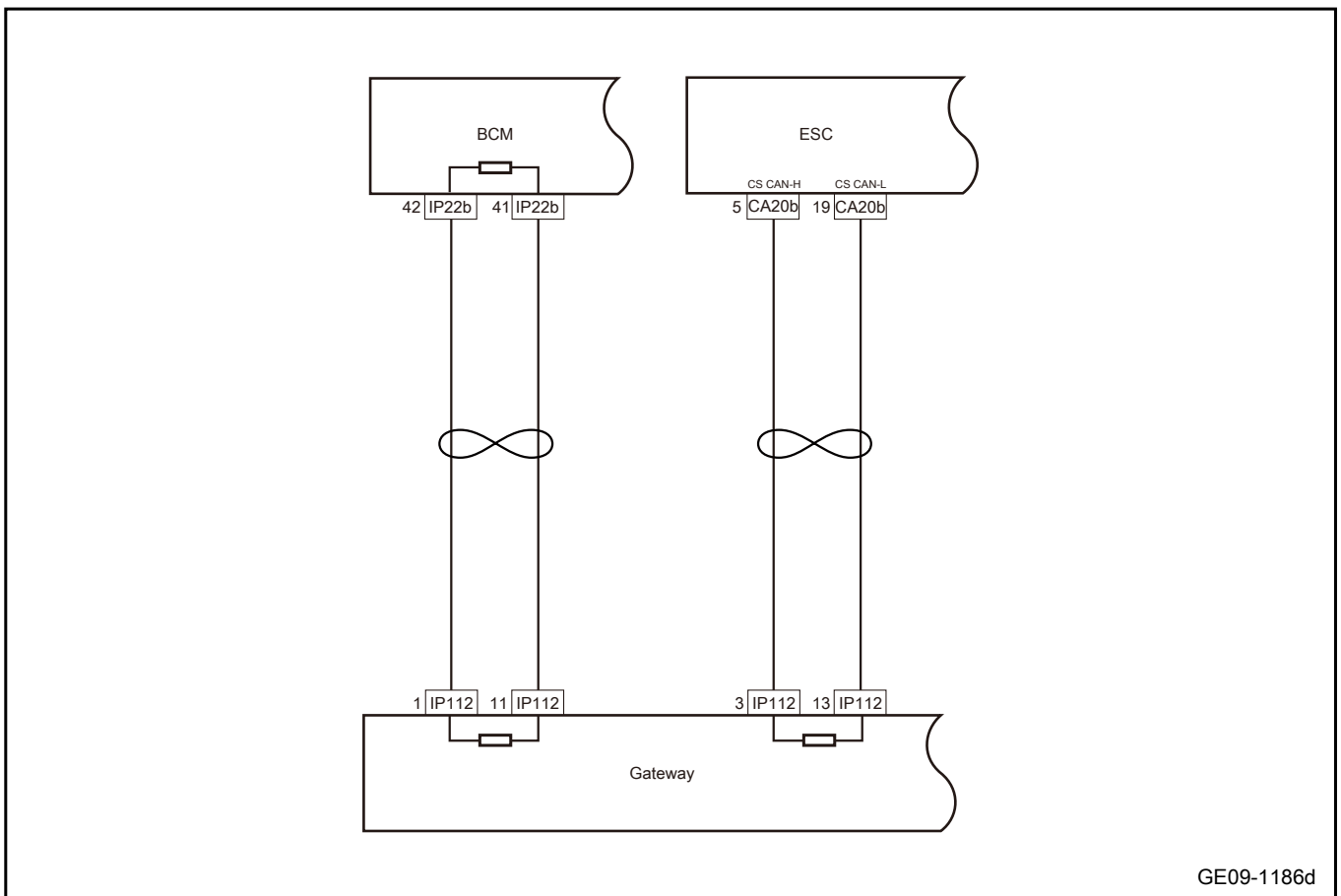
Diagnostic Trouble Code	Trouble description
C161529	Receive invalid gear pulse signal
C161531	Fail to receive gear pulse signal
C161E29	Invalid vehicle speed signal is received
C161E31	Invalid vehicle speed signal is not received

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161529	Receive invalid gear pulse signal	1IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2.ESC 3.BCM
C161531	Fail to receive gear pulse signal		
C161E29	Invalid vehicle speed signal is received		
C161E31	Invalid vehicle speed signal is not received		

#### 3. Schematic circuit diagram:





GE09-1186d

4. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster, ESC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check CF-CAN bus communication circuit.
--------	---

- A. Check communication network, refer to CF-CAN bus network integrity check
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 3 Check CS-CAN bus communication circuit.

- A. Check communication network, refer to CS-CAN bus network integrity check
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the ESC

- A. Replace the ESC Refer to [Replacement of ESC](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Yes

System is normal.

No

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.50 Hard-line collision PWM signal invalid

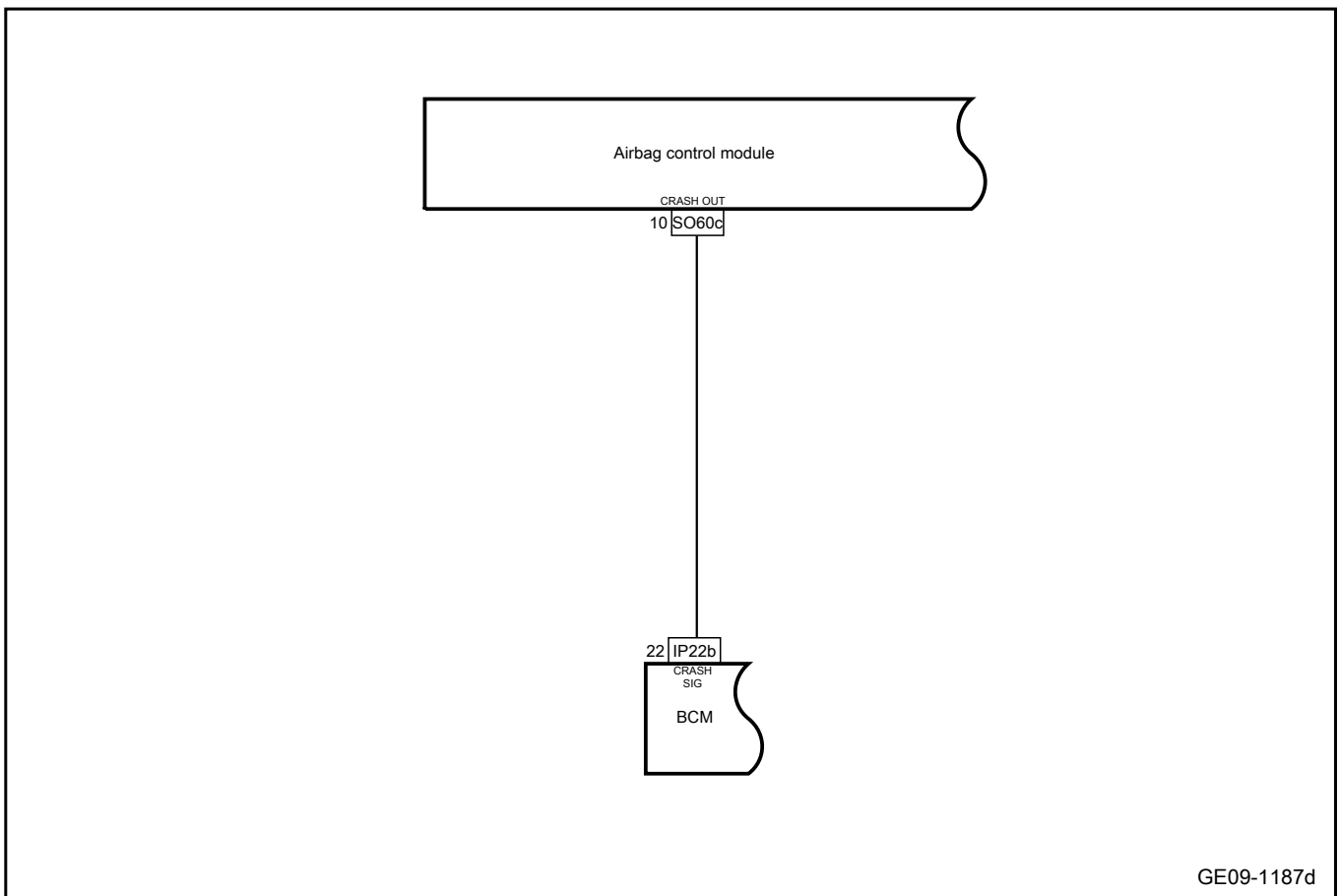
1. DTC description:

Diagnostic Trouble Code	Description
B103629	Hard-line collision PWM signal is invalid

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B103629	The hard-line collision signal is invalid within 500 milliseconds (this value can be changed due to the pulse width modulation detection strategy, and the range is from 500 milliseconds to 800 milliseconds). The effective value is 250Hz±10%, and the duty cycle is 40%-60%; or 10Hz±10%, and the duty cycle is 40%-60%. For details, please refer to the function manual.	The supply voltage is 9V-16V;	1. Supplementary restraint system 2. Circuit 3.BCM

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

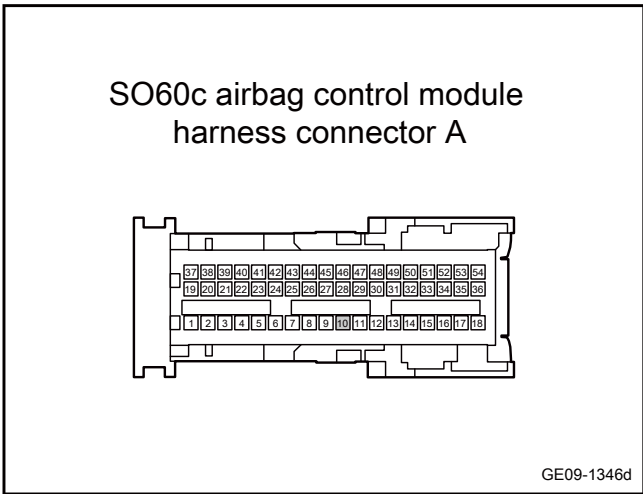
- A. Check the airbag control module and BCM for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

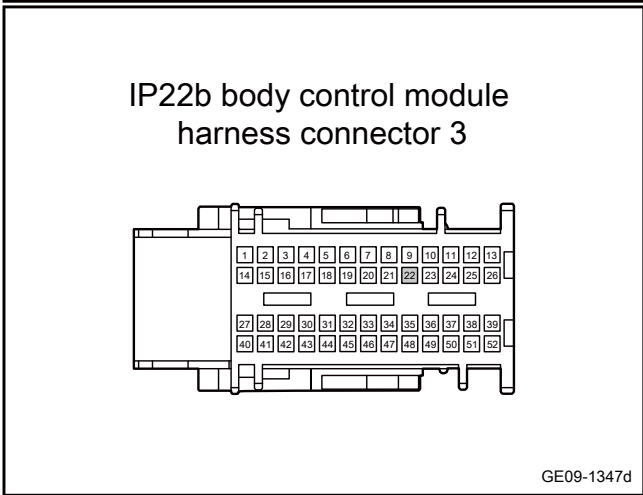
**Step 3** Check whether the harness between airbag control module and BCM is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(10)	IP22b(22)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

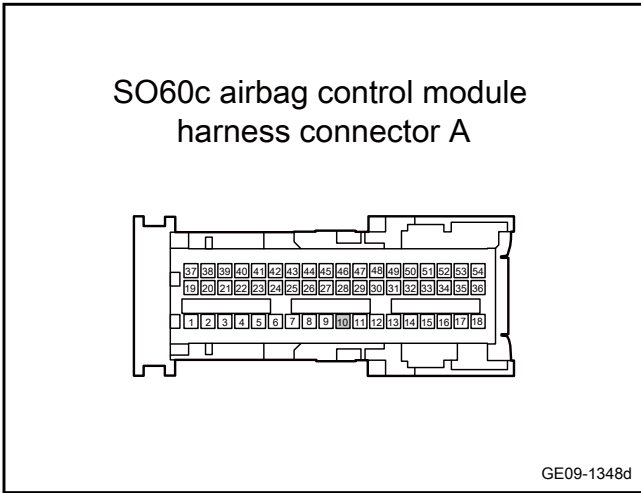


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between airbag control module and BCM is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(10)	Vehicle body is grounded.	Standard voltage: 0V

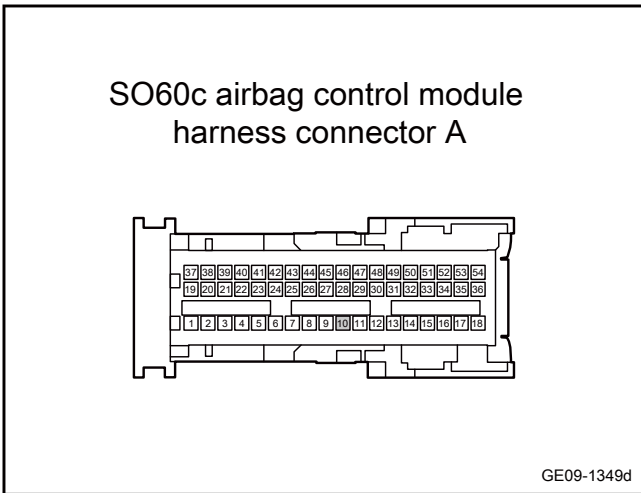
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between airbag control module and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the BCM

- A. Check the BCM power supply and grounding harness. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to the [Power Failure for Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

Step 8	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 9.2.4.51 Abnormal feedback signal of turn signal LED

#### 1. DTC description:

Diagnostic Trouble Code	Description
B106211	Right front turn signal LED feedback line is shorted to ground
B106215	The front right steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited
B106511	Left front turn signal LED feedback line is shorted to ground
B106515	The front left steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited
B107011	Right rear outer turn signal LED feedback line is shorted to ground
B107015	The right rear and outer steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited
B107111	Left rear outer turn signal LED feedback line is shorted to ground
B107115	The left rear and outer steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited
B107211	Right rear inner turn signal LED feedback line is shorted to ground
B107215	The right rear inner steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited
B107311	Left rear inner turn signal LED feedback line is shorted to ground
B107315	The left rear inner steering LED is damaged, or the feedback line is short-circuited to the power supply, or the feedback line is open circuited

#### 2. Trouble code setting and fault location:

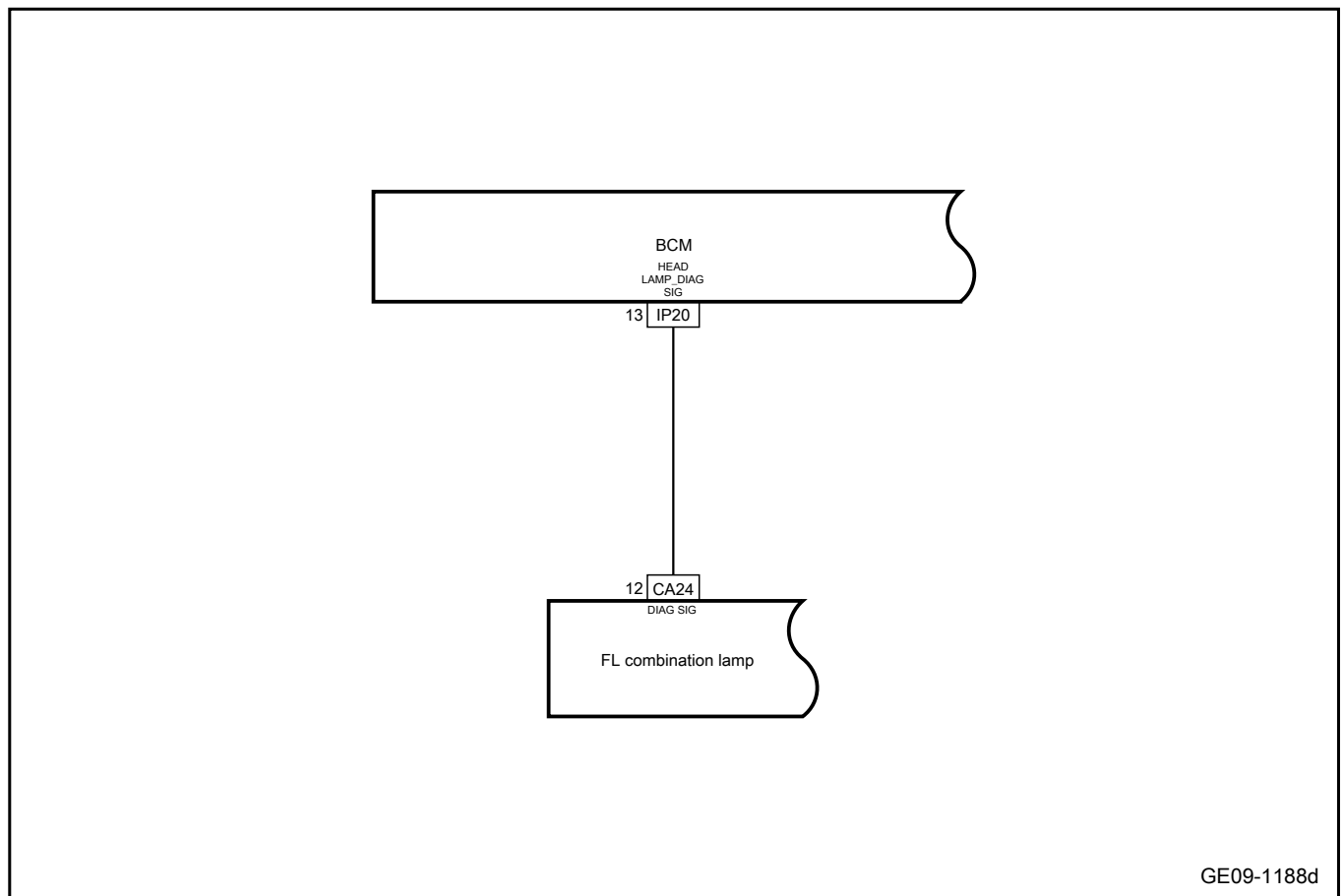
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B106211	The right turn signal flasher is off for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The right turn signal output is not faulty (the right turn signal is short-circuited to the ground)	1. Left headlamp 2. Circuit 3. BCM
B106215	The right turn signal is ON for 200ms ON phase abnormal feedback status counter reaches 3		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B106511	The left turn signal is OFF for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The output of the left turn signal is not faulty (the left turn signal is short-circuited to the ground)	
B106515	The left turn signal is ON for 200ms ON phase abnormal feedback status counter reached 3		
B107011	The right turn signal flasher is off for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The right turn signal output is not faulty (the right turn signal is short-circuited to the ground)	
B107015	The right turn signal is ON for 200ms ON phase abnormal feedback status counter reaches 3		
B107111	The left turn signal is OFF for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The output of the left turn signal is not faulty (the left turn signal is short-circuited to the ground)	
B107115	The left turn signal is ON for 200ms ON phase abnormal feedback status counter reached 3		
B107211	The right turn signal flasher is off for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The right turn signal output is not faulty (the right turn signal is short-circuited to the ground)	
B107215	The right turn signal is ON for 200ms ON phase abnormal feedback status counter reaches 3		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107311	The left turn signal is OFF for 200ms, and the abnormal feedback state counter of phase failure reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn signal flasher or lane changing function is activated 3. The output of the left turn signal is not faulty (the left turn signal is short-circuited to the ground)	
B107315	The left turn signal is ON for 200ms ON phase abnormal feedback status counter reached 3		

3. Schematic circuit diagram:



4. Diagnosis steps

This manual only diagnoses the fault of the left front combination lamp (abnormal turn LED signal feedback). The diagnosis of other left front combination lamps (abnormal turn LED signal feedback) is the same as the left front combination lamp (abnormal turn LED signal feedback).

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

<b>Step 2</b>	Primary check.
---------------	----------------

- A. Check the left front combination lamp and BCM for signs of damage, deformation, stain, loosening, etc.
- B. Check the left headlamp and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

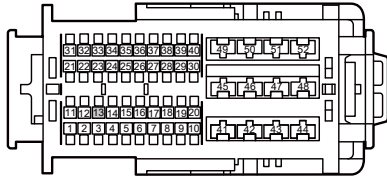
No

Repair or replace the faulty part.

Yes

<b>Step 3</b>	Check whether the harness between the left front combination lamp and BCM is open circuited.
---------------	--

IP20 body control module harness connector 1



GE09-1350d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

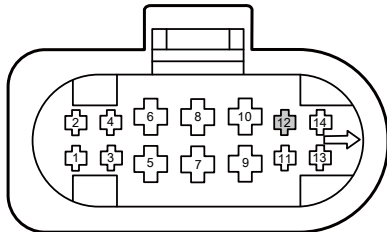
Measure terminal 1	Measure terminal 2	Standard value
IP20(13)	CA24(12)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

CA24 FL headlamp harness connector

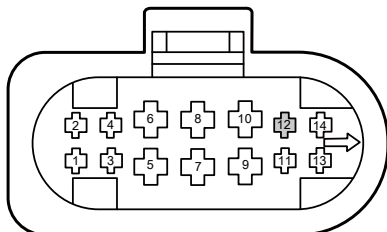


GE09-1351d

Yes

Step 4 Check whether the harness between the left front combination lamp and BCM is short to power supply.

CA24 FL headlamp harness connector



GE09-1352d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the BCM harness connector IP20.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(12)	Vehicle body is grounded.	Standard voltage: 0V

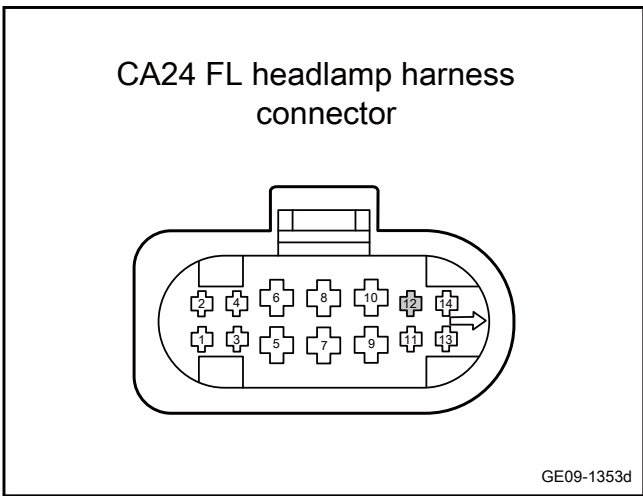
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the left front combination lamp and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left headlamp.

- A. Replace the headlight cluster LH, refer to replacement of the headlight cluster LH
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replace the BCM

- A. Check the BCM power supply and grounding harness. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.2.4.52 Front left antenna fault

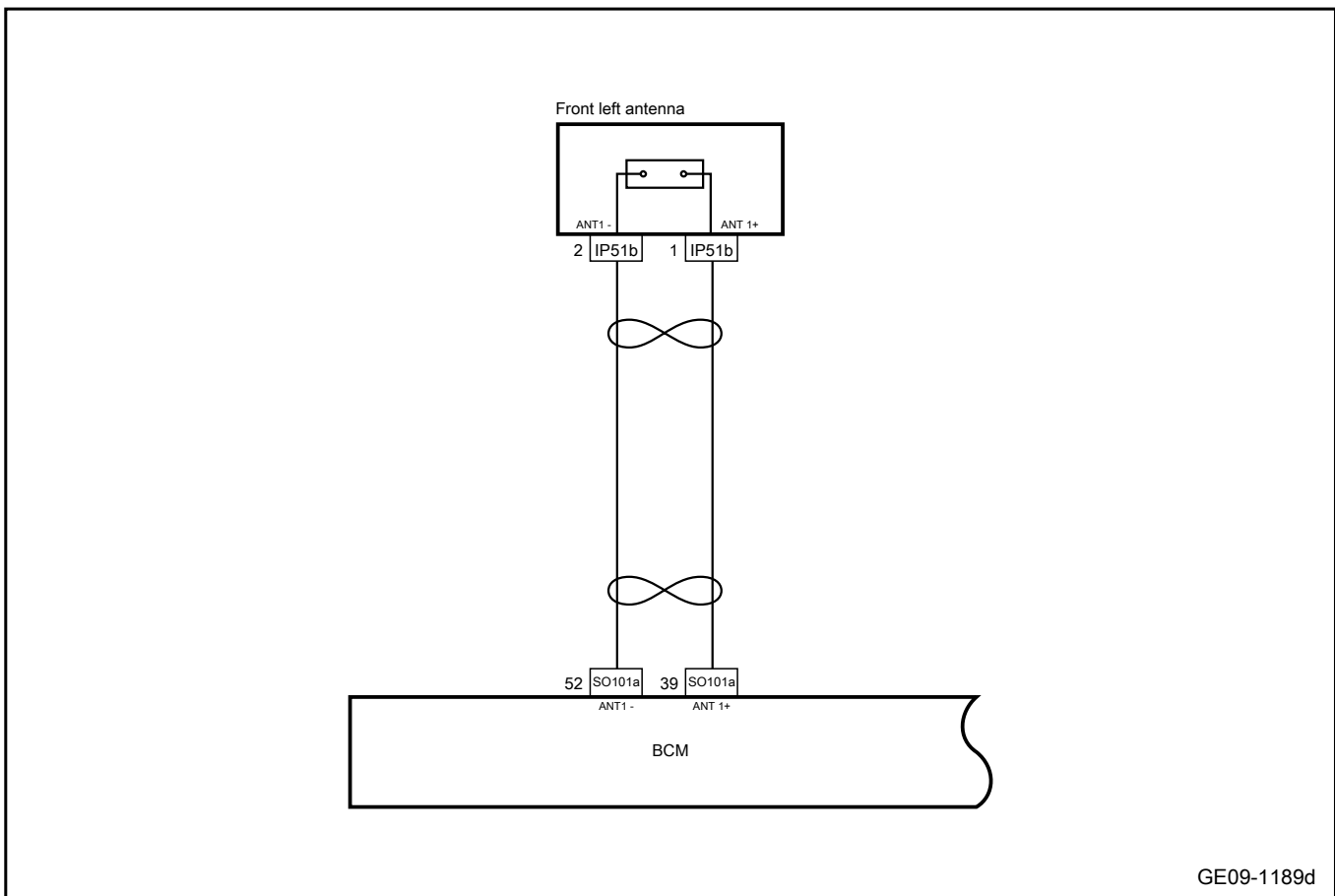
1. DTC description:

Diagnostic Trouble Code	Description
B128800	Antenna failure in the front of the vehicle

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128800	When the internal antenna is triggered before it is triggered and it is detected that the antenna is short-circuited to the battery/short-circuited to the ground/open-circuited, or a fault is detected during the antenna self-test (0x61FC), the debubbling time: 5	1. IBC's power supply voltage is between 9V-16V 2.Immo antenna is configured (Cfg_Immo antenna==0x1)	1. Circuit 2. Front left antenna 3.BCM

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

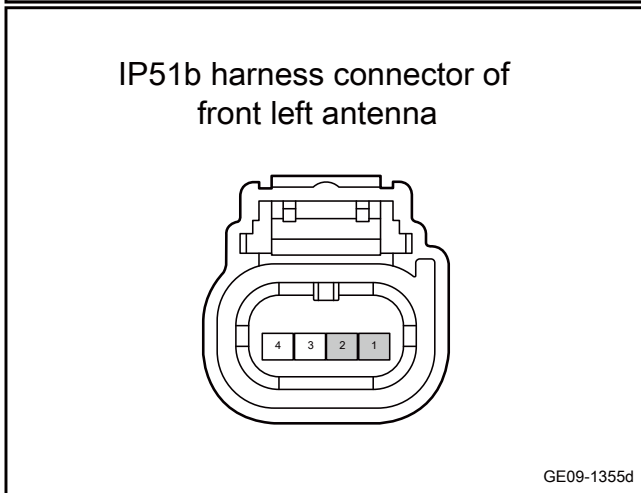
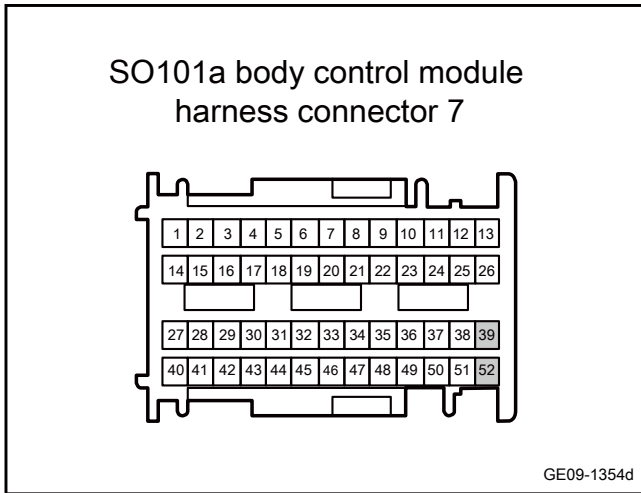
- A. Check the front left antenna and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the control harness between the front left antenna and the BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Unplug the front left antenna harness connector IP51b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(52)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101a(39)		
SO101a(52)	IP51b(2)	Standard resistance: less than 1Ω
SO101a(39)	IP51b(1)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(52)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(39)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Replace the front left antenna.

- A. Replace the front left antenna. See [Replacement of the Front Left Antenna](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 5** Replace the BCM



- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 6 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.2.4.53 ACC relay fault

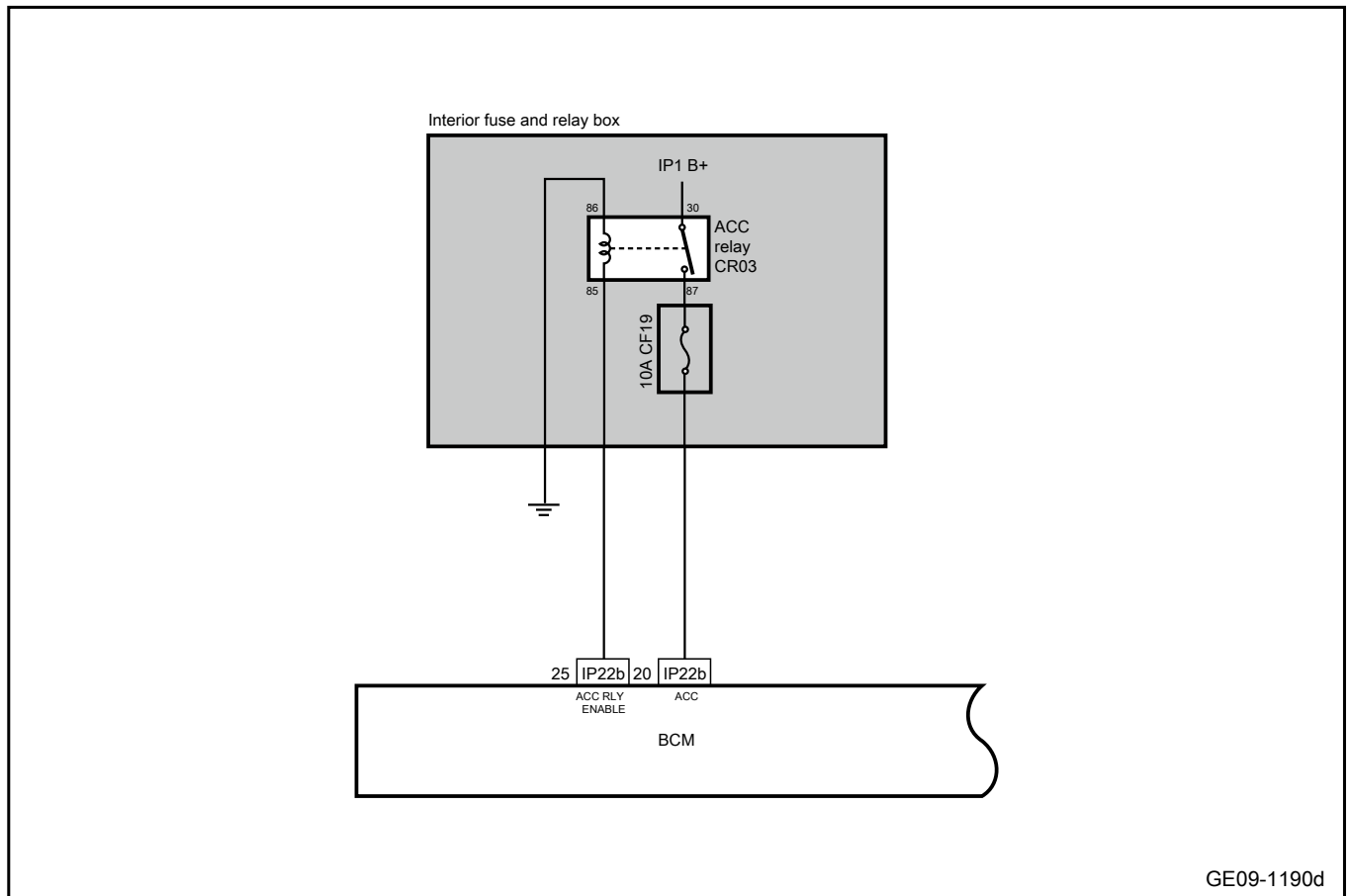
1. DTC description:

DTC Code	Code description
B128200	ACC output failure
B128229	ACC relay control output is invalid

2. Trouble code setting and fault location:

DTC number	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128200	The terminals are ACC/IGN, A U ACC U FB open circuit or short circuited to ground or the terminal is closed, A_ ACC_FB is short to BAT. Detection time: 1000ms or the terminal is ACC/IGN, O U ACC is short to ground or the terminal is closed, O_ACC_RLYshort to BAT detection time: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Fuse 2. Relay 3.BCM
B128229	The terminal is ACC/IGN, A U ACC U FB is open and short-circuited to ground or the terminal is closed and short-circuited to the battery (A u ACC u FB! =A d u ACC). Detection time: 1000ms	IBC's supply voltage range is 9V-16V	

3. Schematic circuit diagram:



GE09-1190d

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

Step 3	Check the ACC relay CR03.
--------	---------------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the ACC relay CR03 and replace ACC relay with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.
-------------------

No

Step 4	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF19 is blown.

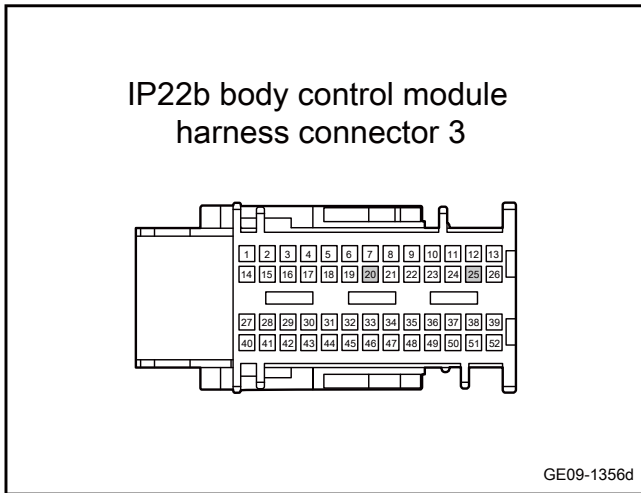
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.
---

No

**Step 5** Check whether the circuit between BCM and ACC relay is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. Use a multimeter to measure each terminal according to the following table:

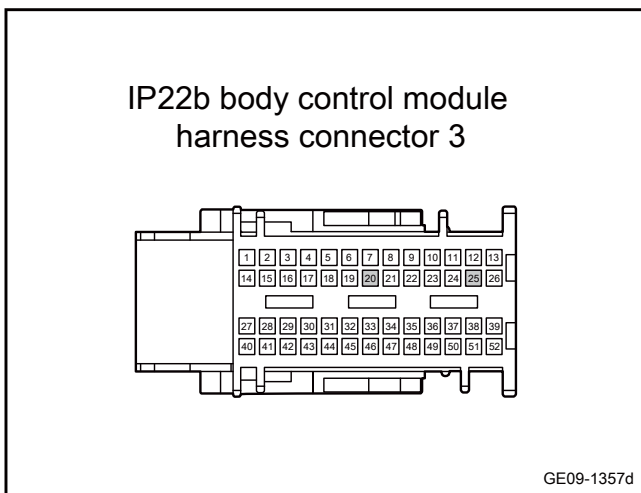
Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	CR03(85)	Standard resistance: less than 1Ω
IP22b(20)	CR03(87)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 6** Check whether the line between BCM and ACC relay is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. Use a multimeter to measure each terminal according to the following table:

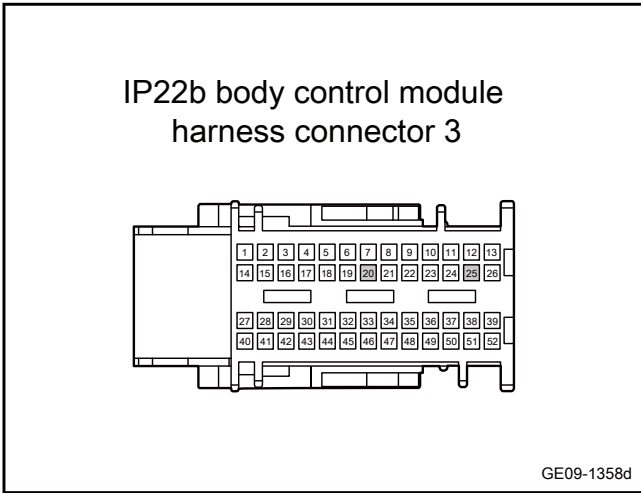
Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(20)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between BCM and ACC relay is shorted to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(20)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** | Check whether the ACC relay grounding harness is normal.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove the ACC relay CR03.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CR03(86)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 9** | Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10	Reprogram and reset the BCM.
------------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 9.2.4.54 IGN1 relay fault

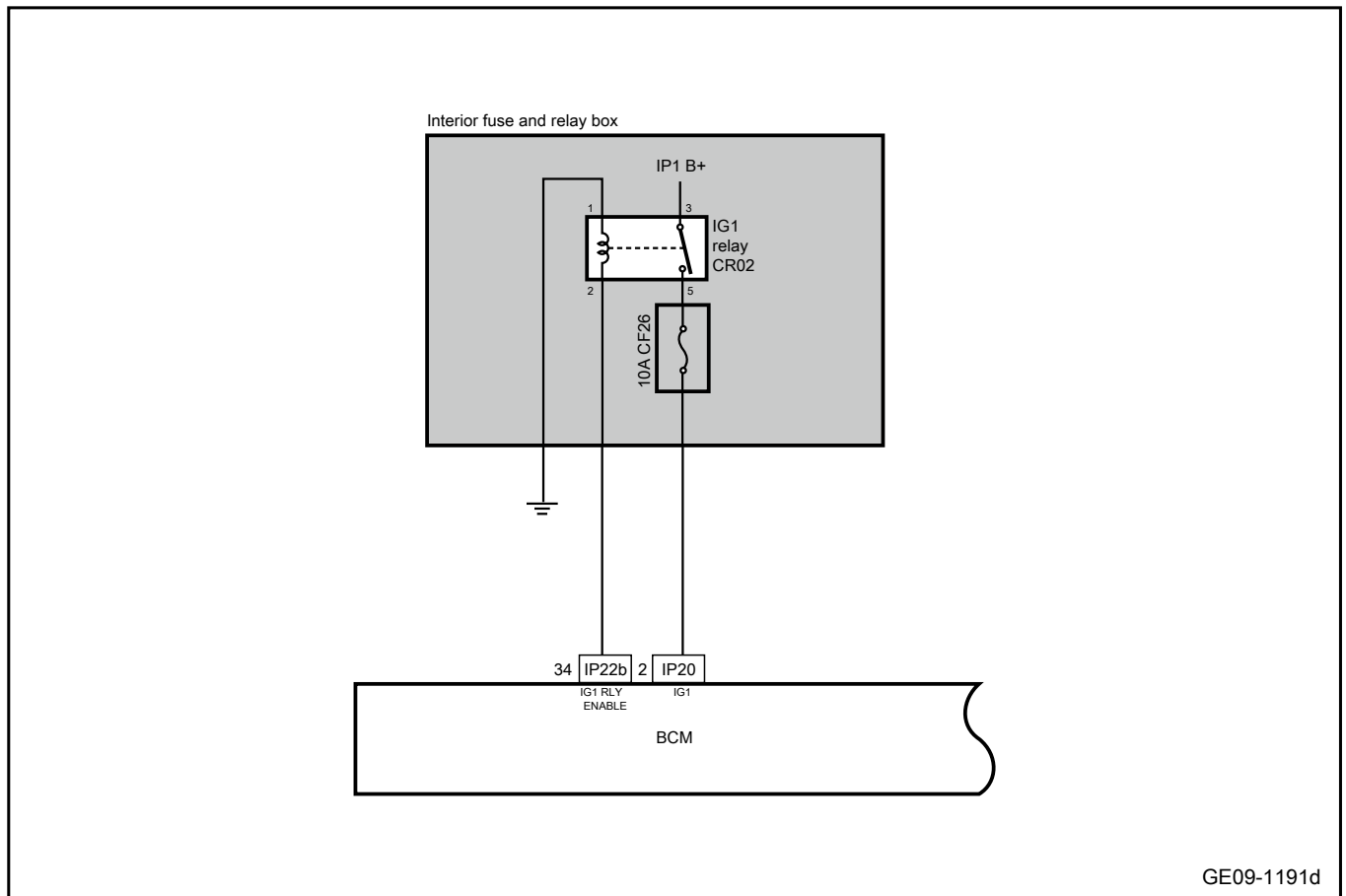
1. DTC description:

DTC Code	Code description
B128300	IGN1 output failure
B128329	Invalid IGN1 relay control output

2. Trouble code setting and fault location:

DTC number	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128300	Terminals IGN, AU IG1 U FB are open or short to ground or Terminal is disconnected/ accelerated, A_IG1_FB is short to battery detection time: 1000ms or terminal is IGN, O\U IG1 is short to ground or Terminal is closed/ accelerated, O}u IG1 }u RLY short-circuit detection time to bat: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Fuse 2. Relay 3.BCM
B128329	The terminals IGN, A U IGN1 U Fb are open or short to ground or terminal OFF ACC, A IG1 Fb is short to ground (A u IGN1 u FB! = Signal 1) Detection time: 1000ms	IBC's supply voltage range is 9V-16V	

3. Schematic circuit diagram:



GE09-1191d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check IG1 relay CR02.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the IG1 relay CR02 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF26 is blown.

Rated fuse capacity: 10A

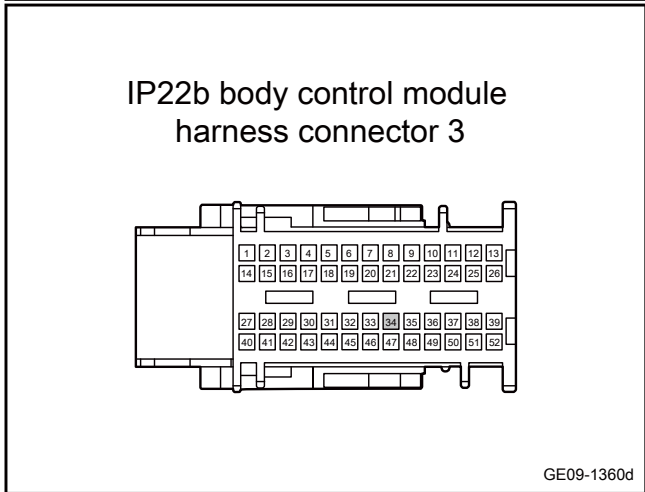
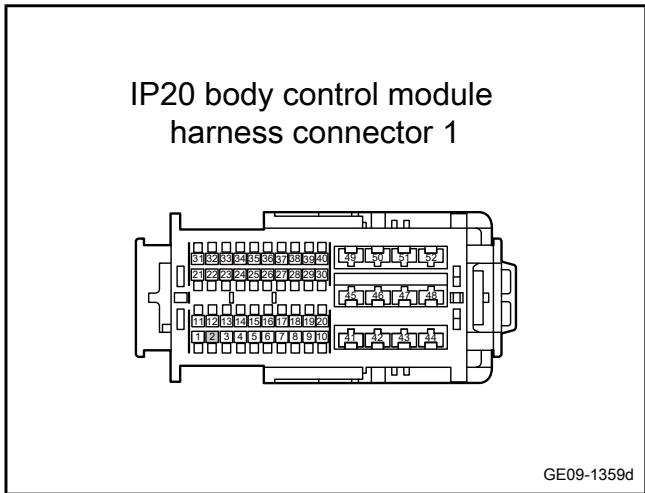
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No



**Step 5** Check whether the circuit between the BCM and the IG1 relay is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	CR02(5)	Standard resistance: less than 1Ω
IP22b(34)	CR02(2)	

- E. Confirm whether the measured value meets the standard.

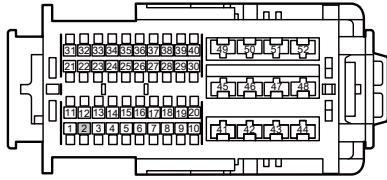
No

Repair or replace the harness.

Yes

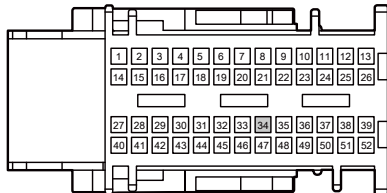
**Step 6** Check the circuit between BCM and IG1 relay for a short to GND.

IP20 body control module harness connector 1



GE09-1361d

IP22b body control module harness connector 3



GE09-1362d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(34)		

- E. Confirm whether the measured value meets the standard.

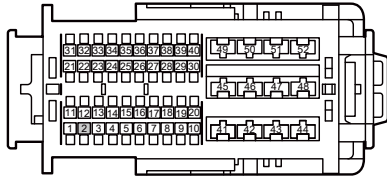
No

Repair or replace the harness.

Yes

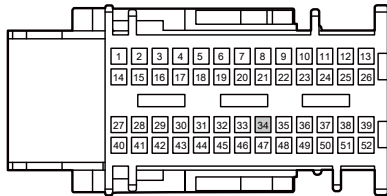
Step 7 | Check the circuit between BCM and IG1 relay is short to power supply.

IP20 body control module harness connector 1



GE09-1363d

IP22b body control module harness connector 3



GE09-1364d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(34)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check if the IG1 relay grounding harness is normal.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the IG1 relay CR02.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CR02(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9	Replace the BCM
--------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10	Reprogram and reset the BCM.
---------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

### 9.2.4.55 IGN2 relay fault

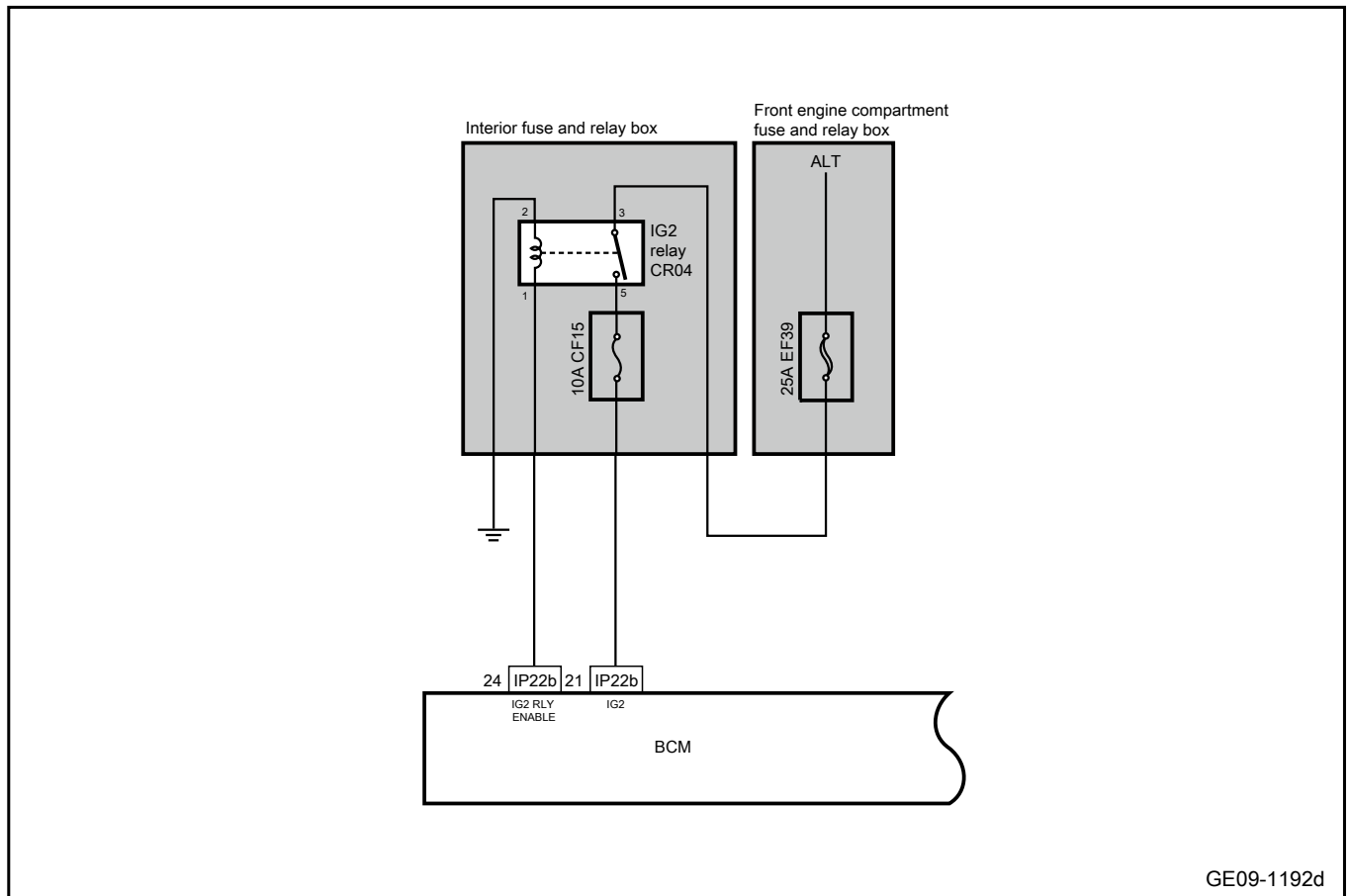
1. DTC description:

DTC Code	Code description
B128400	IGN2 output failure
B128429	Invalid IGN2 relay control output

2. Trouble code setting and fault location:

DTC number	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128400	Terminals IGN, AU IG2 U FB are open or short to ground or Terminal is disconnected/ accelerated, A_IG2_FB is short to battery detection time: 1000ms or terminal is IGN, O\U IG2 is short to ground or Terminal is closed/ accelerated, O}u IG2 }ly short-circuit detection time to bat: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Fuse 2. Relay 3.BCM
B128429	Terminals IGN, A U IGN2 Fb are open or short-circuited to ground or terminals OFF ACC, A IGN2 Fb are short-circuited to ground (A u IGN2 u FB! = Signal 2) Detection time: 1000ms	IBC's supply voltage range is 9V-16V	

3. Schematic circuit diagram:



GE09-1192d

## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check IG2 relay CR04.
--------	-----------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the IG2 relay CR04 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4	Inspect the fuse.
--------	-------------------

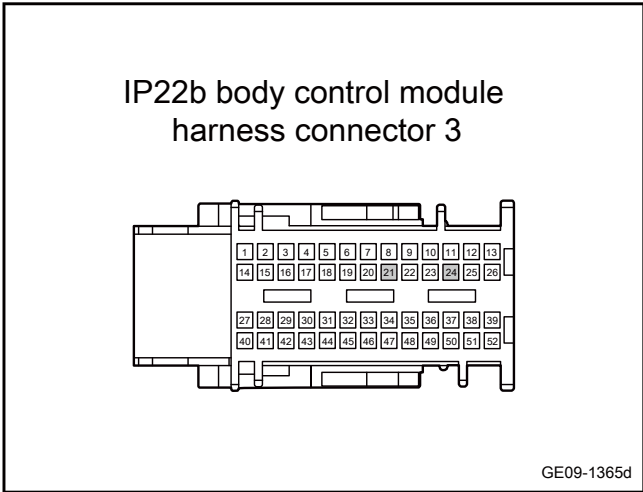
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out fuse CF15 of the indoor fuse relay box. Check whether fuse CF15 is blown.  
Rated fuse capacity: 10A
- C. Unplug front engine compartment fuse relay box fuse EF39, and check whether the fuse is blown.  
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 5** Check whether the circuit between the BCM and the IG2 relay is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	CR04(1)	Standard resistance: less than 1Ω
IP22b(21)	CR04(5)	

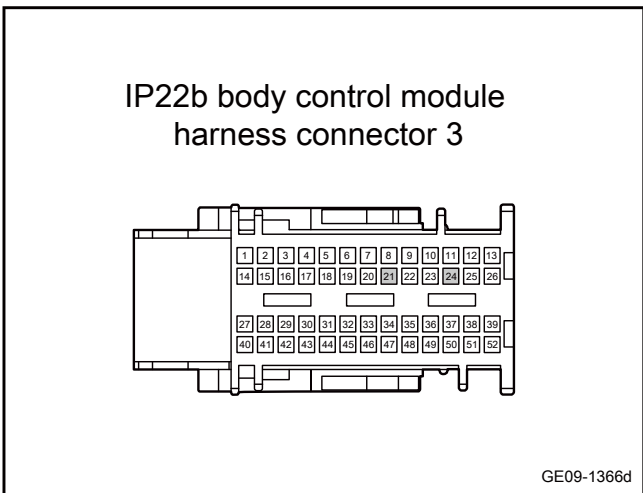
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the circuit between BCM and IG2 relay for a short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(21)		

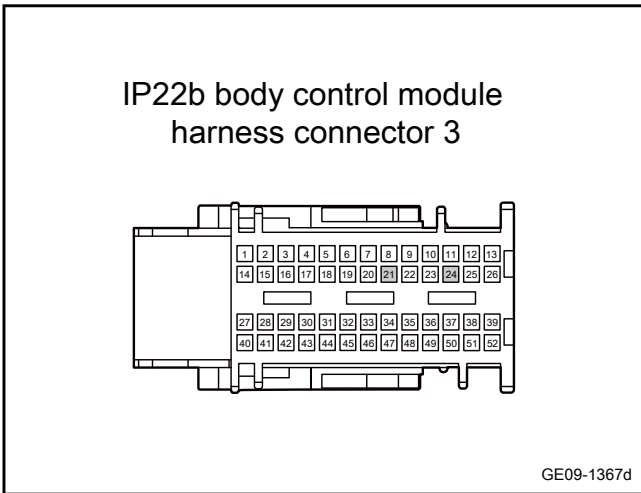
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check the circuit between BCM and IG2 relay is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(21)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 8** Check if the IG2 relay grounding harness is normal.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the IG2 relay CR04.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CR04(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 9** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)



Next Step

Step 10	Reprogram and reset the BCM.
------------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

### 9.2.4.56 Start and stop button fault

1. DTC description:

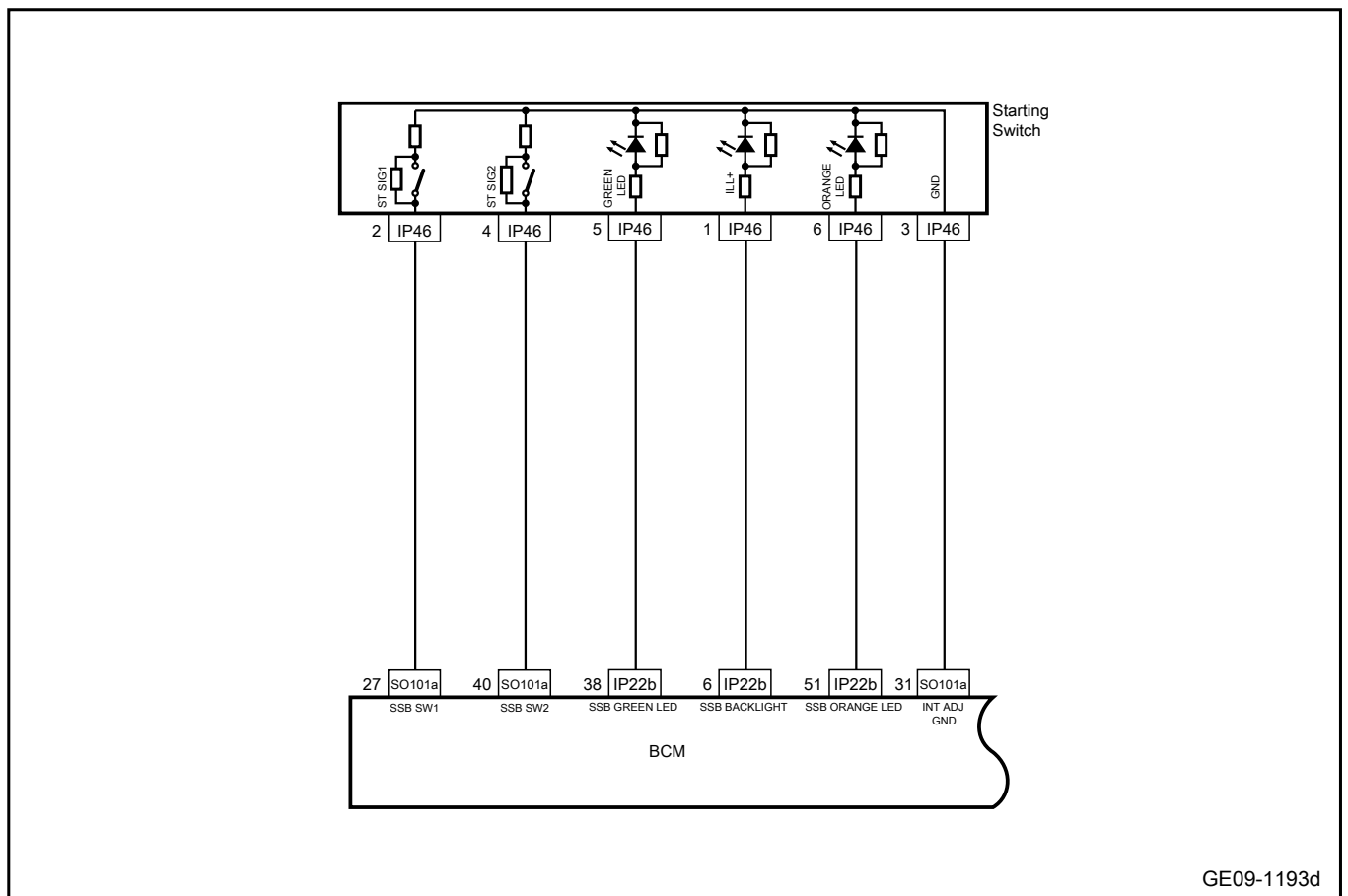
Diagnostic Trouble Code	Description
B128500	Starting output failure
B10204B	The starting circuit is overloaded or over temperature
B108E11	Starting switch backlight control circuit is short to ground

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128500	Terminal off/acceleration/ignition, O U start short circuit to the bat Detection time: 100ms	1. IBC's power supply voltage is between 9V-16V	1. Circuit 2. Start and stop switch 3.BCM

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B10204B	Monitor the overload or over-temperature fault by detecting the output current. When the current is greater than a specific HW threshold, it is considered an overload or over-temperature fault. Starting relay circuit overload 200ms	1. IBC's power supply voltage is between 9V-16V 2. The starter relay function is activated for 100 milliseconds	
B108E11	The output current will be checked to monitor the short circuit-to-ground fault, and if the current is higher than a certain power threshold (based on hardware), it is considered a short circuit-to-ground fault. SSB backlight control is short circuited to ground or overloaded for 200 milliseconds		

3. Schematic circuit diagram:



GE09-1193d

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the start-and-stop switch and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

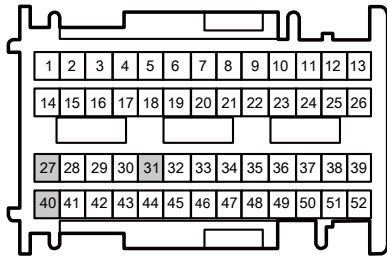
No

Repair or replace the faulty part.
------------------------------------

Yes

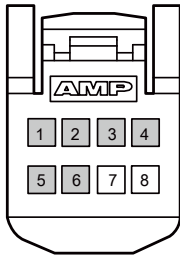
Step 3	Check whether the circuit between the start and stop switch and BCM is open.
--------	--

SO101a body control module harness connector 7



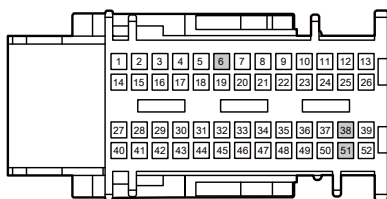
GE09-1368d

IP46 start-up switch harness connector



GE09-1369d

IP22b body control module harness connector 3



GE09-1370d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector SO101a and IP22b.
- C. Unplug the start-and-stop switch harness connector IP46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(27)	IP46(2)	Standard resistance: less than 1Ω
SO101a(40)	IP46(4)	
IP22b(38)	IP46(5)	
IP22b(6)	IP46(1)	
IP22b(51)	IP46(6)	
SO101a(31)	IP46(3)	

- E. Confirm whether the measured value meets the standard.

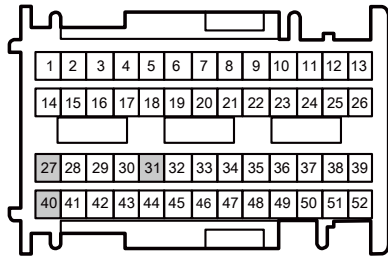
No

Repair or replace the harness.

Yes

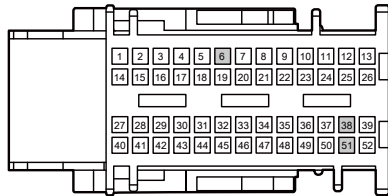
Step 4 Check whether the circuit between the start and stop switch and BCM is short to GND.

SO101a body control module harness connector 7



GE09-1371d

IP22b body control module harness connector 3



GE09-1372d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector SO101a and IP22b.
- C. Unplug the start-and-stop switch harness connector IP46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(27)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101a(40)		
IP22b(38)		
IP22b(6)		
IP22b(51)		
SO101a(31)		

- E. Confirm whether the measured value meets the standard.

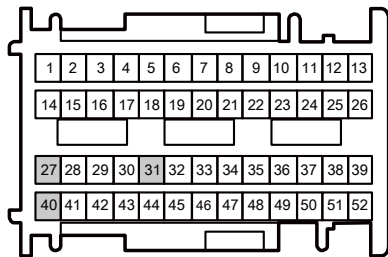
No

Repair or replace the harness.

Yes

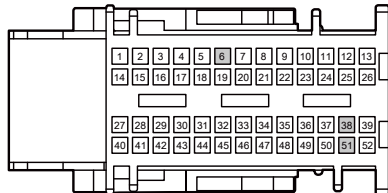
Step 5 Check whether the circuit between the start and stop switch and BCM is short to GND.

SO101a body control module harness connector 7



GE09-1373d

IP22b body control module harness connector 3



GE09-1374d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector SO101a and IP22b.
- C. Unplug the start-and-stop switch harness connector IP46.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(27)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(40)		
IP22b(38)		
IP22b(6)		
IP22b(51)		
SO101a(31)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the start and stop button.

- A. Replace the start and stop button. Refer to [Replacement of the start and stop switch](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 8 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 9.2.4.57 Fault of the handle sensor of the driver side door

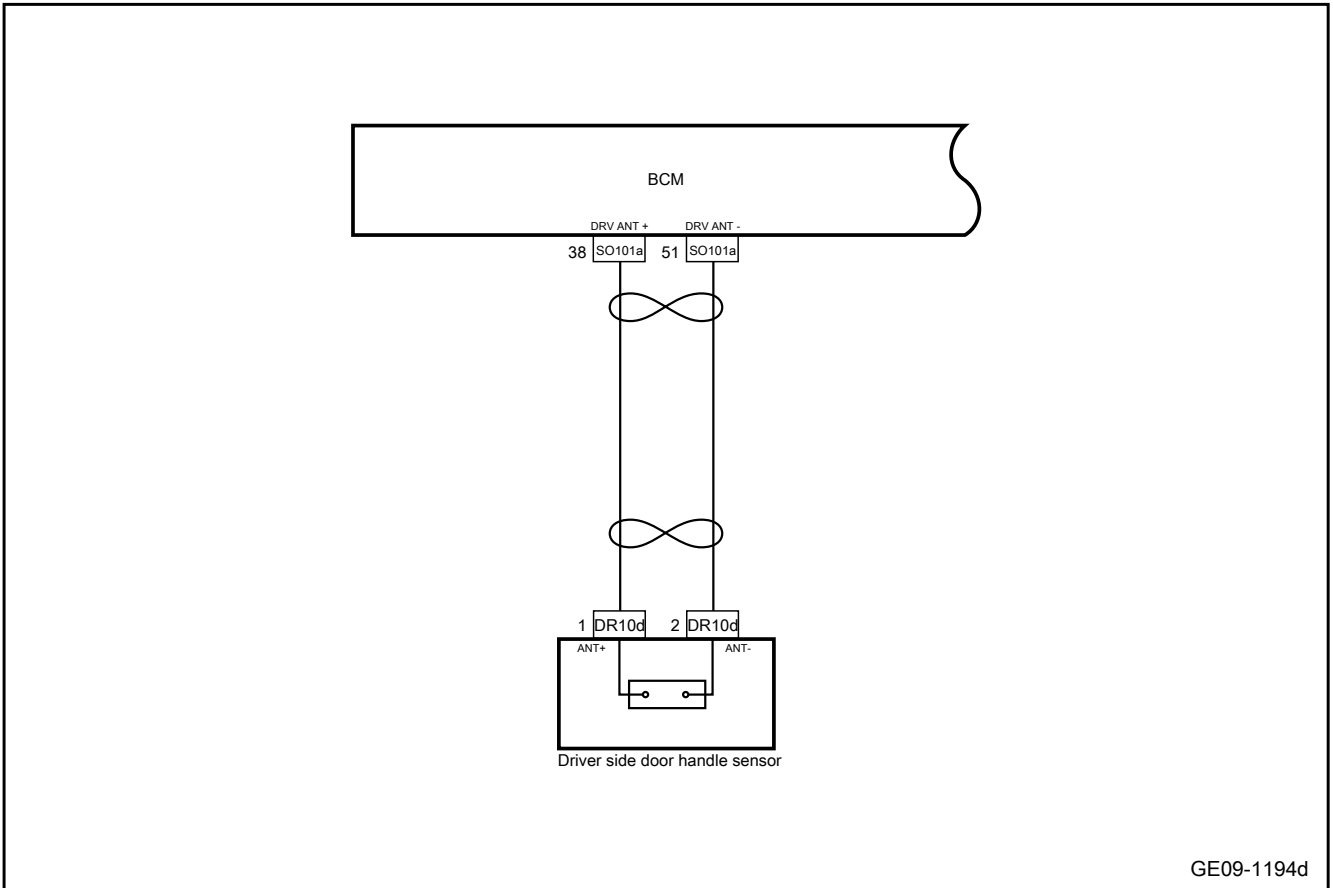
1. DTC description:

Diagnostic Trouble Code	Description
B128600	Driver side antenna failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128600	When the driver's side antenna is triggered and it is detected that the antenna is short-circuited to the battery/short-circuited to the ground/opened, or a fault is detected during the antenna self-check (0x61FC), the de-bubbling time: 5	1. IBC's power supply voltage is between 9V-16V 2. The left door antenna is configured (Cfg_LeftDoor antenna==0x1)	1. Circuit 2. Handle sensor of the driver side door 3. BCM

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the harness connector of the door handle sensor at the driver side for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

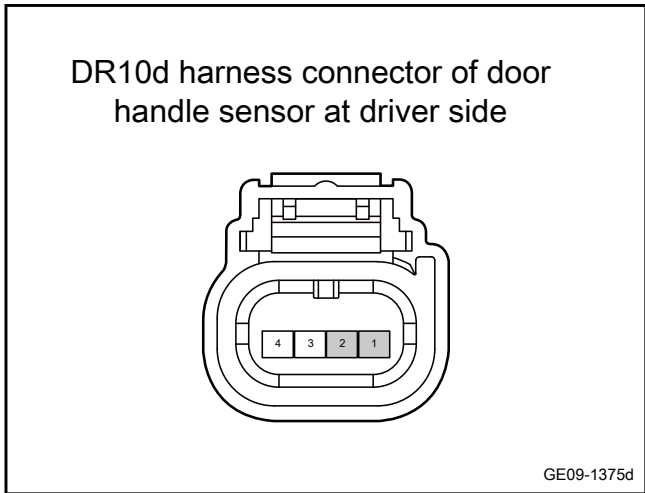
No

Repair or replace the faulty part.

Yes

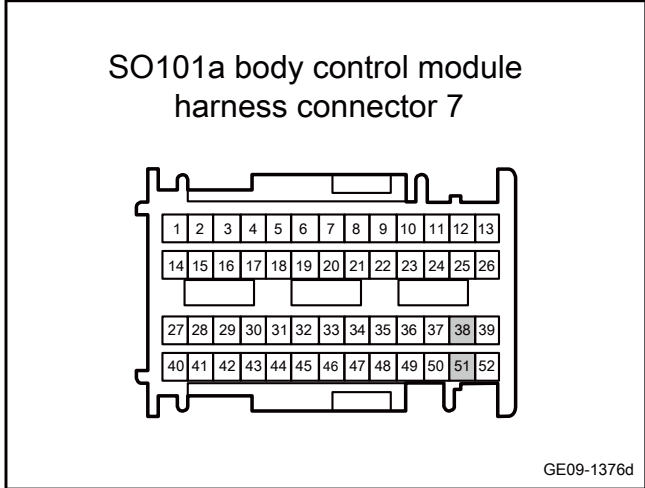


**Step 3** Check whether the circuit between the handle sensor of the driver side door and BCM is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	SO101a(38)	Standard resistance: less than 1Ω
DR10d(2)	SO101a(51)	

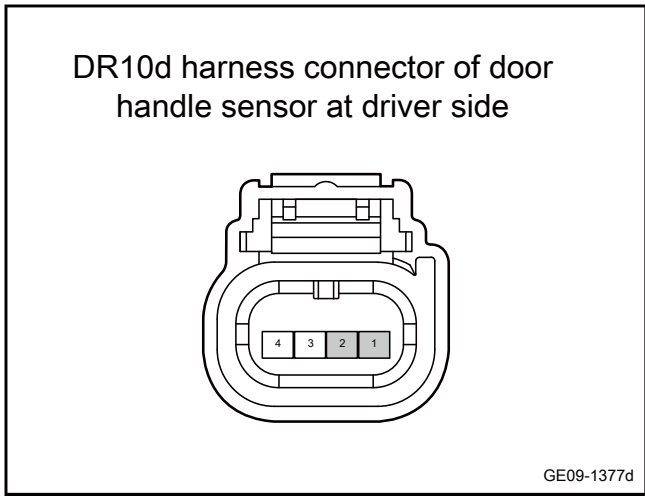


- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the handle sensor of the driver side door and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR10d(2)		

- E. Confirm whether the measured value meets the standard.

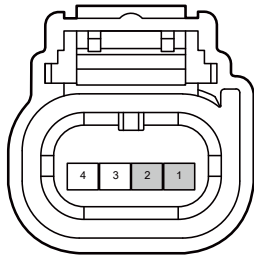
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the handle sensor of the driver side door and BCM is short to power supply.

DR10d harness connector of door handle sensor at driver side



GE09-1378d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the BCM harness connector SO101a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	Vehicle body is grounded.	Standard voltage: 0V
DR10d(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the handle sensor of the driver side door.

- A. Replace the door handle sensor at the driver side, refer to [Replacement of door handle sensor at driver side](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.2.4.58 Front passenger side door handle sensor failure

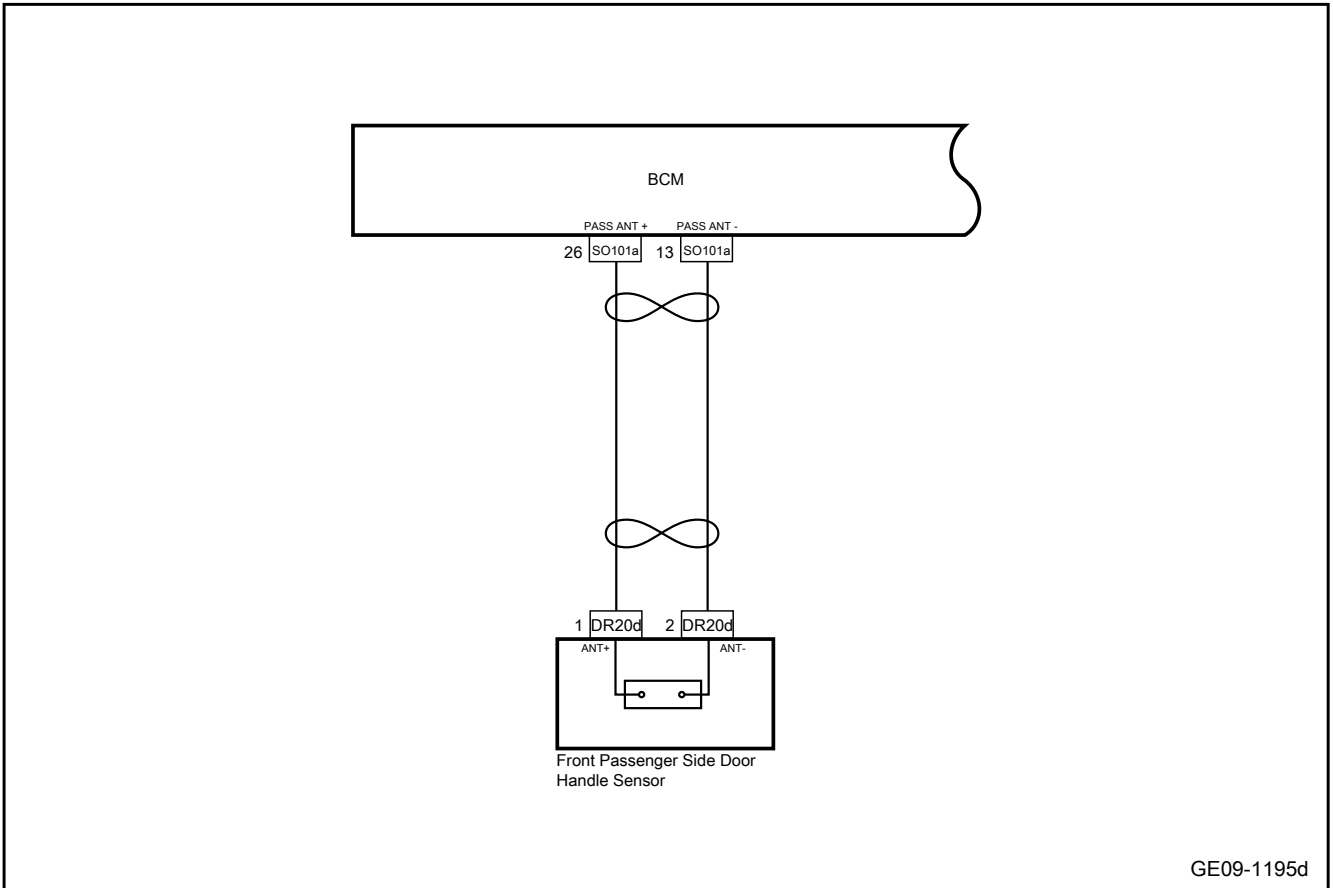
1. DTC description:

Diagnostic Trouble Code	Description
B128700	Front passenger side antenna failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128700	When the auxiliary side antenna is triggered and it is detected that the antenna is short-circuited to the battery/short-circuited to the ground/opened-circuited, or a fault is detected during the antenna self-test (0x61FC), the de-bubbling time: 5	1. IBC's power supply voltage is between 9V-16V 2. The right door antenna is configured (Cfg_Rightdoor antenna==0x1)	1. Circuit 2. Front passenger side door handle sensor 3. BCM

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

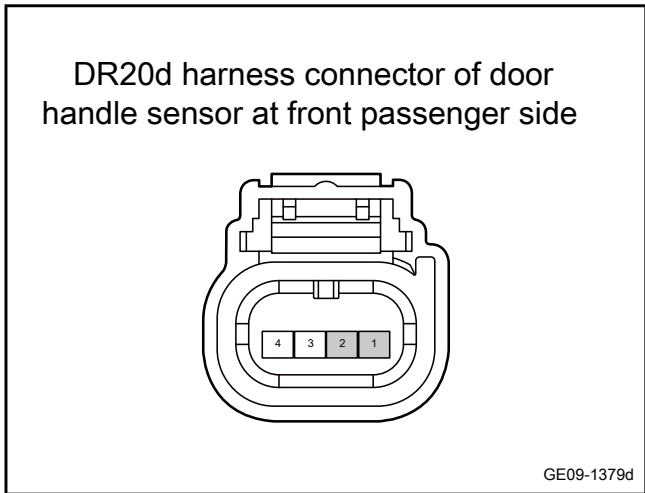
- A. Check the harness connector of the door handle sensor at the front passenger side for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

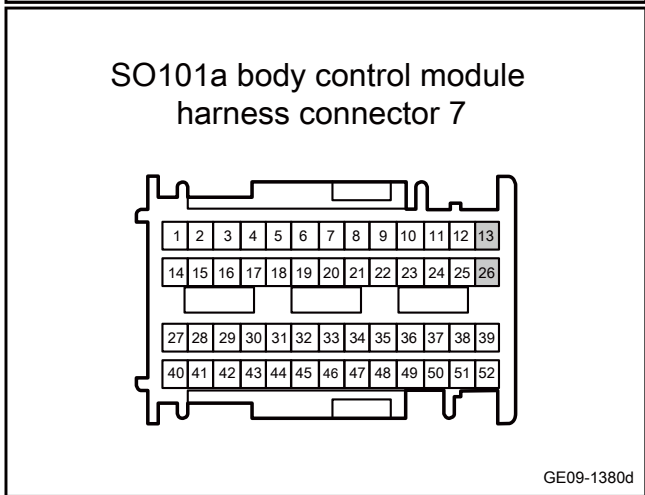
**Step 3** Check whether the circuit between the door handle sensor at the front passenger side and BCM is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR20d of the door handle sensor at the front passenger side.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	SO101a(26)	Standard resistance: less than 1Ω
DR20d(2)	SO101a(13)	

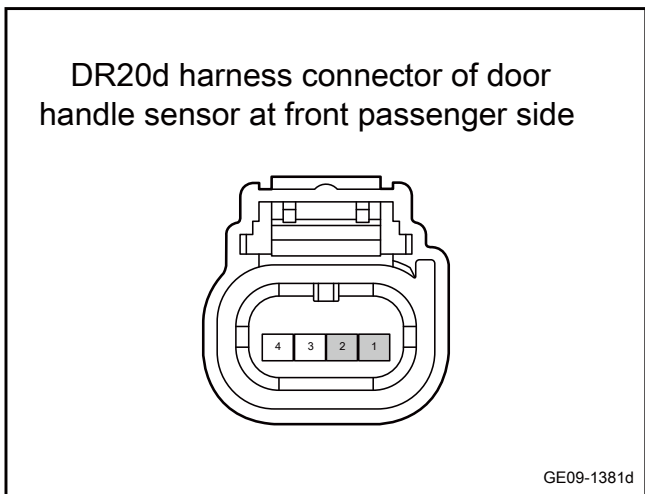
- E. Confirm whether the measured value meets the standard.



No → Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the door handle sensor at the front passenger side and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR20d of the door handle sensor at the front passenger side.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR20d(2)		

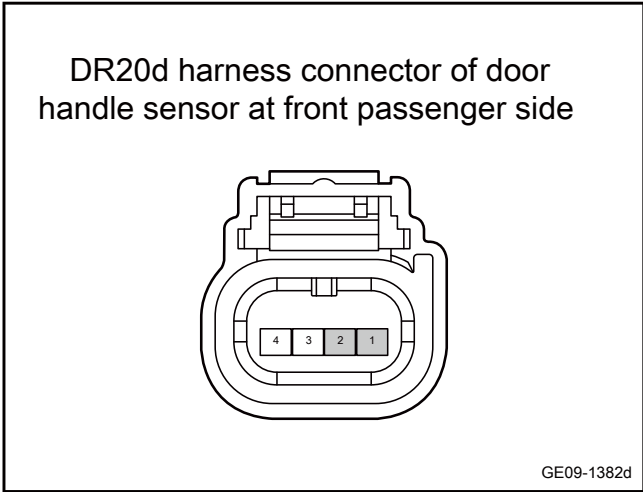
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the door handle sensor at the front passenger side and BCM is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the handle sensor DR20d of the door handle sensor at the front passenger side.
- C. Disconnect the BCM harness connector SO101a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	Vehicle body is grounded.	Standard voltage: 0V
DR20d(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the door handle sensor at the front passenger side.

- A. Replace the door handle sensor at the front passenger side, refer to [Replacement of the door handle sensor at the front passenger side](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.2.4.59 LIN1 communication fault

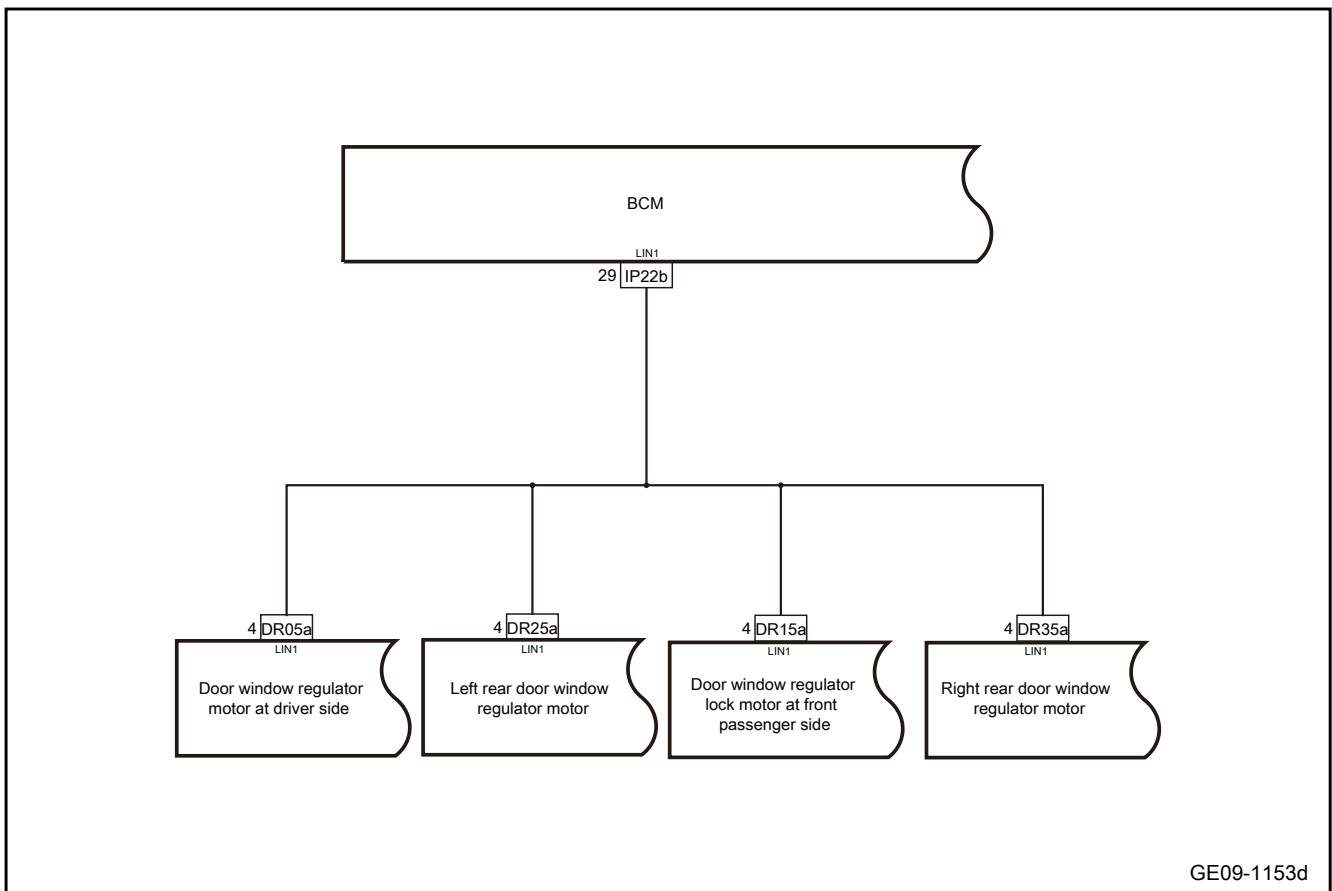
1. DTC description:

Diagnostic Trouble Code	Trouble description
U110000	LIN1 communication fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U110000	The main request transmission failed LIN-1 for 4s	1.LIN1 wakeup 2.IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2.BCM 3. Door glass regulator motor at driver side 4. Left rear door window regulator motor 5. Door glass lifter motor at front passenger side 6. Right rear door glass regulator motor

## 3. Schematic circuit diagram:



## 4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- Connect the diagnostic scanner to the DLC.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Road test for at least 10 min.
- Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- Check the driver side window regulator motor, left rear door window regulator motor, front passenger side window regulator motor, right rear door window regulator motor, BCM harness connector for signs of damage, poor contact, aging, looseness, etc.
- Confirm whether the above items are normal.



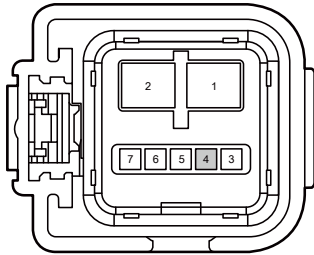
No

Repair or replace the faulty part.

Yes

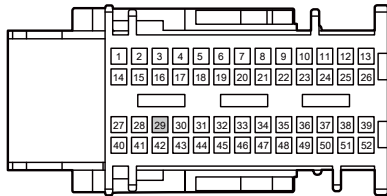
Step 3	Check whether the LIN line between the driver's side window regulator motor, left rear door window regulator motor, front passenger side window regulator motor, right rear door side window regulator motor and BCM is open circuited.
--------	---

DR05a door glass lifting motor harness connector at driver side



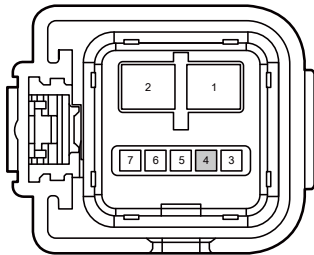
GE09-1383d

IP22b body control module harness connector 3



GE09-1384d

DR15a harness connector for door glass lifting motor at front passenger side



GE09-1385d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the door glass regulator motor at the driver side.
- C. Disconnect the rear left door glass regulator motor harness connector DR25a.
- D. Disconnect the harness connector DR15a of the door glass regulator motor at the front passenger side.
- E. Disconnect the rear right door glass regulator motor harness connector DR35a.
- F. Disconnect the BCM harness connector IP22b.
- G. Use a multimeter to measure each terminal according to the following table:

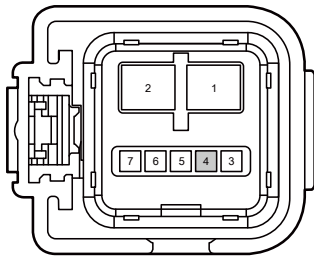
Measure terminal 1	Measure terminal 2	Standard value
DR05a(4)	IP22b(29)	Standard resistance: less than 1Ω
DR15a(4)		
DR25a(4)		
DR35a(4)		

- H. Confirm whether the measured value meets the standard.

No

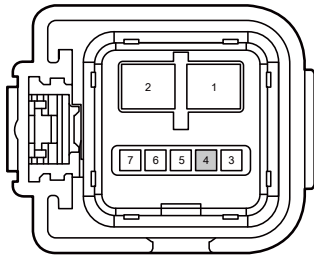
Repair or replace the harness.

DR25a Rear left door window regulator motor harness connector



GE09-1386d

DR35a Rear right door window regulator motor harness connector

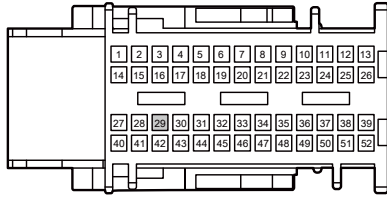


GE09-1387d

Yes

<p>Step 4</p>	<p>Check whether the LIN wire between the driver's side window regulator motor, the left rear door window regulator motor, the front passenger side window regulator motor, the right rear door side window regulator motor and the BCM is short-circuited to the power supply.</p>
---------------	---

IP22b body control module  
harness connector 3



GE09-1388d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the door glass regulator motor at the driver side.
- C. Disconnect the rear left door glass regulator motor harness connector DR25a.
- D. Disconnect the harness connector DR15a of the door glass regulator motor at the front passenger side.
- E. Disconnect the rear right door glass regulator motor harness connector DR35a.
- F. Disconnect the BCM harness connector IP22b.
- G. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- H. Use a multimeter to measure each terminal according to the following table:

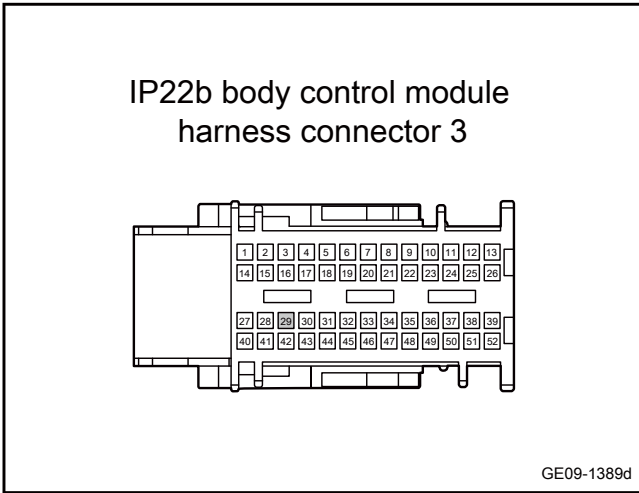
Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard voltage: 0V

- I. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 5</b>	Check whether the LIN wire between the driver's side window regulator motor, left rear door window lifter motor, front passenger side window regulator motor, right rear door side window regulator motor and BCM is short-circuited to ground.
---------------	---



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the door glass regulator motor at the driver side.
- C. Disconnect the rear left door glass regulator motor harness connector DR25a.
- D. Disconnect the harness connector DR15a of the door glass regulator motor at the front passenger side.
- E. Disconnect the rear right door glass regulator motor harness connector DR35a.
- F. Disconnect the BCM harness connector IP22b.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- H. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the door glass lifter motor at the driver side.

- A. Replace the door glass lifter motor at the driver side. Refer to [Replacement of the door glass regulator motor at the driver side](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 7** Replace the left rear door glass regulator motor.

- A. Replace the left rear door glass regulator motor. Refer to [Replacement of the left rear door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Replace the door glass regulator motor at the front passenger side.

- A. Replace the door glass regulator motor at the front passenger side. Refer to [Replacement of the door glass regulator motor at the front passenger side](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the right rear door glass regulator motor.

- A. Replace the right rear door glass regulator motor. See [Replacement of the Right Rear Door Glass Regulator Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 11 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12 Use the diagnostic scanner to determine whether the trouble is eliminated.

12

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

### 9.2.4.60 LIN communication failure of door handle control module

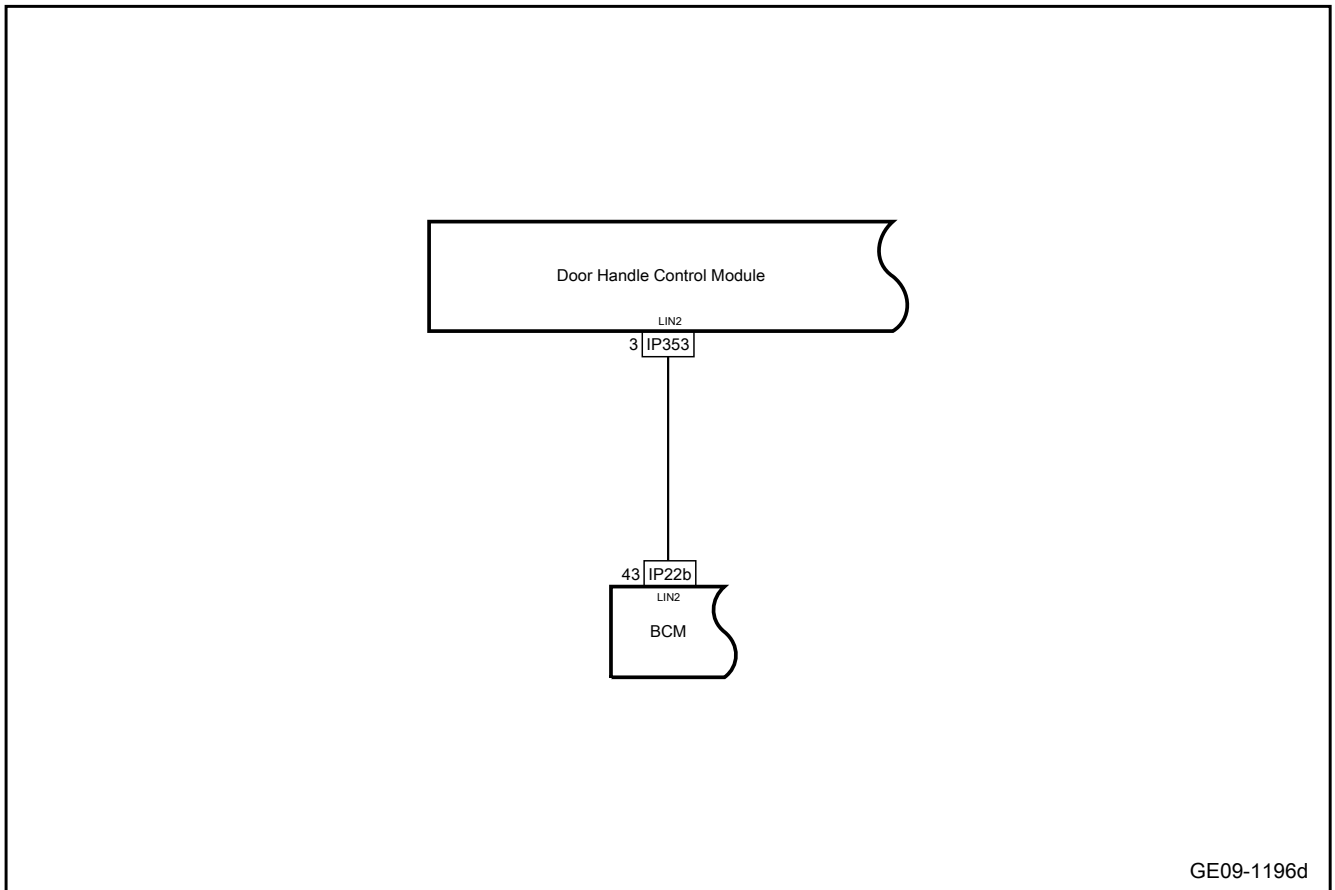
1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B09	Hidden door handle controller LIN communication error

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109B09	The received DHC (door handle controller) information indicates that the LIN error occurs three times successively (0x18: L_DHC_LIN_response_error==0x1)	1. LIN2 wakes up, the communication enabling conditions are met 2. IBC Power supply The supply voltage is within the range of 9-16V 3. cfg hidden door handle option == 1 (F101 byte 14 bits 1 == 1)	1. Circuit 2. Door handle control module 3. BCM

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the door handle control module harness connector for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

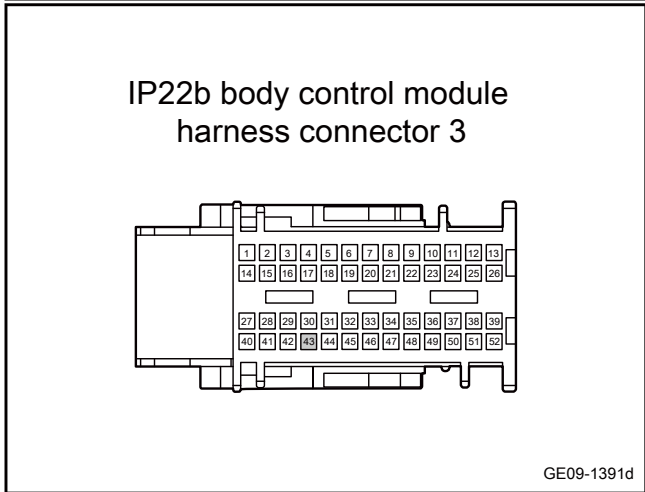
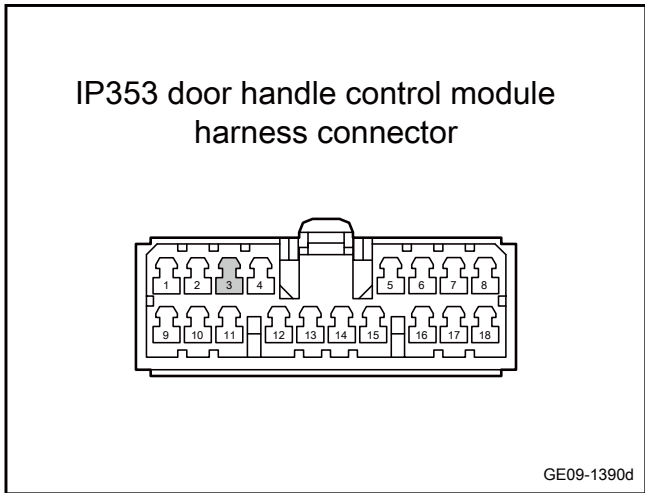
No

Repair or replace the faulty part.

Yes



**Step 3** Check whether the LIN circuit between the door handle control module and BCM is open circuited.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	IP22b(43)	Standard resistance: less than 1Ω

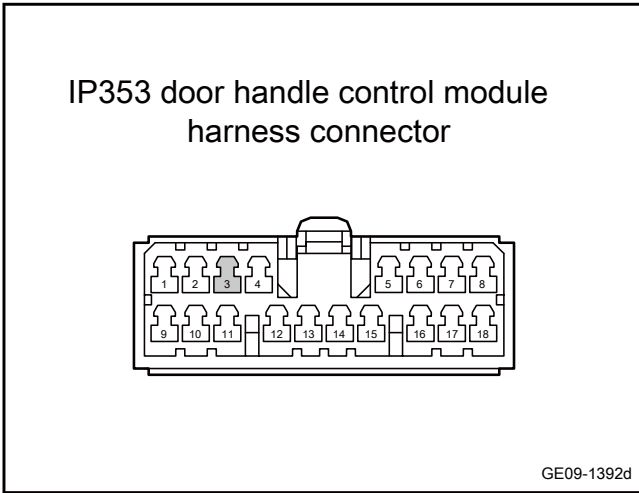
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the LIN circuit between the door handle control module and BCM is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the BCM harness connector IP22b.
- D. Disconnect the relevant modules of the vehicle's LIN2 line.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

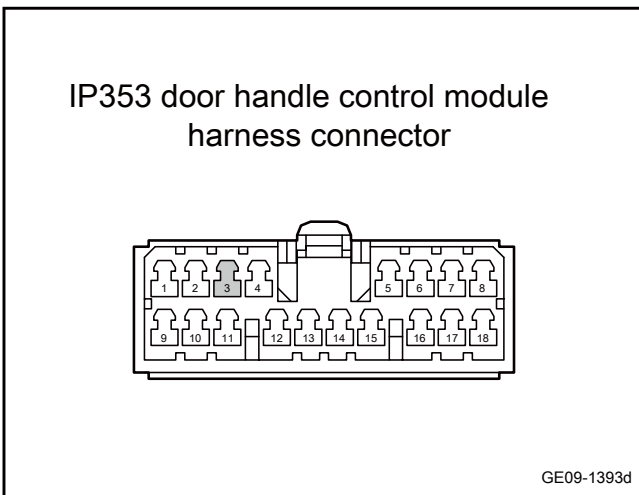
Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** | Check whether the LIN circuit between the door handle control module and BCM is short to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** | Replace the door handle control module.

- A. Replace the door handle control module.
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Reprogram and reset the door handle control module.

- A. Reprogram and reset the door handle control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

**Step 9** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

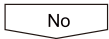
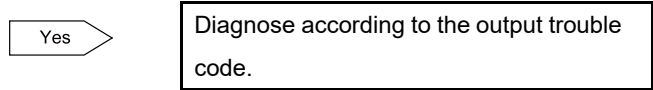
Yes

System is normal.

No

**Step 10** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 11	System is normal.
---------	-------------------

9.2.4.61 Power failure of door handle control module

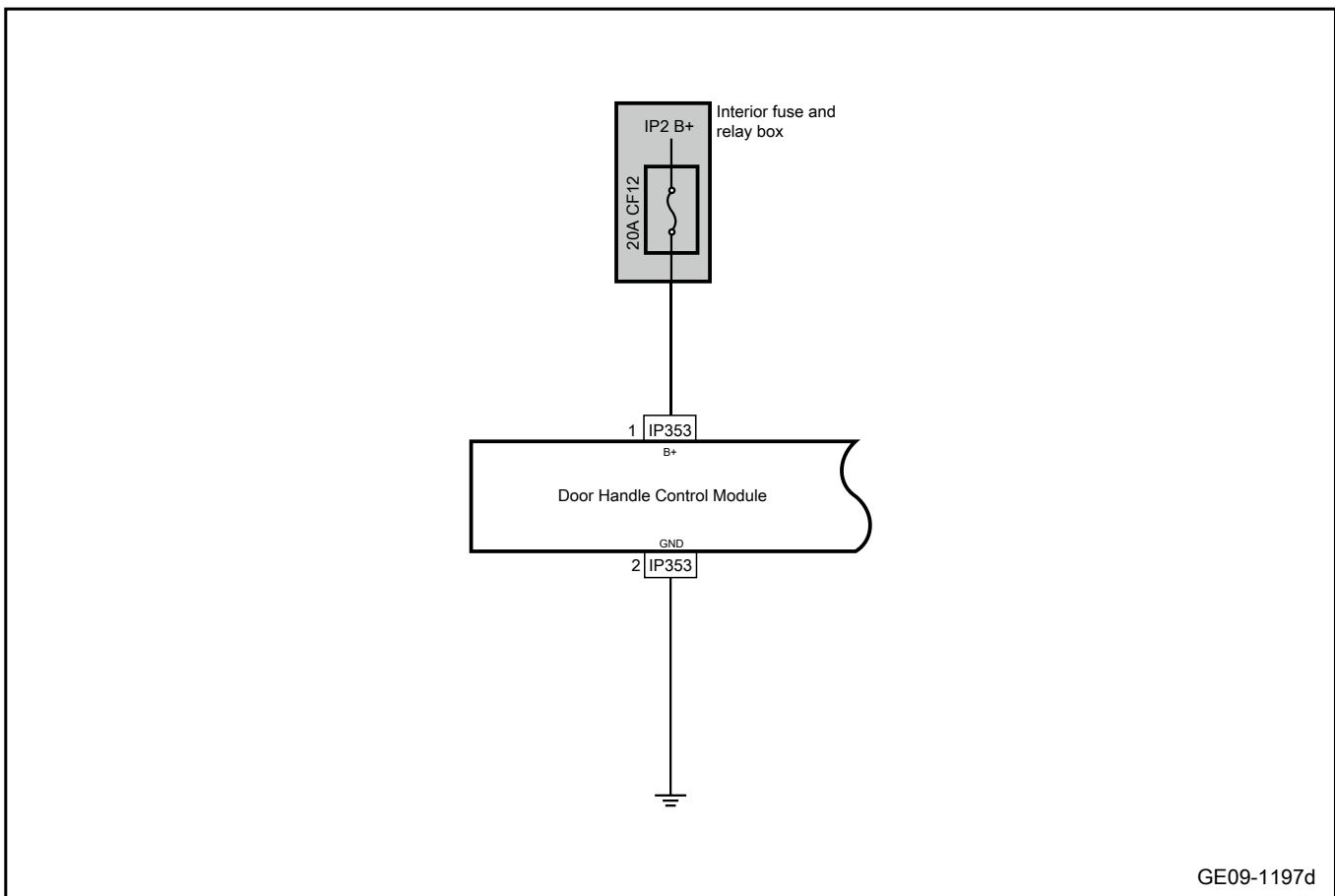
1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B16	Hidden door handle controller undervoltage
B109B17	Hidden door handle controller overvoltage

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109B16	The received DHC (Door Handle Controller) information indicates that the LIN framework error occurs three times successively (0x18:L_DHC_Under_Volt==0x1)	1. LIN2 wakes up, the communication enabling conditions are met 2. IBC's power supply voltage range is 9-16V 3. cfg hidden door handle option==1 (F101 byte 14 bit 1==1)	1. Circuit 2. Fuse 3. Door handle control module
B109B17	The received DHC (door handle controller) information indicates that the LIN frame occurs three times successively (0x18:L_DHC_Over_Volt==0x1)		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble! The diagnosis methods of the above fault codes are similar.

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the door handle control module harness connector for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the battery voltage.

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 4** Inspect the fuse.

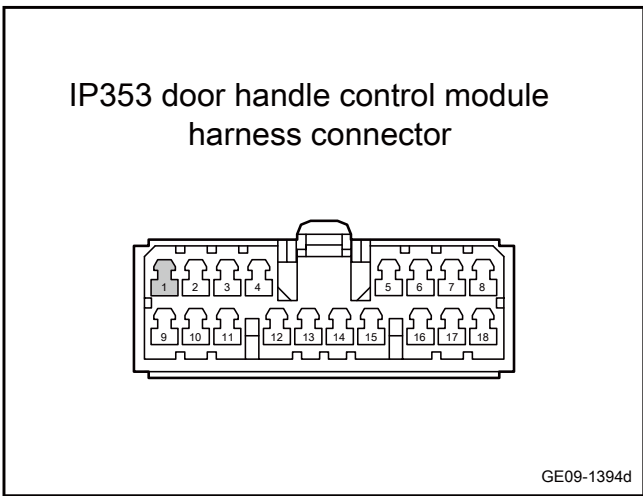
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF12 is blown out.  
Rated fuse capacity: 20A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 5** Check the power circuit of the door handle control module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the door handle control module harness connector IP353.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP353(1)	Vehicle body is grounded.	Standard voltage: 11-14V

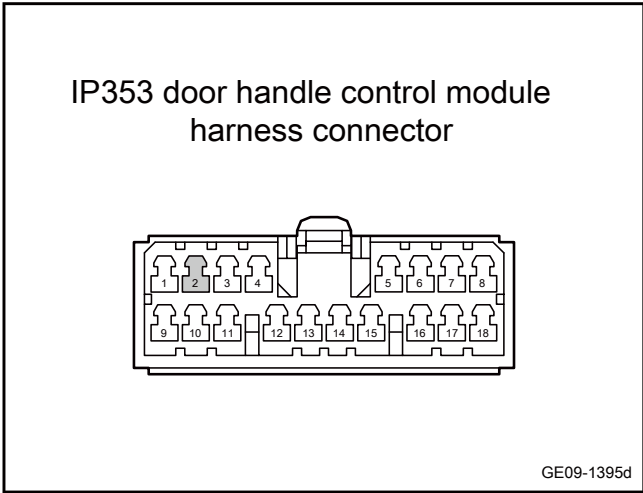
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Detect the grounding circuit of the door handle control module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the door handle control module harness connector IP353.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP353(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the door handle control module.

- A. Replace the door handle control module.

Next Step

**Step 8** Reprogram and reset the door handle control module.

- A. Reprogram and reset the door handle control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

### 9.2.4.62 Internal failure of door handle control module

1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B04	Hidden door handle controller internal circuit failure

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128C00	The received DHC (Door Handle Controller) message indicates that an error occurred three times successively in the LIN frame (0x18:L_DHC_Circuit_error==0x1)	1. LIN2 wakes up, the communication enabling conditions are met 2. IBC's power supply voltage range is 9-16V 3. cfg hidden door handle option==1 (F101 byte 14 bit 1==1)	1. Door handle control module

3. Diagnosis steps

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--



- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the door handle control module harness connector for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Replace the door handle control module.

- A. Check whether the door handle control module power supply and grounding harness are normal. See [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the door handle control module.

Next Step

**Step 4** Reprogram and reset the door handle control module.

- A. Reprogram and reset the door handle control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 5** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

### 9.2.4.63 Hidden door handle motor failure

1. DTC description:

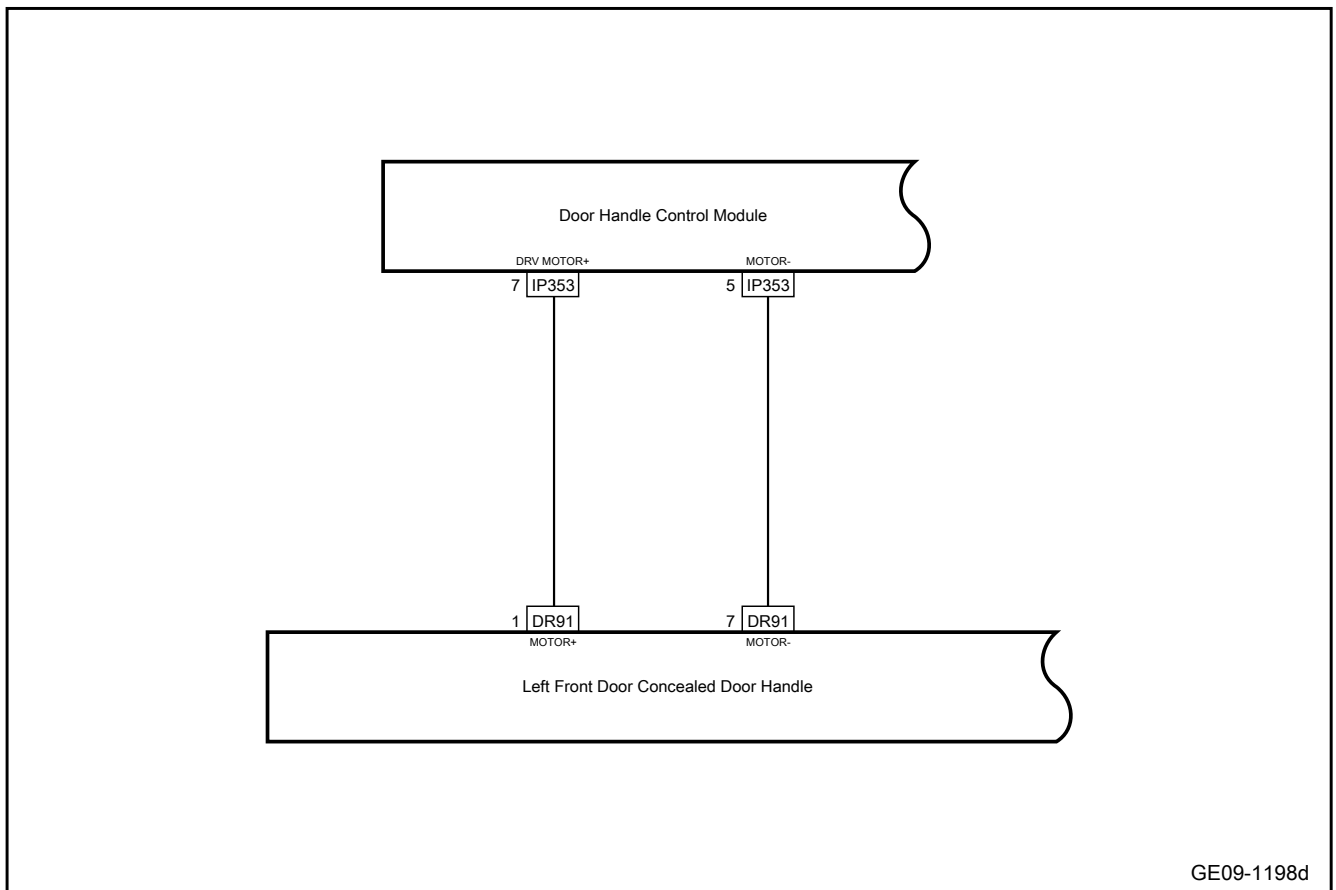
Diagnostic Trouble Code	Trouble description
B108F01	Left front door handle motor failure
B109201	Right front door handle motor failure
B109501	Left rear door handle motor failure
B109801	Right rear door handle motor failure

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108F01	The received DHC (door handle controller) information indicates that the LIN frame occurs three times successively (0x18: L_DHC_LF_error == 0x3)	1. LIN2 is in the wake-up state and meets the communication enabling conditions 2. IBC's power supply voltage range is 9-16V 3. cfg hidden door handle option==1 (F101 byte 14 bit 1==1)	1. Circuit 2. Door handle control module 3. Concealed door handle
B109201	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RF_error == 0x3)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109501	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_LR_error == 0x3)		
B109801	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RR_error == 0x3)		

3. Schematic circuit diagram:



This manual only diagnoses the fault of the left front concealed door handle. The diagnosis of other concealed door handles is the same as that of the left front hidden door handle.

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

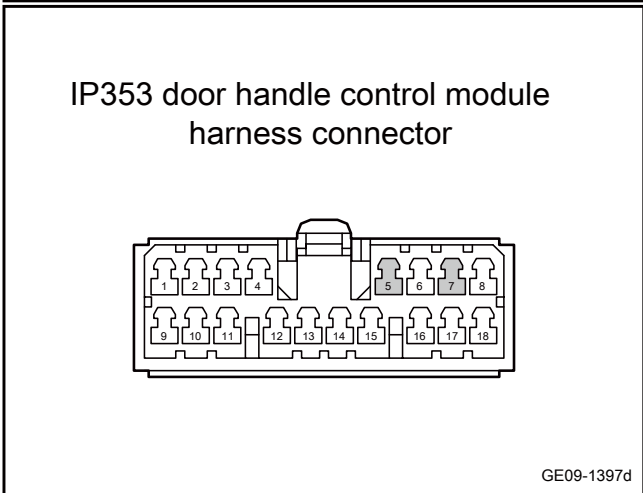
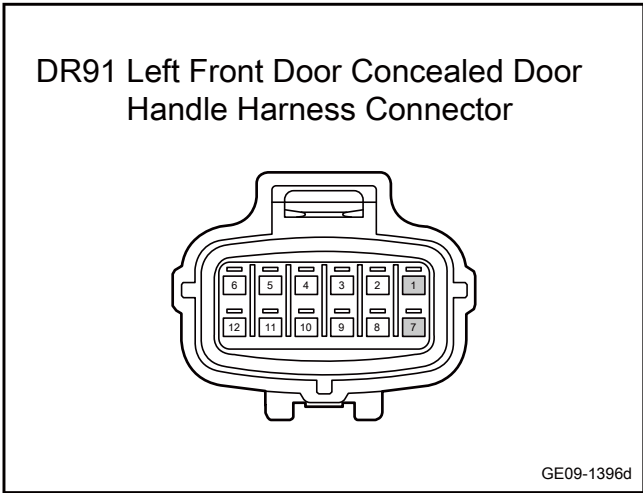
- A. Check the left front hidden door handle, door handle control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the left front hidden door handle and the door handle control module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(7)		
DR91(1)	IP353(7)	Standard resistance: less than 1Ω
DR91(7)	IP353(5)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard voltage: 0V
DR91(7)		

- G. Confirm whether the measured value meets the standard.

No  Repair or replace the harness.

Yes

**Step 4** Replace the left front hidden door handle.

- A. Replace the left front hidden door handle. See [Replacement of the Left Front Hidden Door Handle](#)
- B. Confirm whether the system is normal.

Yes  System is normal.

No

**Step 5** Replace the door handle control module.

- A. Check whether the door handle control module power supply and grounding harness are normal. See [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the door handle control module.

Next Step

Step 6 Reprogram and reset the door handle control module.

- A. Reprogram and reset the door handle control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

#### 9.2.4.64 Hidden door handle status sensor failure

##### 1. DTC description:

Diagnostic Trouble Code	Trouble description
B109001	The left front door handle limit switch OFF fault
B109101	The left front door handle limit switch ON failure
B109301	The front right door handle limit switch OFF fault
B109401	The front right door handle limit switch ON fault
B109601	The left rear door handle limit switch OFF fault
B109701	The left rear door handle limit switch ON fault

Diagnostic Trouble Code	Trouble description
B109901	The right rear door handle limit switch OFF fault
B109A01	The right rear door handle limit switch ON fault

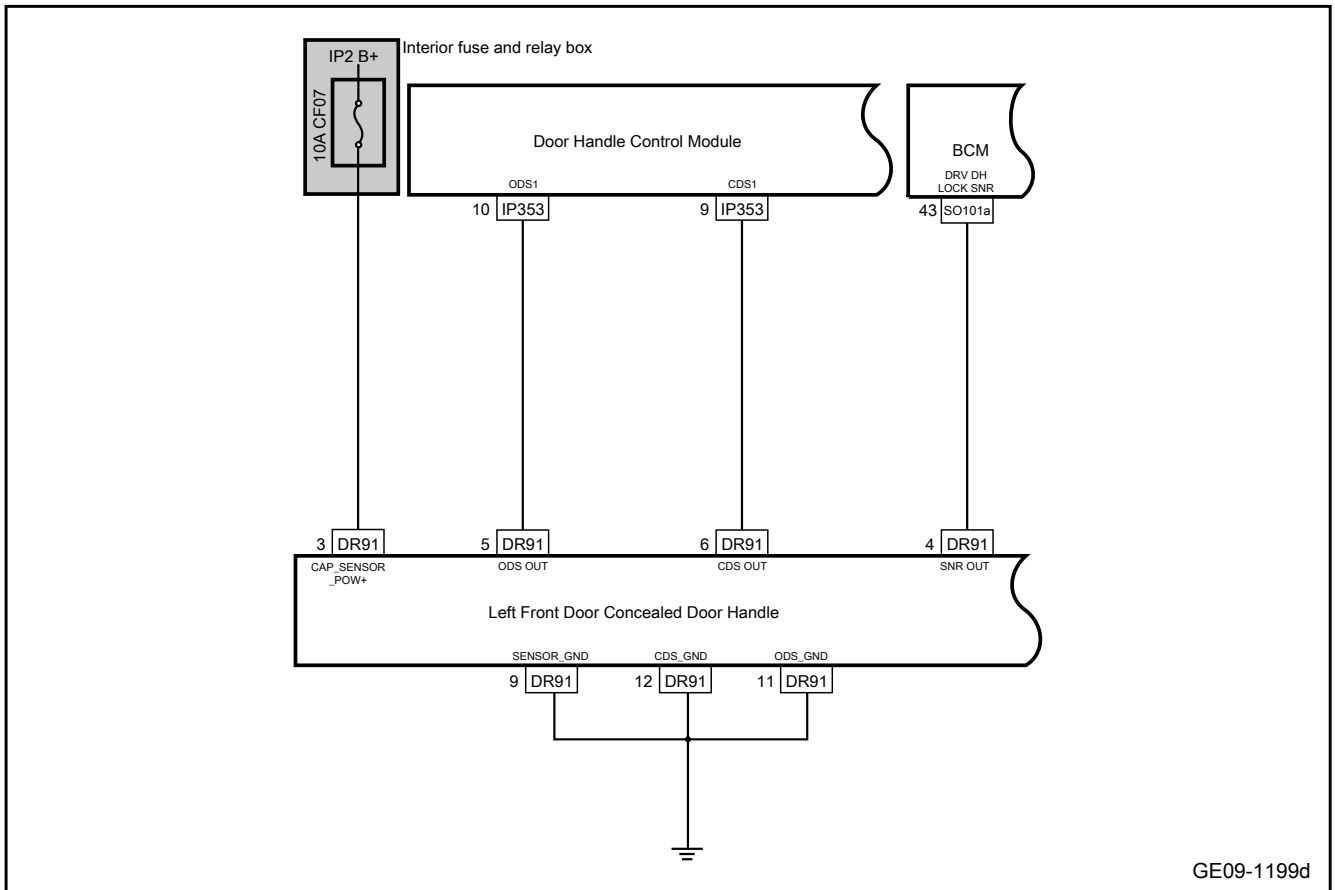
2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109001	The received DHC (door handle controller) information indicates that the LIN frame occurs three times successively (0x18: L_DHC_LF_error == 0x4)	1. LIN2 is in the wake-up state and meets the communication enabling conditions 2. IBC's power supply voltage range is 9-16V 3. cfg hidden door handle option==1 (F101 byte 14 bit 1==1)	1. Circuit 2. BCM 3. Door handle control module 4. Concealed door handle
B109101	The received DHC (door handle controller) information indicates that the LIN frame occurs three times successively (0x18: L_DHC_LF_error == 0x5)		
B109301	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RF_error == 0x4)		
B109401	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RF_error == 0x5)		
B109601	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_LR_error == 0x4)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109701	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_LR_error == 0x5)		
B109901	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RR_error == 0x4)		
B109A01	The received DHC (door handle controller) information indicates that the LIN frame error occurs for 3 consecutive times (0x18: L_DHC_RR_error == 0x5)		

3. Schematic circuit diagram:





GE09-1199d

This manual only diagnoses the fault of the left front concealed door handle. The diagnosis of other concealed door handles is the same as that of the left front hidden door handle.

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front hidden door handle, door handle control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the indoor fuse relay box fuse CF07 and check whether the fuse is blown.

Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check whether the power circuit of the left front hidden door handle is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(3)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding circuit of the hidden handle of the left front door is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(9)	Vehicle body is grounded.	Standard resistance: less than 1Ω
DR91(11)		
DR91(12)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the left front hidden door handle and the BCM is normal.



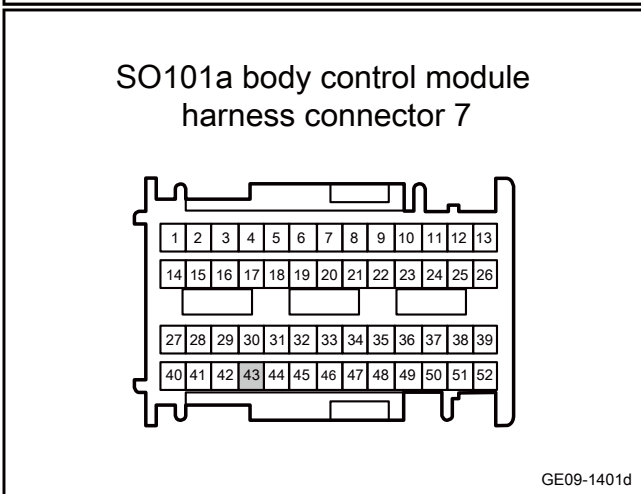
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(4)	SO101a(43)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

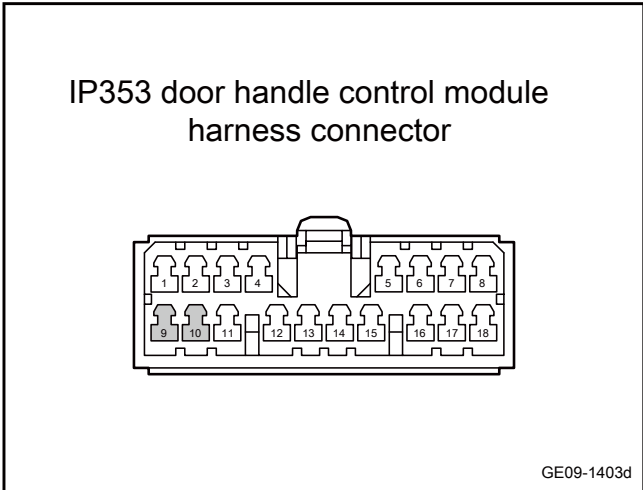
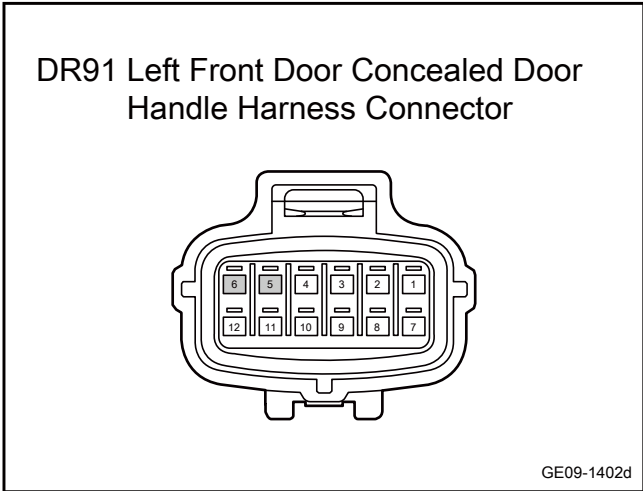


No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the left front hidden door handle and the door handle control module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(6)		
DR91(5)	IP353(10)	Standard resistance: less than 1Ω
DR91(6)	IP353(9)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(5)	Vehicle body is grounded.	Standard voltage: 0V
DR91(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the left front hidden door handle.

- A. Replace the left front hidden door handle. See [Replacement of the Left Front Hidden Door Handle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Replace the door handle control module.
--------	---

- A. Check whether the door handle control module power supply and grounding harness are normal. See [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the door handle control module.

Next Step

Step 10	Reprogram and reset the door handle control module.
---------	---

- A. Reprogram and reset the door handle control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Replace the BCM
---------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 12	Reprogram and reset the BCM.
---------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

### 9.2.4.65 TPMS ID writing and self-check (TPMS integrated in BCM)

#### 1. Diagnosis steps

Step 1	Connect the diagnostic apparatus with OBD diagnostic interface.
--------	---

Next Step

Step 2	Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
--------	---

Next Step

Step 3	Turn on the DTC to enter brand selection and vehicle identification modes.
--------	--

Next Step

Step 4	Enter the first level menu.
--------	-----------------------------

- A. Click 'TPMS ID writing and self-check' to enter the first prompt interface.
- B. Click 'OK'.

Next Step

Step 5	Use the device to activate the sensor.
--------	--

Next Step

Step 6	Enter the ID of the front left wheel.
--------	---------------------------------------

Please input the front left wheel sensor ID, numbers and capital letters of 8 characters.

#### Caution

The input pops up twice, and if the inputs are consistent, continue to the next step. If the inputs are inconsistent, the input is incorrect.

Next Step

Step 7	Enter the ID of the right front wheel.
--------	--

Please input the front right wheel sensor ID, numbers and capital letters of 8 characters.

#### Caution

The input pops up twice, and if the inputs are consistent, continue to the next step. If the inputs are inconsistent, the input is incorrect.

Next Step

Step 8	Enter the right rear wheel ID.
--------	--------------------------------

Please input the rear right wheel sensor ID, numbers and capital letters of 8 characters.

#### Caution

The input pops up twice, and if the inputs are consistent, continue to the next step. If the inputs are inconsistent, the input is incorrect.

Next Step

Step 9	Enter the left rear wheel ID.
--------	-------------------------------

Please input the rear left wheel sensor ID, numbers and capital letters of 8 characters.

#### Caution

The input pops up twice, and if the inputs are consistent, continue to the next step. If the inputs are inconsistent, the input is incorrect.

Next Step

Step 10	Click 'Next' to start the self-test.
---------	--------------------------------------

Next Step

Step 11	Enter extended mode.
---------	----------------------

Next Step

Step 12	Security authentication.
---------	--------------------------

Next Step

Step 13	Write the sensor ID.
---------	----------------------

#### Caution

Delay 5s after writing (otherwise, the old value before writing is read).

Next Step

Step 14	Read the sensor ID and make comparison.
------------	---

- A. If what is read is inconsistent with what is written, it will prompt that the writing is unsuccessful and exit.
- B. If what is read is consistent with what is written, proceed to the next step.

Next Step

Step 15	Self-check in progress.
------------	-------------------------

- A. When XX is 01, the self-check is successful, continue to the next step.
- B. When XX is 02, it prompts that the self-check fails and exits the process.

Next Step

Step 16	Click Next to prompt the end of the TPMS self-test.
------------	---

TPMS ID writing and self-checking succeeded.

Next Step

Step 17	Exit TPMS self-test and return to the main interface.
------------	---

#### 9.2.4.66 Information configuration and reading of the rainfall and illumination sensor

1. Diagnosis steps:

Step 1	Connect a diagnostic instrument to the diagnostic interface of the vehicle
--------	--

Next Step

Step 2	Turn the start switch to "ON".
--------	--------------------------------

Next Step

Step 3	Enter the main interface of the diagnostic instrument and automatically identify or select the "Geely Automotive" brand – "XX" model.
--------	---

Next Step

Step 4	Select "BCM"-select "Special function"-select "Information configuration and reading of rainfall and illumination"
--------	--

#### Note

Input data: information configuration and reading of the rainfall and illumination sensor



Next Step

Step 5	Click “Yes” to execute the special function of information configuration and reading of the rainfall and illumination sensor
--------	--

### 9.2.4.67 ECU self-check

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “BCM”.
--------	---------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “ECU (electronic control unit) self-check”.
--------	--

#### Note

Follow the system prompts.

### 9.2.4.68 IMMO study key

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “BCM”.
--------	---------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “IMMO (Immobilizer) study key”.
--------	--

#### Note

The system will prompt: Keys should be placed at the position that is closest to where the IMMO antenna is installed. Operate according to system prompts

### 9.2.4.69 Remote control learning key

1. Diagnosis steps:

Step 1	Connect a diagnostic instrument to the diagnostic interface of the vehicle
--------	--

Next Step

Step 2	Turn the start switch to “ON”.
--------	--------------------------------

Next Step

Step 3	Enter the main interface of the diagnostic instrument and automatically identify or select the “Geely Automotive” brand – “XX” model.
--------	---

Next Step

Step 4	Select “BCM” – Select “Special function” – Select “Remote control learning key”
--------	---

#### Note

System prompts: Please prepare two brand new keys.

Step 5	Select “Yes”
--------	--------------

#### Note

Operate according to system prompts

### 9.2.4.70 Antenna self-check

1. Diagnosis steps:

Step 1	Connect a diagnostic instrument to the diagnostic interface of the vehicle
--------	--

Next Step

Step 2	Turn the start switch to “ON”.
--------	--------------------------------

Next Step

Step 3	Enter the main interface of the diagnostic instrument and automatically identify or select the “Geely Automotive” brand – “XX” model.
--------	---

Next Step

Step 4	Select “BCM” – Select “Special function” – Select “Antenna self-check”
--------	--

#### Note

The system prompts: Would you like to carry out antenna self-check?

Next Step

Step 5	Select “Yes”, and perform the special function of antenna self-check
--------	--

### 9.2.4.71 Read key IDE

1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “BCM”.
--------	---------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “read key IDE”
--------	-----------------------

#### Note

The system will prompt: Do you want to perform this operation? Click [YES] to continue, and click [NO] to quit the operation.

Next Step

Step 9	Click “confirm” to carry out the function of reading key IDE
--------	--

### 9.2.4.72 Erase ESK

#### 1. Diagnosis steps:

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

**Note**

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select “BCM”.
--------	---------------

Next Step

Step 7	Select “special function”.
--------	----------------------------

Next Step

Step 8	Select “Erase ESK”.
--------	---------------------

**Note**

The system will prompt: Do you want to perform this operation? Click [YES] to continue, and click [NO] to quit the operation.

Next Step

Step 9	Click “Confirm”.
--------	------------------

**Note**

System prompt: please enter 32-digit ESK code (please acquire it from the after-sales service organization of the vehicle).

Next Step

Step 10	Enter the ESK code.
---------	---------------------

Next Step

Step 11 Click "OK" and the function to erase ESK is completed.

### 9.2.4.73 Production line mode switching

1. Diagnosis steps:

Step 1 Connect one end of diagnostic apparatus with OBD diagnostic interface.

Next Step

Step 2 Connect one end of diagnostic apparatus with the computer equipped with DLC software.

Next Step

Step 3 Operate the starting switch of vehicle to place the power in mode ON.

Next Step

Step 4 Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".

#### Note

The system will prompt: name of model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6 Select "BCM".

Next Step

Step 7 Select "special function".

Next Step

Step 8 Select "production line mode switching"

#### Note

The system will notify: whether to switch the production line mode? Note: After switching to after-sale mode, the equipment cannot be switched to the production line mode any more.

Next Step

Step 9	Click “yes” to complete production line mode switching.
--------	---

### 9.2.4.74 Backlighting circuit failure

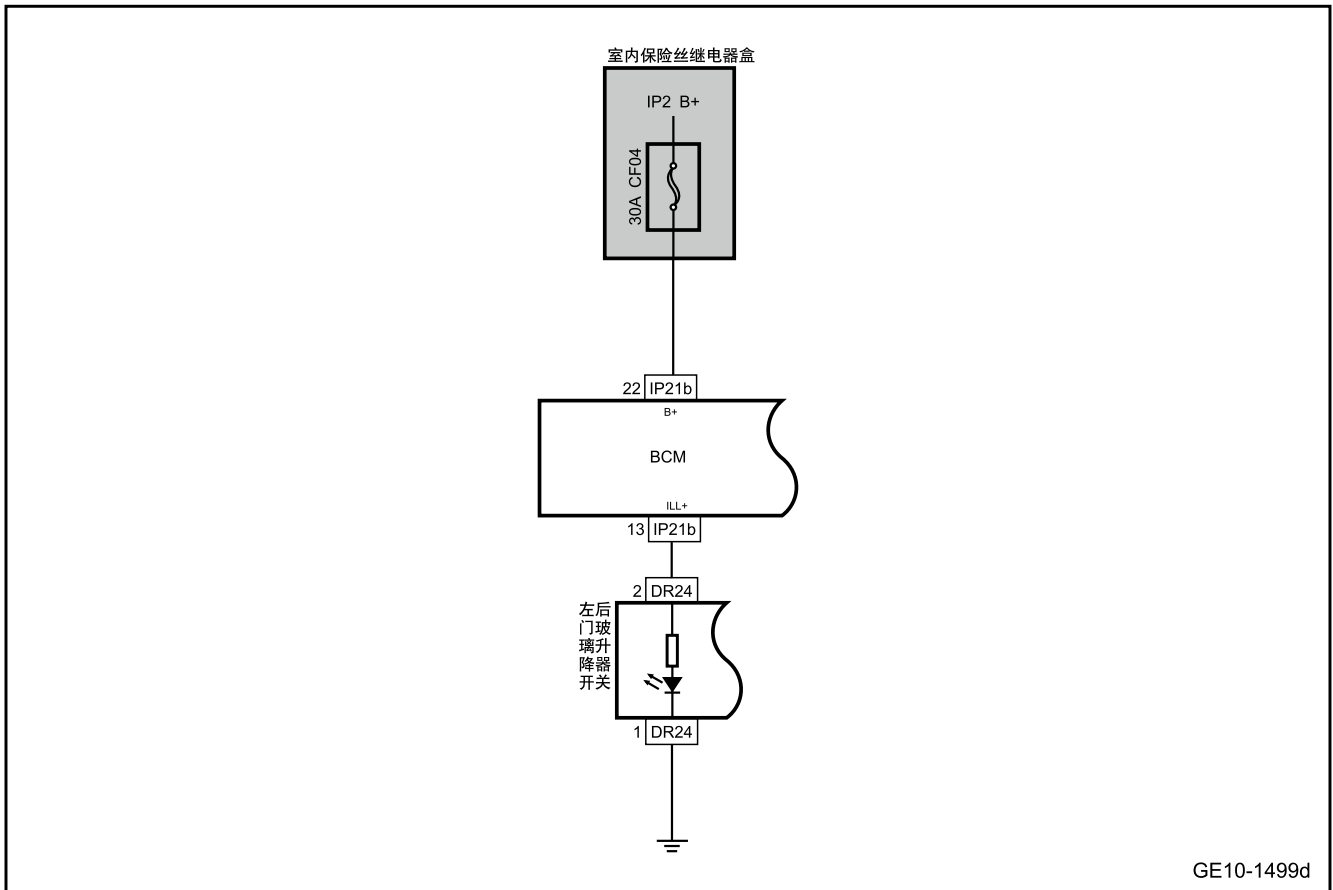
1. DTC description :

DTC	Fault description
B104F4B	Backlight over load or over temperature
B107C11	AC background light control short to GND or over load

2. DTC settings and fault locations :

DTC	Trigger conditions of DTC	Detection condition (control strategy) of DTC	Fault locations
B104F4B	The output current will be checked to monitor the overload or over temperature failure, when the current is bigger than specific HW threshold, it's considered as overload or over temperature failure. Backlight circuit over load for 300ms	Voltage supply is 9V-16V Backlight function active for 100ms	1.Circuit 2.Backlight 3.BCM
B107C11	The output current will be checked to monitor the short to GND or over load failure, if the current is higher than specific power threshold(based on HW), it's considered as short to GND or overload failure. AC background light control Short circuit to GND or Over load for 300ms	Voltage supply of IBC is in the range of 9-16V AC background light control function active for 100ms	

3. Schematic circuit diagram:



## 4. Diagnosis steps

This manual only diagnoses the fault of the left rear door glass lifter switch backlight. The diagnosis of other backlights is the same as the left rear door glass lift switch backlight.

Step 1	Primary check.
--------	----------------

- A. Check whether the appearance of left rear door glass lifter switch is damaged.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF04 and check if it is blown.  
Rated fuse capacity: 30A

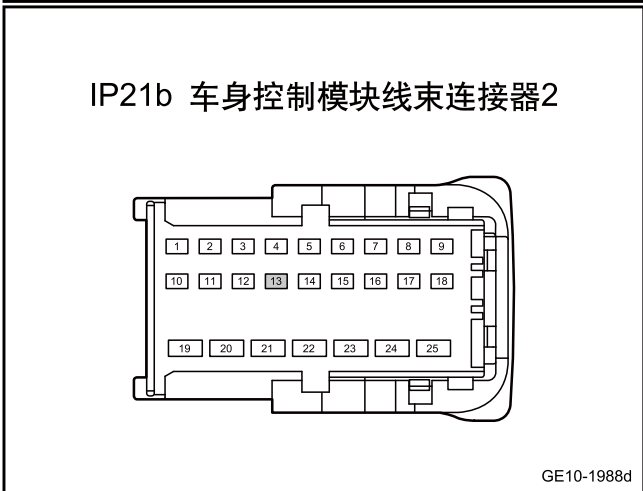
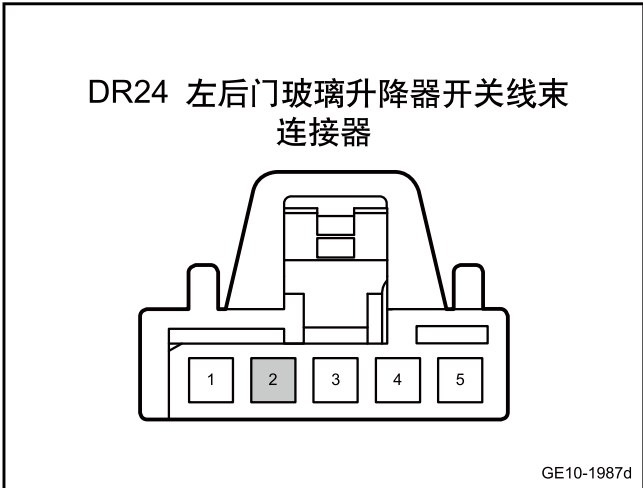


Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the voltage of the power supply circuit of the left rear door glass lifter switch backlight is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left door glass regulator switch harness connector DR24.
- C. Disconnect the BCM harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(2)	IP21b(13)	Standard resistance: less than 1Ω
DR24(2)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Turn on the small light switch.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(2)	Vehicle body is grounded.	Standard voltage: 0V

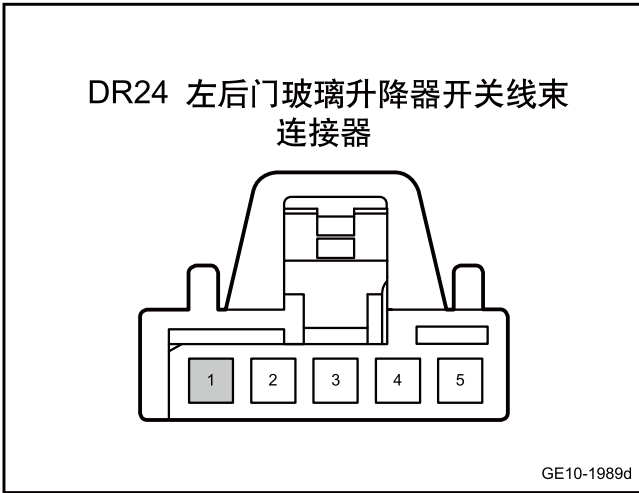
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding circuit of the left rear door glass lifter switch backlight is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left door glass regulator switch harness connector DR24.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 5** Replace the left rear door glass regulator switch.

- A. Replace the left rear door glass regulator switch. Refer to [Replacement of left rear door glass regulator switch](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

**Step 6** Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes → Trouble is removed.

No

**Step 7** Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

## 9.2.5 Removal and installation

### 9.2.5.1 Replacement of central control unit (CCU)

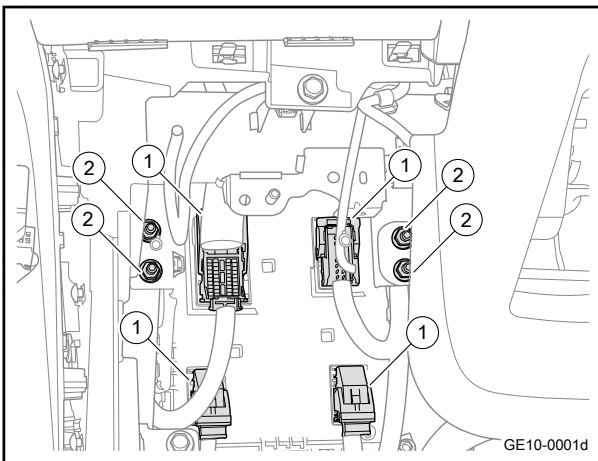
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

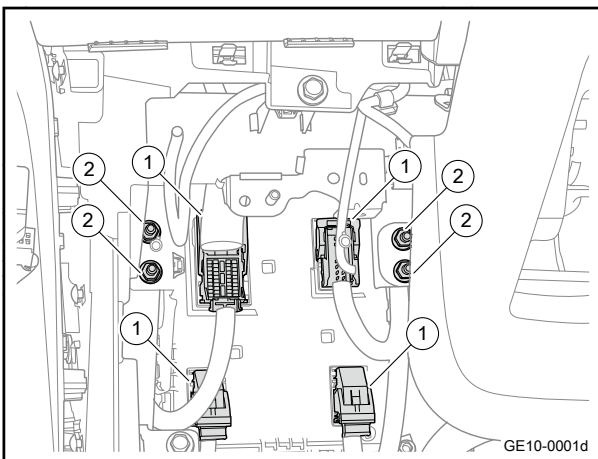
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 3 Disconnect the CCU harness connector 1.
- 4 Remove the 4 fixing nuts 2 of the central controller.
- 5 Take off the CCU.



#### Installation procedure

- 1 Move the central controller to the installation location.
- 2 Install 4 fixing nuts 2 of the central controller.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the CCU harness connector 1.



- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Connect the negative cable of battery.

## 9.3 Vehicle Control Unit (VCU)

### 9.3.1 Specification

#### 9.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of complete vehicle control assembly	M6×16	8 - 10	5.9 - 7.4
Fixing nut of complete vehicle control assembly	M6	8 - 10	5.9 - 7.4

## 9.3.2 Description and Operation

### 9.3.2.1 Instructions and Operations

#### Complete vehicle control unit

The vehicle control unit (VCU) is the core control component of the entire vehicle. It collects or receives signals from the accelerator pedal, brake speed pedal, other power system component signals, and vehicle Platform controller signals, and after making corresponding judgments (for example, the driver's intention recognition), control actions of the controllers of the various sub-components in the system to drive the power output of the vehicle. At the same time, it also serves as the vehicle's energy management center, controlling the SOC balance of the high-voltage battery pack and the power output of the 12V low-voltage system. The main functions of the VCU control unit include: drive torque control, energy recovery control during braking, vehicle energy management control, CAN network communication function, power system fault diagnosis and processing, vehicle status monitoring and fault actions, etc. VCU control unit hardware mainly includes microprocessor, watchdog monitoring module, CAN communication module, BDM debugging module, serial debugging module, serial communication module, power supply and protection junction communication module, power supply and protection circuit, various output IO control and Protection circuit, PWM control interface circuit, etc.

#### Power management

##### Power-on and startup management

Start-up function: refers to the process of the vehicle from other power gear positions (OFF gear, ACC gear, ON gear) to READY gear. It can also be called getting high voltage.

Power-on function: refers to the process of the vehicle from OFF gear to other power gear (ACC gear, ON gear), or the process from ACC gear to ON gear.

Emergency startup: the power state is ACC (that is, the vehicle is stationary), and the SSB switch is pressed and the brake pedal is not depressed (the brake signal is detected by BCM/PEPS), then it enters the emergency start ON position; when the SSB switch is kept pressed for more than 10 seconds, it enter the startup state

When the anti-theft certification is passed and PEPS detects that the brake pedal is pressed at the same time, PEPS sends a startup command to VCU

The VCU receives the startup signal, and the VCU should query the status of each high-voltage related component. When there is no system failure that does not allow power-on and there is no plug-in charging signal, the VCU sends a high-

voltage permission command, and the system enters the pre-charge state.

When the VCU receives the information that the pre-charge is completed and the main relay of the power battery is closed, it sends a command to the instrument to light the Ready lamp.

After the high-voltage power-on is completed, the VCU sends a Buck command to the OBC (DCDC) to make the DC-DC enter the working state.

##### Power-off management

Power-back function: the power-back function refers to the process of turning off the power of the whole vehicle from the READY gear to the OFF or ON gear.

Power-off function: the power-off function refers to the process of powering off the whole vehicle from ON gear to OFF gear or ACC gear.

Power down in emergency:

- a. Press and hold for 3s;
- b. Press the starting button 3 times or more continuously within 2s;

If one of the above conditions is met, PEPS executes emergency power-back and power-off. The high-voltage power-off function refers to the process of powering off the whole vehicle from the READY gear to the OFF or ACC gear. According to the current vehicle speed, the power-off mode is also different.

- a. When the vehicle speed is greater than 5km/h, you need to press the starting button for 2s or 3s for 3 times or more. The PEPS party recognizes it as a power-off request, disconnects the IG hard wire signal and sends the power OFF state on the bus. When the VCU detects that the IG hard wire signal is disconnected, the VCU requests high voltage and turns off the Ready lamp
- b. When the vehicle speed is less than 5km/h, press the starting button PEPS to recognize the power-off request, disconnect the IG hard wire signal and send the power OFF state on the bus. When the VCU recognizes the power-off request, it requests high-voltage power-off and turns off the Ready lamp.
- c. The VCU sends the air conditioner allowable power to 0 on the bus, and sends the IPU fast discharge command.
- d. When the vehicle speed is less than 1.8km/h, the VCU sends the EPB suspension command, and after receiving

the EPB suspension state, it sends the P gear instruction and receives the P gear status signal.

e. After all the high-voltage power components send the work stopping status to the VCU (AC and IPU send the actual torque to 0), the VCU sends a shutdown command, and the BMS immediately disconnects the positive contactor and the negative contactor after receiving the shutdown command, and feeds back the closing status.

#### Driver's demands

##### Accelerator pedal information collection and processing

The accelerator pedal is the main component used to reflect the driving intention. The VCU collects the analog voltage signal of the accelerator pedal signal pin, converts it into a digital quantity, and converts it into a 0-100% opening signal through a calibration curve, which characterizes the driver's acceleration demand and sends the corresponding signal to the bus.

The accelerator pedal is composed of two ways of signals, the second way voltage signal is half of the first way. The credibility of the signal should be checked based on the amplitude of the two ways of signals.

##### Brake pedal information collection and processing

The brake pedal is a component that reflects the driver's braking intention. The VCU collects the status signal of the brake switch, analyzes the driver's braking demand and sends the corresponding information to the bus.

Collect the information of the main and auxiliary brake switches for judging the driver's braking demand.

Check the reliability of the signal and diagnose the fault according to the signal of the main and auxiliary switches.

##### Gear Information management

EGSM detects the operation of the shift knob, analyzes the driver's shift intention and sends this shift request to the VCU via the bus. The VCU judges whether to respond to the gear shifting request according to the brake switch signal, power gear position signal, P gear signal and vehicle speed signal at this time, and sends the actual gear position and electronic control drive mode to the bus. The power system executes the gear shifting action, and completes the management and control of the vehicle in the four gears of P, R, N, and D.

The gear shifting device adopts a rotary mode, which can be rotated by 360°, and is divided into 16 positions, 22.5° for each position. When the user rotates the gear shifting device every 22.5°, he/she will feel obvious frustration. EGSM judges the rotation angle and The position signal is sent out in the

direction, and the VCU determines the user's gear demand according to the analysis signal of the current gear state. The gear shifting knob does not reset after each rotation. It is defined that the rotation from N→R is left-handed, and the rotation from N→D is right-handed.

#### Drive mode management

The driver selects the required driving mode through the mode switch, and the VCU determines the actual driving mode according to the state of the vehicle.

##### Mode switch-(target driving mode)-VCU-(actual mode)

The driving mode is ECO mode by default after powering on. The vehicle running mode can be set only in the ON gear or the Ready gear. If the OFF gear and ACC gear receive a mode switching request, the VCU will not respond.

ON gear or READY gear, press the SPORT button in ECO mode to switch to SPORT mode, and press the ECO button in SPORT mode to switch to ECO mode.

When the VCU receives the mode switching request and judges that the mode can be switched, it sends the corresponding vehicle mode IPK to display the current vehicle mode.

After the SPORT mode is activated, the whole vehicle can output according to the maximum output power, which has better dynamic response.

After the ECO mode is activated, the VCU adjusts the rate of change of torque output and limits the rated discharge and peak power. In this mode, the power output is weaker than the SPORT mode, but the fuel economy is better.

#### Taxiing feedback intensity management

The vehicle taxiing feedback intensity level can be set through MMI, and the feedback level is divided into three levels: low, medium, and high. Each time the feedback level is switched, the meter will prompt the user for the current feedback level.

The vehicle coasting feedback setting is set through the MMI, and the MMI sends the setting signal to the VCU. The VCU judges the current feedback level according to the MMI setting signal, which is divided into three levels: low, medium, and high. Each time the feedback level is switched, the meter will prompt the user for the current feedback level.

The delivered VCU defaults to a moderate coasting feedback level.

The taxiing feedback level can be set only in the ON gear or the ready gear. The VCU will not respond even if the taxiing feedback level switching request sent by the MMI is received in the OFF gear and ACC gear.

## Vehicle power control

### Crawl mode

When the vehicle is started, the vehicle control unit (VCU) judges that the gear is D or R, and the driver does not perform related operations on the brake pedal and accelerator pedal. The EPB is in the released state; the vehicle control unit (VCU) crawls Drive the torque signal to the Integrated Power Unit (IPU).

When the vehicle is at a slope below 10%, the vehicle is not allowed to slip when the vehicle is crawling. When the brake pedal is used to shift gears, the vehicle controller (VCU) provides the initial torque value to ensure that the vehicle does not slip. When the brake pedal is completely released, the vehicle torque needs to keep up smoothly, and the vehicle crawls forward or backward. In the crawl mode, the crawling forward speed is less than or equal to 5km/h, and the crawling backward speed is less than or equal to 5km/h.

During the vehicle's crawling process, the crawling forward speed is less than or equal to 5km/h, the crawling backward speed is less than or equal to 5km/h, and the gradient is less than or equal to 10% (TBD).

### Vehicle running

The execution conditions of the vehicle driving forward and backward are controlled by the vehicle control unit (VCU). The vehicle control unit (VCU) determines whether the segment is in the D or R position, analyzes the accelerator pedal signal and determines the allowable duration and peak discharge power sent by the battery management system (BMS), the integrated power unit (IPU) sends the positive torque limit and the negative torque limit, calculates the target torque and the maximum allowable output torque, sends them to the integrated power unit (IPU), and the integrated power unit (IPU) controls the motor torque to drive the vehicle forward or backward.

### Cruise control

When the vehicle is in the ready gear, there is no need to step on the accelerator pedal and the brake pedal. Through the switch setting, the vehicle speed can be maintained to improve driving comfort; the cruise control switch signal is collected by the BCM, and then sent to the VCU through the CAN bus. VCU master control cruise function.

### AC charging

The vehicle's AC charging port can be connected to an AC charging gun to charge the power battery. The entire charging function includes charging gun plug-in detection, charging permission condition judgment, charging power control, and

charging end judgment. As one of the components, VCU participates in managing the entire process of AC charging.

The VCU detects the CC signal number sent by OBC and sends the command to light up the indicator lamp of the meter's charging gun connection.

After receiving the CP signal sent by the OBC and the fault level sent by IPU and DC is normal or the fault level that does not affect AC charging, the VCU is allowed to send permission to charge

When the AC charging ends, after the VCU receives the end charging sent by the BMS, it stops the DC and A/C work. After receiving the inactive state sent by IP (DC-DC) and the actual power consumption sent by A/C is 0kw, it send the command to turn on the main relay. If there is no feedback from DC or A/C after the VCU sends the command, the VCU waits for 1 second and then sends command to turn off the main relay.

When the VCU detects the semi-connected state of the charging gun sent by the OBC, charging is not allowed at this time, the vehicle is not allowed to drive, and the vehicle remains in the P gear.

When the vehicle speed is greater than 1.8km/h, the OBC detects the CC or CP signal, and after the VCU receives the CC connection signal sent by the OBC, the vehicle does not enter AC charging and the vehicle runs normally.

The VCU controls the slow charging and precharge relay and the slow charge relay. If the relay fails or the precharge fails during AC charging, it will send a signal indicating that charging is not allowed.

### DC charging

The complete vehicle supports the DC fast charging function of the DC charging port. The entire charging function includes DC charging gun insertion gun detection, charging permission condition judgment, charging power control, and charging end judgment. As one of the components, VCU participates in managing the entire process of DC charging.

When the vehicle is being charged, when the vehicle control unit (VCU) receives the fast charge connection signal sent by the battery management system (BMS), the VCU sends the information to the gateway and forwards the information to the meter, and the meter lights up the charging line connection indicator lamp.

The VCU needs to detect the BMS fast charging gun connection signal at the same time. After the connection signal is normal, only when the high-voltage interlock status is normal and the fault level received from the IPU and DC is



normal or a fault level that does not affect the DC charging is allowed to be sent.

When the DC charging ends, after the VCU receives the end charging sent by the BMS, it stops the DC and A/C work. After receiving the inactive state sent by IPU (DC-DC) and the actual power consumption sent by A/C is 0kw, it send the command to turn on the main relay. If there is no feedback from DC or A/C after the VCU sends the command, the VCU waits for 1 second and then sends the command to turn on the main relay.

#### Smart recharging function

The smart recharging function means that the BMS regularly monitors the voltage of the low-voltage battery when the vehicle is in a sleep state, and wakes up the VCU when the battery voltage is lower than the lower limit set value. The VCU activates the DC-DC to charge the battery to prevent the low-voltage battery from being under voltage.

#### Thermal management function

The management function means that the user can control the on and off states of the air conditioner through the local air conditioner panel, MMI air conditioner and remote air conditioner settings, and adjust the temperature in the vehicle. In addition, according to the temperature of each power component (such as battery), turn on the fan, air conditioner or PTC heating device to control the temperature of the power component and make it work under suitable temperature conditions.

#### Charging conditions

After the vehicle enters the charging mode, the cooling water pump is turned on. The control of the fan is affected by the DCDC body, the water temperature of the high and low voltage charging system, and the delay strategy; when the VCU collects the signal of the high and low voltage charging system in the working state, that is to turn on the demand signal for water pump control, and control the fan's gear position by judging the water temperature signal sent by the high and low voltage charging system.

Considering that the high-power use of other electrical appliances and external electrical appliances in the vehicle during the charging condition makes the DCDC work at the maximum load, which causes the temperature of the DCDC body to rise too great and too fast, so it is needed to increase the monitoring of the temperature of the DCDC body under the charging condition.

#### Driving conditions

Due to the driving conditions, the fan speed is controlled by the virtual water inlet temperature of the motor control unit, the component body, the vehicle speed, etc.; when the VCU collects the ready state signal, it will turn on the demand signal for water pump control, and Control the fan's gear position by judging the virtual water temperature of the water inlet sent by the motor control unit (the charging condition is based on the measured water temperature of the high and low voltage charging system, pay attention to the distinction); when the VCU collects the ready state signal, it controls the fan's gear by collecting and judging the motor/inverter/DCDC body temperature signal while collecting the virtual temperature of the water inlet of the motor control unit (using the body sensor to collect the higher temperature as the control parameter).

#### Security management function

##### Collision power off

When the vehicle is running or being charged, after the vehicle collides, when the vehicle control unit (VCU) receives the BMS-sent signals indicating that main positive and main negative relays are disconnected, the VCU initiates the EPB pull-up command.

##### Insulation detection

During the AC and DC charging process, the battery management system (BMS) sends a signal to the vehicle controller (VCU) when the battery management system (BMS) detects the leakage of the high voltage system; after the VCU judges and processes the transmitter, the gateway forwards it to the meter display screen, and sends the signal to the motor controller (IPU), DC stops working, the vehicle controller (VCU) at the same time the transmitter slow charge/fast charge circuit positive contactor is disconnected to OBC, and OBC starts to discharge.

##### Driving prohibited during charging

The charging prohibition function refers to the function that the vehicle is not allowed to run when the DC charging gun or the AC charging gun is detected when the vehicle speed is  $-1.8\text{km/h} \leq V \leq 1.8\text{km/h}$ .

When the vehicle is in the READY gear and the vehicle speed is  $v > 1.8\text{km/h}$  or  $v < -1.8\text{km/h}$ , and the VCU receives the DC charging gun connection signal sent by the BMS or the AC charging gun connection signal sent by the OBC, the vehicle keeps running normally.

When the vehicle is in the READY gear and the vehicle speed is  $-1.8\text{km/h} \leq V \leq 1.8\text{km/h}$ , and when the VCU receives the DC charging gun connection signal sent by the BMS or the AC charging gun connection signal sent by the OBC, the vehicle

is not allowed to drive, and the Ready state indicator lamp is turned off. Determine whether the gear position is P gear at this time. If it is not P gear, it needs to be switched to P gear, and gear shifting is not allowed. It does not respond to shifting actions in P gear and keeps P gear.

When the vehicle is in the OFF gear or ON gear, plug in the DC charging gun or the AC charging gun, or plug the DC charging gun and the AC charging gun at the same time. When the brake pedal is pressed and the starting button is pressed, the whole vehicle cannot get high voltage. The VCU judges whether the gear is at the P gear at this time. If it is not in the P gear, the gear must be switched to the P gear and the gear shift is not allowed. It does not respond to shifting actions in P gear and keeps P gear.

#### High voltage interlock

When the BMS detects a fault in the internal high voltage system of the battery pack while the vehicle is running, the BMS limits the output power from the current discharge power to 0kw within 1 minute, and the VCU limits the output power according to the current continuous discharge power sent by the BMS. When the vehicle speed is  $\leq 1.8$ km/h, the VCU sends air conditioning and DC discharging is not allowed, after the high-voltage components stop working, the VCU sends to command to open the main relay.

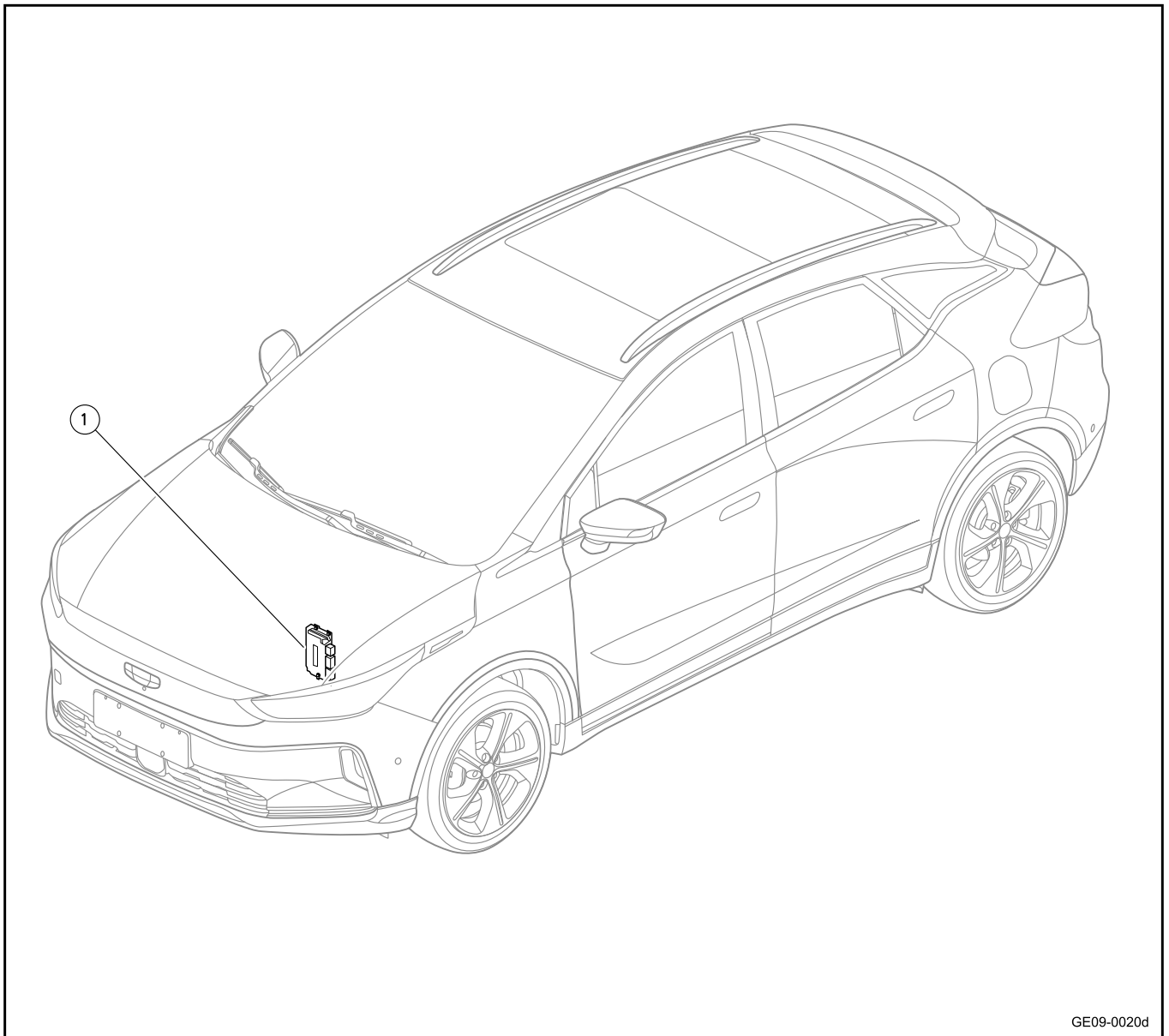
VCU detects the positive and negative connectors of the integrated power unit (IPU), the positive and negative connectors on the junction box, the positive and negative connectors of the compressor, the positive and negative electrodes of the OBC AC charging and the high-voltage output positive and negative connectors, and the PTC positive and negative connectors connection reliability. When the VCU fails to detect the normal high-voltage interlock signal, it sends the high-voltage interlock connection failure through the CAN network, and records the abnormal high-voltage interlock connection failure code, and lights up the system failure lamp

When the vehicle speed is greater than 1.8km/h during driving, and when the VCU receives an abnormal high-voltage interlock signal of the vehicle, the VCU will limit the current discharge power to 0kw within 1min, and the ready indicator lamp will go out. After the vehicle speed is less than 1.8km/h, the A/C allowable discharge power is 0, the IPU (DC-DC) sends the inactive command. After the VCU receives the IPU (DC-DC) and the working status is inactive and the A/C power consumption is 0, control the vehicle gear to switch to the P gear and do not allow gear shifting. The VCU sends an instruction to open the main relay to the BMS to disconnect the positive and negative contactors.

When the VCU detects an abnormality in the high-voltage interlock signal for 1 second, the high-voltage interlock signal is faulty.

9.3.3 Part location

9.3.3.1 Part Position

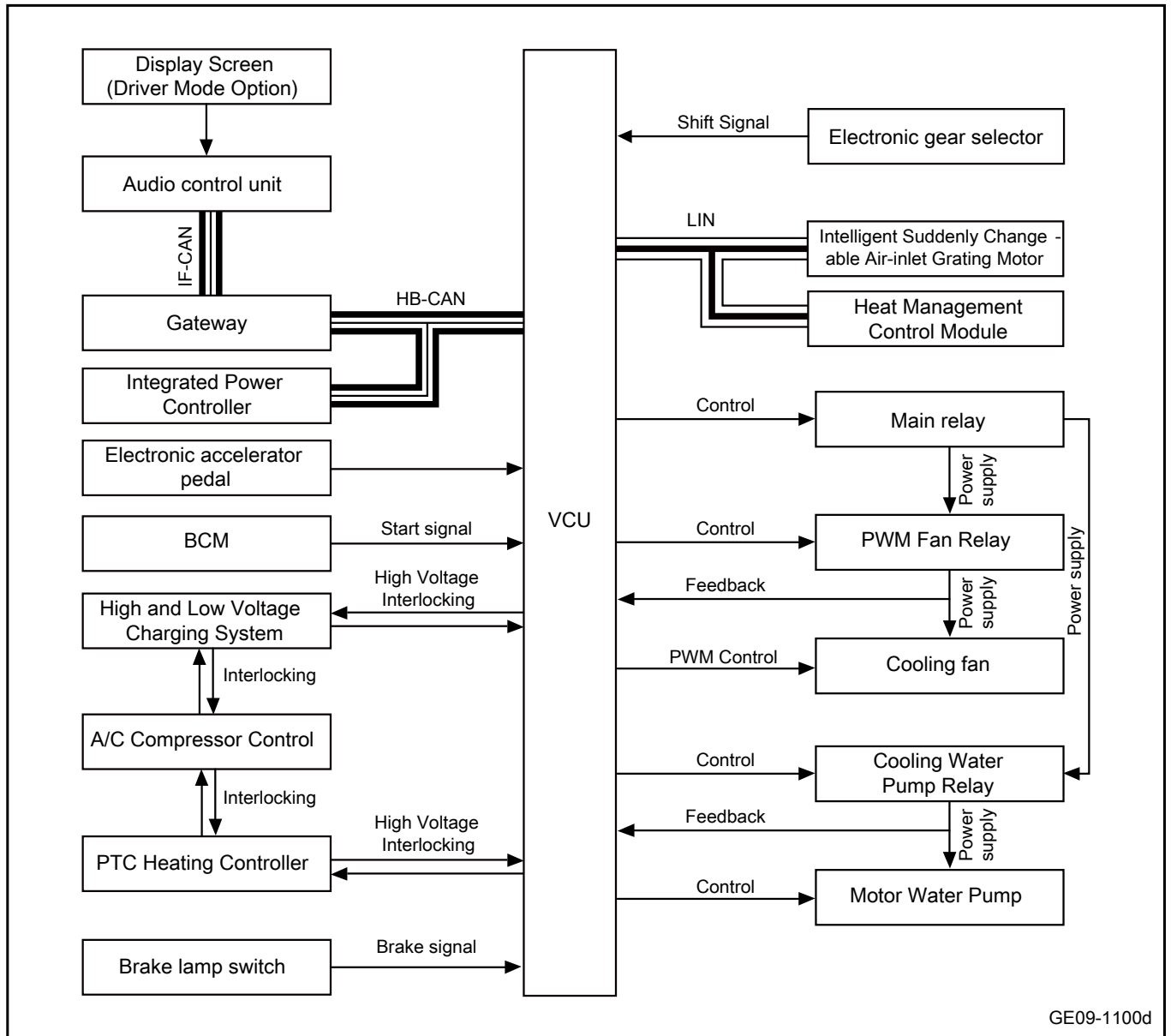


GE09-0020d

- 1. Vehicle Control Unit (VCU)

9.3.4 Electrical block diagram

9.3.4.1 Electrical schematic diagram of VCU



GE09-1100d

### 9.3.5 Diagnostic information and steps

#### 9.3.5.1 Diagnosis Description

Before diagnosing the fault of the vehicle control system. Refer to [Description and operation](#). Understand and familiarize yourself with the working principle of the vehicle control system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of the vehicle control system should start with visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of faulty parts.

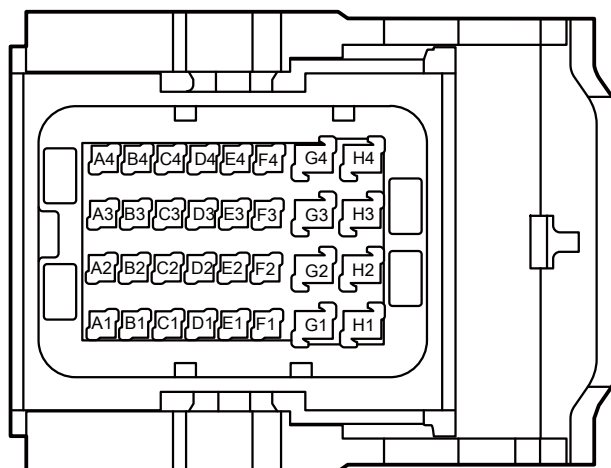
#### 9.3.5.2 Routine inspection

1. Check if there is any after-sales installation that may affect the normal operation of VCU, and confirm that VCU can operate normally.
2. Check system components that are easily accessible or visible to ensure that there are no obvious damages or conditions that might cause malfunctions.

#### 9.3.5.3 List of complete vehicle control unit connector terminals

##### CA66b VCU module harness connector A

CA66b VCU module harness connector A



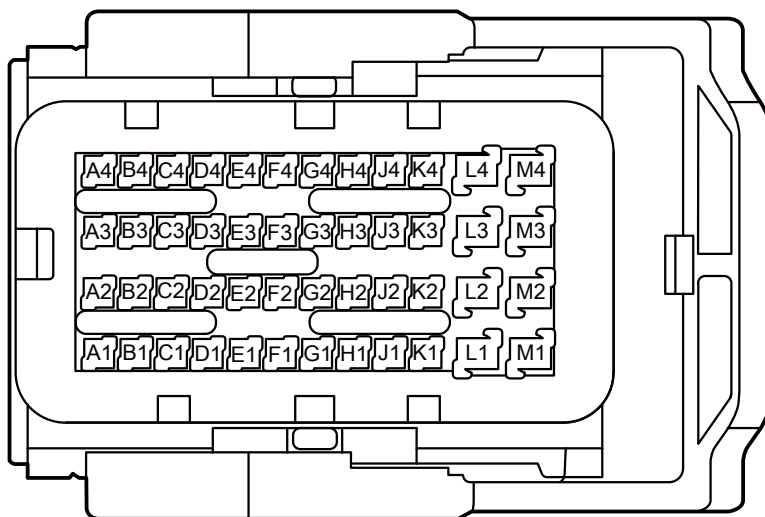
GE09-1125d

Terminal No.	Terminal name	Terminal description
A1	-	-
A2	-	-
A3	-	-
A4	-	-
B1	Cooling fan control signal	PWM control signal of cooling fan

Terminal No.	Terminal name	Terminal description
B2	-	-
B3	-	-
B4	-	-
C1	-	-
C2	-	-
C3	-	-
C4	-	-
D1	Electric motor pump control signal	Motor water pump control signal output
D2	-	-
D3	-	-
D4	-	-
E1	Cooling water pump relay control	Cooling water pump relay grounding control
E2	-	-
E3	-	-
E4	-	-
F1	-	-
F2	-	-
F3	-	-
F4	-	-
G1	PWM fan relay control	PWM fan relay control signal
G2	-	-
G3	-	-
G4	Main relay control	Main relay control signal
H1	-	-
H2	-	-
H3	-	-
H4	High voltage interlock output signal	High voltage interlock output signal

CA67b VCU module harness connector B

CA67b VCU module harness connector B



GE09-1126d

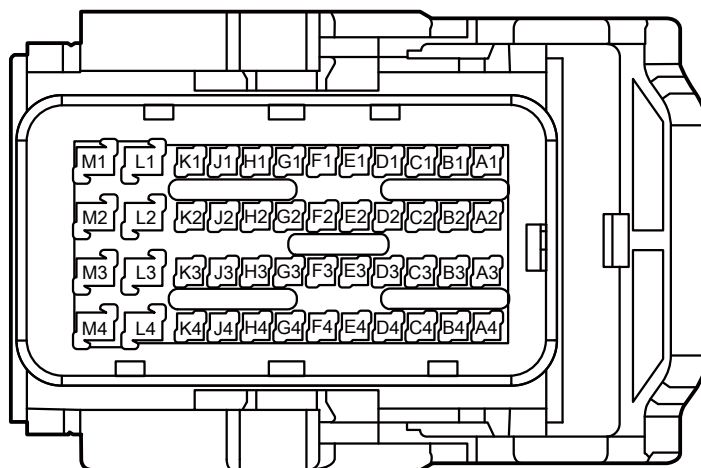
Terminal No.	Terminal name	Terminal description
A1	-	-
A2	-	-
A3	-	-
A4	Electric accelerator pedal 5V power supply 2	2.5V power supply of electronic accelerator pedal position sensor 2
B1	HB CAN-H	Hybrid CAN high line
B2	HB CAN-L	Hybrid CAN low line
B3	-	-
B4	Electric accelerator pedal 5V power supply 1	2.5V power supply of electronic accelerator pedal position sensor 1
C1	-	-
C2	Electronic accelerator pedal signal input 1	Electronic accelerator pedal position sensor 1 signal input
C3	Electric accelerator pedal sensor grounding 1	Electronic accelerator pedal position sensor 1 analog grounding circuit
C4	-	-
D1	-	-
D2	Electronic accelerator pedal signal input 2	Electronic accelerator pedal position sensor 2 signal input

Terminal No.	Terminal name	Terminal description
D3	Electric accelerator pedal sensor grounding 2	Electronic accelerator pedal position sensor 2 analog grounding circuit
D4	-	-
E1	-	-
E2	-	-
E3	-	-
E4	-	-
F1	-	-
F2	-	-
F3	-	-
F4	-	-
G1	-	-
G2	Cooling fan feedback signal	Cooling fan feedback signal input
G3	-	-
G4	-	-
H1	-	-
H2	-	-
H3	-	-
H4	Brake signal	Brake signal input
J1	-	-
J2	LIN	LIN data communication bus
J3	Brake lamp switch signal	Brake lamp switch signal input
J4	-	-
K1	-	-
K2	-	-
K3	-	-
K4	Starting signal	Starting signal input
L1	Main relay power supply 1	Main relay output power supply 1
L2	IG1 power supply	VCU module ACC\ON\START power supply
L3	Ground connection	VCU module grounding circuit
L4	Ground connection	VCU module grounding circuit
M1	B+ Power supply	Battery power supply of VCU module
M2	Main relay power supply 2	Main relay output power supply 2
M3	Main relay power supply 3	Main relay output power supply 3
M4	Ground connection	VCU module grounding circuit



CA68 VCU module harness connector C

CA68 VCU module harness connector C



GE09-1127d

Terminal No.	Terminal name	Terminal description
A1	-	-
A2	-	-
A3	CS CAN-L	Chassis CAN low line
A4	CS CAN-H	Chassis CAN high line
B1	-	-
B2	-	-
B3	Private CAN-L	Private CAN low line
B4	Private CAN-H	Private CAN high line
C1	-	-
C2	-	-
C3	-	-
C4	-	-
D1	-	-
D2	LIN	LIN data communication bus
D3	-	-
D4	-	-
E1	-	-
E2	-	-
E3	-	-

Terminal No.	Terminal name	Terminal description
E4	-	-
F1	-	-
F2	-	-
F3	-	-
F4	-	-
G1	High voltage interlock input signal	High voltage interlock input signal
G2	-	-
G3	-	-
G4	-	-
H1	Gear signal input	Gear signal input
H2	-	-
H3	-	-
H4	-	-
J1	-	-
J2	-	-
J3	-	-
J4	-	-
K1	-	-
K2	-	-
K3	Cooling water pump relay feedback signal	Cooling water pump relay feedback signal
K4	-	-
L1	-	-
L2	-	-
L3	-	-
L4	-	-
M1	-	-
M2	-	-
M3	-	-
M4	-	-

#### 9.3.5.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
VCU power failure	1. Harness and connector	Refer to <a href="#">VCU power failure</a>
	2. Fuse	
	3.VCU	
VCU communication fault	1. Harness and connector	Refer to <a href="#">VCU communication fault</a>
	2.VCU	
Internal fault of VCU	1.VCU	Refer to <a href="#">Internal failure of VCU</a>
High voltage interlock failure	1. Harness and connector	See <a href="#">High-voltage Interlock Failure</a>
	2. A/C compressor	

Fault Symptom	Suspected fault location	Maintenance plan
	3. High and low voltage charging system 4.PTC heating controller 5.VCU	
Motor water pump PWM signal failure	1. Harness and connector 2. Electric motor pump 3.VCU	See <a href="#">Motor Water Pump PWM Signal Failure</a>
Motor water pump feedback signal failure	1. Harness and connector 2.ACUI 3. Impact sensor	See <a href="#">Motor Water Pump Feedback Signal Failure</a>
Motor water pump relay control signal failure	1. Harness and connector 2. Relay 3. Fuse 4.VCU	See <a href="#">Motor Water Pump Relay Control Signal Failure</a>
Electronic accelerator pedal signal 1 failure	1. Harness and connector 2.VCU 3. Electronic accelerator pedal	Refer to <a href="#">Electronic accelerator pedal signal 1 failure</a>
Electronic accelerator pedal signal 2 failure	1. Harness and connector 2.VCU 3. Electronic accelerator pedal	Refer to <a href="#">Electronic accelerator pedal signal 2 failure</a>
Electronic accelerator pedal signal failure	1. Harness and connector 2.VCU 3. Electronic accelerator pedal	Refer to <a href="#">Electronic accelerator pedal signal failure</a>
Main relay fault	1. Harness and connector 2. Relay 3. Fuse 4.VCU	Refer to <a href="#">Main relay fault</a>
VCU reports other system failures	1.VCU	See <a href="#">VCU Report Other System Failures</a>
LIN communication failure	1. Harness and connector 2.VCU 3. Smart mutable intake grille motor 4. Thermal management control module 5. A/C compressor 6. Automatic air conditioning control panel 7. Three-way solenoid valve 8.PTC heating controller 9. Four-way valve 10. Electronic expansion valve 11. Solenoid water valve	See <a href="#">LIN Communication Failure</a>

Fault Symptom	Suspected fault location	Maintenance plan
Fault on cooling fan	1. Harness and connector	Refer to <a href="#">Cooling fan fault</a>
	2. Relay	
	3. Fuse	
	4.VCU	
	5. Cooling fan	
Intelligent variable intake grille does not work	1. Harness and connector	Refer to the <a href="#">Failed Operation of Intelligent Variable Intake Grille</a>
	2. Fuse	
	3. Smart mutable intake grille motor	
	4.VCU	

### 9.3.5.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Power supply is low	Refer to <a href="#">VCU power failure</a>
U300617	Power supply is high	
U003788	The chassis bus is switched off.	Refer to <a href="#">VCU communication fault</a>
U006488	The new energy bus is switched off.	
U000100	Private CAN bus off	
U016487	Communication with AC is lost	
U042481	Error in communication with AC CAN	
U014687	Communication with GW is lost	
U044781	Error in communication with GW CAN	
U015587	Communication with IPK is lost	
U042381	Error in communication with IPK CAN	
U011087	Loss of communication with the motor controller IPU	
U249683	Error in communication with IPU CAN	
P1C8A87	Loss of communication with private CAN motor controller	
P1C8B86	Private CAN motor controller communication error	
U029887	Communication with DCDC is lost	
U059981	Error in communication with DCDC CAN	
U111587	Loss of communication with vehicle-mounted charger OBC	
U140581	Error in communication with OBC CAN	
U011287	Communication with BMSH is lost	
U041381	Error in communication with BMSH CAN	
U111887	Communication with PCU parking lock module is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U140881	Error in communication with PCU CAN	
U010387	Communication with shift level EGSM is lost	
U040481	Error in communication with EGSM CAN	
U015187	Communication with ACU airbag module is lost	
U045281	Error in communication with ACU CAN	
U014087	Loss of communication with BCM vehicle body controller	
U042281	Error in communication with BCM CAN	
U013187	Loss of communication with EPS electric power steering	
U042081	Error in communication with EPS CAN	
U012687	Communication with SAS timed out	
U042881	Error in communication with SAS CAN	
U012287	Communication with ESC is lost	
U241283	Error in communication with ESC CAN	
U019887	Loss of communication with T-BOX teleprocessing controller	
U049981	T-BOX CAN communication error	
U120387	Communication with FCS is lost	
U143381	T-BOX CAN communication error	
U015987	Communication with PAS is lost	
U045A81	Communication error with PAS CAN	
U015687	Communication with MMI is lost	
U045781	Error in communication with MMI CAN	
P1C1E04	Accelerator pedal signal 1 voltage is too high	Refer to <a href="#">Electronic accelerator pedal signal 1 failure</a>
P1C1F04	Accelerator pedal signal 1 voltage is too low	
P1C2004	Accelerator pedal signal 2 voltage is too high	Refer to <a href="#">Electronic accelerator pedal signal 2 failure</a>
P1C2104	Accelerator pedal signal 2 voltage is too low	
P1C2105	Unreliable accelerator pedal signal	Refer to <a href="#">Electronic accelerator pedal signal failure</a>
P1C2204	The two signals of the accelerator pedal are inconsistent	
P1C0852	Main relay fault	Refer to <a href="#">Main relay fault</a>
P1C2604	Battery discharge failure level 2	See <a href="#">VCU Report Other System Failures</a>
P1C2704	Battery discharge failure level 3	

Diagnostic Trouble Code	Description	Fault location/elimination method	
P1C2804	Battery discharge failure level 4		
P1C6C04	BMS reports power battery discharging level 6 failure		
P1C6D04	BMS reports power battery charging level 2 failure		
P1C718A	BMS reports power battery charging level 3 failure		
P1C728A	BMS reports power battery charging level 4 failure		
P1C6E04	BMS reports power battery charging level 6 failure		
P1C2B04	Charger fault level 2		
P1C2C04	Charger fault level 3		
P1C2C05	Charger fault level 6		
P1C2F04	Gear fault level 3		
P1C6F04	PCU reports a level 3 fault		
P1C3304	Motor controller failure level 1 (reduced power)		
P1C3404	Motor controller fault level 2 (turn off output)		
P1C3504	Motor controller fault level 3 (power off)		
P1C3804	DCDC controller failure level 2 (automatically recoverable)		
P1C3904	DCDC controller failure level 3 (can be reset to KL15 )		
P1C4296	Speed signal warning failure		
P1C6B25	BMS reports insulation failure		
P1C3A96	EBD reports failure		
P1C3B96	ABS report failure		
P1C3B00	ESP report failure		
P1C3C96	TCS report failure		
P1C3D96	EPS report failure		
P1C3F96	Air conditioning system reports failure		
P1C4096	High voltage interlock failure		See <a href="#">High-voltage Interlock Failure</a>
P1C7D04	Motor water pump PWM signal is short circuited to power supply		See <a href="#">Motor Water Pump PWM Signal Failure</a>
P1C7E04	Motor system water pump PWM control signal is short-circuited to ground		

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C7F04	Motor system water pump PWM control signal is open circuited	
P1C1352	Motor water pump relay failure	See <a href="#">Motor Water Pump Feedback Signal Failure</a>
P1C7D05	The motor water pump enabling signal is short-circuited to the power supply	See <a href="#">Motor Water Pump Relay Control Signal Failure</a>
P1C7E05	The motor water pump enabling signal is short-circuited to ground	
P1C7F05	Motor water pump enabling signal is open circuited	
P1CA204	VCU internal NVM reading data error	Refer to <a href="#">Internal failure of VCU</a>
P1CA304	VCU internal NVM writing data error	
P1C1E00	IMMO authentication failure causes startup failure	
P1C1E01	Body control unit BCM reports cruise switch failure	
P1C4396	Invalid vehicle speed signal (reduced power)	
P1C5C63	Collision signal detected	
P1C6B87	PCU does not respond to VCU commands	
P1C6B01	High voltage waiting for precharge timeout on regular request	
P1C6B02	High voltage waiting for precharge timeout on charging request	
P1C6B03	High voltage waiting for precharge timeout on smart recharge request	
P1C6B04	High voltage waiting for precharge timeout on external discharge request	
P1C6B05	High voltage waiting for precharge timeout on remote air conditioning request	
P1C6B06	High voltage waiting for the main relay to close timeout on the regular request	
P1C6B07	High voltage waiting for the main relay to close timeout on the charging request	
P1C6B08	High voltage waiting for the main relay to close timeout on smart power supply request	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C6B09	High voltage waiting for the main relay to close timeout on external discharging request	
P1C6B0A	High voltage waiting for the main relay to close timeout on remote air conditioning request	
P1C6B0C	High voltage waiting for BMS&IPU to work timeout on the charging request	
P1C6B0D	High voltage waiting for BMS&IPU to work timeout on the smart power supply request	
P1C6B0E	High voltage waiting for BMS&IPU to work timeout on external discharging request	
P1C6B0F	High voltage waiting for BMS&IPU to work timeout on the remote air conditioning request	
P1C6B10	High voltage waiting for BMS&IPU to work timeout on regular fast	
P1C6B13	High voltage waiting for BMS&IPU to work timeout on the external discharging request fast	
P1C6B14	High voltage waiting for BMS&IPU to work timeout on the remote air conditioning request fast	
P1C6B15	BMS&IPU status abnormal response timeout under high pressure in normal mode	
P1C6B16	BMS&IPU&DCDC status abnormal response timeout under high voltage in charging mode	
P1C6B17	BMS&IPU&DCDC abnormal response timeout under high-voltage state in smart power supply mode	
P1C6B18	BMS&IPU&DCDC abnormal response timeout under high voltage state in external discharging mode	
P1C6B19	BMS&IPU&DCDC abnormal response timeout under high pressure in remote air conditioning mode	
P1C6C02	Stopper failure	



Diagnostic Trouble Code	Description	Fault location/elimination method	
P1C6C03	Locked-rotor failure		
P1C6C09	Electrical failure		
P1C6C05	Low voltage fault		
P1C6C06	Overvoltage fault		
P1C6C07	Over temperature fault		
P1CAC00	Internal fault of VCU		
P1CAD04	The software is not compatible with the vehicle		
P1C6B0B	High voltage waiting for BMS&IPU to work timeout on regular request		
P1C6C08	Lin fault		See <a href="#">LIN Communication Failure</a>
P1CCE92	PWM fan relay failure		Refer to <a href="#">Cooling fan fault</a>
P1CCF12	The PWM fan enabling signal is short-circuited to the power supply		
P1CCF11	PWM fan enabling signal is short-circuited to ground		
P1CCF13	PWM fan enabling signal is open		
P1CD012	PWM fan control signal is short-circuited to the power supply		
P1CD011	PWM fan control signal is short-circuited to ground		
P1CD013	PWM fan control signal is open circuited		

### 9.3.5.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 9.3.5.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

## 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 9.3.5.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	Battery voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Fault occurrence counter	0-255	time
4	P-gear lock request issued by VCU	0-2	-
5	Motor torque request issued by VCU	-1200-1200	Nm
6	VCU controls the on-off of the BMSH high-voltage main circuit	0-7	-
7	Motor working status mode request issued by VCU	0-7	-
8	Air conditioner cooling fan PWM	0-100	%
9	Motor speed (general)	-32767-32768	rpm
10	IPU failure level	0-15	-
11	Motor working status mode	0-7	-
12	IPU actual torque	-1200-1022	Nm
13	Actual temperature at motor water inlet	-40-214	°C
14	BMS status	0-31	-
15	OBC status request	0-15	-
16	OBC failure level	0-15	-
17	P gear locked state	0-7	-
18	Power-on/off logic state	0-255	-
19	VCU internal motor torque request	-1200-1200	Nm
20	Torque mode management	0 - 255	-
21	The current fault level inside the VCU	0-255	-
22	Cruise control status	0-7	-

Serial No.	DID description	Physical value range	Unit
23	ePT system Ready status	0-1	-
24	Cruise switch status	0-1	-
25	Speed value set by cruise control	0-254	km/h
26	EPB lock request issued by VCU	0-1	-
27	Prompt whether the throttle opening signal is valid	0-1	-
28	Collision output status	-	-
29	ESC signal prompts whether ABS is activated	-	-
30	ESC signal prompts whether TCS is activated	-	-
31	Brake master cylinder pressure	0-254	Bar
32	DCDC failure level	0-15	-
33	DCDC work enabling status	0-1	-
34	BMS charging failure level	0-15	-
35	BMS discharge failure level	0-15	-
36	EPB system status	0-3	-
37	VCU internal gear information	0 - 255	-
38	Maximum motor peak torque limit	-4000-4000	Nm
39	Minimum motor peak torque limit	-4000-4000	Nm
40	Target torque at the wheel end of the original delivery	-4000-4000	Nm
41	VCU detects high voltage interlock status	0-1	-
42	Mileage before the first fault	0-999999	Km

### 9.3.5.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by VCU can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Connect the scan tool.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Select "VCU"/"action test".
- e. Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Motor cooling water pump enabling signal	Cooling water pump of motor	Activate/deactivate
High voltage interlock	VCU	0-100%
Motor system cooling water pump control	Cooling water pump of motor	0-100%
PWM fan enabling signal	Cooling fan	Activate/deactivate
PWM fan control	Cooling fan	0-100%
Grille position	Smart air intake grille	0-100%

### 9.3.5.10 VCU power failure

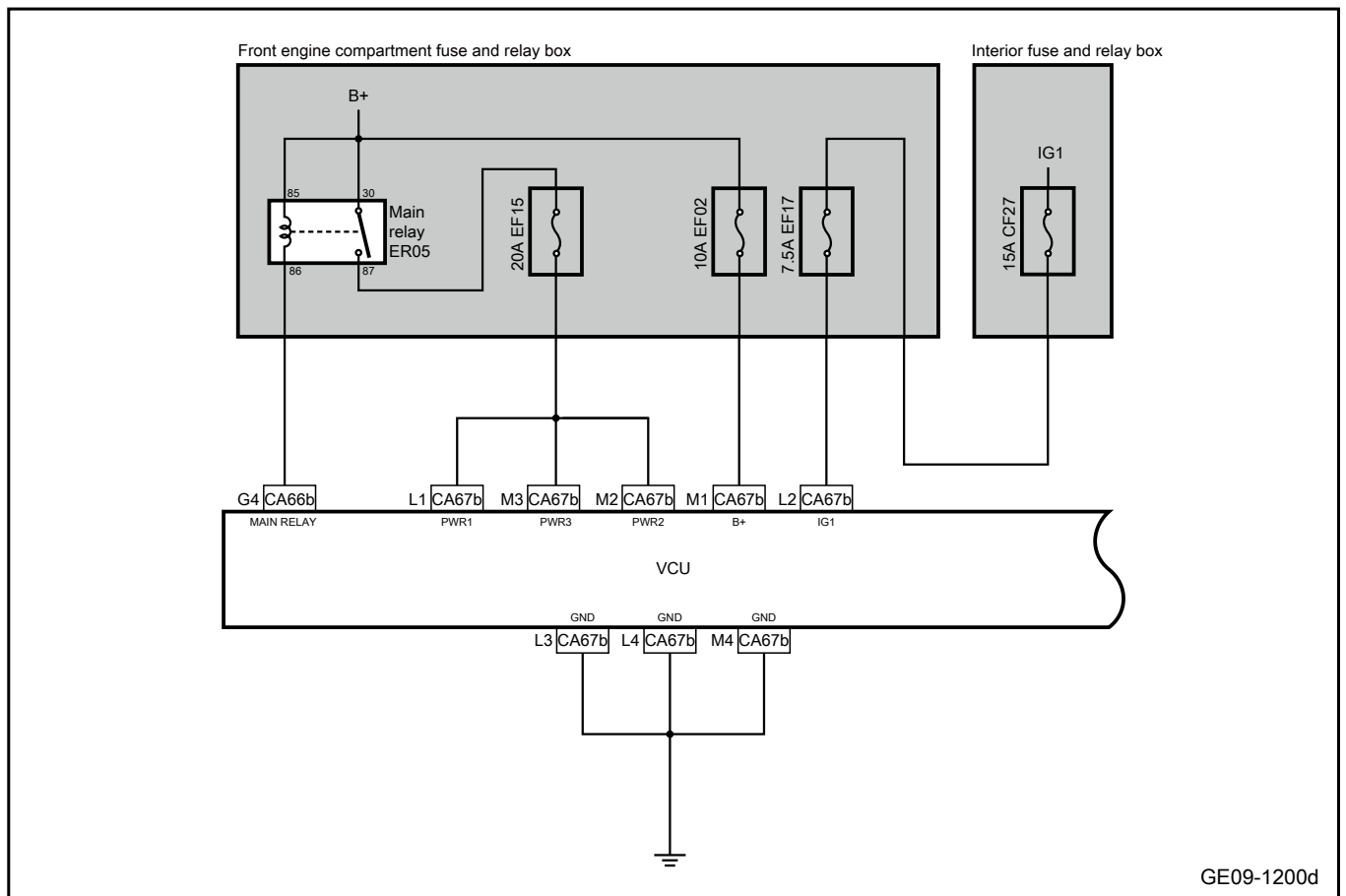
1. DTC description:

Diagnostic Trouble Code	Trouble description
U300616	Power supply is low
U300617	Power supply is high

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Battery voltage is less than or equal to 9V, the state is maintained for at least 1s, the main relay does not report an error	Ignition status should be IGN ON $\geq$ 1 second, or wake up after 500ms	1. Circuit 2. Fuse 3.VCU
U300617	Battery voltage $\geq$ 16V, keep the state for at least 1s		

3. Schematic circuit diagram:



GE09-1200d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble! The diagnosis methods of the above fault codes are similar.

Step 1	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF27 is blown out.  
  
Rated fuse capacity: 15A
- C. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF02 is blown out.  
  
Rated fuse capacity: 10A
- D. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF15 is blown out.  
  
Rated fuse capacity: 20A
- E. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF17 is blown out.  
  
Rated fuse capacity: 7.5A

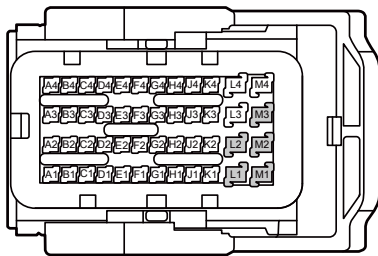
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the power supply circuit of VCU

CA67b VCU module harness connector B



GE09-1404d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA67b.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(L1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA67b(M3)		
CA67b(M2)		
CA67b(M1)		
CA67b(L2)		

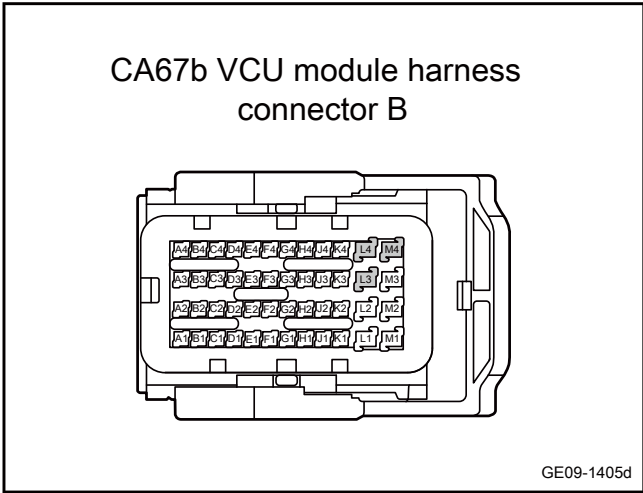
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the VCU ground circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA67b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(L3)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA67b(L4)		
CA67b(M4)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the VCU.

- A. Replace the VCU. Refer to [Replacement of VCU](#)

Next Step

**Step 7** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 9.3.5.11 VCU communication fault

#### 1. DTC description:

Diagnostic Trouble Code	Trouble description
U003788	The chassis bus is switched off.
U006488	The new energy bus is switched off.
U000100	Private CAN bus off
U016487	Communication with AC is lost
U042481	Error in communication with AC CAN
U014687	Communication with GW is lost
U044781	Error in communication with GW CAN
U015587	Communication with IPK is lost
U042381	Error in communication with IPK CAN
U011087	Loss of communication with the motor controller IPU
U249683	Error in communication with IPU CAN
P1C8A87	Loss of communication with private CAN motor controller
P1C8B86	Private CAN motor controller communication error
U029887	Communication with DCDC is lost
U059981	Error in communication with DCDC CAN
U111587	Loss of communication with vehicle-mounted charger OBC
U140581	Error in communication with OBC CAN
U011287	Communication with BMSH is lost
U041381	Error in communication with BMSH CAN
U111887	Communication with PCU parking lock module is lost
U140881	Error in communication with PCU CAN
U010387	Communication with shift level EGSM is lost
U040481	Error in communication with EGSM CAN
U015187	Communication with ACU airbag module is lost



Diagnostic Trouble Code	Trouble description
U045281	Error in communication with ACU CAN
U014087	Loss of communication with VCU vehicle body control unit
U042281	Error in communication with VCU CAN
U013187	Loss of communication with EPS electric power steering
U042081	Error in communication with EPS CAN
U012687	Communication with SAS timed out
U042881	Error in communication with SAS CAN
U012287	Communication with ESC is lost
U241283	Error in communication with ESC CAN
U019887	Loss of communication with T-BOX teleprocessing controller
U049981	T-BOX CAN communication error
U120387	Communication with FCS is lost
U143381	T-BOX CAN communication error
U015987	Communication with PAS is lost
U045A81	Communication error with PAS CAN
U015687	Communication with MMI is lost
U045781	Error in communication with MMI CAN

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003788	CAN bus disconnection lasting for 1s is detected	1. The power supply voltage is 6V-16V 2. The TDiagenable condition is met 3. No bus disconnect is detected, and there are more than 1000 ms after recovery of last bus disconnection	1. Circuit 2.VCU
U006488	CAN bus disconnection lasting for 1s is detected		
U000100	CAN bus disconnection lasting for 1s is detected		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location		
U016487	Any failure occurred during communication with message 0x1E0 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x1E0: 50 milliseconds	1. Meet one of the following conditions: 2. AC charging method 3. DC charging method 4. V2G discharge mode 5. Remote air conditioning mode 6. Smart charging mode 7. Vehicle readiness without any of the above modes (TKL15_ON>3S) 8. Turn on when it is higher than any mode -. CAN bus node power supply voltage is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 9. The TDiagenable condition is met 10. No bus disconnect is detected, and there are more than 1000 ms after recovery of last bus disconnection 11. The ignition state is the ignition lasting for 3 seconds			
U042481	Any communication information 0x1E0 No. DLC<8 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x1E0: 50 milliseconds				
U014687	Any failure occurred during communication with message 0x283 0x2F1 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x2F1: 100 milliseconds				
U044781	Any individual GW message 0x2F1 No. DLC<8 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x2F1: 100 milliseconds				
U015587	5T lost IPK (ID=0x3F1) information, confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x3F1: 1000 milliseconds				

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042381	Any personal IPK information 0x3F1 type DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x3F1: 1000 milliseconds		
U011087	When communicating with any individual IPU message 0x171, 0x0A8, a failure occurs, 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) and the cycle is as follows: 0x171: 20 milliseconds 0xA8: 10 milliseconds		
U249683	Any independent IPU information 0x171, 0x0A8 Active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x171: 20 milliseconds 0xA8: 10 milliseconds		
P1C8A87	A failure occurs when communicating with any IPU message alone, 0x71 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x71: 10 milliseconds		
P1C8B86	A failure occurs when communicating with any IPU message alone, 0x71 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x71: 10 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U029887	Any independent IPU information 0x71 active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x71: 10 milliseconds		
U059981	Any individual DCDC message 0x176 DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x176: 50 milliseconds		
U111587	A failure occurs when communicating with any OBC message (0x220, 0x221, 0x222) alone is lost 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x220: 100 milliseconds 0x221: 100 milliseconds 0x222: 100 milliseconds		
U140581	Any individual OBC message 0x220 0x221 0x222 DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x220: 100 milliseconds 0x221: 100 milliseconds 0x222: 100 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	A failure occurs when communicating Any BMS message individually lost (0x0B0, 0x211, 0x178, 0x17A) 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x0B0: 10 milliseconds 0x211: 100 milliseconds 0x178: 10 milliseconds 0x17A: 100 milliseconds		
U041381	Individual loss of any BMS message (0x0B0, 0x211, 0x178, 0x17A) Active counter error or checksum error or DLC<8 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x0B0: 10 milliseconds 0x211: 100 milliseconds 0x178: 10 milliseconds 0x17A: 100 milliseconds		
U111887	A failure occurs during communication with PCU message 0x213 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x213: 100 milliseconds		
U140881	PCU message 0x213 active counter error or checksum error or DLC<8 Confirmation time: 5*T <sub>x</sub> (T <sub>x</sub> >50ms) or 250ms (T <sub>x</sub> ≤50ms) The cycle is as follows: 0x213: 100 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U010387	When communicating with EGSM message 0x145, a failure occurs 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x145: 20 milliseconds		
U040481	EGSM message 0x145 active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x145: 20 milliseconds		
U015187	A failure occurs when communicating with ACU messages, 0x380, 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x380: 200 milliseconds		
U045281	ACU message 0x380 active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x380: 200 milliseconds		
U014087	A failure occurs when communicating with any body control module, 0x286, 0x284, 0x285, 0x283, 0x1E2 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x286: 100 milliseconds 0x284: 100 milliseconds 0x285: 100 milliseconds 0x283: 100 milliseconds 0x1E2: 20 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042281	Any individual body control module information 0x286, 0x284, 0x285, 0x283, 0x1E2 DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x286: 100 milliseconds 0x284: 100 milliseconds 0x285: 100 milliseconds 0x283: 100 milliseconds 0x1E2: 20 milliseconds		
U013187	A failure occurs when communicating with EPS messages, 0x150 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x150: 20 milliseconds		
U042081	Any individual EPS message 0x150 DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x150: 20 milliseconds		
U012687	A failure occurs when communicating with SAS messages, 0x0E0 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0xE0: 10 milliseconds		
U042881	The active counter error or checksum error of SAS message 0x0E0 or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0xE0: 10 milliseconds		

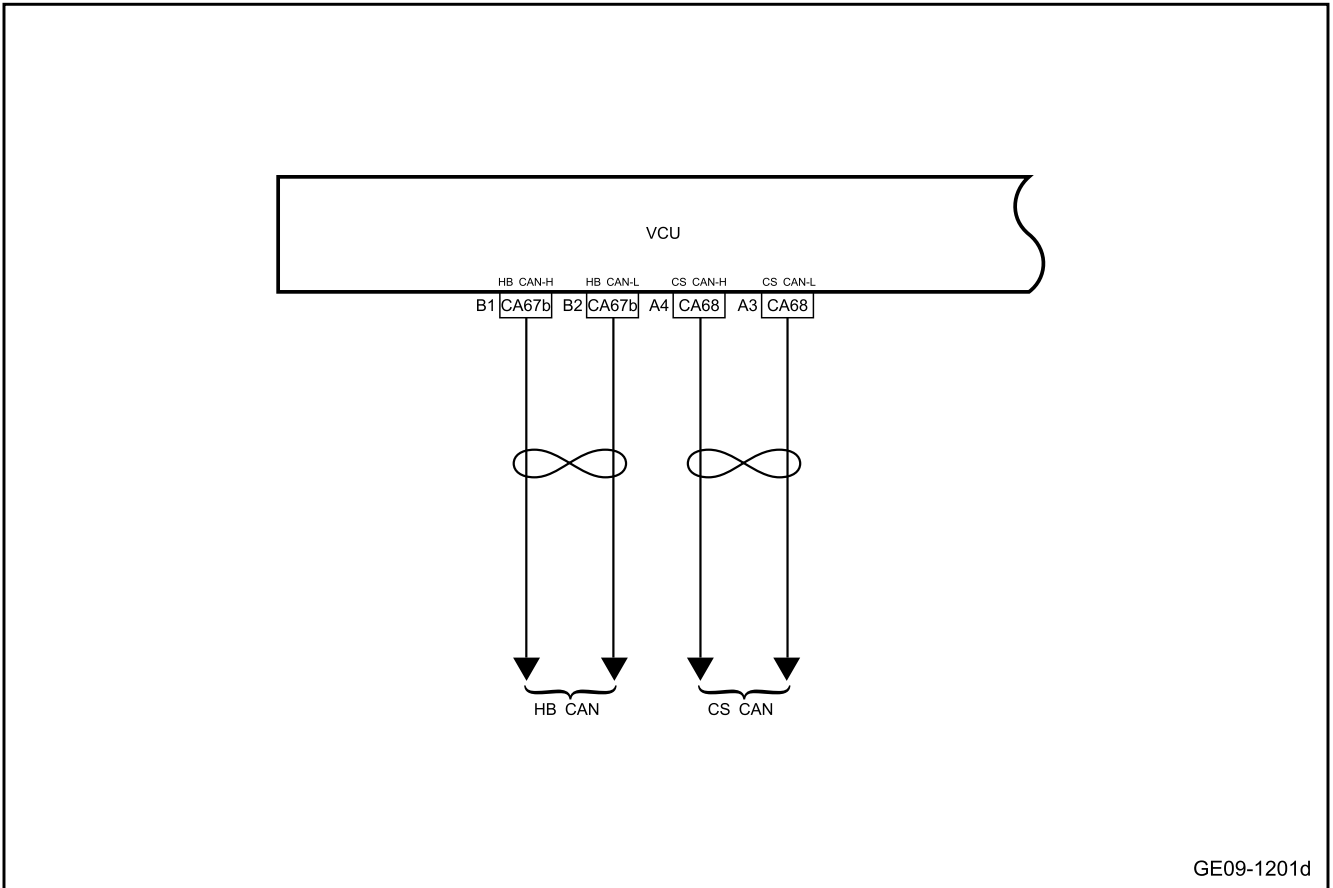
DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	<p>A failure occurs when communicating with any ESC message 0x125/0x121/0x127/0x128/0x129/0x62/0xE5 5*Tx(, Tx&gt;50ms) or 250ms(Tx≤50ms) The cycle is as follows: 0x125: 20 milliseconds 0x121: 20 milliseconds 0x127: 20 milliseconds 0x128: 20 milliseconds 0x129: 20 milliseconds 0x62: 10 milliseconds 0xE5: 20 milliseconds</p>		
U241283	<p>Any ESC message 0x125/0x121/0x127/0x128/0x129/0xE5, active counter error or checksum error or DLC&lt;8 Confirmation time: 5*Tx (Tx&gt;50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x125: 20 milliseconds 0x121: 20 milliseconds 0x127: 20 milliseconds 0x128: 20 milliseconds 0x129: 20 milliseconds 0x62: 10 milliseconds 0xE5: 20 milliseconds</p>		
U019887	<p>A failure occurs when communicating with T-BOX messages, 0x292 5*Tx (Tx&gt;50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x292: 100 milliseconds</p>		



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U049981	Any individual T-BOX message 0x292 DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x292: 100 milliseconds		
U120387	Any failure occurs during communication with message 0x1A1/0x1A2 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x1A1: 20 milliseconds 0x1A2: 20 milliseconds		
U143381	Any failure occurs during communication with message 0x1A1/0x1A2. Active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x1A1: 20 milliseconds 0x1A2: 20 milliseconds		
U015987	Any failure occurs when communicating with message 0x136 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x136: 20 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U045A81	Any failure occurs during communication with message 0x136 Active counter error or checksum error or DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x136: 20 milliseconds		
U015687	Any failure occurs when communicating with message 0x2A2 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x2A2: 100 milliseconds		
U045781	Any individual MMI message 0x2A2 type DLC<8 Confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x2A2: 100 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the HB-CAN network integrity.

- A. Perform HB CAN network integrity check, refer to [HB CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 Check the CS-CAN network integrity.

- A. Perform CS CAN network integrity check, refer to [CS CAN bus network integrity check](#)
- B. Check whether the CS-CAN network is normal.

No

Check or repair the CS-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 5 Replace the VCU.

- A. Check whether the power supply and grounding harness of VCU are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of CCU assembly \(central control unit\)](#)

Next Step

Step 6 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

### 9.3.5.12 Internal failure of VCU

1. DTC description:

DTC	Trouble description
P1CA204	VCU internal NVM reading data error
P1CA304	VCU internal NVM writing data error
P1C1E00	IMMO authentication failure causes startup failure
P1C1E01	Body control unit BCM reports cruise switch failure
P1C4396	Invalid vehicle speed signal (reduced power)
P1C5C63	Collision signal detected
P1C6B87	PCU does not respond to VCU commands
P1C6B01	High voltage waiting for precharge timeout on regular request
P1C6B02	High voltage waiting for precharge timeout on charging request
P1C6B03	High voltage waiting for precharge timeout on smart recharge request
P1C6B04	High voltage waiting for precharge timeout on external discharge request
P1C6B05	High voltage waiting for precharge timeout on remote air conditioning request
P1C6B06	High voltage waiting for the main relay to close timeout on the regular request
P1C6B07	High voltage waiting for the main relay to close timeout on the charging request
P1C6B08	High voltage waiting for the main relay to close timeout on smart power supply request
P1C6B09	High voltage waiting for the main relay to close timeout on external discharging request
P1C6B0A	High voltage waiting for the main relay to close timeout on remote air conditioning request
P1C6B0C	High voltage waiting for BMS&IPU to work timeout on the charging request
P1C6B0D	High voltage waiting for BMS&IPU to work timeout on the smart power supply request
P1C6B0E	High voltage waiting for BMS&IPU to work timeout on external discharging request
P1C6B0F	High voltage waiting for BMS&IPU to work timeout on the remote air conditioning request
P1C6B10	High voltage waiting for BMS&IPU to work timeout on regular fast
P1C6B13	High voltage waiting for BMS&IPU to work timeout on the external discharging request fast

DTC	Trouble description
P1C6B14	High voltage waiting for BMS&IPU to work timeout on the remote air conditioning request fast
P1C6B15	BMS&IPU status abnormal response timeout under high pressure in normal mode
P1C6B16	BMS&IPU&DCDC status abnormal response timeout under high voltage in charging mode
P1C6B17	BMS&IPU&DCDC abnormal response timeout under high-voltage state in smart power supply mode
P1C6B18	BMS&IPU&DCDC abnormal response timeout under high voltage state in external discharging mode
P1C6B19	BMS&IPU&DCDC abnormal response timeout under high pressure in remote air conditioning mode
P1C6C02	Stopper failure
P1C6C03	Locked-rotor failure
P1C6C09	Electrical failure
P1C6C05	Low voltage fault
P1C6C06	Overvoltage fault
P1C6C07	Over temperature fault
P1CAC00	Internal fault of VCU
P1CAD04	The software is not compatible with the vehicle
P1C6B0B	High voltage waiting for BMS&IPU to work timeout on regular request

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1CA204	Gusset plate	IG15 off -> on	1.VCU
P1CA304			
P1C1E00	IPU indicates the error state (starting from 0x171) IPU_IsgReleaseSig=Isg locked or undefined, the error state signal quality is normal	1. The supply voltage of CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage) 2. The TDiagenable condition is met 3. No bus disconnect is detected, and there are more than 1000 ms after recovery of last bus disconnection 4. The ignition state is the ignition lasting for 3 seconds	
P1C1E01	The body control module indicates the error state (from 0x283). The body control module cruises WinValidSts=fault, the error state signal quality is normal	Vehicle readiness without any of the above modes (TKL15_Open>3S)	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C4396	(Vehicle speed ESC_vehicle speed (0x125) wrong CAN signal or vehicle speed CAN signal with invalid value ESC_vehicle speed invalid (0x125) IPUNMOT speed signal (0xA8) quality is not normal	1. Meet one of the following conditions: 2. AC charging method 3. DC charging method 4. V2G discharging method 5. Remote air conditioning mode 6. Smart charging mode 7. Vehicle readiness without any of the above modes (TKL15_ON>3S) 8. Vehicle IG starting state without any of the above modes (TKL15_open>3S)	
P1C5C63	ACU indicates the failure flag (from 0x380) ACU CrashOutputSts is true on bit1 or bit2 or bit3 or bit4 The quality of the fault signal is normal	IG15 off -> on delay 1000ms	
P1C6B87	PCU does not respond or responds incorrectly to VCU requests	PCU does not respond or makes an error response to the request of VCU and F110 central processor 0x1: PCU	
P1C6B01	Time for waiting for the BMS to enter the pre-charging mode during the routine start-up and high-voltage process is more than 10s	Time for waiting for the BMS to enter the pre-charging mode during the routine start-up and high-voltage process is more than 10s	
P1C6B02	Waiting for the BMS to enter the pre-charge mode during the high voltage charging process is timeout: BMS has been in standby for more than 120S or not in standby for more than 2S	Waiting for the BMS to enter the pre-charge mode during the high voltage charging process is timeout: BMS has been in standby for more than 120S or not in standby for more than 2S	
P1C6B03	Time for waiting for the BMS to enter the pre-charge time during the process of smart power supply is more than 10s	Time for waiting for the BMS to enter the pre-charge time during the process of smart power supply is more than 10s	
P1C6B04	Time for waiting for the BMS to enter the pre-charge time during the high voltage process of external discharge	Time for waiting for the BMS to enter the pre-charge time during the high voltage process of external discharge	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B05	Time for waiting for the BMS to enter the pre-charging mode during the process of the remote air conditioner getting high voltage is more than 10s	Time for waiting for the BMS to enter the pre-charging mode during the process of the remote air conditioner getting high voltage is more than 10s	
P1C6B06	Time for waiting for the BMS main relay to close upon regular request for getting high voltage is more than 10s	Time for waiting for the BMS main relay to close upon regular request for getting high voltage is more than 10s	
P1C6B07	Time for waiting for the BMS main relay to close upon charging request for getting high voltage is more than 10s	Time for waiting for the BMS main relay to close upon charging request for getting high voltage is more than 10s	
P1C6B08	Time for waiting for the BMS main relay to close on smart recharging request for getting high voltage is more than 10s	Time for waiting for the BMS main relay to close on smart recharging request for getting high voltage is more than 10s	
P1C6B09	Time for waiting for the BMS main relay to close on smart recharging request for getting high voltage is more than 10s	Time for waiting for the BMS main relay to close on smart recharging request for getting high voltage is more than 10s	
P1C6B0A	Time for waiting for the BMS main relay to close during the process of remote air conditioner getting high voltage is more than 10 seconds	Time for waiting for the BMS main relay to close during the process of remote air conditioner getting high voltage is more than 10 seconds	
P1C6B0C	Time for waiting for BMS to enter AC, DC charge or IPU to enter standby during the process of charging to high voltage is more than 120S	Time for waiting for BMS to enter AC, DC charge or IPU to enter standby during the process of charging to high voltage is more than 120S	
P1C6B0D	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of smart recharging to high voltage is more than 10S	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of smart recharging to high voltage is more than 10S	
P1C6B0E	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of external recharging to high voltage is more than 10S	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of external recharging to high voltage is more than 10S	



DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B0F	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of remote air conditioner getting high voltage is more than 10 seconds	Time for waiting for BMS to enter normal discharge, V2G or IPU to enter standby during the process of remote air conditioner getting high voltage is more than 10 seconds	
P1C6B10	Time for waiting for BMS to enter normal discharge or IPU to enter standby during the process of regular fast high voltage is more than 5S	Time for waiting for BMS to enter normal discharge or IPU to enter standby during the process of regular fast high voltage is more than 5S	
P1C6B13	Time for waiting for BMS to enter normal discharge, V2G or IPU enters standby, fault or DCDC enabling during the process of external recharging to high voltage is more than 5S	Time for waiting for BMS to enter normal discharge, V2G or IPU enters standby, fault or DCDC enabling during the process of external recharging to high voltage is more than 5S	
P1C6B14	Time for waiting for BMS to enter normal discharge, V2G or IPU enters standby, fault or DCDC enabling during the process of remote air conditioner getting high voltage is more than 5S	Time for waiting for BMS to enter normal discharge, V2G or IPU enters standby, fault or DCDC enabling during the process of remote air conditioner getting high voltage is more than 5S	
P1C6B15	Under regular mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	Under regular mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	
P1C6B16	Under charging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	Under charging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	
P1C6B17	Under smart recharging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	Under smart recharging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	
P1C6B18	Under external discharging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	Under external discharging mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B19	Under remote air conditioning mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	Under remote air conditioning mode and high voltage, BMS exits normal discharge, V2G or IPU exits standby, fault, TqCtrl for over 5S	
P1C6C02	Overtravel error flag remains true	Overtravel error flag changed from false to true	
P1C6C03	Block error flag remains true	Block error flag changed from false to true	
P1C6C09	tbdeletric error flag remains true	Electrical error signs changed from false to true	
P1C6C05	under coltage error flag remains true	The error flag changed from false to true under coltage	
P1C6C06	Overvoltage error flag remains true	Overvoltage error flag changed from false to true	
P1C6C07	The over temperature error flag remains true	The over-temperature error flag changed from false to true	
P1CAC00	-	-	
P1CAD04	When the vehicle software is running, an OBC CAN message 0x220 or 0x221 or 0x222 is detected, which is greater than 500ms	OBC configuration in F110 configuration word is 0x0: no OBC	
P1C6B0B	Check that the IPU has no CAN bus	Normally, time for waiting for BMS to enter normal discharge or IPU to enter standby during the process of regular high voltage is more than 5S	

### 3. Diagnosis steps

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

**Step 4** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 5** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Write controller data.

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next Step

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 8	System is normal.
--------	-------------------

### 9.3.5.13 High voltage interlock failure

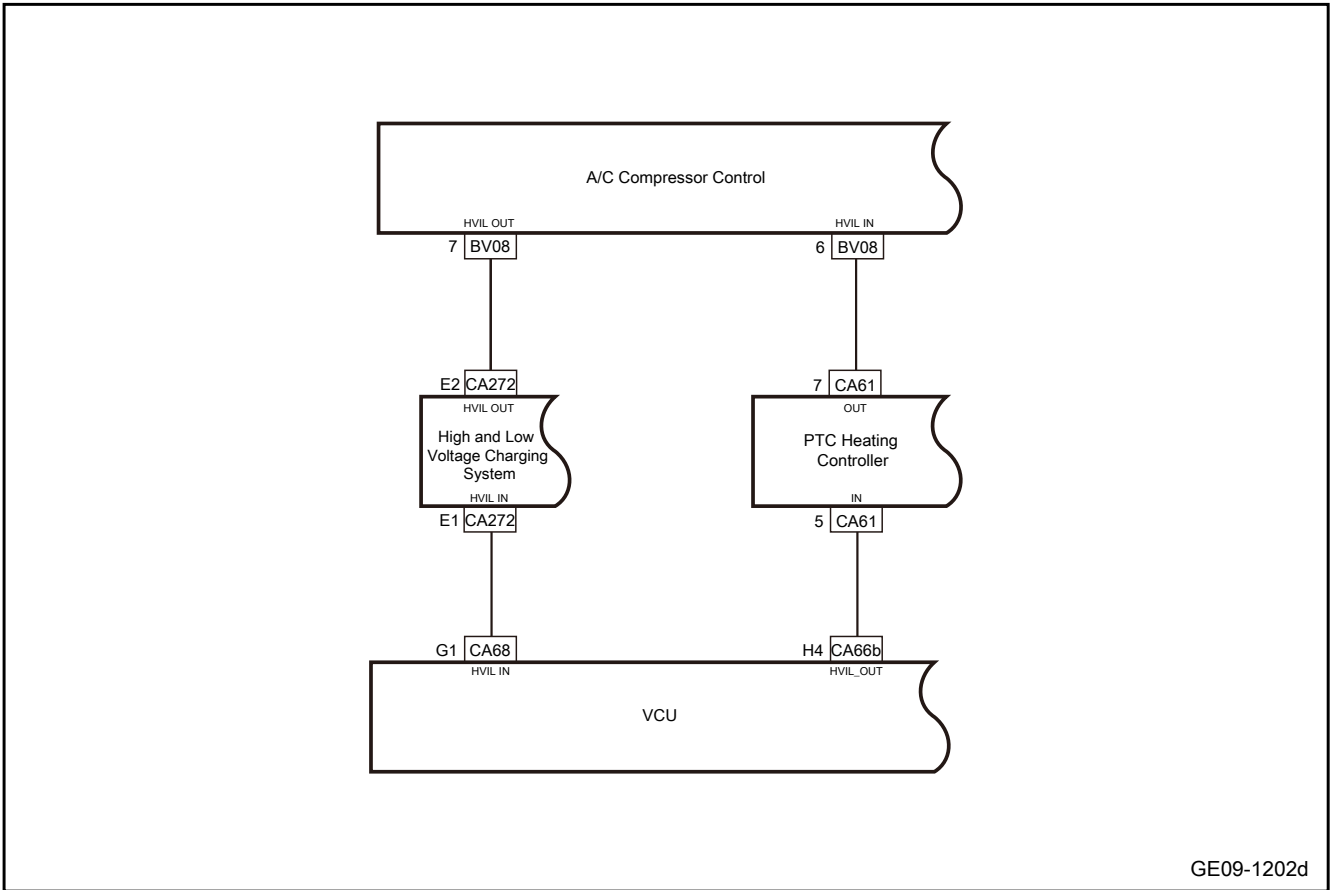
1. DTC description:

Diagnostic Trouble Code	Description
P1C4096	High voltage interlock failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C4096	The Hvil signal of BMSH (0x0B0) and VCU indicates that the Hvil is abnormal (in one of the lists). VCU detection failure time: 500ms. The main relay did not report an error	1. Meet one of the following conditions: 2. AC charging method 3. DC charging method 4. V2G discharging method 5. Remote air conditioning mode 6. Smart charging mode 7. Vehicle readiness without any of the above modes (TKL15_ON>3S) 8. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	1. Circuit 2. A/C compressor 3. High and low voltage charging system 4. PTC heating controller 5. VCU

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

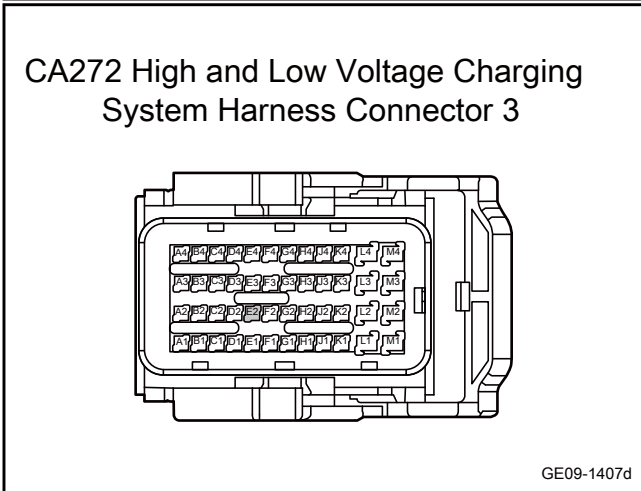
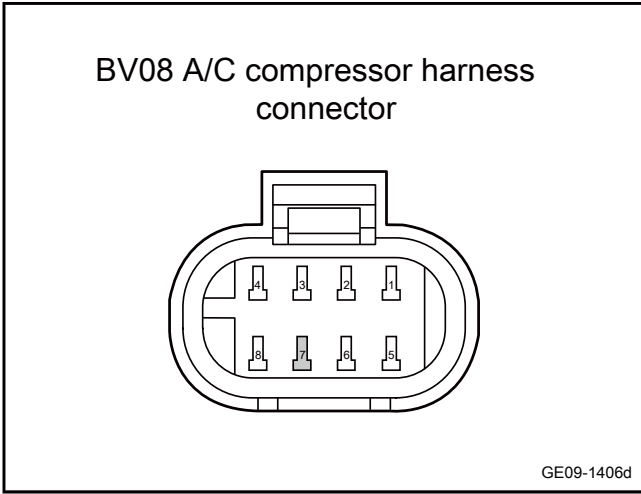
- A. Check the air conditioner compressor, PTC heating controller, high and low voltage charging system, VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the air conditioner compressor and the high and low pressure charging system is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(7)	CA272(E2)	Standard resistance: less than 1Ω
CA272(E2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(7)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

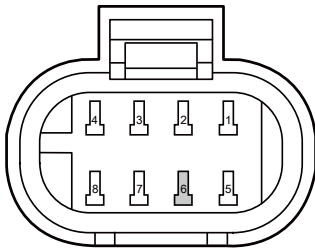
No

Repair or replace the harness.

Yes

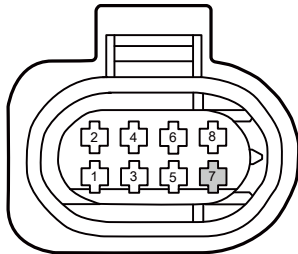
**Step 4** Check whether the circuit between the air conditioner compressor and the PTC heating controller is normal.

BV08 A/C compressor harness connector



GE09-1408d

CA61-PTC Heating Controller Harness Connector 2



GE09-1409d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the PTC heating control unit harness connector CA61.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(6)	CA61(7)	Standard resistance: less than 1Ω
BV08(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV08(6)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

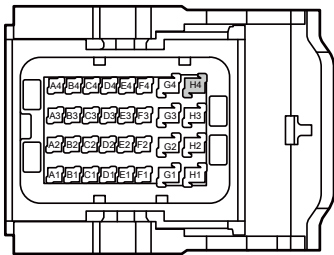
No

Repair or replace the harness.

Yes

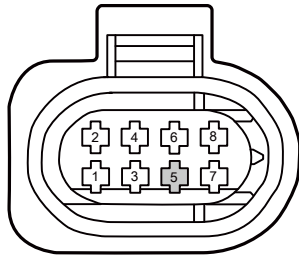
**Step 5** Check whether the circuit between the VCU and the PTC heating controller is normal.

CA66b VCU module harness connector A



GE09-1410d

CA61-PTC Heating Controller Harness Connector 2



GE09-1411d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the PTC heating control unit harness connector CA61.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(H4)	CA61(5)	Standard resistance: less than 1Ω
CA66b(H4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(H4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

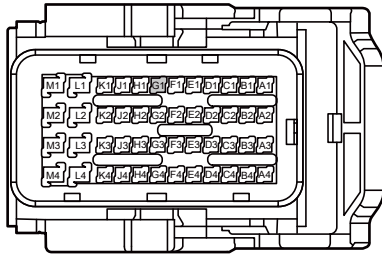
Repair or replace the harness.

Yes

Step 6	Check whether the circuit between the VCU and the high and low voltage charging system is normal.
--------	---

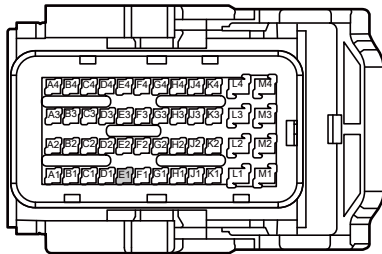


CA68 VCU module harness connector C



GE09-1412d

CA272 High and Low Voltage Charging System Harness Connector 3



GE09-1413d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA68.
- C. Disconnect the HV/LV charging system harness connector CA272.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	CA272(E1)	Standard resistance: less than 1Ω
CA272(E1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the A/C compressor.

- A. Remove the A/C compressor, refer to [Replacement of A/C compressor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the high and low voltage charging system.

- A. Replace the high and low voltage charging system, refer to the [Replacement of High and Low Voltage Charging System](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Replace the PTC heating controller.
--------	-------------------------------------

- A. Replace the PTC heating controller, refer to the [PTC Heating Controller Replacement](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace the VCU.
---------	------------------

- A. Check whether the power supply and grounding harness of VCU are normal. Refer to [VCU power failure](#)
- B. Replace the VCU. Refer to [Replacement of VCU](#)

Next Step

Step 11	Reprogram and reset the VCU.
---------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

### 9.3.5.14 Motor water pump PWM signal failure

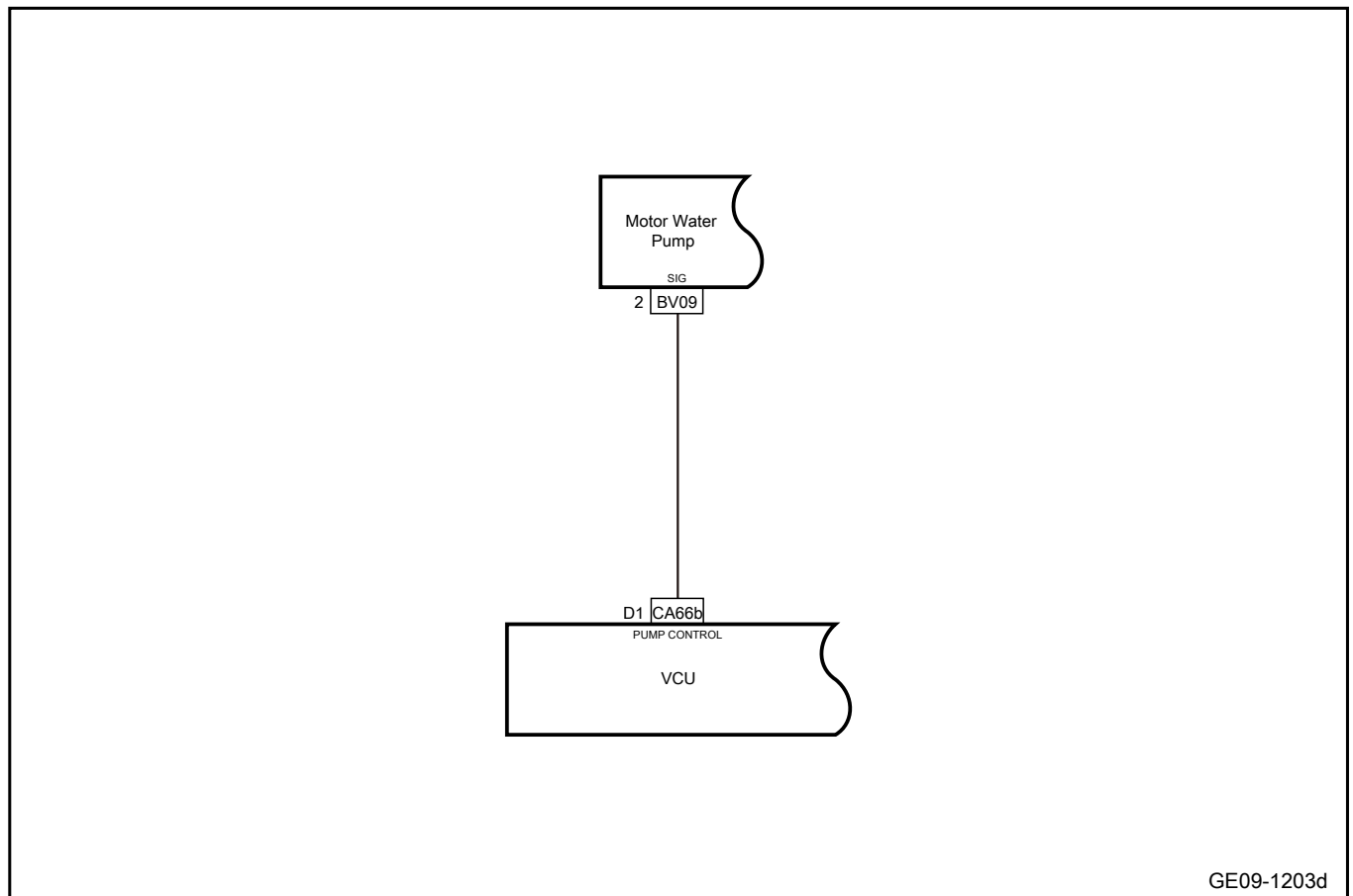
1. DTC description:

Diagnostic Trouble Code	Description
P1C7D04	Motor water pump PWM signal is short circuited to power supply
P1C7E04	Motor system water pump PWM control signal is short-circuited to ground
P1C7F04	Motor system water pump PWM control signal is open circuited

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C7D04	Short circuit to VCC	1. Full working conditions 2. When the water pump is enabled, and the water pump relay has no fault	1. Circuit 2. Electric motor pump 3.VCU
P1C7E04	Short circuit to ground		
P1C7F04	open circuit		

3. Schematic circuit diagram:



## 4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check whether the electric motor water pump is damaged or falls off.
- B. Check the motor-driven water pump, VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

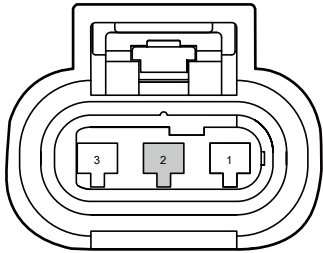
No

Repair or replace the faulty part.

Yes

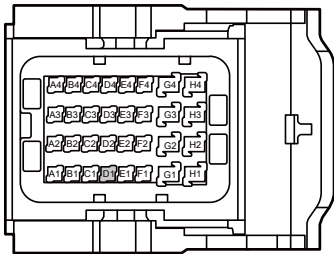
Step 3	Check whether the circuit between motor-driven water pump and VCU is open.
--------	--

BV09 Alternator water pump harness connector



GE09-1414d

CA66b VCU module harness connector A



GE09-1415d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV09 of electric motor water pump.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	CA66b(D1)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

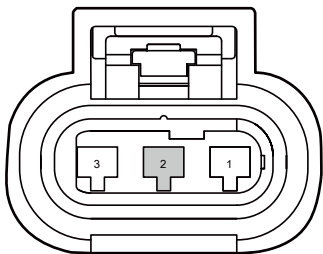
No

Repair or replace the harness.

Yes

Step 4 Check the wiring between electric motor water pump and VCU for short circuit to ground.

BV09 Alternator water pump harness connector



GE09-1416d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV09 of electric motor water pump.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

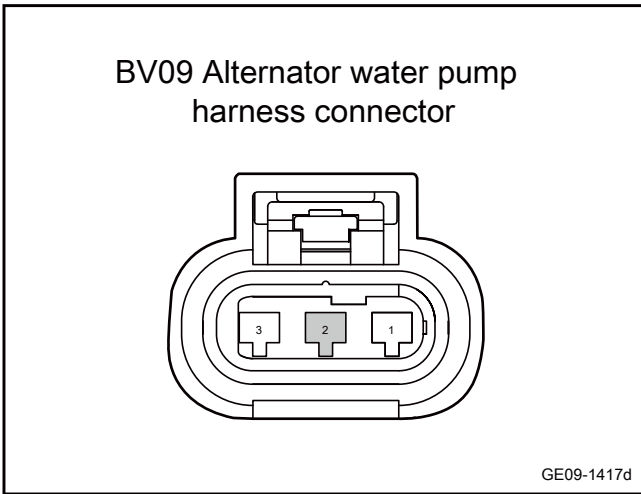
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the motor-driven water pump and VCU is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector BV09 of electric motor water pump.
- C. Disconnect the VCU harness connector CA66b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV09(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the motor-driven water pump.

- A. Replace motor water pump, refer to the [Replacement of Electric Motor Water Pump](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 8** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.3.5.15 Motor water pump feedback signal failure

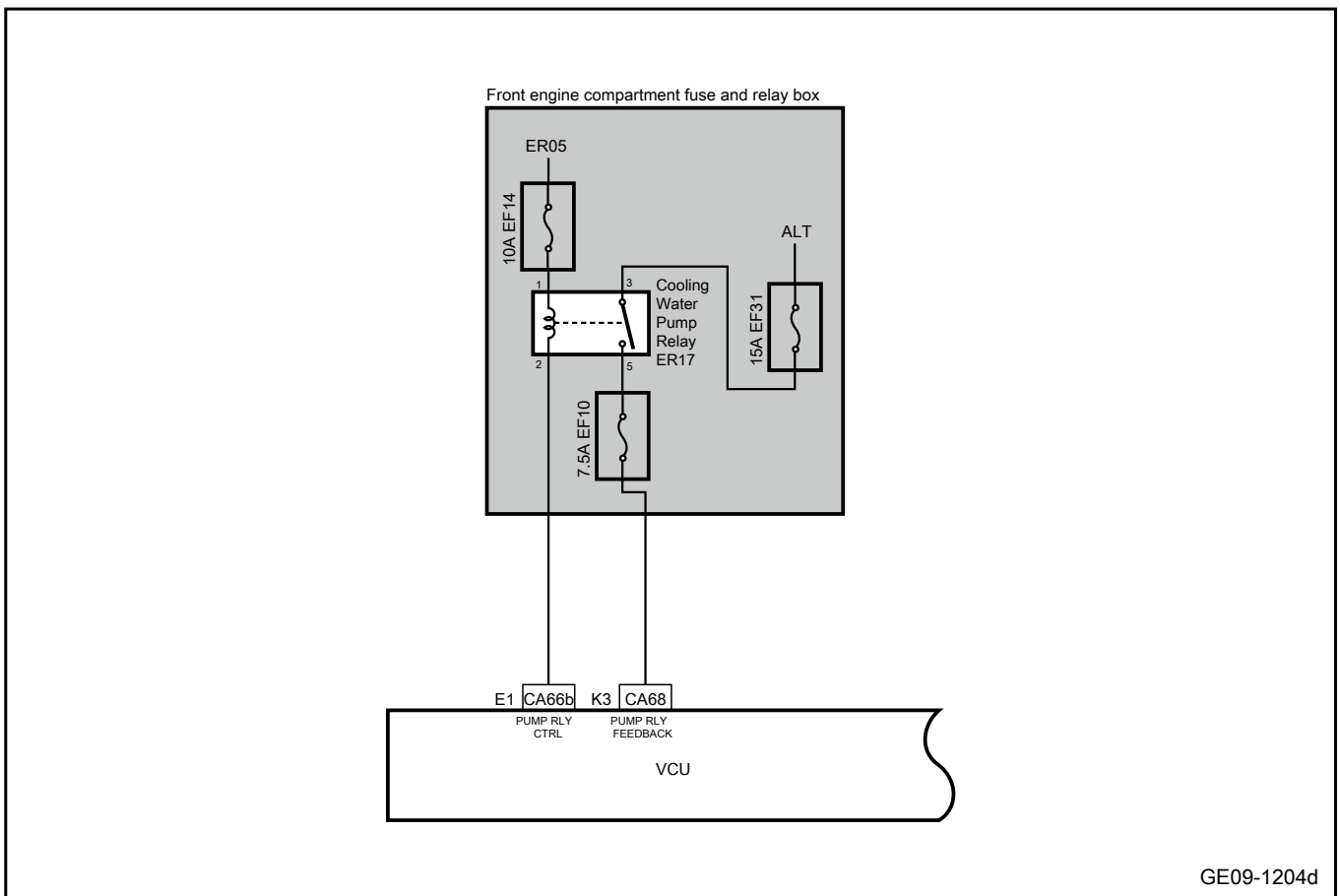
1. DTC description:

Diagnostic Trouble Code	Description
P1C1352	Motor water pump relay failure

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C1352	The difference between the feedback signal and the output signal is 500ms, the main relay does not report an error	1.IG15 off -> on delay 1000ms	1. Circuit 2. Relay 3. Fuse 4.VCU

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling water pump relay for signs of damage, falling off, etc.
- B. Check the cooling water pump relay, VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.



Yes

**Step 3** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF10 of the front engine bay. Check whether the fuse EF10 is blown.  
  
Rated fuse capacity: 7.5A
- C. Pull out the fuse EF14 of the front engine compartment. Check whether the fuse EF31 is blown.  
  
Rated fuse capacity: 10A
- D. Pull out the fuse EF31 of the front engine bay. Check whether the fuse EF31 is blown.  
  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the cooling water pump relay ER17.

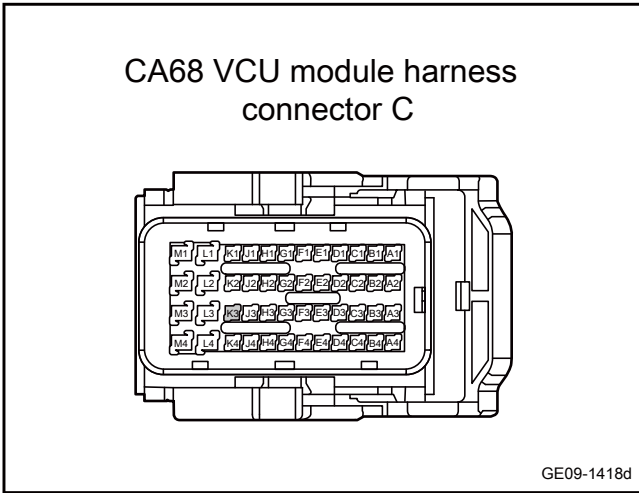
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the cooling water pump relay ER17 and replace the cooling water pump relay with a new relay of the same specifications.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 5** | Check whether the circuit between motor-driven water pump relay and VCU is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	ER17(5)	Standard resistance: less than 1Ω

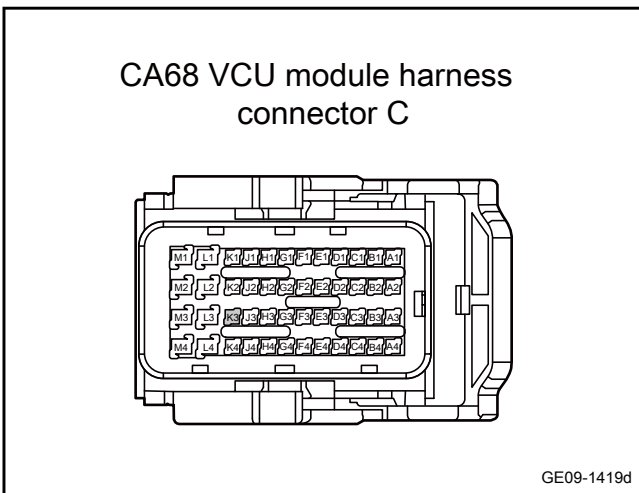
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the wiring between the cooling water pump relay and VCU for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

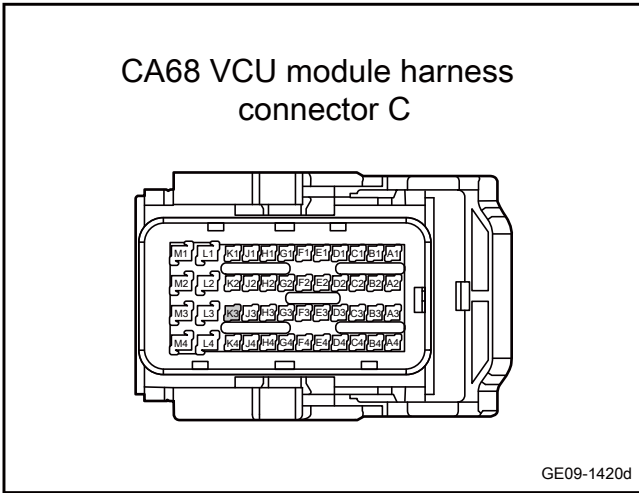
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between motor-driven water pump relay and VCU is short to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 9** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 10** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

### 9.3.5.16 Motor water pump relay control signal failure

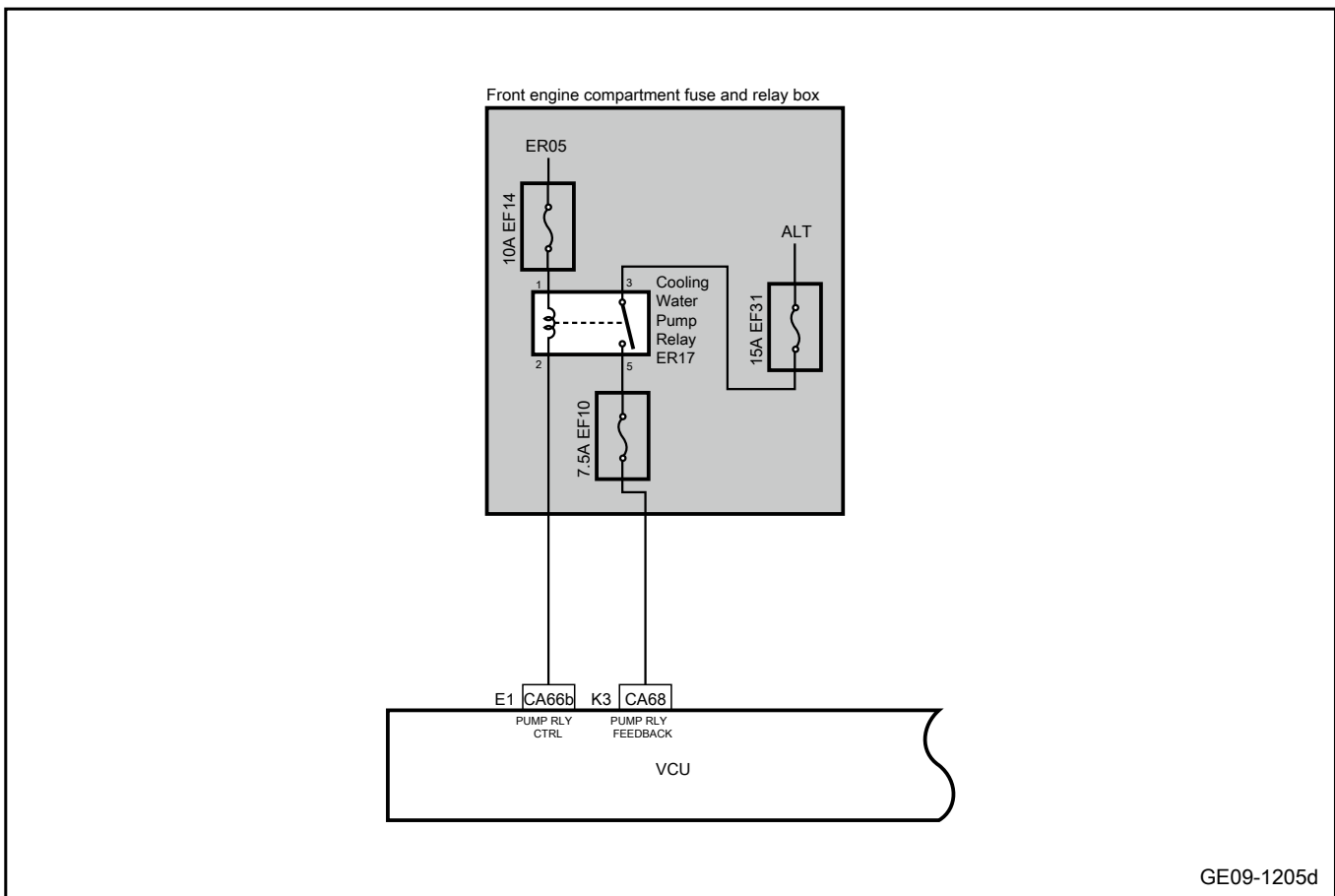
#### 1. DTC description:

Diagnostic Trouble Code	Description
P1C7D05	The motor water pump enabling signal is short-circuited to the power supply
P1C7E05	The motor water pump enabling signal is short-circuited to ground
P1C7F05	Motor water pump enabling signal is open circuited

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C7D05	Short circuit to VCC	1. Full working conditions	1. Circuit 2. Relay 3. Fuse 4.VCU
P1C7E05	Short circuit to ground		
P1C7F05	open circuit		

#### 3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling water pump relay for signs of damage, falling off, etc.
- B. Check the cooling water pump relay, VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check the cooling water pump relay ER17.

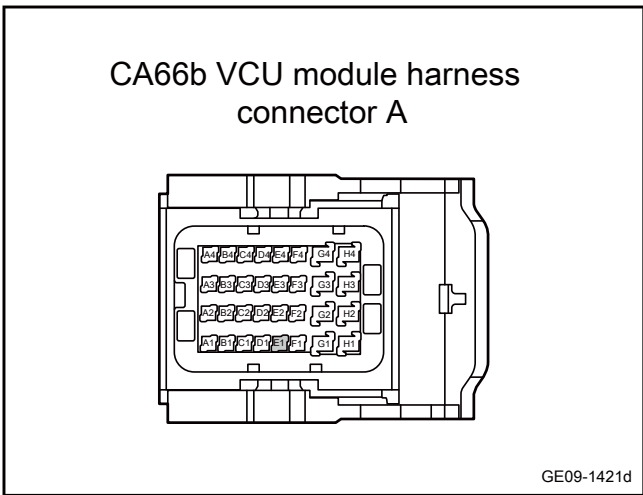
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the cooling water pump relay ER17 and replace the cooling water pump relay with a new relay of the same specifications.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 4** Check whether the circuit between motor-driven water pump relay and VCU is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	ER17(2)	Standard resistance: less than 1Ω

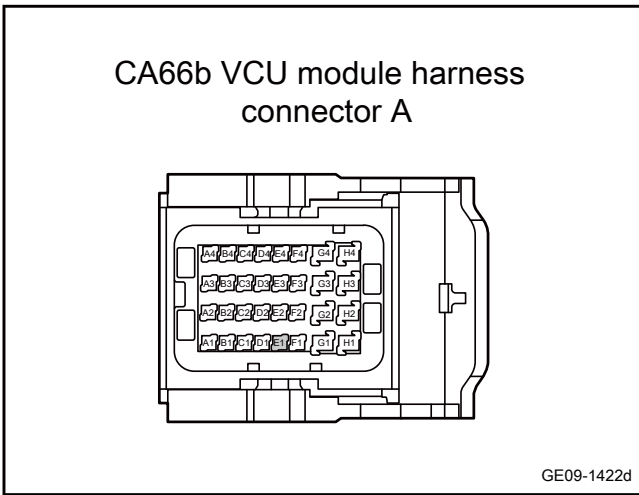
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the wiring between the cooling water pump relay and VCU for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

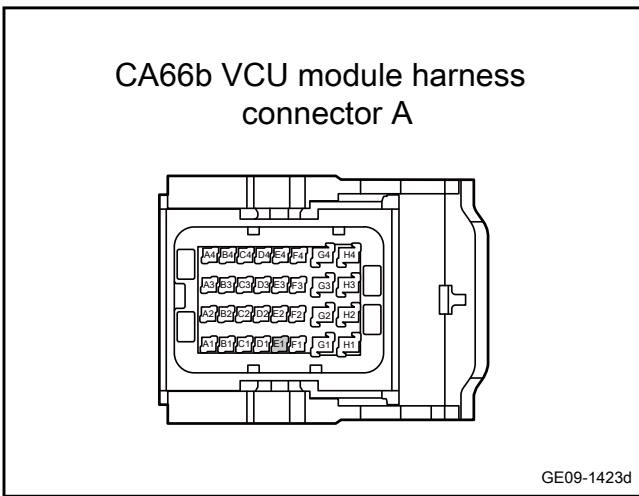
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between motor-driven water pump relay and VCU is short to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull off cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA66b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 8	Reprogram and reset the VCU.
--------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes
System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 9.3.5.17 Electronic accelerator pedal signal 1 failure

1. DTC description:

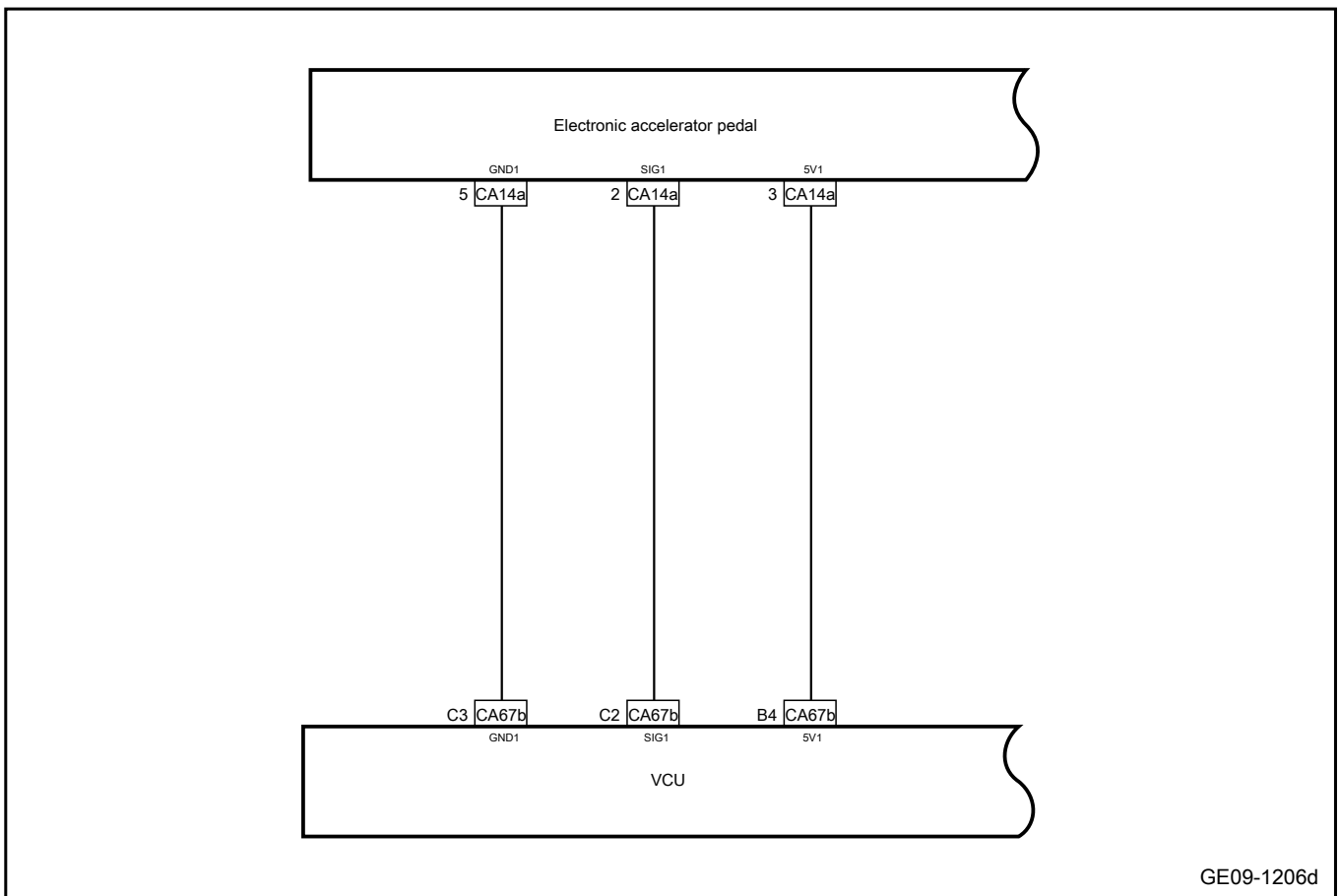
Diagnostic Trouble Code	Description
P1C1E04	Accelerator pedal signal 1 voltage is too high
P1C1F04	Accelerator pedal signal 1 voltage is too low

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C1E04	Accelerator pedal 1 voltage is higher than the limit (4.8V) for 500ms	1.IG15 off -> on delay 1000ms	1. Circuit 2.VCU 3. Electronic accelerator pedal
P1C1F04	Accelerator pedal 1 voltage is lower than the limit (0.4V) for 500ms		

3. Schematic circuit diagram:





GE09-1206d

4. Diagnosis steps:

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

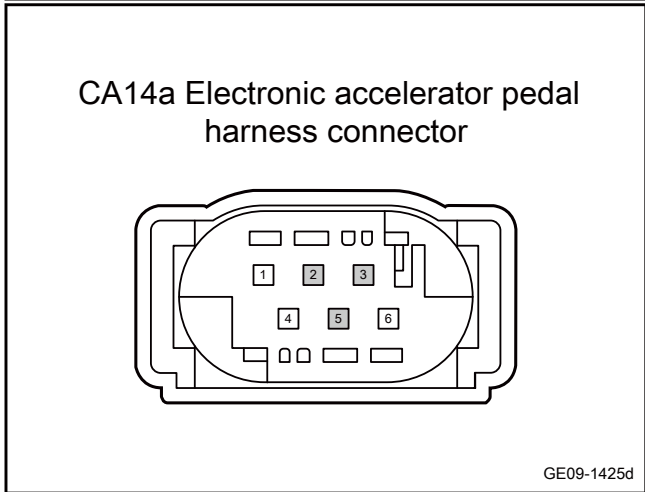
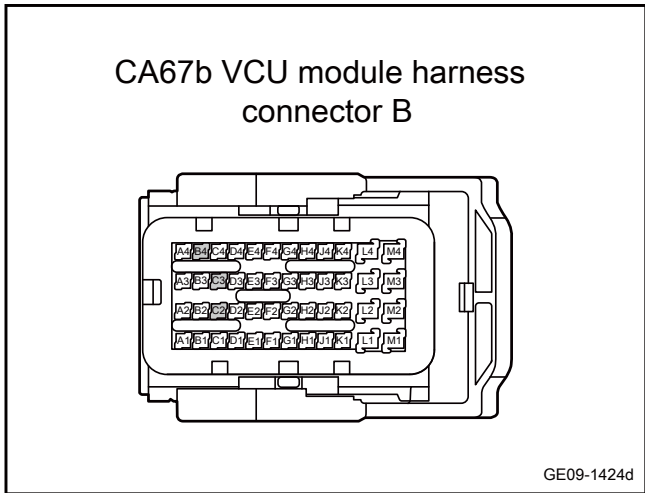
- A. Check the electronic accelerator pedal, VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the VCU and the electronic accelerator pedal is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	CA14a(2)	Standard resistance: less than 1Ω
CA67b(B4)	CA14a(3)	
CA67b(C3)	CA14a(5)	

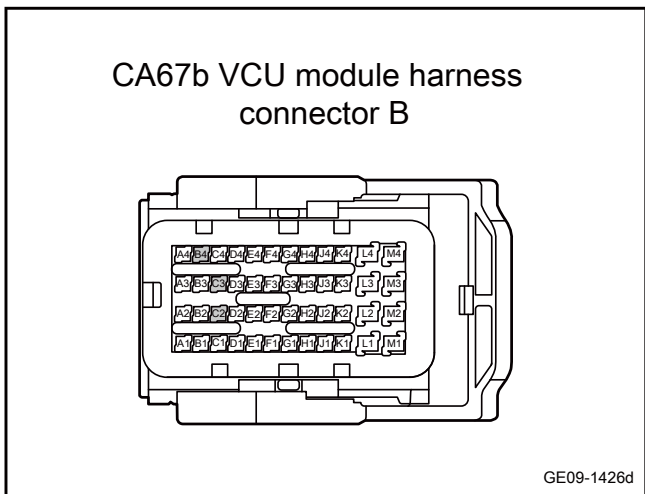
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(B4)		
CA67b(C3)		

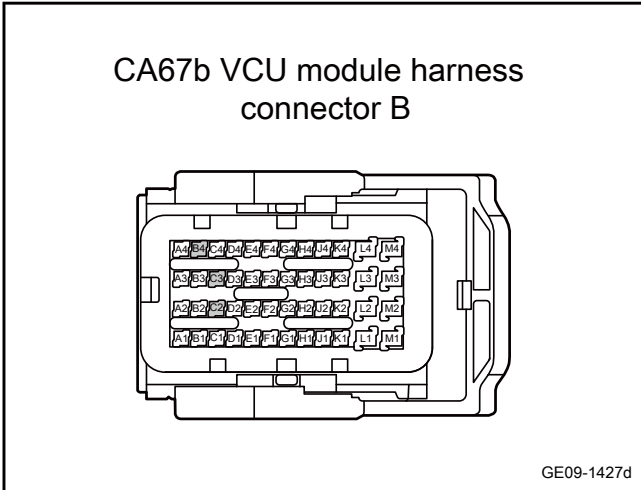
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(B4)		
CA67b(C3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, see [Replacement of the Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 8** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.3.5.18 Electronic accelerator pedal signal 2 failure

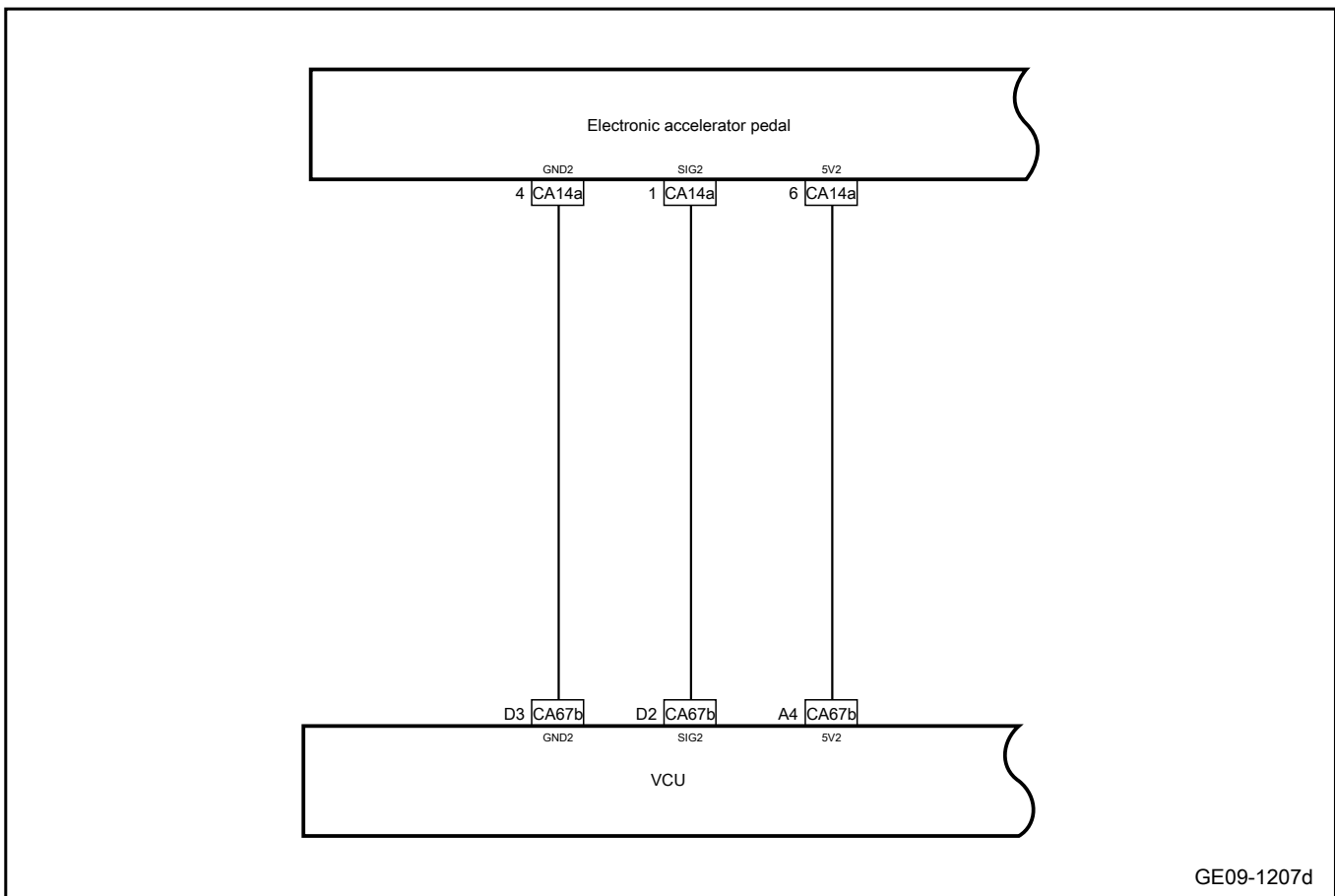
1. DTC description:

Diagnostic Trouble Code	Description
P1C2004	Accelerator pedal signal 2 voltage is too high
P1C2104	Accelerator pedal signal 2 voltage is too low

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2004	Accelerator pedal 2 voltage is higher than the limit (2.4V) for 500ms	1.IG15 off -> on delay	1. Circuit 2.VCU 3. Electronic accelerator pedal
P1C2104	Accelerator pedal 2 voltage is lower than the limit (0.2V) for 500ms	1000ms	

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

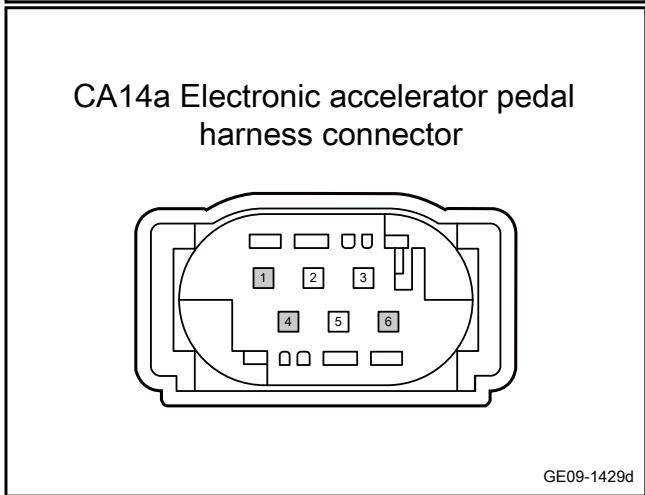
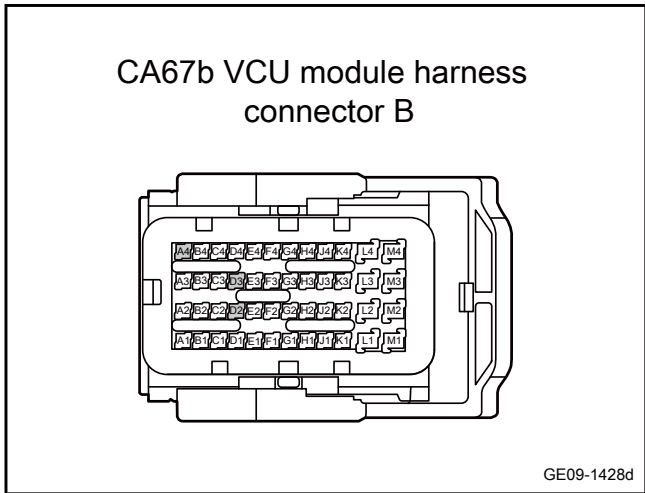
- A. Check the electronic accelerator pedal, VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the VCU and the electronic accelerator pedal is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	CA14a(1)	Standard resistance: less than 1Ω
CA67b(D3)	CA14a(4)	
CA67b(A4)	CA14a(6)	

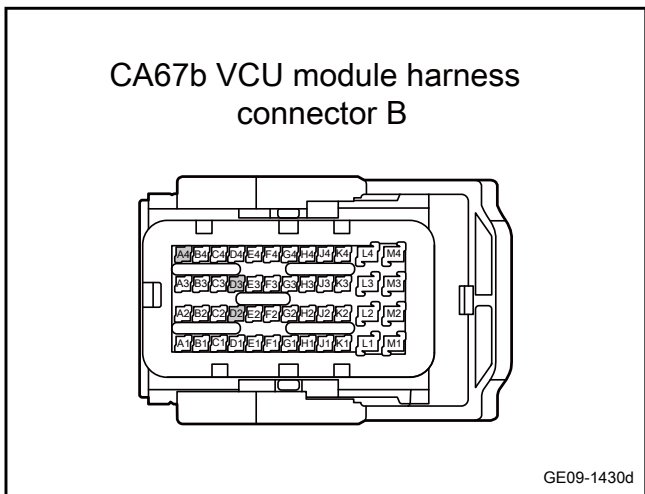
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(D3)		
CA67b(A4)		

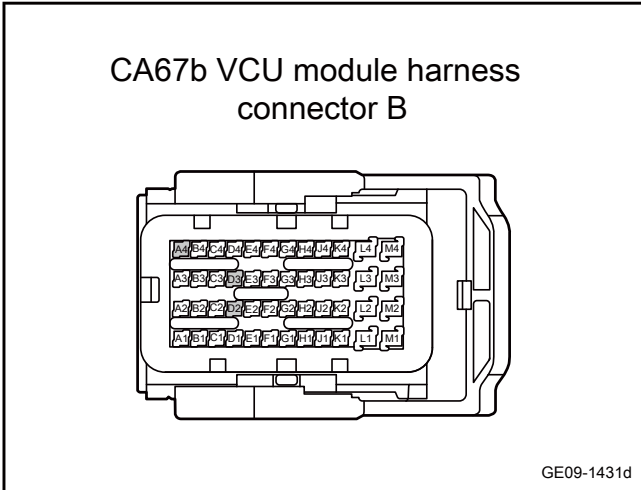
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(D3)		
CA67b(A4)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, see [Replacement of the Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 8** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 9.3.5.19 Electronic accelerator pedal signal failure

1. DTC description:

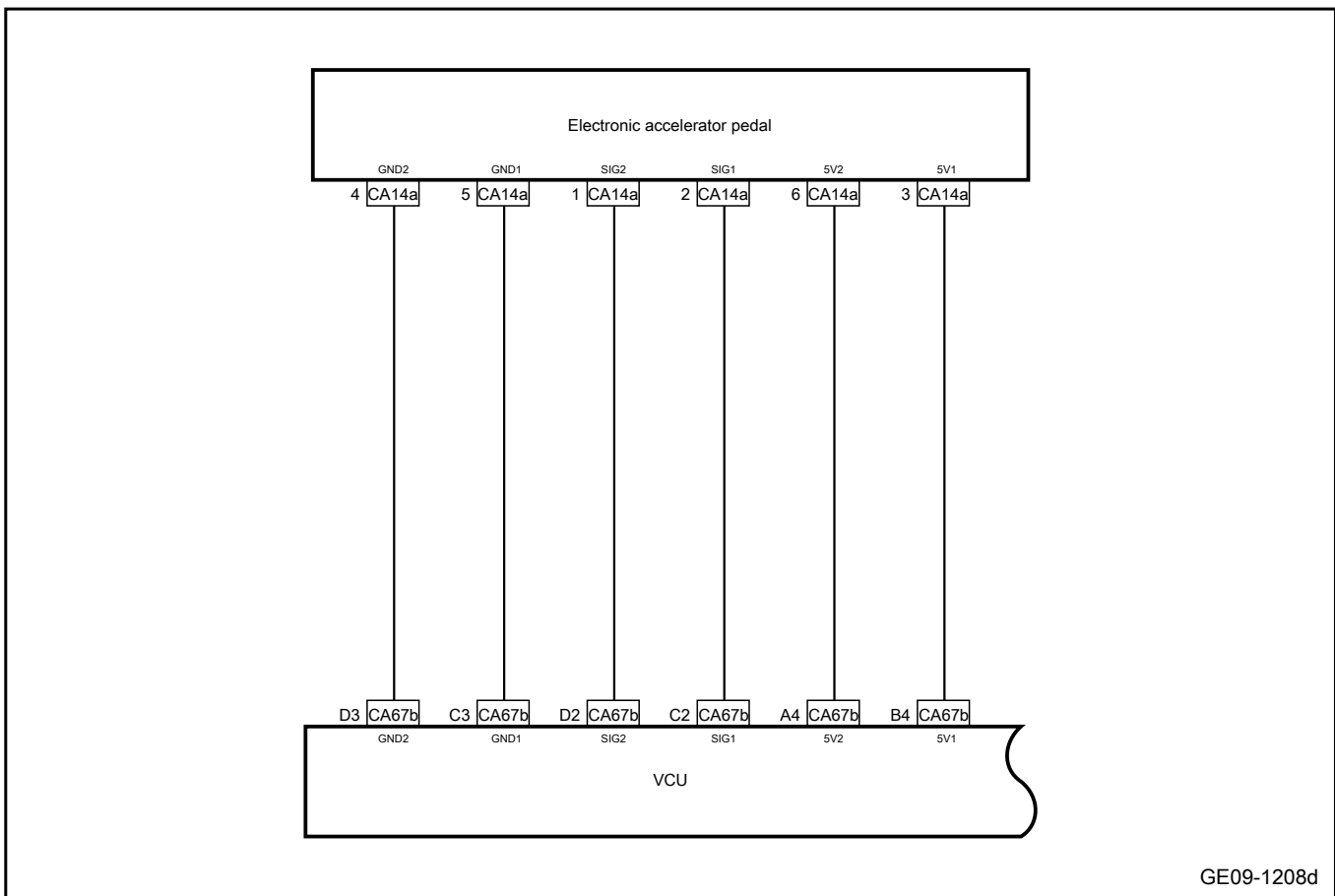
Diagnostic Trouble Code	Description
P1C2105	Unreliable accelerator pedal signal
P1C2204	The two signals of the accelerator pedal are inconsistent

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2105	Pedal sensors 1 and 2 have errors in the past 500 milliseconds	1.IG15 off -> on delay 1000ms	1. Circuit 2.VCU 3. Electronic accelerator pedal
P1C2204	The voltage between accelerator pedal 1 and 2 is different ( $V1-2 \cdot V2 > 0.4$ ), lasting for 500 milliseconds		

3. Schematic circuit diagram:





4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

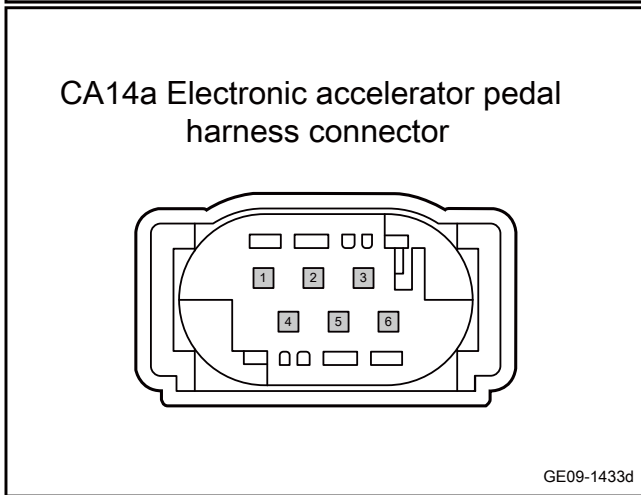
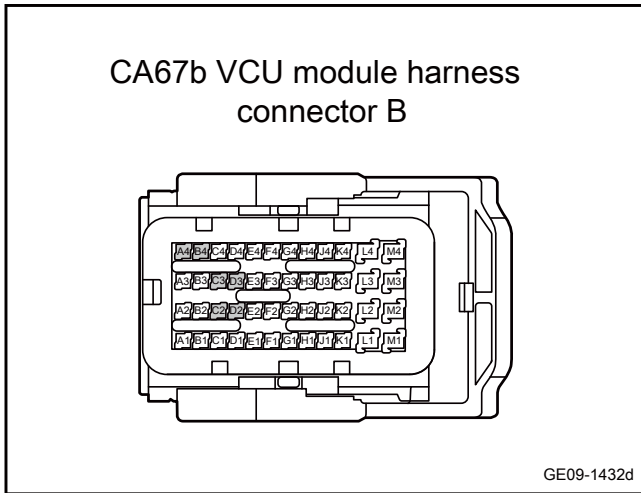
- A. Check the electronic accelerator pedal, VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the VCU and the electronic accelerator pedal is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	CA14a(1)	Standard resistance: less than 1Ω
CA67b(D3)	CA14a(4)	
CA67b(A4)	CA14a(6)	
CA67b(C2)	CA14a(2)	
CA67b(B4)	CA14a(3)	
CA67b(C3)	CA14a(5)	

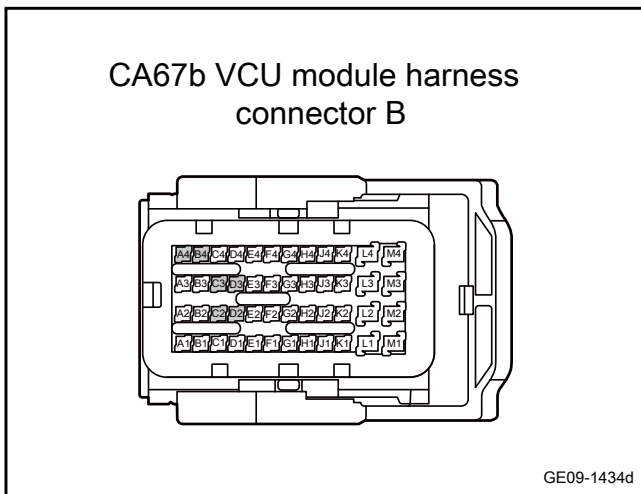
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(D3)		
CA67b(A4)		
CA67b(C2)		
CA67b(B4)		

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C3)		

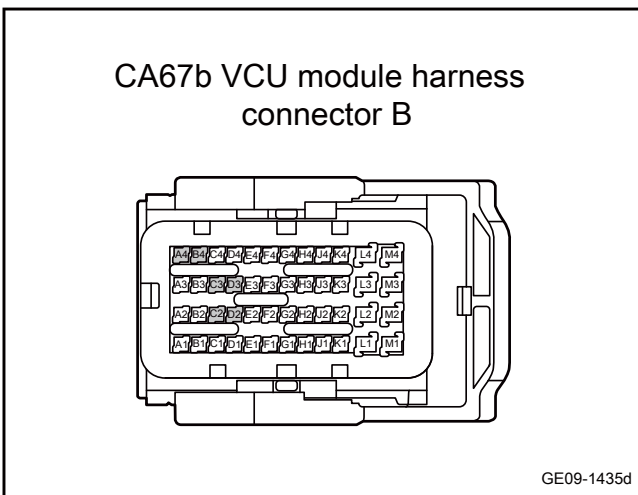
E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the VCU and the electronic accelerator pedal is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic accelerator pedal harness connector CA14a.
- C. Disconnect the VCU harness connector CA67b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(D3)		
CA67b(A4)		
CA67b(C2)		
CA67b(B4)		
CA67b(C3)		

F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, see [Replacement of the Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the VCU.
--------	------------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 8	Reprogram and reset the VCU.
--------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

### 9.3.5.20 Main relay fault

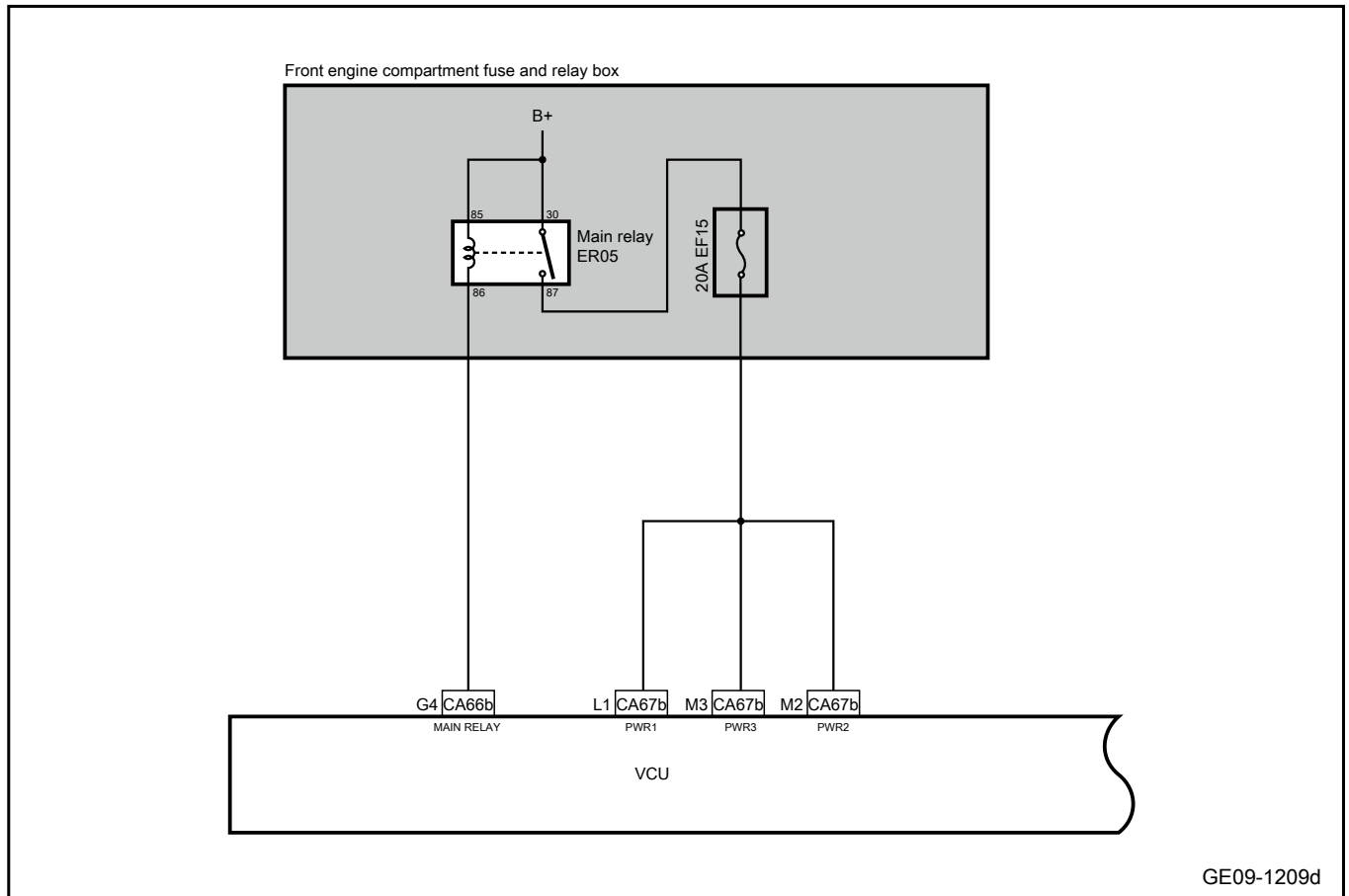
1. DTC description:

Diagnostic Trouble Code	Description
P1C0852	Main relay fault

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C0852	The difference between the feedback signal and the output signal is 500ms	1. AC charging method 2. DC charging method 3. V2G discharge mode 4. Remote air conditioning mode 5. Smart charging mode 6. Vehicle readiness without any of the above modes (TKL15_ON>3S) 7. Vehicle readiness without any of the above modes (TKL15_ON>3S) 8. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	1. Circuit 2. Relay 3. Fuse 4.VCU

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the main relay for signs of damage, falling off, etc.
- B. Check the main relay, VCU harness connector for damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF15 of the front engine bay. Check whether the fuse EF15 is blown.

Rated fuse capacity: 20A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the main relay ER05.

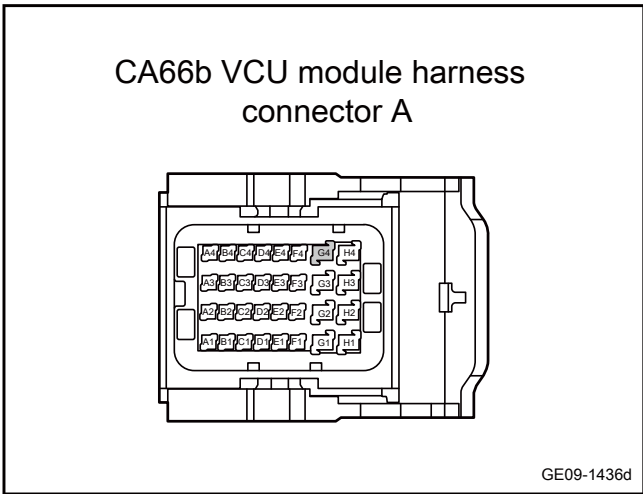
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the main relay ER05 and replace it with a new relay of the same specification.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

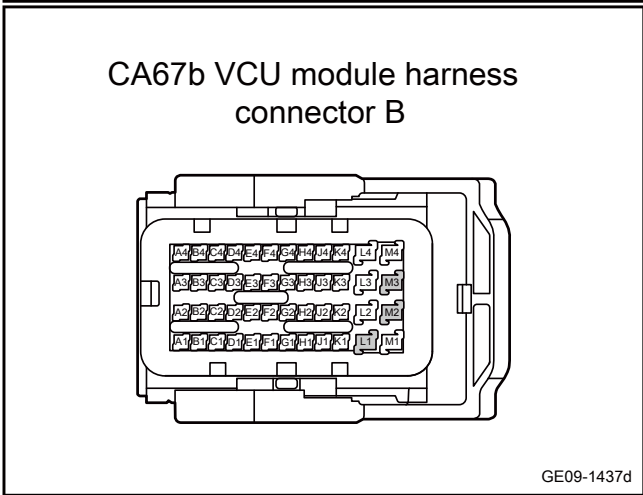
No

Step 5 Check whether the circuit between the main relay and VCU is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER05.
- C. Disconnect VCU harness connector CA66b and CA67b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	ER05(86)	Standard resistance: less than 1Ω
CA67b(L1)	ER05(87)	
CA67b(M3)		
CA67b(M2)		



- E. Confirm whether the measured value meets the standard.

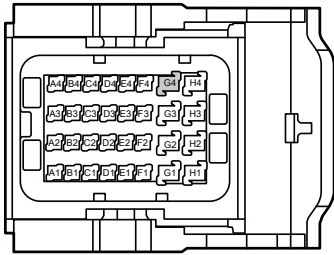
No

Repair or replace the harness.

Yes

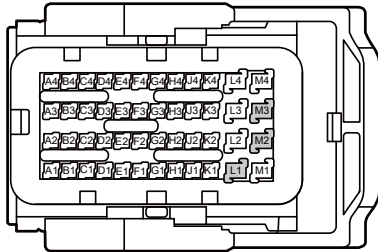
Step 6 Check whether the circuit between the main relay and VCU is short to the ground.

CA66b VCU module harness connector A



GE09-1438d

CA67b VCU module harness connector B



GE09-1439d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER05.
- C. Disconnect VCU harness connector CA66b and CA67b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(L1)		
CA67b(M3)		
CA67b(M2)		

- E. Confirm whether the measured value meets the standard.

No

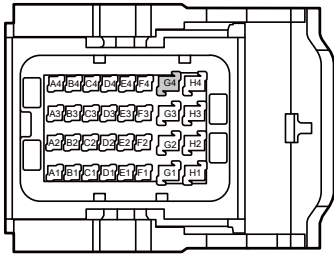
Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between the main relay and VCU is short to power supply.

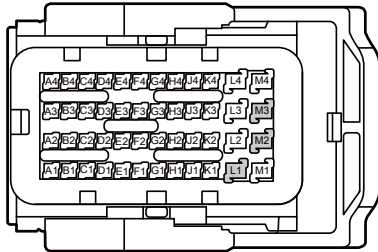


CA66b VCU module harness connector A



GE09-1440d

CA67b VCU module harness connector B



GE09-1441d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the main relay ER05.
- C. Disconnect VCU harness connectors CA66b and CA67b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(L1)		
CA67b(M3)		
CA67b(M2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 9 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

### 9.3.5.21 VCU reports other system failures

#### 1. DTC description:

DTC	Trouble description
P1C2604	Battery discharge failure level 2
P1C2704	Battery discharge failure level 3
P1C2804	Battery discharge failure level 4
P1C6C04	BMS reports power battery discharging level 6 failure
P1C6D04	BMS reports power battery charging level 2 failure
P1C718A	BMS reports power battery charging level 3 failure
P1C728A	BMS reports power battery charging level 4 failure
P1C6E04	BMS reports power battery charging level 6 failure
P1C2B04	Charger fault level 2
P1C2C04	Charger fault level 3
P1C2C05	Charger fault level 6
P1C2F04	Gear fault level 3
P1C6F04	PCU reports a level 3 fault
P1C3304	Motor controller failure level 1 (reduced power)
P1C3404	Motor controller fault level 2 (turn off output)
P1C3504	Motor controller fault level 3 (power off)
P1C3804	DCDC controller failure level 2 (automatically recoverable)
P1C3904	DCDC controller failure level 3 (can be reset to KL15 )
P1C4296	Speed signal warning failure
P1C6B25	BMS reports insulation failure
P1C3A96	EBD reports failure
P1C3B96	ABS report failure
P1C3B00	ESP report failure

DTC	Trouble description
P1C3C96	TCS report failure
P1C3D96	EPS report failure
P1C3F96	Air conditioning system reports failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2604	BMSH indicates the error state (from 0xB0) BMSH_DischgFaultLevel=2 The error state signal quality is normal	1. Meet one of the following conditions: 2. Remote air conditioning mode 3. Smart charging mode 4. Vehicle readiness without any of the above modes (TKL15_ON>3S) 5. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	1.VCU
P1C2704	BMSH indicates the error state (from 0xB0) BMSH_DischgFaultLevel=3 The error state signal quality is normal	1. Meet one of the following conditions: 2. V2G discharging method	
P1C2804	BMSH indicates the error state (starting from 0xB0) BMSH_DischgFaultLevel=4 The error state signal quality is normal	3. Remote air conditioning mode 4. Smart charging mode 5. Vehicle readiness without any of the above modes (TKL15_ON>3S)	
P1C6C04	BMS indicates the error state (starting from 0x0B0) BMS_BatteryDchgSysFaultLevel=6 The error state signal quality is normal	6. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	
P1C6D04	BMS indicates the error state (starting from 0x0B0) BMSH_ChgFaultLevel=2 The error state signal quality is normal		
P1C718A	BMS indicates the error state (starting from 0x0B0) BMSH_ChgFaultLevel=3 The error state signal quality is normal	1. Meet one of the following conditions: 2. AC charging method 3. DC charging method	
P1C728A	BMS indicates the error state (starting from 0x0B0) BMSH_ChgFaultLevel=4 The error state signal quality is normal		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6E04	BMS indicates the error state (starting from 0x0B0) BMSH_ChgFaultLevel=6 The error state signal quality is normal		
P1C2B04	OBC indicates that the error state (from 0x220) is OBC_OnBdFailSt=2 The error state signal quality is normal		
P1C2C04	OBC indicates that the error state (from 0x220) is OBC_OnBdFailSt=3 The error state signal quality is normal		
P1C2C05	OBC indicates that the error state (from 0x220) is OBC_OnBdFailSt=6 The error state signal quality is normal		
P1C2F04	EGSM indicates that the error state (starting from 0x145) is EGSM\lu ShiftleverFailSt=3 The error state signal quality is normal	1. Vehicle IG connecting state (TKL15_connected>3S)	
P1C6F04	The PCU indicates the error state (from 0x213) is PCU_FaultLevel=3 The error state signal quality is normal	1. Meet one of the following conditions: 2. AC charging method 3. DC charging method	
P1C3304	IPU indicates error status (from 0x171) IPU_FltLev=1 Error status signal quality is normal	1. Meet one of the following conditions: 2. V2G discharging method 3. Remote air conditioning mode 4. Smart charging mode 5. Vehicle readiness without any of the above modes (TKL15_ON>3S) 6. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	
P1C3404	IPU indicates error status (from 0x171) IPU_FltLev=2 Error status signal quality is normal		
P1C3504	IPU indicates error status (from 0x171) IPU_FltLev=3 Error status signal quality is normal		
P1C3804	DCDC indicates that the error state (starting from 0x176) is IPU DCDC FailSt=2 The error state signal quality is normal		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C3904	DCDC indicates that the error state (starting from 0x176) is IPU DCDC FailSt=3 The error state signal quality is normal		
P1C4296	(The controller area network (CAN) signal of the vehicle speed (0x125) is wrong or the CAN signal of the vehicle speed has an invalid value) or the quality of the IPUNMOT speed signal (0xA8) is abnormal	Vehicle IG connecting state (TKL15_connected>3S)	
P1C6B25	BMS_Insulation_Error_Range=0x2 'High voltage bus insulation error', confirmation time: 0	1. Meet one of the following conditions: 2. V2G discharging method 3. Remote air conditioning mode 4. Smart charging mode 5. Vehicle readiness without any of the above modes (TKL15_ON>3S) 6. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	
P1C3A96	EBD means failure flag (from 0x125) ESC\ \u EBDFailed is true, the quality of the failure signal is normal		
P1C3B96	ABS means failure flag (from 0x125) ESC\ \u ABSFailed is true, the quality of the failure signal is normal		
P1C3B00	ESP indicates failure flag (from 0x125) ESC\ \u ESPFailed is TRUE The quality of the failure signal is normal		
P1C3C96	TCS indicates the failure flag (from 0x125) ESC\ \u TCSFailed is TRUE The quality of the failure signal is normal	Vehicle IG connecting state (TKL15_connected>3S)	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C3D96	EPS means failure flag (from 0x150) EPS\ u EpasFailed is TRUE The quality of the fault signal is normal		
P1C3F96	AC means (fault flag (from 0x252) AC U remote U set U sts is 2, the quality of the fault signal is normal)	1. Meet one of the following conditions: 2. V2G discharging method 3. Remote air conditioning mode 4. Smart charging mode 5. Vehicle readiness without any of the above modes (TKL15_ON>3S) 6. Vehicle IG connecting state without any of the above modes (TKL15_Connected>3S)	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

**Step 4** Replace the VCU.

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

**Step 5** Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Write controller data.

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next Step

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 9.3.5.22 LIN communication failure

#### 1. DTC description:

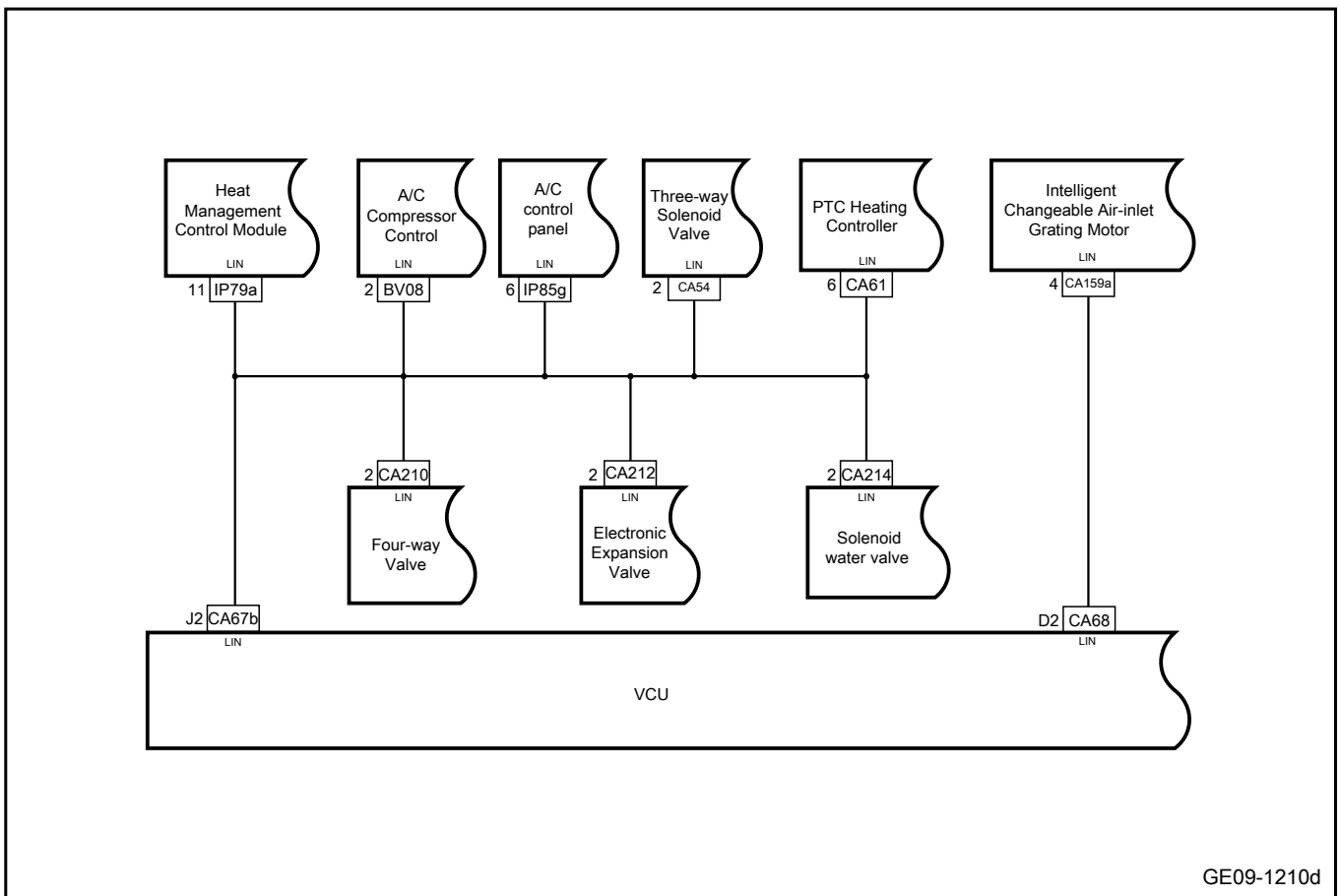
Diagnostic Trouble Code	Description
P1C6C08	LIN fault

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6C08	LIN error flag remains true	1.LIN error flag changed from false to true	1. Circuit 2.VCU 3. Smart mutable intake grille motor 4. Thermal management control module 5. A/C compressor 6. Automatic air conditioning control panel 7. Three-way solenoid valve 8.PTC heating controller 9. Four-way valve 10. Electronic expansion valve 11. Solenoid water valve

#### 3. Schematic circuit diagram:





4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the smart mutable intake grille motor, thermal management control module, air conditioning compressor, automatic air conditioning control panel, three-way solenoid valve, PTC heating controller, four-way valve, electronic expansion valve, solenoid water valve, VCU wiring harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

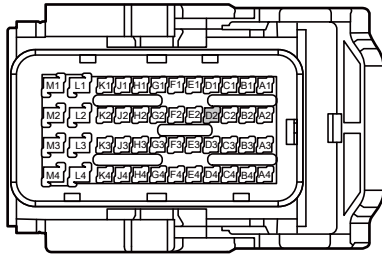
No

Repair or replace the faulty part.

Yes

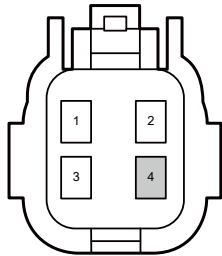
Step 3 | Check whether the VCU LIN communication circuit is open.

CA68 VCU module harness connector C



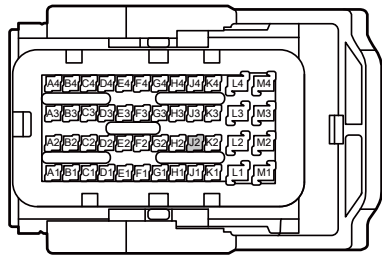
GE09-1442d

CA159a Intelligent Changeable Air-inlet Grating Motor Harness Connector



GE09-1443d

CA67b VCU module harness connector B



GE09-1444d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the A/C compressor harness connector BV08.
- E. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- F. Disconnect the three-way solenoid valve harness connector CA54a.
- G. Disconnect the PTC heating control unit harness connector CA61.
- H. Disconnect the four-way valve harness connector CA210.
- I. Disconnect electronic expansion valve harness connector CA212.
- J. Disconnect the solenoid water valve harness connector CA214.
- K. Disconnect VCU harness connector CA67b and CA68.
- L. Use a multimeter to measure :

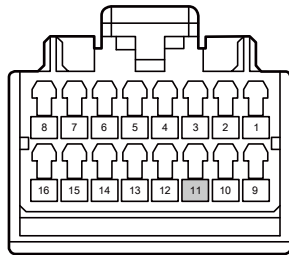
Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	CA159a(4)	Standard resistance: less than 1Ω
CA67b(J2)	IP79a(11)	
CA67b(J2)	BV08(2)	
CA67b(J2)	IP85g(6)	
CA67b(J2)	CA54(2)	
CA67b(J2)	CA61(6)	
CA67b(J2)	CA210(2)	
CA67b(J2)	CA212(2)	
CA67b(J2)	CA214(2)	

- M. Confirm whether the measured value meets the standard.

No

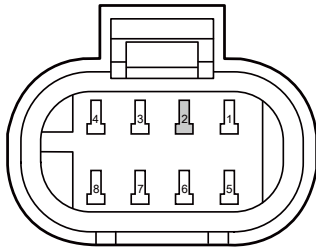
Repair or replace the harness.

IP79a Heat Management Control  
Module Harness Connector 1



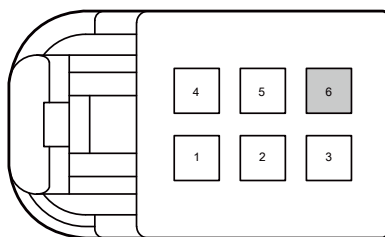
GE09-1445d

BV08 A/C compressor harness  
connector



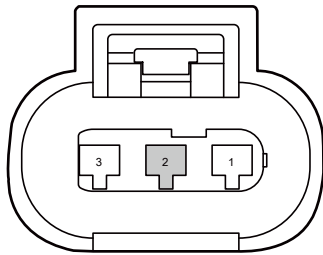
GE09-1446d

IP85g harness connector A of automatic  
air conditioning control panel



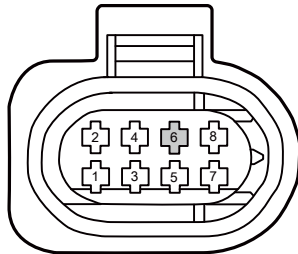
GE09-1447d

CA54 Three-way Solenoid Valve  
Harness Connector A



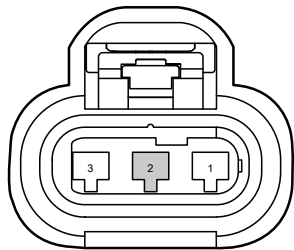
GE09-1448d

CA61-PTC Heating Controller  
Harness Connector 2



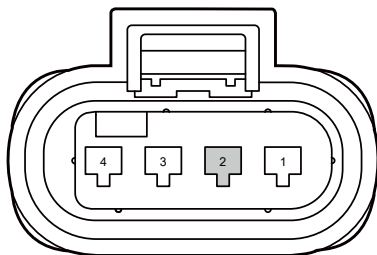
GE09-1449d

CA210 Four-way Valve  
Harness Connector



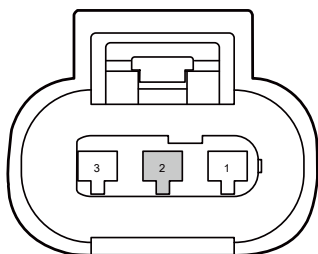
GE09-1450d

CA212 Electronic Expansion Valve  
Harness Connector 1



GE09-1451d

CA214 Solenoid water valve  
harness connector

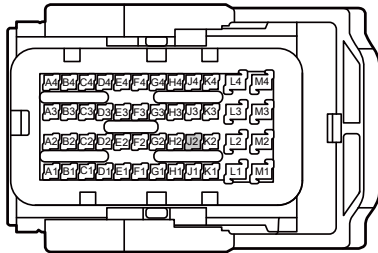


GE09-1452d

Yes

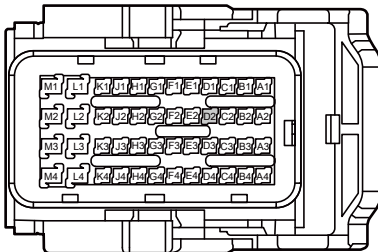
Step 4	Check whether the VCU LIN communication circuit is short to ground.
--------	---

CA67b VCU module harness connector B



GE09-1453d

CA68 VCU module harness connector C



GE09-1454d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the A/C compressor harness connector BV08.
- E. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- F. Disconnect the three-way solenoid valve harness connector CA54a.
- G. Disconnect the PTC heating control unit harness connector CA61.
- H. Disconnect the four-way valve harness connector CA210.
- I. Disconnect electronic expansion valve harness connector CA212.
- J. Disconnect the solenoid water valve harness connector CA214.
- K. Disconnect VCU harness connector CA67b and CA68.
- L. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(J2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA68(D2)		

- M. Confirm whether the measured value meets the standard.

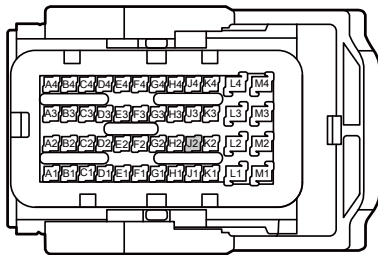
No

Repair or replace the harness.

Yes

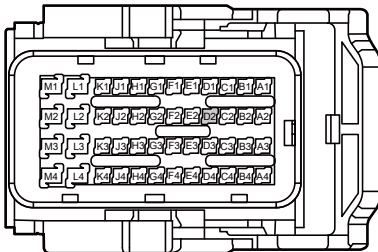
Step 5 | Check whether the VCU LIN communication circuit is short to the power supply.

CA67b VCU module harness connector B



GE09-1455d

CA68 VCU module harness connector C



GE09-1456d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the thermal management control module harness connector IP79a.
- D. Disconnect the A/C compressor harness connector BV08.
- E. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- F. Disconnect the three-way solenoid valve harness connector CA54a.
- G. Disconnect the PTC heating control unit harness connector CA61.
- H. Disconnect the four-way valve harness connector CA210.
- I. Disconnect electronic expansion valve harness connector CA212.
- J. Disconnect the solenoid water valve harness connector CA214.
- K. Disconnect VCU harness connector CA67b and CA68.
- L. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- M. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA67b(J2)	Vehicle body is grounded.	Standard voltage: 0V
CA68(D2)		

- N. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replacement of the smart mutable intake grille motor.

- A. To replace the smart mutable intake grille motor, see [Replacement of the Smart Mutable Intake Grille Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the three-way solenoid valve.



- A. To replace the three-way solenoid valve, see [Replacement of the Three-way Solenoid Valve](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the four-way valve.

- A. To replace the four-way solenoid valve, see [Replacement of the Four-way Solenoid Valve](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the solenoid water valve.

- A. To replace the solenoid water valve, see [Replacement of the Solenoid Water Valve](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Replace the electronic expansion valve.

- A. To replace the electronic expansion valve, see [Replacement of the Electronic Expansion Valve](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Replace automatic air-conditioning control panel.

- A. Replace the automatic air-conditioning control panel, see [Replacement of the Automatic Air-conditioning Control Panel](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Replace the PTC heating controller.
------------	-------------------------------------

- A. Replace the PTC heating controller, refer to the [PTC Heating Controller Replacement](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Replace the A/C compressor.
------------	-----------------------------

- A. Remove the A/C compressor, refer to [Replacement of A/C compressor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 14	Replace the thermal management control module.
------------	--

- A. Replace the thermal management control module, see [Replacement of the Thermal Management Control Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 15	Replace the VCU.
------------	------------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 16	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 17	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 18	System is normal.
------------	-------------------

### 9.3.5.23 Fault on cooling fan

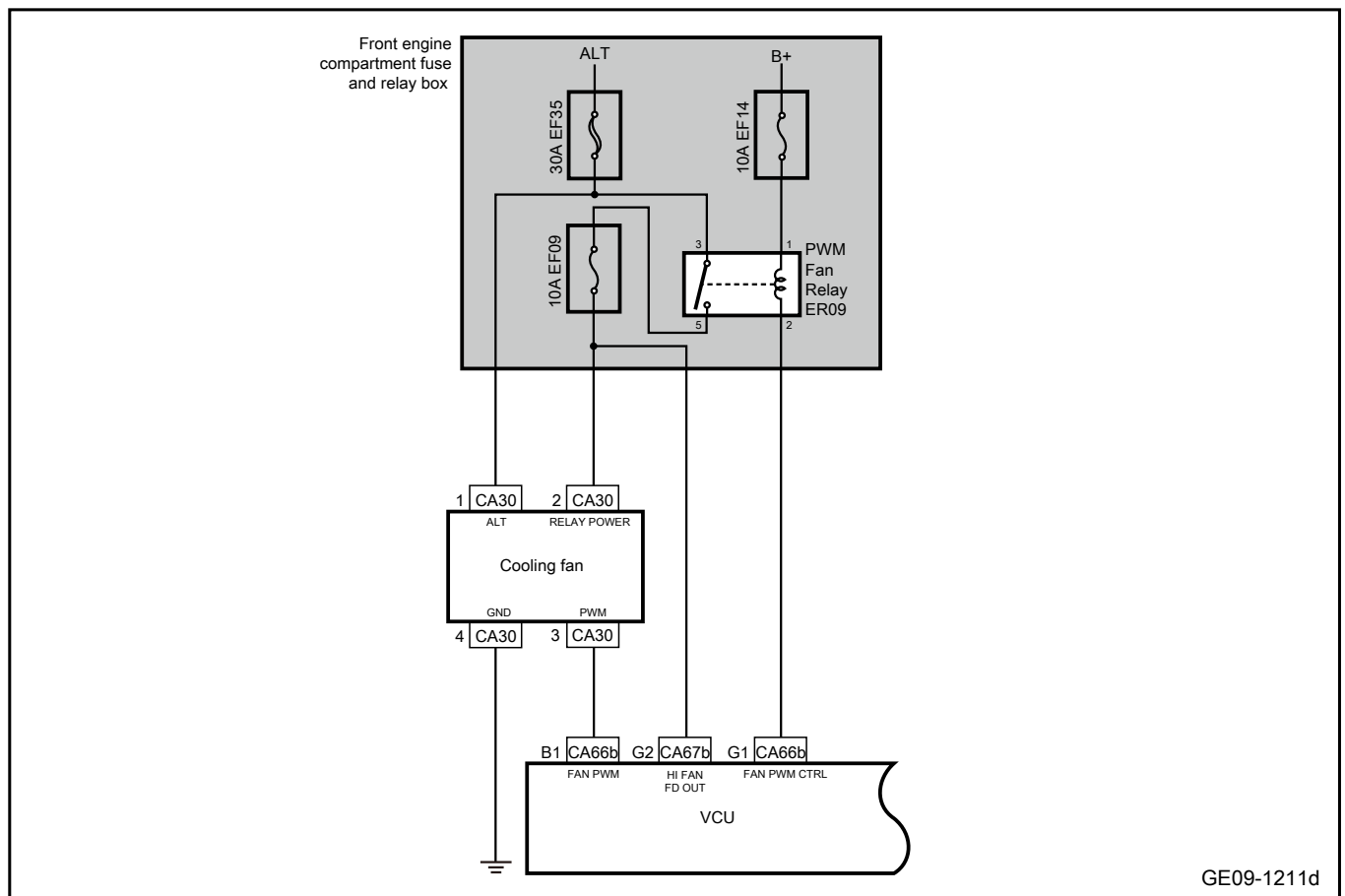
1. DTC description:

Diagnostic Trouble Code	Description
P1CCE92	PWM fan relay failure
P1CCF12	The PWM fan enabling signal is short-circuited to the power supply
P1CCF11	PWM fan enabling signal is short-circuited to ground
P1CCF13	PWM fan enabling signal is open
P1CD012	PWM fan control signal is short-circuited to the power supply
P1CD011	PWM fan control signal is short-circuited to ground
P1CD013	PWM fan control signal is open circuited

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1CCE92	The difference between the feedback signal and the output signal is 500ms, and the cooling fan does not report an error	1. Full working conditions	1. Circuit 2. Relay 3. Fuse 4.VCU 5. Cooling fan
P1CCF12	Short circuit to VCC		
P1CCF11	Short circuit to ground		
P1CCF13	open circuit		
P1CD012	Short circuit to VCC		
P1CD011	Short circuit to ground		
P1CD013	open circuit		

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling fan for signs of damage or falling off.
- B. Check the cooling fan, VCU harness connector for the signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuses EF09 and EF14 of the front engine compartment. Check whether the fuses EF09 and EF14 is blown.  
  
Rated fuse capacity: 10A
- C. Pull out the fuse EF35 of the front engine bay. Check whether the fuse EF35 is blown.  
  
Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the PWM fan relay ER09.
--------	-------------------------------

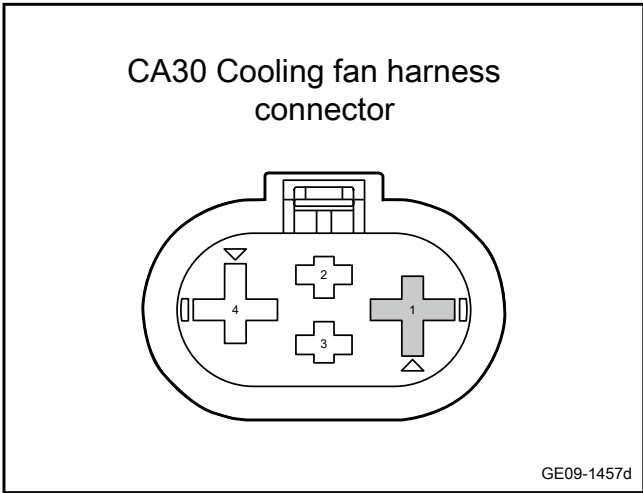
- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the PWM fan relay ER09 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

**Step 5** Check whether the power supply circuit of the cooling fan is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the cooling fan harness connector CA30.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(1)	Vehicle body is grounded.	Standard voltage: 11-14V

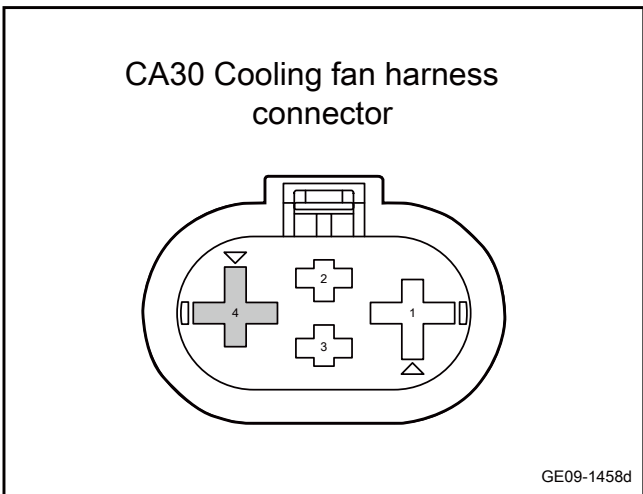
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check if the grounding circuit of the cooling fan is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the cooling fan harness connector CA30.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

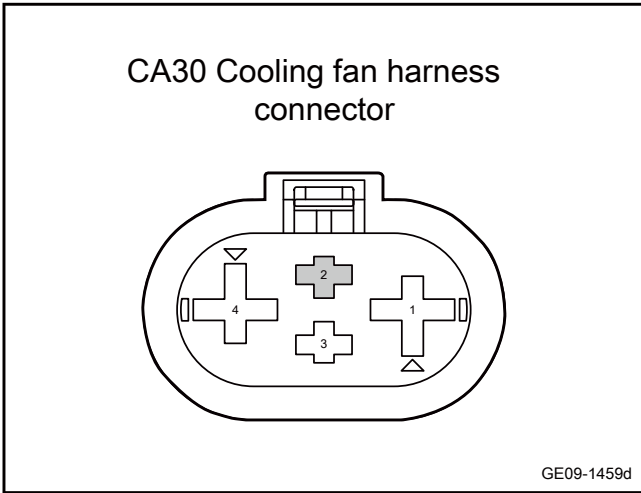
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between cooling fan and PWM fan relay is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	ER09(5)	Standard resistance: less than 1Ω

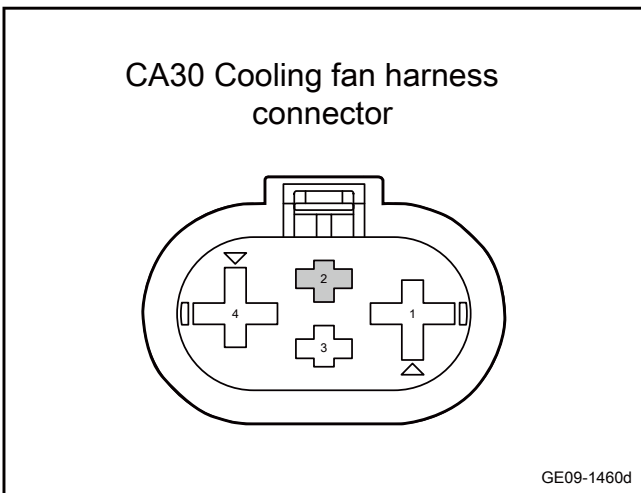
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** | Check whether the circuit between the cooling fan and the PWM fan relay is short to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

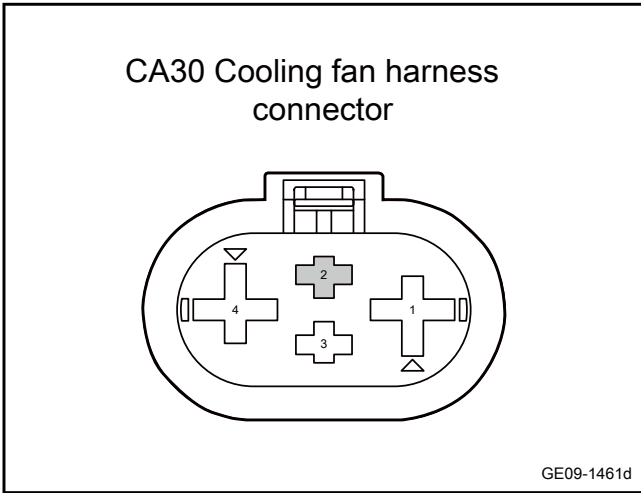
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** | Check whether the circuit between the cooling fan and the PWM fan relay is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

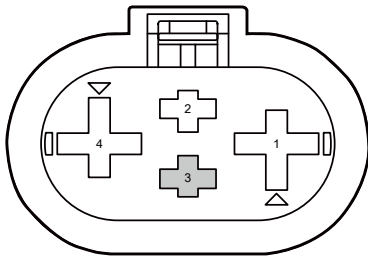
Repair or replace the harness.

Yes

<b>Step</b> 10	Check whether the circuit between the cooling fan and the VCU is open.
-------------------	--

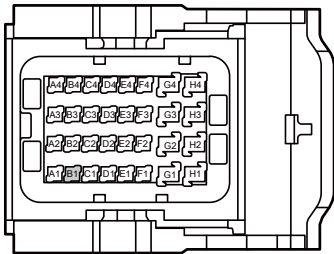


CA30 Cooling fan harness connector



GE09-1462d

CA66b VCU module harness connector A



GE09-1463d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	CA66b(B1)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

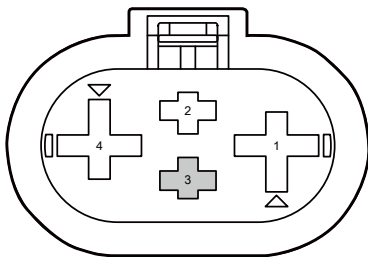
No

Repair or replace the harness.

Yes

Step 11 Check whether the circuit between the cooling fan and VCU is short to ground.

CA30 Cooling fan harness connector



GE09-1464d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

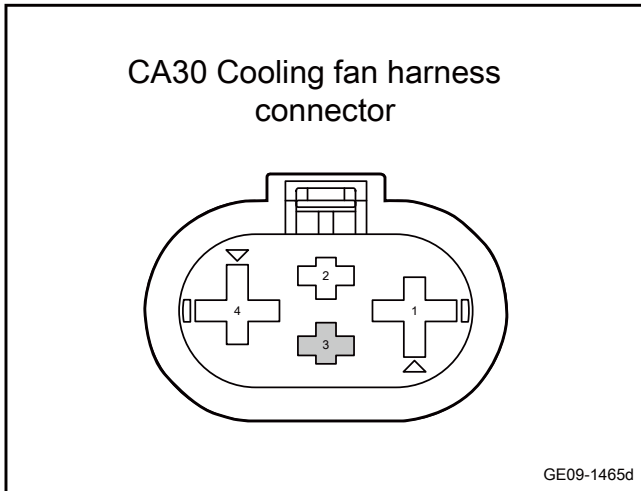
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 12	Check whether the circuit between cooling fan and VCU is short to power supply.
------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

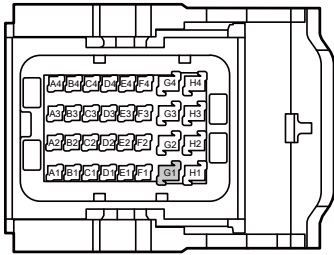
No

Repair or replace the harness.

Yes

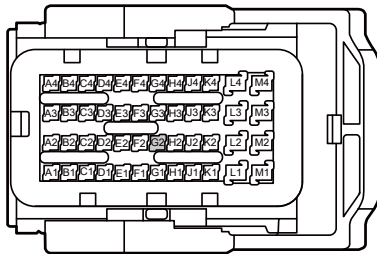
Step 13	Check whether the circuit between PWM fan relay and VCU is open.
------------	--

CA66b VCU module harness connector A



GE09-1466d

CA67b VCU module harness connector B



GE09-1467d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect VCU harness connector CA66b and CA67b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	CA66b(G1)	Standard resistance: less than 1Ω
ER09(5)	CA67b(G2)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 14	Check whether the circuit between PWM fan relay and VCU is short to the ground.
---------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Disconnect VCU harness connector CA66b and CA67b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
ER09(5)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 15	Check whether the circuit between PWM fan relay and VCU is short to the power supply.
------------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Disconnect VCU harness connector CA66b and CA67b.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	Vehicle body is grounded.	Standard voltage: 0V
ER09(5)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 16	Replace the cooling fan.
------------	--------------------------

- A. Remove the cooling fan, refer to [Replacement of the cooling fan](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 17	Replace the VCU.
------------	------------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step

Step 18	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 19	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

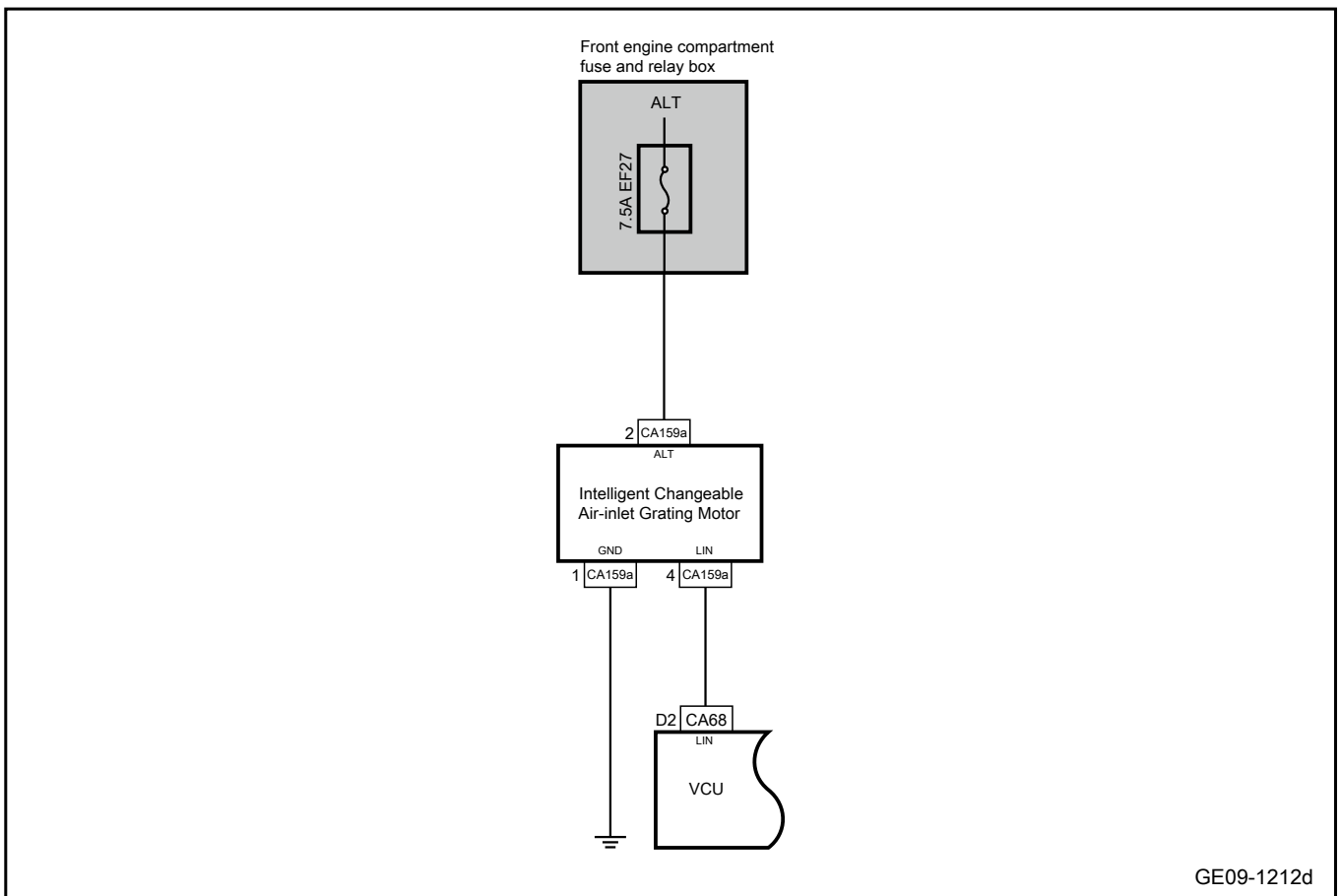
Diagnose according to the output trouble code.

No

Step 20	System is normal.
------------	-------------------

### 9.3.5.24 Intelligent variable intake grille does not work

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the smart changeable grille harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF27 is blown out.

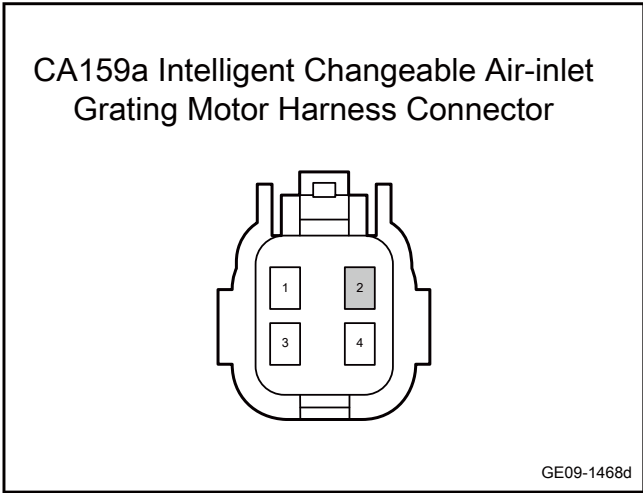
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the power circuit of the smart mutable intake grille motor.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA159a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

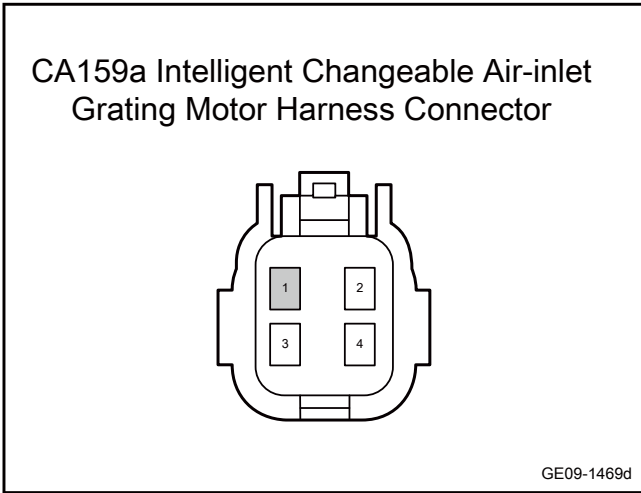
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Detect the ground line of the smart mutable intake grille motor.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Use a multimeter to measure each terminal according to the following table:

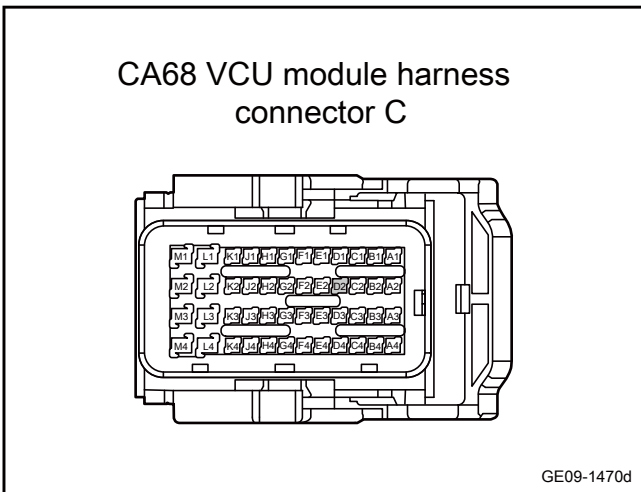
Measure terminal 1	Measure terminal 2	Standard value
CA159a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the smart mutable intake grille motor and the VCU is open.

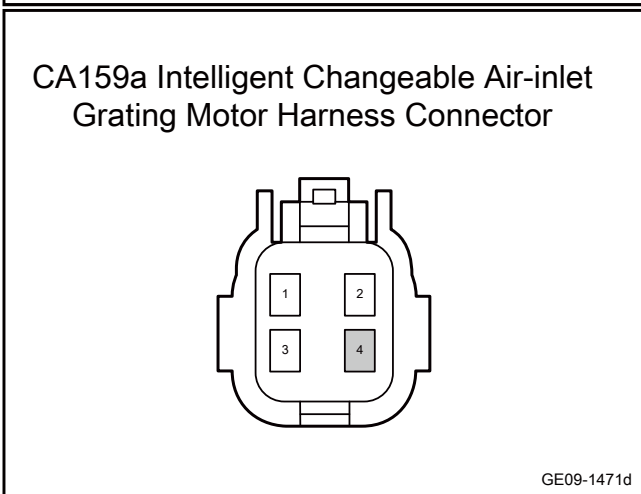


- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	CA159a(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

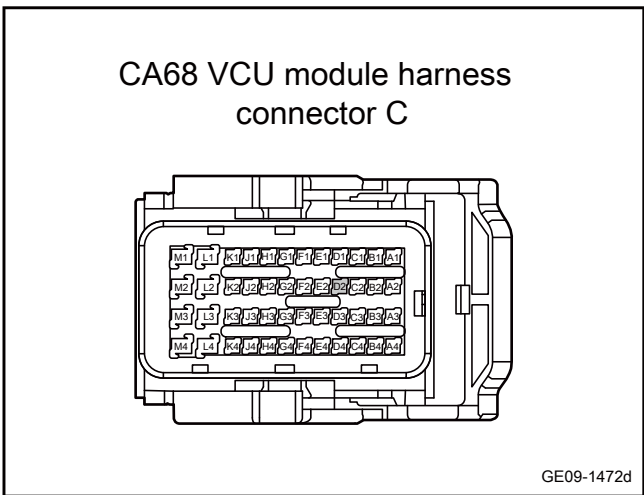
No Repair or replace the harness.



Yes



**Step 7** Check whether the circuit between the smart mutable intake grille motor and the VCU is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure :

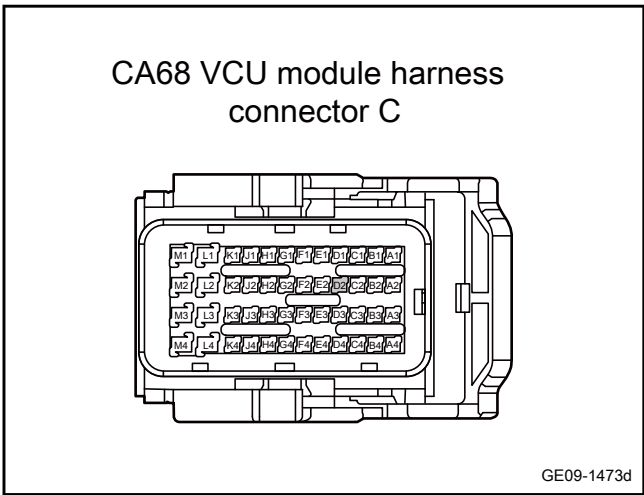
Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → **Repair or replace the harness.**

Yes

**Step 8** Check whether the circuit between the smart mutable intake grille motor and the VCU is short to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the smart mutable intake grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	Vehicle body is grounded.	Standard voltage: 0V

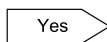
- F. Confirm whether the measured value meets the standard.

No → **Repair or replace the harness.**

Yes

**Step 9** Replace the smart mutable intake grille motor.

- A. To replace the smart mutable intake grille motor, see [Replacement of Smart Mutable Intake Grille Motor](#)
- B. Confirm whether the system is normal.

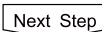
Yes 

System is normal.

No 

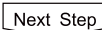
Step 10	Replace the VCU.
------------	------------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU power failure](#)
- B. Replace the VCU, refer to [Replacement of VCU](#)

Next Step 

Step 11	Reprogram and reset the VCU.
---------	------------------------------

- A. Reprogram and reset the VCU. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step 

Step 12	System is normal.
------------	-------------------

### 9.3.6 Removal and installation

#### 9.3.6.1 Complete vehicle controller assembly

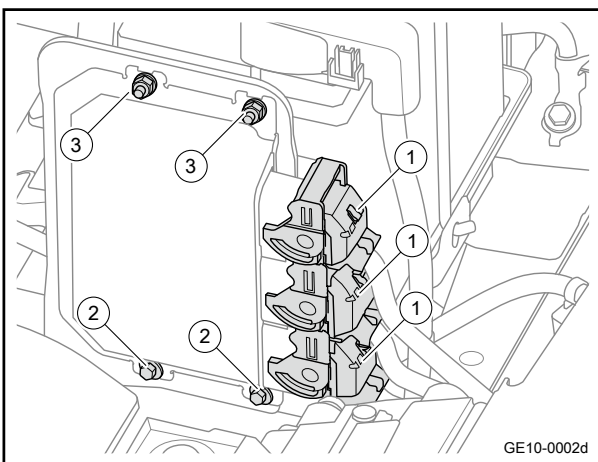
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

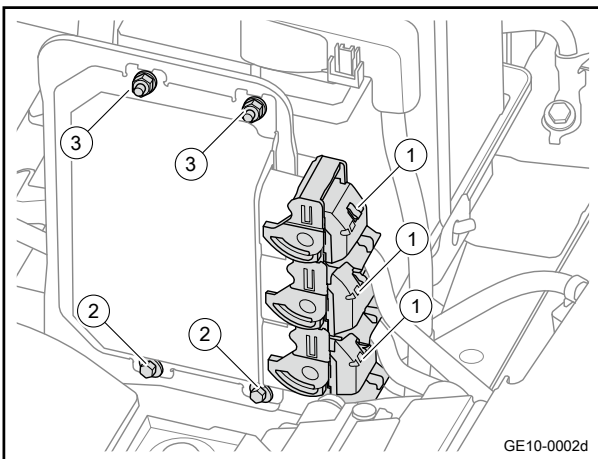
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Remove the wiring harness connector 1 of the vehicle control unit assembly.
- 4 Remove the 2 fixing bolts 2 of the vehicle control unit assembly.
- 5 Remove the 2 fixing nuts 3 of the vehicle control unit assembly.
- 6 Remove the vehicle control unit assembly.



##### Installation procedure

- 1 Move the vehicle control unit assembly to the installation position.
- 2 Install the two fixing nuts 3 of the vehicle control unit assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install the two fixing bolts 2 of the vehicle control unit assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 4 Connect the complete vehicle controller assembly harness connector 1.
- 5 Install the front cabin trim cover assembly.
- 6 Connect the negative cable of battery.



## 9.4 Programming and setting

### 9.4.1 Diagnostic information and steps

#### 9.4.1.1 Programming precautions

Before programming the control module, ensure that the following conditions are met:

1. The charging system shall have no fault. Before programming the control module, the fault of the charging system must be eliminated first.
2. Battery voltage should be higher than 12V but lower than 16V. If the battery voltage is too low, it should be charged before programming the control module.
3. The battery charger shall not be connected to the vehicle battery. Incorrect system voltage or voltage fluctuation caused by a battery charger can lead to programming failures or damage to the control module.
4. Switch off or disable all electrical loads of a vehicle battery, such as interior lamps, daytime running lights, warm air, air-conditioning systems, cooling fans, radios, etc.
5. The start and stop button should be placed in the correct position. Do not change the position of the start and stop button during programming unless indicated by the diagnostic instrument.
6. Ensure that all tools are securely connected, including the following components and circuits:
  - Control module serial data link tester.
  - Connection at the diagnostic interface (DLC).
  - Power supply circuit
7. Do not disturb tool harness when programming. Unexpected programming interruptions can lead to programming failures or damage to the control module.

#### 9.4.1.2 Replacement of controller

##### Note

After replacing the controller, it is needed to write data and other operations on the controller.

##### 1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".
--------	--

##### Note

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXX

Next Step

Step 5	Click "Confirm".
--------	------------------

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select "Write data function".
--------	-------------------------------

**Note**

Write data function is equipped with contents of "configuration with one key", "backup with one key", "vehicle name", "vehicle identification number" (VIN code), "system name", "ECU installation date", "anti-theft KEY", "erase anti-theft KEY", "network topology configuration 2", "network node configuration code-code input", "function configuration code-code input" (the specific control module should prevail). Select data name to be written according to needs. The following is an example of writing vehicle name data.

Next Step

Step 8	Select "vehicle name".
--------	------------------------

**Note**

The system will prompt: the present vehicle name is: XXXXX

Next Step

Step 9	Click "Confirm".
--------	------------------

Next Step

Step 10	Input data.
---------	-------------

**Note**

The system will prompt: please enter the vehicle name

Next Step

Step 11	Click "Confirm".
---------	------------------

Next Step

Step 12	Input data.
---------	-------------

**Note**

The system will prompt: please reenter the vehicle name

Next Step

Step 13	Click "Confirm".
------------	------------------

**Note**

The system will prompt: data you entered is: xxx. Please confirm whether the input data is correct. If yes, please press "OK" to implement the next step, otherwise, press "No" to reenter.

Next Step

Step 14	Click "Ok" to implement the next step.
------------	--

**Note**

The system will prompt: implementing, please wait...

Next Step

Step 15	Write data function completes.
------------	--------------------------------

### 9.4.1.3 Programing and setting each module of the complete vehicle

#### 1. Programming and settings after BCM is replaced

The BCM control module must be reset after it is replaced, the specific steps are as follows:

- a. Connect a diagnostic instrument to the diagnostic interface of the vehicle
- b. Turn the start switch to "ON".
- c. Enter the main interface of the diagnostic instrument and automatically identify or select the "XX Automotive" brand – "XX" model.
- d. Select manual selection system-Select body control module (BCM).
- e. Select data writing function-Write anti-theft key.
  - Input KSK code of the anti-theft key and re-input KSK code of anti-theft key.
  - It will prompt to confirm the successful anti-theft writing.
- f. Select a special function - sunroof self-learning, please see [Sunroof Self-learning](#)
- g. Select special function-RLS information configuration and reading, refer to [Information configuration and reading of rainfall sunlight sensor](#)

#### 2. Programming and settings after ACU is replaced

To replace or remove ACU, it is necessary to calibrate the heading angle sensor Refer to [Yaw angle sensor calibration](#)

#### 3. Programming and settings after EPS is replaced

To remove or replace EPS, it is necessary to calibrate the steering wheel angle Refer to [Steering wheel angle calibration](#)

4. Programming and settings of EPB initialization

EPB initiation settings Refer to [EPB initialization settings](#)

5. Programming and settings for entering maintenance mode (brake caliper release)

Programming and settings for entering maintenance mode (brake caliper release). Refer to [Entering the maintenance mode \(ready to replace brake block\), exiting the maintenance mode \(functions performed after brake block is replaced\)](#)

6. Programming and settings of combination instrument mileage reset

Maintenance mileage reset (maintenance indicator lamp of diagnostic apparatus) Refer to [Mileage reset](#)

### 9.4.1.4 Clear the trouble code

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

Note

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select “clear trouble code”
--------	-----------------------------

Next Step

Step 8	Click “YES”.
--------	--------------

**Note**

System prompts: clearing the trouble code is completed.

Next Step

Step 9 Click "Confirm" to complete the function of clearing the trouble code.

**9.4.1.5 Read data stream**

## 1. Diagnosis steps

Step 1 Connect one end of diagnostic apparatus with OBD diagnostic interface.

Next Step

Step 2 Connect one end of diagnostic apparatus with the computer equipped with DLC software.

Next Step

Step 3 Operate the starting switch of vehicle to place the power in mode ON.

Next Step

Step 4 Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".

**Note**

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6 Select the system.

Next Step

Step 7 Select "read data stream".

Next Step

Step 8 Select data stream.



Note

Select one or more data streams as needed, or select all data streams with one touch.

Next Step

Step 9	Click "OK".
--------	-------------

Next Step

Step 10	View data stream information.
---------	-------------------------------

Note

At the bottom of the view data stream page, there are: reset, previous page, next page, save, history, graphics, print, freeze, return function options, and you can select the function according to your demands.

Next Step

Step 11	Read data stream function is completed.
---------	---

### 9.4.1.6 Motion test

#### 1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".
--------	--

Note

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click "Confirm".
--------	------------------

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select “motion test”.
--------	-----------------------

#### Note

Motion test has different motion selections. Select the appropriate action as required.

Next Step

Step 8	Select the motion to be tested.
--------	---------------------------------

Next Step

Step 9	Input value.
--------	--------------

#### Note

The system will prompt: range of input value: X-XX (input values should be within this range).

Next Step

Step 10	Click “confirm” to complete the motion test function.
------------	---

### 9.4.1.7 Controller reset

#### 1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6 Select the system.

Next Step

Step 7 Select "ECU Reset".

#### Note

ECU reset functions include: ECU software reset and ECU hardware reset. The following introduces ECU software reset. The ECU hardware reset method refers to ECU software reset method.

Next Step

Step 8 Select "ECU Software Reset".

#### Note

System prompts: whether to reset.

Next Step

Step 9 Click "Yes" and complete the ECU reset function.

### 9.4.1.8 Read freeze frame

#### 1. Diagnosis steps

Step 1 Connect one end of diagnostic apparatus with OBD diagnostic interface.

Next Step

Step 2 Connect one end of diagnostic apparatus with the computer equipped with DLC software.

Next Step

Step 3 Operate the starting switch of vehicle to place the power in mode ON.

Next Step

Step 4 Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".

**Note**

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6 Select the system.

Next Step

Step 7 Select "read freeze frame".

Next Step

Step 8 Read freeze frame function is completed.

### 9.4.1.9 ECU filling

#### 1. Diagnosis steps

Step 1 Connect one end of diagnostic apparatus with OBD diagnostic interface.

Next Step

Step 2 Connect one end of diagnostic apparatus with the computer equipped with DLC software.

Next Step

Step 3 Operate the starting switch of vehicle to place the power in mode ON.

Next Step

Step 4 Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click "Welcome to enter".

**Note**

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5 Click "Confirm".

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select "ECU filling".
--------	-----------------------

Next Step

Step 8	Select "Yes".
--------	---------------

**Note**

The system will prompt: please select the first file to be filled.

Next Step

Step 9	Click "YES".
--------	--------------

**Note**

The system will prompt: please open the file to be filled.

Next Step

Step 10	Click "Open".
---------	---------------

A. Add files to be filled?

Yes

Go to Step 9.
---------------

No

Step 11	Click "No".
---------	-------------

**Note**

The system will prompt: you have selected the following files, continue the filling function?

Next Step

Step 12	Click "YES".
---------	--------------

Next Step

Step 13	The ECU filling function is completed.
---------	--

### 9.4.1.10 Read vision information

#### 1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

#### Note

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select “Vision information”
--------	-----------------------------

#### Note

The system will display: vehicle name, guiding procedure software identification number, part number, supplier code, ECU production date, ECU serial number, vehicle identification number (VIN), ECU hardware version number, ECU software version number, ECU flashing and repair shop code or equipment number, ECU flashing date, ECU installing date, emission type, calibrated software version number.

Next Step

Step 8	Click “OK”, and complete version number information reading,
--------	--

### 9.4.1.11 Read the fault code

#### 1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next Step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next Step

Step 3	Operate the starting switch of vehicle to place the power in mode ON.
--------	---

Next Step

Step 4	Turn on DLC software on the computer (the computer needs to be connected with the Internet), and click “Welcome to enter”.
--------	--

**Note**

The system will prompt: model is: XX VIN code is: XXXXXXXXXXXXXXXXXXXX

Next Step

Step 5	Click “Confirm”.
--------	------------------

Next Step

Step 6	Select the system.
--------	--------------------

Next Step

Step 7	Select “Read the fault code”
--------	------------------------------

**Note**

The system will display: the current fault code: XXXX Fault name: XXXX

Next Step

Step 8	Click “Confirm”, and the function of reading the fault code is completed.
--------	---





## Body electrical

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## 10.1 Warnings and Precautions

### 10.1.1 Warnings and Precautions

#### 10.1.1.1 Warnings and Precautions

##### Warning regarding the vehicle lifting

###### Warning

To avoid vehicle damage, serious personal injury and even death, when the main components are removed from the vehicle, and the lifter is used for support, the jack should be used to support the vehicle part corresponding to the components to be removed.

##### Warnings regarding battery disconnection

###### Warning

Before maintaining any electrical component, the start and stop button power mode should be in the OFF status and all electrical loads must be "OFF" (switch off) unless otherwise stated in the operational program. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

##### Warning regarding cracked windows

###### Warning

If a window glass is cracked but remains intact, the protective tape should be cross-pasted to the window glass to prevent further damage to the window glass and personal injury.

##### Warning about the express window down function

###### Warning

When the driver operates powered window switch, the fast lifting function makes the window move extremely fast and cannot be stopped, which may cause personal injury.

##### Warning regarding halogen bulb

###### Warning

Halogen bulb contains high pressure gas. Improper handling can cause the bulb to explode into glass shards. To avoid personal injury: before replacing the bulb, it is needed to turn off the light switch and make the bulb to cool down. Keep the light off until the bulb is replaced. Wear goggles when replacing the halogen bulb. When holding the bulb, it is important to hold the lamp base only. Avoid contact with glass. The bulb should avoid dust and moisture. File old the bulbs correctly. Keep halogen bulbs away from children.

## 10.2 Audio entertainment system

### 10.2.1 Specification

#### 10.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screw of bass loudspeaker	ST4.8	1 - 2	0.7 - 1.5
Vehicle-mounted information entertainment display screen fixing screw	ST4.2	1 - 2	0.7 - 1.5
Vehicle-mounted information entertainment host fixing bolt	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing bolt of antenna amplifier assembly	M8×16	8 - 10	5.9 - 7.4
Fixing nut of automobile audio power amplifier	M6	8.5 - 11.5	6.3 - 8.5
Fixing screw of wireless charging module	-	2 - 3	1.5 - 2.2
Front reading lamp assembly fixing screw	M4×12	4 - 5	2.9 - 3.7
Fixing bolt of emergency call system controller	M6×16	8.5 - 11.5	6.3 - 8.5
Fixing nut of emergency call system controller	M6	8.5 - 11.5	6.3 - 8.5
Fixing nut of electric vehicle communication control module	M5	2.5 - 3.5	1.8 - 2.6
GPS antenna fixing screw	ST4.2×16	1.3 - 1.7	1 - 1.3

## 10.2.2 Description and Operation

### 10.2.2.1 Instructions and Operations

The in-vehicle multimedia infotainment system is mainly composed of the vehicle infotainment host, the front central control display assembly, the radio antenna, the GPS antenna, the speaker, the microphone, the switch buttons and various interfaces related to the system on the steering wheel.

Mainly realize mobile phone mapping, radio, USB audio and video playback, clock display, GPS navigation, information display, vehicle settings, voice control function requirements, reversing video/dynamic reversing auxiliary line/panoramic video/reversing radar icon display, air conditioning information display, and settings and other functions.

#### Instrument

The instrument and MMI are connected via USB/public CAN/private CAN, and adopt the communication protocol based on USB/public CAN/private CAN.

The instrument uses LVDS/public CAN/private CAN connection.

The instrument can receive multimedia, navigation and other information sent by MMI (reference for specific information).

MMI can transmit style information to the instrument via CAN.

#### AVM

The panoramic image of the vehicle can be seen directly on the multimedia display screen with a 360-degree panoramic aerial view view of the vehicle's circumference, without any blind spots in the field of vision.

#### Camera

The high-definition camera is connected to the MMI through LVDS, the image resolution is 1280\*720, the image correction is completed by the camera, and the dynamic reversing auxiliary line is drawn by the MMI and superimposed on the RVC image.

Ordinary camera, connected with MMI through CVBS, the image meets the CVBS signal standard, the image correction is completed by the camera, and the dynamic reversing auxiliary line is drawn by MMI and superimposed on the RVC image.

#### GPS antenna

Antenna signal and electricity share coaxial cable;

The power supply voltage is  $5V \pm 0.5V$ , and the impedance is 50 ohms.

#### Microphone

Support voice recognition.

Support microphone noise reduction. Use the built-in noise reduction module to reduce noise.

Supports open circuit and short circuit detection of the microphone.

#### USB

The multimedia host outputs USB to the outside, and has a fault detection function

1. When the MMI detects USB overcurrent, the MMI stops the USB interface power supply and a prompt screen pops up;
2. The screen prompts the user 'overcurrent is detected, please check or replace the USB storage device';
3. When the user clicks the 'OK' button, MMI will supply power to the USB interface again;
4. It works normally after the power supply is restored. If the overcurrent problem is detected again, repeat steps 1-3;
5. The over-current strategy with USB-HUB is applicable: within a power-on cycle, count 3 times, and no power is supplied if over-current occurs for the fourth time;

The over-current strategy without USB-HUB is applicable: within a power-on cycle, when MMI detects the USB over-current problem for the fourth time, the prompt screen will not pop up, the USB interface power supply will be stopped, and the USB interface power supply will not be restored during this power-on cycle. The screen is handled as USB device not recognized;

6. The system does not support distinguishing which USB port has overcurrent (HUB cannot distinguish);
7. MAX2.1A USB interface current limit 2.3A; MAX500mA USB interface current limit 650mA

#### Time calibration

##### With GPS/WIFI

1. MMI does not support users to set the time. When the time setting of the meter changes, the instrument sends the time to MMI.
2. When the MMI has a time signal, each time it is powered on (ON gear), the MMI needs to synchronize the time to the instrument.
3. When the GPS/WIFI signal is not available, the instrument will display the time based on its own time crystal oscillator. The MMI needs to display the time of the MMI based on the time released by the instrument via CAN.

4. When the instrument time cannot be obtained, the MMI needs to use its own RTC (time crystal oscillator) to update the time.

Without GPS/WIFI:

MMI needs to display the time of MMI according to the time released by the instrument through CAN.

Display

1. The screen is powered separately from the entire vehicle
2. The multimedia host provides a wake-up signal to the screen
3. Use LVDS line to realize the transmission of video signal information

Alert tone

The alert tone types are: radar active defense alert tone, automatic parking alert tone.

Among them, the radar active defense alarm sound needs to make the alarm sound from different azimuth speakers according to the front radar or the rear radar.

Tunnel noise reduction

When a vehicle enters areas with weak radio signals (tunnels, underground parking lots, high-rise buildings, remote mountainous areas, etc.), it recognizes that the radio signal is not good, the noise is automatically reduced, and when the vehicle drives out of such areas, the radio signal is recognized to be enhanced, and the sound is enhanced gradually.

1. The sound reduction is based the field strength signal, and the threshold value of the field strength is related to the antenna, the radio circuit and the vehicle environment.
2. When AutoNavi Map judges that the vehicle enters the tunnel, it sends the incoming signal to the host. The host mutes the radio according to the map signal. When exiting the tunnel, the map sends the exit signal to the host, and the host unmutes and restores the sound. (Some tunnels currently are equipped with radio antennas)

Smart voice reminder

Low voltage alarm

Instrument commands to send low voltage alarm signal;

Scheduled charging reminder

MMI accepts the schedule and the charging setting is successful (T-BOX is sent via USB) and the charging gun is not connected, MMI confirms that the two conditions are met at the same time before exiting the OFF gear, and perform voice broadcast: "Hello, you have made an appointment for

charging, please prepare for charging and connect the charging gun."

Take your phone when getting off

If the mobile phone is not taken away when the wireless charging ACC is OFF, the wireless charging sends a signal to the MMI, and MMI voice reminds the user. MMI needs to remind the user: find a foreign object and remind the customer to take the mobile phone (when the vehicle is powered off, the charging function will remind when it is enabled. Xiaoka is responsible for popping up).

The door is opened when ACC is OFF, and PEPS sends a close signal to the wireless charging module. The wireless charging cannot work at this time. Because the wireless charging and the Bluetooth key interfere in the same frequency band, invalid charging cannot work;

Upgrade

MMI system upgrade is an upgrade of the operating system in conjunction with its own APP (radio, multimedia, Bluetooth, etc.).

System upgrade

System upgrade includes two upgrade methods: online upgrade and USB upgrade.

The upgrade portal is in engineering mode.

- When selecting the USB upgrade, you should confirm whether the USB device containing the upgrade package is inserted. If the USB device contains a valid upgrade package, the user is prompted not to power off the upgrade during the upgrade. If not, a prompt should be given.

- When selecting online upgrade, you should confirm that the network connection is available, and if it is not available, a prompt should be given. In the case of the background server support, support breakpoint resume.

Upgrade processing

1. COPY the USB upgraded file or online upgraded file to the designated location of EMMC;
2. The system restarts;
3. After booting, enter the upgrade mode and start to update the EMMC system area according to the EMMC upgrade file;
4. After the upgrade is completed, set the upgrade successfully completed flag and restart;
5. After restarting, it is judged that the upgrade has been completed, boot to the new system to complete the upgrade action;

6. If the system fails to upgrade due to power failure during the upgrade process, after power-on again, continue to perform steps 3, 4, and 5 until the upgrade is completed correctly;

7. After the upgrade is complete, delete the upgrade file.

#### Audio and video formats supported by USB

##### Audio file category

Supports audio files in the following formats: MP3, AAC, WAV, APE, OGG, MP2, MKA, M4A, AMR, FLAC

##### Video file category

Supports video files in the following formats: avi, 3gp/3g2, MP4, FLV, F4V, webm, rmvb, wmv, MO, M4V, MKV

#### Wireless charging

- Control the charging of wireless devices through the wireless charging module, and MMI controls the charging on/off and status display.

#### Ambient lamp

The MMI provides an on/off control switch for the ambient light, which, together with the position light, controls the on and off state of the ambient light.

When the position lamp is On, the ambient light can be turned on and off through the ambient light switch on the MMI. That is, only when the position lamp signal and the ambient light switch on the MMI are both On, the ambient light will light up.

#### HUD steering wheel settings

The brightness adjustment and image position adjustment of the HUD can be realized through the buttons on the multi-function steering wheel of the vehicle. The MMI processes the signal and sends them to the HUD, and the HUD receives the signal for corresponding control.

#### Right to use steering wheel

- When the HUD adjustment switch in the MMI setting items is turned on, when the MMI sends HUD mode, the right to use the left and right and OK keys of the steering wheel is switched to the HUD, and the steering wheel is used for the brightness adjustment and image position setting of the HUD. When the power gear is ON, the right to use the steering wheel can be switched to HUD.
- When the right to use steering wheel returns to MMI, when MMI sends MMI mode, the right to use steering wheel returns to MMI:
  - MMI judges that the HUD setting interface has no operation and waits for 10s (judges that the steering wheel has no action);

2. When the HUD switch is closed;

3. Press the OK button to exit the HUD setting page, and the right to use the steering wheel will return to MMI; pressing and holding the OK button, when the hand is pressed for more than 1s, the MMI sends a pressing and holding command, and at the same time switches the right to use the steering wheel back to MMI;

4. Press the working mode button to exit the HUD setting page, and at the same time, the right to use the steering wheel will return to MMI;

5. The HUD adjustment switch is turned off, and the right to use the steering wheel returns to MMI;

#### Emergency call controller

The emergency call controller is located on the right side of the instrument panel. The system uses the vehicle's built-in emergency call controller to detect the airbag burst signal and the user's manual call operation to determine the location of the vehicle at the time of the collision (GPS positioning information and reliable estimates). The direction of the vehicle, vehicle data (VIN, vehicle type, power type), etc. are sent to the control center through the network, and the rescue service provided by the PSAP is obtained through the control center.

#### SOS emergency call

When the user needs to manually start the emergency call system, he/she only needs to press and hold the SOS trigger switch on the front reading lamp for 3 seconds. The SOS indicator will indicate the system status and call status accordingly. When the system is working normally, the user can use the microphone and full-range speaker to complete the voice call.

## 10.2.3 How the system works

### 10.2.3.1 System Working Principles

#### CAN

Communication rate 500 kb/s, with wake-up, function, and diagnostic functions

MMI can control or display vehicle-related functions through the bus. When the CAN bus is Sleep or the signal is lost, all functions on the bus become unavailable.

The multimedia host controls the volume, sound effects, channels and so on through PWM signals.

#### LIN

LIN communication is the communication between the host and the external control input unit, and it is not connected to the public LIN network.

The LIN function does not support the wake-up of the MMI from the node.

The LIN bus is used for communication and control between the multimedia host, the wireless charging module and the ambient light.

#### Low voltage strategy

The pop-up message is displayed until the voltage is greater than 11V ;

When the battery voltage is lower than 11V, after pop-up and TTS broadcast, the voltage continues to decrease to 10.5V, and the voltage continues to be tested once for 6s, and the voltage is tested 3 times. The voltage of the 3 times is less than 10.5V, and the MMI automatically enters the power saving mode;

Conditions for pop-up message elimination:

It has been detected that the voltage is greater than 11V within 30 seconds, and the pop-up message will be automatically eliminated;

When a low voltage is detected, a message will pop up to handle the screen. When the vehicle is unlocked and started, it will pop up again when it returns to the OFF gear, ACC gear, or ON gear;

#### Host high temperature

- Multimedia host high temperature detection: 80 °C; high temperature release: 75°C (ambient temperature)
- After the multimedia host detects high temperature, lower the multimedia volume
- After the high temperature of the multimedia host is detected, if the volume is less than 10, keep the volume

unchanged, if the volume is greater than 10, the volume is automatically reduced to 10; after the release, the volume does not change, maintaining the status quo.

- When the multimedia host detects high temperature, it will notify the display to minimize the brightness (that is, the duty cycle value corresponding to Lev1 in the dimming level). When the MMI high temperature is released, it will notify the display to restore the original brightness.

#### Button backlight adjustment

##### Touch button

In the normal working mode of MMI, the key backlight adjustment logic is as follows:

The small light signal is ON, the backlight of the MMI button will adjust the brightness of the button according to the dimmer level number; the small light signal is OFF, the brightness is adjusted to the maximum (level 10 by default, the model can be adjusted according to the actual situation of the calibration, and the backlight brightness can be adjusted), no longer follow vehicle backlight signal;

#### Keys operation

You can use the following 3 ways to operate MMI:

- Capacitive screen

##### Steering wheel buttons

- Power button, volume +/- button

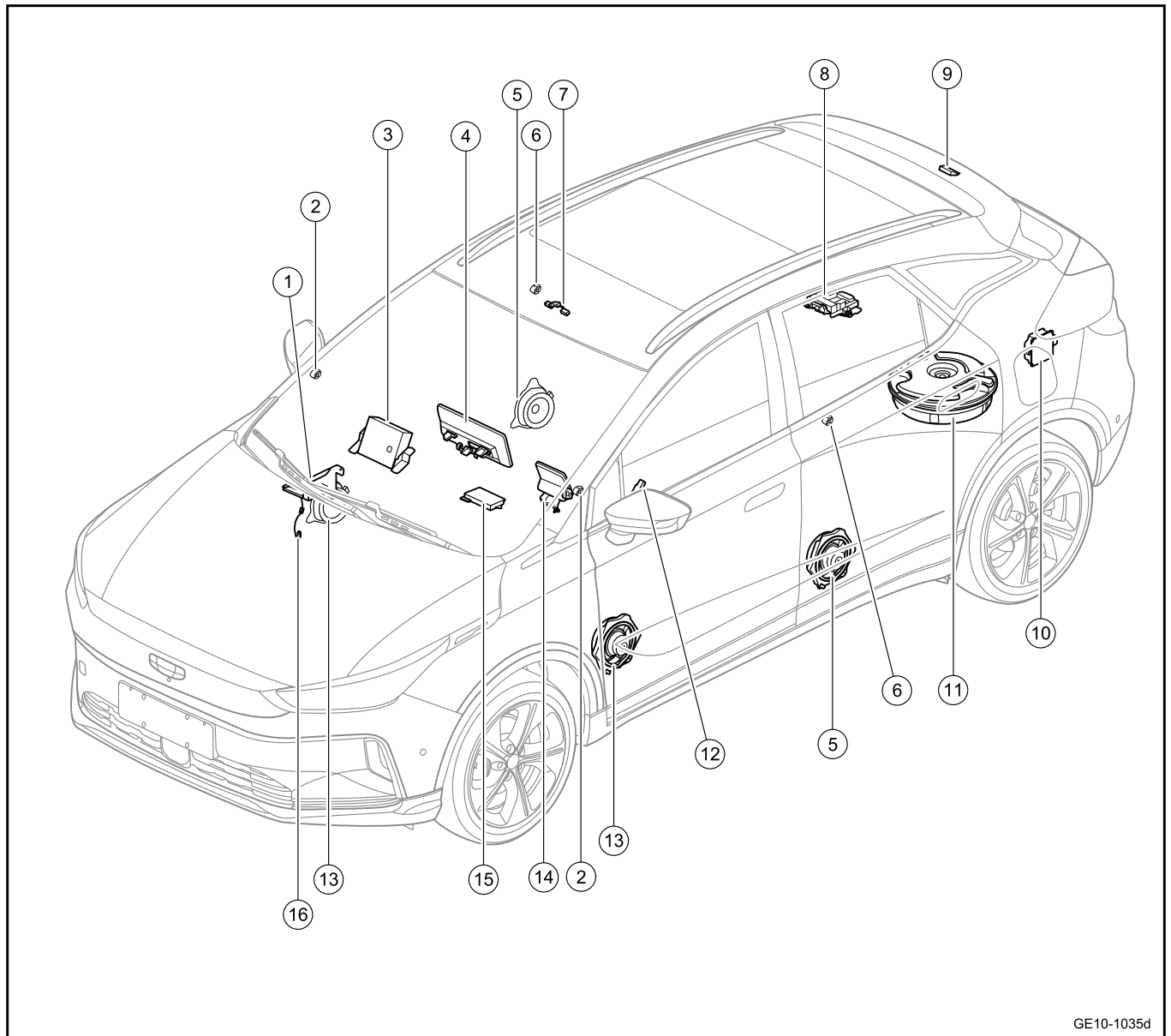
The steering wheel button is detected for AD value, which is detected every 8ms in a regular cycle. If the detected value of 8ms\*2 times (adjusted according to actual measurement) is the same, the corresponding button is considered to be detected (press down/up).

Power button, volume +/- button, detected by the host through hard wire;



10.2.4 Part location

10.2.4.1 Part Position



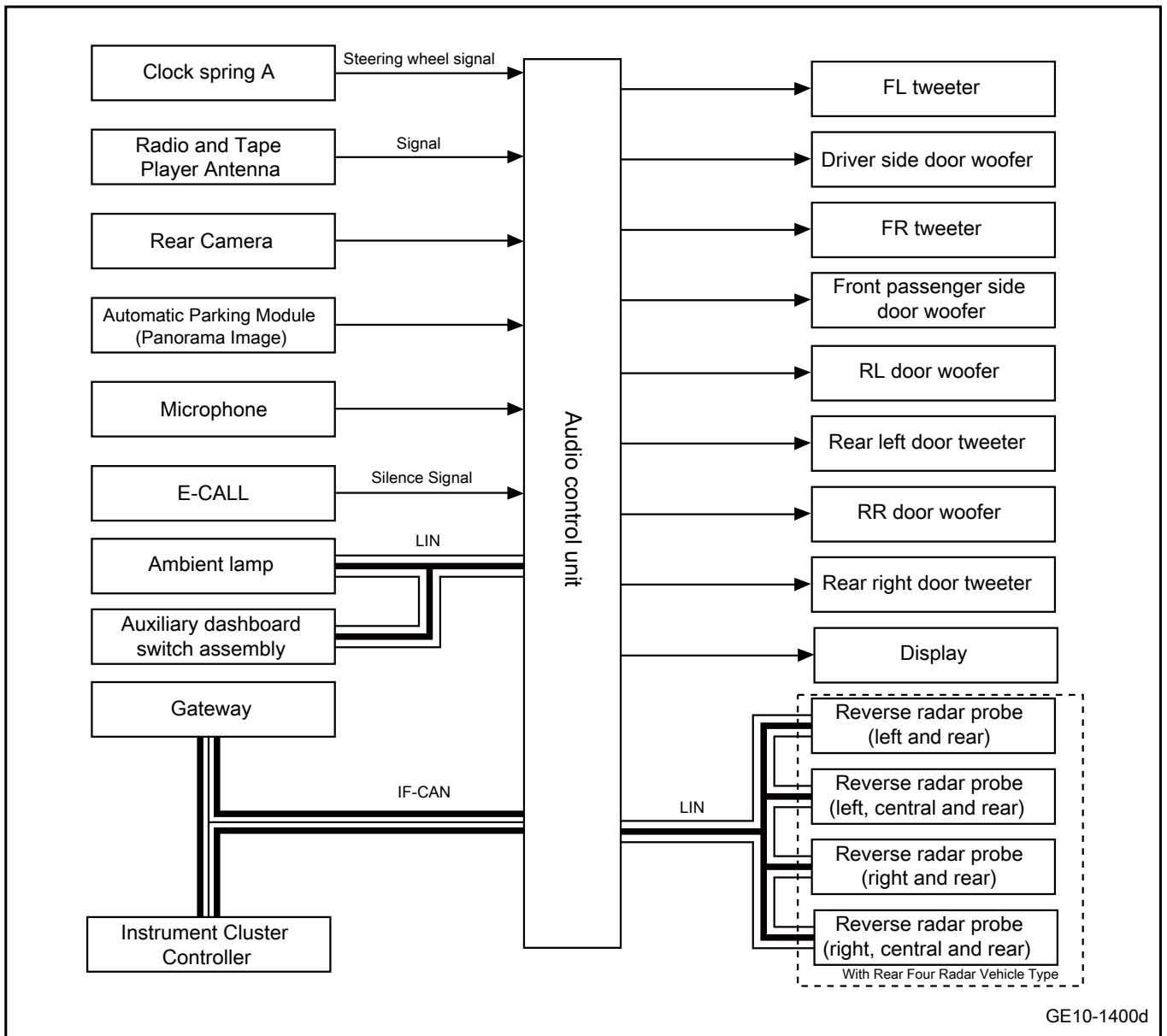
GE10-1035d

- |   |   |
|---|---|
| 1. Emergency call system control unit                       | 9. Antenna amplifier assembly                     |
| 2. Front tweeter  | 10. Electric vehicle communication control module |
| 3. Vehicle-mounted information entertainment media center   | 11. Subwoofer                                     |
| 4. Vehicle-mounted information entertainment display screen | 12. Rear USB box                                  |
| 5. Rear door bass loudspeaker (full range speaker)          | 13. Front door bass loudspeaker                   |
| 6. Rear tweeter   | 14. Combination instrument assembly               |
| 7. Microphone   | 15. Wireless charging module                      |
| 8. Vehicle audio amplifier                                  | 16. GPS antenna                                   |

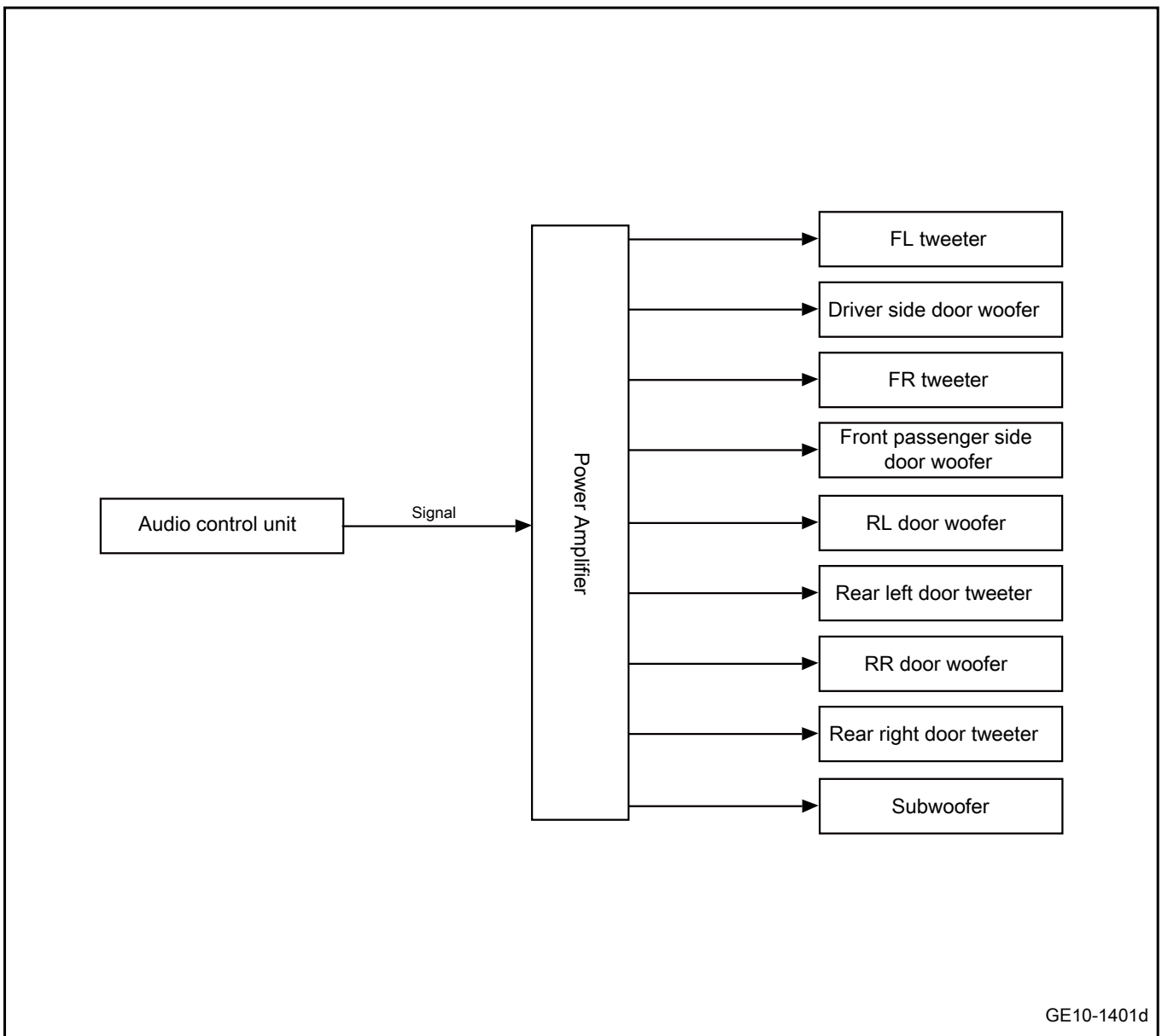
10.2.5 Electrical block diagram

10.2.5.1 Electrical schematic diagram of audio system

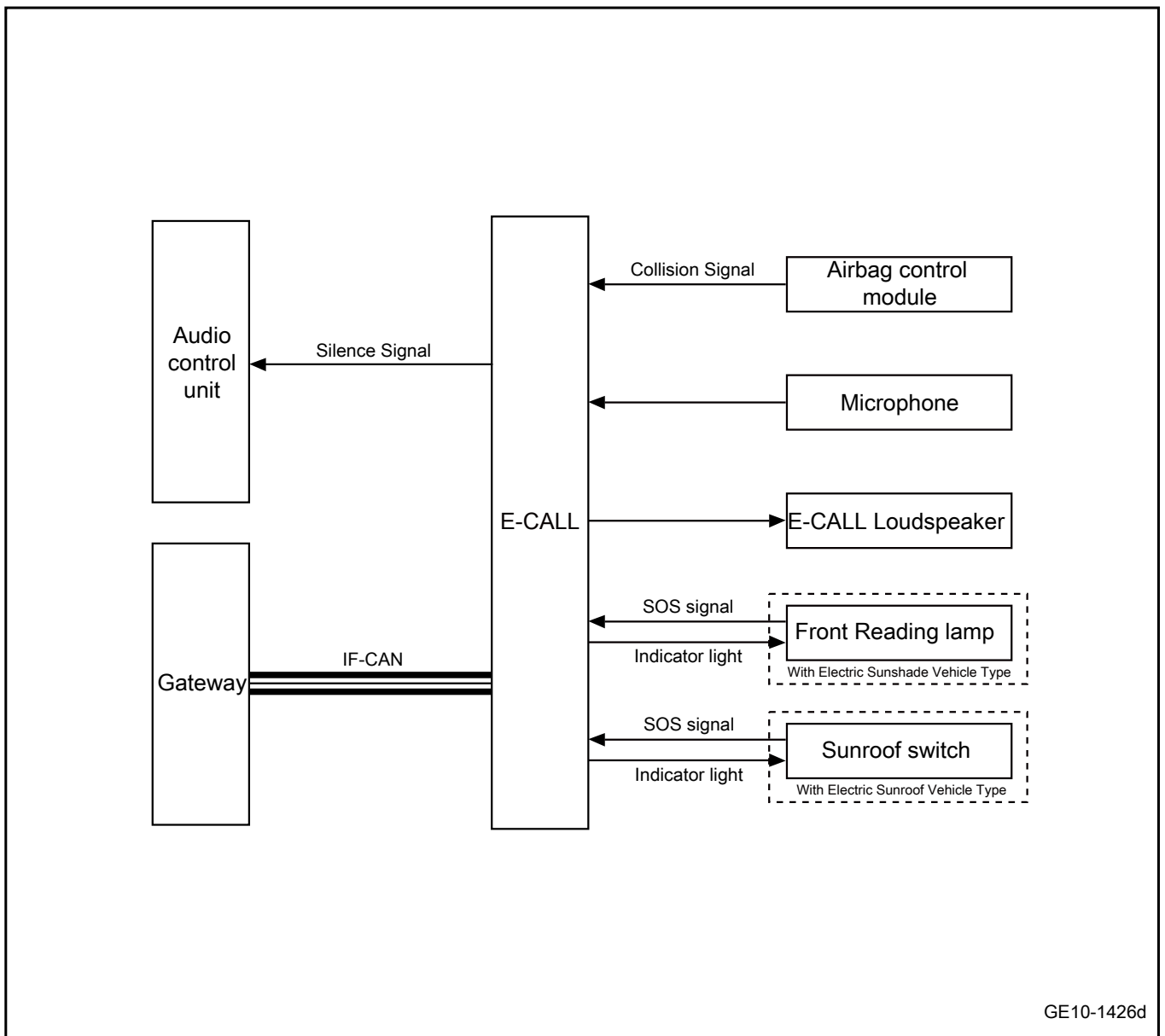
Audio system



Audio system (model with power amplifier)



E-CALL



GE10-1426d

## 10.2.6 Diagnostic information and steps

### 10.2.6.1 Diagnosis Description

Before troubleshooting, see [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

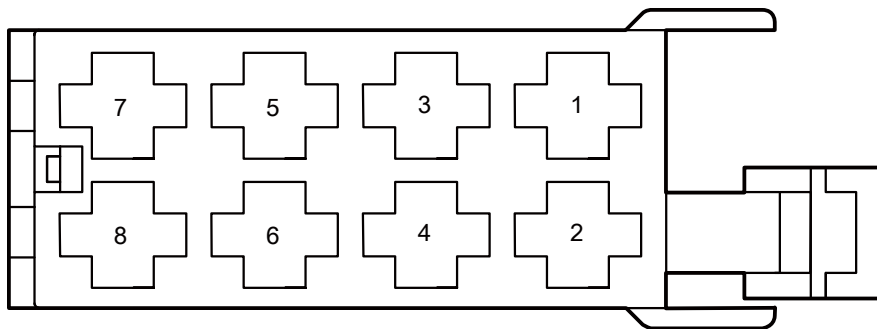
### 10.2.6.2 Routine inspection

- Check after-sales installations that may affect the operation of audio system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
- For faults where all of the speakers are inoperative, focus on areas of the speaker circuit that are prone to short to GND, to facilitate quick removing the fault.
- For the fault of a single speaker inoperative, the distributor may inadvertently use the sound channel shielding function of the host/intelligent vehicle host to make a single sound channel inoperative in the process of use, which is not a fault of the sound system. You can consult the handbook for instructions of sound system.

### 10.2.6.3 Terminal list of audio entertainment system

#### IP47 audio control unit harness connector A

### IP47 audio control unit harness connector A

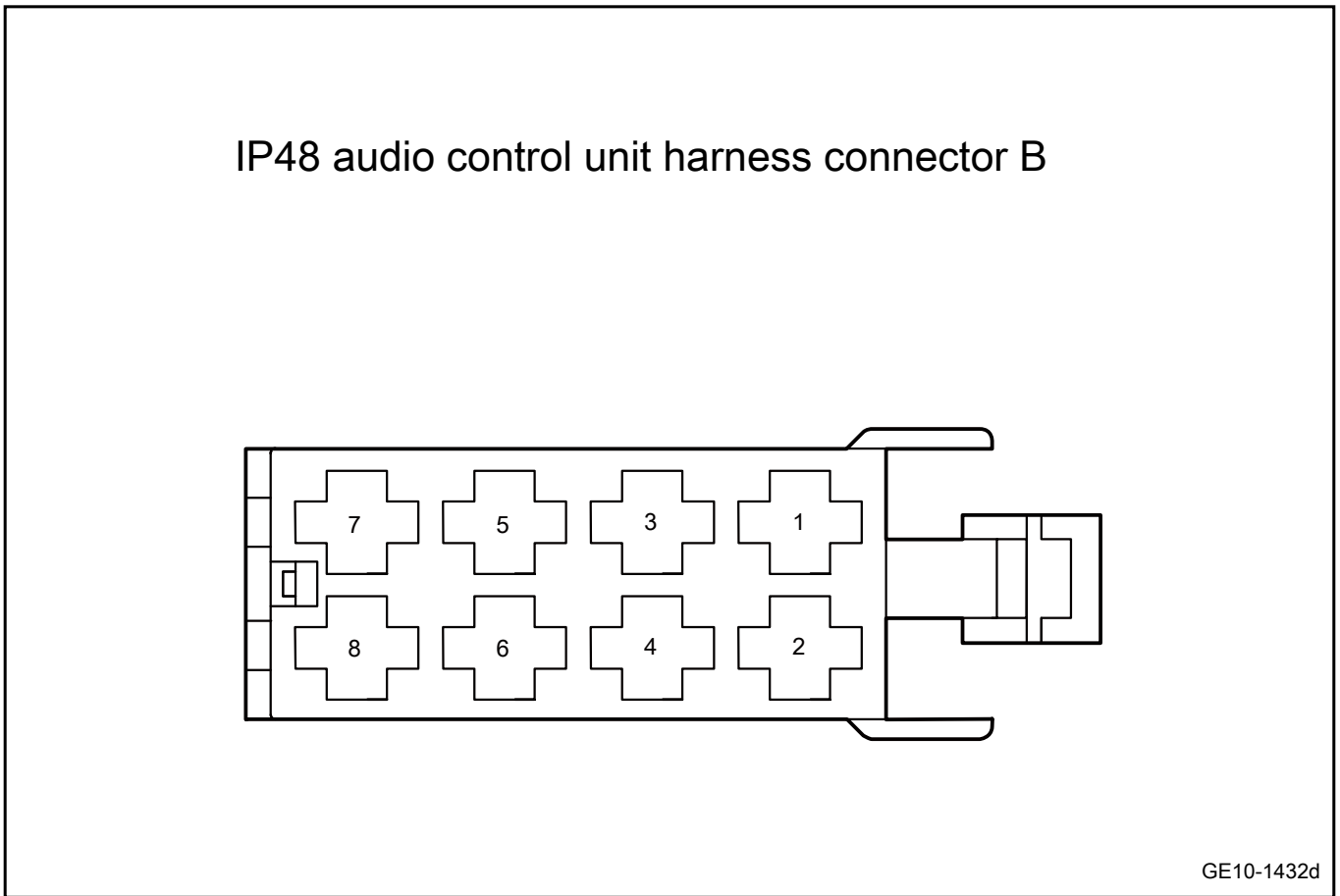


GE10-1431d

Terminal No.	Terminal name	Terminal description
1	Steering wheel signal input L	Steering wheel signal input L
2	Steering wheel signal grounding	Steering wheel signal grounding

Terminal No.	Terminal name	Terminal description
3	Steering wheel signal input R	Steering wheel signal input R
4	ACC power supply	Audio host ACC power supply
5	-	-
6	Radar probe signal input	Radar probe signal input
7	B+ Power supply	Audio host battery power supply
8	Ground connection	Audio host grounding circuit

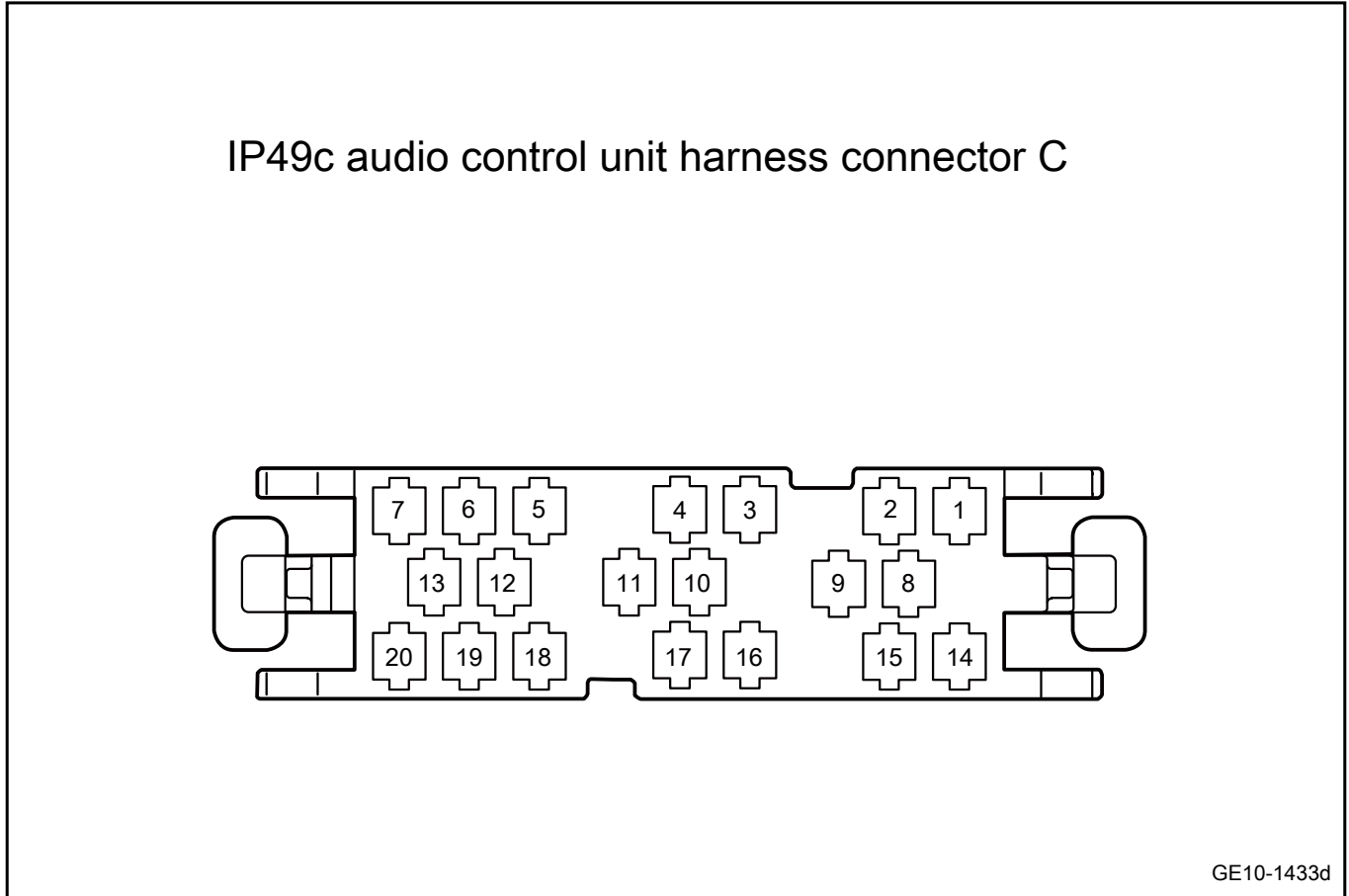
IP48 audio control unit harness connector B



Terminal No.	Terminal name	Terminal description
1	RR loudspeaker positive	RR loudspeaker positive signal
2	RR loudspeaker negative	RR speaker negative signal
3	Loudspeaker at front passenger side positive	Loudspeaker at front passenger side positive signal
4	Loudspeaker at front passenger side negative	Loudspeaker at front passenger side negative signal
5	Driver side loudspeaker positive	Driver side loudspeaker positive signal
6	Driver side loudspeaker negative	Driver side loudspeaker negative signal

Terminal No.	Terminal name	Terminal description
7	RL loudspeaker positive	RL loudspeaker positive signal
8	RL loudspeaker negative	RL loudspeaker negative signal

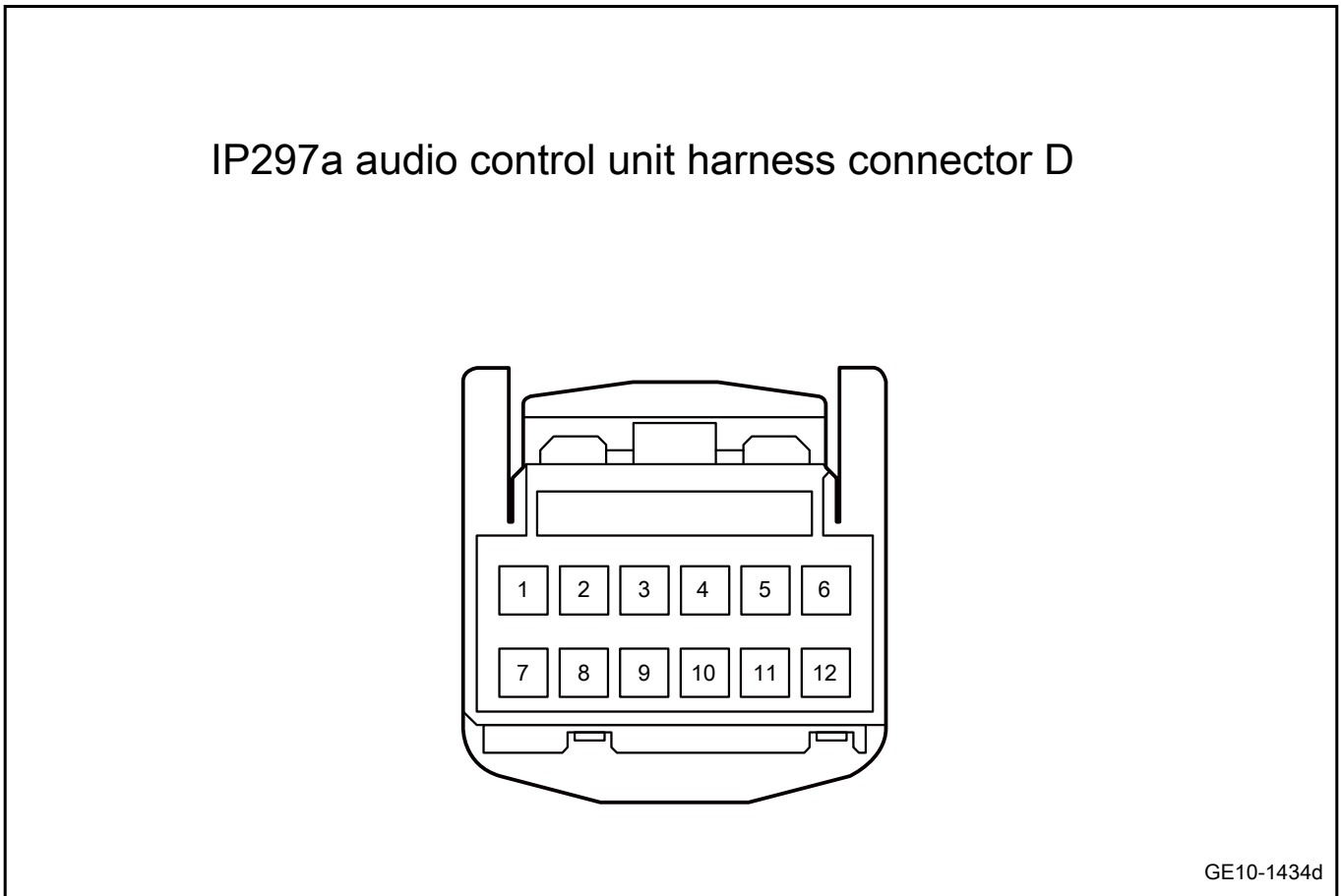
IP49c audio control unit harness connector C



Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	IF CAN-L	Infotainment CAN low line
4	IF CAN-H	Infotainment CAN high line
5	LIN	LIN data communication bus
6	-	-
7	-	-
8	Microphone 1 negative	Microphone 1 negative circuit
9	Microphone 1 positive	Microphone 1 positive circuit
10	Rear camera grounding	Rear camera grounding circuit
11	Rear camera video signal negative	Rear camera video signal negative circuit
12	-	-
13	Mute signal	Mute signal input
14	-	-

Terminal No.	Terminal name	Terminal description
15	-	-
16	Rear camera power supply	Rear camera power supply circuit
17	Rear camera video signal positive	Rear camera video signal positive circuit
18	Display screen wake-up signal	Display screen wake-up signal
19	-	-
20	-	-

IP297a audio control unit harness connector D

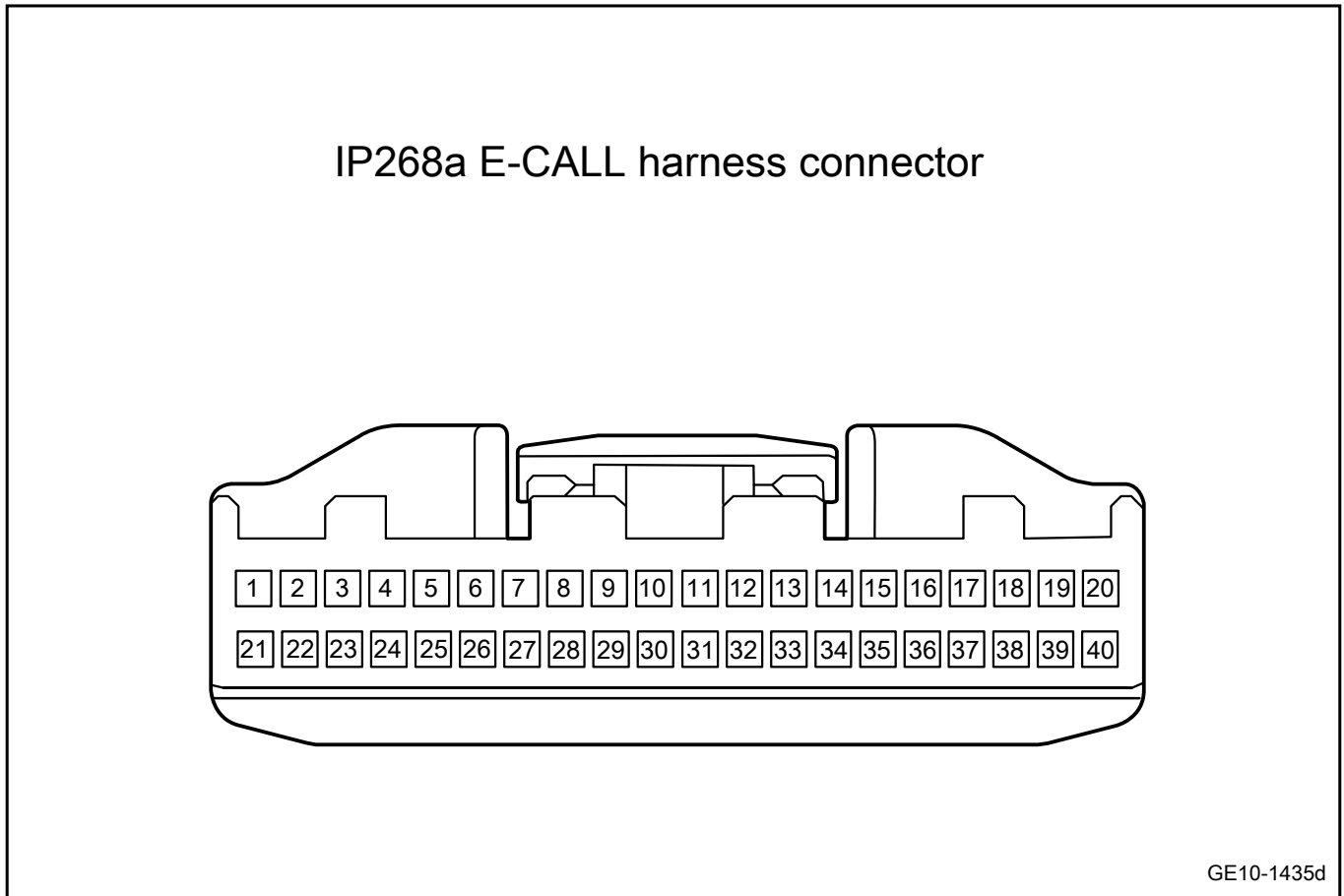


Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	AMP PWM control output	AMP PWM control output
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	AMP ACC control output	Power amplifier ACC control output



Terminal No.	Terminal name	Terminal description
10	-	-
11	-	-
12	-	-

IP268a E-CALL harness connector



Terminal No.	Terminal name	Terminal description
1	IG1 power supply	E-CALL ACC\ON\START power supply
2	-	-
3	-	-
4	-	-
5	-	-
6	Microphone positive	Microphone signal input (positive signal)
7	-	-
8	-	-
9	Loudspeaker positive	Loudspeaker signal output (positive signal)
10	SOS switch ground	SOS switch analog ground
11	Collision signal	Collision signal input
12	SOS indicator lamp grounding	SOS indicator lamp analog ground
13	-	-

Terminal No.	Terminal name	Terminal description
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-
19	IF CAN-H	Infotainment CAN high line
20	B+ Power supply	E-CALL battery power supply
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	Microphone negative	Microphone signal input (negative signal)
27	-	-
28	-	-
29	Loudspeaker negative	Loudspeaker signal output (negative signal)
30	SOS switch signal	SOS switch signal input
31	-	-
32	Mute signal	Mute signal output
33	-	-
34	SOS indicator power supply	SOS indicator lamp control output
35	-	-
36	-	-
37	-	-
38	-	-
39	IF CAN-L	Infotainment CAN low line
40	Ground connection	E-CALL grounding circuit

#### 10.2.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Audio control unit power supply fault	1. harness and connectors	Refer to <a href="#">Radio control unit power supply fault</a>
	2. Fuse	
	3. Audio control unit	
Radio control unit communication fault	1. harness and connectors	Refer to <a href="#">Audio control unit communication fault</a>
	2. Gateway	
	3. Audio control unit	
There is an internal fault of radio host	1. Audio control unit	Refer to <a href="#">Internal fault of audio control unit</a>
The microphone is not working	1. harness and connectors	See <a href="#">Microphone does not work</a>
	2. Microphone	
	3. Audio control unit	

Symptom	Suspected parts	Measures / Reference
The display screen does not work	1. harness and connectors	See <a href="#">Display screen does not work</a>
	2. Fuse	
	3. Screen	
	4. Audio control unit	
Communication failure between audio host and ambient light	1. harness and connectors	See <a href="#">Communication failure between the audio host and the ambient light</a>
	2. Atmosphere lamp	
	3. Audio control unit	
Communication failure between audio host and wireless charging module	1. harness and connectors	See <a href="#">Communication failure between the audio host and the wireless charging module</a>
	2. Wireless charging module	
	3. Audio control unit	
Loudspeaker failure (with power amplifier)	1. harness and connectors	See <a href="#">Loudspeaker failure (with power amplifier)</a>
	2. Loudspeaker	
	3. Power amplifier	
Loudspeaker failure (without power amplifier)	1. harness and connectors	See <a href="#">Loudspeaker failure (without power amplifier)</a>
	2. Loudspeaker	
	3. Audio control unit	
Reversing vision failure	1. harness and connectors	See <a href="#">Reversing visual failure</a>
	2. Screen	
	3. Rear camera	
	4. Audio control unit	
Rear left radar probe fault	1. harness and connectors	Refer to <a href="#">Rear left radar probe fault</a>
	2. Rear left radar probe	
	3. Audio control unit	
Left middle rear radar probe fault	1. harness and connectors	See <a href="#">Left central rear radar probe failure</a>
	2. Left center rear radar probe	
	3. Audio control unit	
Right middle rear radar probe fault	1. harness and connectors	Refer to <a href="#">Right middle rear radar probe fault</a>
	2. Right middle rear radar probe	
	3. Audio control unit	
Right rear radar probe fault	1. harness and connectors	Refer to <a href="#">Rear right radar probe fault</a>
	2. Rear right radar probe	
	3. Audio control unit	
Antenna fault	1. harness and connectors	See <a href="#">Antenna failure</a>
	2. Radio antenna	
	3. Audio control unit	
USB1 fault	1. harness and connectors	See <a href="#">USB1 failure</a>
	2.USB1	
	3. Audio control unit	
USB2 fault	1. harness and connectors	See <a href="#">USB2 failure</a>
	2.USB2	

Symptom	Suspected parts	Measures / Reference
	3. Audio control unit	
E-CALL power supply failure	1. harness and connectors	Refer to <a href="#">E-CALL power supply fault</a>
	2. Fuse	
	3.E-CALL	
E-CALL communication fault	1. harness and connectors	Refer to <a href="#">E-CALL communication fault</a>
	2. Gateway	
	3.E-CALL	
Internal fault of E-CALL	1.E-CALL	Refer to <a href="#">Internal fault of E-CALL</a>
Microphone circuit fault	1. harness and connectors	See <a href="#">Microphone circuit failure</a>
	2. Microphone	
	3.E-CALL	
Collision signal failure	1. harness and connectors	See <a href="#">Collision signal failure</a>
	2. Supplementary restraint system	
	3.E-CALL	
E-CALL button failure (with electric sunshade)	1. harness and connectors	See <a href="#">E-CALL button failure (with electric sunshade)</a>
	2. Front reading lamp	
	3.E-CALL	
E-CALL button failure (without electric sunshade)	1. harness and connectors	See <a href="#">E-CALL button failure (without electric sunshade)</a>
	2. Sunroof switch	
	3.E-CALL	
E-CALL indicator lamp failure (with electric sunshade)	1. harness and connectors	See <a href="#">E-CALL indicator failure (with electric sunshade)</a>
	2. Front reading lamp	
	3.E-CALL	
E-CALL indicator lamp failure (without electric sunshade)	1. harness and connectors	See <a href="#">E-CALL indicator lamp failure (without electric sunshade)</a>
	2. Sunroof switch	
	3.E-CALL	
E-CALL loudspeaker failure	1. harness and connectors	See <a href="#">E-CALL loudspeaker failure</a>
	2.E-CALL loudspeaker	
	3.E-CALL	

### 10.2.6.5 List of Diagnostic Trouble Codes (DTC)

#### MMI

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller voltage is too low	Refer to <a href="#">Radio control unit power supply fault</a>
U300617	Controller voltage is too high	
U007300	Entertainment CAN network bus is switched off	Refer to <a href="#">Audio control unit communication fault</a>
U012687	Communication with steering-angle sensor is lost	
U014087	Communication with body control module is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method	
U014687	Communication with gateway module is lost		
U015587	Communication with instrument module is lost		
U015987	Communication with park assist system is lost		
U016487	Communication with air-conditioning module is lost		
U020887	Communication with seat memory module is lost		
U021487	Communication with keyless entry and button ignition unit is lost		
U023587	Communication with front radar system module is lost		
U120387	Communication with front camera system module is lost		
U111787	Communication with AVM (panoramic view module) is lost		
U111587	Communication with OBC is lost		
U011287	Communication with BMSH is lost		
U111487	Communication with VCU is lost		
U016087	Communication with AVAS is lost		
U012287	Communication with ESC is lost		
U015887	Communication with HUD (head up display system) is lost		
U019887	Communication with TBOX module is lost		
B138111	MIC is short to GND		Refer to <a href="#">Microphone fault</a>
B138112	MIC is short to power supply		
B138211	Camera power supply is short to GND.		Refer to <a href="#">Camera fault</a>
B138511	Power amplifier FR is short to GND		See <a href="#">Loudspeaker failure (with power amplifier)</a>
B138512	Power amplifier FR is short to power supply		
B138513	Power amplifier FR is open		
B138611	Power amplifier FL short circuit to ground		
B138612	Power amplifier FL short circuit to power supply		
B138613	Power amplifier FL circuit open		
B138711	Power amplifier RR is short to GND.		

Diagnostic Trouble Code	Description	Fault location/elimination method
B138712	Power amplifier RR is short to power supply.	
B138713	Power amplifier RR is open.	
B138811	Power amplifier RL short to GND	
B138812	Power amplifier RL short to power supply	
B138813	Power amplifier RL open circuit	
B13A787	Lost communication with wireless charging device	See <a href="#">Communication failure between the audio host and the wireless charging module</a>
B13A896	Wireless charging error	
B13B719	HOST USB interface 1 circuit is overcurrent	See <a href="#">USB1 failure</a>
B13BC19	HOST USB interface 2 circuit is overcurrent	See <a href="#">USB2 failure</a>
B13A687	Lost communication with ambient light	See <a href="#">Communication failure between the audio host and the ambient light</a>
B138B04	There is an error in Bluetooth communication	Refer to <a href="#">Internal fault of audio control unit</a>
B13A94B	MMI is of high temperature	
B138A87	Communication failure with T-BOX USB	
B13A019	T-BOX USB interface circuit is overcurrent	
B13AA16	Low voltage of the screen	See <a href="#">Display screen does not work</a>
B13AA17	Over voltage of the screen	
B13AA98	High temperature of the screen	
B13AE96	Rear left radar probe fault (UART radar)	Refer to <a href="#">Rear left radar probe fault</a>
B13AF96	Left middle rear radar probe fault (UART radar)	See <a href="#">Left central rear radar probe failure</a>
B13B096	Right middle rear radar probe fault (UART sensor)	Refer to <a href="#">Right middle rear radar probe fault</a>
B13B196	Right rear radar probe fault (UART sensor)	Refer to <a href="#">Rear right radar probe fault</a>
B138911	Tuner antenna is short to GND	See <a href="#">Antenna failure</a>
B138913	Tuner antenna open circuit	

E-CALL

Diagnostic Trouble Code	Description	Fault location/elimination method
B140771	E-Call key stuck	See <a href="#">E-CALL button failure (with electric sunshade)</a> See <a href="#">E-CALL button failure (without electric sunshade)</a>
B140111	GNSS antenna is short circuited to ground	Check or replace antenna
B140113	GNSS antenna open circuit	
U300616	Voltage is too low	Refer to <a href="#">E-CALL power supply fault</a>
U300617	Voltage is too high	
B140411	Microphone input is short-circuited to ground	See <a href="#">Microphone circuit failure</a>
B140412	The microphone input is short-circuited to the power supply	
B140413	Microphone input open circuit	
B140511	Microphone output short circuit (loudspeaker)	
B140512	The microphone output is short-circuited to the power supply (loudspeaker)	
B140513	Microphone output open circuit (loudspeaker)	
B140076	SIM card not inserted	
B140A16	Internal battery voltage is too low	
B140A17	Internal battery voltage is too high	
B140A1B	Internal battery is aging	
B141051	VIN is not written in	
B140B11	Airbag signal wire is short-circuited to ground	See <a href="#">Collision signal failure</a>
B140B15	The airbag signal wire is shorted or open to the power supply	
U007300	Bus off fault	Refer to <a href="#">E-CALL communication fault</a>
U015187	Communication with ACU is lost	
B140231	WAN communication module fault	

### 10.2.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.2.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 10.2.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	Vehicle name	-	-
2	Diagnostic version	-	-
3	Active diagnostic dialog	-	-
4	Geely Part Number	-	-
5	Vehicle manufacturer delivery number	-	-
6	System supplier identification	-	-
7	Production Date	-	-
8	ECU serial number	-	-
9	Vehicle manufacturer assembly part number data identifier	-	-
10	Vehicle identification number	-	-
11	System vendor hardware	-	-
12	System vendor software version number	-	-
13	System	-	-
14	Repair workshop code or serial number	-	-
15	Programming	-	-



Serial No.	DID description	Physical value range	Unit
16	ECU installation date help identifier	-	-
17	ECU core component/part number	-	-
18	ECU software part number	0-255	-
19	Vehicle network configuration	-	-
20	Function configuration	-	-
21	ECU power supply voltage	0-25.4	V
22	Vehicle speed	0-460.6875	km/h
23	PKI write status	0-255	-
24	MCU software version number	-	-
25	IC card identification code	-	-
26	International Mobile Subscriber Identity Code	-	-
27	SIM card phone number	-	-
28	ESK write status	-	-

### 10.2.6.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by MMI can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Connect the scan tool.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Select “MMI”/“action test”.
- e. Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Large screen lighting control	Display screen	ON/OFF

### 10.2.6.10 Audio control unit power supply fault

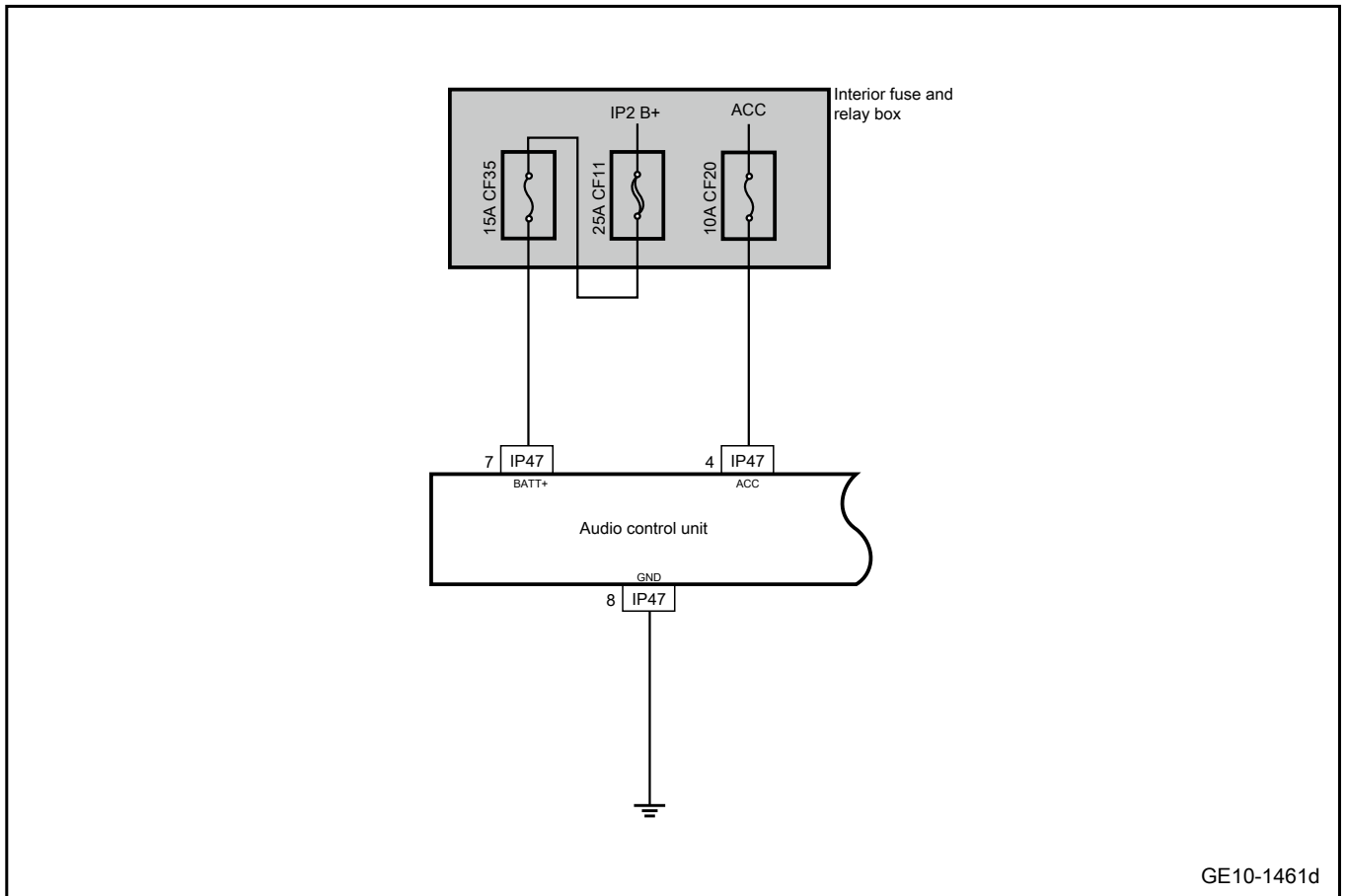
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is too low
U300617	Controller voltage is too high

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measure the voltage < 9V, lasting for 5s	Measure the voltage < 9 V	1. Circuit 2. Fuse
U300617	Voltage measurement value > 16V for 5s	Measure the voltage > 16V	3. Audio control unit

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check the audio control unit fuses CF11, CF20, CF35.

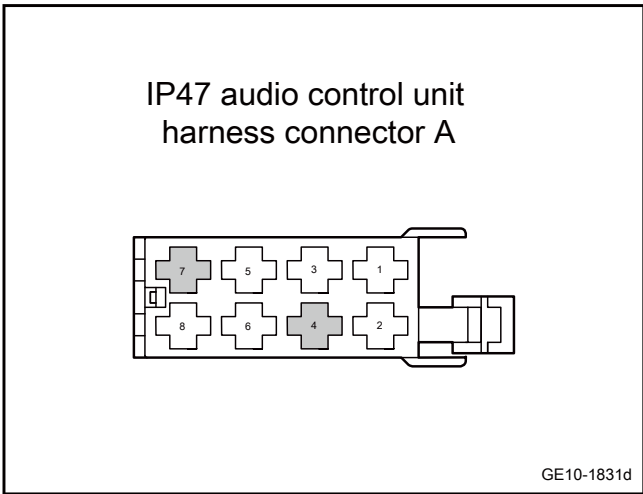
- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF11 is blown.  
  
Rated fuse capacity: 25A
- C. Unplug the fuse and check whether the fuse CF20 is blowout.  
  
Rated fuse capacity: 10A
- D. Unplug the fuse and check whether the fuse CF35 is blowout.  
  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the power circuit of audio control unit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP47.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP47(4)	Vehicle body is grounded.	Standard voltage: 11-14V
IP47(7)	Vehicle body is grounded.	

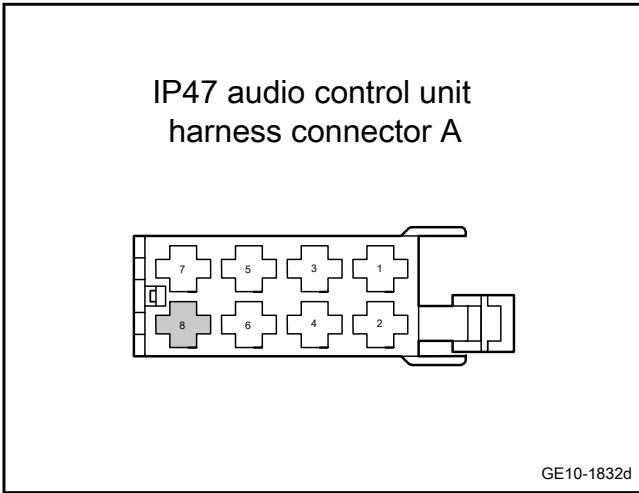
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding circuit of audio control unit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP47.
- C. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP47(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Change the radio control unit.

- A. Change the radio control unit. Refer to [Replacement of audio host](#)

Next Step

**Step 6** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 10.2.6.11 Radio control unit communication fault

#### 1. DTC description:

Diagnostic Trouble Code	Description
U007300	Entertainment CAN network bus is switched off
U012687	Communication with steering-angle sensor is lost
U014087	Communication with body control module is lost
U014687	Communication with gateway module is lost
U015587	Communication with instrument module is lost
U015987	Communication with park assist system is lost
U016487	Communication with air-conditioning module is lost
U020887	Communication with seat memory module is lost
U021487	Communication with keyless entry and button ignition unit is lost
U023587	Communication with front radar system module is lost
U120387	Communication with front camera system module is lost
U111787	Communication with AVM (panoramic view module) is lost
U111587	Communication with OBC is lost
U011287	Communication with BMSH is lost
U111487	Communication with VCU is lost
U016087	Communication with AVAS is lost
U012287	Communication with ESC is lost
U015887	Communication with HUD (head up display) is lost
U019887	Communication with TBOX module is lost

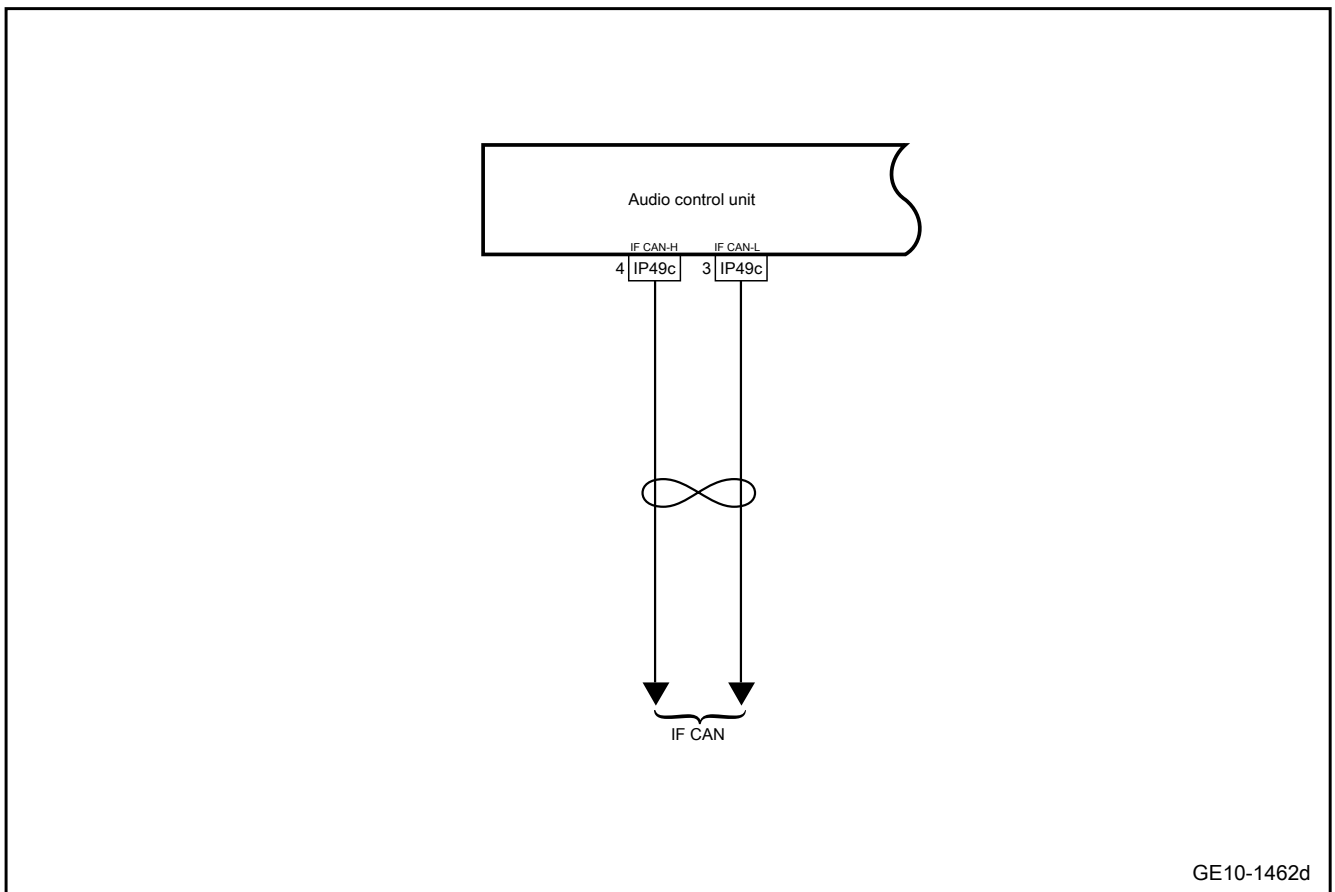
#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	cBusOff of bus disconnection counter equals to 10 (detected CAN bus disconnection for 1000 ms)	1. The supply voltage of the CAN bus node is in the range of 9-16V. 2. The ignition state should be on IGN on $3.9V < V < 16V$ , V DLon; V DHon, TRestart=1S	1. Circuit 2. Audio control unit 3. Diagnostic interface

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012687	Message from SAS lost for 250 milliseconds (0x0E0)	1. Power supply voltage of CAN bus node is between 9V and 16V 2. The TDiagenable condition is met 3. No bus disconnection is detected. 4. Ignition status is Ignition ON. 5. Diagnostic configuration supports ECU.	
U014087	The information from the body control module is lost for 250 milliseconds (0x1F0)		
U014687	Message from GW lost for 500 milliseconds (0x2FC)		
U015587	Message from IPK lost for 500 milliseconds (0x26D)		
U015987	Message from PAS lost for 2500 milliseconds (0x390)		
U016487	Message from AC lost for 500 milliseconds (0x2F2)		
U020887	Message from DSCU lost for 500 milliseconds (0x2D2)		
U021487	GW_PEPS_information (0x2FC) PEPS_0x1E2_timeout=1 or GW_PEPS_information (0x2FC) PEPS_0x272_TimeoutFlag=1 timeout		
U023587	Message from FRS lost for 250 milliseconds (0x1A3 or 0x1A2)		
U120387	Message from FCS lost for 250 milliseconds (0x1B0 or 0x114)		
U111787	Message from AVM lost for 1000 milliseconds (0x2AB)		
U111587	Battery Electric Vehicle: Message from OBC lost for 500 milliseconds (0x220)		
U011287	Battery Electric Vehicle: GW_BMSH_IPU_info (0x250) BMSH_0x211_timeout=1		
U111487	Battery Electric Vehicle: Message from VCU lost for 250 milliseconds (0x162 or 0x1A5)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U016087	Battery Electric Vehicle: Message from AVAS lost for 500 milliseconds (0x2B2)		
U012287	Message from ESC lost for 250 milliseconds (0x125)		
U015887	Message from ESC lost for 1000ms (0x2CA)		
U019887	Message from TBOX lost for 500 milliseconds (0x292)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the IF-CAN network integrity.

- A. Check the instrument communication network, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 5 Reprogram and reset the radio control unit.



- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 7** System is normal.

### 10.2.6.12 There is an internal fault of radio host

1. DTC description:

DTC	Trouble description
B138B04	There is an error in Bluetooth communication
B13A94B	MMI is of high temperature
B138A87	Communication failure with T-BOX USB
B13A019	T-BOX USB interface circuit is overcurrent

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138B04	Bluetooth module communication error 500 milliseconds	1. The supply voltage is 9V-16V.	1. Audio control unit 2. Circuit
B13A94B	The temperature is over 85°C, lasting for 5 seconds		
B138A87	Communication failure with T-BOX USB	1. Power supply voltage is between 10V-15V 2. MMI boot	
B13A019	T-BOX USB interface circuit is overcurrent		

## 3. Diagnosis steps

## Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Perform a controller reset.
--------	-----------------------------

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4	Change the radio control unit.
--------	--------------------------------

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 5	Reprogram and reset the radio control unit.
--------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6** Write controller data.

- A. Write controller data, refer to [write controller data](#)

Next Step

**Step 7** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

**Step 8** System is normal.

### 10.2.6.13 The microphone is not working

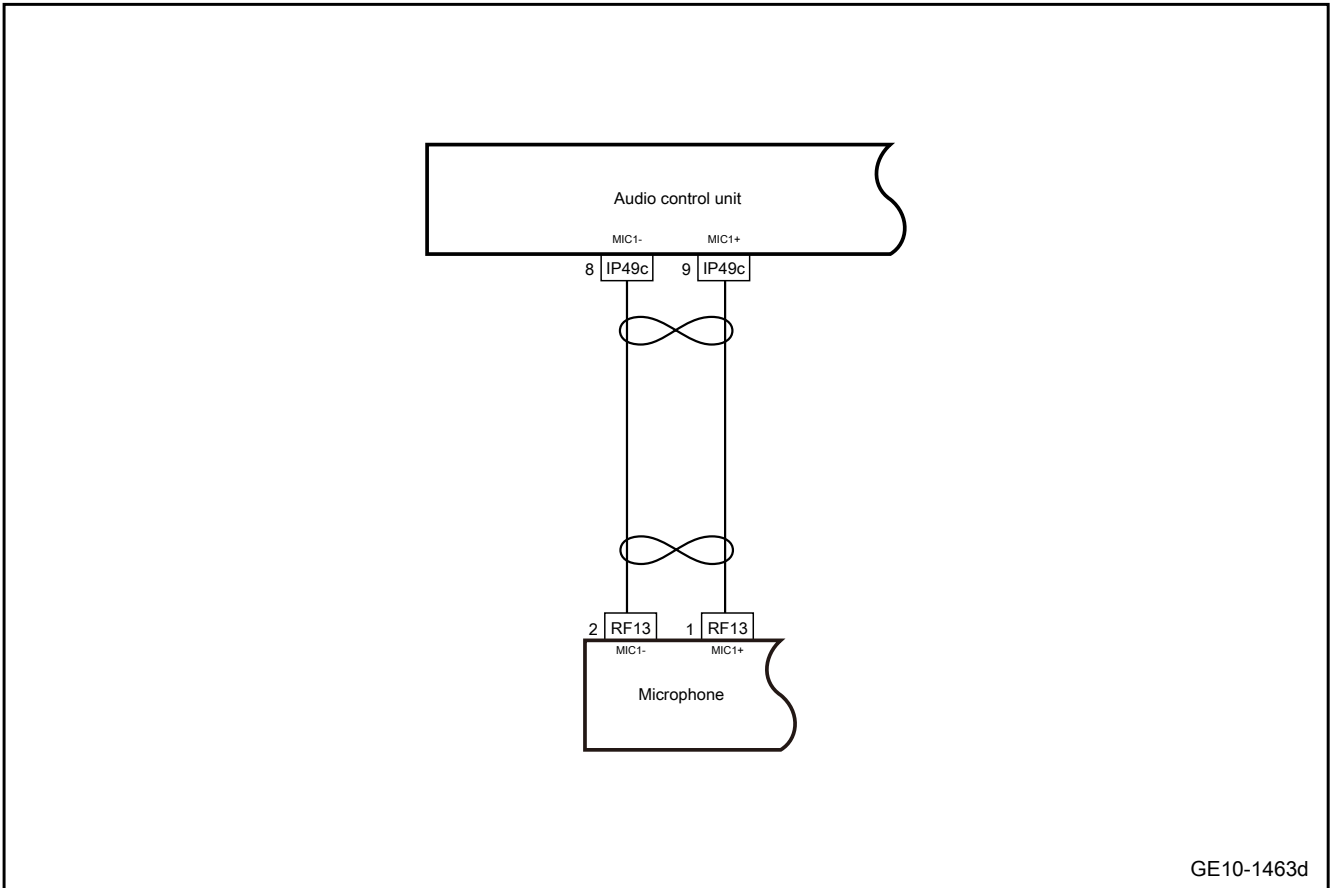
1. DTC description:

DTC	Trouble description
B138111	MIC is short to GND
B138112	MIC is short to power supply

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138111	Microphone is short-circuited to ground for 300 ms	1. The supply voltage is 9V-16V.	1. Audio control unit 2. Circuit 3. Microphone
B138112	Microphone is short to battery for 300ms.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

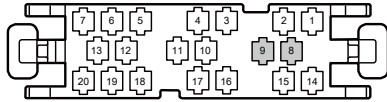
- A. Check the appearance of microphone for signs of damage, rust, dirt, etc.
- B. Check the microphone harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

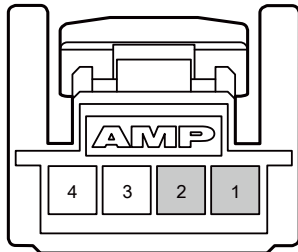
Step 2	Check whether the circuit between the CD player/radio control unit and Microphone is open.
--------	--

IP49c audio control unit harness connector C



GE10-1833d

RF13 microphone harness connector



GE10-1834d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP49c(8)	RF13(2)	Standard resistance: less than 1Ω
IP49c(9)	RF13(1)	

- E. Confirm whether the measured value meets the standard.

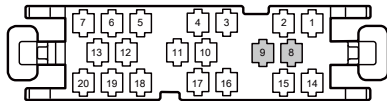
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the CD player/radio control unit and microphone is short to the power supply.

IP49c audio control unit harness connector C



GE10-1835d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect microphone harness connector RF13.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP49c(8)	Vehicle body is grounded.	Standard voltage: 0V
IP49c(9)		

- F. Confirm whether the measured value meets the standard.

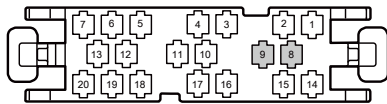
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the CD player/radio control unit and microphone is short to grounding.

IP49c audio control unit  
harness connector C



GE10-1836d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP49c(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP49c(9)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the microphone.

- A. Replace the microphone, refer to [Replacement of microphone](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 7** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 9** System is normal.

### 10.2.6.14 The display screen does not work

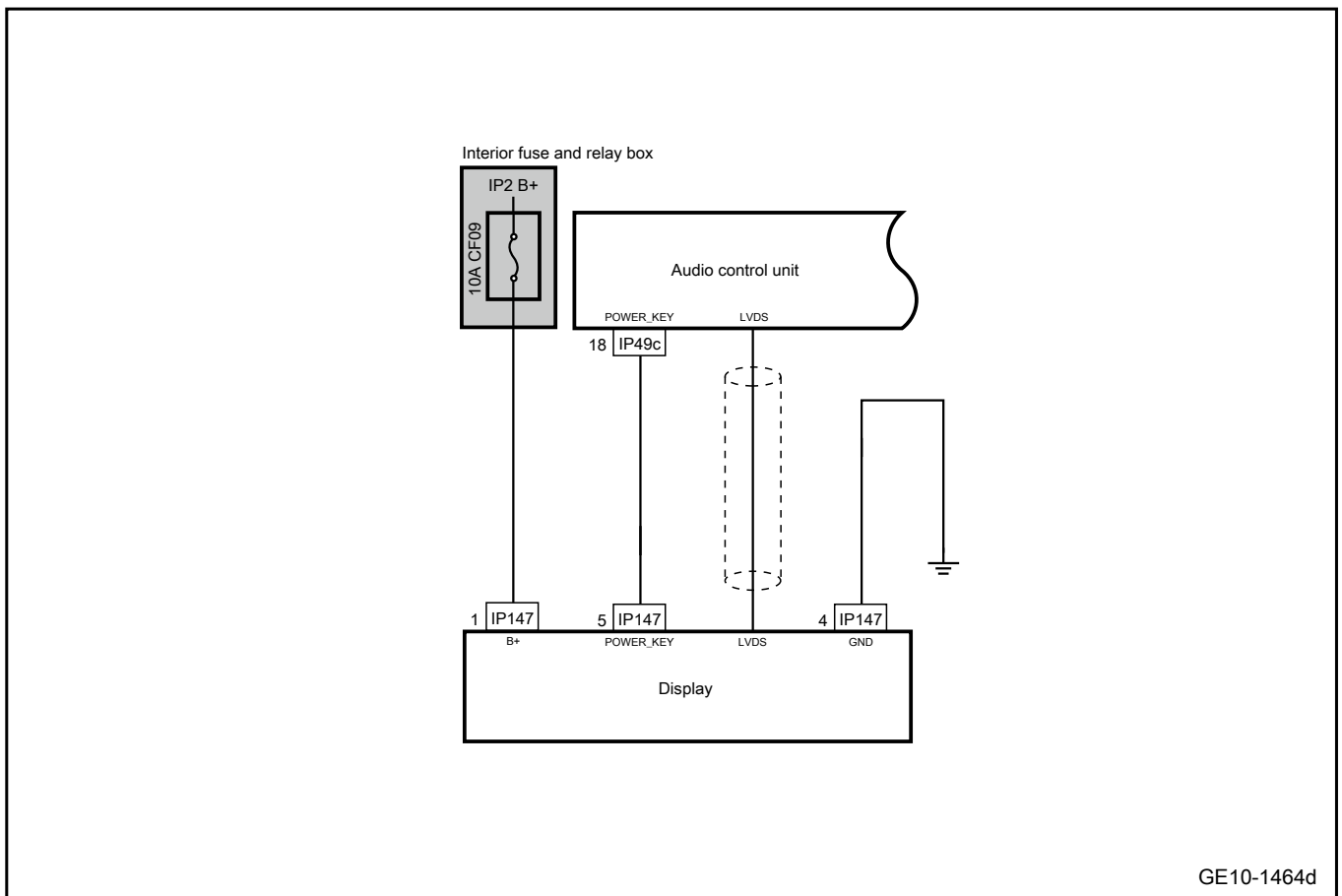
1. DTC description:

Diagnostic Trouble Code	Description
B13AA16	Low voltage of the screen
B13AA17	Over voltage of the screen
B13AA98	High temperature of the screen

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13AA16	Measure the voltage<10V	1. Power supply voltage is between 10V-15V 2. MMI boot	1. Circuit 2. Audio control unit 3. Fuse 4. Screen
B13AA17	Measure the voltage>15V		
B13AA98	Display temperature>70 degrees Celsius		

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the display screen for signs of damage, getting adrift, etc.
- B. Check the display screen, audio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.



Yes

**Step 3** Check the fuse of the display screen.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF09 is blown.

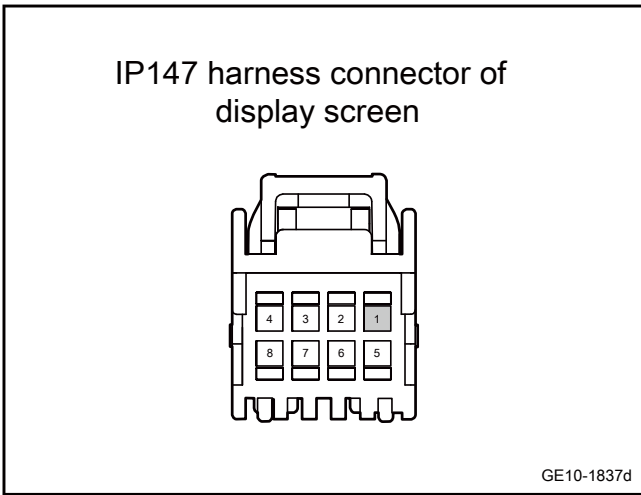
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the power supply circuit of the display screen.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the display screen harness connector IP147.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP147(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

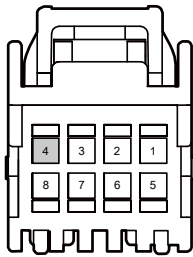
No

Repair or replace the harness.

Yes

**Step 5** Check the grounding circuit of the display screen.

IP147 harness connector of display screen



GE10-1838d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the display screen harness connector IP147.
- C. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP147(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

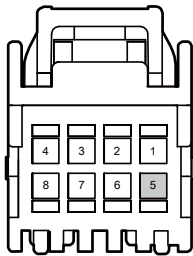
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the display screen and the audio host is open.

IP147 harness connector of display screen



GE10-1839d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the display screen harness connector IP147.
- C. Disconnect the audio host harness connector IP49c.
- D. Measure the resistance between the following terminals:

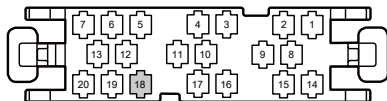
Measure terminal 1	Measure terminal 2	Standard voltage value
IP147(5)	IP49c(18)	Standard resistance: less than 1Ω
LVDS display screen terminal	LVDS audio host	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

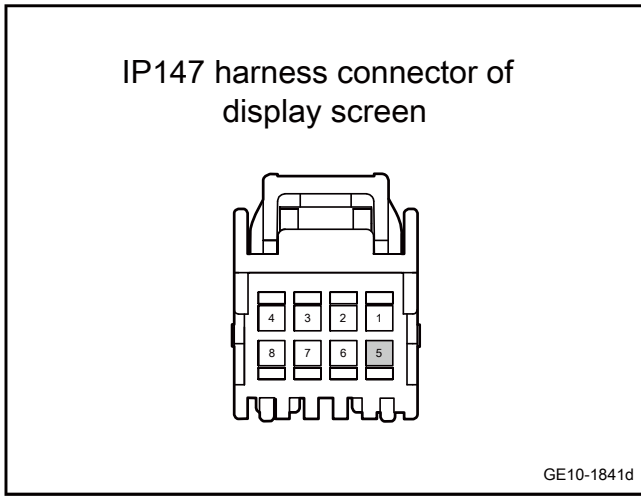
IP49c audio control unit harness connector C



GE10-1840d

Yes

**Step 7** Check whether the circuit between the display and the audio host is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the display screen harness connector IP147.
- C. Disconnect the audio host harness connector IP49c.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP147(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
LVDS display screen terminal		

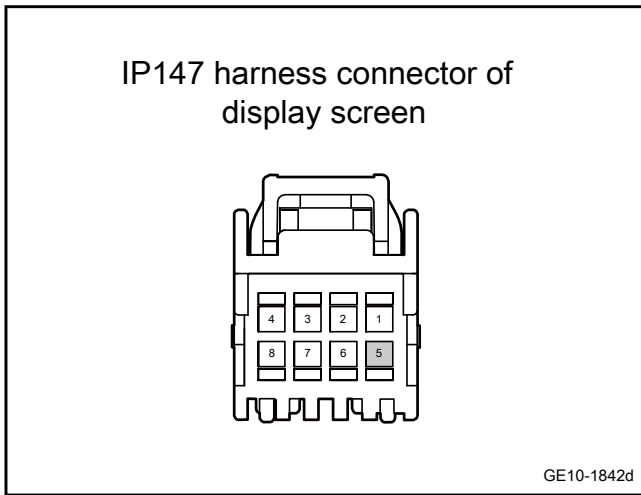
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the display screen and the audio host is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the display screen harness connector IP147.
- C. Disconnect the audio host harness connector IP49c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP147(5)	Vehicle body is grounded.	Standard voltage: 0V
LVDS display screen terminal		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the display screen.

- A. Replace the display screen. Refer to [Replacement of the display screen](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Change the radio control unit.
------------	--------------------------------

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 11	Reprogram and reset the radio control unit.
---------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

10.2.6.15 Communication failure between audio host and ambient light

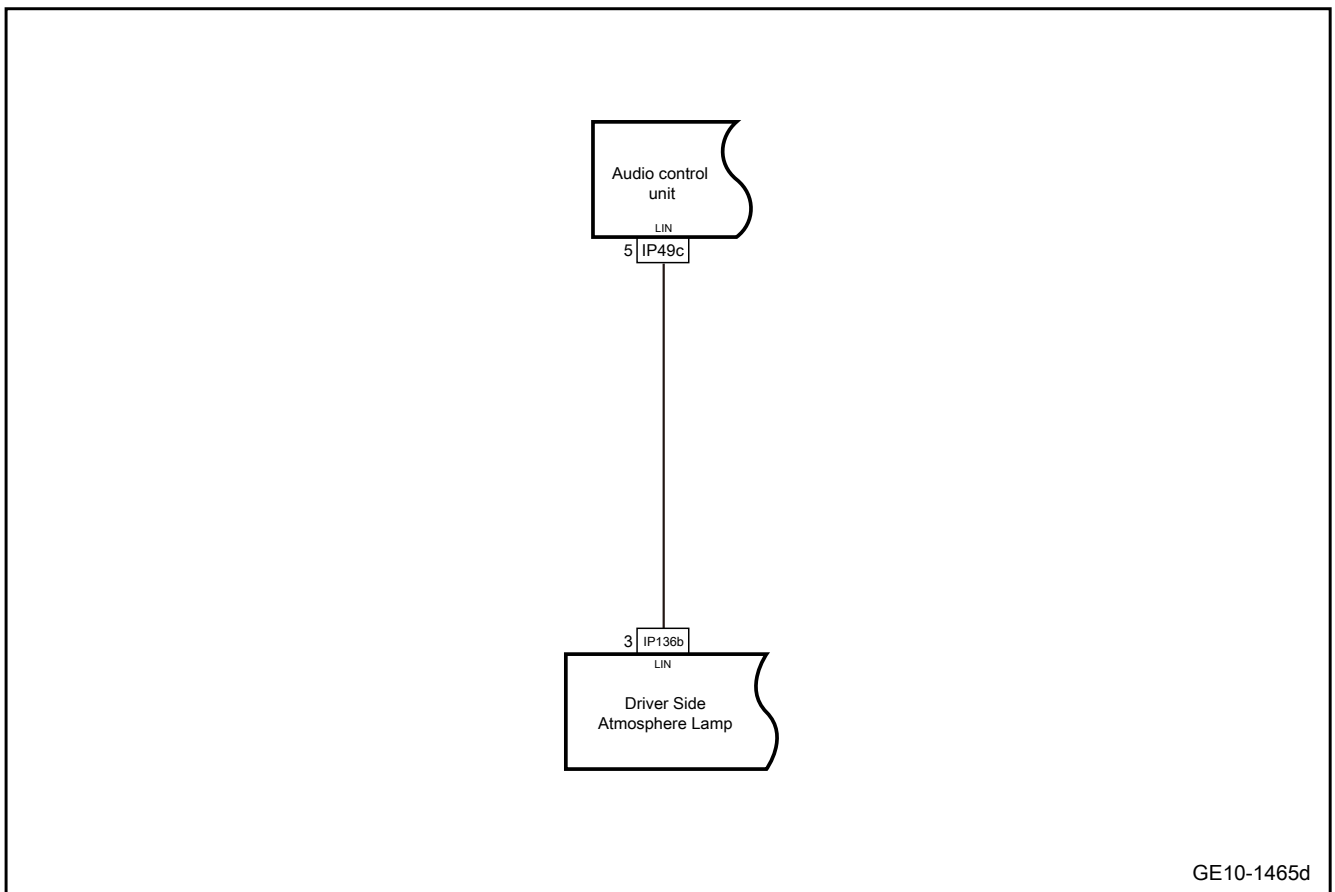
1. DTC description:

Diagnostic Trouble Code	Trouble description
B13A687	Lost communication with ambient light

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A687	Information from AL is lost for more than 1800ms	1. The power supply voltage is 6V-16V	1. Circuit 2. Audio control unit 3. Atmosphere lamp

3. Schematic circuit diagram:



This manual only diagnoses the malfunction of the ambient light at driver's side, and the diagnosis of other ambient lights is the same as that of the ambient light at driver's side.

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the driver side atmosphere lamp, radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

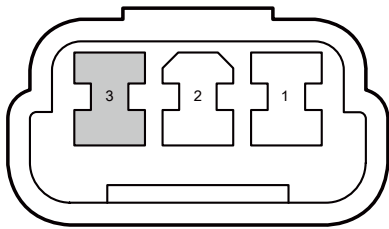
No

Repair or replace the faulty part.

Yes

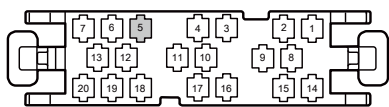
Step 3 Check whether the wiring harness between the ambient light at driver's side and the audio host is open.

IP136b Driver Side Atmosphere Lamp Harness Connector



GE10-1843d

IP49c audio control unit harness connector C



GE10-1844d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP136b(3)	IP49c(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

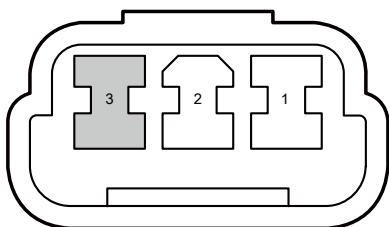
No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the ambient light at driver's side and the audio host is short-circuited to the power supply.

IP136b Driver Side Atmosphere Lamp Harness Connector



GE10-1845d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP136b(3)	Vehicle body is grounded.	Standard voltage: 0V

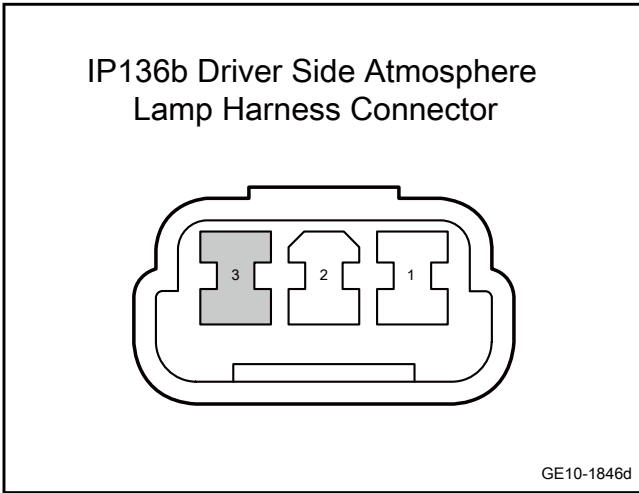
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the ambient light at driver's side and the audio host is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP136b(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the ambient light at driver's side.

- A. Replace the ambient light at driver's side. See [Replacement of the ambient light at driver's side](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Change the radio control unit.

- A. Check whether the radio control unit power supply or grounding harness is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 8** Reprogram and reset the radio control unit.



- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.2.6.16 Communication failure between audio host and wireless charging module

1. DTC description:

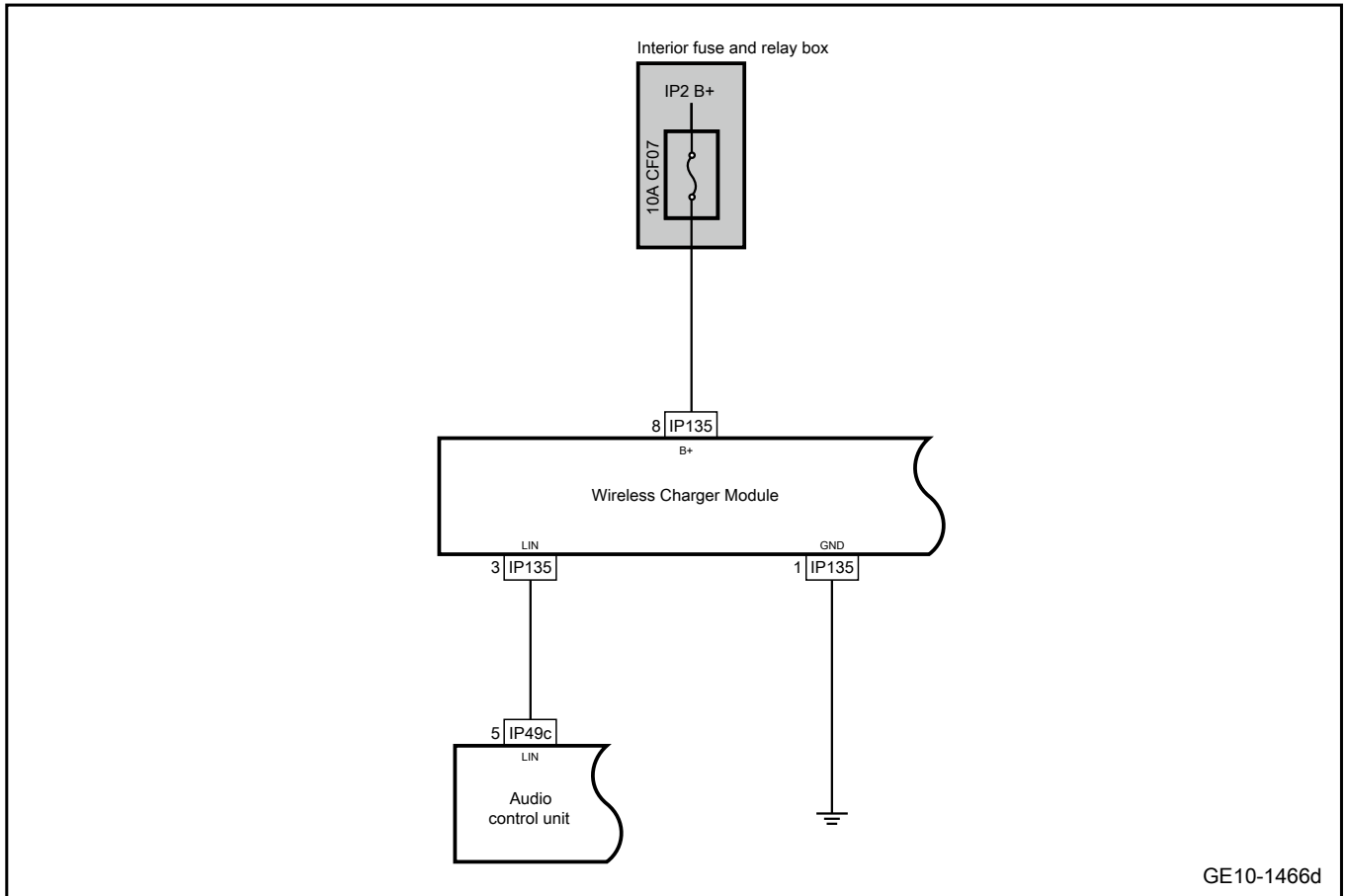
Diagnostic Trouble Code	Description
B13A787	Lost communication with wireless charging device
B13A896	Wireless charging error

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A787	Messages from WCM are lost for 600ms	1. The power supply voltage is 6V-16V 2. Ignition status should be ACC.	1. Circuit 2. Audio control unit 3. Wireless charging module

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A896	In wireless charging devices: Sign one of them (&O) 1. Reset count >=3 2. Checksum error count >=3 3. Frame error count >=3	1. The power supply voltage is 6V-16V 2. WCM communication is normal 3. Ignition status should be ACC.	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the wireless charging module for signs of damage, falling off, etc.
- B. Check the wireless charging module, radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the fuse of the wireless charging module.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF07 is blown.

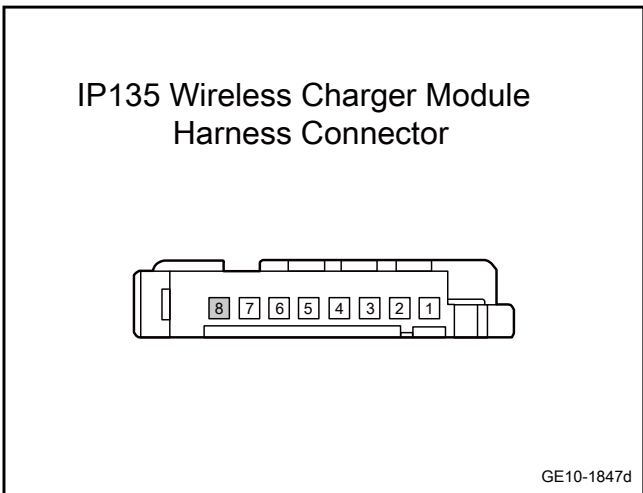
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power circuit of the wireless charging module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure voltages according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(8)	Vehicle body is grounded.	Standard voltage: 11-14V

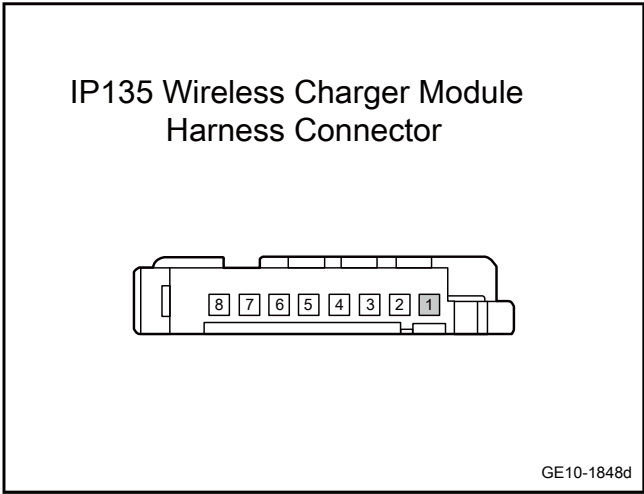
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the grounding circuit of the wireless charging module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Use a multimeter to measure resistance according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

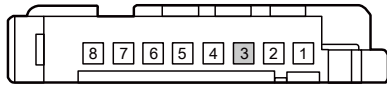
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

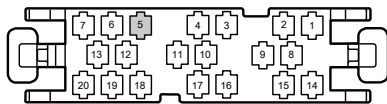
**Step 6** Check whether the circuit between the wireless charging module and the audio host is open.

IP135 Wireless Charger Module  
Harness Connector



GE10-1849d

IP49c audio control unit  
harness connector C



GE10-1850d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the audio host harness connector IP49c.
- D. Use a multimeter to measure resistance according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(3)	IP49c(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

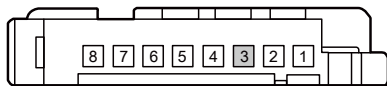
No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the wireless charging module and the audio host is short-circuited to ground.

IP135 Wireless Charger Module  
Harness Connector



GE10-1851d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the audio host harness connector IP49c.
- D. Use a multimeter to measure resistance according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

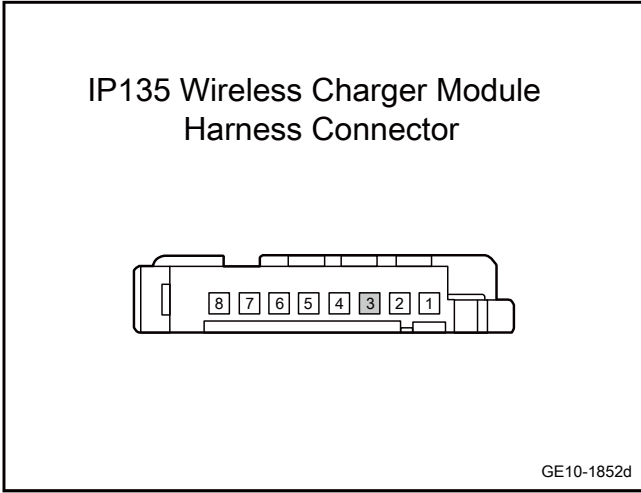
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the wireless charging module and the audio host is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the audio host harness connector IP49c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure voltages according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the wireless charging module.

- A. Replace the wireless charging module. See [Replacement of wireless charging module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 10** Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 11** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

### 10.2.6.17 Loudspeaker failure (with power amplifier)

1. DTC description:

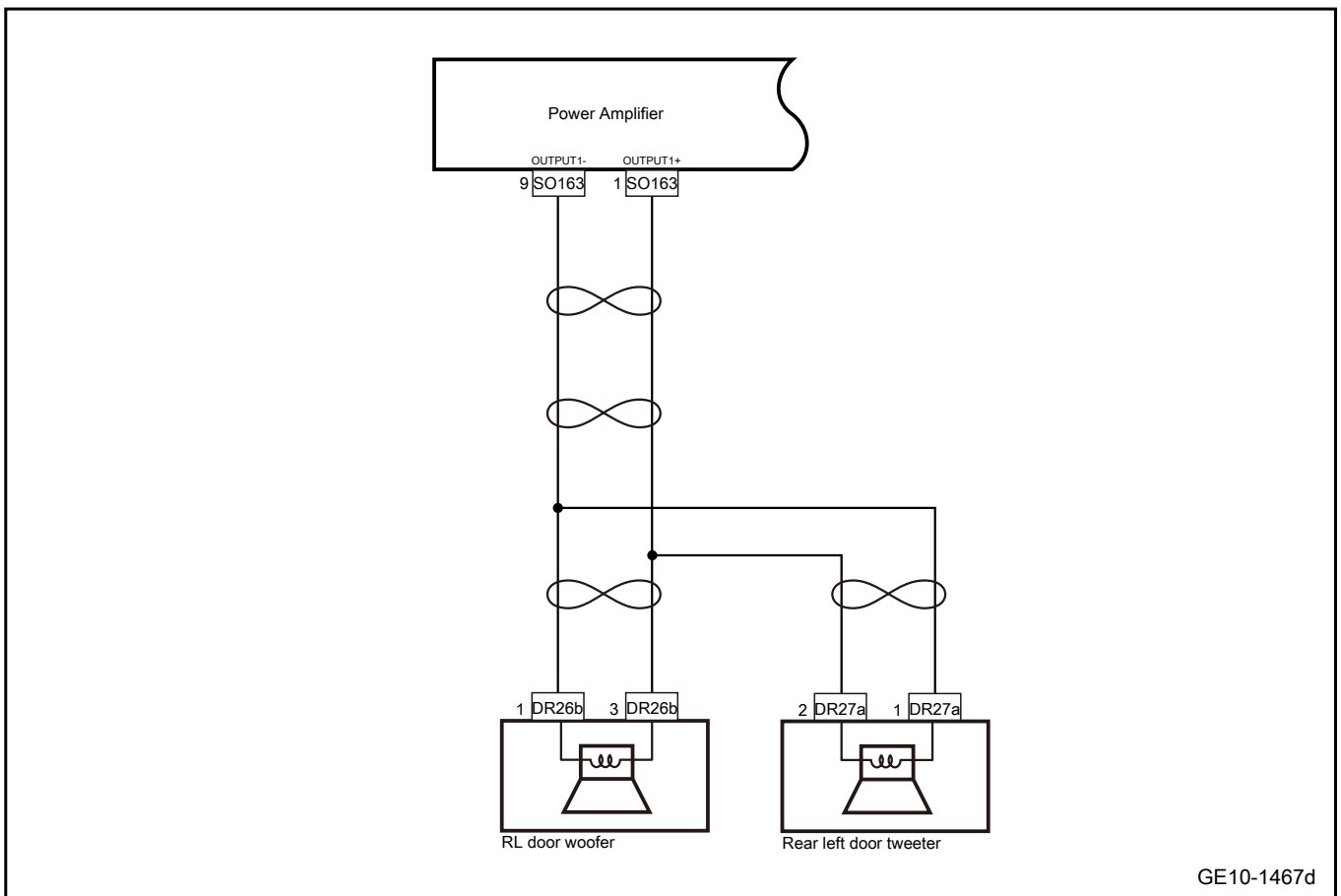
Diagnostic Trouble Code	Description
B138611	Power amplifier FL short circuit to ground
B138612	Power amplifier FL short circuit to power supply
B138613	Power amplifier FL circuit open
B138511	Power amplifier FR is short to GND
B138512	Power amplifier FR is short to power supply
B138513	Power amplifier FR is open
B138811	Power amplifier RL short to GND
B138812	Power amplifier RL short to power supply
B138813	Power amplifier RL open circuit
B138711	Power amplifier RR is short to GND.
B138712	Power amplifier RR is short to power supply.
B138713	Power amplifier RR is open.

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138611	Current is short-circuited to ground for 1200 milliseconds	1. Power supply voltage is between 10V-15V 2. MMI boot	1. Circuit 2. Power amplifier 3. Loudspeaker
B138612	The current is short-circuited to the battery for 1200 milliseconds		
B138613	The amplifier is turned on for 300 ms		
B138511	Current is short-circuited to ground for 1200 milliseconds		
B138512	The current is short-circuited to the battery for 1200 milliseconds		
B138513	The amplifier is turned on for 300 ms		
B138811	Current is short-circuited to ground for 1200 milliseconds		
B138812	The current is short-circuited to the battery for 1200 milliseconds		
B138813	The amplifier is turned on for 300 ms		
B138711	Current is short-circuited to ground for 1200 milliseconds		
B138712	The current is short-circuited to the battery for 1200 milliseconds		
B138713	The amplifier is turned on for 300 ms		

## 3. Schematic circuit diagram:





GE10-1467d

This manual only diagnoses the fault of the left rear door loudspeaker, and the diagnosis of other loudspeakers is the same as that of the left rear door loudspeaker.

4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

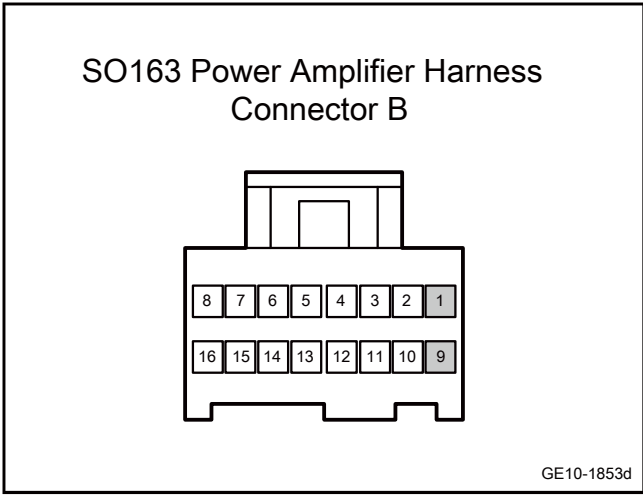
- A. Check the RR speaker for signs of frame damage or cone damage.
- B. Check the rear left door loudspeaker, power amplifier harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

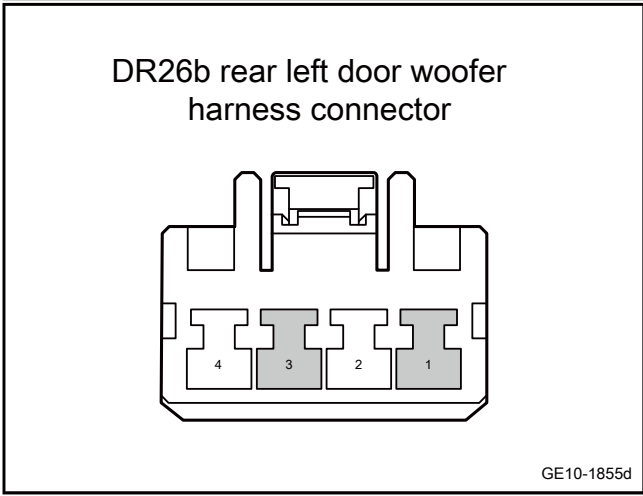
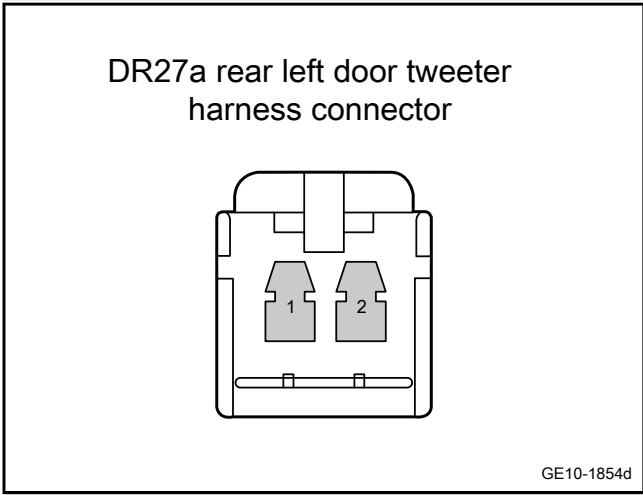
**Step 3** Check whether the circuit between the power amplifier and the left rear door loudspeaker is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the power amplifier harness connector SO163.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO163(1)	DR27a(2)	Standard resistance: less than 1Ω
SO163(9)	DR27a(1)	
SO163(1)	DR26b(3)	
SO163(9)	DR26b(1)	

- F. Confirm whether the measured value meets the standard.

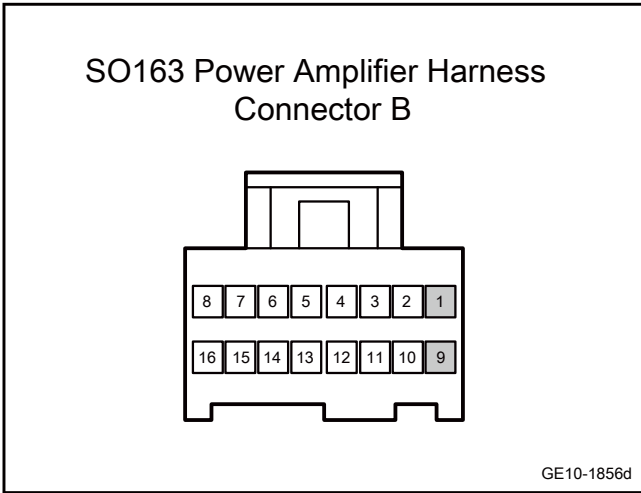


No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the power amplifier and the left rear door loudspeaker is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the power amplifier harness connector SO163.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO163(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO163(9)		

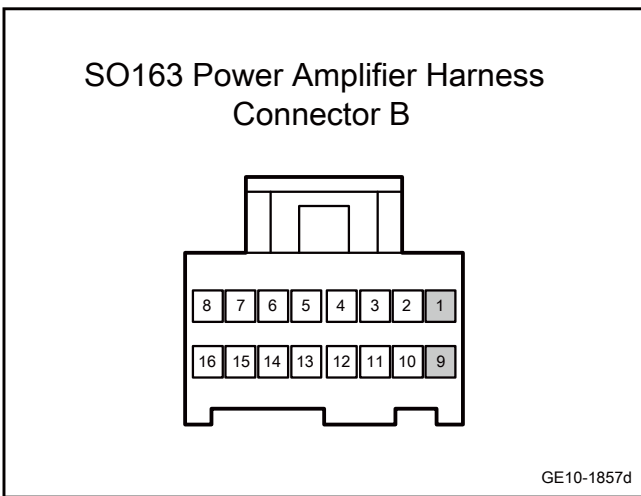
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the power amplifier and the left rear door loudspeaker is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the power amplifier harness connector SO163.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO163(1)	Vehicle body is grounded.	Standard voltage: 0V
SO163(9)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the RL door woofer.

- A. Replace the RL door woofer, refer to [Replacement of RL door woofer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the RL door tweeter

- A. Replace the RL door tweeter, refer to [Replacement of RL door tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the power amplifier.

- A. Replace the power amplifier, see [Replacement of the power amplifier](#)

Next Step

Step 9 Reprogram and reset the power amplifier.

- A. Reprogram and reset the power amplifier. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

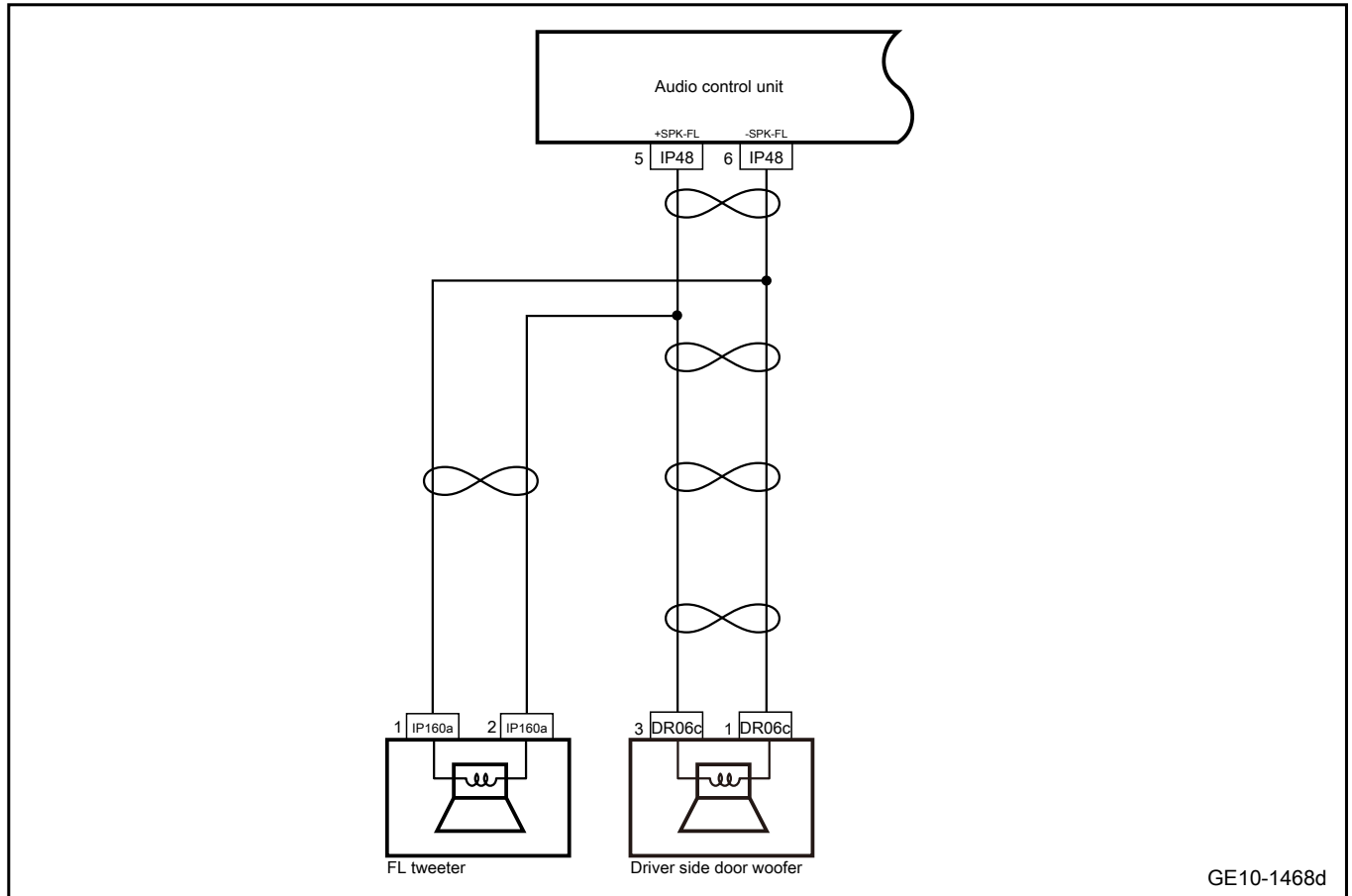
Diagnose according to the output trouble code.

No

Step 11 | System is normal.

10.2.6.18 Loudspeaker failure (without power amplifier)

1. Schematic circuit diagram:



GE10-1468d

This manual only diagnoses the fault of the driver's side loudspeaker, and the diagnosis of other loudspeakers is the same as that of the driver's side loudspeaker.

2. Diagnosis steps:

Step 1 | Primary check.

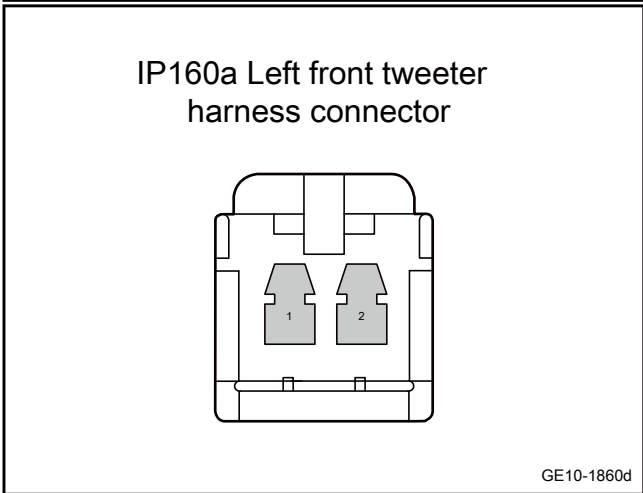
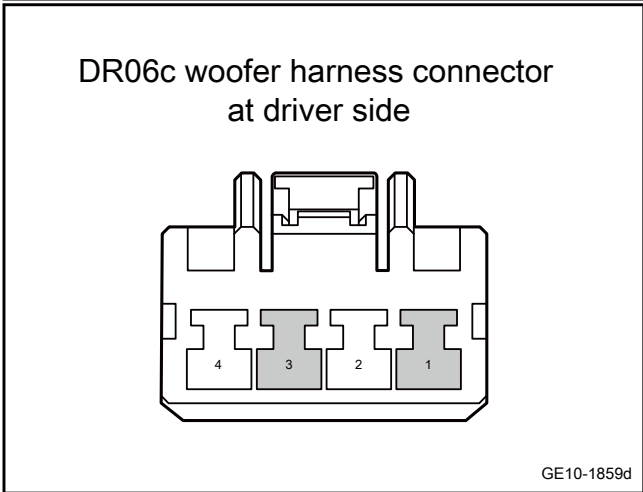
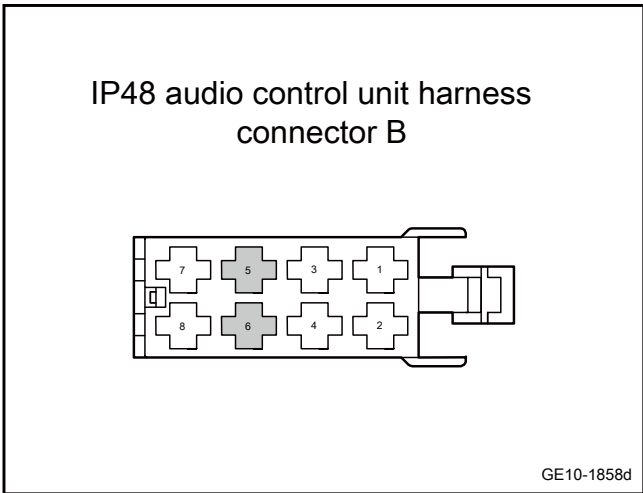
- A. Check the driver side door loudspeaker for signs of frame damage or cone damage.
- B. Check the driver side door loudspeaker, radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check whether the circuit between the audio control unit and the driver side door loudspeaker is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector of front left tweeter IP160a
- C. Disconnect harness connector of woofer at driver side DR06c
- D. Disconnect the audio host harness connector IP48.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP48(6)	DR06c(1)	Standard resistance: less than 1Ω
IP48(5)	DR06c(3)	
IP48(6)	IP160a(1)	
IP48(5)	IP160a(2)	

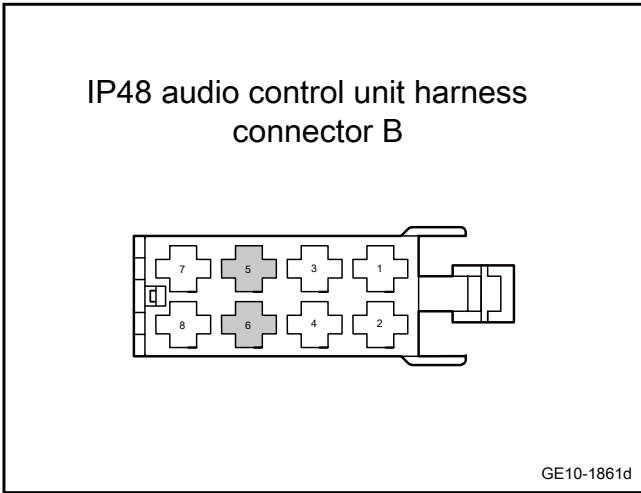
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the audio control unit and the driver side door loudspeaker is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector of woofer at driver side DR06c
- C. Disconnect harness connector of front left tweeter IP160a
- D. Disconnect the audio host harness connector IP48.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP48(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP48(6)		

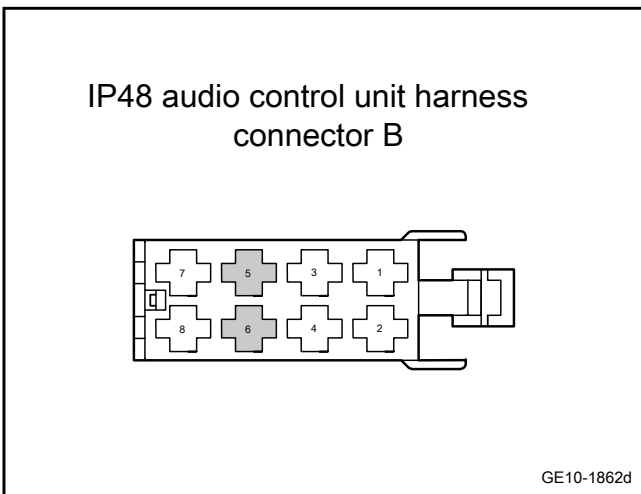
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the audio control unit and the driver side door loudspeaker is short to power.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector of woofer at driver side DR06c
- C. Disconnect harness connector of front left tweeter IP160a
- D. Disconnect the audio host harness connector IP48.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP48(6)	Vehicle body is grounded.	Standard voltage: 0V
IP48(5)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace front left tweeter

- A. Replace the front left tweeter, refer to [replacement of front left tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the woofer of the driver side door

- A. Replace the driver's side door woofer, refer to [Replacement of the driver's side door woofer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 8 Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9 System is normal.

### 10.2.6.19 Reversing vision failure

#### 1. DTC description:

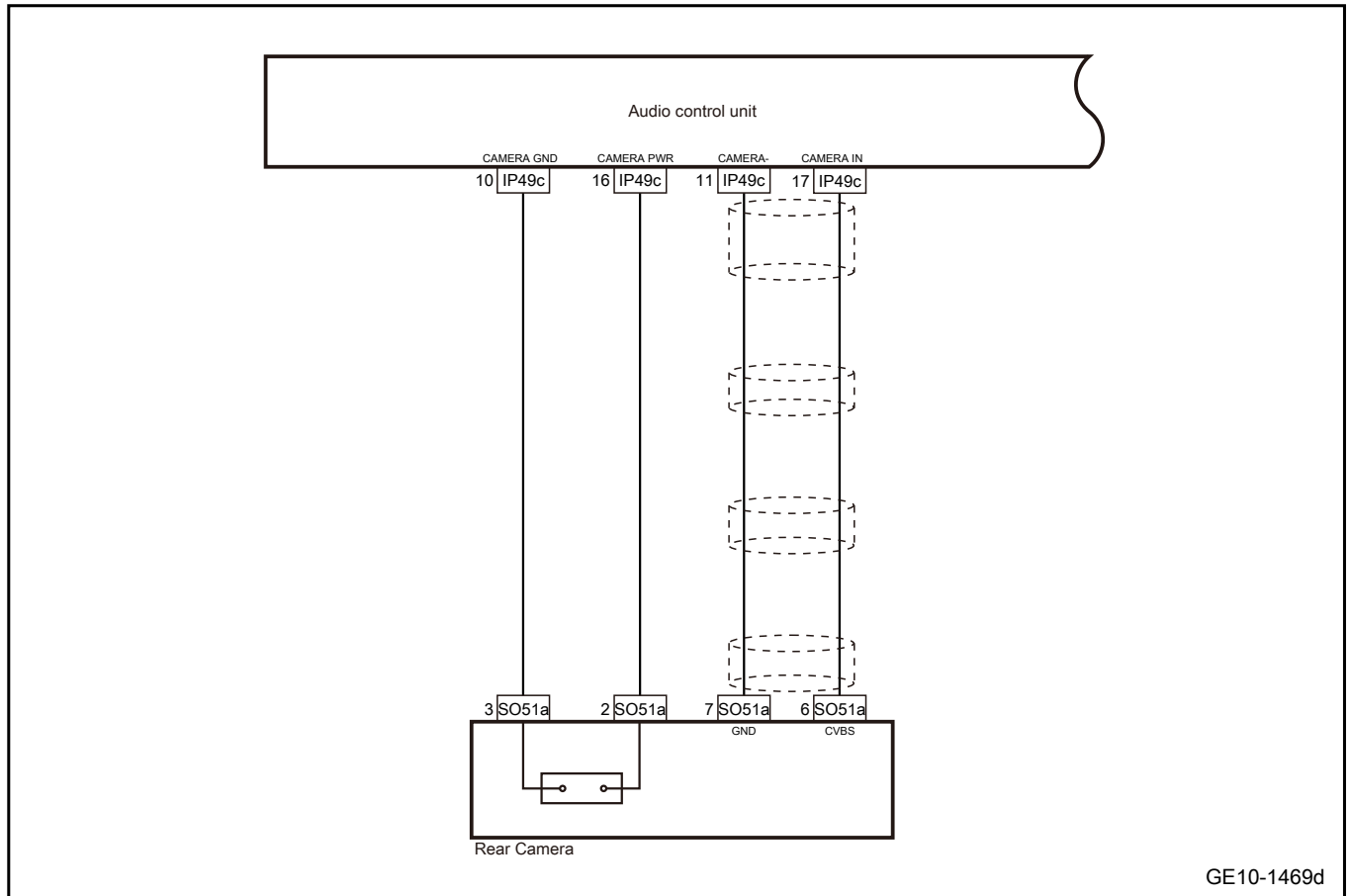
Diagnostic Trouble Code	Description
B138211	Camera power supply is short to GND.

#### 2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138211	$V < 9V$ or $V > 16V$	1. Voltage is 9V–16V	1. Circuit 2. Audio control unit 3. Rear camera

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

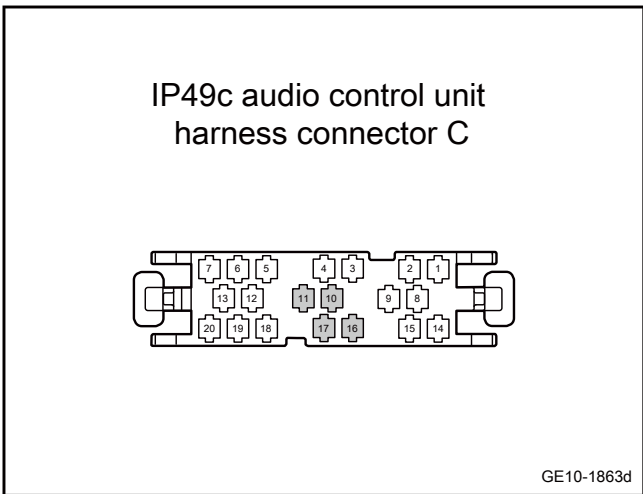
- A. Check the camera for signs of damage, etc.
- B. Check the rear camera, radio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

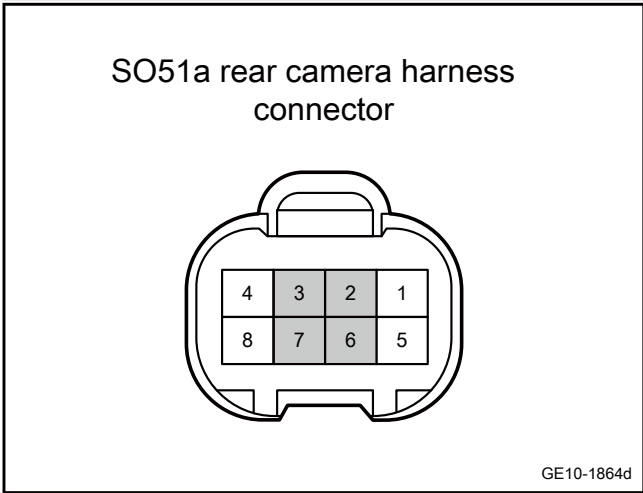
**Step 3** Check whether the circuit between the audio control unit and the rear amplifier is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect rear camera harness connector SO51a.
- C. Disconnect the audio host harness connector IP49c.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP49c(16)	SO51a(2)	Standard resistance: less than 1Ω
IP49c(10)	SO51a(3)	
IP49c(17)	SO51a(6)	
IP49c(11)	SO51a(7)	

- E. Confirm whether the measured value meets the standard.

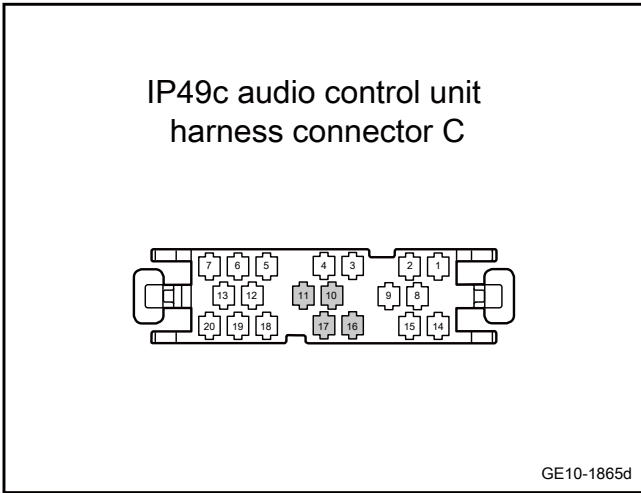


No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the audio control unit and the rear amplifier is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect rear camera harness connector SO51a.
- C. Disconnect the audio host harness connector IP49c.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP49c(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP49c(10)		
IP49c(17)		
IP49c(11)		

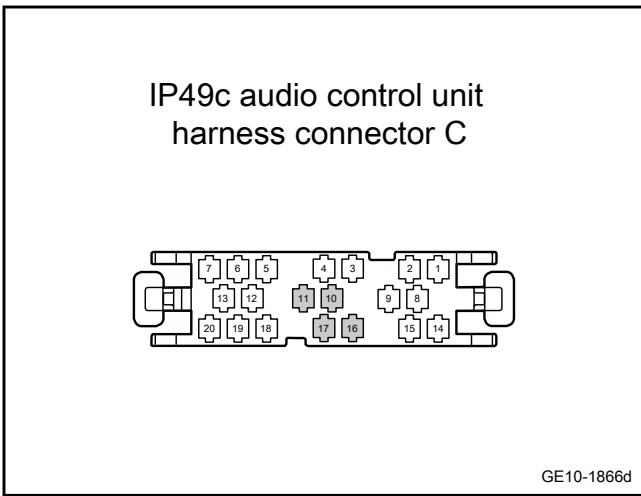
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the audio control unit and the rear amplifier is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect rear camera harness connector SO51a.
- C. Disconnect the audio host harness connector IP49c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP49c(16)	Vehicle body is grounded.	Standard voltage: 0V
IP49c(10)		
IP49c(17)		
IP49c(11)		

- F. Confirm whether the measured value meets the standard.

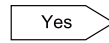
No

Repair or replace the harness.

Yes

**Step 6** Replace rear camera.

- A. Replace the rear camera, refer to [Replacement of the rear camera](#)
- B. Confirm whether the system is normal.

Yes 

System is normal.

No 

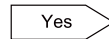
Step 7	Replace the audio control unit
--------	--------------------------------

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step 

Step 8	Reprogram and reset the radio control unit.
--------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

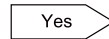
Yes 

System is normal.

No 

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes 

Diagnose according to the output trouble code.

No 

Step 10	System is normal.
---------	-------------------

### 10.2.6.20 Rear left radar probe fault

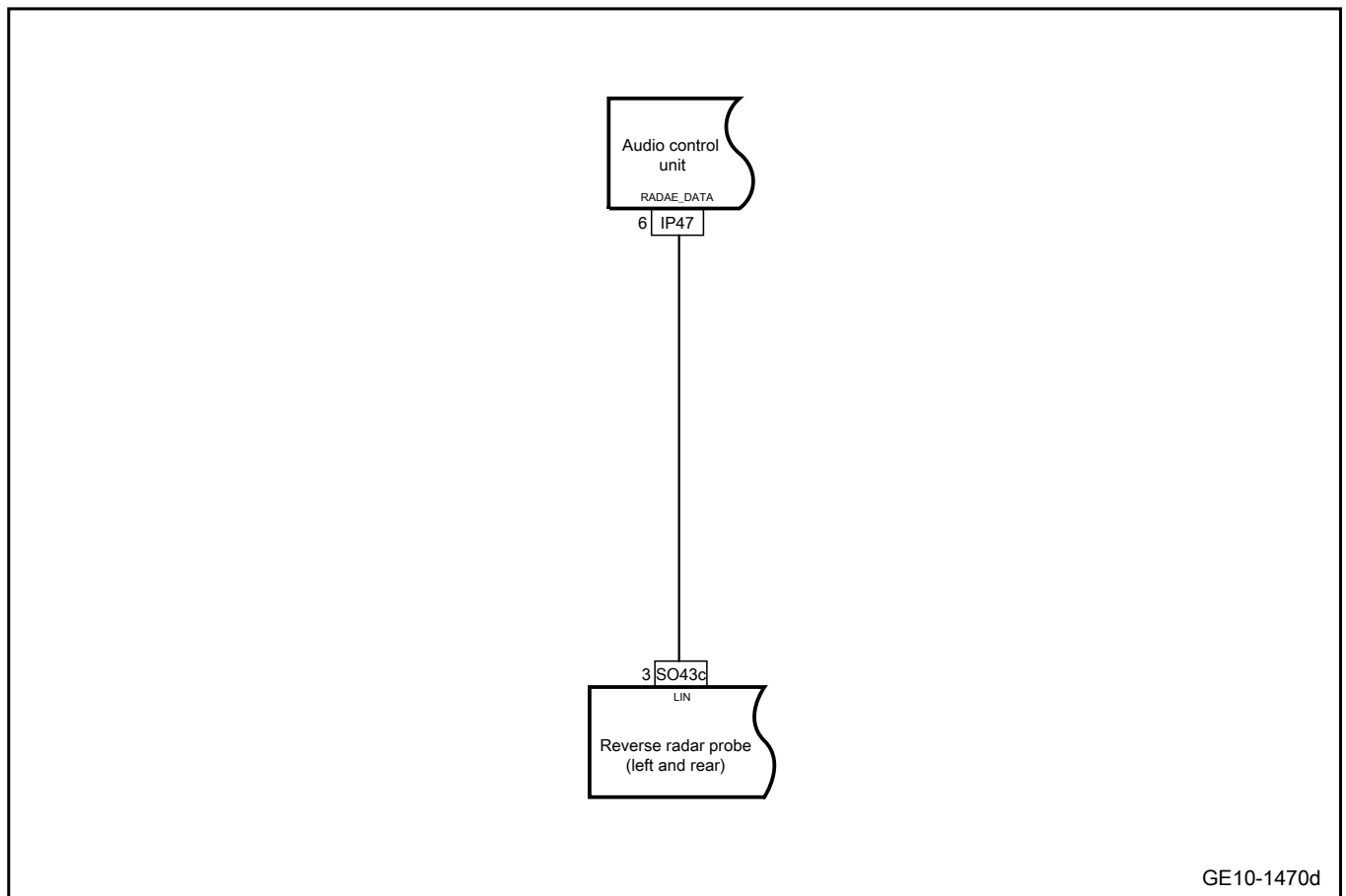
1. DTC description:

Diagnostic Trouble Code	Description
B13AE96	Rear left radar probe fault (UART radar)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13AE96	The second byte BIT3 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Audio control unit 3. Rear left radar probe

3. Schematic circuit diagram:



GE10-1470d

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the left rear radar probe for signs of damage, falling off, etc.
- B. Check the harness connector of rear left radar probe, audio control unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

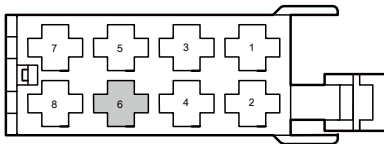
No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the left rear radar probe and the radio control unit is open.

IP47 audio control unit harness connector A



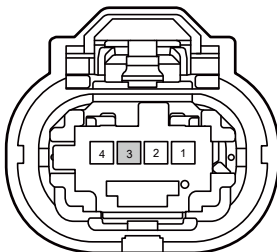
GE10-1867d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left reverse radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP47(6)	SO43c(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

SO43c rear left reverse radar probe harness connector



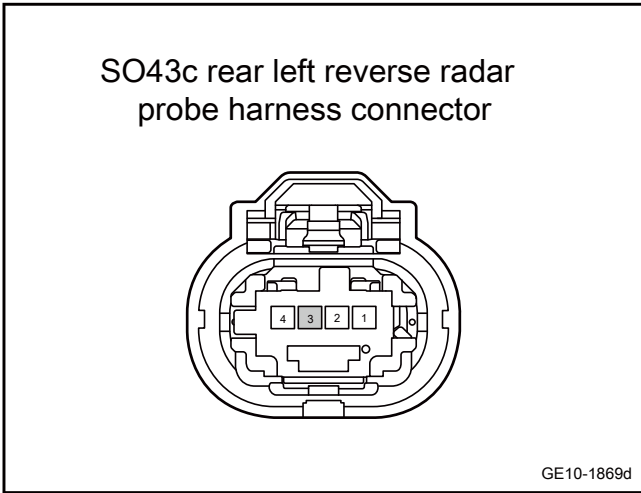
GE10-1868d

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left rear radar probe and the radio control unit is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left reverse radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO43c(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

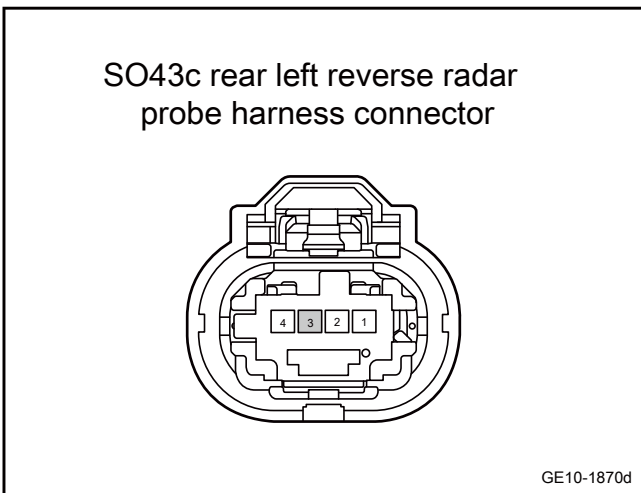
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left rear radar probe and the radio control unit is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left reverse radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO43c(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the rear left radar probe.

- A. Replace the rear left radar probe. See [Replacement of the rear left radar probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 8 Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.2.6.21 Left middle rear radar probe fault

1. DTC description:

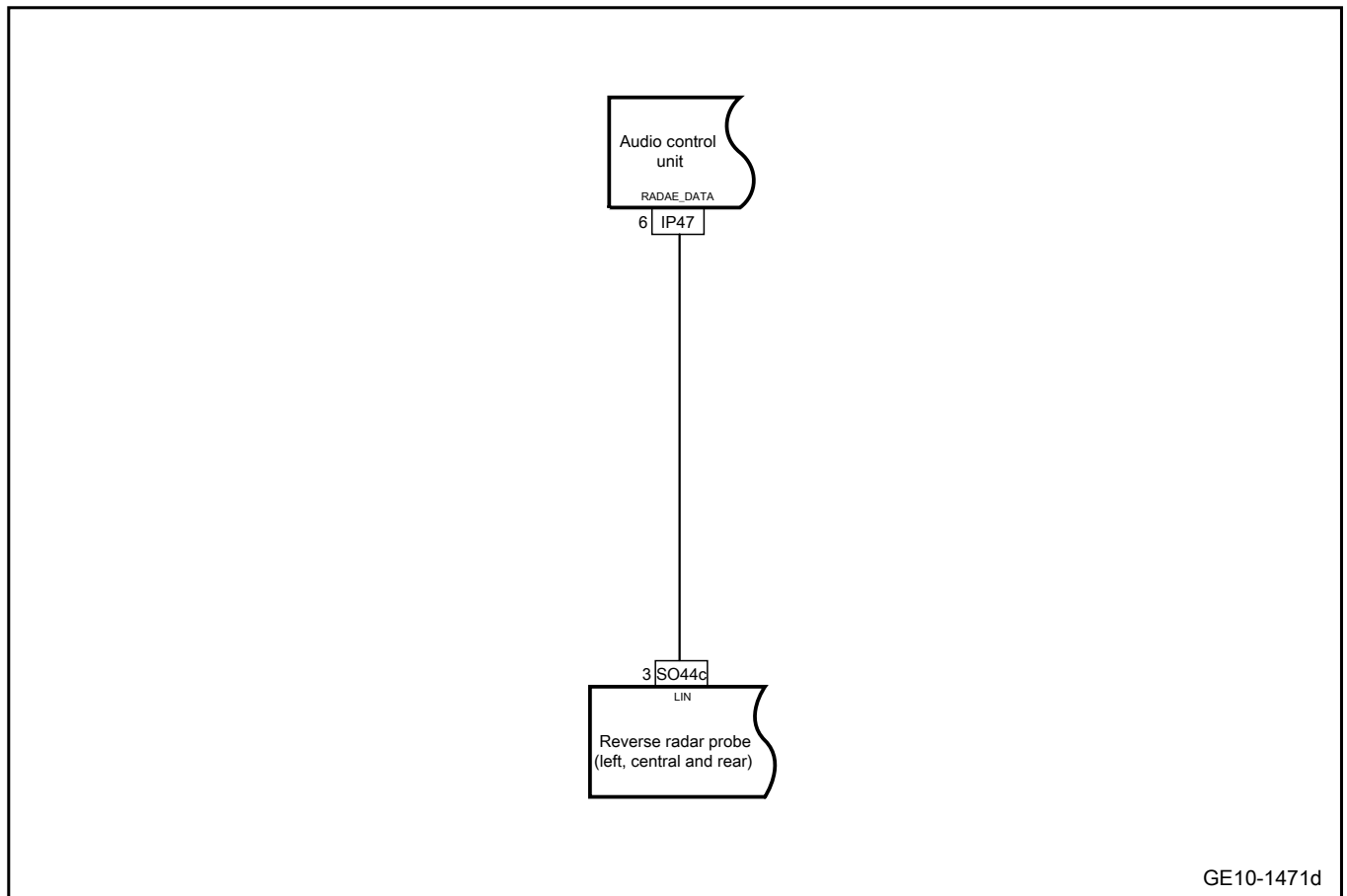
Diagnostic Trouble Code	Description
B13AF96	Left middle rear radar probe fault (UART radar)

2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13AF96	The second byte BIT2 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Audio control unit 3. Left middle reverse radar probe

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

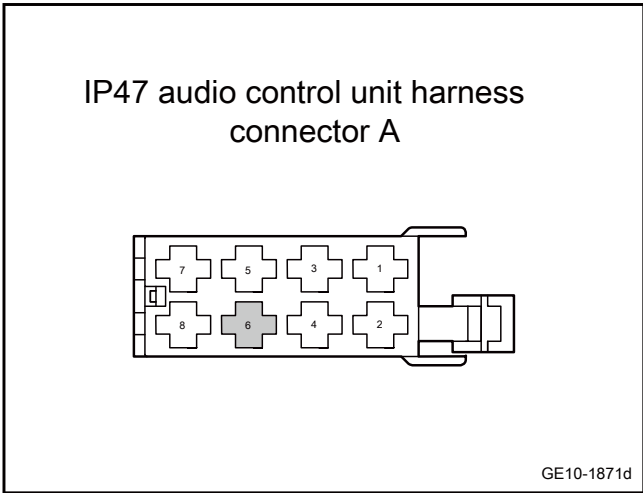
- A. Check the left center and rear reversing radar sensor for signs of damage, falling off, etc.
- B. Check the harness connector of left middle rear reversing radar probe, audio control unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

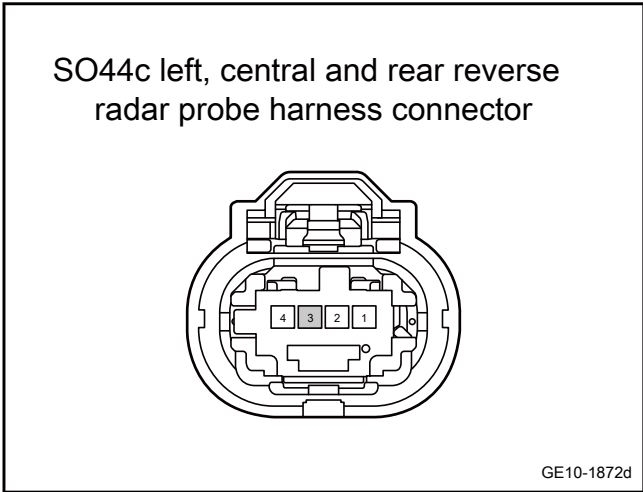
**Step 3** Check whether the circuit between the left middle rear reversing radar probe and the radio control unit is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP47(6)	SO44c(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.



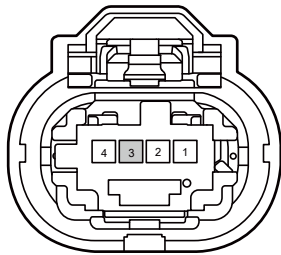
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left middle rear reversing radar probe and the radio control unit is short to ground.

SO44c left, central and rear reverse radar probe harness connector



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO44c(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

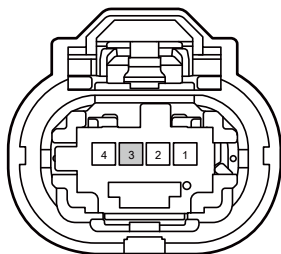
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left middle rear reversing radar probe and the radio control unit is short to power supply.

SO44c left, central and rear reverse radar probe harness connector



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the audio host harness connector IP47.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO44c(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left middle reverse radar probe.

- A. Replace the left middle reverse radar probe. See [Replacement of left center rear reversing radar sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 8** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.2.6.22 Right middle rear radar probe fault

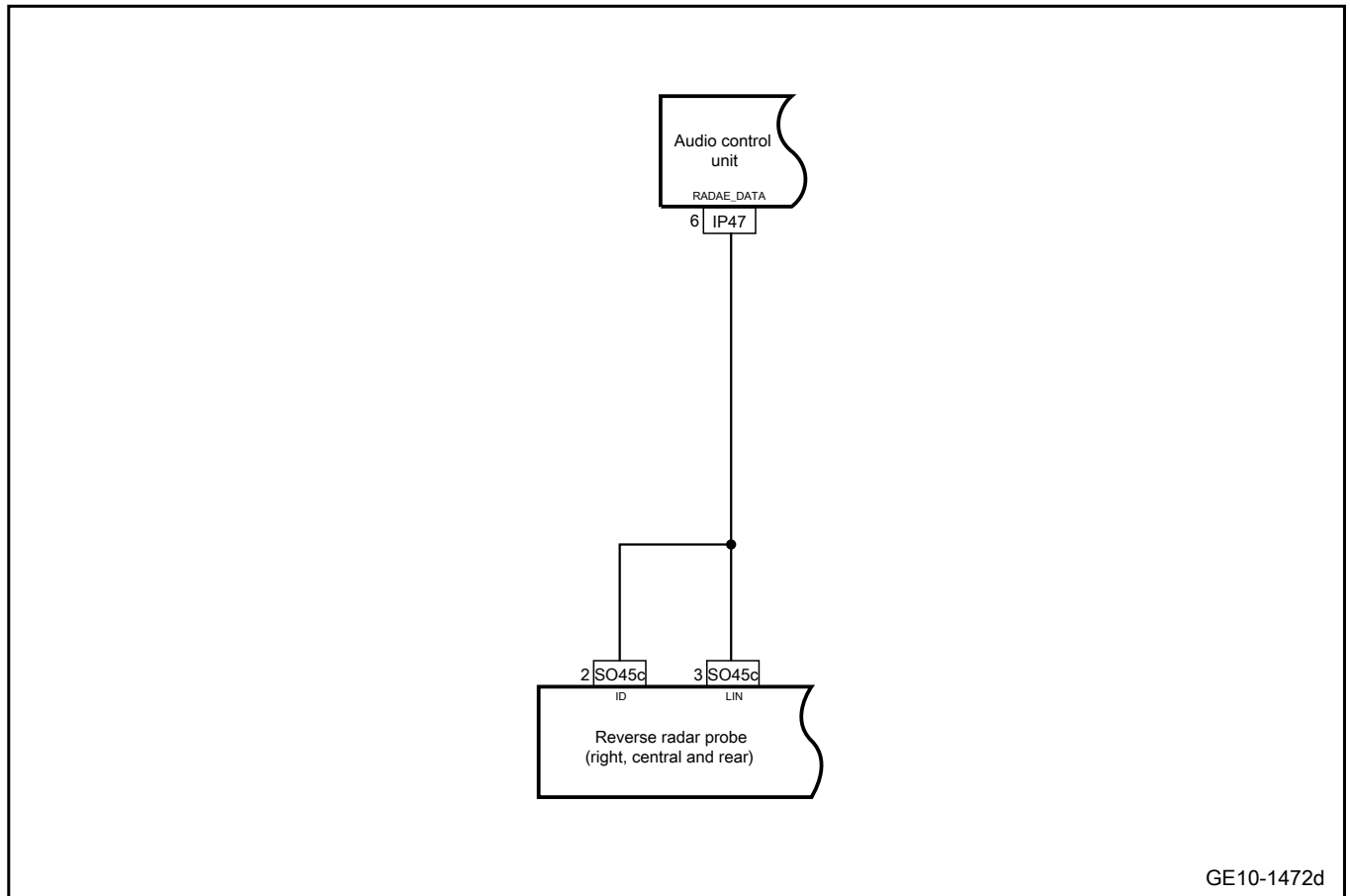
1. DTC description:

Diagnostic Trouble Code	Description
B13B096	Right middle rear radar probe fault (UART sensor)

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13B096	The second byte BIT1 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Audio control unit 3. Right middle rear reverse radar probe

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

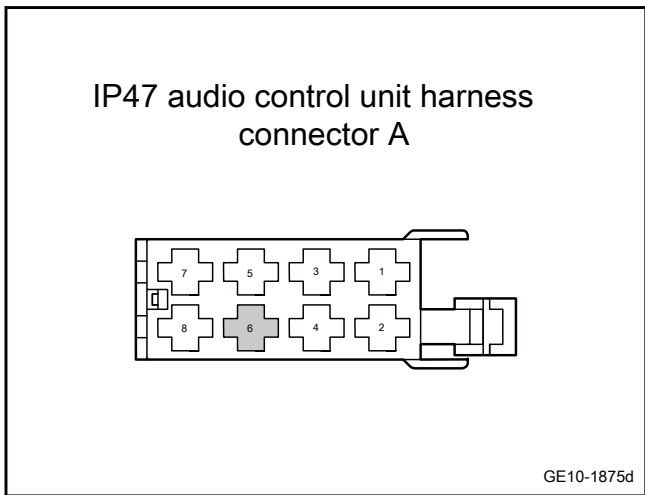
- A. Check the right middle rear reversing radar probe for signs of wear, looseness, and falling off, etc.
- B. Check the harness connector of right middle rear reversing radar probe, audio control unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

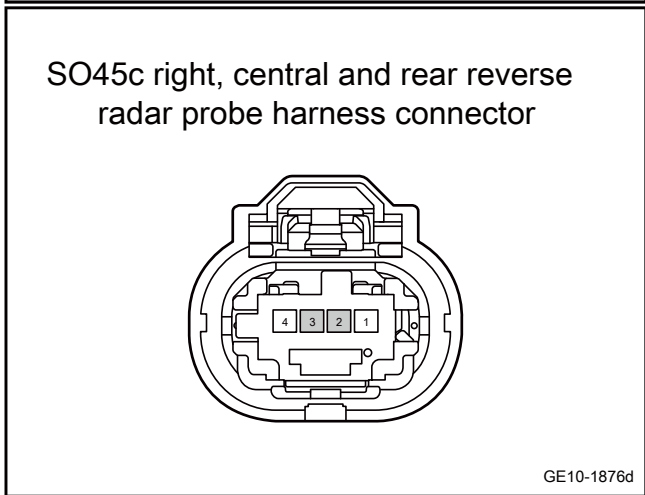
Step 3 Check whether the line between the RRM reverse radar probe and audio control unit is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP47(6)	SO45c(2)	Standard resistance: less than 1Ω
	SO45c(3)	

- E. Confirm whether the measured value meets the standard.

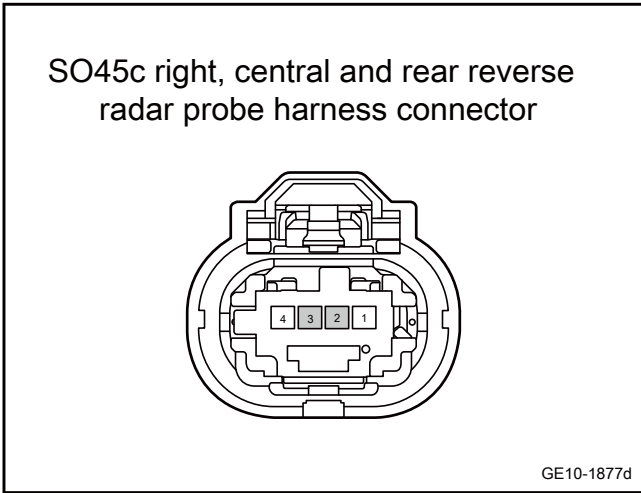


No

Repair or replace the harness.

Yes

Step 4 Check whether the line between RRM reverse radar probe and audio control unit is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO45c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO45c(3)		

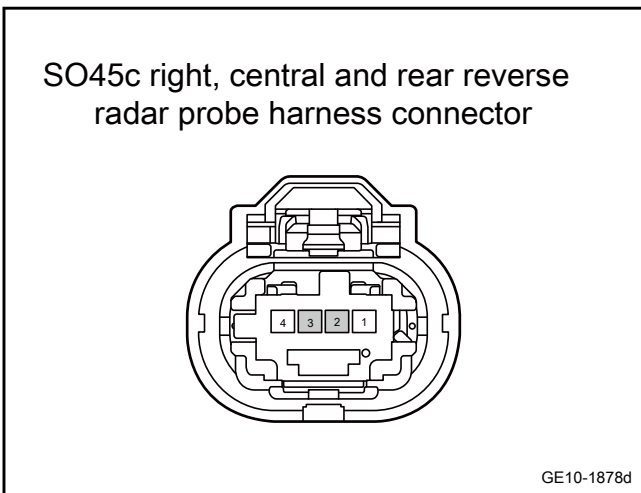
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether the line between RRM reverse radar probe and audio control unit is shorted to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- C. Disconnect the audio host harness connector IP47.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO45c(2)	Vehicle body is grounded.	Standard voltage: 0V
SO45c(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replace the right middle rear probe of parking sensor.

- A. Replace the right middle rear probe of parking sensor. See [Replacement of rear-right reversing radar sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Change the radio control unit.
--------	--------------------------------

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 8	Reprogram and reset the radio control unit.
--------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 10.2.6.23 Right rear radar probe fault

1. DTC description:

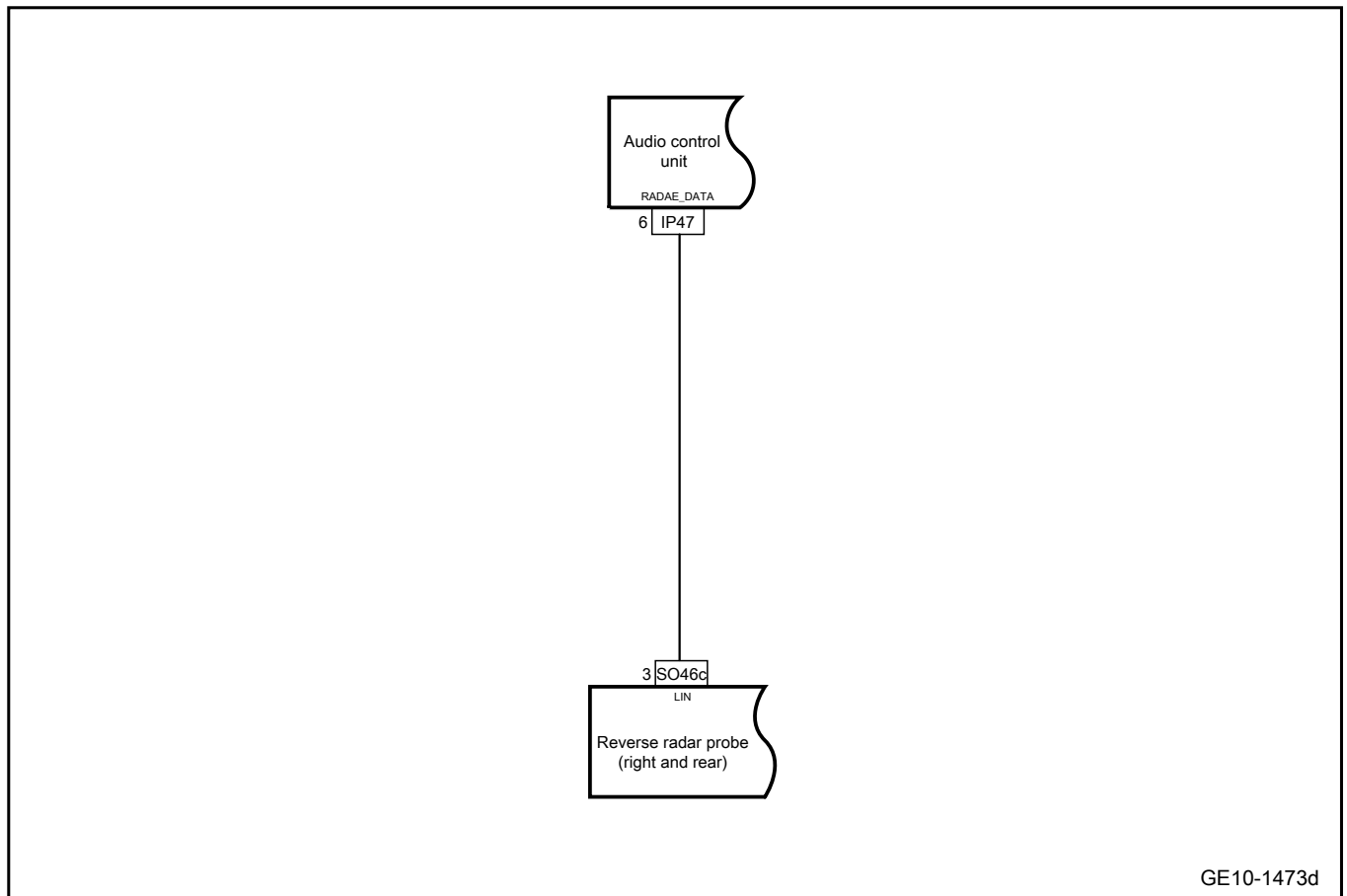
Diagnostic Trouble Code	Description
B13B196	Right rear radar probe fault (UART sensor)

2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13B196	The second byte BIT0 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Audio control unit 3. Rear right reverse radar probe

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

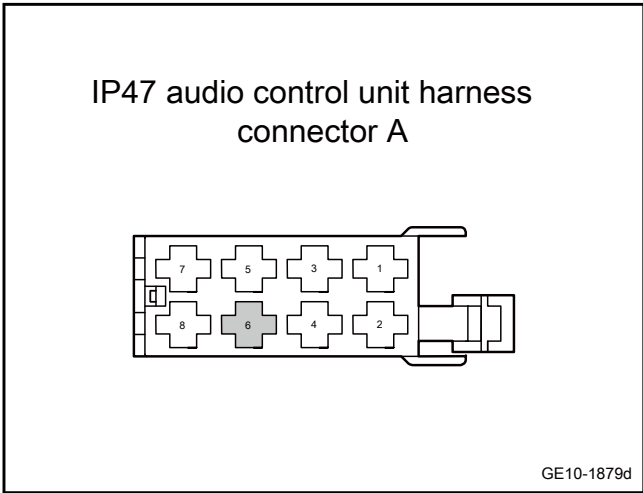
- A. Check the right rear reversing radar probe for signs of wear, looseness, and falling off, etc.
- B. Check the harness connector of right rear reversing radar probe, audio control unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

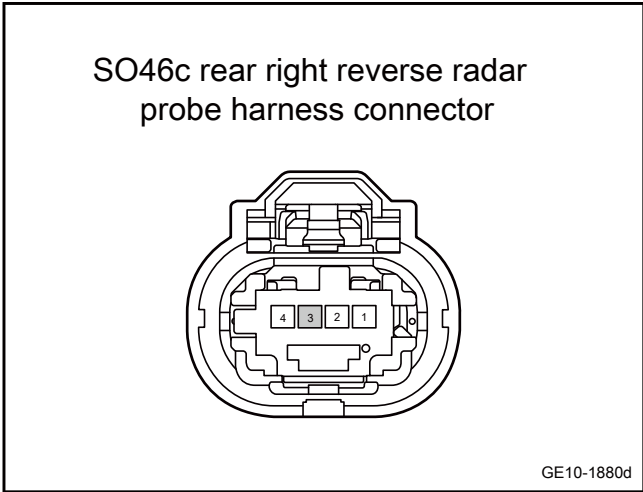
**Step 3** Check whether the line between RR reverse radar probe and audio control unit is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46c of the probe of the rear parking sensor.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
IP47(6)	SO46c(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.



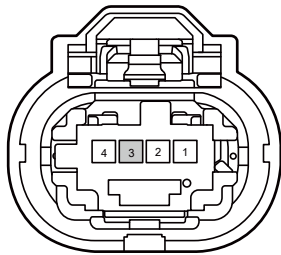
No

Repair or replace the harness.

Yes

**Step 4** Check whether the line between RR reverse radar probe and audio control unit is shorted to GND.

SO46c rear right reverse radar probe harness connector



GE10-1881d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46c of the probe of the rear parking sensor.
- C. Disconnect the audio host harness connector IP47.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO46c(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

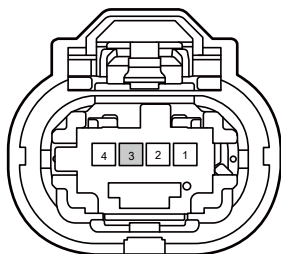
No

Repair or replace the harness.

Yes

Step 5 Check whether the line between RR reverse radar probe and audio control unit is shorted to power supply.

SO46c rear right reverse radar probe harness connector



GE10-1882d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46c of the probe of the rear parking sensor.
- C. Disconnect the audio host harness connector IP47.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
SO46c(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the probe of the rear parking sensor.

- A. Replace the probe of the rear parking sensor. See [Replacement of rear right reversing radar sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the radio control unit.

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 8 Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.2.6.24 Antenna fault

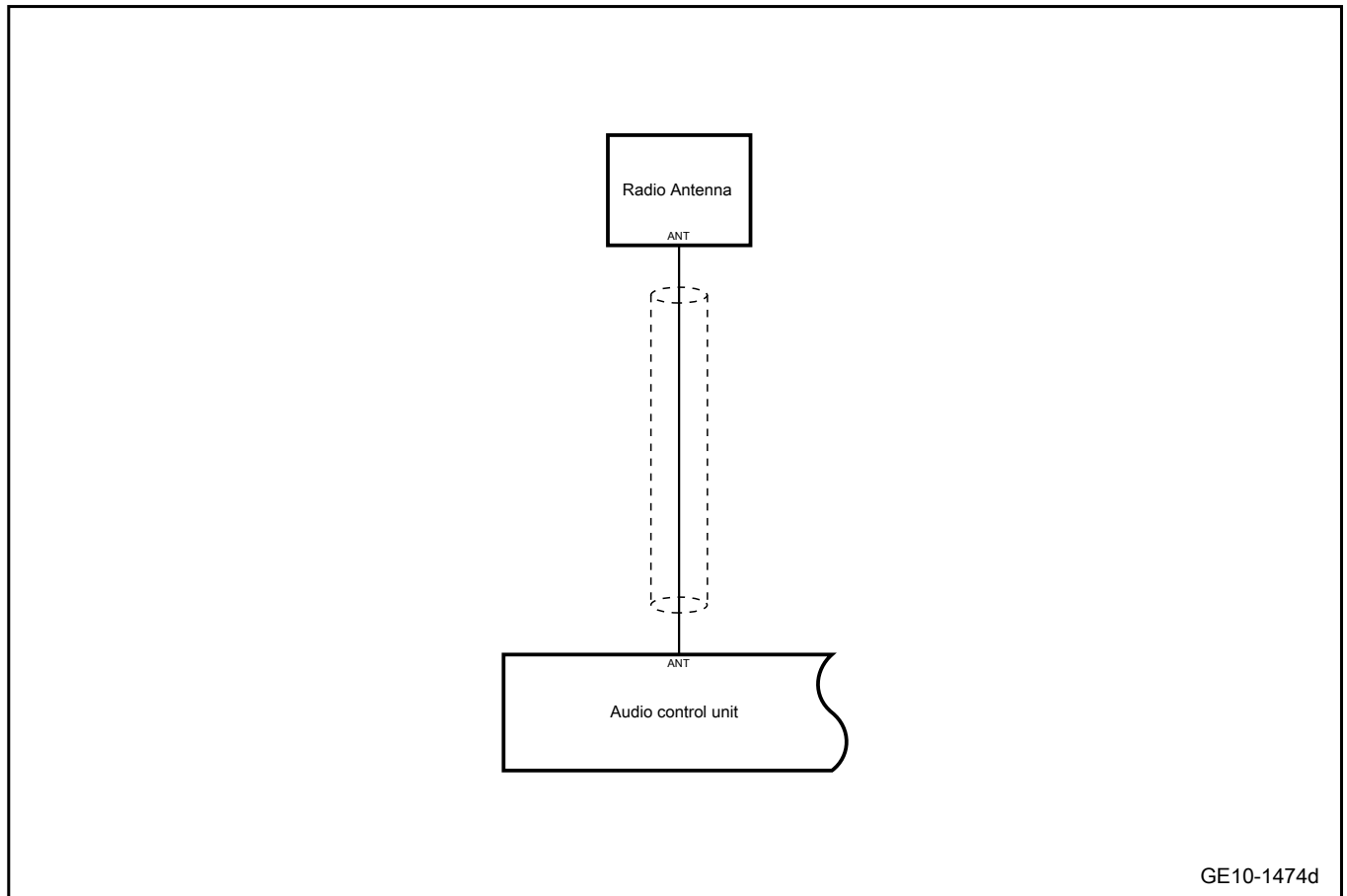
1. DTC description:

Diagnostic Trouble Code	Description
B138911	Tuner antenna is short to GND
B138913	Tuner antenna open circuit

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138911	1.ANT P DET power supply voltage>16V or power supply voltage<9V 2.ANT S DET power supply voltage>0.8V or power supply voltage<0.65V	1. ANT P DET power supply voltage is 9V-16V 2. ANT S DET power supply voltage is 0.65V-0.8V	1. Circuit 2. Audio control unit 3. Radio antenna
B138913	The tuner antenna is open-circuited for 300 milliseconds	1. Power supply voltage is between 9V-16V 2. MMI boot	

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the radio antenna for signs of damage, poor contact, aging, etc.
- B. Check the radio antenna, audio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the audio host and the radio antenna is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the radio antenna harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
Antenna end of ANT radio	ANT audio host	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the audio control unit and the radio antenna is short to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the radio antenna harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
Antenna end of ANT radio	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the audio control unit and the radio antenna is short to power supply.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the radio antenna harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure :

Measure terminal 1	Measure terminal 2	Standard value
Antenna end of ANT radio	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the radio antenna.

- A. Replace the radio antenna, see [Replacement of the radio antenna](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the audio control unit
--------	--------------------------------

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

Step 8	Reprogram and reset the radio control unit.
--------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
---------	-------------------

### 10.2.6.25 USB1 fault

1. DTC description:

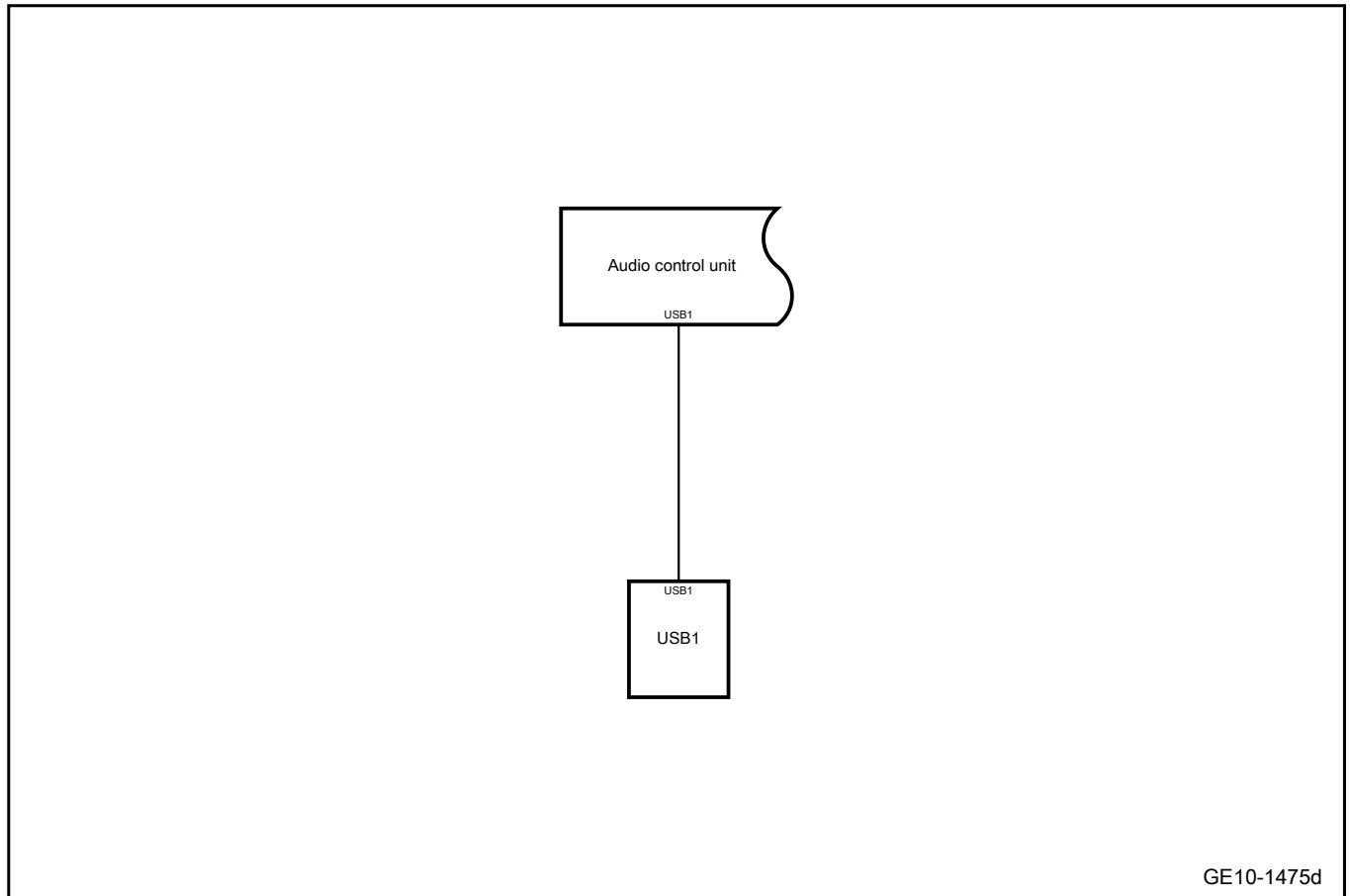
Diagnostic Trouble Code	Description
B13B719	HOST USB interface 1 circuit is overcurrent

2. Trouble code setting and fault location:



DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13B719	HOST USB interface 1 circuit is overcurrent	1. Power supply voltage is between 10V-15V 2. MMI boot	1. Circuit 2. Audio control unit 3.USB1

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the USB1 for the signs of damage, smudge, corrosion, etc.
- B. Check the USB1 harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the USB1 and the audio control unit is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB1 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB1 port	Audio control unit terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the USB1 and the audio control unit is short to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB1 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB1 port	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the USB1 and the audio control unit is short to power supply.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB1 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB1 port	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace USB1.

- A. Replace USB1, refer to [Replacement of USB1](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 8** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.2.6.26 USB2 fault

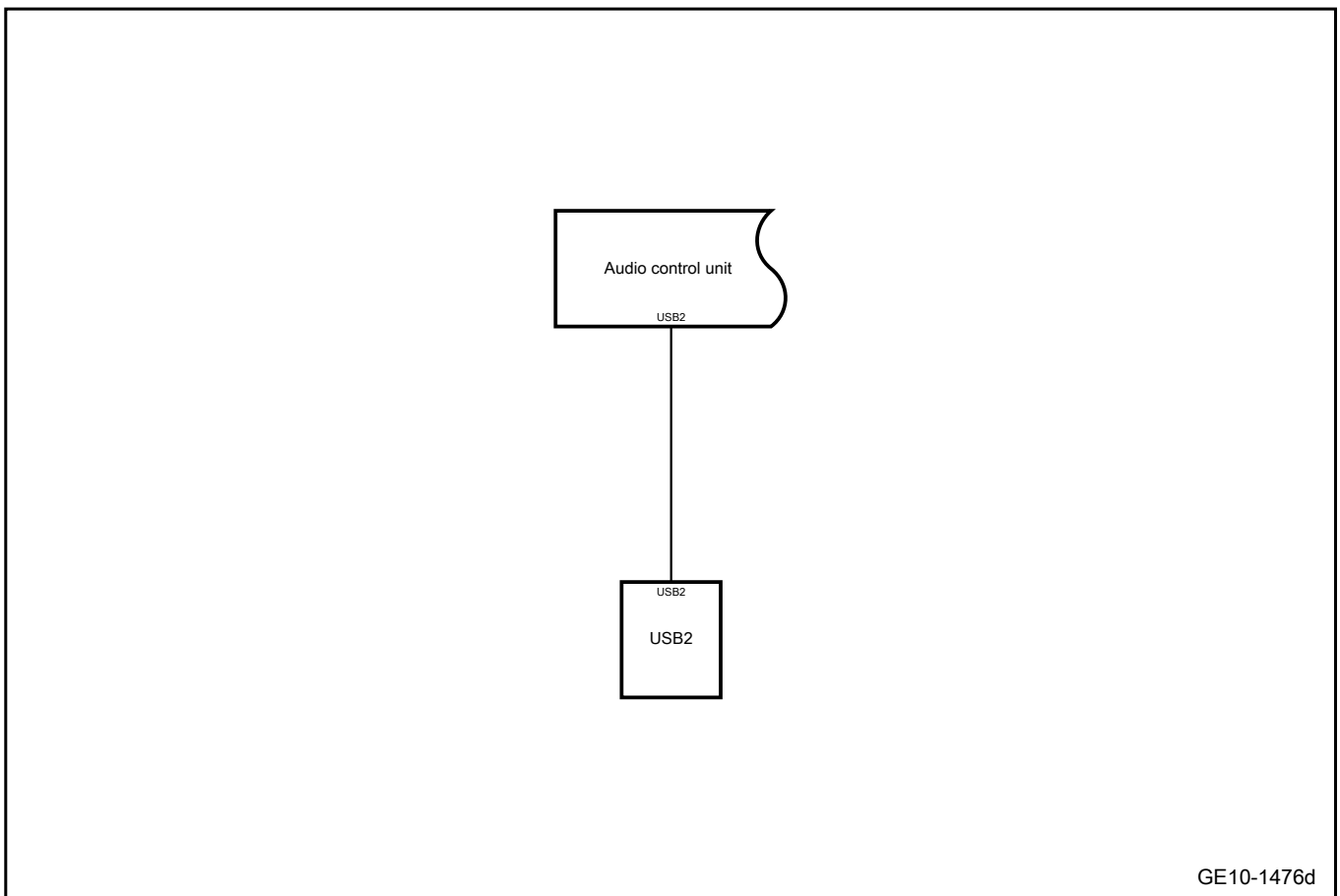
1. DTC description:

Diagnostic Trouble Code	Description
B13BC19	HOST USB interface 2 circuit is overcurrent

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13BC19	HOST USB interface 2 circuit is overcurrent	1. Power supply voltage is between 10V-15V 2. MMI boot	1. Circuit 2. Audio control unit 3. USB1

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the USB2 for the signs of damage, smudge, corrosion, etc.
- B. Check the USB2 harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the USB2 and the audio control unit is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB2 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB2 port	Audio control unit terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the USB2 and the audio control unit is short to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB2 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB2 port	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the USB2 and the audio control unit is short to power supply.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the USB2 harness connector.
- C. Disconnect the audio control unit harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
USB2 port	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace USB2.

- A. Replace USB2, refer to [Replacement of USB2](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 7** Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the radio control unit is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 8** Reprogram and reset the radio control unit.

- A. Reprogram and reset the radio control unit. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
---------	-------------------

### 10.2.6.27 E-CALL power supply failure

#### 1. DTC description:

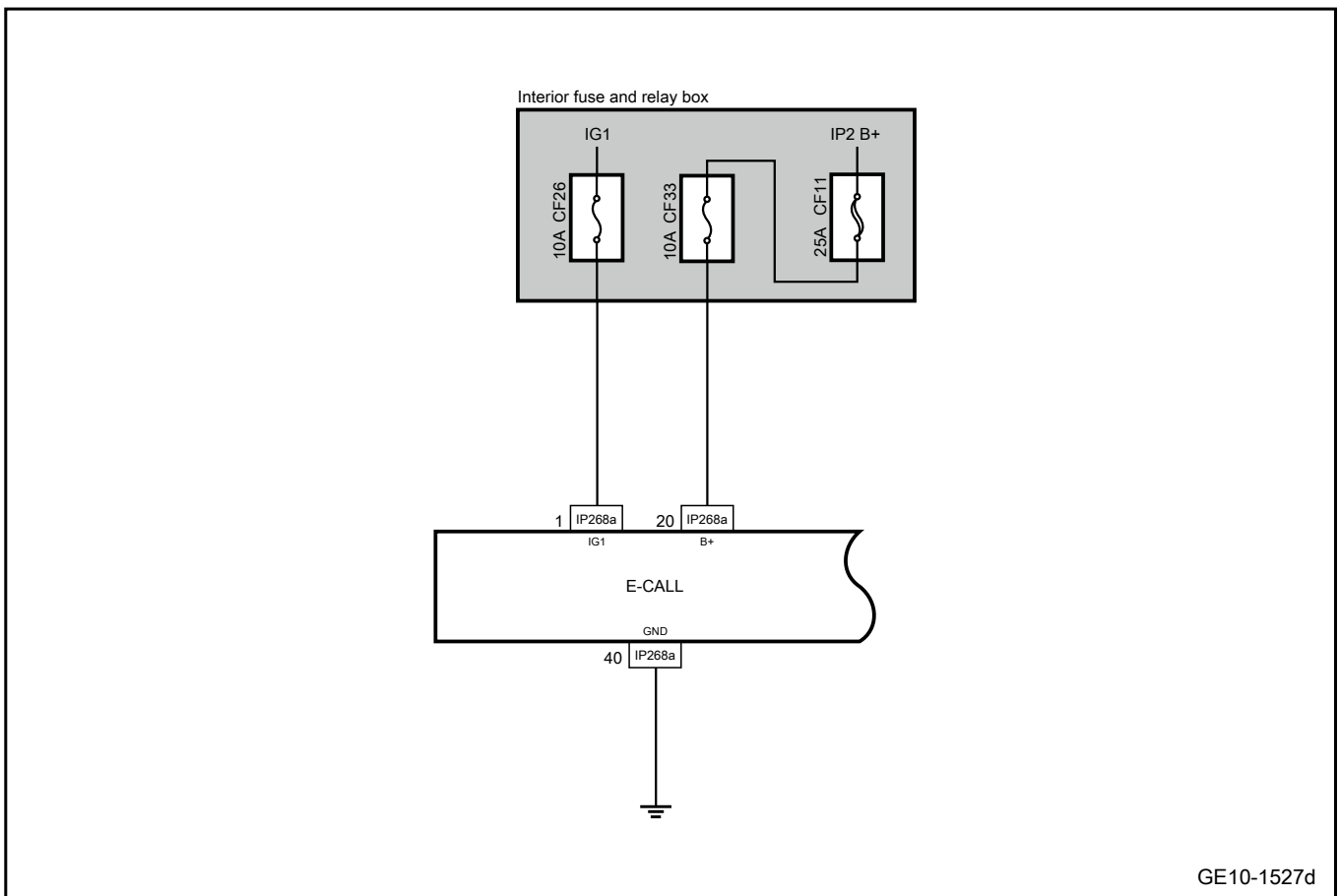
Diagnostic Trouble Code	Description
U300616	Voltage is too low
U300617	Voltage is too high

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Battery voltage $\leq 9V$ , and keep the voltage for at least 1s	1. Ignition status is IGN ON 2. 3 seconds after the ignition switch is turned on	1. Circuit 2. Fuse 3.E-CALL
U300617	Battery voltage $\geq 16V$ , and keep the voltage for at least 1s		

#### 3. Schematic circuit diagram:





4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the E-CALL harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** | Check fuses CF11, CF26, CF33 of E-CALL.

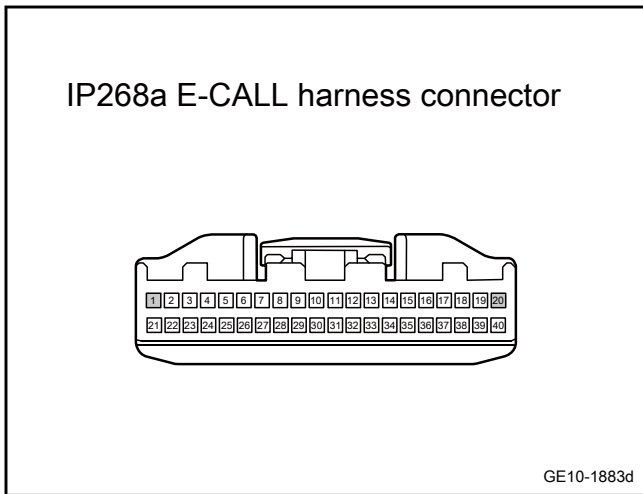
- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the fuse and check whether the fuse CF11 is blown.  
  
Rated fuse capacity: 25A
- C. Unplug the fuse and check whether the fuse CF26 is blowout.  
  
Rated fuse capacity: 10A
- D. Unplug the fuse and check whether the fuse CF33 is blowout.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the E-CALL power supply circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP268a(20)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

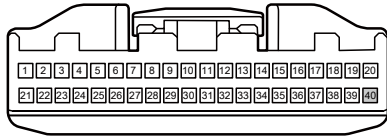
No

Repair or replace the harness.

Yes

**Step 5** | Check the E-CALL grounding circuit.

IP268a E-CALL harness connector



GE10-1884d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(40)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

**Step 7** Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

### 10.2.6.28 E-CALL communication fault

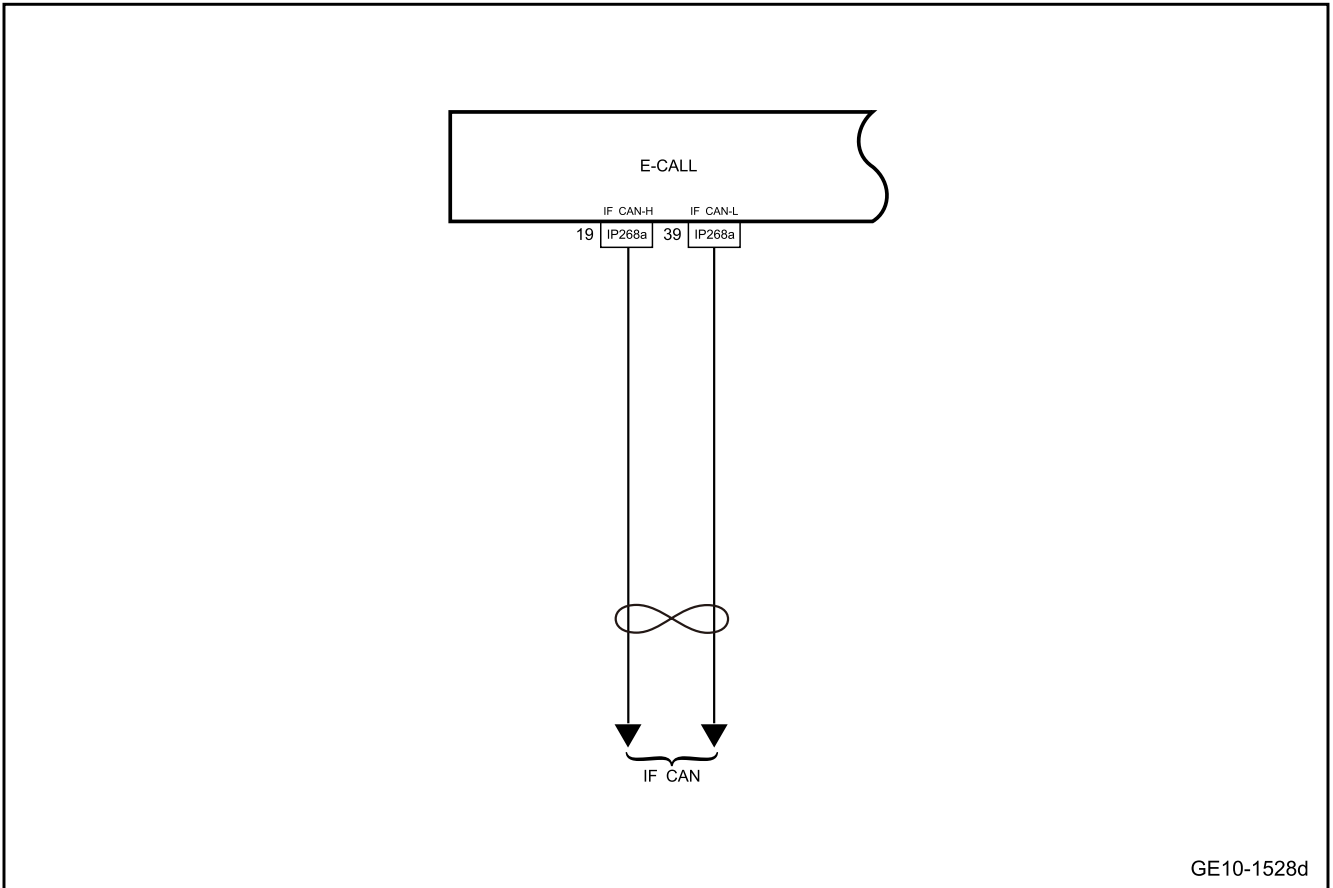
#### 1. DTC description:

Diagnostic Trouble Code	Description
U007300	Bus off fault
U015187	Communication with ACU is lost
B140231	WAN communication module fault

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	<ol style="list-style-type: none"> <li>1. The supply voltage of the CAN bus node is in the range of 9-16V.</li> <li>2. Bus disconnection is detected</li> <li>3. Ignition status is IGN ON</li> <li>4. 3 seconds after the ignition switch is turned on</li> </ol>	<ol style="list-style-type: none"> <li>1. Circuit</li> <li>2.E-CALL</li> <li>3. Diagnostic interface</li> </ol>
U015187	Lost communication with ACU (ID=0x380) 5T	<ol style="list-style-type: none"> <li>1. Power supply voltage of CAN bus node is between 9V and 16V</li> <li>2. The TDiagenable condition is met</li> <li>3.The bus disconnection is not detected, over 1000ms after the last bus shutdown recovery.</li> <li>4. Ignition status is Ignition ON.</li> <li>5.3s after ignition.</li> </ol>	
B140231	5. 3 seconds after ignition	<ol style="list-style-type: none"> <li>1. Not in the crank.</li> <li>2. 3s after KL15 is turned on.</li> <li>3. Voltage source is 9V-16V.</li> </ol>	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the E-CALL harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. Check the E-CALL communication network, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Replace E-CALL.
--------	-----------------

- A. Check whether the power supply and the grounding harness of control module CALL are normal. Refer to [E-CALL power supply fault](#)
- B. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 5	Reprogram and reset the E-CALL.
--------	---------------------------------

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

### 10.2.6.29 Internal fault of E-CALL

#### 1. DTC description:

DTC	Trouble description
B140076	SIM card not inserted
B140A16	Internal battery voltage is too low
B140A17	Internal battery voltage is too high
B140A1B	Internal battery is aging
B141051	VIN is not written in

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140076	An error occurred when eSIM was detected. Or it cannot be detected.	1. Not on the crank. 2. 3s after KL15 is opened. 3. The power supply voltage is between 9V-16V.	1.E-CALL 2. Circuit
B140A16	Set when the internal battery voltage is 2.7V for 10s.		
B140A17	Set when the internal battery voltage is higher than 5V for 10s.	1. Not on the crank. 2. 3s after KL15 is opened. 3. The power supply voltage is between 9V-17V.	
B140A1B	Set when the internal resistance of the battery is greater than or equal to the warning value.	1. Not on the crank. 2. 3s after KL15 is opened. 3. The power supply voltage is between 9V-18V.	
B141051	When it is detected that VIN is equal to all 20h.	1. Not on the crank. 2. 3s after KL15 is opened. 3. The power supply voltage is between 9V-16V.	

#### 3. Diagnosis steps

##### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the E-CALL harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace E-CALL.

- A. Check whether the power supply and the grounding harness of control module CALL are normal. Refer to [E-CALL power supply fault](#)
- B. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 5 Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Write controller data.

- A. Write controller data, refer to [write controller data](#)

Next Step



Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

### 10.2.6.30 Microphone circuit fault

#### 1. Trouble code description:

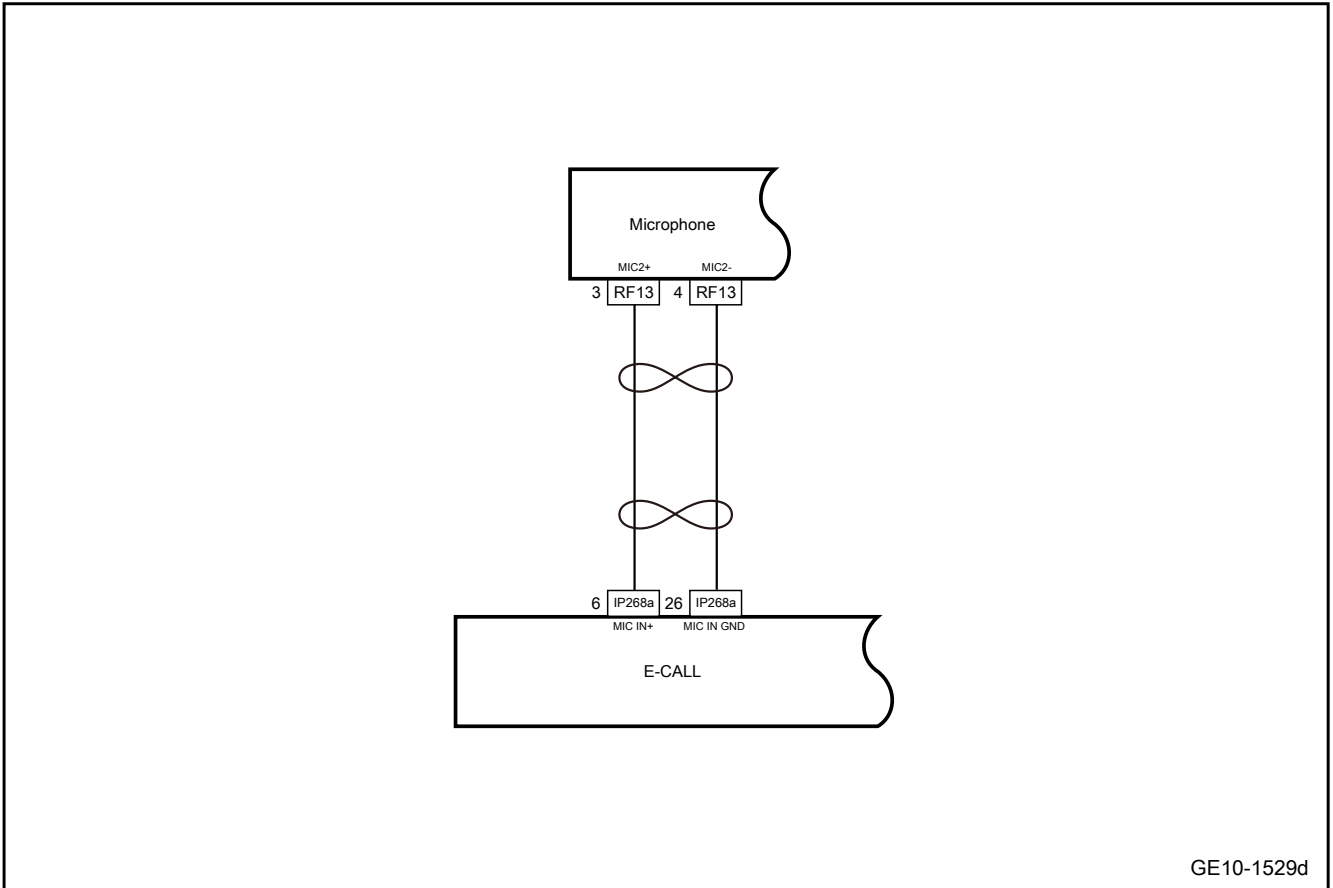
Diagnostic Trouble Code	Description
B140411	Microphone input is short-circuited to ground
B140412	The microphone input is short-circuited to the power supply
B140413	Microphone input open circuit
B140511	Microphone output short circuit (loudspeaker)
B140512	The microphone output is short-circuited to the power supply (loudspeaker)
B140513	Microphone output open circuit (loudspeaker)

#### 2. Trouble code setting and trouble location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140411	Set when it is detected that the microphone input is short-circuited to ground after IGN off/on.	1. Not on the crank 2. 3s after the ignition switch is turned on 3. Power supply voltage is between 9V-16V 4. Not a voice call 5. Non-remote starting mode	1. Circuit 2. Microphone 3.E-CALL
B140412	Set when it is detected that the microphone input is turned on after IGN off/on.		
B140413	Set when it is detected that the microphone input is turned on after IGN off/on.		
B140511	Set when it is detected that the microphone output is short-circuited to GND after IGN off/on.		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140512	Set when it is detected that the microphone output is turned on after IGN off/on.		
B140513			

3. Circuit schematic:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

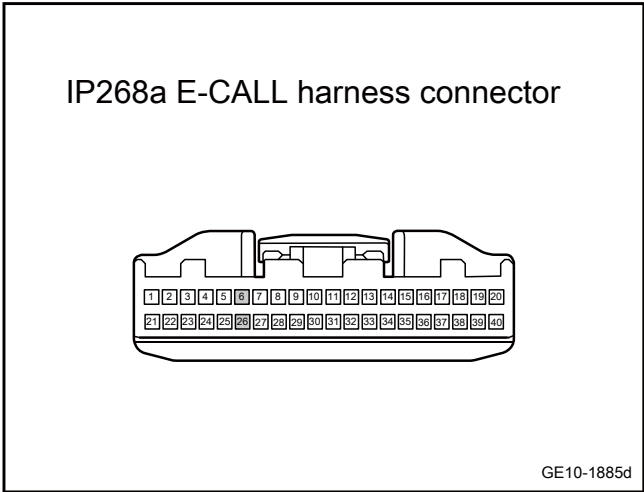
- A. Check the microphone harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

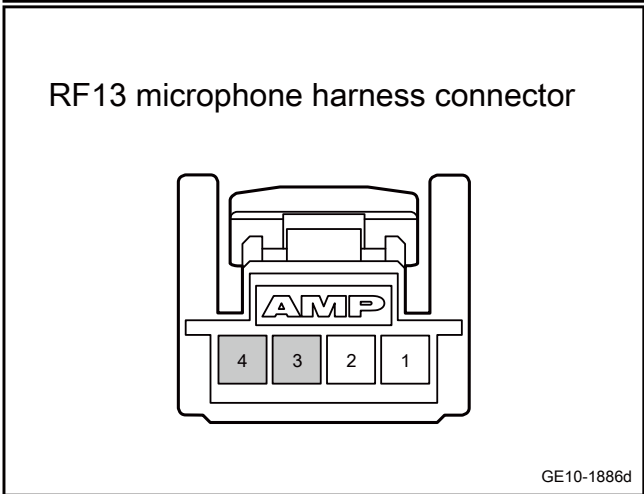
**Step 3** Check whether the circuit between the E-CALL and the microphone is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(6)	RF13(3)	Standard resistance: less than 1Ω
IP268a(26)	RF13(4)	

- E. Confirm whether the measured value meets the standard.



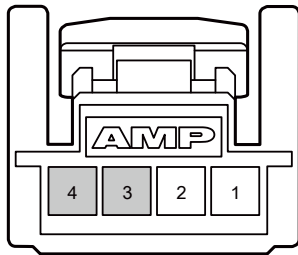
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the E-CALL and the microphone is short to power supply.

RF13 microphone harness connector



GE10-1887d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect microphone harness connector RF13.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF13(3)	Vehicle body is grounded.	Reference voltage: 0V
RF13(4)	Vehicle body is grounded.	

- F. Confirm whether the measured value meets the standard.

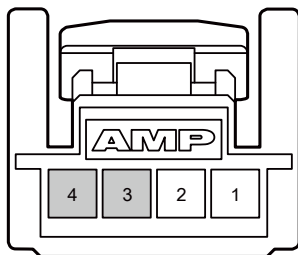
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the E-CALL and the microphone is short to ground.

RF13 microphone harness connector



GE10-1888d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF13(3)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
RF13(4)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the microphone.

- A. Replace the microphone. See [Replacement of Microphone](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 8 Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.2.6.31 Collision signal failure

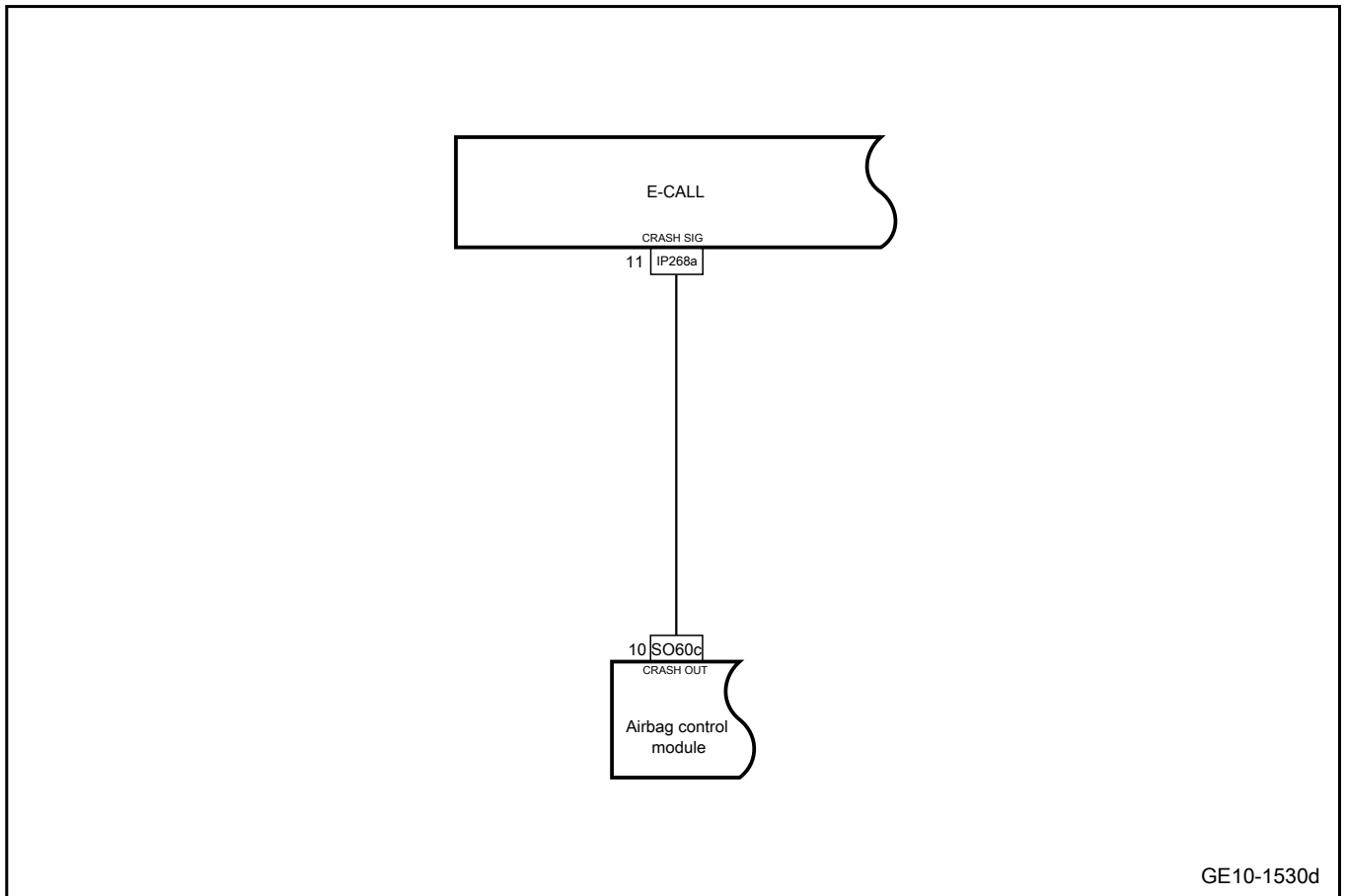
1. DTC description:

Diagnostic Trouble Code	Description
B140B11	Airbag signal wire is short-circuited to ground
B140B15	The airbag signal wire is shorted or open to the power supply

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140B11	When it is detected that the SRS airbag deployment signal value is always logic 0 for 3s.	1. Not on the crank. 2. 3s after KL15 is opened. 3. The power supply voltage is between 9V-16V.	1. Circuit 2. Supplementary restraint system 3.E-CALL
B140B15	When the SRS airbag deployment signal is detected, the value is always logic 1 and lasts for 3s.		

3. Schematic circuit diagram:



GE10-1530d

4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

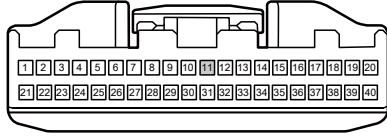
No

Repair or replace the faulty part.

Yes

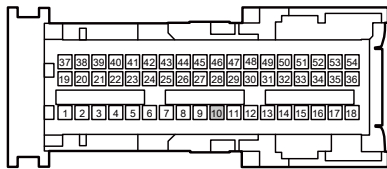
Step 3	Check whether the harness between airbag control module and E-CALL is open.
--------	---

IP268a E-CALL harness connector



GE10-1889d

SO60c airbag control module harness connector A



GE10-1890d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(11)	SO60c(10)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

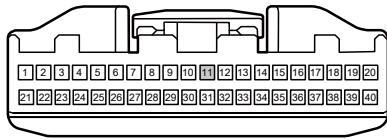
No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between airbag control module and E-CALL is short to power supply.

IP268a E-CALL harness connector



GE10-1891d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(11)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

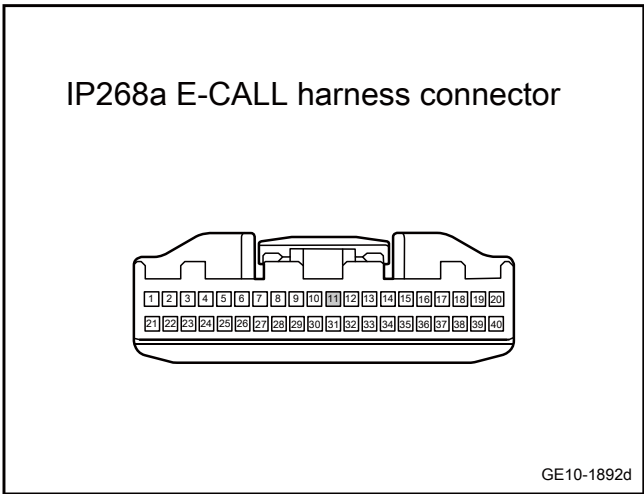
No

Repair or replace the harness.



Yes

**Step 5** Check whether the harness between airbag control module and E-CALL is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(11)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the airbag control module.

- A. Replace the airbag control module. Refer to [Replacement of airbag control module](#)

Next Step

**Step 7** Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 9	Reprogram and reset the E-CALL.
--------	---------------------------------

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 10.2.6.32 E-CALL button failure (with electric sunshade)

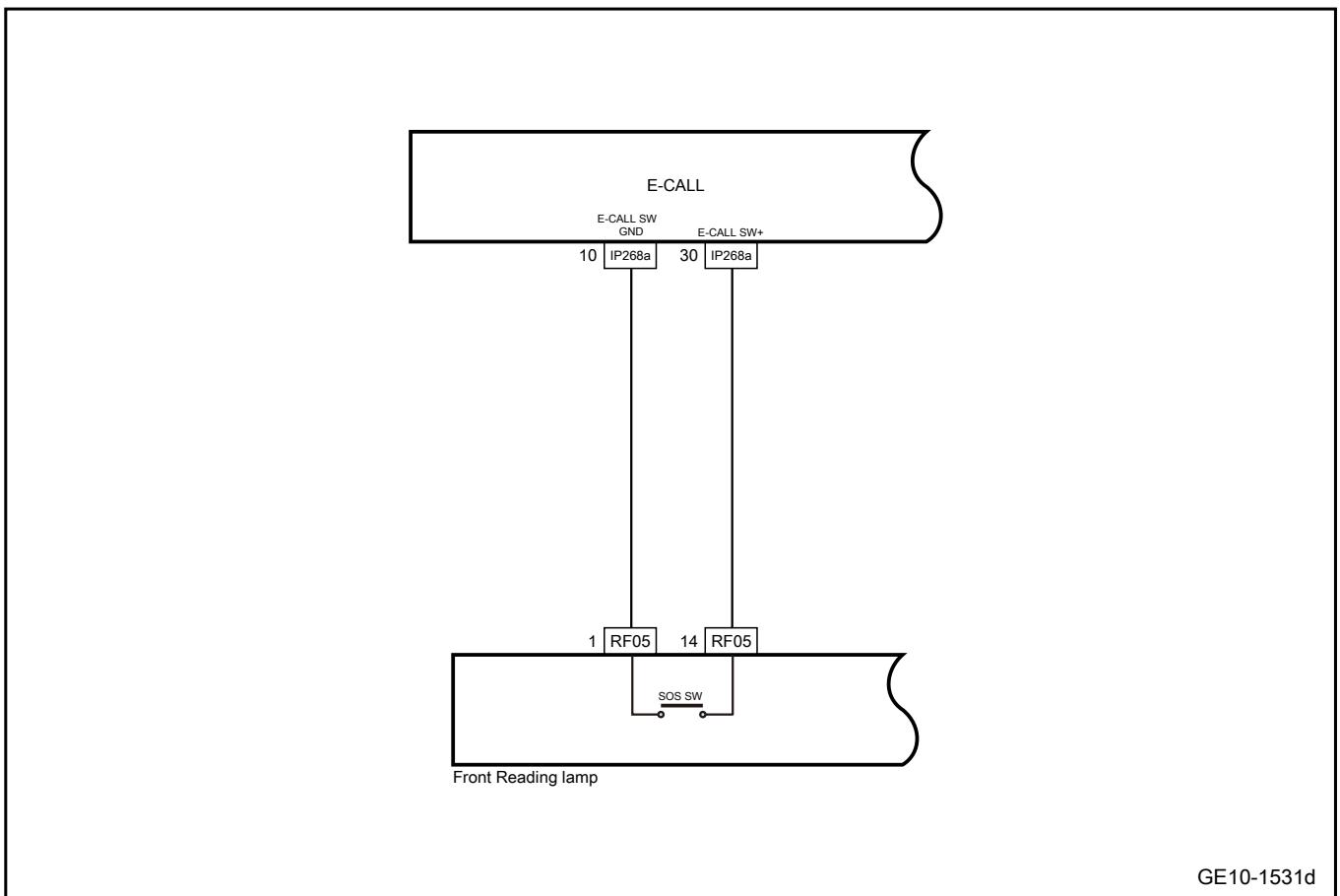
#### 1. DTC description:

Diagnostic Trouble Code	Description
B140771	E-Call key stuck

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140771	Set when the detected E-Call button is pressed continuously for 45 seconds.	1. Not on the crank. 2. 3s after the ignition switch is turned on. 3. The power supply voltage is between 9V-16V.	1. Circuit 2. Front reading lamp 3.E-CALL

#### 3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

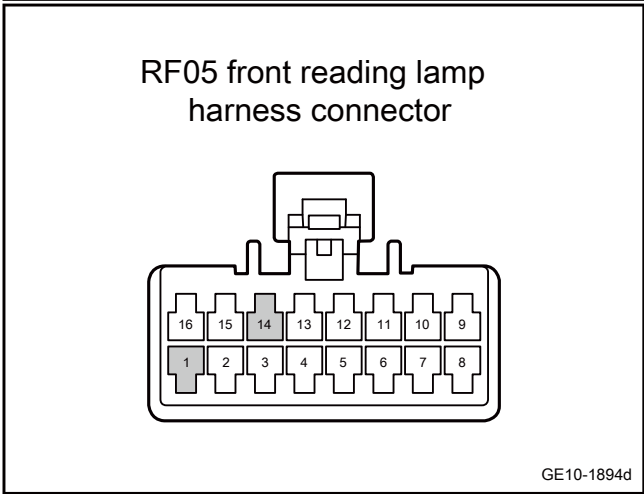
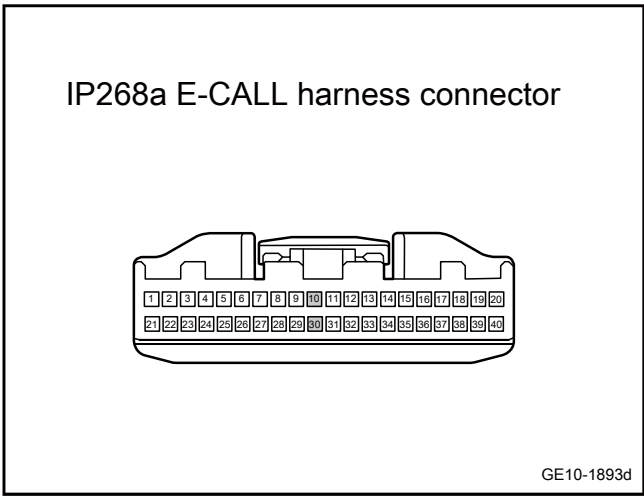
- A. Check the front reading lamp, E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the front reading lamp and E-CALL is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(10)	RF05(1)	Standard resistance: less than 1Ω
IP268a(30)	RF05(14)	

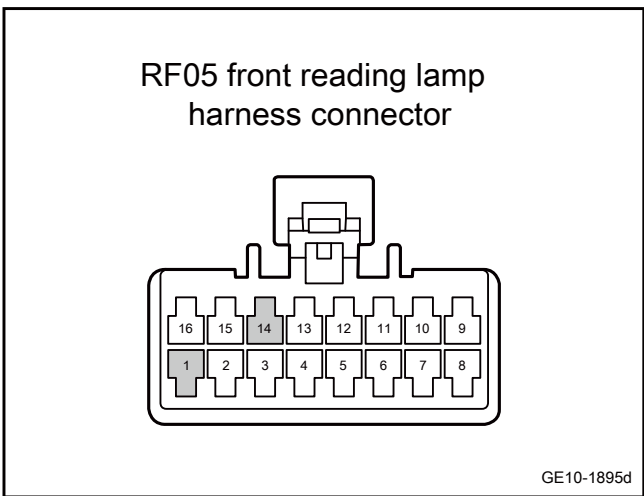
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the front reading lamp and E-CALL is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF05(1)	Vehicle body is grounded.	Standard voltage: 0V
RF05(14)		

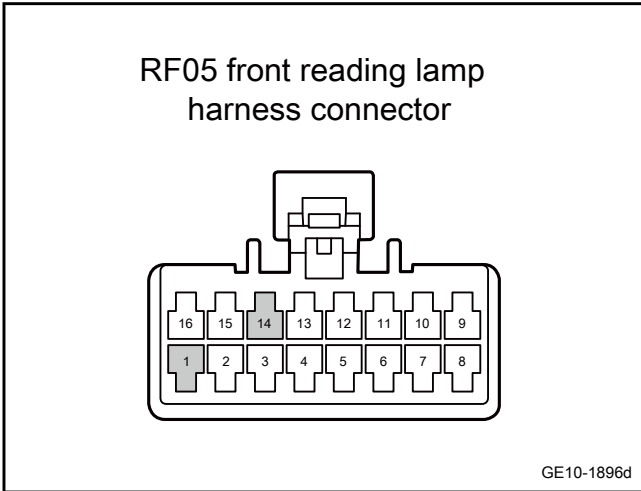
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the front reading lamp and E-CALL is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF05(1)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
RF05(14)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the front reading lamp.

- A. Replace the front reading lamp. Refer to [replacement of front reading lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

**Step 8** Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.2.6.33 E-CALL button failure (without electric sunshade)

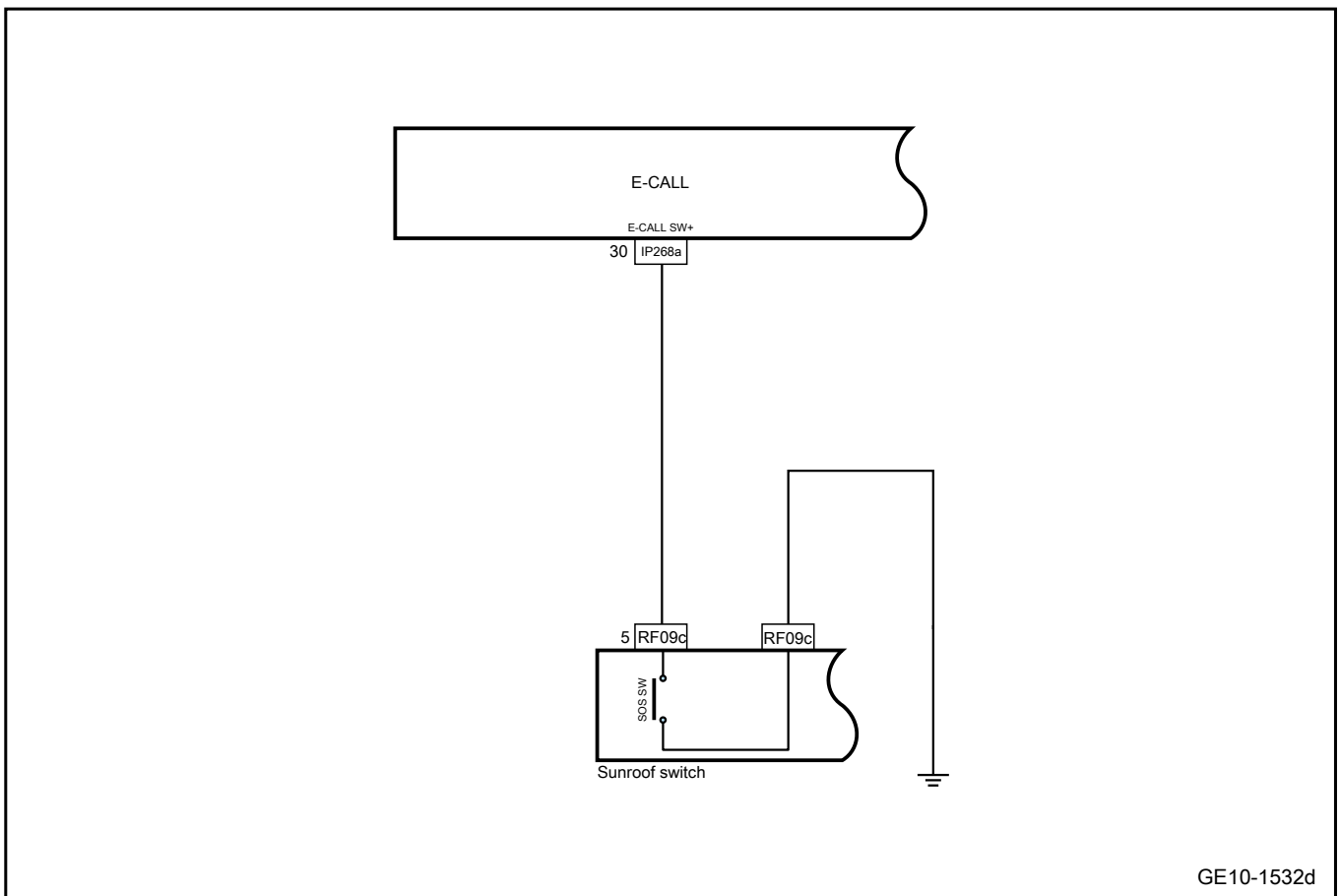
1. DTC description:

Diagnostic Trouble Code	Description
B140771	E-Call key stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140771	Set when the detected E-Call button is pressed continuously for 45 seconds.	1. Not on the crank. 2. 3s after the ignition switch is turned on. 3. The power supply voltage is between 9V-16V.	1. Circuit 2. Sunroof switch 3.E-CALL

3. Schematic circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

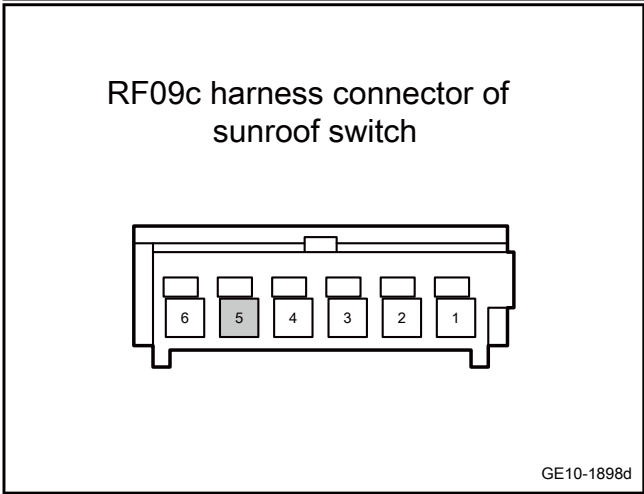
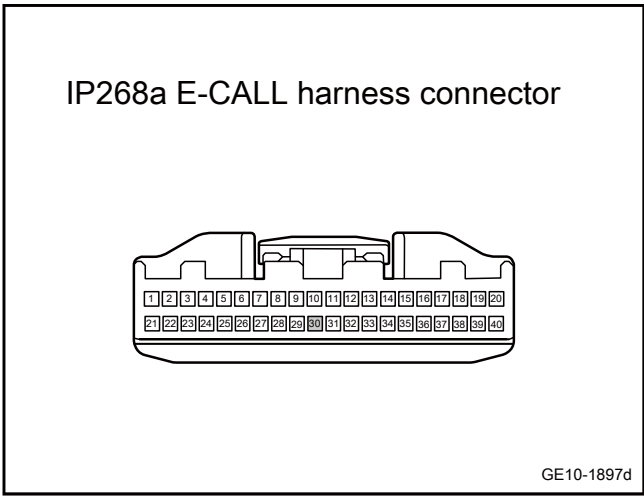
- A. Check the sunroof switch, E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the sunroof switch and E-CALL is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(30)	RF09c(5)	Standard resistance: less than 1Ω

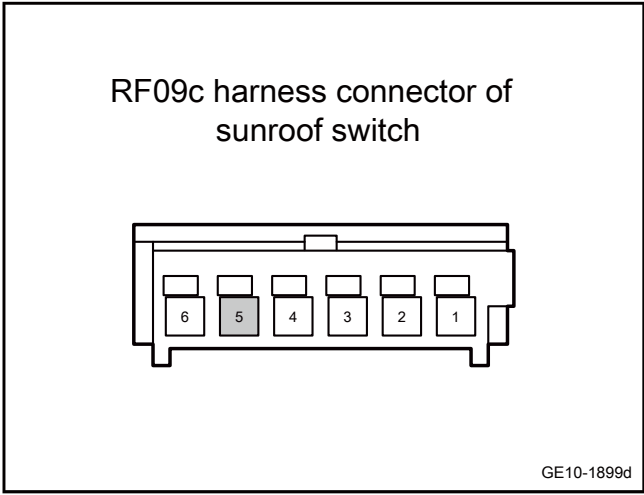
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the sunroof switch and E-CALL is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(5)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

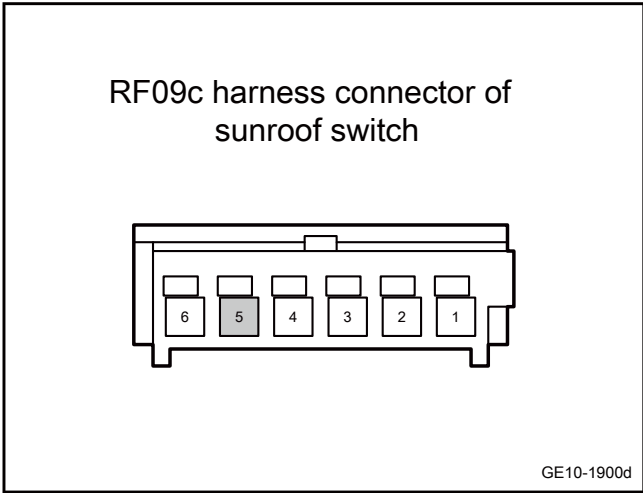


No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the sunroof switch and E-CALL is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(5)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

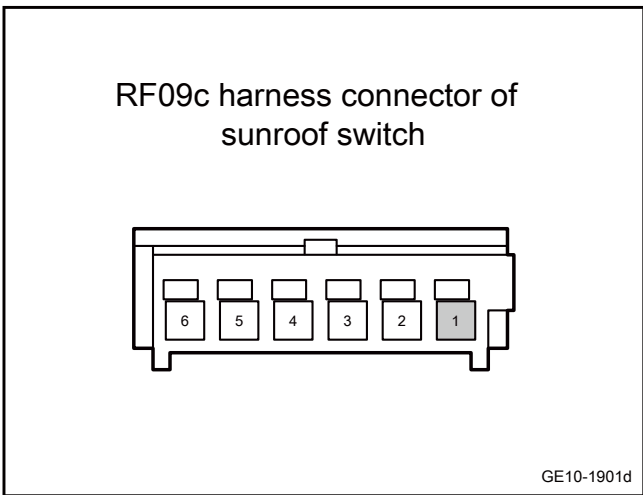
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the grounding harness of the sunroof switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the sunroof switch.

- A. Replace the sunroof switch. Refer to [Replacement of sunroof switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 9 Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

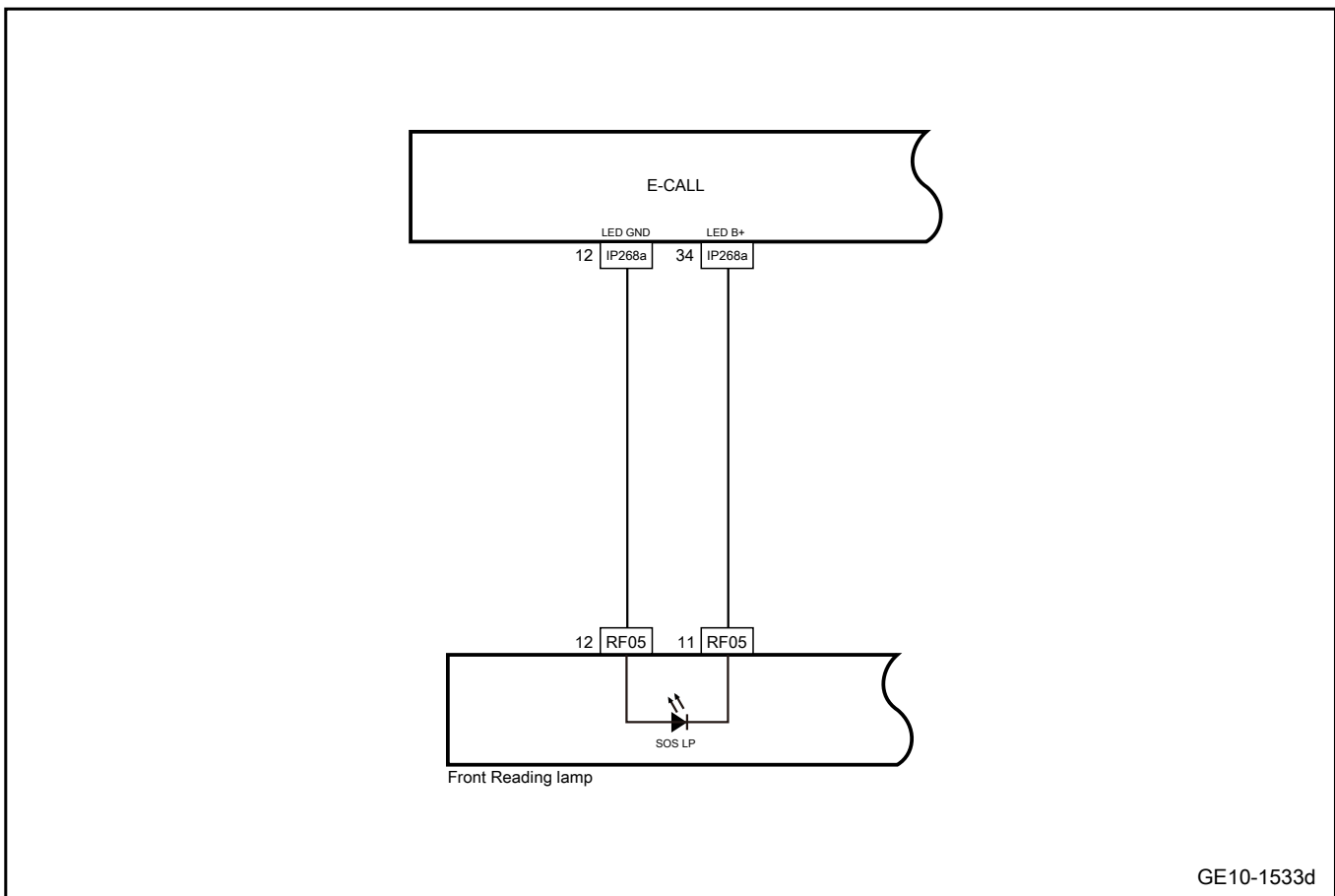
Diagnose according to the output trouble code.

No

Step 11 System is normal.

### 10.2.6.34 E-CALL indicator lamp failure (with electric sunshade)

1. Schematic circuit diagram:



GE10-1533d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the front reading lamp, E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

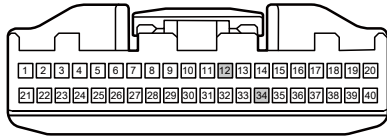
No

Repair or replace the faulty part.

Yes

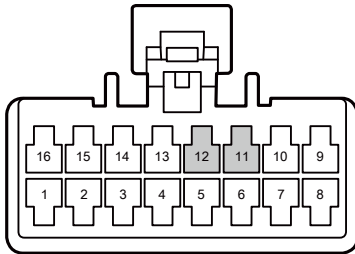
Step 2	Check whether the circuit between the front reading lamp and E-CALL is open.
--------	--

IP268a E-CALL harness connector



GE10-1902d

RF05 front reading lamp harness connector



GE10-1903d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(34)	RF05(11)	Standard resistance: less than 1Ω
IP268a(12)	RF05(12)	

- E. Confirm whether the measured value meets the standard.

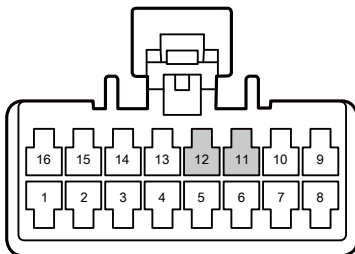
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the front reading lamp and E-CALL is short to power supply.

RF05 front reading lamp harness connector



GE10-1904d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF05(11)	Vehicle body is grounded.	Standard voltage: 0V
RF05(12)		

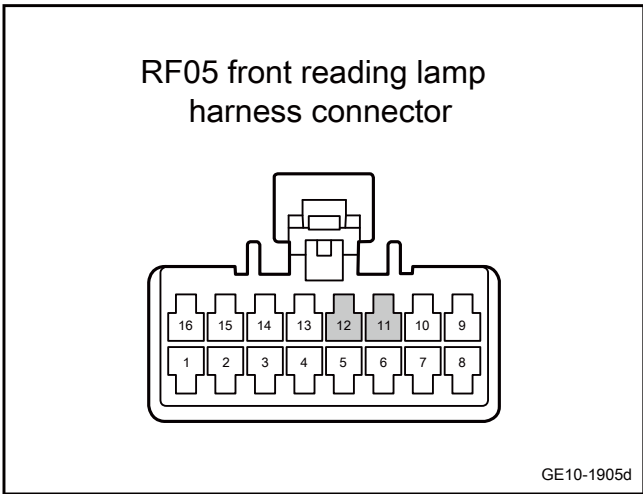
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the front reading lamp and E-CALL is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF05(11)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
RF05(12)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the front reading lamp.

- A. Replace the front reading lamp. Refer to [replacement of front reading lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

**Step 7** Reprogram and reset the E-CALL.

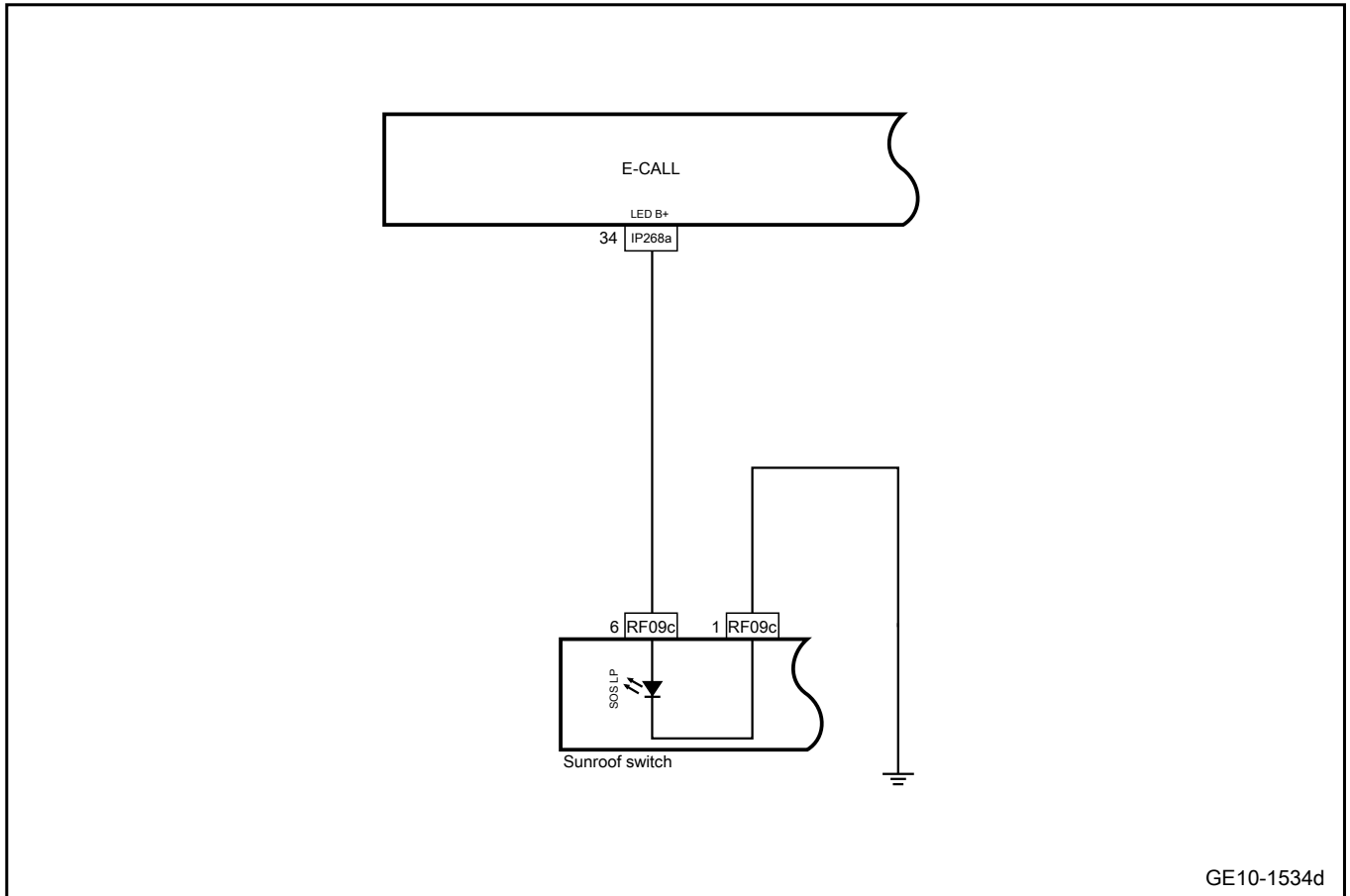
- A. Reprogram and reset the E-CALL. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 | System is normal.

10.2.6.35 E-CALL indicator lamp failure (without electric sunshade)

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1 | Primary check.

- A. Check the sunroof switch, E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

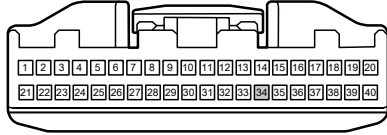
No

Repair or replace the faulty part.

Yes

Step 2 | Check whether the circuit between the sunroof switch and E-CALL is open.

IP268a E-CALL harness connector



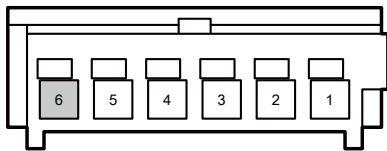
GE10-1911d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP268a(34)	RF09c(6)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

RF09c harness connector of sunroof switch



GE10-1912d

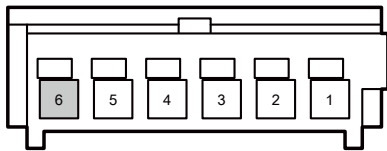
No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the sunroof switch and E-CALL is short to power supply.

RF09c harness connector of sunroof switch



GE10-1913d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(6)	Vehicle body is grounded.	Standard voltage: 0V

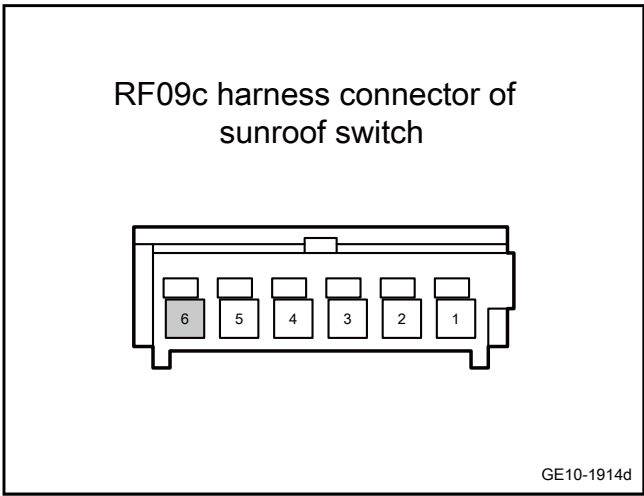
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the sunroof switch and E-CALL is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(6)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

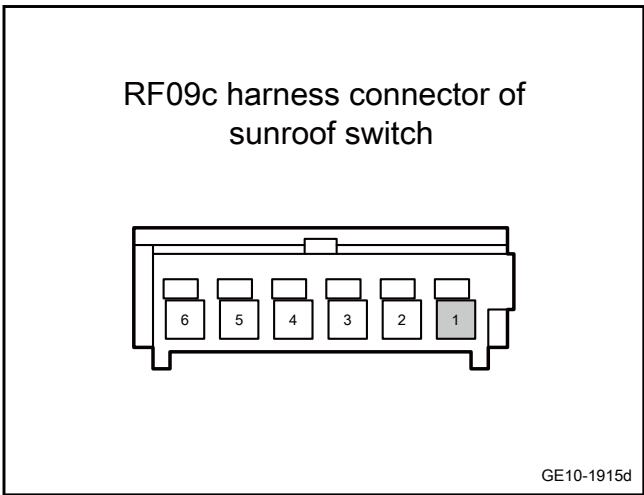
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding harness of the sunroof switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Measure the resistance between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
RF09c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the sunroof switch.



- A. Replace the sunroof switch. Refer to [Replacement of sunroof switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace E-CALL.
--------	-----------------

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

Step 8	Reprogram and reset the E-CALL.
--------	---------------------------------

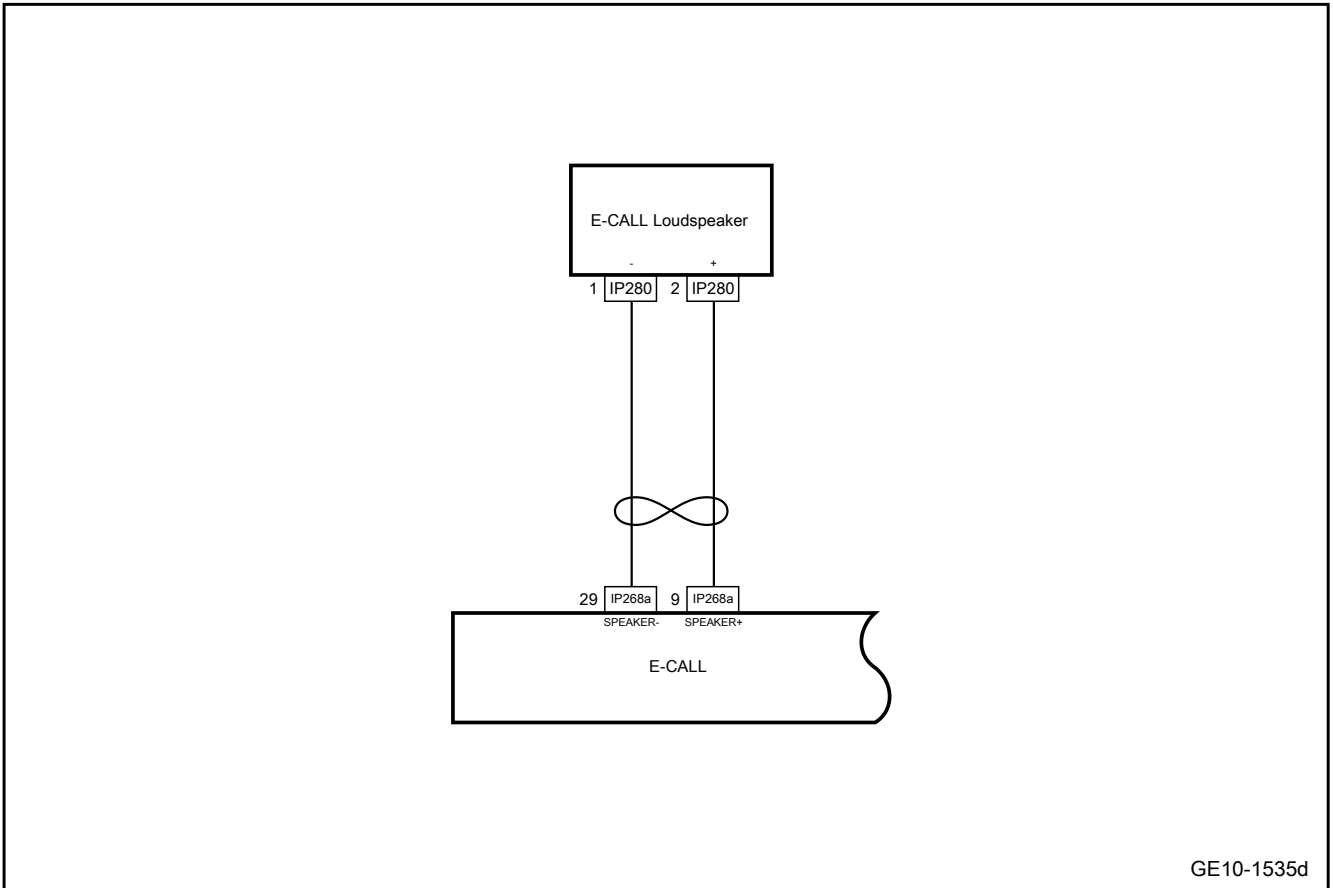
- A. Reprogram and reset the E-CALL. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 10.2.6.36 E-CALL loudspeaker failure

1. Circuit schematic:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the E-CALL loudspeaker harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

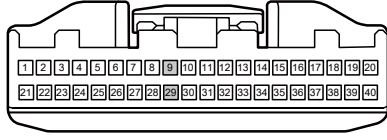
No

Repair or replace the faulty part.

Yes

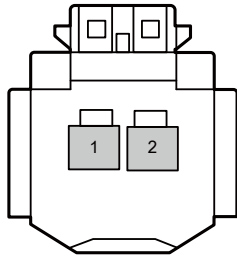
Step 2	Check whether the circuit between E-CALL and E-CALL loudspeaker is open.
--------	--

IP268a E-CALL harness connector



GE10-1920d

IP280 E-CALL Loudspeaker Harness Connector



GE10-1921d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect the CALL loudspeaker harness connector IP280.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(29)	IP280(1)	Standard resistance: less than 1Ω
IP268a(9)	IP280(2)	

- E. Confirm whether the measured value meets the standard.

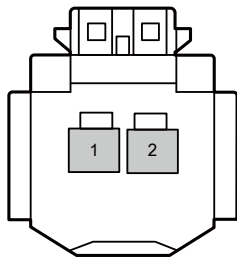
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between E-CALL and E-CALL loudspeaker is short to power supply.

IP280 E-CALL Loudspeaker Harness Connector



GE10-1922d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect the CALL loudspeaker harness connector IP280.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP280(1)	Vehicle body is grounded.	Standard voltage: 0V
IP280(2)		

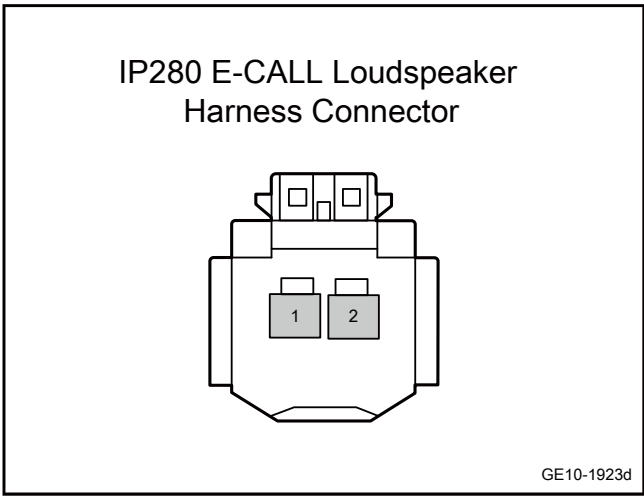
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between E-CALL and E-CALL loudspeaker is short to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect the CALL loudspeaker harness connector IP280.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP280(1)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
IP280(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Replace the E-CALL speaker.

- A. Replace the E-CALL speaker. See [Replacement of E-CALL Loudspeaker](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 6** Replace E-CALL.

- A. Replace E-CALL. Refer to [Replacement of E-CALL](#)

Next Step

**Step 7** Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8	System is normal.
--------	-------------------

## 10.2.7 Removal and installation

### 10.2.7.1 Replacement of front door bass loudspeaker

#### Removal procedure

##### Caution

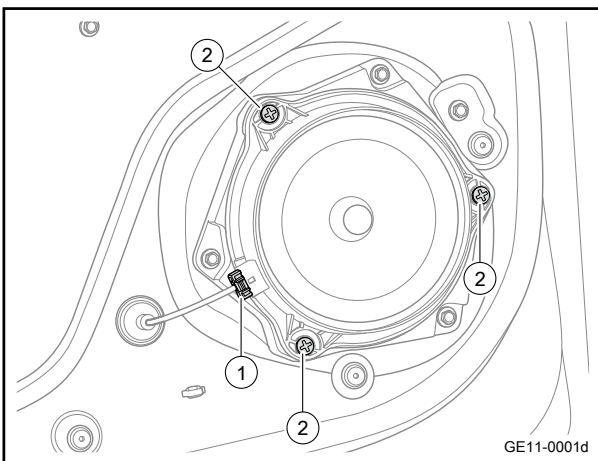
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

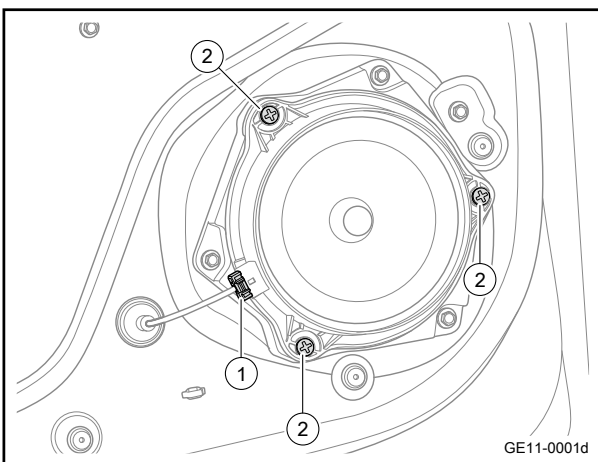
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 3 Disconnect bass loudspeaker harness connector 1 of front door.
- 4 Remove the 3 fixing screws 2 of the front door bass loudspeaker.
- 5 Remove the front door bass loudspeaker.



#### Installation procedure

- 1 Move the front door bass loudspeaker to the installation position.
- 2 Install the three fixing screws 2 of the front door bass loudspeaker.  
Torque: 1.5N·m (metric) 1.0lb-ft (imperial system)
- 3 Connect bass loudspeaker harness connector 1 of front door.



- 4 Install the FL door interior trim panel assembly.
- 5 Connect the negative cable of battery.

### 10.2.7.2 Replacement of the rear door bass loudspeaker

#### Removal procedure

##### Caution

The disassembly and assembly methods are the same for the left and right sides.

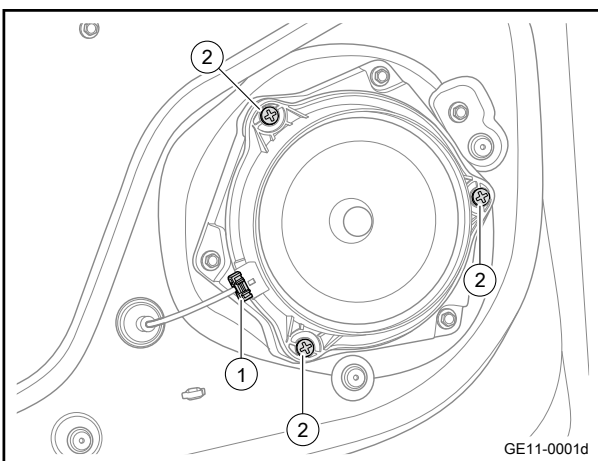
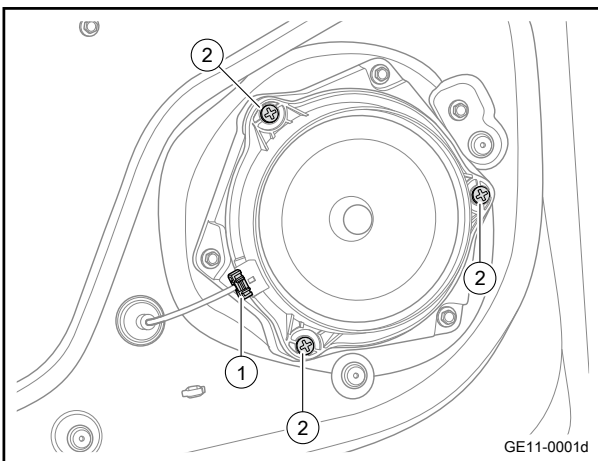
The noble model is equipped with full-range speakers here, and the disassembly method is the same as that of the bass loudspeaker.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Disconnect bass loudspeaker harness connector 1 of rear door.
- 4 Remove the 3 fixing screws 2 of the rear door bass loudspeaker.
- 5 Remove the subwoofer.



#### Installation procedure

- 1 Move the rear door bass loudspeaker to the installation position.
- 2 Install the 3 fixing screws 2 of the rear door bass loudspeaker.  
Torque: 1.5N·m (metric) 1.0lb·ft (imperial system)
- 3 Connect bass loudspeaker harness connector 1 of rear door.

- 4 Install the RL door interior trim panel assembly.
- 5 Connect the negative cable of battery.

### 10.2.7.3 Replacement of front tweeter

#### Removal procedure

##### Caution

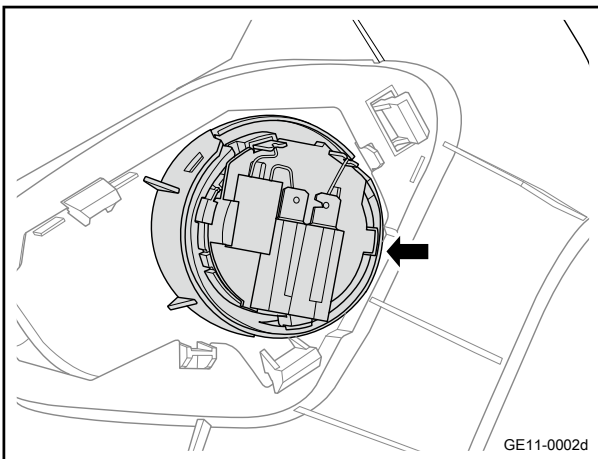
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

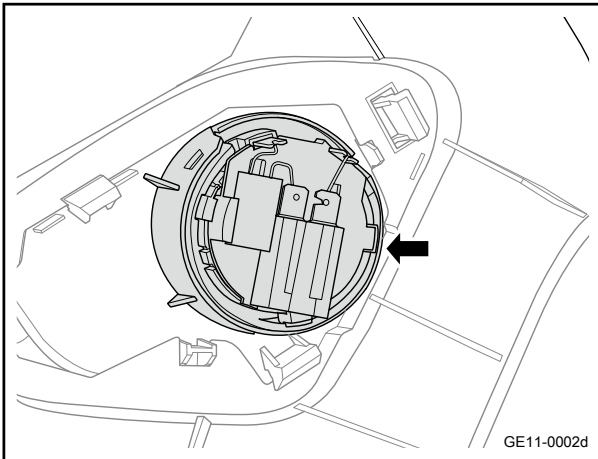
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the upper trim panel assembly on the left A pillar. Refer to [Replacement of A-pillar upper trim panel assembly](#)
- 3 Pry off the front tweeter.



#### Installation procedure





- 1 Install the front tweeter.

- 2 Install the left A-pillar upper trim panel assembly.
- 3 Connect the negative cable of battery.

#### 10.2.7.4 Replacement of rear tweeter

##### Removal procedure

##### Caution

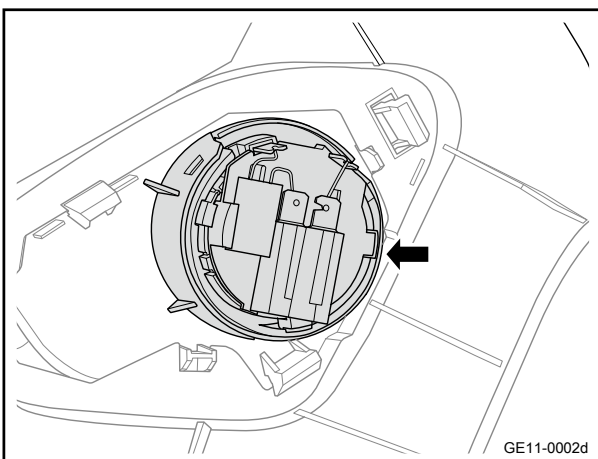
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

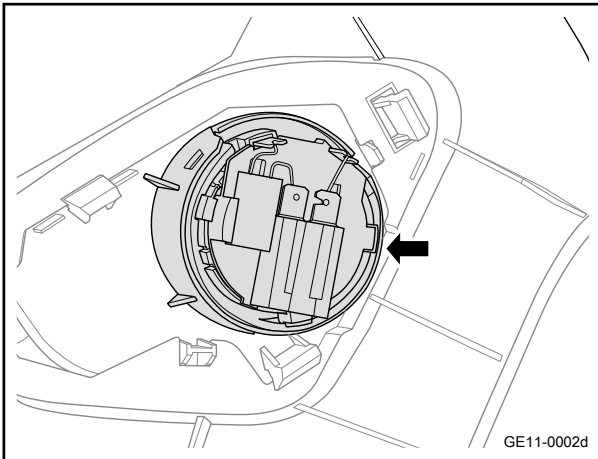
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the interior trim panel of the left rear door. See [Replacement of the left rear door trim panel](#)
- 3 Pry off the rear tweeter.



##### Installation procedure



- 1 Install the rear tweeter.

- 2 Install the RL door interior trim panel.
- 3 Connect the negative cable of battery.

### 10.2.7.5 Replacement of vehicle-mounted infotainment control unit

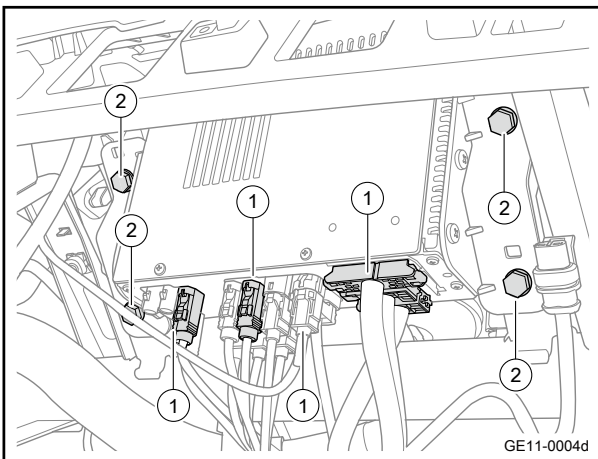
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

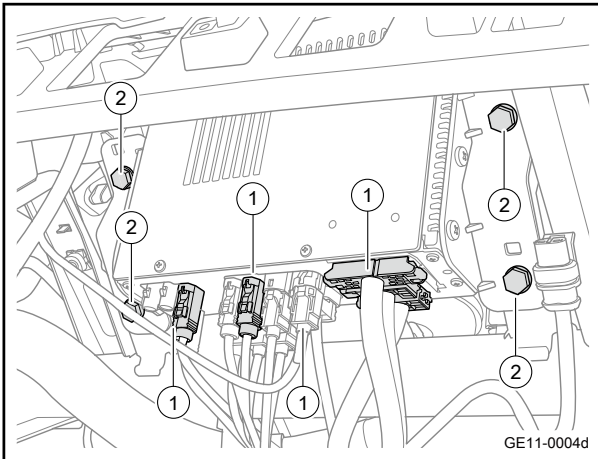
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the lower right guard plate sub-assembly of the instrument panel. See [Replacement of the lower right guard plate sub-assembly of the instrument panel](#)
- 3 Disconnect the harness connector 1 of the vehicle-mounted infotainment control unit.
- 4 Remove the 4 fixing bolts 2 of the in-vehicle infotainment host.
- 5 Remove the vehicle-mounted infotainment control unit.



#### Installation procedure



- 1 Move the in-vehicle infotainment host to the installation location.
- 2 Install 4 fixing bolts 2 of the in-vehicle infotainment host. Torque: 10N·m (metric) 7.4lb·ft (imperial system)
- 3 Connect the harness connector 1 of the vehicle-mounted infotainment control unit.

- 4 Install the lower right guard plate sub-assembly of the instrument panel.
- 5 Connect the negative cable of battery.

### 10.2.7.6 Replacement of on-board infotainment display screen

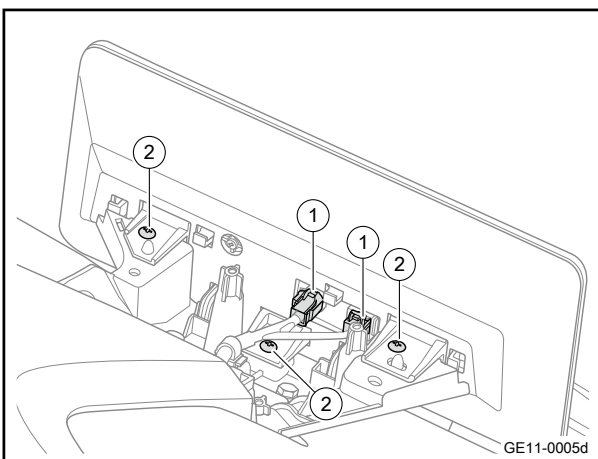
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

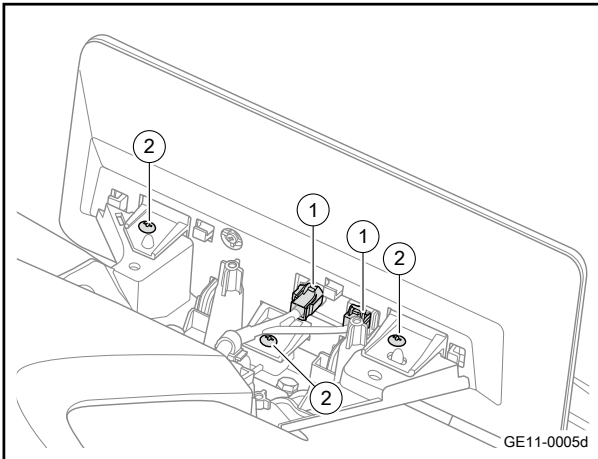
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the mounting bracket cover plate of the central console screen. Refer to [Placement of the mounting bracket cover plate of the center console screen](#)
- 3 Disconnect in-vehicle infotainment display wire harness connector 1.
- 4 Remove the 3 fixing screws 2 of the vehicle-mounted information entertainment display screen.
- 5 Remove the vehicle-mounted information entertainment display screen.



#### Installation procedure



- 1 Move the in-vehicle infotainment display to the installation location.
- 2 Install the 3 fixing screws 2 of the vehicle-mounted information entertainment display screen.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Connect the vehicle-mounted information entertainment display screen harness connector 1.

- 4 Install the mounting bracket cover plate of the central console screen.
- 5 Connect the negative cable of battery.

### 10.2.7.7 Replacement of antenna amplifier assembly

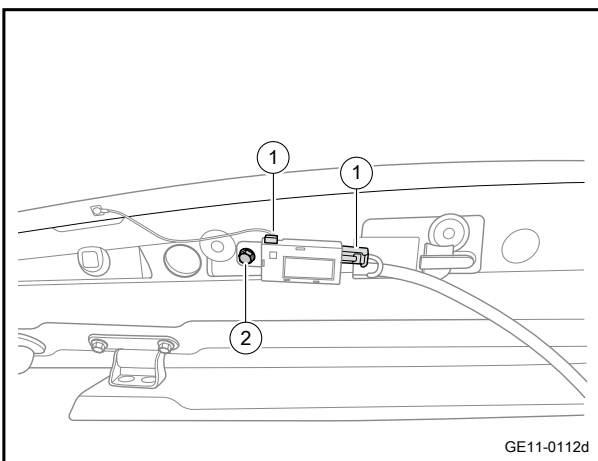
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

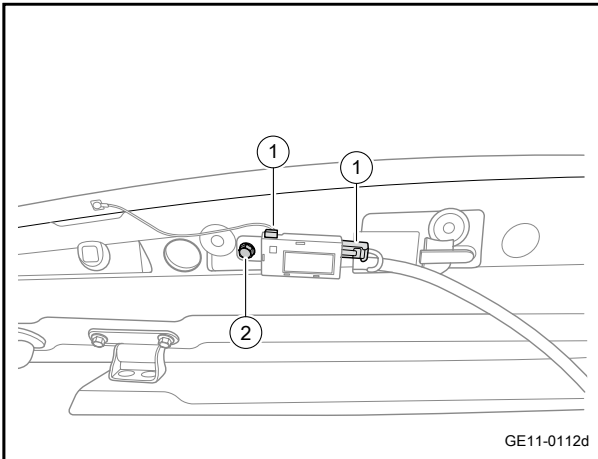
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 3 Remove the antenna amplifier assembly harness connector 1.
- 4 Remove 1 fixing bolt 2 of the antenna amplifier assembly.
- 5 Remove the antenna amplifier assembly.



#### Installation procedure



- 1 Move the antenna amplifier assembly to the installation location.
- 2 Install 1 fixing bolt 2 of the antenna amplifier assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Connect harness connector 1 of antenna amplifier assembly.

- 4 Install the middle upper interior trim panel assembly of the backdoor.
- 5 Connect the negative cable of battery.

### 10.2.7.8 Replacement of rear USB box

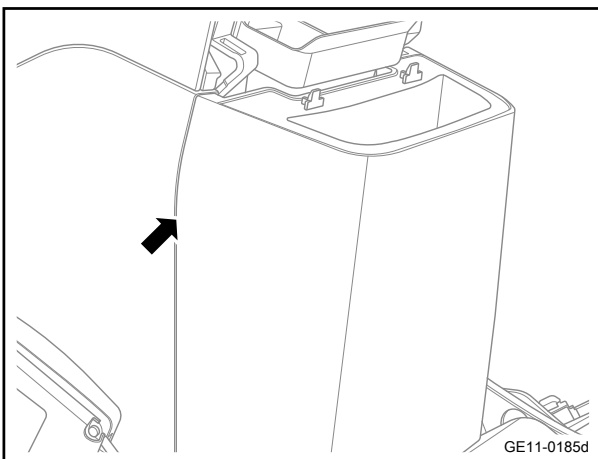
#### Removal procedure

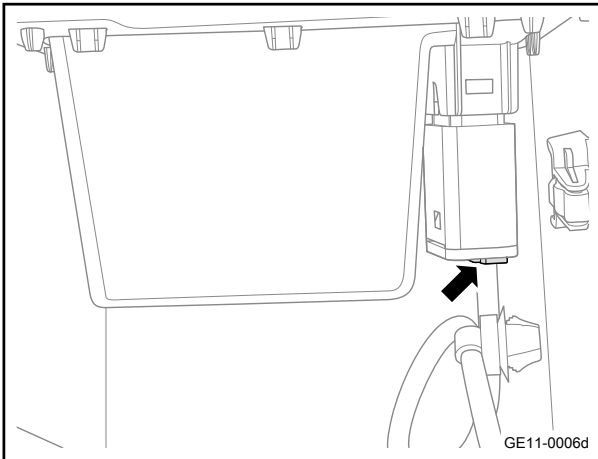
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

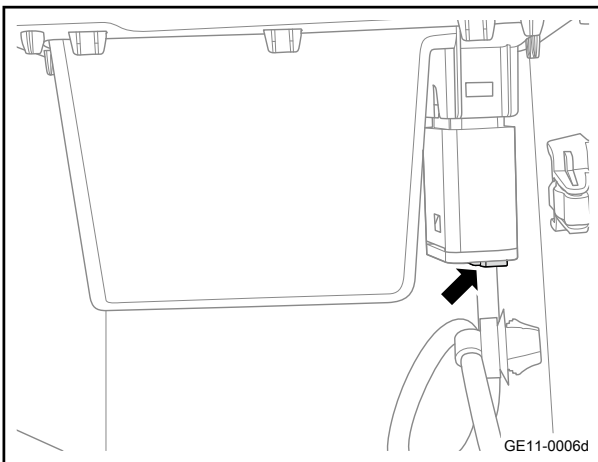
- 2 Remove the rear panel assembly of the auxiliary fascia console. See [Replacement of the rear panel assembly of the auxiliary instrument](#)
- 3 Pry off the rear glove box cover plate assembly at the rear of the auxiliary fascia console.



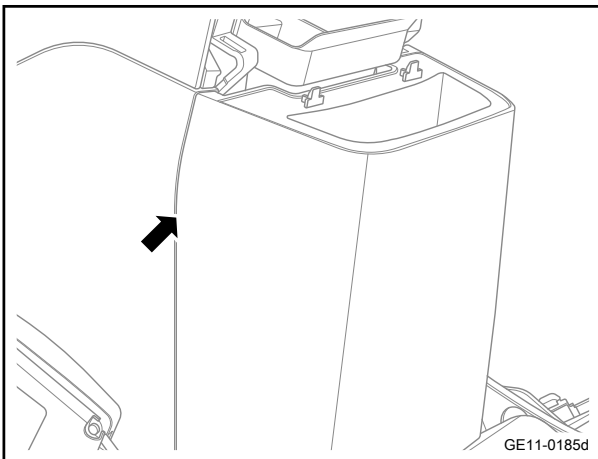


- 4 Disconnect the rear USB box harness connector.
- 5 Remove the rear USB box.

#### Installation procedure



- 1 Move the rear USB box to the installation position.
- 2 Connect the rear USB box harness connector.



- 3 Install the rear glove box cover plate assembly at the rear of the auxiliary fascia console.

- 4 Install the rear panel assembly of the auxiliary fascia console.
- 5 Connect the negative cable of battery.

#### 10.2.7.9 Replacement of wireless charging module

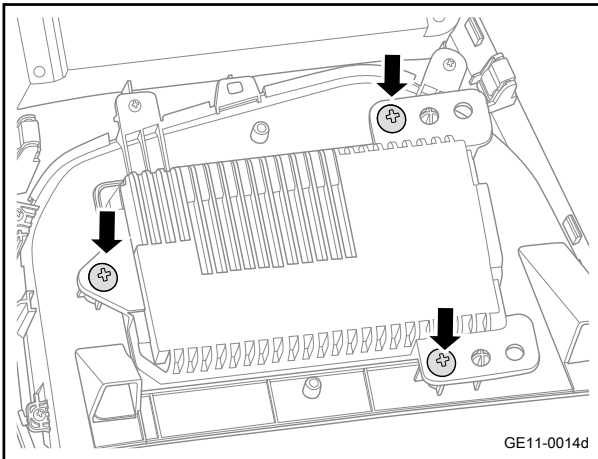
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

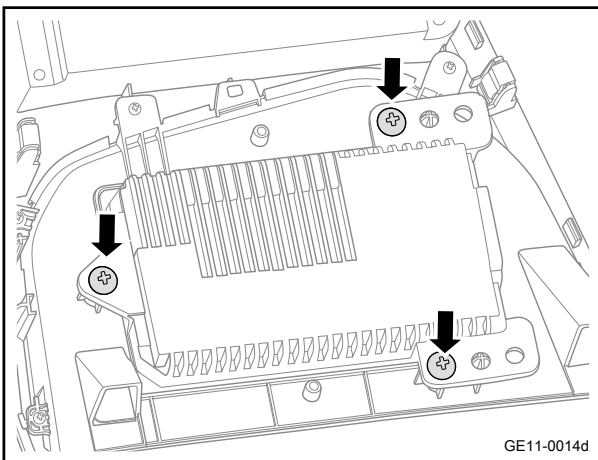
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 3 Remove the 3 fixing screws of the wireless charging module.
- 4 Remove the wireless charging module.



#### Installation procedure

- 1 Move the wireless charging module to the installation location.
- 2 Install the 3 fixing screws of the wireless charging module.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)



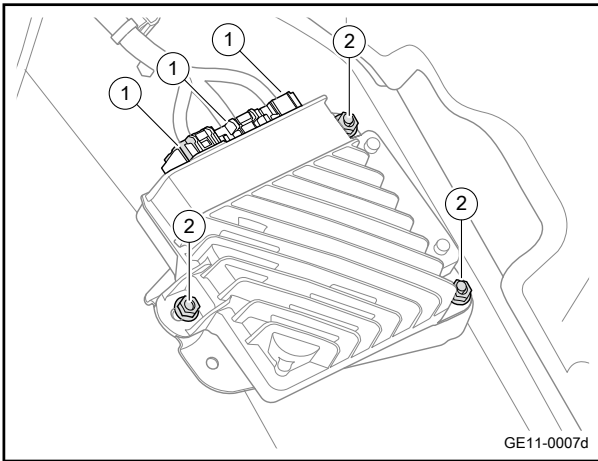
S

- 3 Install the auxiliary instrument switch pack.
- 4 Connect the negative cable of battery.

### 10.2.7.10 Replacement of vehicle audio amplifier

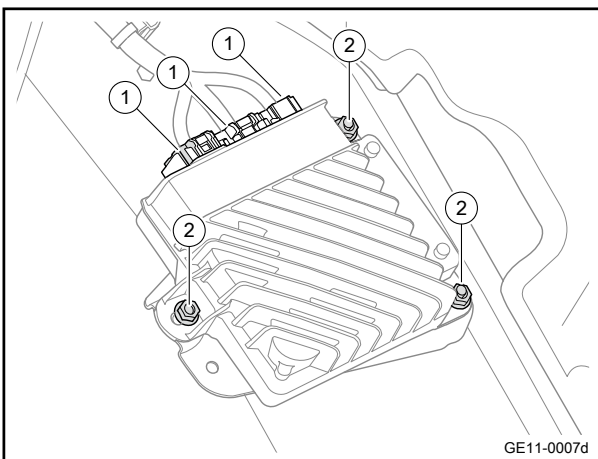
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the luggage compartment carpet assembly. See [Replacement of luggage compartment carpet assembly](#)
  - 3 Remove the right trim panel assembly of the luggage compartment. See [Replacement of left trim panel assembly of the luggage compartment](#)
  - 4 Remove the right mounting liner plate of luggage compartment carpet. See [Replacement of left mounting liner plate of luggage compartment carpet](#)
  - 5 Disconnect audio amplifier wiring harness connector 1.
  - 6 Remove the 3 fixing nuts 2 of the audio amplifier.
  - 7 Remove the audio amplifier.



#### Installation procedure

- 1 Move the audio amplifier to the installation location.
  - 2 Install 3 fixing nuts 2 for audio amplifier.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
  - 3 Connect the audio amplifier wiring harness connector 1.
- 4 Install the right mounting liner plate of the luggage compartment carpet.
  - 5 Install the right trim panel assembly of the luggage compartment.





- 6 Install the luggage compartment carpet assembly.
- 7 Connect the negative cable of battery.

### 10.2.7.11 Subwoofer replacement

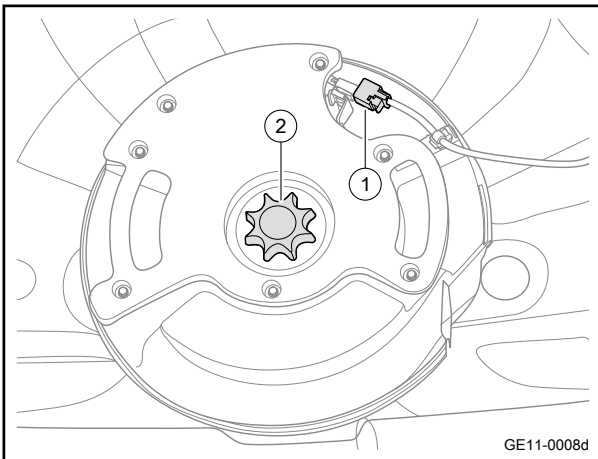
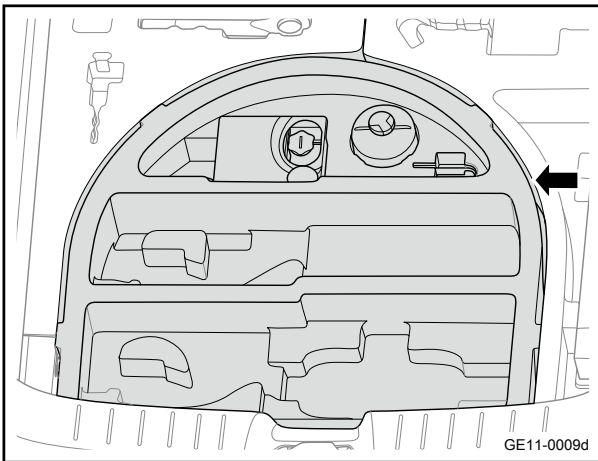
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

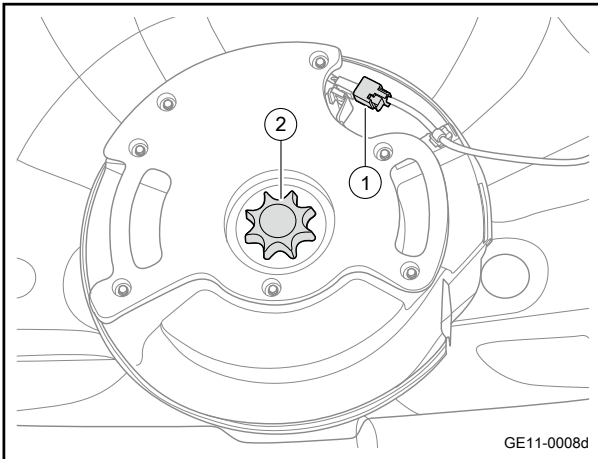
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the luggage compartment carpet assembly. See [Replacement of luggage compartment carpet assembly](#)
- 3 Remove the foam box of the driver's tool.

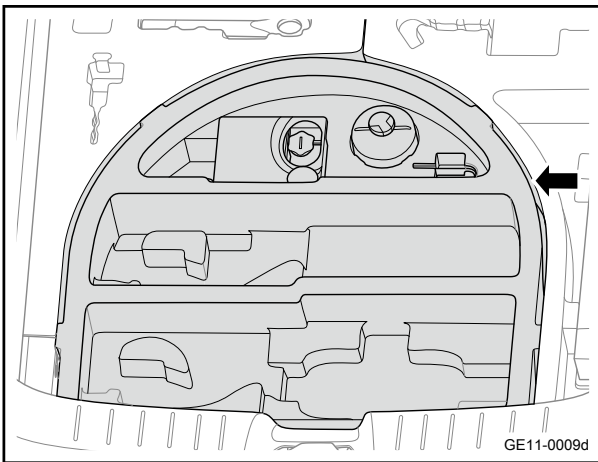


- 4 Disconnect the harness connector 1 of the subwoofer.
- 5 Remove the spare tire pressing plate assembly 2.
- 6 Remove the subwoofer.

#### Installation procedure



- 1 Move the subwoofer to the installation location.
- 2 Install spare tire pressing plate assembly 2.
- 3 Connect the harness connector 1 of the subwoofer.



- 4 Install the foam box of the driver's tool.

- 5 Install the luggage compartment carpet assembly.
- 6 Connect the negative cable of battery.

### 10.2.7.12 Microphone replacement (type one)

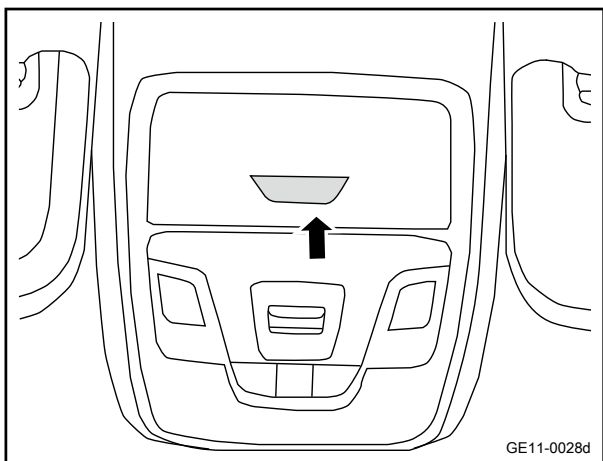
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

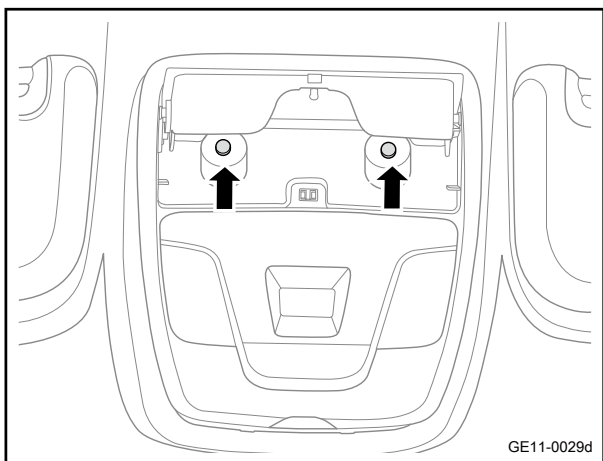
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Open the panel of the glasses case.

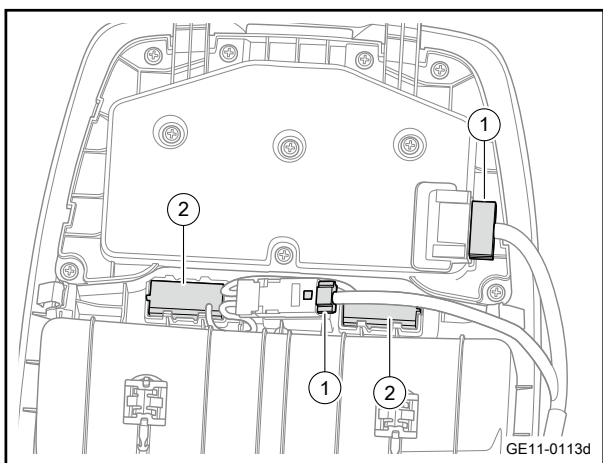


- 3 Remove the 2 fixing screws of the front reading lamp assembly.



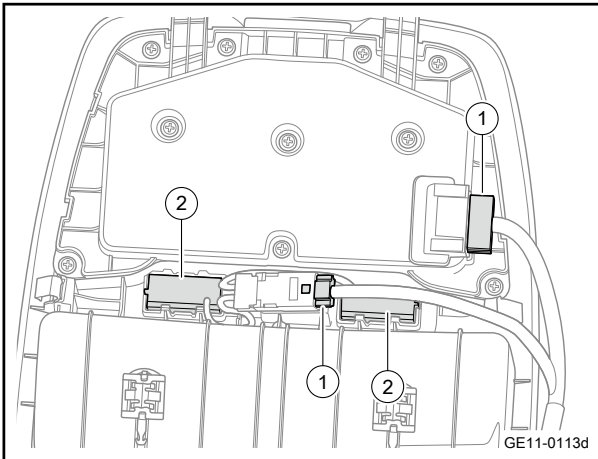
- 4 Remove the front reading lamp assembly.

- 5 Disconnect the harness connector 1 of the front reading lamp assembly.

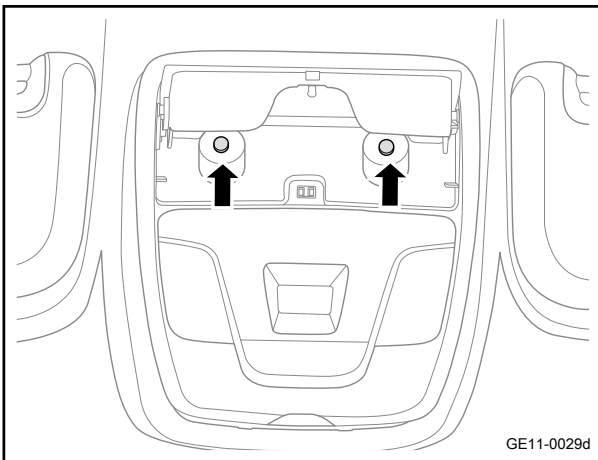


- 6 Pry down the microphone 2.

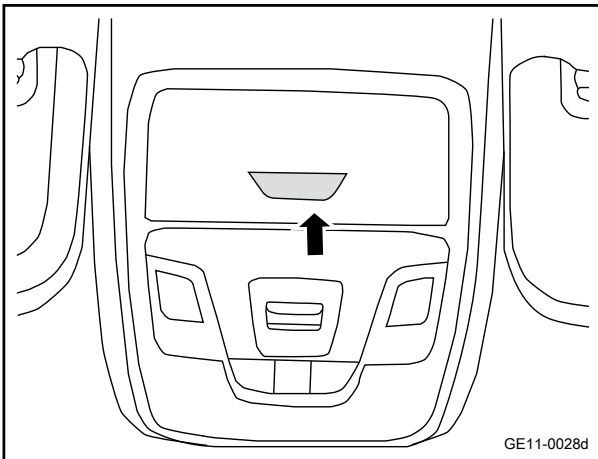
Installation procedure



- 1 Install microphone 2.
- 2 Connect the front reading lamp assembly harness connector 1.



- 3 Install the 2 fixing screws of the front reading lamp assembly.  
Torque: 4.5N·m (metric) 3.3lb-ft (imperial system)



- 4 Close the panel of the glasses case.

- 5 Connect the negative cable of battery.

### 10.2.7.13 Microphone replacement (type II)

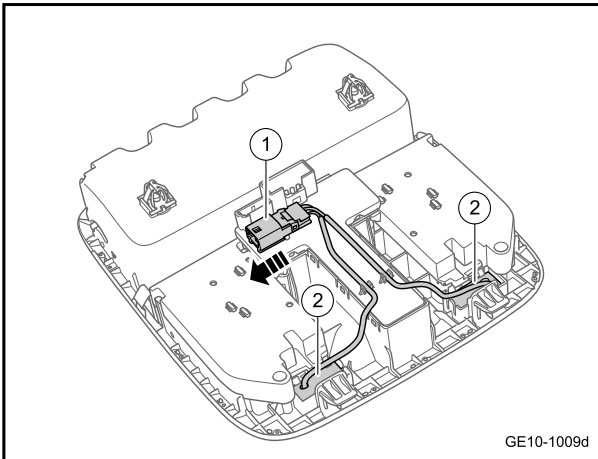
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

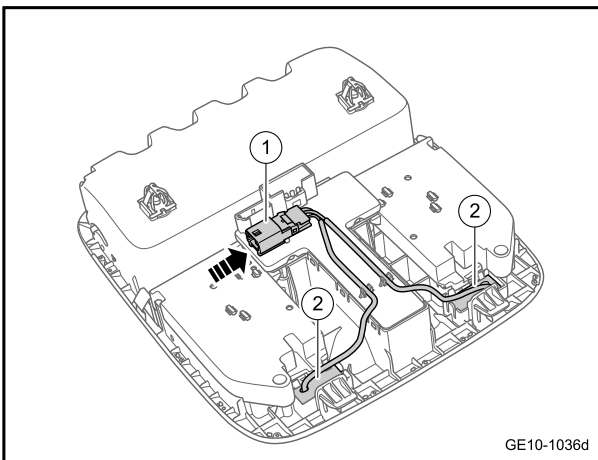
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front reading lamp assembly. See [Replacement of front reading lamp assembly \(Type II\)](#)
- 3 Disconnect the microphone harness connector 1 leftwards from the bracket
- 4 Pry down the microphone 2.



Installation procedure

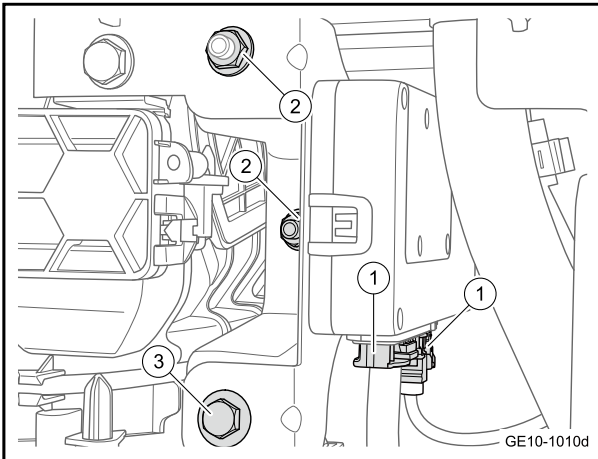
- 1 Insert the microphone 2 into the front reading lamp slot.
- 2 Rightwards install the microphone harness connector 1 to the bracket.



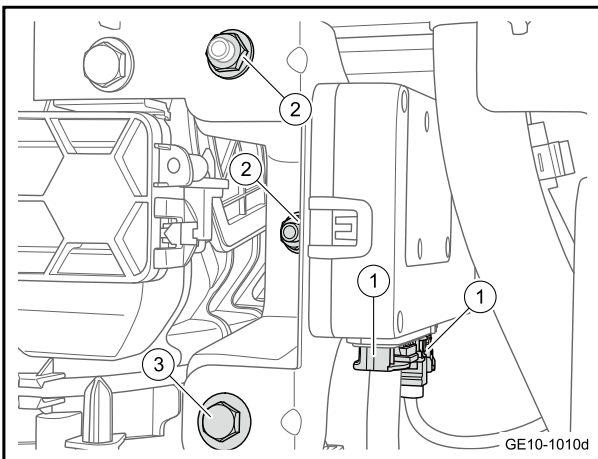
- 3 Install the front reading lamp assembly.
- 4 Connect the negative cable of battery.

### 10.2.7.14 Replacement of emergency call system control unit

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the lower right guard plate sub-assembly of the instrument panel. See [Replacement of the lower right guard plate sub-assembly of the instrument panel](#)
- 3 Disconnect the 2 harness connectors 1 of the emergency call system control unit.
- 4 Remove the 2 fixing nuts 2 of the emergency call system control unit.
- 5 Remove the 1 fixing bolt 3 of the emergency call system control unit.
- 6 Remove the emergency call system control unit.



#### Installation procedure

- 1 Move the emergency call system control unit to the installation location.
- 2 Install the 1 fixing bolt 3 of the emergency call system control unit.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Install the 2 fixing nuts 2 of the emergency call system control unit.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 4 Connect the 2 harness connectors 1 of the emergency call system control unit.

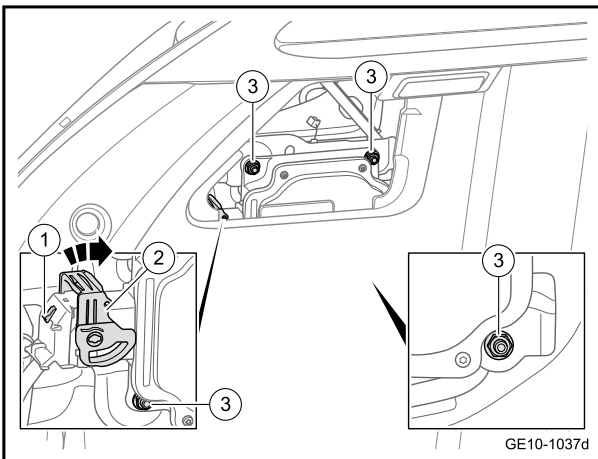
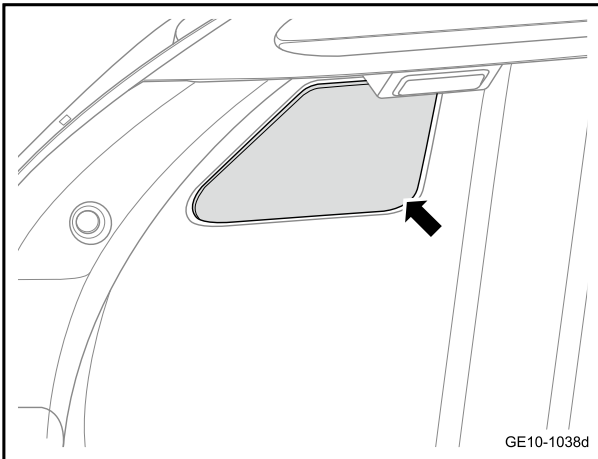
#### Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 5 Install the lower right guard plate sub-assembly of the instrument panel.
- 6 Connect the negative cable of battery.

### 10.2.7.15 Replacement of electric vehicle communication control module

#### Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Open the backdoor.
- 3 Use a prying board to pry off the access cover of the combination lamp from the edge.

**Caution**

Please use the special tools for vehicle body repair, otherwise it is easy to scratch the edge of the interior panel.

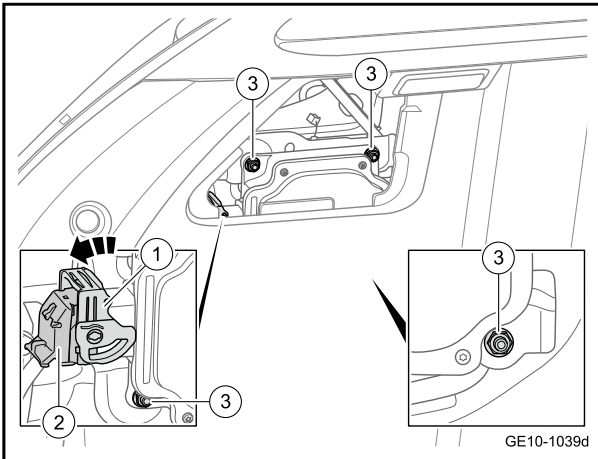
- 4 Press the buckle 1 of the harness connector of the electric vehicle communication control module.
- 5 Toggle handle 2 of the harness connector of the electric vehicle communication control module to disconnect 1 harness connector of the electric vehicle communication control module.
- 6 Remove the 4 fixing nuts 3 of the communication control module of the electric vehicle.

**Caution**

Carefully open the trim panel on the left side of the luggage compartment to increase the space for disassembly, but it is required to avoid damaging the trim panel.

- 7 Remove the electric vehicle communication control module.

Installation procedure

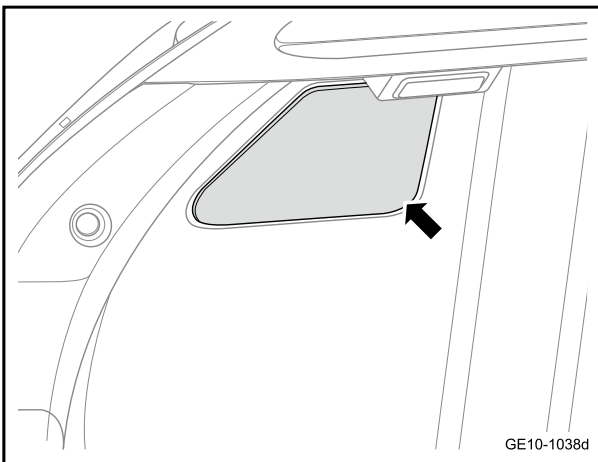


- 1 Move the electric vehicle communication control module to the installation position.
- 2 Install the 4 fixing nuts 3 of the electric vehicle communication control module.  
Torque: 3N·m (metric) 2.2lb-ft (imperial system)
- 3 Connect 1 harness connector 2 of the electric vehicle communication control module.

#### Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the handle 1 of the wiring harness connector of the electric vehicle communication control module.
- 5 Install the combination lamp access cover.



- 6 Close the backdoor.
- 7 Connect the negative cable of battery.

### 10.2.7.16 Replacement of GPS antenna

#### Removal procedure

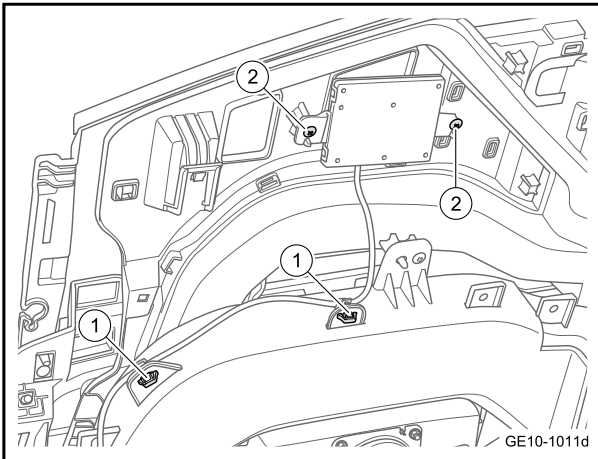
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)





- 3 Remove the two fixed buckles 1 of the GPS antenna.
- 4 Remove the 2 fixing screws 2 of the GPS antenna.

#### Caution

The GPS antenna is located on the main body of the dashboard, which can be seen by disassembling the main body assembly of the dashboard.

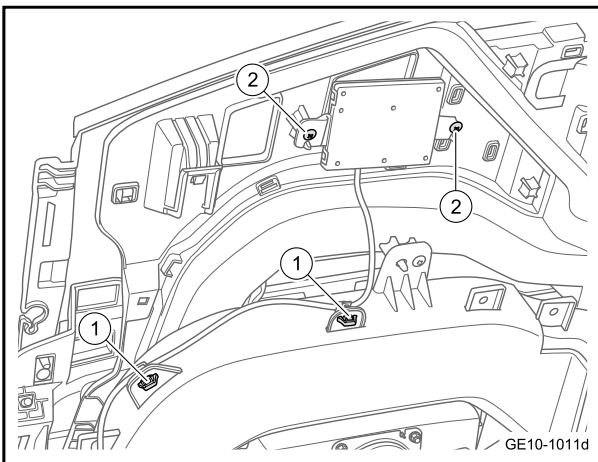
- 5 Remove the GPS antenna.

#### Installation procedure

- 1 Move the GPS antenna to the installation location.
- 2 Install 2 fixing bolts 2 of the GPS antenna.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install the 2 fixed buckles 1 of the GPS antenna.

#### Caution

After each disassembly and assembly, the buckle is loose and needs to be replaced with a new one.



- 4 Install the dashboard body assembly.
- 5 Connect the negative cable of battery.

## 10.3 Lighting system

### 10.3.1 Specification

#### 10.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of combination switch	M5×10	2.5 - 3.5	1.8 - 2.6
Fixing screw of middle rear fog lamp assembly	ST4.8×16	1.3 - 1.7	1 - 1.3
High-position braking lamp assembly fixing nut	M5	2 - 3	1.5 - 2.2
Fixing bolt of front combined lamps assembly	M6×25	4 - 5	3 - 3.7
Fixing nut for back door combination lamp	M5	2 - 3	1.5 - 2.2
Fixing bolts of the side wall combination lamp	M5	2 - 3	1.5 - 2.2
Fixing screw of back door through lamp	ST4.8×16	1.3 - 1.7	1 - 1.3

## 10.3.2 Description and Operation

### 10.3.2.1 Description and operation of exterior lighting system

#### Headlamp

The headlamp is controlled by the multi-functional control lever on the left of steering column. When the headlamp switch is turned to the first position, the position lamp, license plate lamp and fascia lamp will be illuminated. When the headlamp switch is turned to the second position, all lamps mentioned above will be lightened. The headlamp will be lightened, too. When the switch turns to OFF position, all lamps are switched off.

The high beam and low beam of the headlamp are also controlled by this control lever. When the headlamp is switched on, push the control lever forward away from the driver until a sound of click is heard. Then the low beam is switched to high beam. When the headlamp high beam is switched on, the indicator light on the combination instrument assembly is illuminated. Pull back the control lever toward the driver. Then the high beam is switched to low beam. If continue to pull the control lever toward the driver, the low beam can still become the high beam. But when your hand is released, the control lever will return to low beam position automatically.

The headlamp must undergo beam calibration to achieve proper road lighting. When new headlamp assembly is being installed or the headlamp assembly or its mounting seat is influenced by the maintenance of front area possibly, the beam of headlamp should be checked and calibrated.

#### Buzzer reminding to turn off the headlight

When the headlight switch is in the ON position, operate the start switch at the same time so that the power mode is not in the 'ACC (accessory)', 'ON' or 'START' position. When the body control module monitors the driver's door status, if the left front door is opened, the body control module will make the buzzer sound. If the headlight is turned off, the body control module will not detect that the headlight switch is on, and the buzzer will not sound.

#### Position lamp and turn signal lamp

Turn the lighting switch to the first position, the position lamp will be illuminated. Operate the starting switch to turn the power mode to OFF. The position lamp will be switched off. When turn signal lamp is enabled, the front/rear turn signal lamps and side turn signal lamp flash to give a turning signal. Turn signal lamp only works when the power is under ON status. Turn signal lamp is controlled by the lamp switch on the left of steering column. Pull up or pull down the control lever (beyond the stop point). The front/rear turn signal lamps

and side turn signal lamp will be illuminated. After turning is completed, the control lever returns to horizontal position. The turn signal lamp will stop flashing.

During lane changes or a small turning, the turn signal may not be canceled due to small rotating angle of steering wheel. Therefore, only turn signal control lever to a stop point and remain in the position. When the control lever is released and returns to horizontal position, the turn signal will be cancelled.

When remote anti-theft system is working, BCM can control the turn signal indicator light to flash to indicate the working status of the remote anti-theft system.

#### Fog Lamp

The vehicle is not equipped with front fog lamps, only rear fog lamps. The fog lamp switch is at the multi-functional control lever on the left of steering column. When using the rear fog lamps, you must first turn on the low beam or high beam, and turn the multi-function joystick to the rear fog lamp position. The indicator lamp on the instrument turns on to indicate that the rear fog lamps have been switched on. Switch off rear fog lamp, and the indicator light is off as well.

#### Daytime running lamps

When the electric drive system rotates, the daytime running lamps should be automatically lit; this function should be configurable through the diagnostic instrument. The daytime running lamps should automatically go out when the headlights are turned on, but not when the headlights flash intermittently at short intervals. (The high beam lighting time is less than 700ms as an intermittent warning).

#### Rear light cluster

The rear combination light A includes position lamps, turn signals and brake lamps. The rear combination light B includes position lamps, turn signals and reversing lights.

The high-position brake lamp is located on the top of the outside of the rear windshield. When the brake pedal is stepped on, the brake lamp switch transmits the braking signal to the BCM. After the BCM receives the signal, the brake lamp and the high-position brake lamp are simultaneously turned on.

#### Reverse Lamp

The reversing light is located in the rear combination light B. When the driver puts the shift lever in the reverse gear, the electronic shifter uses the CAN cable to transmit the gear position signal to the BCM via the gateway, and the BCM

drives the reverse light to turn on according to the received signal.

#### License plate lamp

License plate lamp will be illuminated when the headlamp or the position lamp is illuminated. The license plate lamp is mounted above the license plate.

#### Charging status indicator lamps

The charging status indicator lamps are located on the front left and right fenders of the vehicle to indicate different charging statuses.

The definition of the charging status indicator lamp is as follows:

Status	Description
Breath, frequency of once 2 seconds	Charging, power is less than or equal to 50%
Breath, frequency of once 4 seconds	Charging, the battery is greater than 50%
Turns off after 2 minutes	Charging finished
Flashing (on for 2 seconds, off for 2 seconds)	Charging heating

### 10.3.2.2 Description and operation of internal lighting system

#### Internal courtesy lamp

The courtesy lamp is on the reading lamp. When the switch is in the DOOR gear, open the door and the courtesy lamp is on; close the door, the courtesy lamp goes out after a few seconds.

#### Reading lamp

The front reading lamp is in the middle of the front roof. Press the switch to turn on the light bulb, and press it again to turn off the light bulb.

#### Luggage boot lamp

The rear compartment lamp is located on the trim panel at the left side of rear compartment. As long as the backdoor is opened, the lamp is on.

#### Back Lighting

The backlight is located inside the button. When the position light is turned on, the backlight is turned on synchronously, and the brightness of the backlight can be adjusted through the display.

### 10.3.2.3 Comfortable Lighting Control

#### Follow me home function

Adjust the start-and-stop switch from ON to OFF within 10 minutes, and within 2 seconds, rotate the light switch from OFF position to small light position, or headlight position, or automatic light position, and then return to OFF position => follow me home lighting function is activated => the low beam is turned on with a delay of 30 seconds (the default is 30 seconds, and the specific lighting time can be set).

When the Follow Me Home lighting function is activated, if a door is opened => the low beam is turned on for 180 seconds (the delay is reset).

#### Automatic lightening function

1. Operate start and stop button to place the power to ON status. When the front lamp knob on lamp lightening switch handle is in AUTO mode and signal of ambient light intensity sensor received by BCM control unit is in on-status (low light), then BCM connects position lamp and headlamp relay, and lightens position lamp or headlamp.
2. Operate start and stop switch to place the power to ON status. When the front lamp knob on lamp lightening switch handle is under AUTO mode and signal of ambient light level sensor received by BCM control unit is in disconnected-status (bright light), then BCM disconnects location position lamp or headlamp relay, and extinguishes position lamp or headlamp. (If the automatic lightening function is valid before, then BCM disconnects position lamp or headlamp relay after 2s of delay, and extinguishes position lamp or headlamp).
3. When the combined switch is in the AUTO position and the power mode exits the OFF state, if the headlight or position lamp is on, it will continue to be on for 60s. If the lock signal is received within 60s, this function will be turned off.

#### Bulb inspection function

Under turning status, if one of directional indicators is damaged, other directional indicators of the same side flash at a double-frequency in normal mode.

#### Fade-in lightening function

External condition of BCM controlling interior lamp is that the interior lamp switch is shifted to "DOOR" mode.

If one of following conditions is met, interior dome lamp will fade-in and be lighten within about 0.7s :

- Any one of doors is open
- Operate the start and stop button to turn the power mode to the "OFF" status

- Operate the start and stop button to place the power to OFF status, release unlocking request (including remote control and internal)

Fade-in shut off function

External condition of BCM controlling interior lamp is that the interior lamp switch is shifted to “DOOR” mode.

When one of the following situations occurs, the interior dome lamp will fade-out and go out after about 1.7s:

- Turn the start switch to power mode ON and close all doors
- Operate the start and stop button to place the power to OFF status, and close all doors. Lock request is released (including remote control and internal)
- When the central control is in unlocking status, operate the start and stop button to place the power to OFF status, after the last door is closed,
- the light is lit for 15 seconds within 15 seconds after the last door is closed, and there is no condition to activate it again
- Close all the doors and lock central control.

Greeting function

When you bring a valid smart key close to the vehicle, the greeting function will be activated and the headlights will be turned on.

10.3.2.4 Light adjustment of front headlamp

Equipment and site preparation

1. Tools: Phillips screwdriver and Allen wrench.
2. Tape measure or laser range finder (electronic ruler).
3. Site: The dark environment site should be level, sized to allow vehicle entry, with the headlight reference center at least 10m away from the screen.
4. Test screen: thick white paper or white wall (the width of the test screen should be greater than the vehicle width by no less than 2m to facilitate the observation of light patterns).

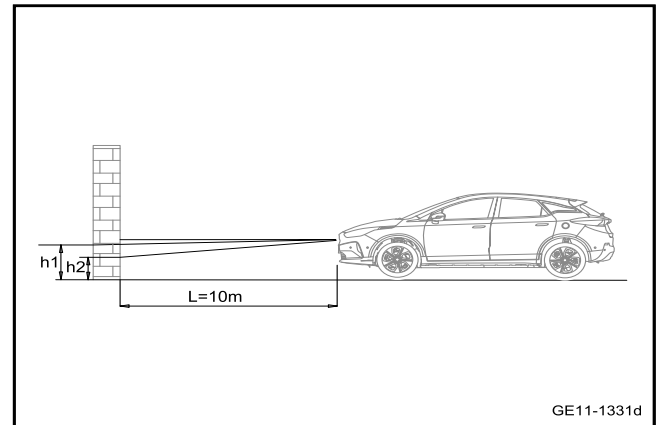
Vehicle preparation

1. Tyre pressure is adjusted to the full load tyre pressure value, refer to [Ryre specifications](#)
2. Supplement the vehicle with coolant and lubricating oil, and prepare all the accessories and tools (spare tires, tools, etc.) for testing the vehicle.
3. A load of 75kg is placed on the driver's seat to simulate the driver's ride.
4. Prior to measurement, the vehicle should be at a natural standstill state with the vehicle traveling backward for at least one wheel circle distance and then forward for the same distance.

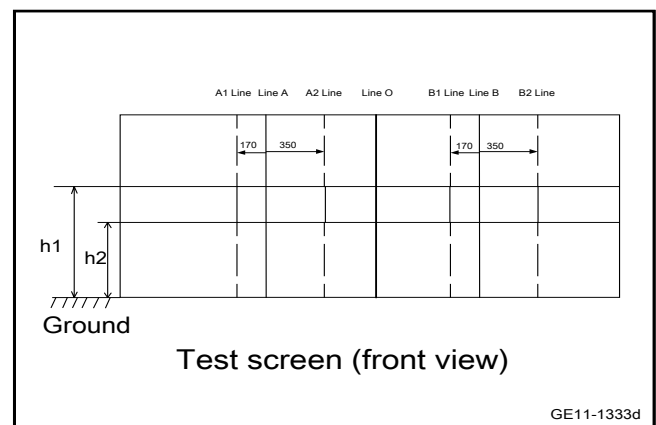
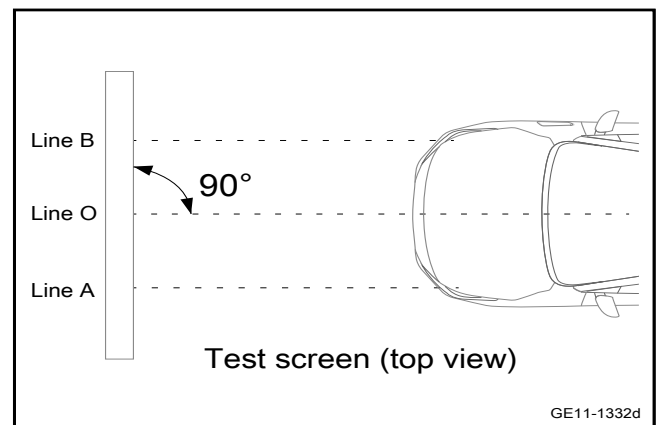
5. Make sure the outside cover of the headlamp is clean.
6. Start the vehicle.

Light measurement

1. Park the vehicle as shown in the diagram, with a distance L between the headlight reference center and the screen of 10m.



2. For vehicles with manual adjustment of light height, the height switch should be set to "0" gear.
3. Draw Line O, Line A, Line A1, Line A2, Line B, Line B1, and Line B2 on the screen.



– Line O: Draw a vertical line in the center of the test screen aligned with the center of the vehicle.

- Line A: Draw a line to the left of Line O, parallel to Line O, with a distance of 662.5mm from Line O (solid red line).
- Line A1: Draw a line to the left of Line A, parallel to Line A, with a distance of 170mm from Line A (dashed red line).
- Line A2: Draw a line to the right of Line A, parallel to Line A, with a distance of 350mm from Line A (dashed red line).
- Line B: Draw a line to the right of Line O, parallel to Line O, with a distance of 662.5mm from Line O (solid red line).
- Line B1: Draw a line to the left of Line B, parallel to Line B, with a distance of 170mm from Line B (dashed red line).
- Line B2: Draw a line to the right of Line B, parallel to Line B, with a distance of 350mm from Line B (dashed red line).

4. Draw Line h1 and h2 on the screen.

- Line h2: Draw a horizontal line parallel to the ground at a distance of 655mm from the ground.
- Line h1: Draw a horizontal line parallel to the ground at a distance of 695mm from the ground.

5. The green box shown in the diagram is formed after all lines are completed.

### Light adjustment

#### 1. Adjustment of low beam lamp

a. Turn on the low beam lamp

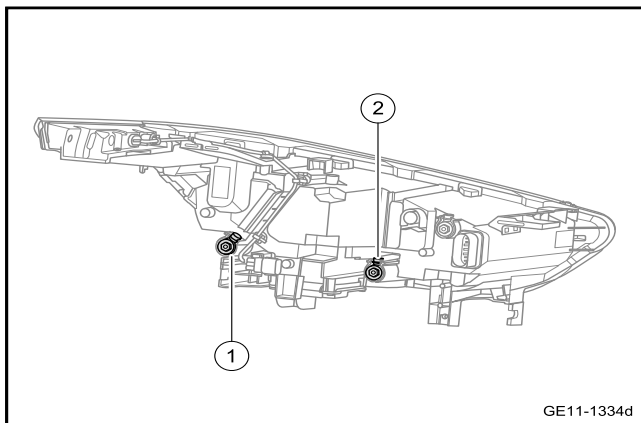
b. Lights on the left: Insert a Phillips screwdriver or Allen wrench into the dimmer port of low beam lamp. Rotate the front headlamp dimmer handle 1 to adjust the front headlamp in the vertical (up and down) direction. Rotate the front headlamp dimmer handle 2 to adjust the front headlamp in the horizontal (left and right) direction.

### Note

Adjust the lights on the right with the same method as that on the left.

### Caution

In order to observe the effect of light adjustment, the light on one side may be adjusted while the light on the other side is shielded.

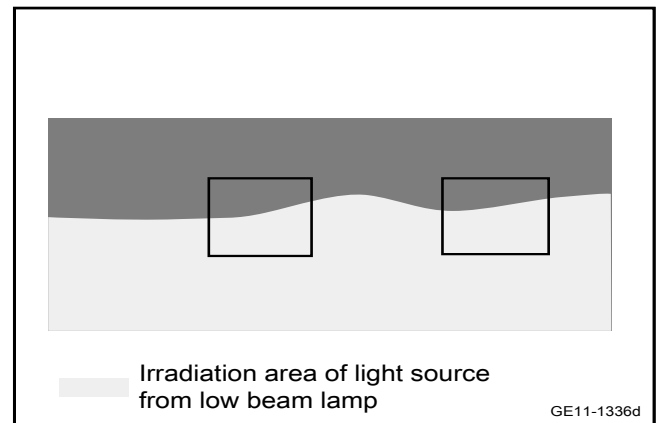
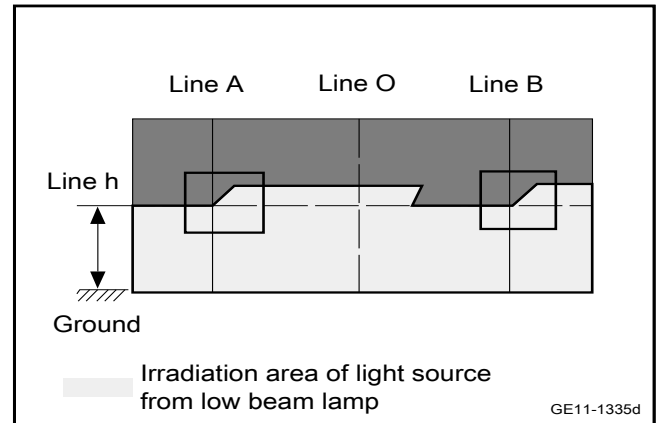


GE11-1334d

c. The light adjustment is completed when the turning point of light and dark cutoff line of source for low beam lamp is located in the green box.

### Caution

After commissioning, the light height on left and right sides should be consistent.



#### 2. Adjustment of high beam lamps

The front combination lamp of this model is a combination of low and high beams.

### Caution

Lights with integrated low and high beams only need to adjust the low beam.

### 10.3.3 How the system works

#### 10.3.3.1 System Working Principles

##### Working principles of the headlamps

**Low beam:** When the light combination switch is adjusted to the low beam position, the 'low beam on' signal from the light combination switch is transmitted to the BCM via the wiring harness, and then the BCM controls the low beam to light up.

**High beam:** When the low beam is on, adjust the light combination switch to the high beam position, the 'high beam on' signal from the combination switch is transmitted to the BCM through the wiring harness, and then the BCM controls the high beam to light up.

**Headlight height adjustment:** the headlight height adjustment switch sends a signal, which is transmitted to the stepping motor in the front combination lamp, that is, the headlight height adjustment motor. The motor follows the control signal to make corresponding actions, and change the angle of the headlights through the mechanical device between the motor output shaft and the headlights.

##### Caution

**Too frequent toggling of the key may cause damage or no operation to the motor.**

When the BCM detects that the vehicle is in the 'AUTO' (automatic light) mode, it will control the turning on and off of the headlights according to the received environment and sunlight sensor signals. When the ambient light is weak, BCM controls to turn on the low beam; when the ambient light is strong, BCM controls to turn off the low beam.

##### Working principles of the position lamp

When the light combination switch is adjusted to the position light position, the 'position light on' signal from the combination switch is transmitted to the BCM through the wiring harness, and then the BCM sends out the position lamp control signal to light up the vehicle position light and license plate lamp.

##### Working principles of the daytime running light

The daytime running lights are turned on by BCM control, and the switch can be set on and off freely in the multimedia host.

##### Working principles of fog lamps

When the combination switch is adjusted to the rear fog lamp position, the 'rear fog lamp on' signal from the combination switch is transmitted to the BCM via the wiring harness, and then the BCM sends a rear fog lamp control signal to light up the vehicle's rear fog lamp.

##### Working principles of the turn signal lamp

When the light combination switch is adjusted to the left/right turn signal position, the 'left/right turn signal on' signal from the combination switch is transmitted to the BCM via the wiring harness, and then the BCM sends out the left/right turn signal control signal to light up the left/right turn signal of the vehicle which then flashes regularly.

##### Caution

**When the hazard warning lamp button is pressed down, BCM outputs the voltage to these two circuits and lights up all turn signal lamps which flash regularly.**

##### Working principles of the brake lamp

Step on the brake pedal and the brake switch will output a brake signal. When the BCM receives the brake signal, it will output a brake light control signal to light up the vehicle brake lamp and high-position brake lamp.

##### Working principles of the reverse lamp

When the driver engages reverse gear, the electronic gear shifter outputs the reverse signal and transmits it to the gateway controller, which is then transmitted to the BCM via the wiring harness. The BCM receives the reverse signal and outputs the reverse light control signal to light up the vehicle's reversing light.

##### Working principles of the interior dome light

When the reading lamp switch is at DOOR gear, the power supply of the reading lamp comes from the BCM harness connector. When the door is opened, the door control switch transmits the signal to the BCM, and the BCM lights up the reading lamp after receiving the signal.

The power supply for the courtesy light and ambient light comes from a fuse. When the door is opened, the door control switch transmits the signal to the BCM, and the BCM lights up the courtesy light and the ambient light after receiving the signal.

The power supply of the luggage compartment lamp comes from the BCM. When the luggage compartment door is opened, the door control switch transmits the signal to the BCM, and the BCM lights up the luggage compartment lamp after receiving the signal.

##### The working principle of the backlight

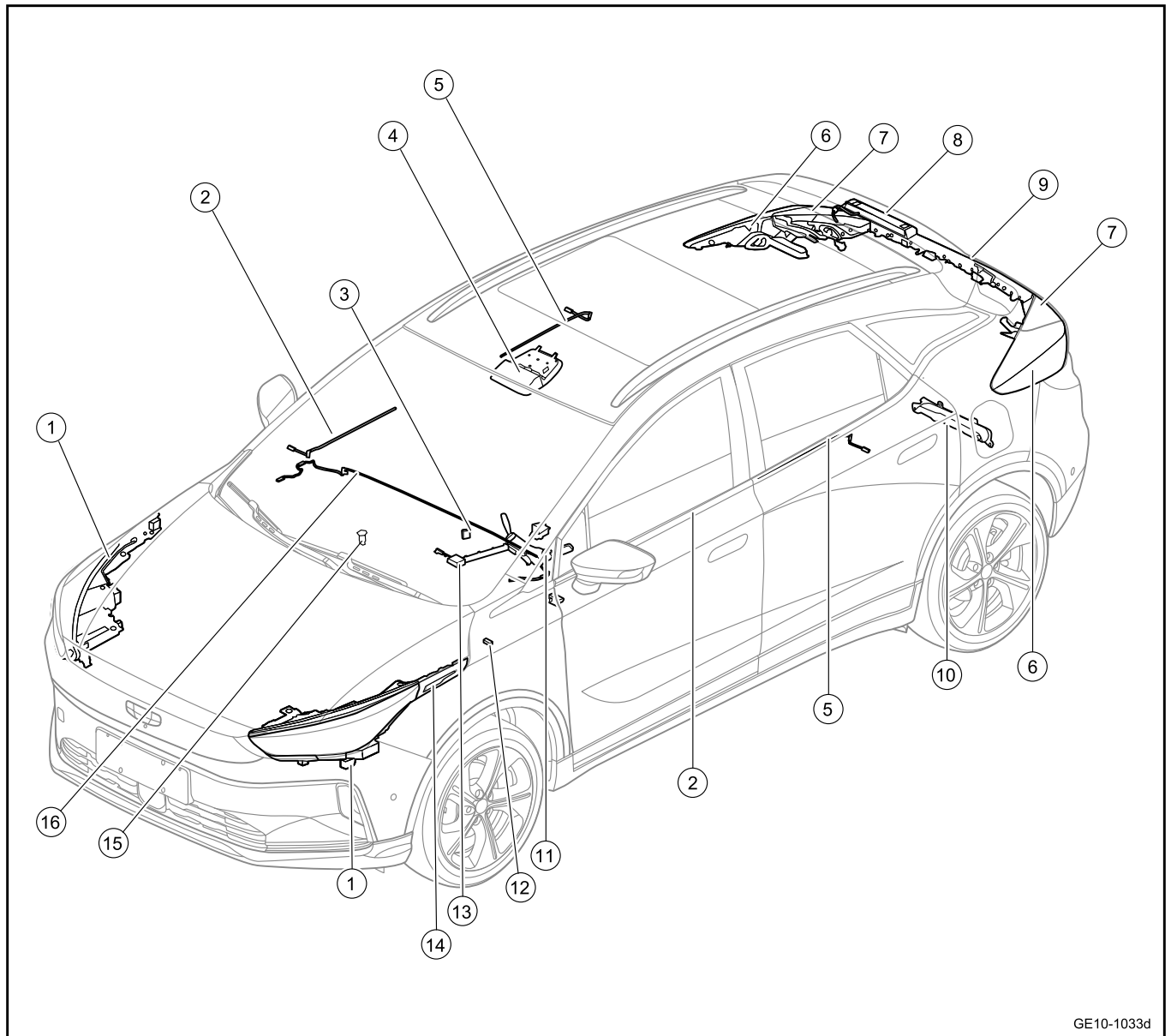
The power source of the backlight lamp comes from BCM. When the position lamp is turned on, the switch transmits the

signal to the BCM, and the BCM lights up the backlight after receiving the signal.



10.3.4 Part location

10.3.4.1 Part Position

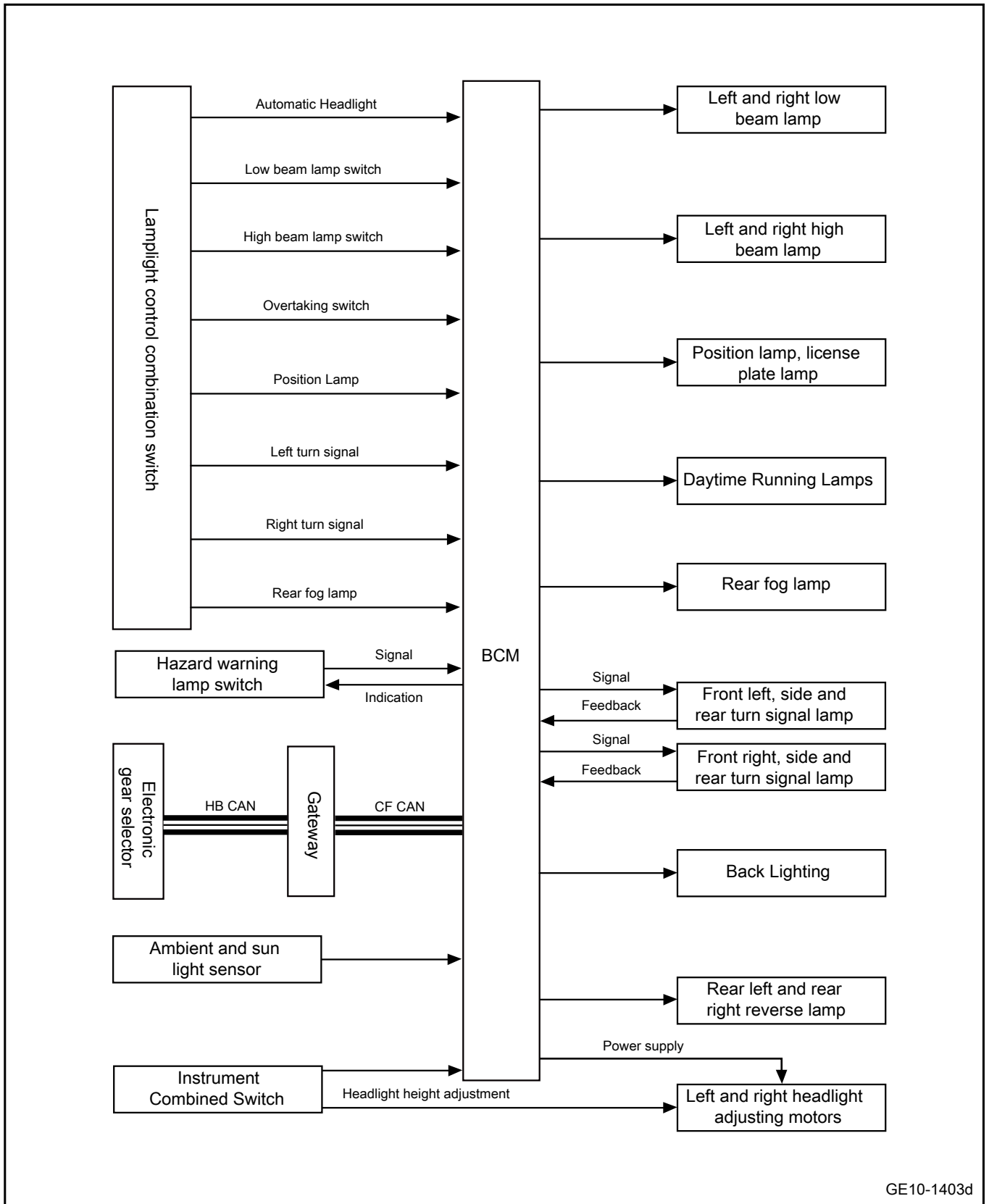


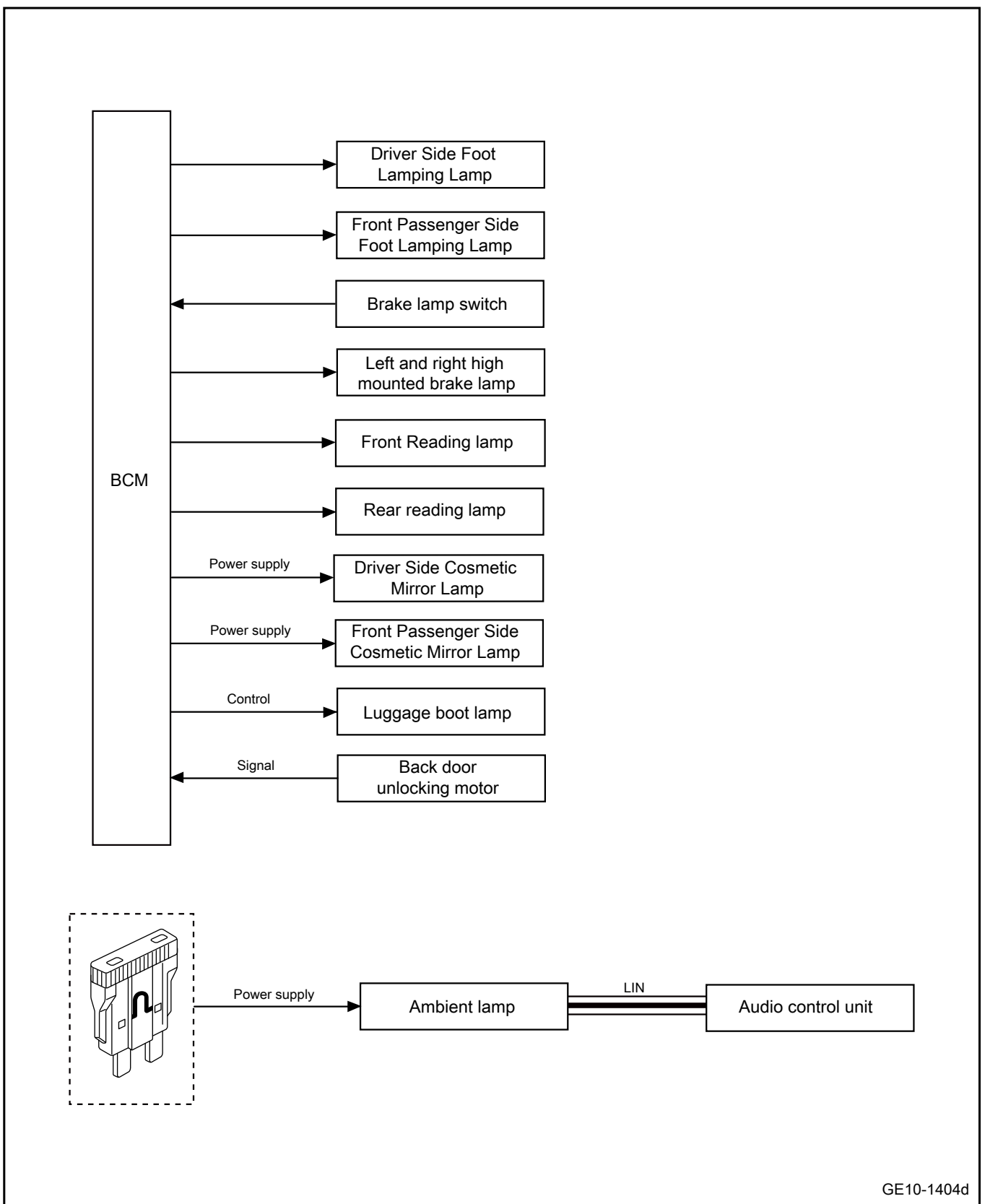
GE10-1033d

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| 1. Front combination lamps assembly | 9. Back door full-width lamp      |
| 2. Front door ambient light         | 10. Middle rear fog lamp assembly |
| 3. Hazard warning switch            | 11. Combination switch            |
| 4. Front reading lamp assembly      | 12. Foot lights                   |
| 5. Rear door ambient light          | 13. Center console ambient light  |
| 6. Rear side wall combination lamp  | 14. Charging indicator lamp       |
| 7. Back door combination light      | 15. Sunlight sensor               |
| 8. High braking lamp assembly       | 16. Dashboard atmosphere light    |

10.3.5 Electrical block diagram

10.3.5.1 Electrical schematic diagram of the lighting system





## 10.3.6 Diagnostic information and steps

### 10.3.6.1 Diagnosis Description

Before diagnosing the fault of the lighting system, refer to [Description and Operation](#) and [System Working Principle](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

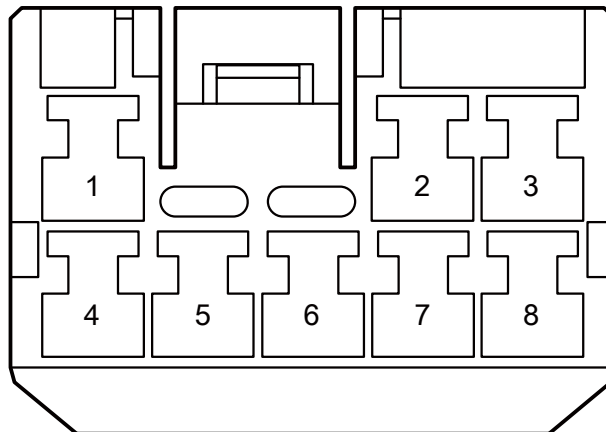
### 10.3.6.2 Routine inspection

- Check after-sales installations to guarantee that these installations will not affect the operation of lighting system.
- Checking system parts that are easily accessible or can be seen to guarantee that there is no obvious damage or situation that may cause a fault.
- If only one bulb is inoperative, check and repair the power supply or poor contact or open circuit fault at the grounding circuit before replacing the bulb.

### 10.3.6.3 List of lighting system terminals

#### SO39c RL combination lamp harness connector A

#### SO39c RL combination lamp harness connector A

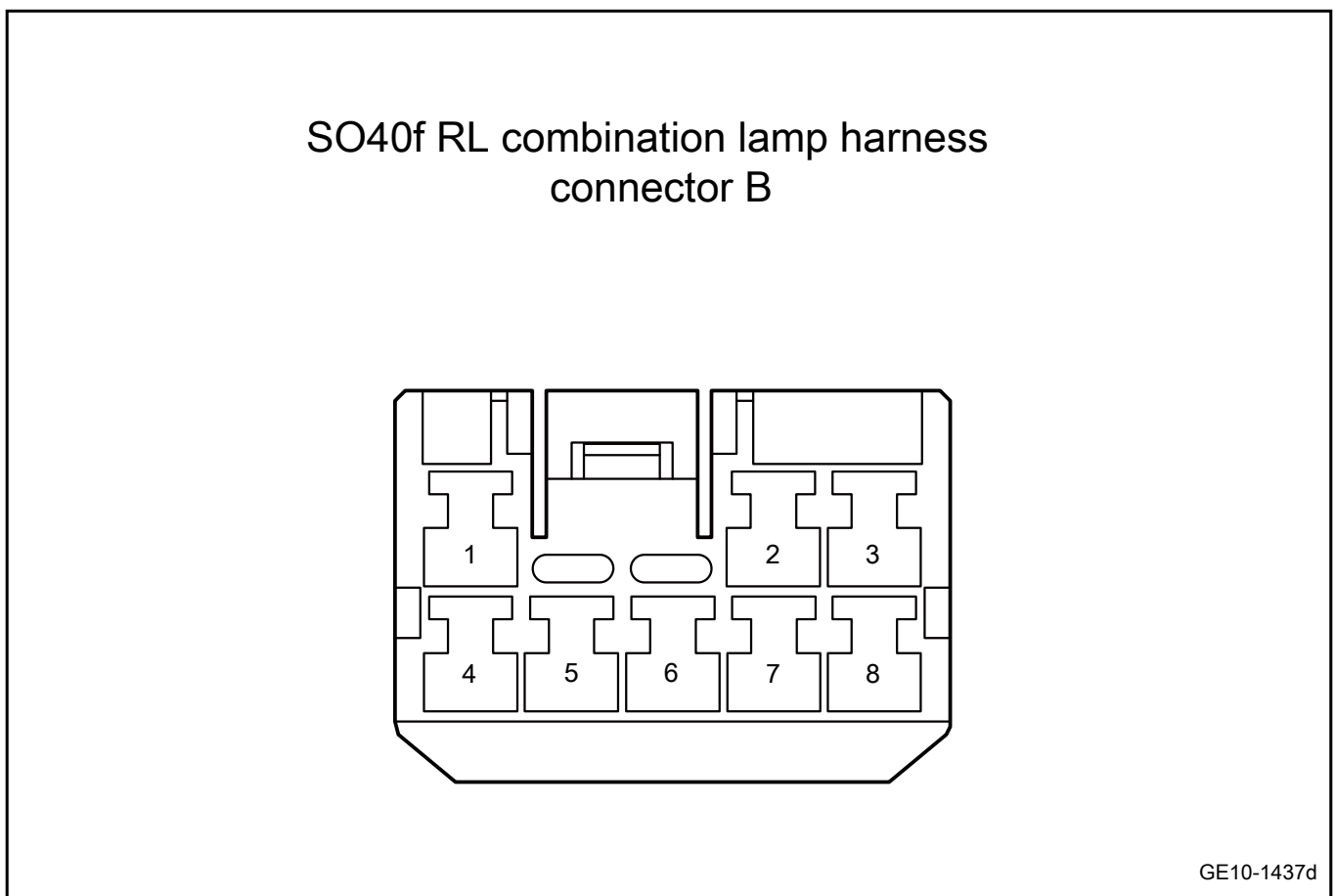


GE10-1436d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Left rear combination lamp grounding circuit
2	Brake-to-low light enabling signal	Brake-to-low light enabling signal input
3	Turn signal dynamic lighting signal	Dynamic turn signal input

Terminal No.	Terminal name	Terminal description
4	Position lamp power (body side)	Position lamp power input (body side)
5	Power supply of brake lamp (body side)	Brake lamp power input (body side)
6	Turn signal power supply (body side)	Turn signal power supply input (body side)
7	Turn signal fault feedback (body side)	Turn signal fault feedback output (body side)
8	Courtesy signal	Courtesy signal power input

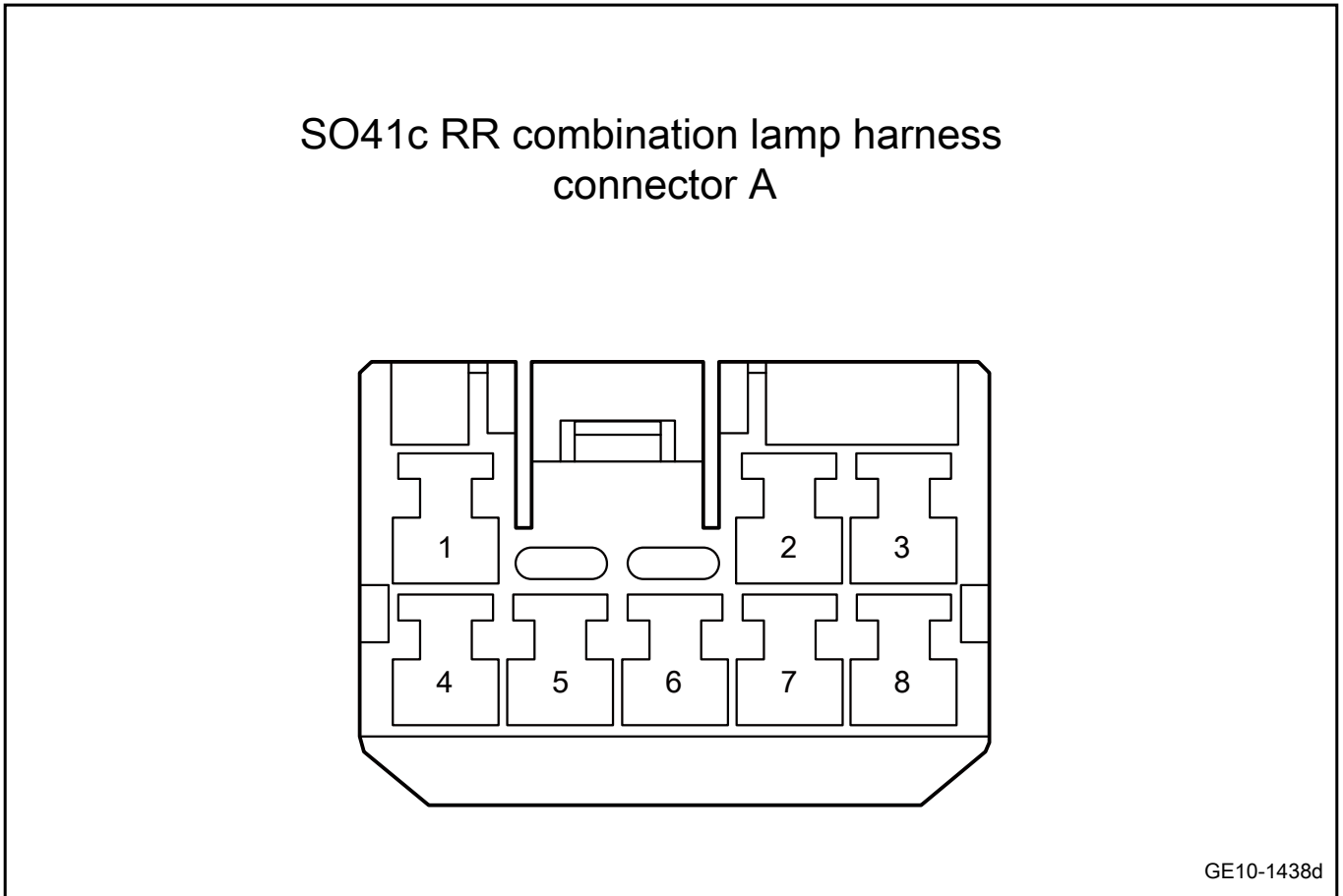
SO40f RL combination lamp harness connector B



Terminal No.	Terminal name	Terminal description
1	Ground connection	Left rear combination lamp grounding circuit
2	-	-
3	Turn signal dynamic lighting signal	Dynamic turn signal input
4	Position lamp power (back door side)	Position lamp power input (back door side)
5	Reversing lamp power supply (back door side)	Reversing lamp power input (back door side)

Terminal No.	Terminal name	Terminal description
6	Turn signal power supply (backdoor side)	Turn signal power supply input (backdoor side)
7	Turn signal fault feedback (backdoor side)	Turn signal fault feedback output (backdoor side)
8	Courtesy signal	Courtesy signal power input

SO41c RR combination lamp harness connector A

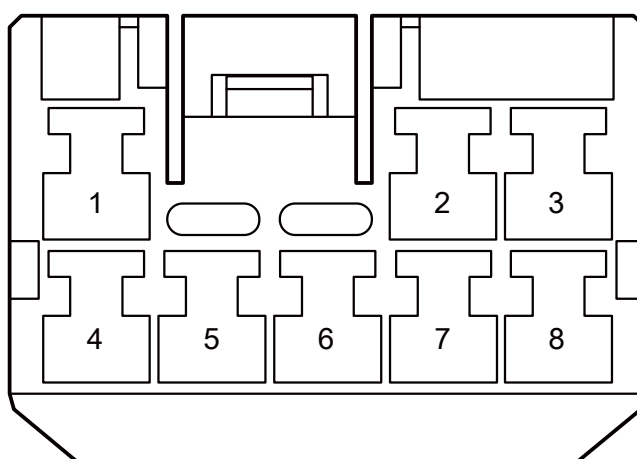


Terminal No.	Terminal name	Terminal description
1	Ground connection	Ground circuit of right rear combination lamp
2	Brake-to-low light enabling signal	Brake-to-low light enabling signal input
3	Turn signal dynamic lighting signal	Dynamic turn signal input
4	Position lamp power (body side)	Position lamp power input (body side)
5	Power supply of brake lamp (body side)	Brake lamp power input (body side)
6	Turn signal power supply (body side)	Turn signal power supply input (body side)

Terminal No.	Terminal name	Terminal description
7	Turn signal fault feedback (body side)	Turn signal fault feedback (body side)
8	Courtesy signal	Courtesy signal power input

SO42f Rear right lamp harness connector B

SO42f RR combination lamp harness connector B

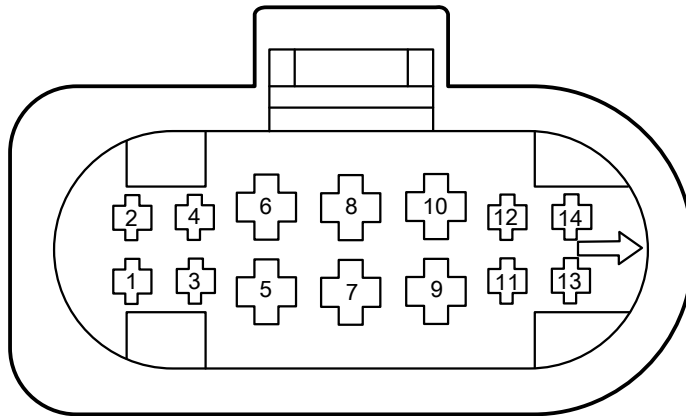


GE10-1439d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Ground circuit of right rear combination lamp
2	-	-
3	Turn signal dynamic lighting signal	Dynamic lighting signal input
4	Position lamp power (back door side)	Position lamp power input (back door side)
5	Reversing lamp power supply (back door side)	Reversing lamp power input (back door side)
6	Turn signal power supply (backdoor side)	Turn signal power supply input (backdoor side)
7	Turn signal fault feedback (backdoor side)	Turn signal fault feedback (backdoor side)
8	Courtesy signal	Courtesy signal power input

## CA24 FL headlamp harness connector

## CA24 FL headlamp harness connector



GE10-1440d

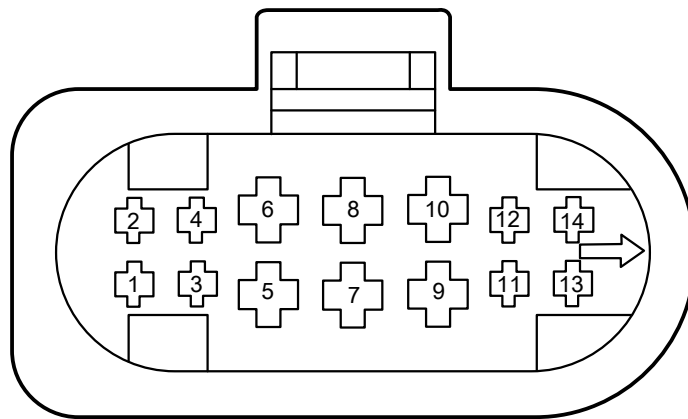
Terminal No.	Terminal name	Terminal description
1	Headlight height adjustment power supply	Headlight height adjustment power input
2	Headlight height adjustment grounding	Headlight height adjustment grounding circuit
3	Headlight height adjustment signal	Headlight height adjustment signal input
4	High beam lamps power supply	High beams power supply input
5	Low beam and high beam grounding	Grounding circuit of low beam and high beam
6	Low beam lamps power supply	Low beams power supply input
7	Position lamps, turn signals, daytime running lights grounding	Position lamps, turn signals, daytime running light ground circuit
8	Turn signal power supply	Turn signals power supply input
9	Daytime running lamps power supply	Daytime running lights power supply input
10	Position lamp power supply	Position lamp power supply input



Terminal No.	Terminal name	Terminal description
11	Turn signal signal	Turn signals power supply input
12	Turn signal diagnostic signal	Fault feedback signal output
13	Courtesy signal	Courtesy signal power input
14	Turn signal dynamic lighting signal	Dynamic lighting signal input

CA41 FR headlamp harness connector

CA41 FR headlamp harness connector

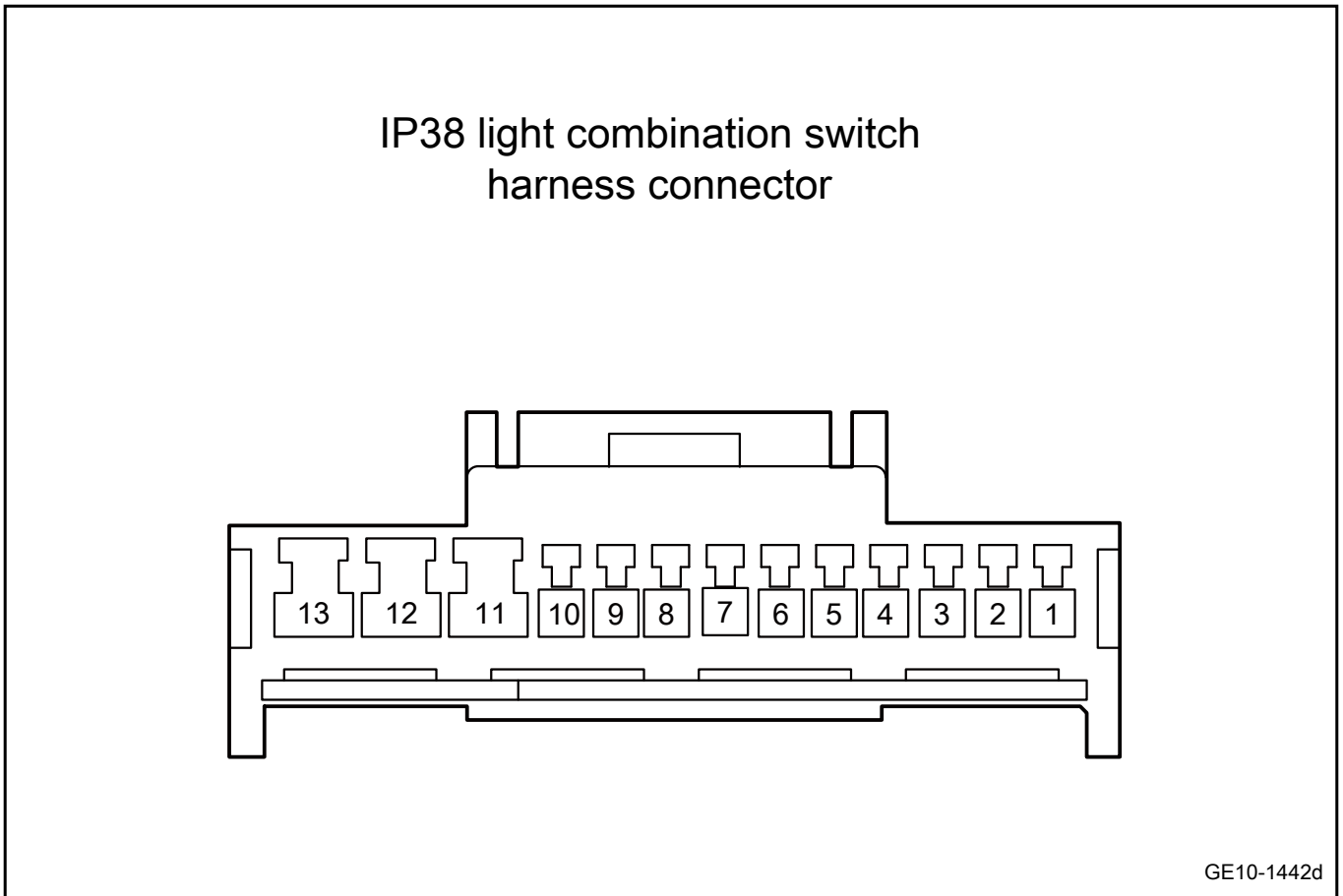


GE10-1441d

Terminal No.	Terminal name	Terminal description
1	Headlight height adjustment power supply	Headlight height adjustment power input
2	Headlight height adjustment grounding	Headlight height adjustment grounding circuit
3	Headlight height adjustment signal	Headlight height adjustment signal input
4	High beam lamps power supply	High beams power supply input
5	Low beam and high beam grounding	Grounding circuit of low beam and high beam
6	Low beam lamps power supply	Low beams power supply input

Terminal No.	Terminal name	Terminal description
7	Position lamps, turn signals, daytime running lights grounding	Position lamps, turn signals, daytime running light ground circuit
8	Turn signal power supply	Turn signals power supply input
9	Daytime running lamps power supply	Daytime running lights power supply input
10	Position lamp power supply	Position lamp power supply input
11	Turn signal signal	Turn signals power supply input
12	Turn signal diagnostic signal	Fault feedback signal output
13	Courtesy signal	Courtesy signal power input
14	Turn signal dynamic lighting signal	Turn signal dynamic lighting signal input

IP38 light combination switch harness connector



Terminal No.	Terminal name	Terminal description
1	Light switch grounding	Light switch grounding circuit
2	Position lamp switch signal	Position lamp switch signal output
3	Automatic headlamp switch signal	Automatic headlamp switch signal output

Terminal No.	Terminal name	Terminal description
4	Low beam lamp switch signal	Low beam lamp switch signal output
5	Rear fog lamp switch grounding	Rear fog lamp switch grounding circuit
6	-	-
7	Rear fog lamp switch signal	Rear fog lamp switch signal output
8	-	-
9	High beam lamp switch signal	High beam switch signal output
10	High/low beam switch signal	High/low beam switch signal output
11	Left turn switch signal	Left turn signal switch signal output
12	Turn signal switch grounding	Turn signal switch grounding circuit
13	Right turn switch signal	Right turn signal switch signal output

#### 10.3.6.4 Fault symptom table

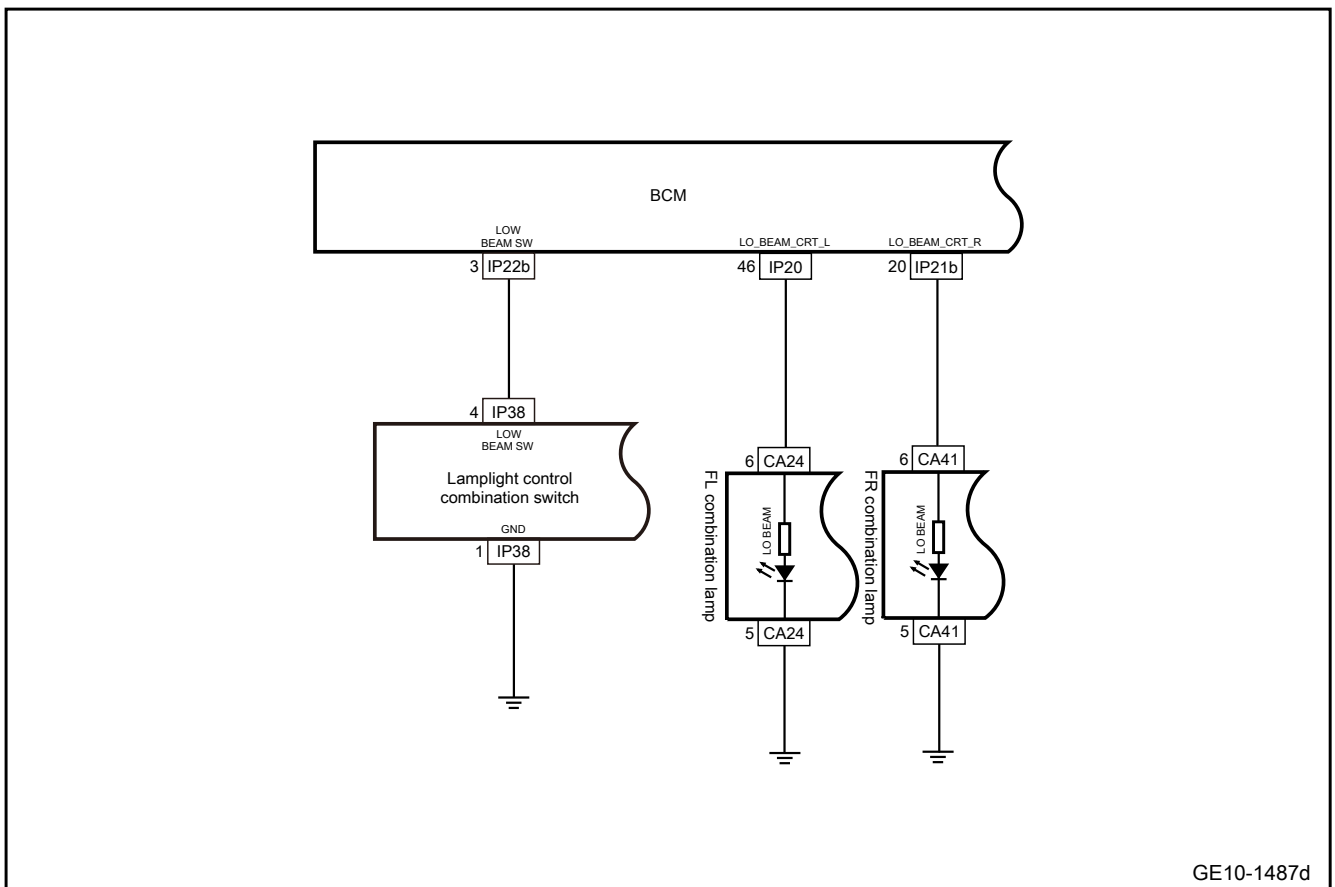
Symptom	Suspected parts	Measures / Reference
Inoperative low beam lamps	1. harness and connectors	Refer to <a href="#">Inoperative low beam lamp</a>
	2. Fuse	
	3. Light combination switch	
	4. Low beam lamp	
	5. BCM	
Inoperative high beam lamp	1. harness and connectors	Refer to <a href="#">Inoperation of high beam lamp</a>
	2. Fuse	
	3. Light combination switch	
	4. High beam lamp	
	5. BCM	
Headlight height adjustment is inoperative	1. harness and connectors	Refer to <a href="#">inoperation of headlamp height adjustment</a>
	2. Instrument combination switch	
	3. Height adjusting motor	
	4. BCM	
Position lamp is inoperative	1. harness and connectors	Refer to <a href="#">inoperation of position lamp</a>
	2. Light combination switch	
	3. Position lamp	
	4. BCM	
Rear fog lamp is inoperative	1. harness and connectors	Refer to <a href="#">inoperation of rear fog lamp</a>
	2. Light combination switch	
	Rear fog lamp	
	4. BCM	
The brake lamp is inoperative	1. harness and connectors	Refer to <a href="#">Inoperative brake lamp</a>

Symptom	Suspected parts	Measures / Reference
	2. Fuse	
	3. Brake lamp switch	
	Brake Lamp	
	5.BCM	
Inoperative high mounted brake lamp	1. harness and connectors	Refer to <a href="#">inoperation of high mount brake lamp</a>
	2. Fuse	
	3. Brake lamp switch	
	4. High mount brake lamp	
	5.BCM	
Inoperative reverse lamp	1. harness and connectors	Refer to <a href="#">inoperation of reverse lamp</a>
	2. Electronic shifter	
	3. Reverse lamp	
	4.BCM	
Inoperative turn signal lamp	1. harness and connectors	Refer to <a href="#">inoperative turn signal lamp switch</a>
	2. Fuse	
	3. Light combination switch	
	4. Side turn signal lamp	
	5.BCM	
Inoperative daytime running light	1. harness and connectors	Refer to inoperation of daytime running light
	2. Fuse	
	3. Daytime running light	
	4.BCM	
Inoperative hazard warning light	1. harness and connectors	Refer to inoperation of hazard warning lamp
	2. Hazard warning lamp switch	
	3.BCM	
Inoperative rear compartment lamp	1. harness and connectors	Refer to <a href="#">Inoperation of boot lamp</a>
	2. Fuse	
	3. Backdoor lock motor	
	4. Luggage boot lamp	
	5.BCM	
Inoperative front reading lamp	1. harness and connectors	Refer to <a href="#">Inoperative front reading lamp</a>
	2. Front reading lamp	
	3.BCM	
Inoperative rear-row reading lamp	1. harness and connectors	Refer to <a href="#">Inoperative rear reading lamp</a>
	2. Rear reading lamp	
	3.BCM	
The headlights are automatically turned on and do not work	1. harness and connectors	See <a href="#">Headlights automatically turn on and do not work</a>
	2. Ambient light and sun light sensor	
	3.BCM	
Backlighting circuit failure	1. harness and connectors	See <a href="#">Backlighting circuit failure</a>

Symptom	Suspected parts	Measures / Reference
	2. Fuse	
	3. Back Lighting	
	4. BCM	
Ambient light does not work	1. harness and connectors	See <a href="#">Ambient light does not work</a>
	2. Fuse	
	3. Atmosphere lamp	
	4. Audio control unit	
Courtesy lights do not work	1. harness and connectors	See <a href="#">Courtesy lights do not work</a>
	2. Combination lamp	
	3. BCM	
Foot lights do not work	1. harness and connectors	See <a href="#">Foot lights do not work</a>
	2. Foot lights	
	3. BCM	

### 10.3.6.5 Inoperative low beam lamps

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

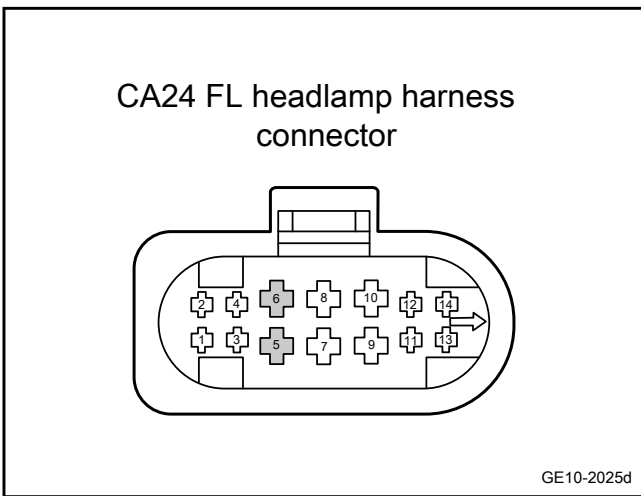
- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

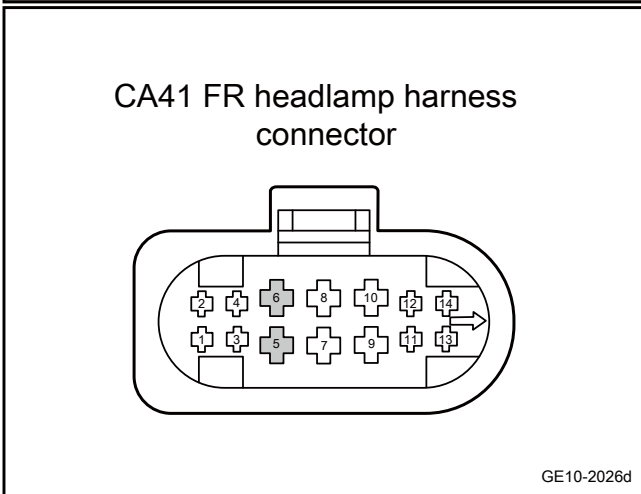
Step 2 Check whether the left and right low beam lamp working voltages are normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Turn on low beam lamps.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	CA24(5)	Standard
CA41(6)	CA41(5)	voltage: 11-14V

- G. Confirm whether the measured value meets the standard.



Yes

Replace the faulty low beam lamp.

No

Step 3 Check whether the lighting combination switch is caught.

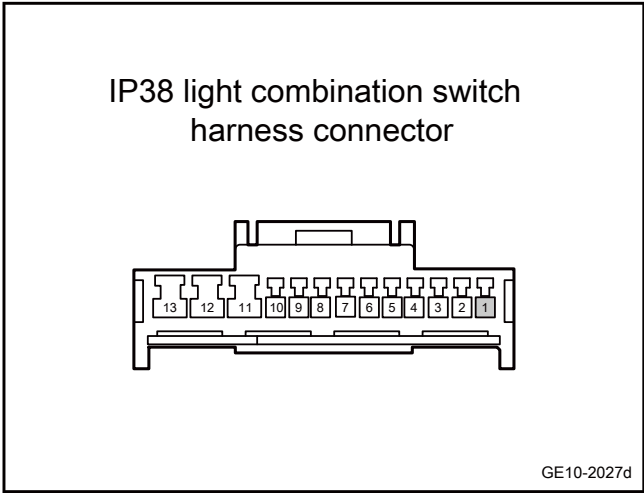
- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes

Replace the lighting combination switch, refer to [Replacement of lighting combination switch](#)

No

**Step 4** Check the lighting combination switch grounding circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the lighting combination switch harness connector IP38.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

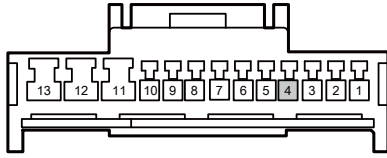
No

Repair or replace the harness.

Yes

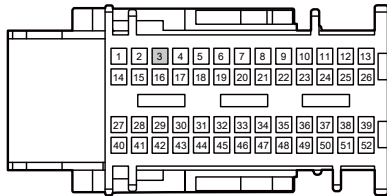
**Step 5** Check whether the circuit between BCM and the lighting combination switch is open.

IP38 light combination switch harness connector



GE10-2028d

IP22b body control module harness connector 3



GE10-2029d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(4)	IP22b(3)	Standard resistance: less than 1Ω

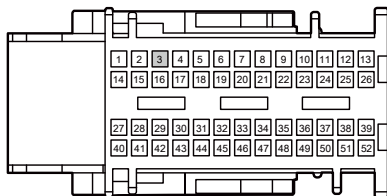
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 6 Check whether the circuit between BCM and the lighting combination switch is short to power supply.

IP22b body control module harness connector 3



GE10-2030d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

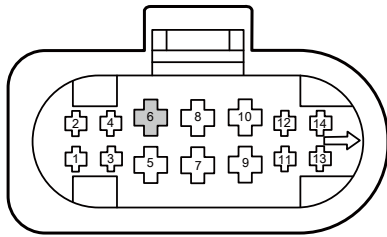
Repair or replace the harness.



Yes

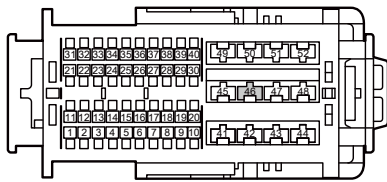
Step 7	Check whether the circuit between the low beam and BCM is normal.
--------	---

CA24 FL headlamp harness connector



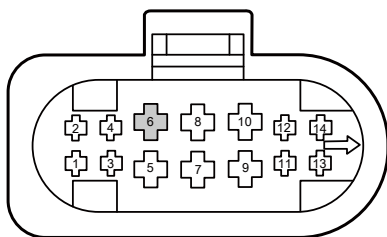
GE10-2031d

IP20 body control module harness connector 1



GE10-2032d

CA41 FR headlamp harness connector



GE10-2033d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect BCM harness connector IP20 and IP21b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	IP20(46)	Standard resistance: less than 1Ω
CA41(6)	IP21b(20)	

- F. Use a multimeter to measure each terminal according to the following table:

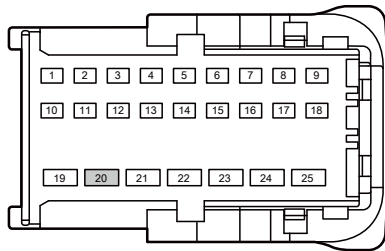
Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
CA41(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

IP21b body control module harness connector 2

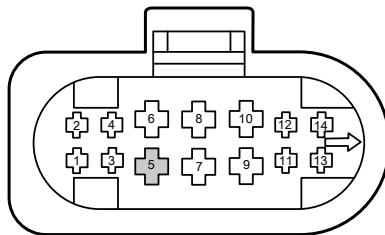


GE10-2034d

Yes

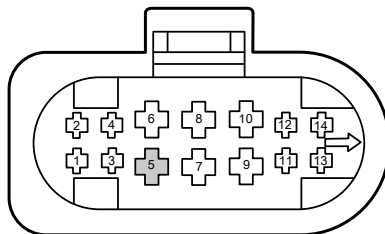
Step 8 Check whether the low beam grounding circuit is open.

CA24 FL headlamp harness connector



GE10-2035d

CA41 FR headlamp harness connector



GE10-2036d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(5)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 9 Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of lighting combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 11	Replace the BCM
---------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 12	Reprogram and reset the BCM.
------------	------------------------------

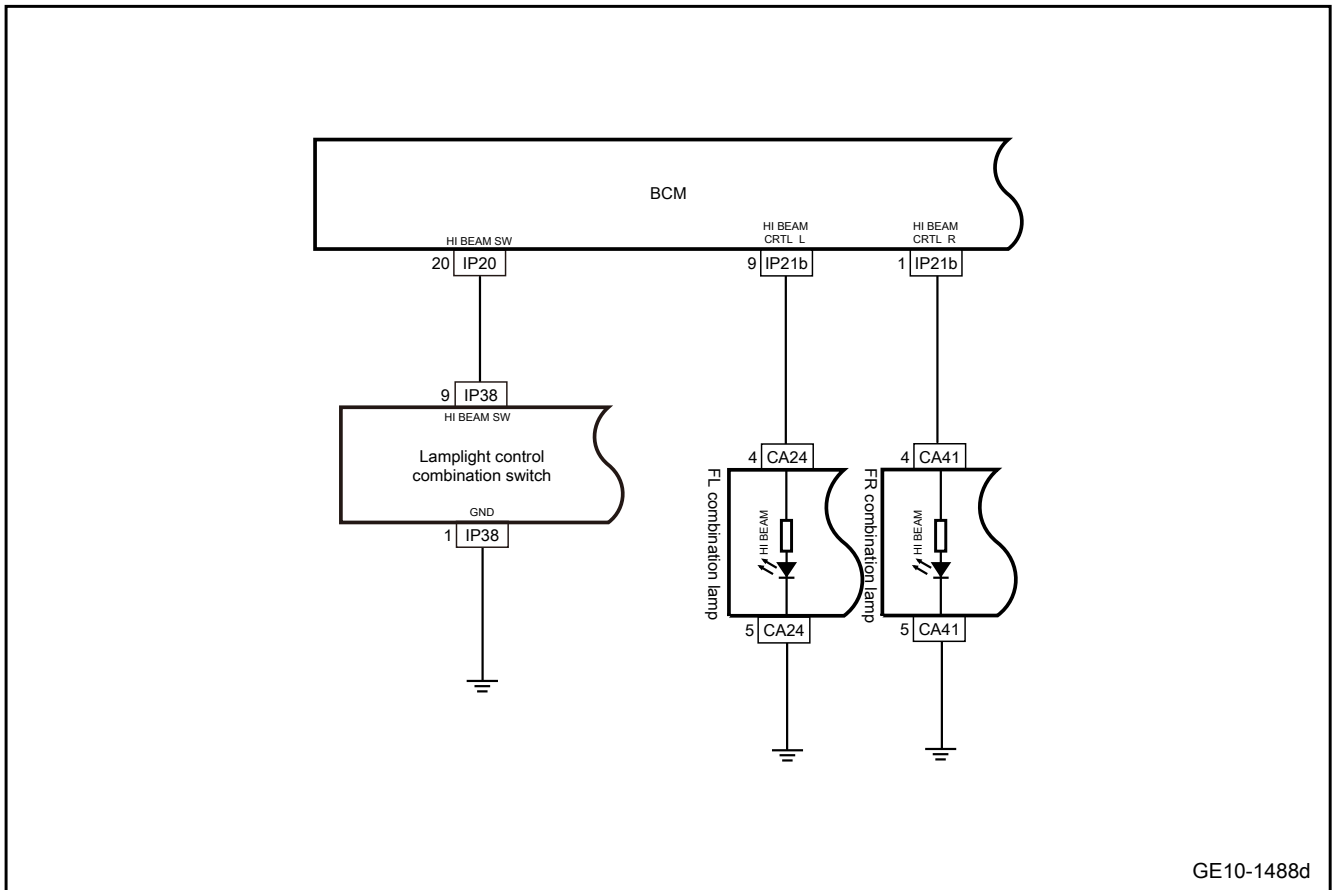
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 13	System is normal.
------------	-------------------

### 10.3.6.6 Inoperative high beam lamp

1. Schematic circuit diagram:



GE10-1488d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

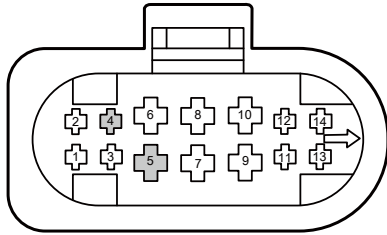
No

Repair or replace the faulty part.

Yes

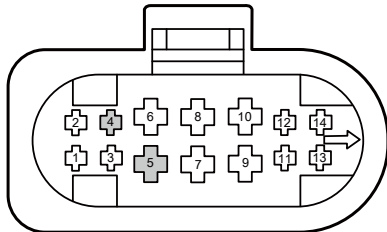
Step 2	Check whether the voltage of the left and right high beam lamp is functioning properly.
--------	---

CA24 FL headlamp harness connector



GE10-2037d

CA41 FR headlamp harness connector



GE10-2038d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Turn on the high beam lamp.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	CA24(5)	Standard voltage: 11-14V
CA41(4)	CA41(5)	

- G. Confirm whether the measured value meets the standard.

Yes

Replace the faulty high beam lamp bulb.

No

Step 3 | Check whether the lighting combination switch is caught.

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

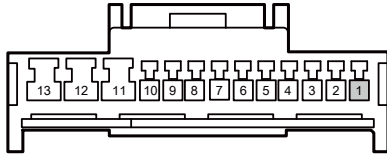
Yes

Replace the lighting combination switch, refer to [Replacement of lighting combination switch](#)

No

Step 4 | Check the lighting combination switch grounding circuit.

IP38 light combination switch harness connector



GE10-2039d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the lighting combination switch harness connector IP38.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

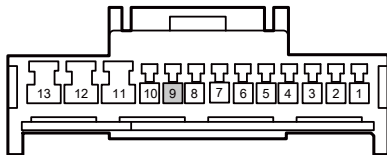
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between BCM and the lighting combination switch is open.

IP38 light combination switch harness connector



GE10-2040d

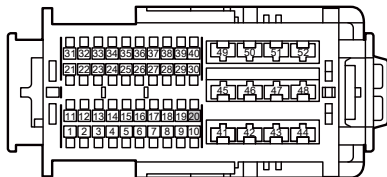
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(9)	IP20(20)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

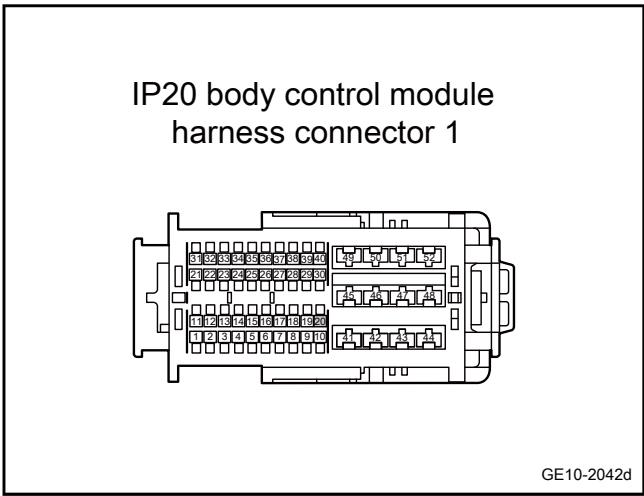
IP20 body control module harness connector 1



GE10-2041d

Yes

**Step 6** Check whether the circuit between BCM and the lighting combination switch is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(20)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

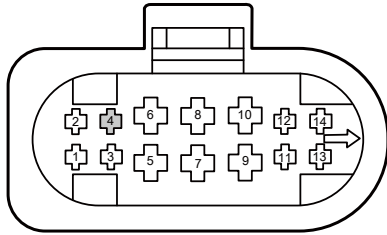
No Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the high beam and BCM is normal.

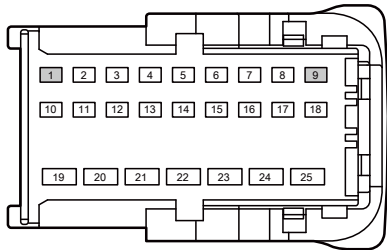


CA24 FL headlamp harness connector



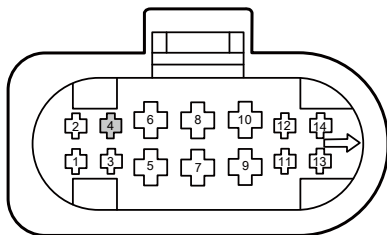
GE10-2043d

IP21b body control module harness connector 2



GE10-2044d

CA41 FR headlamp harness connector



GE10-2045d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect the BCM harness connector IP21b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	IP21b(9)	Standard resistance: less than 1Ω
CA41(4)	IP21b(1)	

- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
CA41(4)		

- G. Confirm whether the measured value meets the standard.

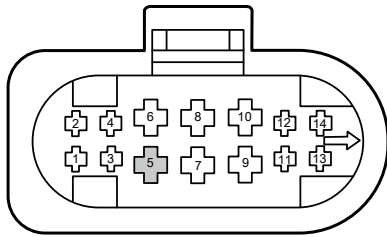
No

Repair or replace the harness.

Yes

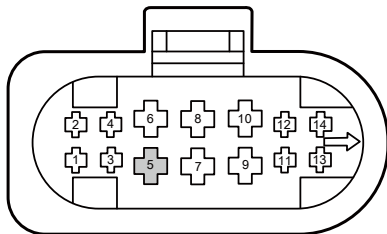
Step 8 Check whether the grounding circuit of high beam lamp is opened.

CA24 FL headlamp harness connector



GE10-2046d

CA41 FR headlamp harness connector



GE10-2047d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(5)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of lighting combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 11	Replace the BCM
---------	-----------------

A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 12	Reprogram and reset the BCM.
---------	------------------------------

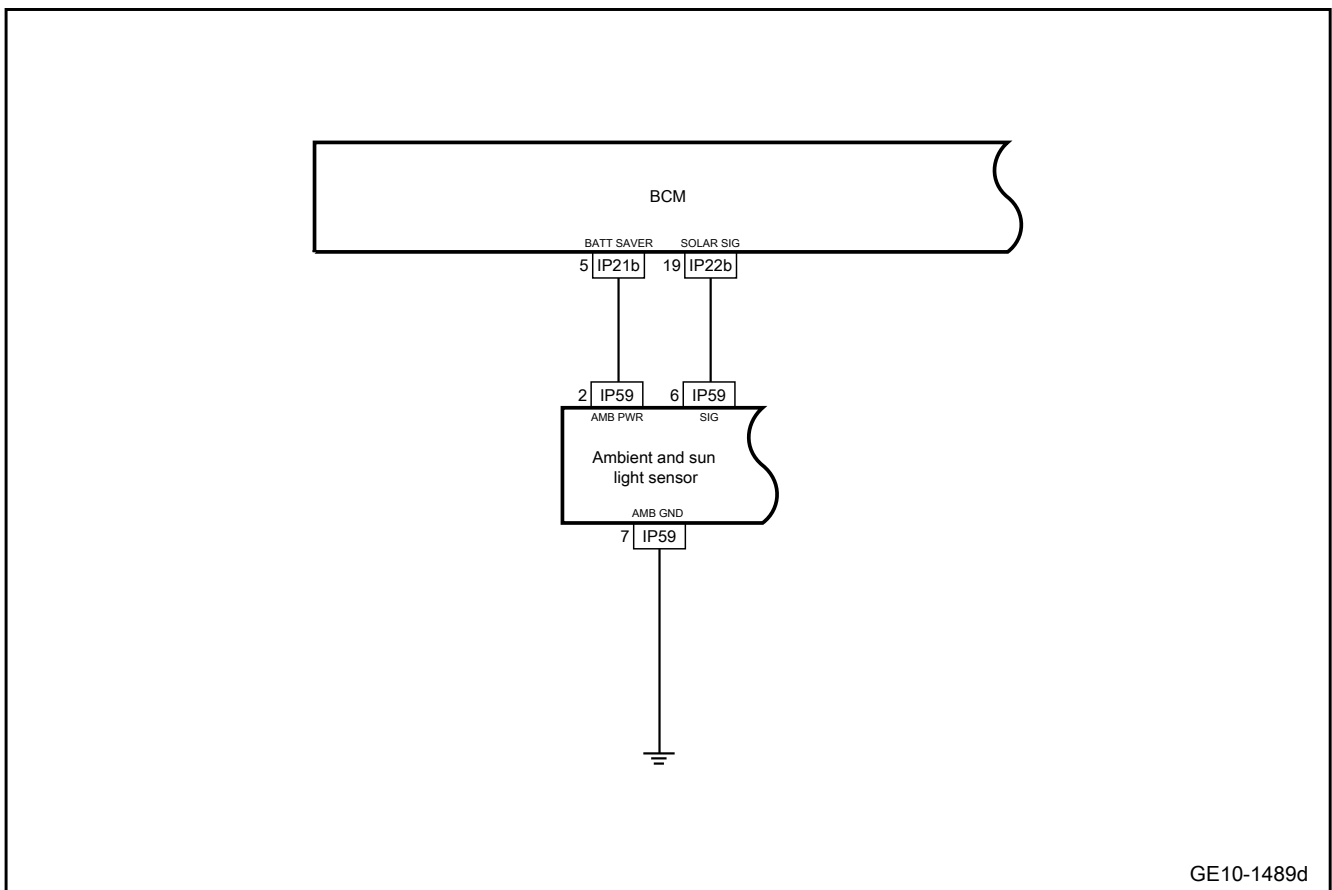
A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 13	System is normal.
---------	-------------------

### 10.3.6.7 The headlights are automatically turned on and do not work

1. Schematic circuit diagram:



GE10-1489d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the appearance of ambient light and sunlight sensor for damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

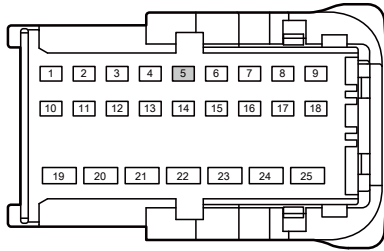
No

Repair or replace the faulty part.

Yes

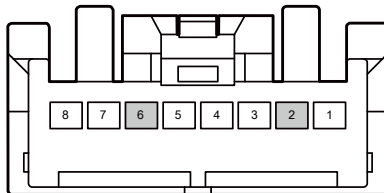
Step 2	Check whether the circuit between the BCM and the ambient light and sunlight sensor is normal.
--------	--

IP21b body control module harness connector 2



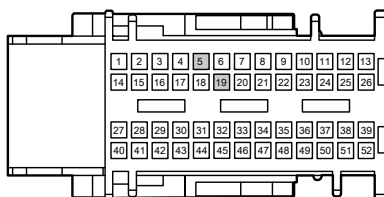
GE10-2048d

IP59 ambient and sun light sensor harness connector



GE10-2049d

IP22b body control module harness connector 3



GE10-2050d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP22b and IP21b.
- C. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	IP59(2)	Standard resistance: less than 1Ω
IP22b(19)	IP59(6)	
IP22b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(19)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(19)		

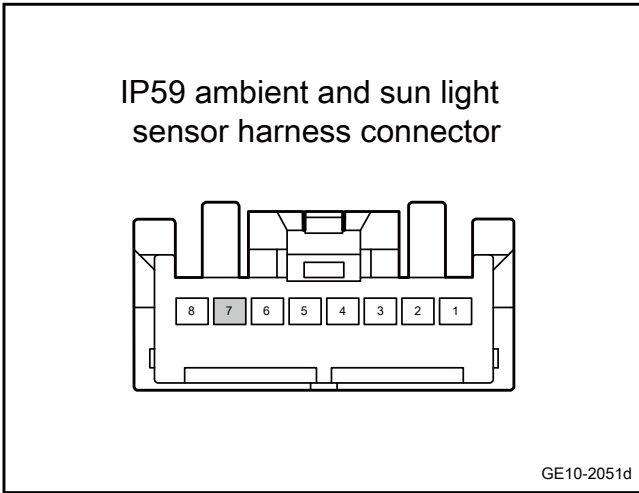
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 | Check whether the grounding circuit of the ambient light and sunlight sensor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector IP59 of the ambient light and sunlight sensor.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 4** Replace the ambient light and sun light sensor.

- A. Replace the ambient light and sun light sensor. Refer to [Replacement of ambient light and sun light sensor](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

**Step 5** Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 6** Reprogram and reset the BCM.

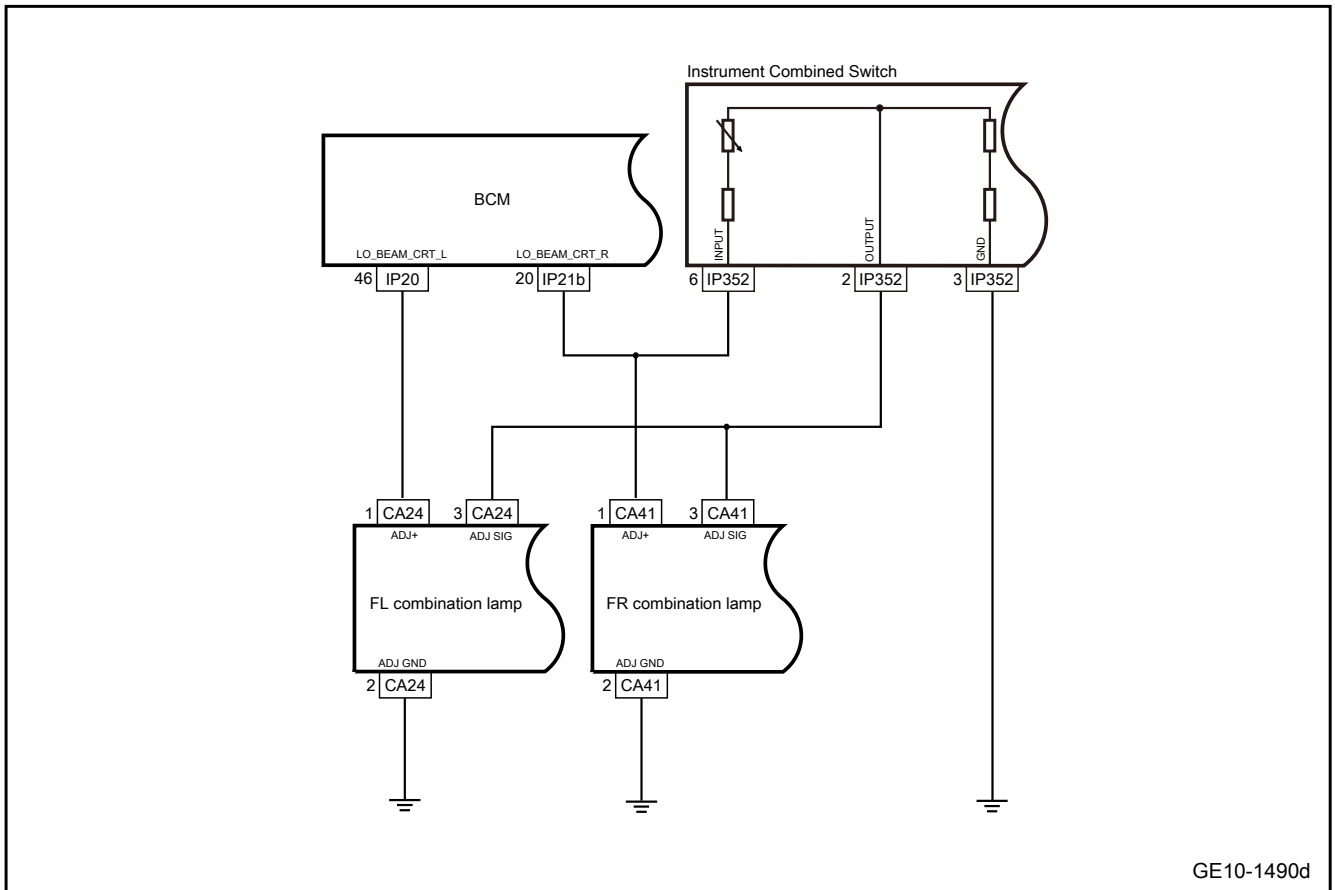
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 7** System is normal.

### 10.3.6.8 Headlight height adjustment is inoperative

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

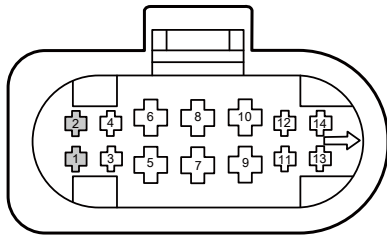
- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

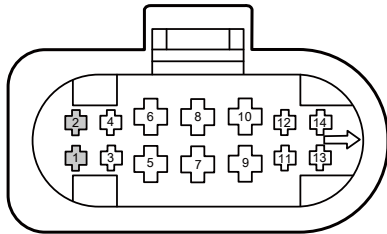
Step 2	Check whether the working voltage of the left and right regulating motors is normal.
--------	--

CA24 FL headlamp harness connector



GE10-2052d

CA41 FR headlamp harness connector



GE10-2053d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Turn on the adjustment motor switch.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(1)	CA24(2)	Standard
CA41(1)	CA41(2)	voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

Yes

Replace the faulty regulating motor.

No

Step 3 | Check whether the instrument combination switch is blocking.

- A. Operate the instrument combination switch.
- B. Check whether the switch is caught.

Yes

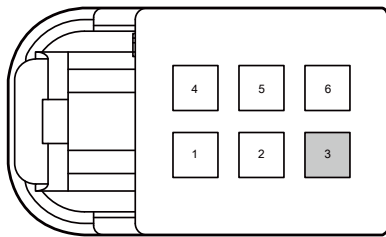
Replace the instrument combination switch, refer to [Replacement of the instrument combination switch](#)

No

Step 4 | Check the grounding circuit of the instrument combination switch.



IP352 Harness connector of switch block facia



GE10-2054d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the instrument combination switch harness connector IP352.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP352(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

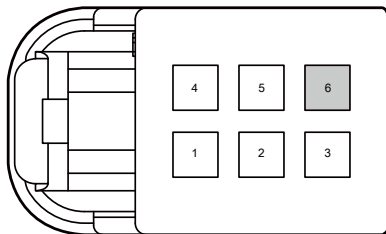
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between BCM and the instrument combination switch is open.

IP352 Harness connector of switch block facia



GE10-2055d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the instrument combination switch harness connector IP352.
- D. Use a multimeter to measure each terminal according to the following table:

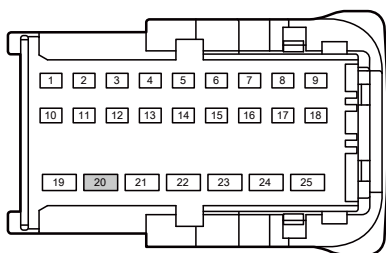
Measure terminal 1	Measure terminal 2	Standard value
IP352(6)	IP21b(20)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

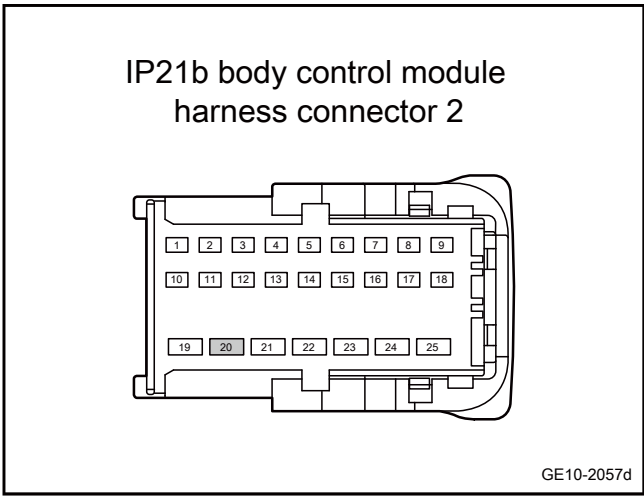
IP21b body control module harness connector 2



GE10-2056d

Yes

**Step 6** Check whether the circuit between BCM and the instrument combination switch is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the instrument combination switch harness connector IP352.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(20)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Confirm whether the measured value meets the standard.

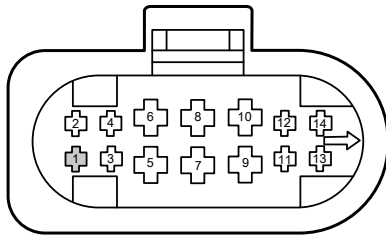
No

Repair or replace the harness.

Yes

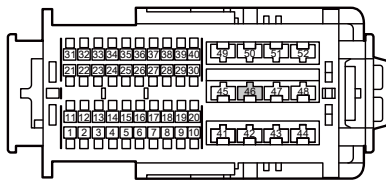
**Step 7** Check whether the power supply circuit of the adjustment motor is normal.

CA24 FL headlamp harness connector



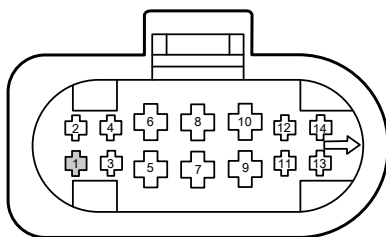
GE10-2058d

IP20 body control module harness connector 1



GE10-2059d

CA41 FR headlamp harness connector



GE10-2060d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect BCM harness connector IP20 and IP21b.
- E. Use a multimeter to measure each terminal according to the following table:

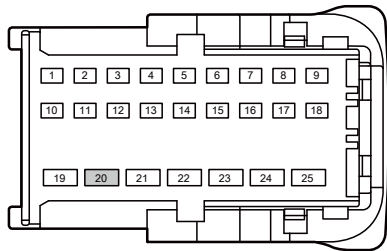
Measure terminal 1	Measure terminal 2	Standard value
CA24(1)	IP20(46)	Standard resistance: less than 1Ω
CA41(1)	IP21b(20)	
CA24(1)	Vehicle body is grounded.	Standard resistance:
CA41(1)		greater than 10KΩ

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

IP21b body control module harness connector 2

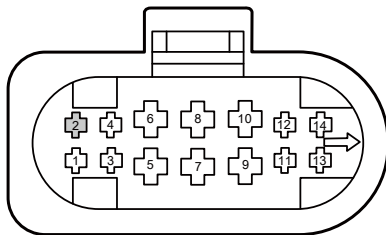


GE10-2061d

Yes

Step 8 Check whether the grounding circuit of the regulating motor is open.

CA24 FL headlamp harness connector



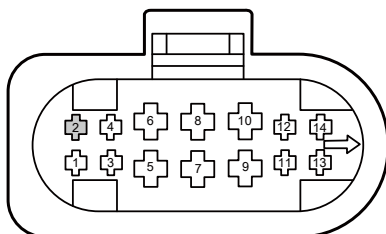
GE10-2062d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(2)		

- E. Confirm whether the measured value meets the standard.

CA41 FR headlamp harness connector



GE10-2063d

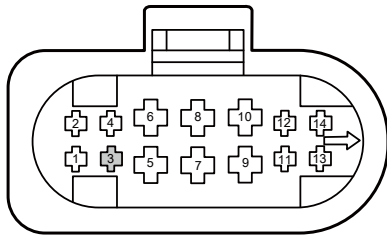
No

Repair or replace the harness.

Yes

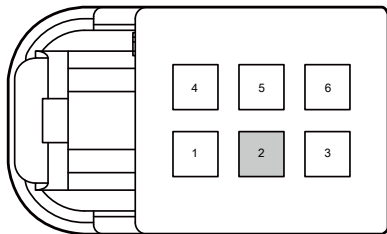
Step 9 Check whether the circuit between the regulating motor and the instrument combination switch is normal.

CA24 FL headlamp harness connector



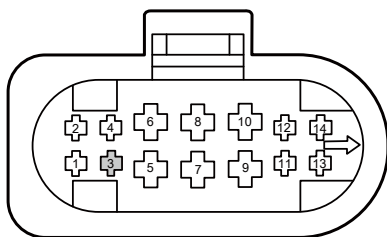
GE10-2064d

IP352 Harness connector of switch block facia



GE10-2065d

CA41 FR headlamp harness connector



GE10-2066d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect the instrument combination switch harness connector IP352.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(3)	IP352(2)	Standard resistance: less than 1Ω
CA41(3)	IP352(2)	
CA24(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA41(3)		

- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(3)	Vehicle body is grounded.	Standard voltage: 0V
CA41(3)		

- H. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 10	Replace the instrument combination switch.
---------	--

- A. Replace the instrument combination switch. Refer to [Replacement of instrument combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Check the BCM power supply and grounding circuit.
---------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 12	Replace the BCM
---------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 13	Reprogram and reset the BCM.
---------	------------------------------

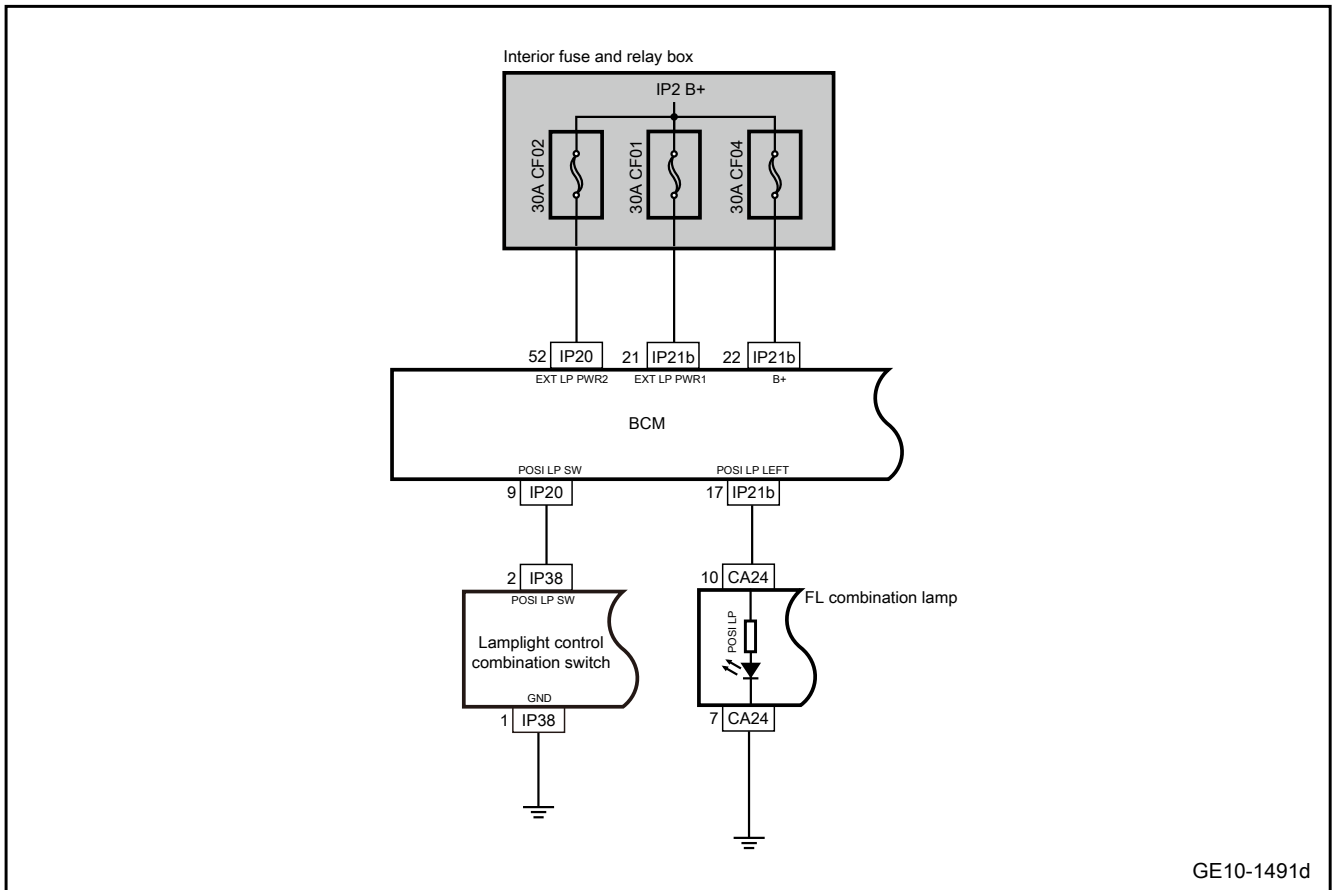
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 14	System is normal.
---------	-------------------

### 10.3.6.9 Position lamp is inoperative

1. Schematic circuit diagram:



2. Diagnosis steps

This manual only diagnoses the faults of the left front combination lamp (position lamp). The diagnosis of other position lamps is the same as that of the left front combination lamp (position lamp).

Step 1	Primary check.
--------	----------------

- A. Check whether the position lamp has apparent damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the lighting combination switch is caught.
--------	--

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes Replace the lighting combination switch, refer to [Replacement of lighting combination switch](#)

No

Step 3 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove interior fuses CF01, CF02, CF04 and check if they are blown.

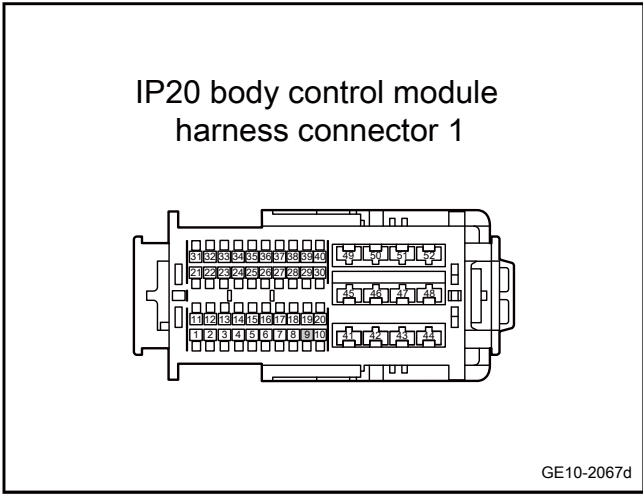
Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

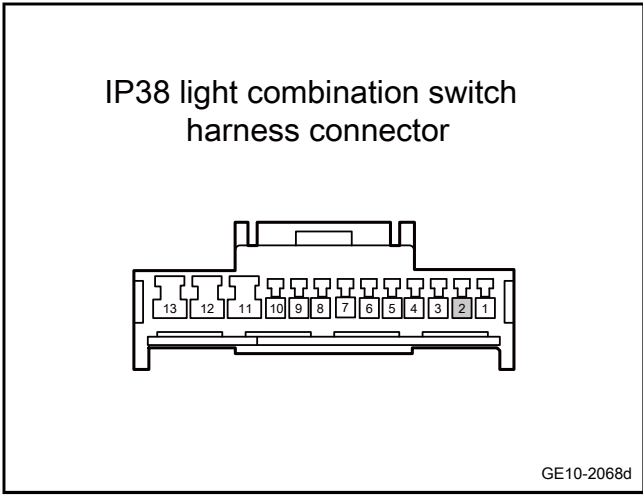
Step 4 Check whether the circuit between BCM and the lighting combination switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(9)	IP38(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.



No

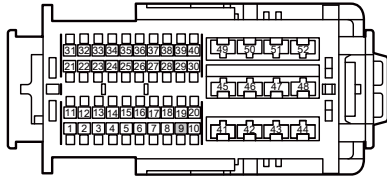
Repair or replace the harness.

Yes

Step 5 Check whether the circuit between BCM and the lighting combination switch is short to power supply.



IP20 body control module harness connector 1



GE10-2069d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(9)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

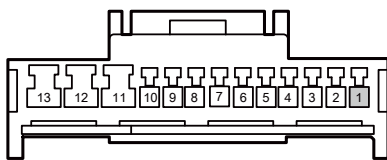
No

Repair or replace the harness.

Yes

Step 6 Check the lighting combination switch grounding circuit.

IP38 light combination switch harness connector



GE10-2070d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the lighting combination switch harness connector IP38.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

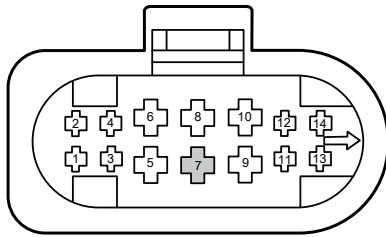
No

Repair or replace the harness.

Yes

Step 7 Check the grounding line of left front combination lamp.

CA24 FL headlamp harness connector



GE10-2071d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

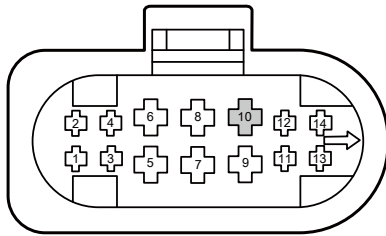
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 Check whether the circuit between BCM and left front combination lamp is open circuit.

CA24 FL headlamp harness connector



GE10-2072d

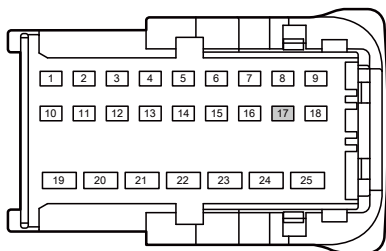
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(10)	IP21b(17)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

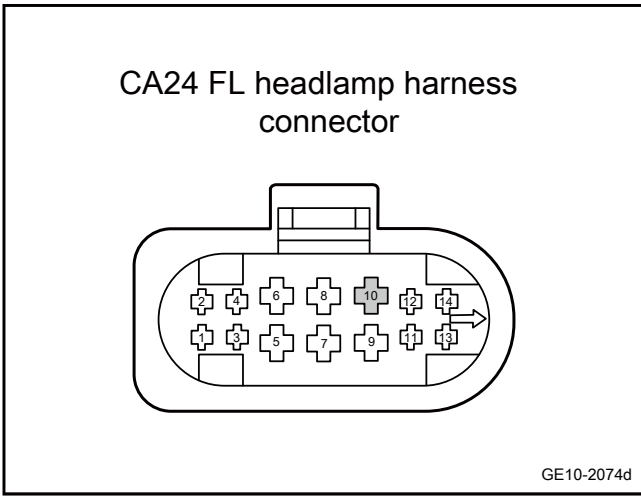
IP21b body control module harness connector 2



GE10-2073d

Yes

Step 9 Check whether the line between BCM and left front combination lamp is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No  Repair or replace the harness.

Yes

Step 10 Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of lighting combination switch](#)
- B. Confirm whether the system is normal.

Yes  System is normal.

No

Step 11 Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes  System is normal.

No

Step 12 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13	Replace the BCM
------------	-----------------

A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 14	Reprogram and reset the BCM.
------------	------------------------------

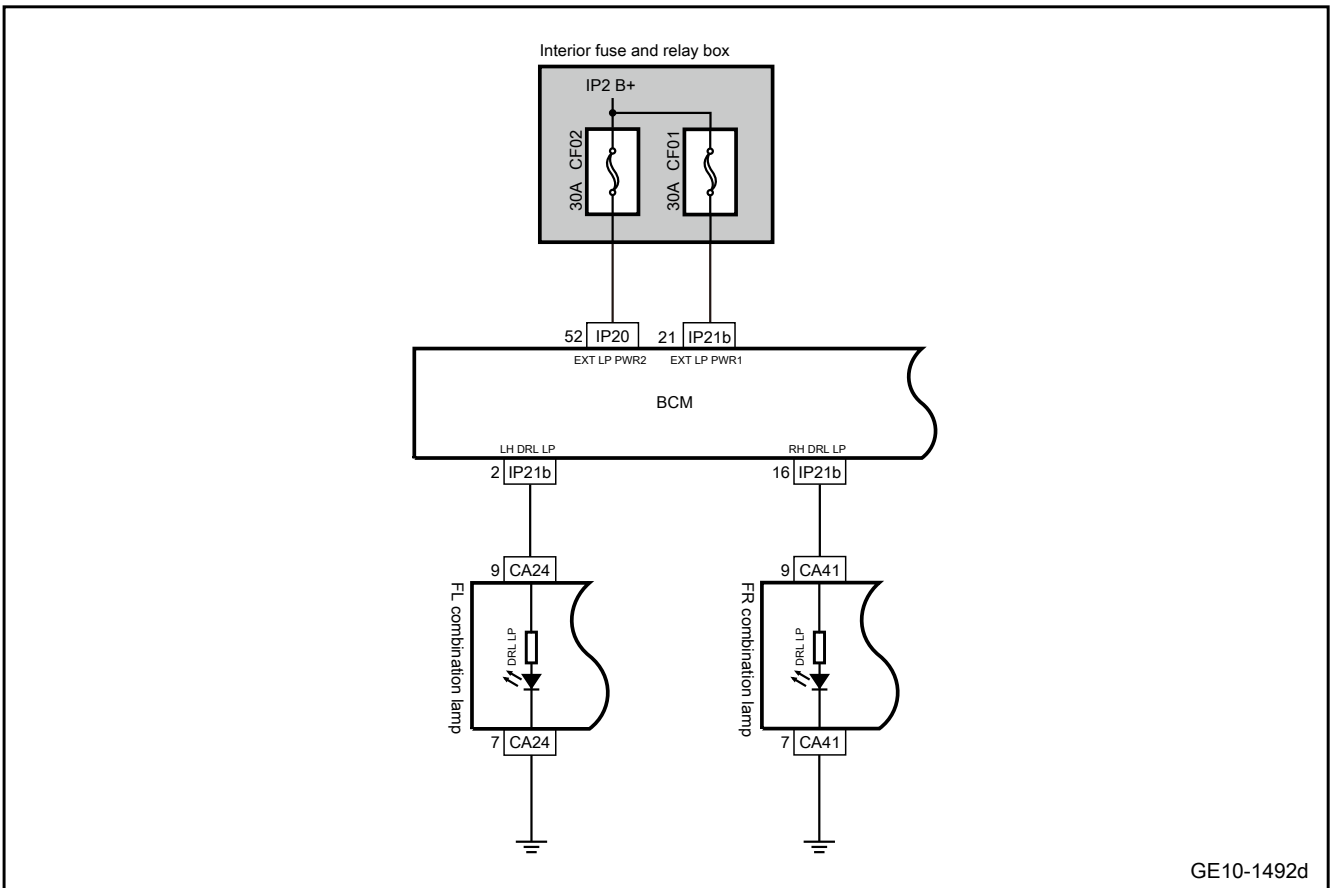
A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 15	System is normal.
------------	-------------------

### 10.3.6.10 Inoperative daytime running light

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether there is appearance damage of the daytime running light.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuses CF01 and CF02 and check if they are blown.

Rated fuse capacity: 30A

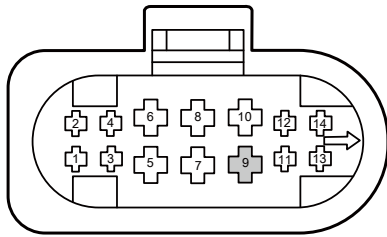
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.
---

No

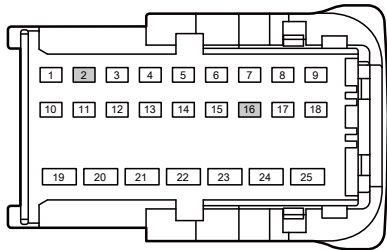
Step 3	Check whether the circuit between the BCM and the daytime running light is open.
--------	--

CA41 FR headlamp harness connector



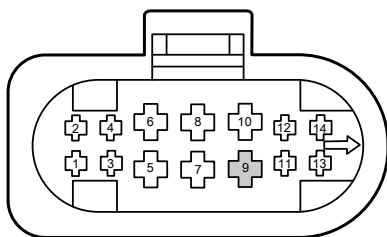
GE10-1924d

IP21b body control module harness connector 2



GE10-1925d

CA24 FL headlamp harness connector



GE10-1926d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Disconnect the harness connector CA41 of RF combination lamp.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(9)	IP21b(16)	Standard resistance: less than 1Ω
CA24(9)	IP21b(2)	

- F. Confirm whether the measured value meets the standard.

No

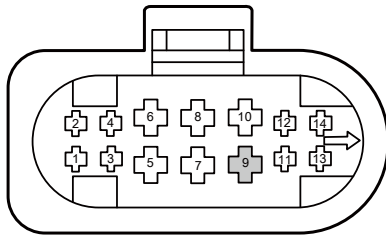
Repair or replace the harness.

Yes

Step 4

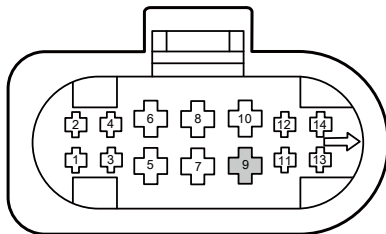
Check whether the circuit between the BCM and the daytime running light is shorted to power supply.

CA41 FR headlamp harness connector



GE10-1927d

CA24 FL headlamp harness connector



GE10-1928d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Disconnect the harness connector CA41 of RF combination lamp.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(9)	Vehicle body is grounded.	Standard voltage: 0V
CA24(9)		

- G. Confirm whether the measured value meets the standard.

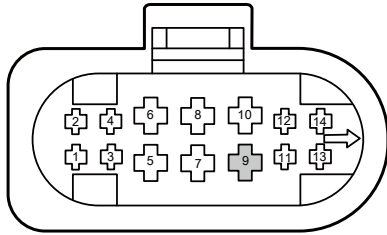
No

Repair or replace the harness.

Yes

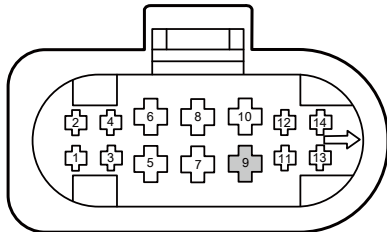
Step 5 | Check whether the circuit between the BCM and the daytime running light is shorted to GND.

CA41 FR headlamp harness connector



GE10-1929d

CA24 FL headlamp harness connector



GE10-1930d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Disconnect the harness connector CA41 of RF combination lamp.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(9)		

- F. Confirm whether the measured value meets the standard.

No

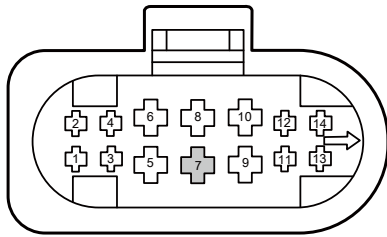
Repair or replace the harness.

Yes

Step 6 | Check whether the grounding circuit of the daytime running light is open

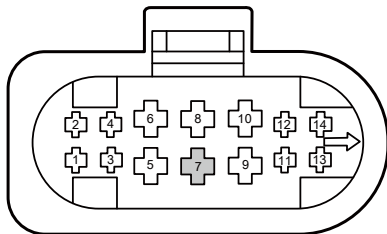


CA41 FR headlamp harness connector



GE10-1931d

CA24 FL headlamp harness connector



GE10-1932d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA41(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA24(7)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace daytime running light

- A. Replace daytime running light Refer to [replacement of daytime running light](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 9 Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10	Reprogram and reset the BCM.
---------	------------------------------

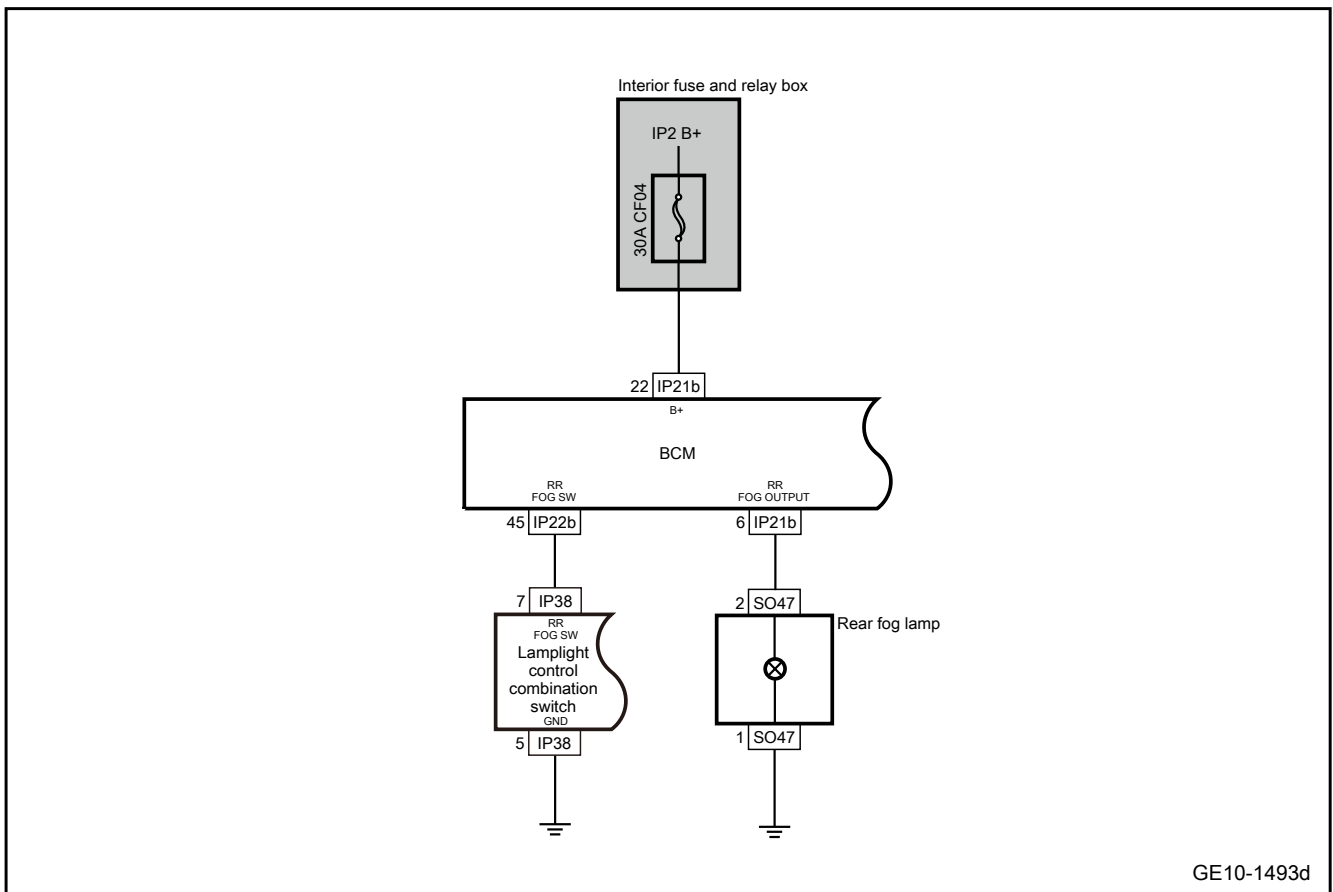
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11	System is normal.
---------	-------------------

### 10.3.6.11 Rear fog lamp is inoperative

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the fog lamp is damaged in appearance.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check whether the lighting combination switch is caught.

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes

Replace the lighting combination switch, refer to [Replacement of lighting combination switch](#)

No

**Step 3** Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF04 and check if it is blown.  
Rated fuse capacity: 30A

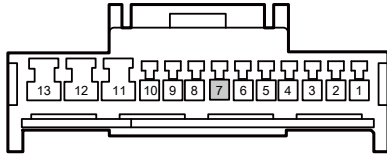
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

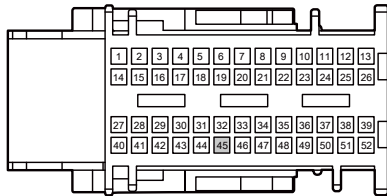
**Step 4** Check whether the circuit between BCM and the lighting combination switch is open.

IP38 light combination switch harness connector



GE10-1933d

IP22b body control module harness connector 3



GE10-1934d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(7)	IP22b(45)	Standard resistance: less than 1Ω

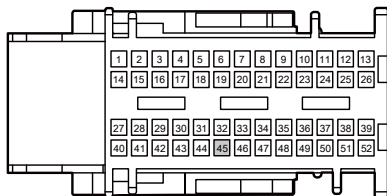
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between BCM and the lighting combination switch is short to power supply.

IP22b body control module harness connector 3



GE10-1935d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

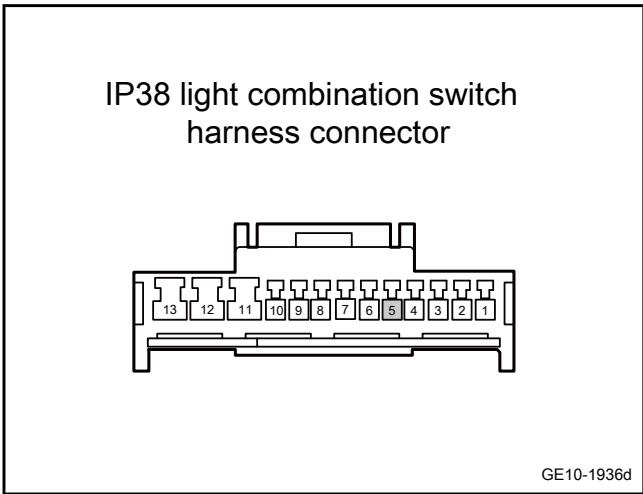
Measure terminal 1	Measure terminal 2	Standard value
IP22b(45)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Check the lighting combination switch grounding circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the lighting combination switch harness connector IP38.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

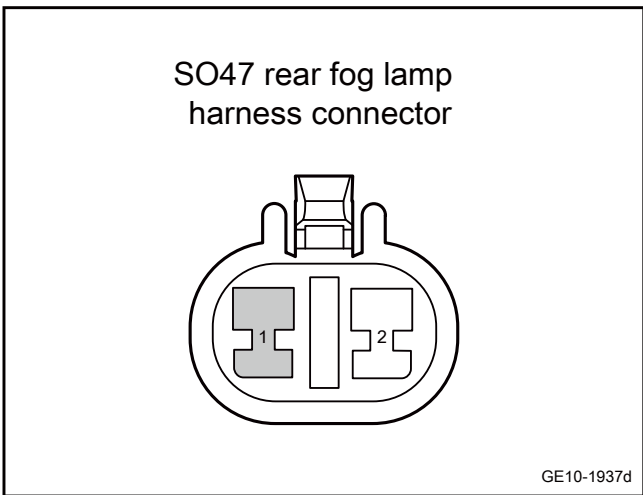
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check the grounding circuit of the rear fog lamp.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear fog lamp harness connector SO47.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

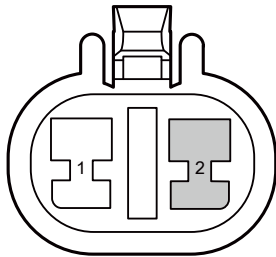
No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between BCM and left rear fog lamp is open.

SO47 rear fog lamp harness connector



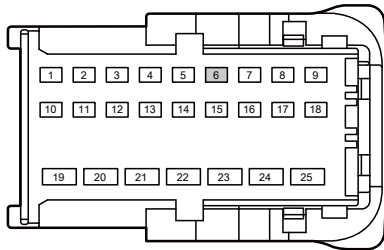
GE10-1938d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(2)	IP21b(6)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

IP21b body control module harness connector 2



GE10-1939d

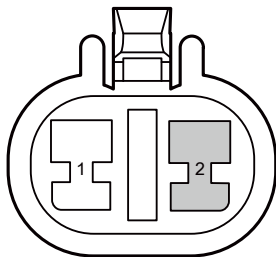
No

Repair or replace the harness.

Yes

Step 9 Check whether the circuit between BCM and rear fog lamp is short to GND.

SO47 rear fog lamp harness connector



GE10-1940d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO47(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10	Replace the lighting combination switch.
------------	--

- A. Replace the lighting combination switch. Refer to [Replacement of lighting combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace rear fog lamp.
---------	------------------------

- A. Replace rear fog lamp. Refer to [replacement of rear fog lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 14	Reprogram and reset the BCM.
------------	------------------------------

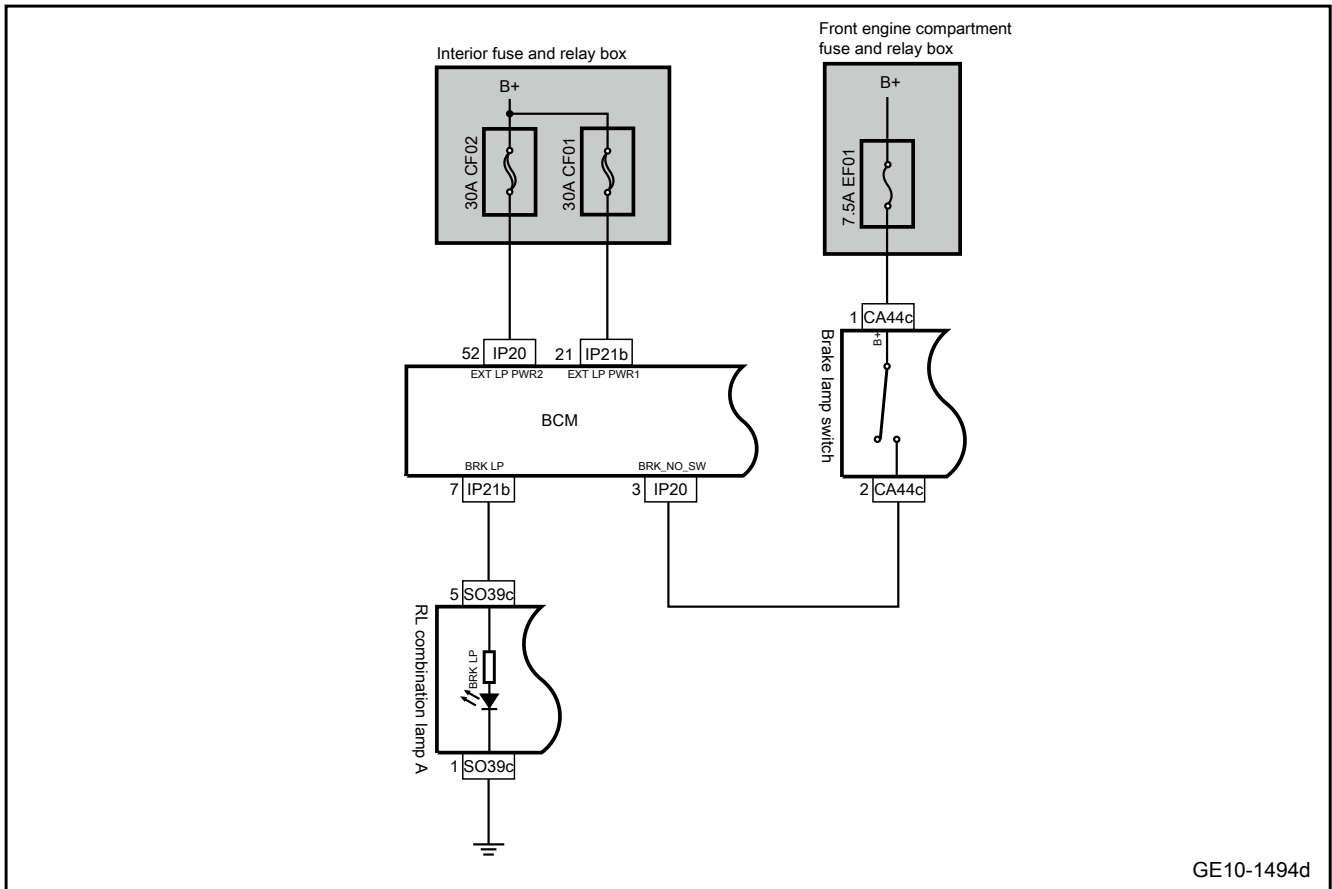
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 15	System is normal.
------------	-------------------

10.3.6.12 The brake lamp is inoperative

1. Schematic circuit diagram:



2. Diagnosis steps

This Manual only provides the diagnosis for faults of the left rear combination lamp A (brake lamp). The diagnosis of other brake lamps is the same as that of the left rear combination lamp A (brake lamp).

Step 1	Primary check.
--------	----------------

- A. Check the brake lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------



- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuses CF01 and CF02 and check if they are blown.  
Rated fuse capacity: 30A
- C. Unplug the EF01 fuse in the front engine compartment and check whether the fuse is blown out.  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the brake pedal for hysteresis.

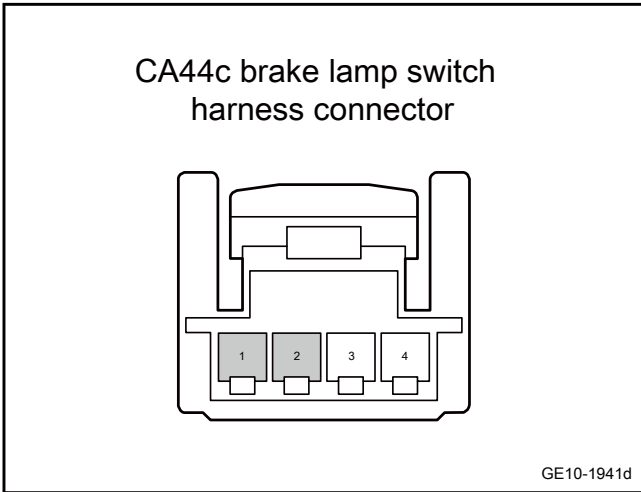
- A. Step on the brake pedal.
- B. Check the brake pedal for hysteresis.

Yes

Replace the brake switch, refer to [Replacement of brake switch](#)

No

**Step 4** Check whether the brake lamp switch is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. Turn on brake lamp switch
- D. Use a multimeter to measure resistance between terminals according to the following table:

Switch position	Measure terminal 1	Measure terminal 2	Standard value
Turn on	CA44c(2)	CA44c(1)	Standard resistance: less than 1Ω
Disabling	CA44c(2)	CA44c(1)	Standard resistance: 10KΩ or higher

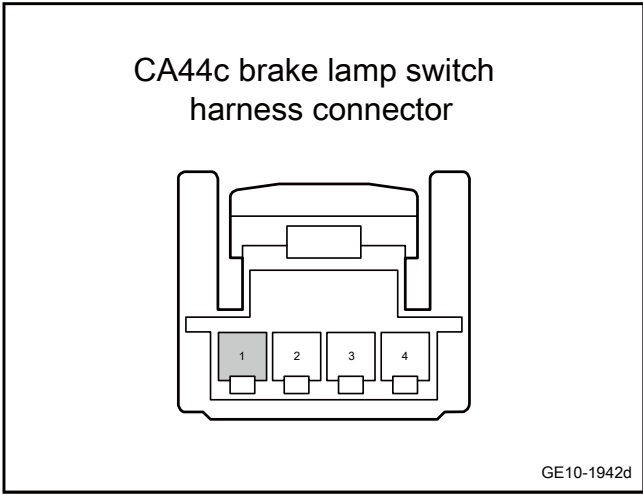
- E. Confirm whether the measured value meets the standard.

No

Replace the brake lamp switch.

Yes

**Step 5** Check the power supply circuit of the brake lamp switch.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(1)	Vehicle body is grounded.	Standard voltage: 11-14V

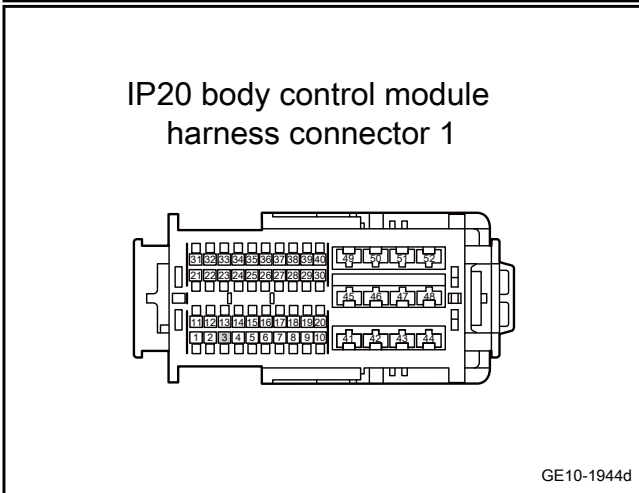
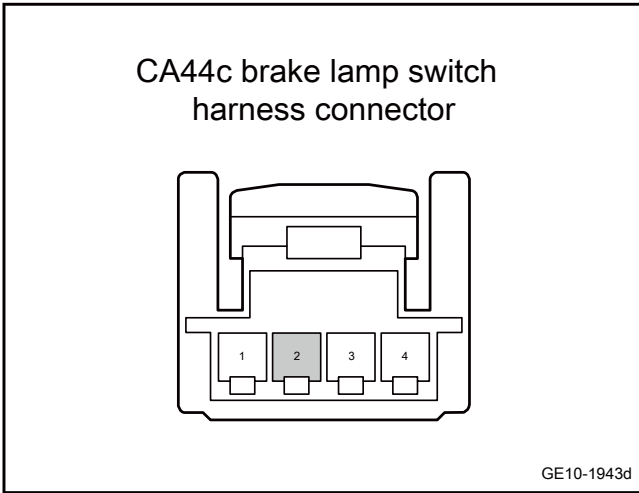
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the harness between BCM and brake lamp switch to be open.



Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure terminals according to the following table:

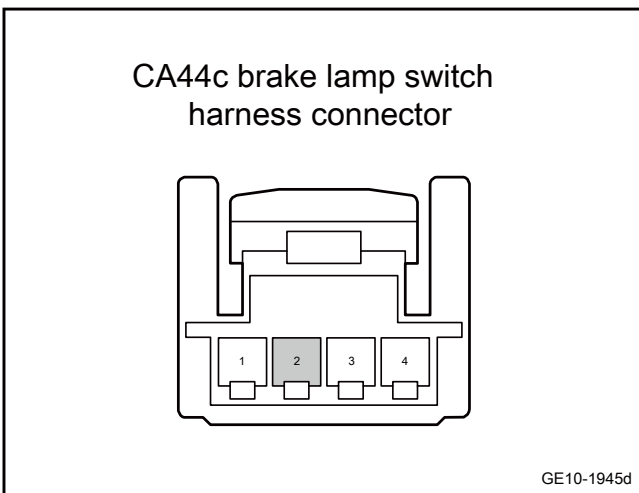
Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	IP20(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 7** Check harness between BCM and brake lamp switch for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

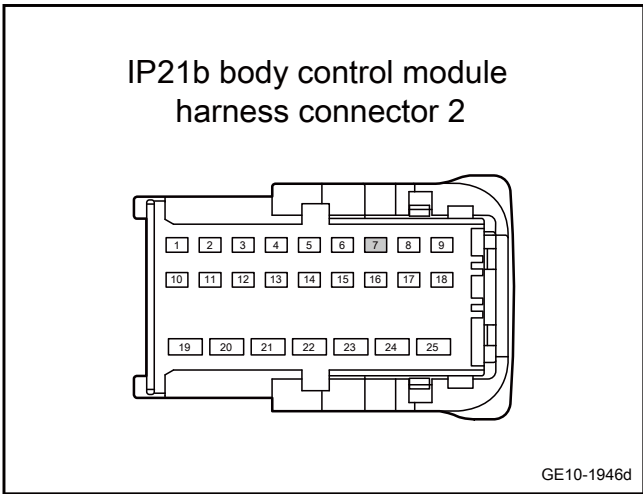
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

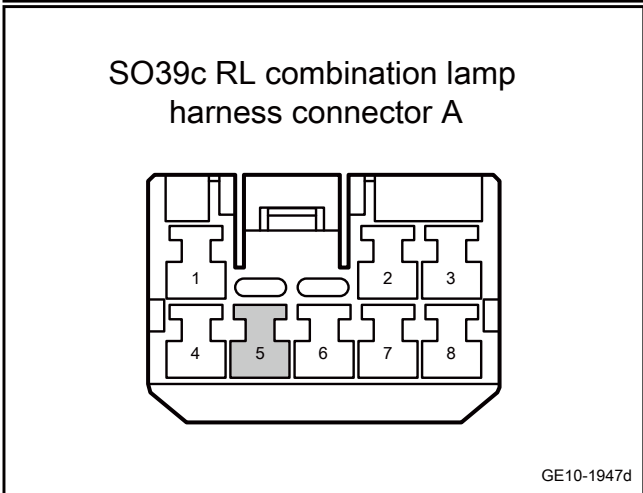
**Step 8** Check the harness between BCM and brake lamp to be open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(7)	SO39c(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

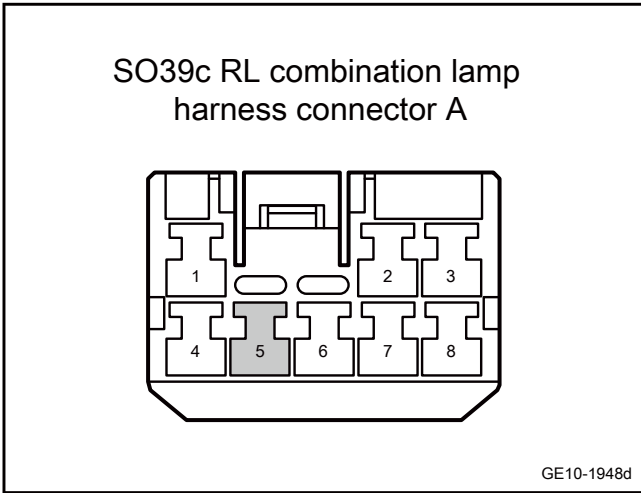


No

Repair or replace the harness.

Yes

**Step 9** Check the harness between BCM and brake lamp for short circuit to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure terminals according to the following table:

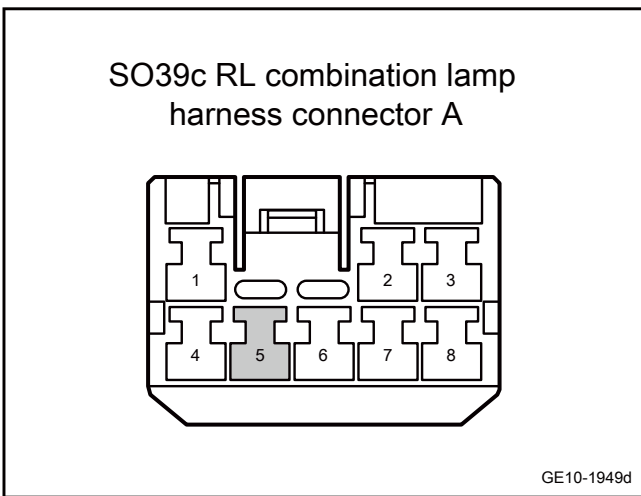
Measure terminal 1	Measure terminal 2	Standard value
SO39c(5)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 10</b>	Check the harness between BCM and brake lamp for short circuit to ground.
----------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Use a multimeter to measure terminals according to the following table:

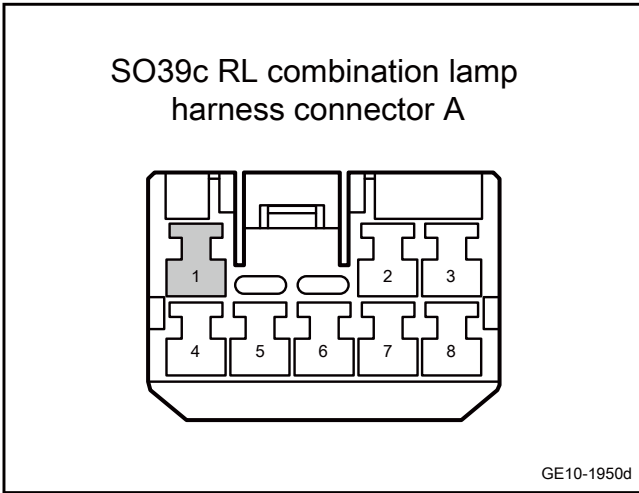
Measure terminal 1	Measure terminal 2	Standard value
SO39c(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 11</b>	Check the brake lamp ground line for an open circuit.
----------------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector SO39c of the left rear combination lamp A.
- C. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO39c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 12	Replace the brake lamp.
---------	-------------------------

- A. Replace the brake lamp. Refer to [replacement of brake lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Check the BCM power supply and grounding circuit.
---------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 14	Replace the BCM
---------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 15	Reprogram and reset the BCM.
---------	------------------------------

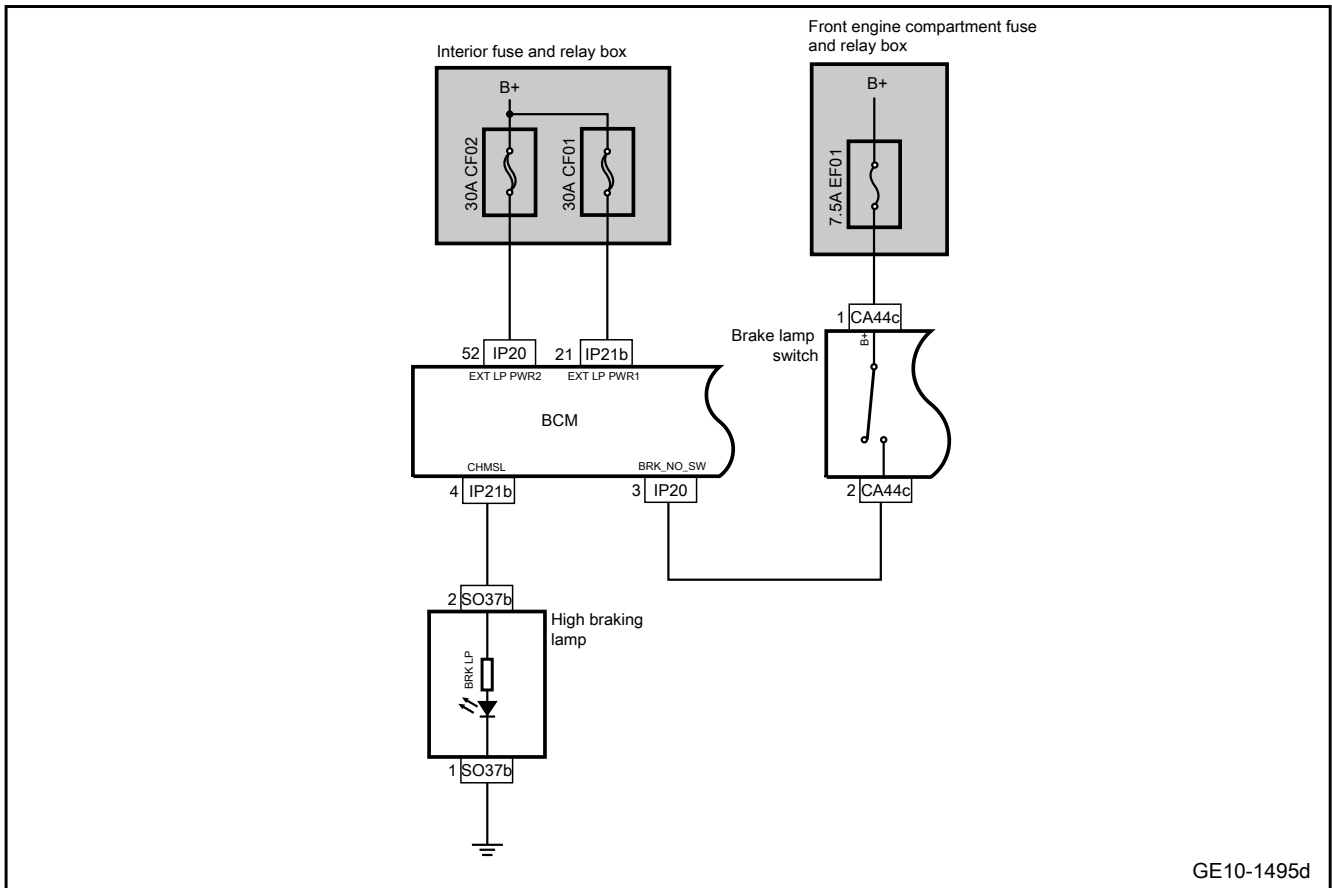
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step	System is normal.
16	

### 10.3.6.13 Inoperative high mounted brake lamp

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the high mounted brake lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuses CF01 and CF02 and check if they are blown.  
  
Rated fuse capacity: 30A
- C. Unplug the EF01 fuse in the front engine compartment and check whether the fuse is blown out.  
  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the brake pedal for hysteresis.

- A. Step on the brake pedal.
- B. Check the brake pedal for hysteresis.

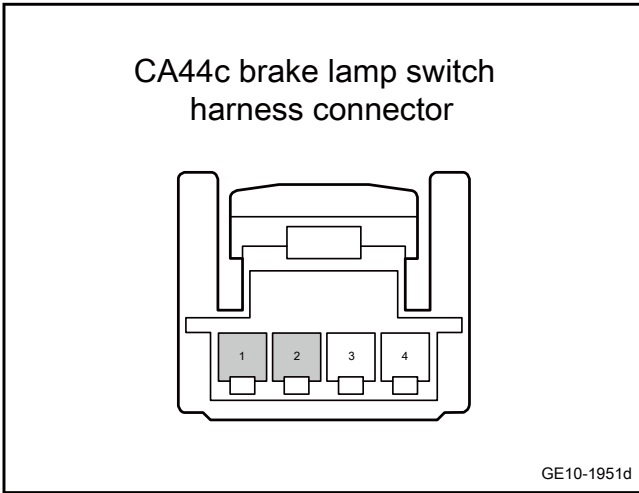
Yes

Replace the high-mounted brake lamp switch, refer to [Replacement of high-mounted brake lamp switch](#)

No

Step 4 Check whether the high-mounted brake lamp switch is normal.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the high-mounted brake lamp switch harness connector CA44c.
- C. Turn on the high-mounted brake lamp switch.
- D. Use a multimeter to measure resistance between terminals according to the following table:

Switch position	Measure terminal 1	Measure terminal 2	Standard value
Turn on	CA44c(2)	CA44c(1)	Standard resistance: less than 1Ω
Disabling	CA44c(2)	CA44c(1)	Standard resistance: 10KΩ or higher

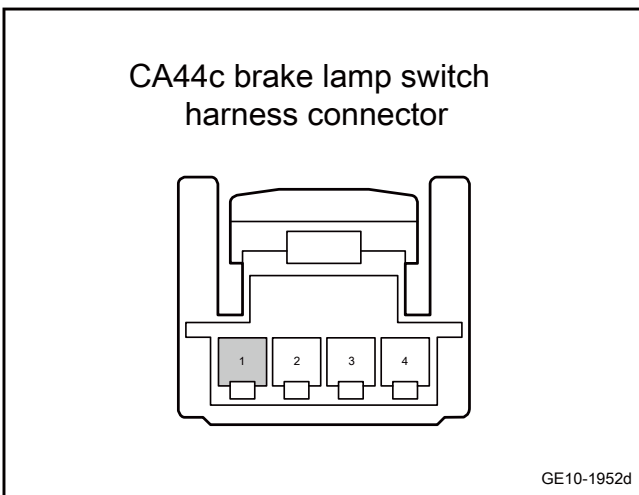
- E. Confirm whether the measured value meets the standard.

No

Replace the high-mounted brake lamp switch.

Yes

**Step 5** Check the power supply circuit of the brake lamp switch.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(1)	Vehicle body is grounded.	Standard voltage: 11-14V

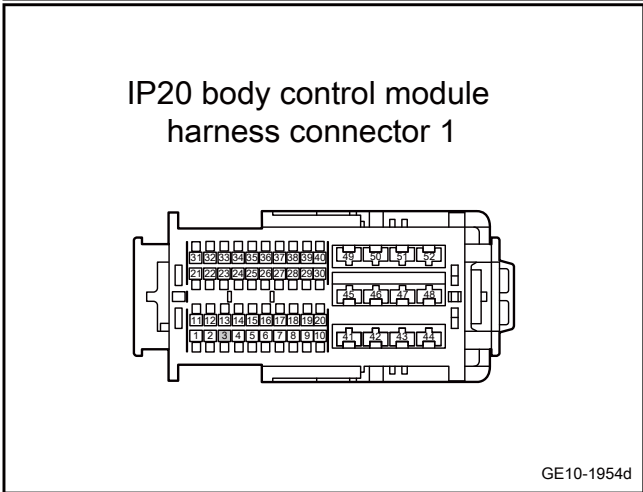
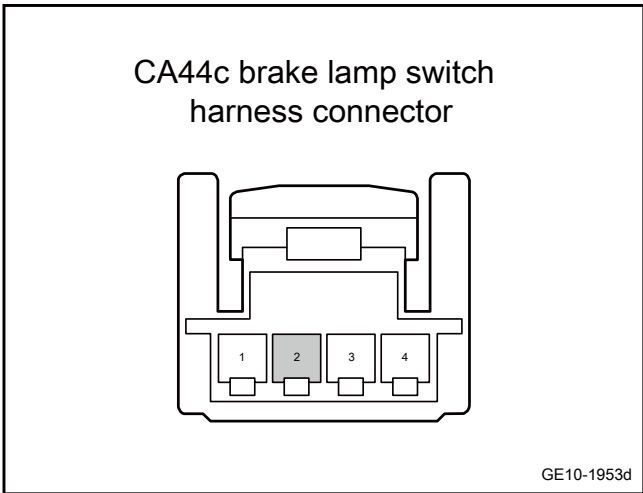
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the harness between BCM and brake lamp switch to be open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	IP20(3)	Standard resistance: less than 1Ω

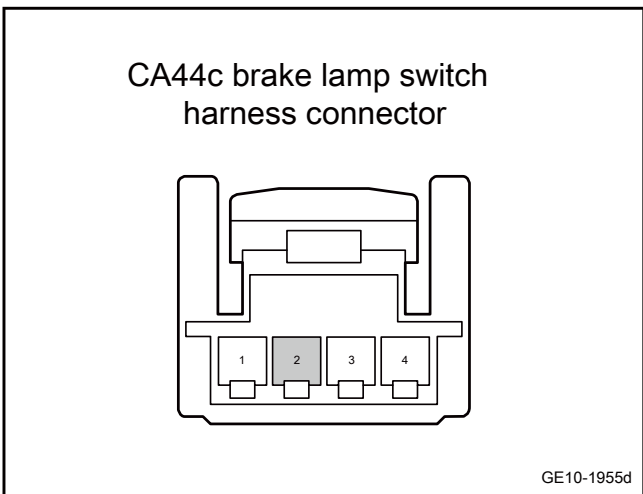
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check harness between BCM and brake lamp switch for short circuit to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

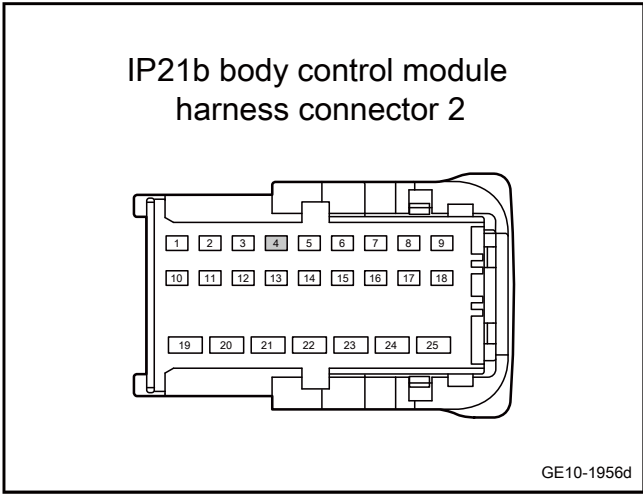
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

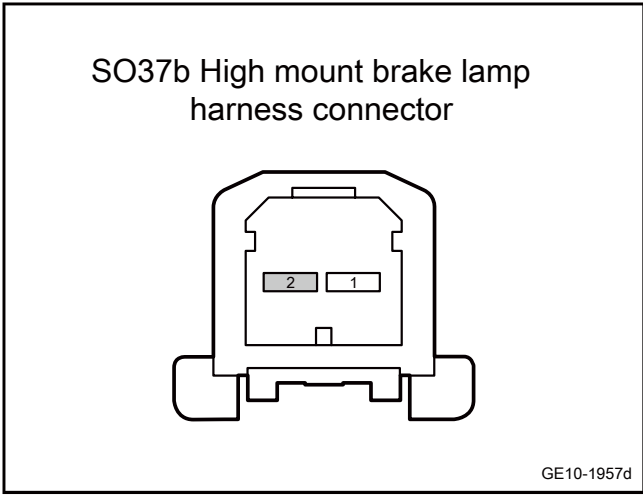
**Step 8** Check whether the circuit between BCM and the high mounted brake lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the high mounted brake lamp harness connector SO37b.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(4)	SO37b(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

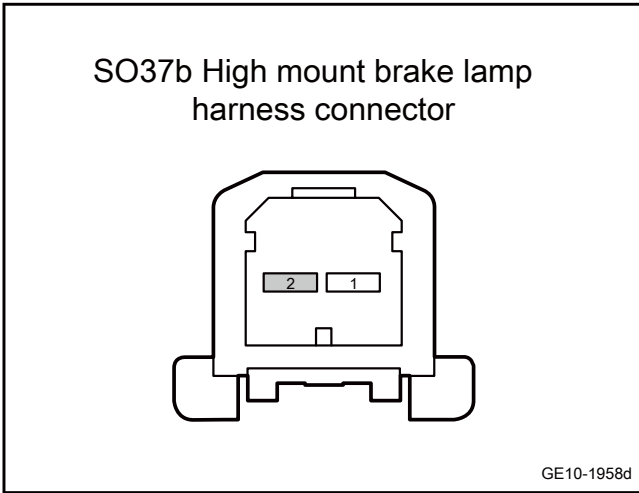


No

Repair or replace the harness.

Yes

**Step 9** Check whether the circuit between BCM and the high mounted brake lamp is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the high mounted brake lamp harness connector SO37b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure terminals according to the following table:

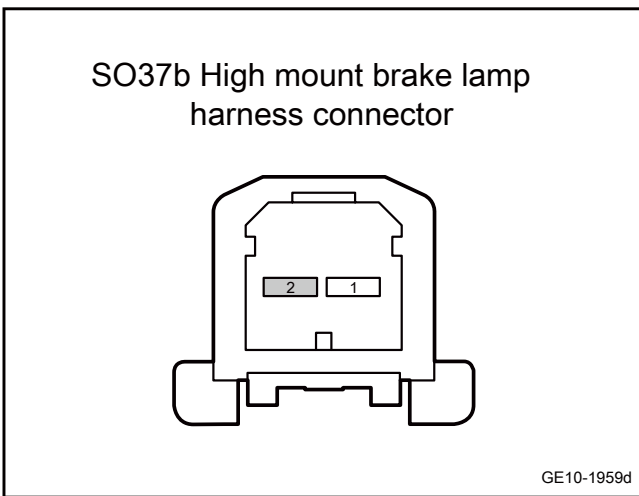
Measure terminal 1	Measure terminal 2	Standard value
SO37b(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 10	Check whether the circuit between the BCM and the high mounted brake lamp is shorted to GND.
------------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the high mounted brake lamp harness connector SO37b.
- D. Use a multimeter to measure terminals according to the following table:

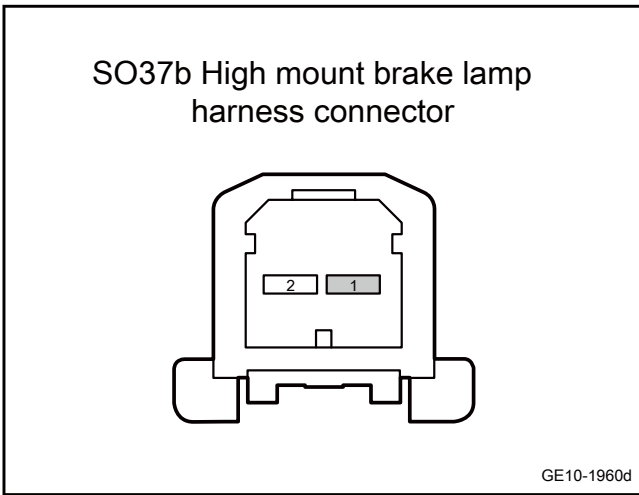
Measure terminal 1	Measure terminal 2	Standard value
SO37b(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 11	Check whether grounding circuits of the high mounted brake lamp are open.
---------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the high mounted brake lamp harness connector SO37b.
- C. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO37b(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 12	Replace high mounted brake lamp.
------------	----------------------------------

- A. Replace high mounted brake lamp. Refer to [replacement of high mounted brake lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 14	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 15	Reprogram and reset the BCM.
------------	------------------------------

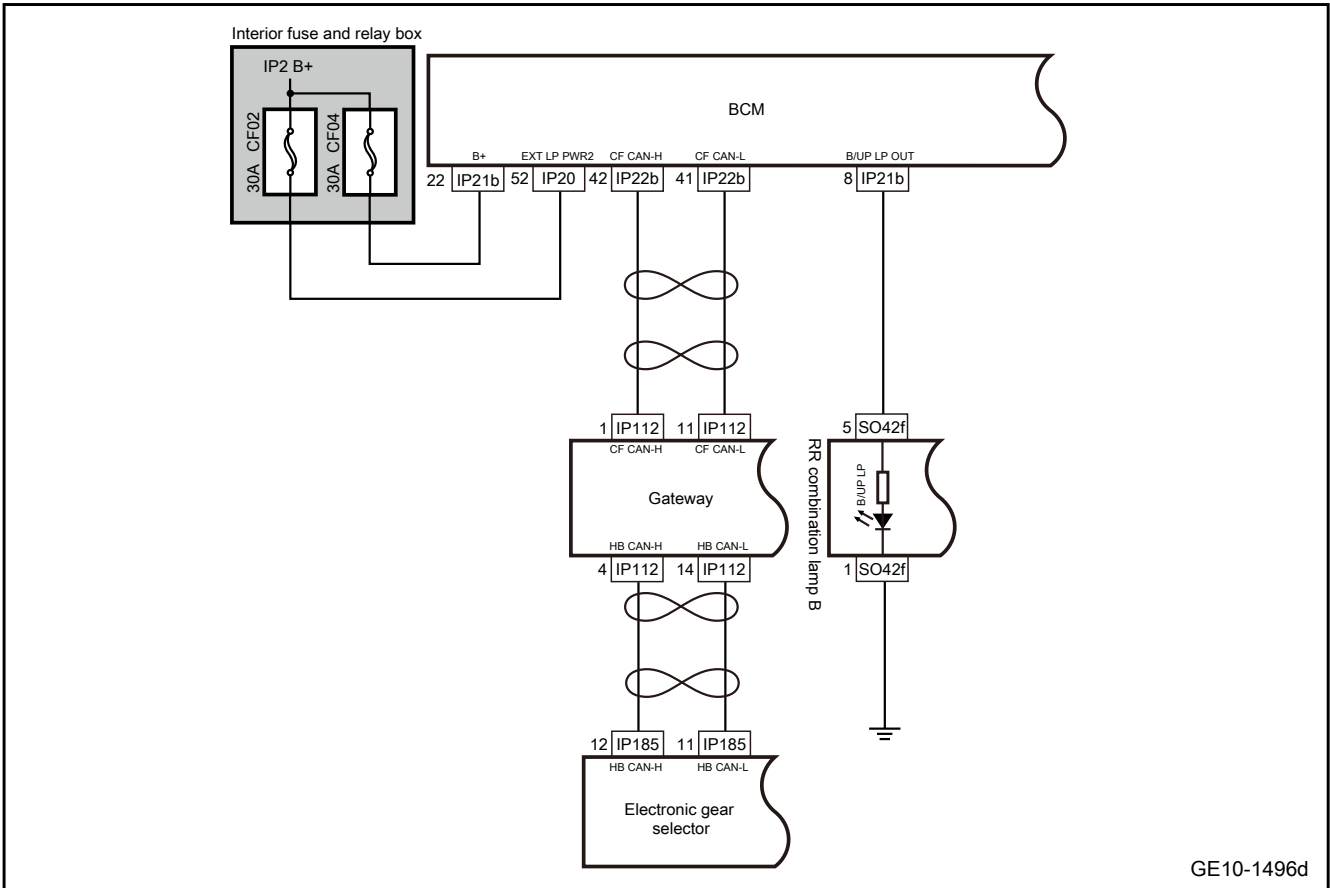
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step	System is normal.
16	

### 10.3.6.14 Inoperative reverse lamp

1. Schematic circuit diagram:



2. Diagnosis steps

The Manual only provides the diagnosis for faults of the right rear combination lamp A (reversing lamp). The diagnosis of other brake lamps is the same as that of the right rear combination lamp A (reversing lamp).

Step 1	Primary check.
--------	----------------

- A. Check reverse lamps for the sign of damages to appearance.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 2 | Check the HB-CAN network integrity.

- A. Perform HB-CAN network integrity check, refer to [HB-CAN bus network integrity check](#)
- B. Confirm whether the HB-CAN network is normal.

No

Check or repair the HB-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 3 | Check the CF-CAN network integrity.

- A. Perform CF CAN network integrity check, refer to [CF CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN network is normal.

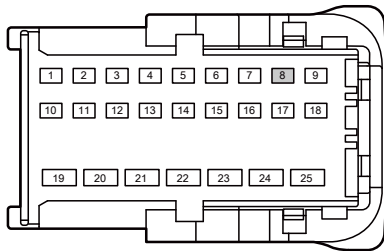
No

Check or repair the CF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4 | Check whether the circuit between BCM and right rear combination lamp is open.

IP21b body control module harness connector 2



GE10-1961d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector SO42f of RR combination lamp.
- D. Use a multimeter to measure terminals according to the following table:

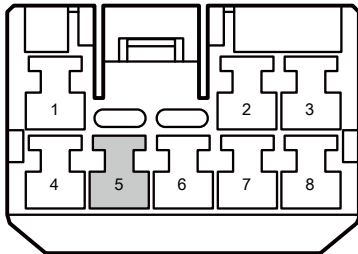
Measure terminal 1	Measure terminal 2	Standard value
IP21b(8)	SO42f(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

SO42f RR combination lamp harness connector B

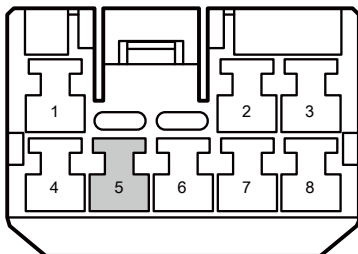


GE10-1962d

Yes

Step 5 Check whether the circuit between BCM and the reverse lamp are shorted to power supply.

SO42f RR combination lamp harness connector B



GE10-1963d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector SO42f of RR combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO42f(5)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

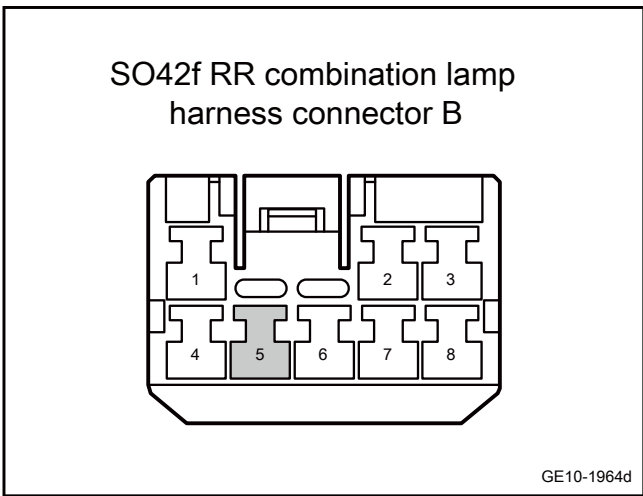
No

Repair or replace the harness.



Yes

**Step 6** Check whether the circuit between BCM and the reverse lamp are shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector SO42f of RR combination lamp.
- D. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO42f(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

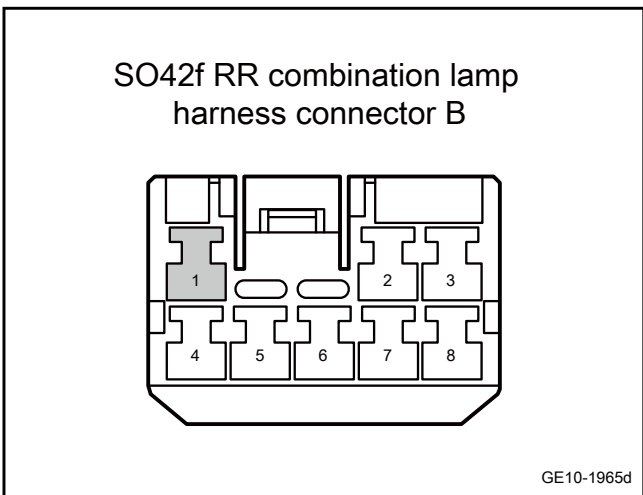
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether grounding circuits of reverse lamp are open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO42f of RR combination lamp.
- C. Use a multimeter to measure terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO42f(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the RR combination lamp.

- A. Replace the RR combination lamp. Refer to [Replacement of RR combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 10 Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 11 Reprogram and reset the BCM.

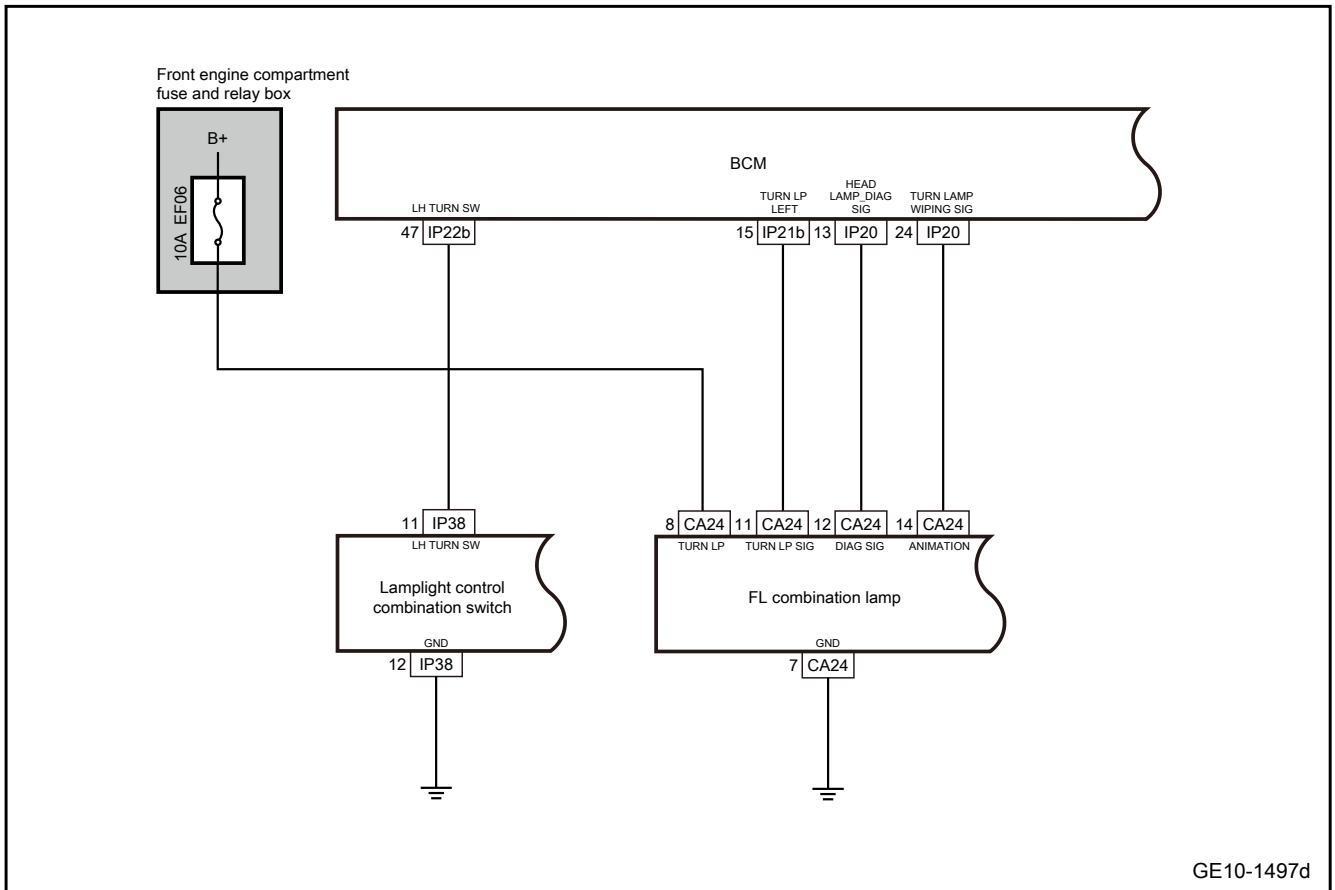
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 12 System is normal.

### 10.3.6.15 Inoperative turn signal lamp

1. Schematic circuit diagram:



2. Diagnosis steps

This Manual only diagnoses the fault of the LF combination lamp (turn signal lamp), and the diagnosis of the turn signal lamp is the same as that of the LF combination lamp (turn signal lamp).

Step 1	Primary check.
--------	----------------

- A. Check the left front combination lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the lighting combination switch is caught.
--------	--

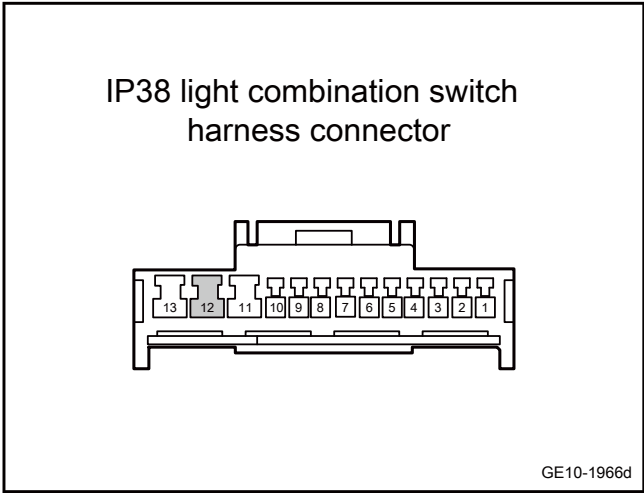
- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes

Replace the lighting combination switch, refer to [Replacement of lighting combination switch](#)

No

**Step 3** Check whether grounding circuit of the lighting combination switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the lighting combination switch harness connector IP38.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(12)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

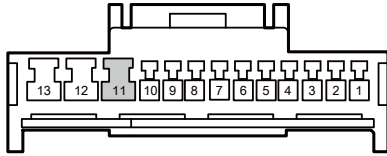
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between BCM and the lighting combination switch is open.

IP38 light combination switch harness connector



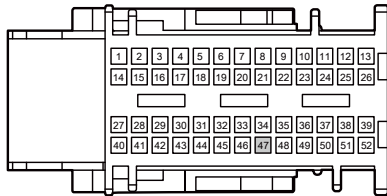
GE10-1967d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(11)	IP22b(47)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

IP22b body control module harness connector 3



GE10-1968d

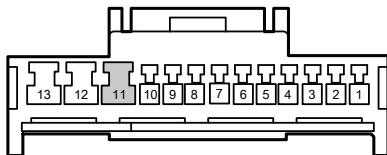
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between BCM and the lighting combination switch is short to ground.

IP38 light combination switch harness connector



GE10-1969d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the lighting combination switch harness connector IP38.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP38(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

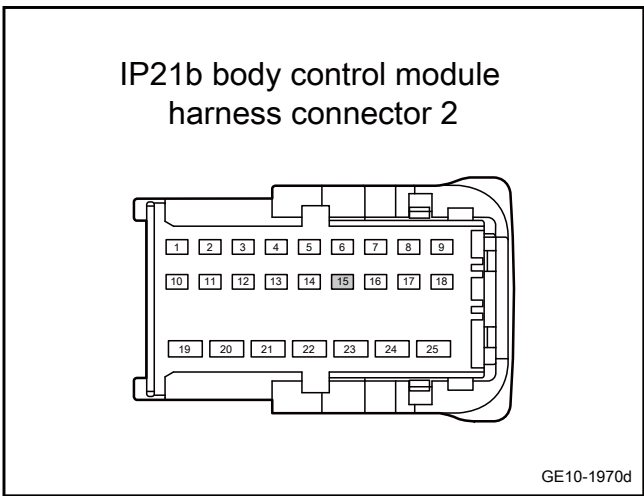
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

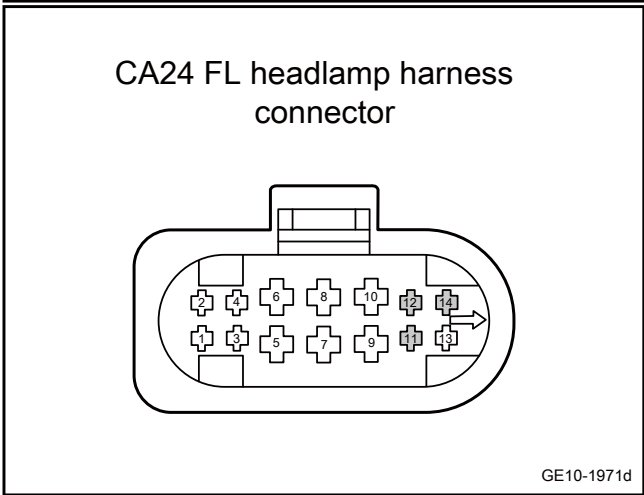
Yes

**Step 6** Check whether the circuit between BCM and left front combination lamp is open circuit.

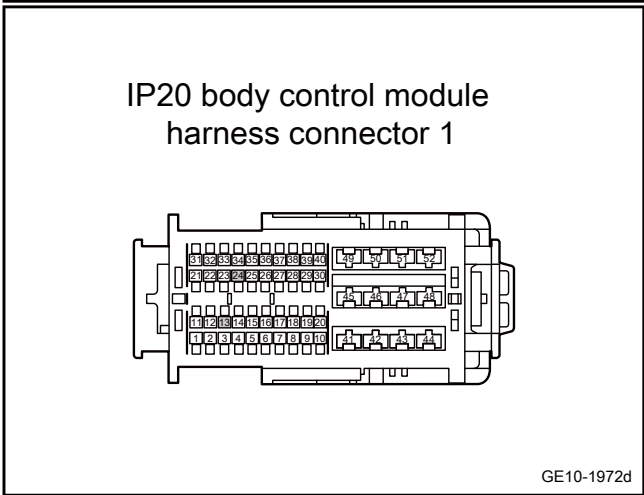


- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(15)	CA24(11)	Standard resistance: less than 1Ω
IP20(13)	CA24(12)	
IP20(24)	CA24(14)	



- E. Confirm whether the measured value meets the standard.

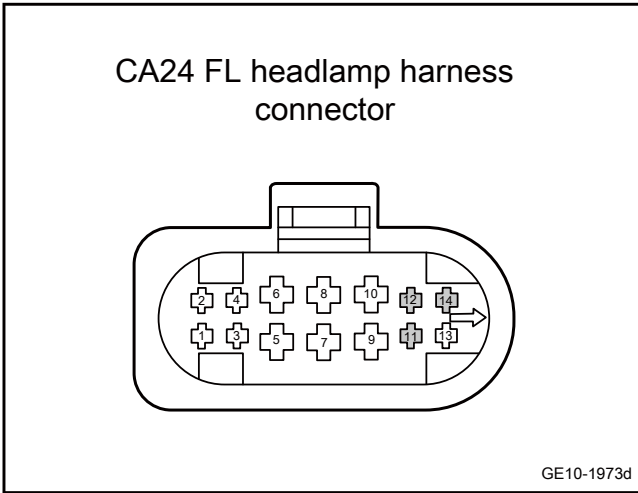


No

Repair or replace the harness.

Yes

**Step 7** Check whether the line between BCM and left front combination lamp is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

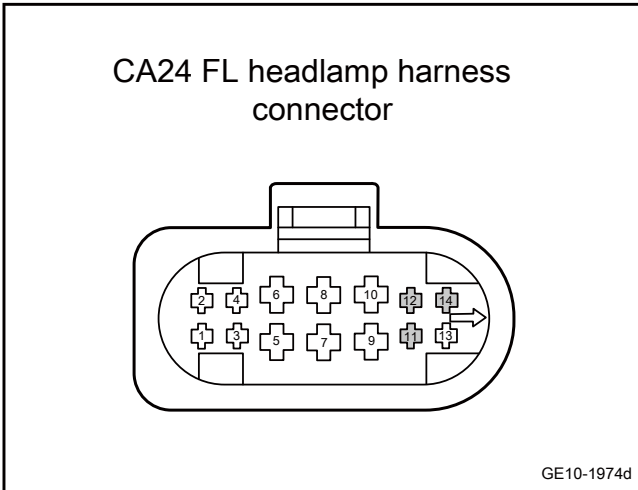
Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard voltage: 0V
CA24(12)		
CA24(14)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** | Check whether the line between BCM and left front combination lamp is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector IP20 and IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

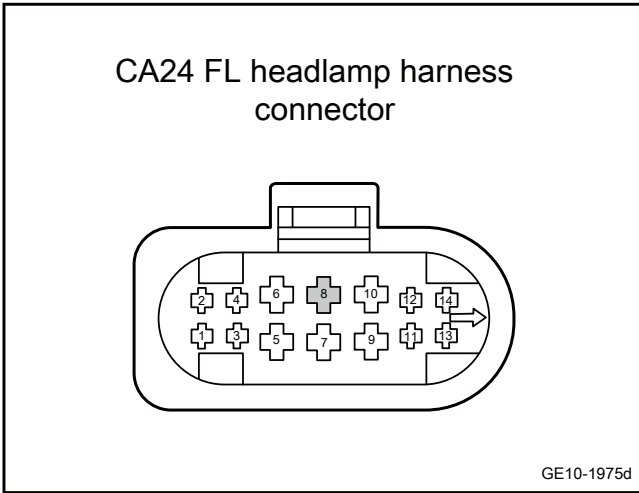
Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(12)		
CA24(14)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 9** | Check whether the left front combination lamp power supply circuit is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

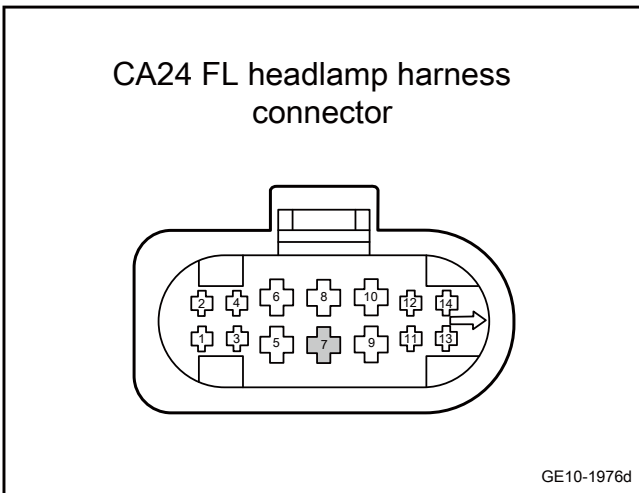
Measure terminal 1	Measure terminal 2	Standard value
CA24(8)	Vehicle body is grounded.	Standard voltage value: 11V-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 10</b>	Check whether the grounding line of left front combination lamp is open.
----------------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 11</b>	Replace the left headlamp.
----------------	----------------------------

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.



Yes

System is normal.

No

Step 12	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 14	Reprogram and reset the BCM.
------------	------------------------------

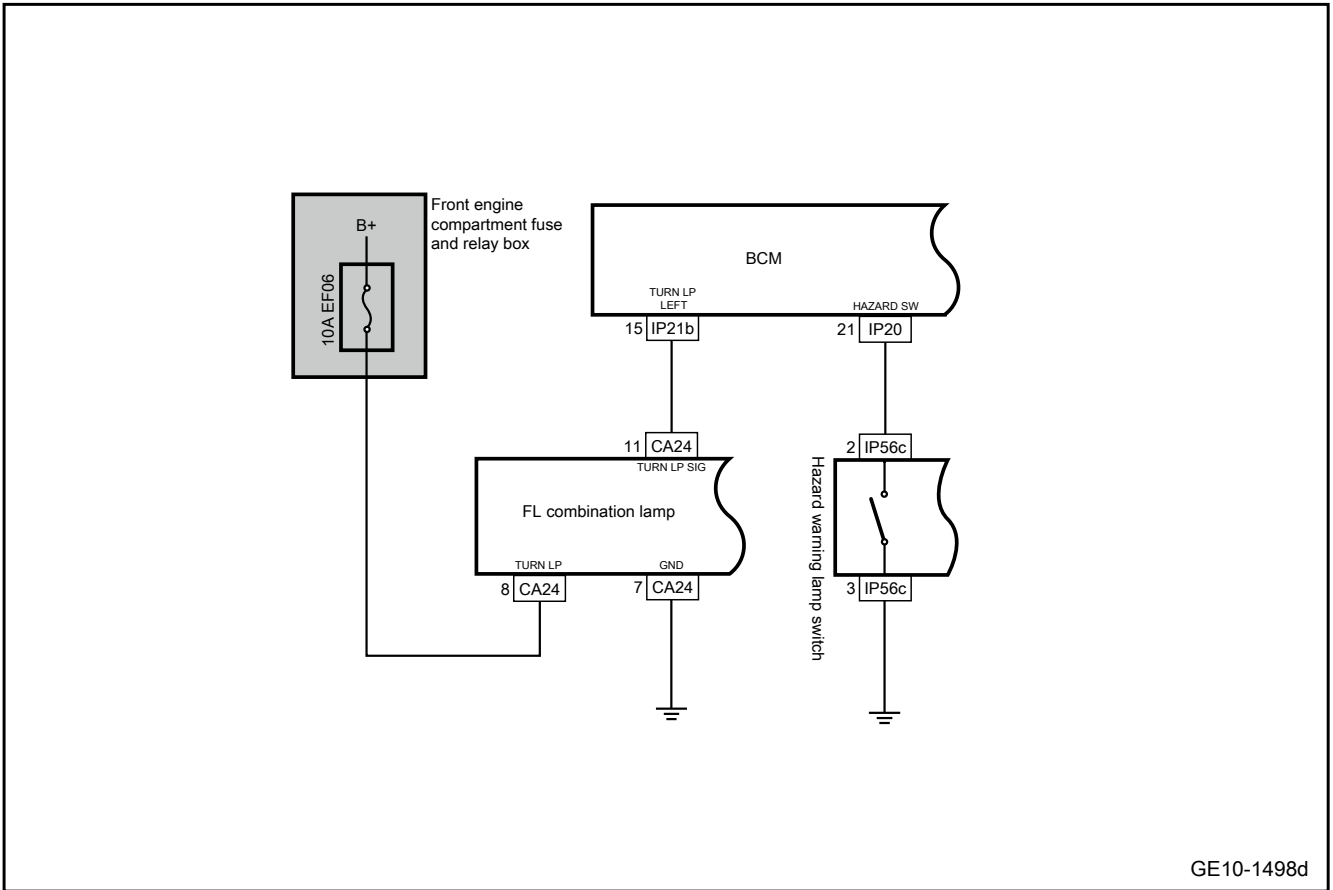
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 15	System is normal.
------------	-------------------

### 10.3.6.16 Inoperative hazard warning light

1. Schematic circuit diagram:



2. Diagnosis steps

This Manual only diagnoses the faults of the left front combination lamp (hazard warning lamp). The diagnosis of other hazard warning lamps is the same as that of the left front combination lamp (hazard warning lamp).

Step 1	Primary check.
--------	----------------

- A. Check the left front combination lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

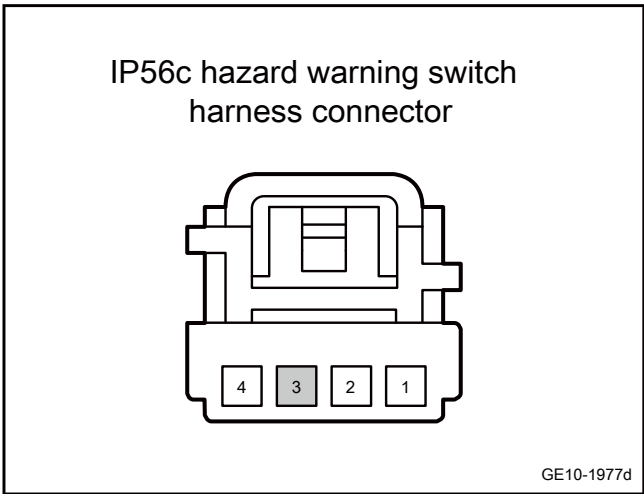
Step 2	Check whether the hazard warning switch is caught.
--------	--

- A. Operate the hazard warning switch.
- B. Check whether the switch is caught.

Yes Replace the hazard warning switch, refer to [Replacement of hazard warning switch](#)

No

Step 3 Check whether the hazard warning switch grounding circuit is an open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the hazard warning switch harness connector IP56c.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

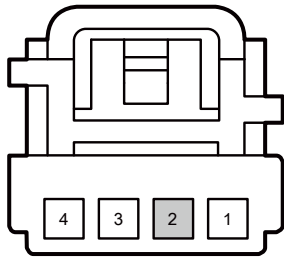
No

Repair or replace the harness.

Yes

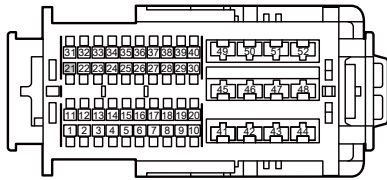
Step 4 Check whether the circuit between BCM and the hazard warning switch is open.

IP56c hazard warning switch harness connector



GE10-1978d

IP20 body control module harness connector 1



GE10-1979d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the hazard warning switch harness connector IP56c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(2)	IP20(21)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

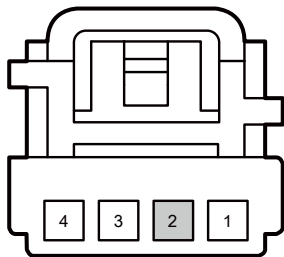
No

Repair or replace the harness.

Step 5

Check whether the circuit between BCM and the hazard warning switch is short to GND.

IP56c hazard warning switch harness connector



GE10-1980d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the hazard warning switch harness connector IP56c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP56c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

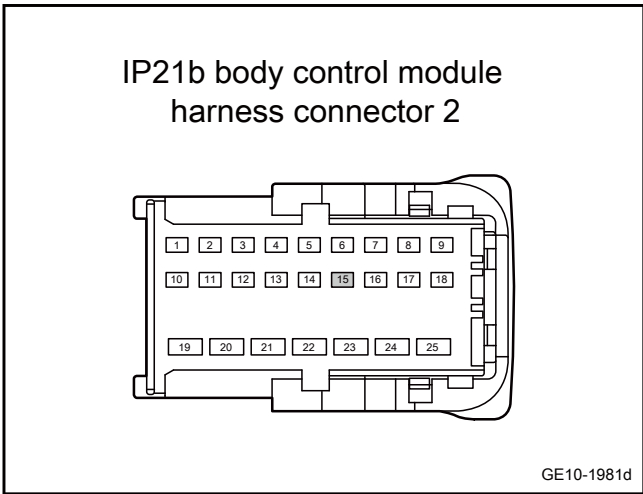
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

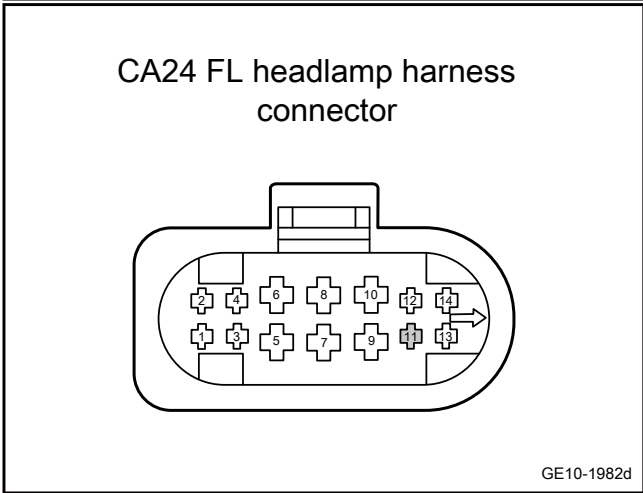
Yes

**Step 6** Check whether the circuit between BCM and left front combination lamp is open circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(15)	CA24(11)	Standard resistance: less than 1Ω



- E. Confirm whether the measured value meets the standard.

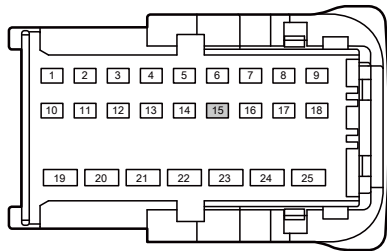
No

Repair or replace the harness.

Yes

**Step 7** Check whether the line between BCM and left front combination lamp is short to power supply.

IP21b body control module harness connector 2



GE10-1983d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(15)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

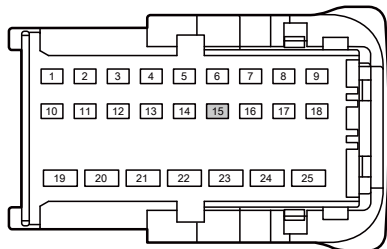
No

Repair or replace the harness.

Yes

**Step 8** Check whether the line between BCM and left front combination lamp is short to GND.

IP21b body control module harness connector 2



GE10-1984d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the harness connector CA24 of the LF combination lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(15)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

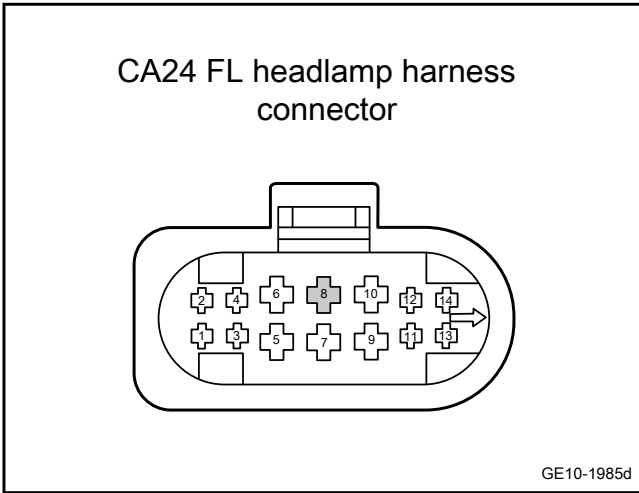
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Check whether the left front combination lamp power supply circuit is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

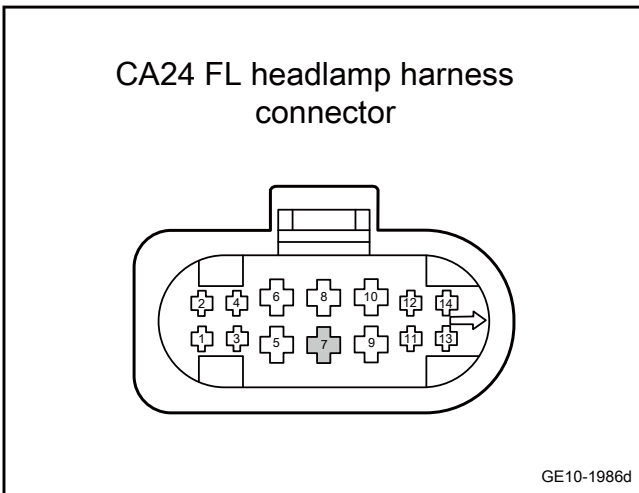
Measure terminal 1	Measure terminal 2	Standard value
CA24(8)	Vehicle body is grounded.	Standard voltage value: 11V-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 10</b>	Check whether the grounding line of left front combination lamp is open.
----------------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA24 of the LF combination lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

<b>Step 11</b>	Replace the left headlamp.
----------------	----------------------------

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step	Check the BCM power supply and grounding circuit.
------	---

12

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step	Replace the BCM
------	-----------------

13

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step	Reprogram and reset the BCM.
------	------------------------------

14

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

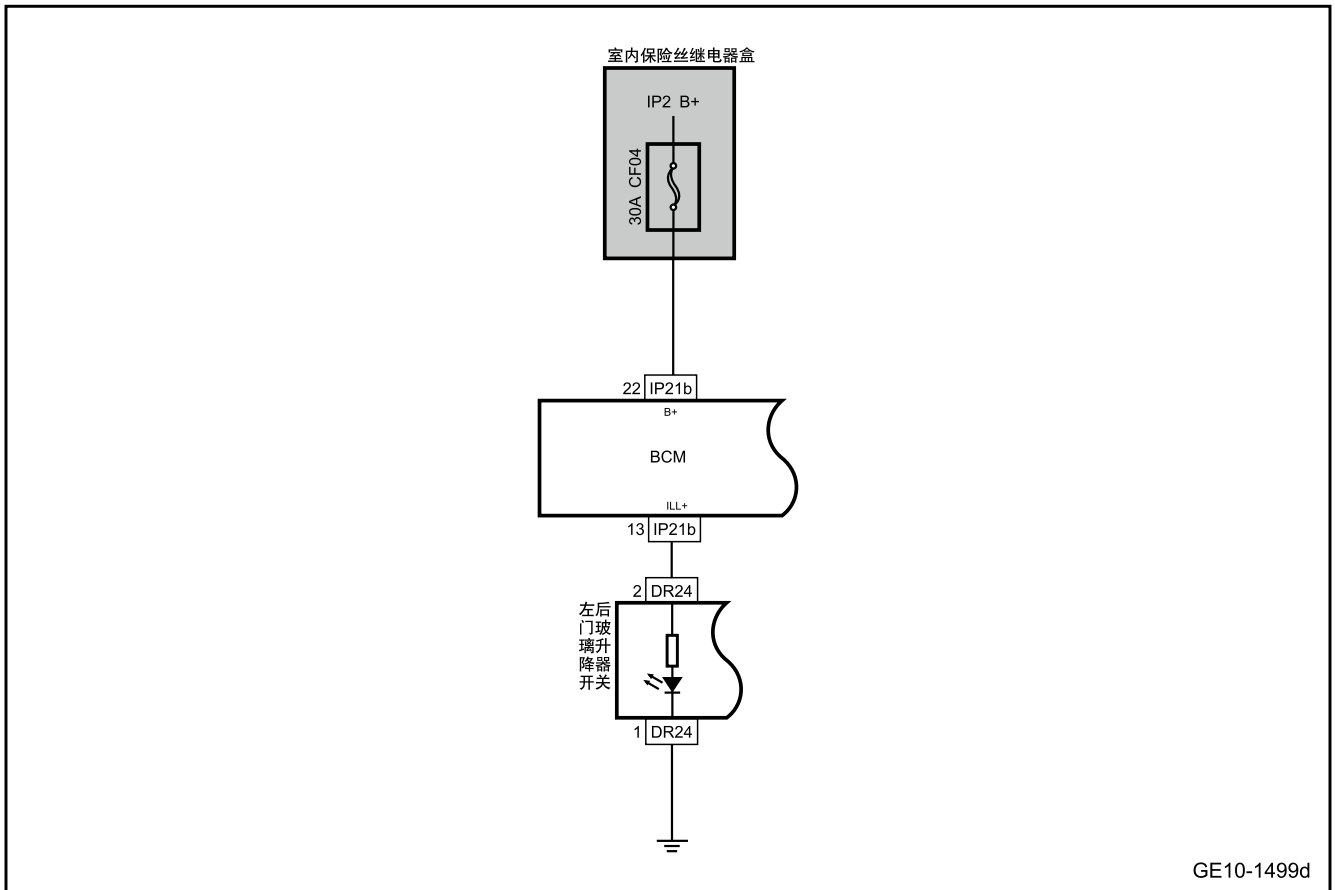
Step	System is normal.
------	-------------------

15

### 10.3.6.17 Backlighting circuit failure

1. Schematic circuit diagram:





2. Diagnosis steps

This manual only diagnoses the fault of the left rear door glass lifter switch backlight. The diagnosis of other backlights is the same as the left rear door glass lift switch backlight.

Step 1	Primary check.
--------	----------------

- A. Check whether the appearance of left rear door glass lifter switch is damaged.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

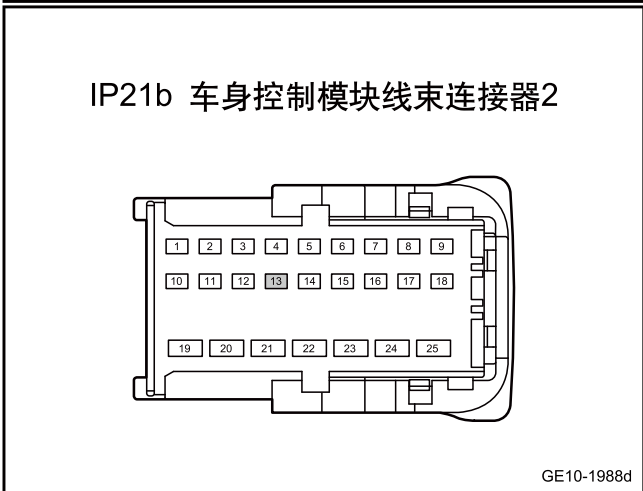
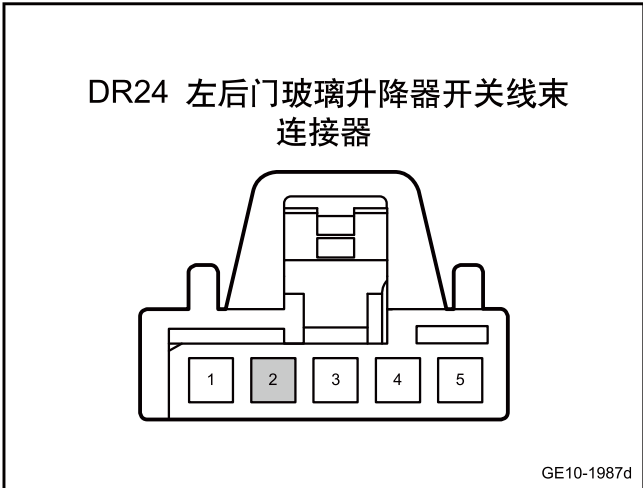
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF04 and check if it is blown.  
Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the voltage of the power supply circuit of the left rear door glass lifter switch backlight is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left door glass regulator switch harness connector DR24.
- C. Disconnect the BCM harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(2)	IP21b(13)	Standard resistance: less than 1Ω
DR24(2)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Turn on the small light switch.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(2)	Vehicle body is grounded.	Standard voltage: 0V

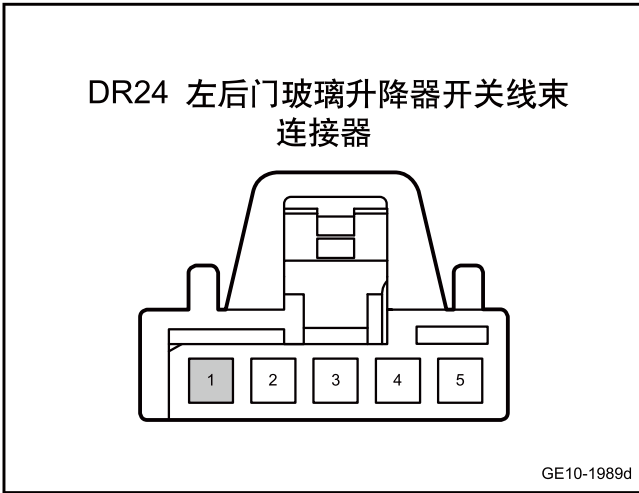
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the grounding circuit of the left rear door glass lifter switch backlight is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left door glass regulator switch harness connector DR24.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR24(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 5** | Replace the left rear door glass regulator switch.

- A. Replace the left rear door glass regulator switch. Refer to [Replacement of left rear door glass regulator switch](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

**Step 6** | Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes → Trouble is removed.

No

**Step 7** | Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

**Step 8** | Reprogram and reset the BCM.

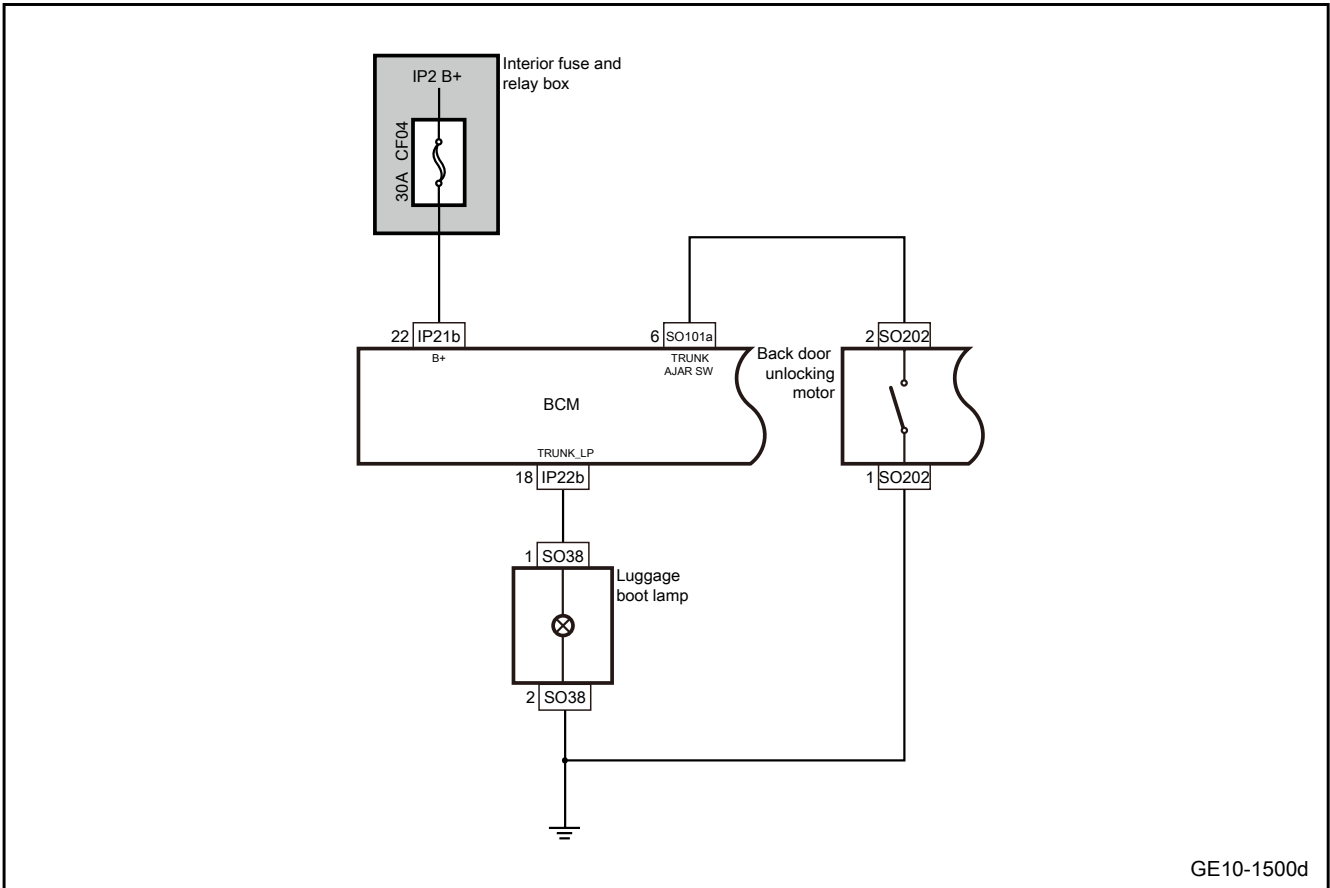
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9 | System is normal.

### 10.3.6.18 Inoperative rear compartment lamp

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 | Primary check.

- A. Check the rear compartment lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

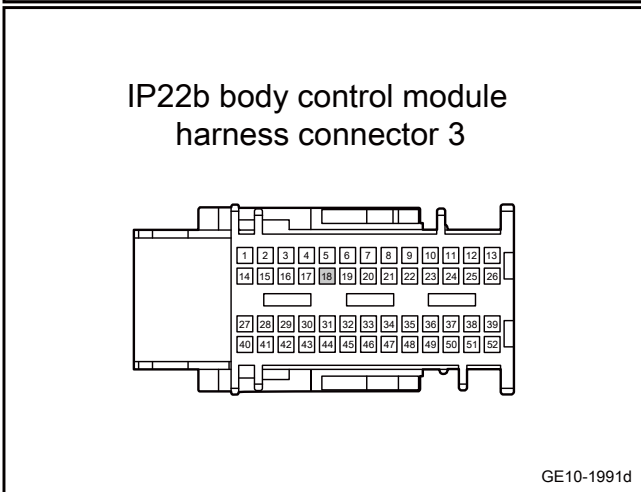
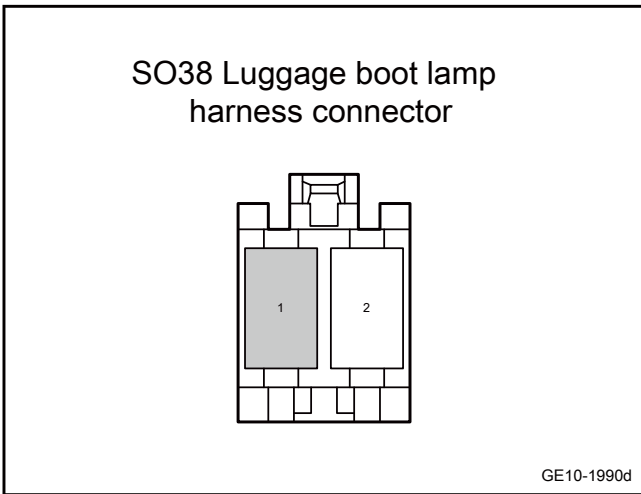
Step 2 | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF04 and check if it is blown.  
Rated fuse capacity: 30A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the circuit between the BCM and the luggage compartment lamp is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	IP22b(18)	Standard resistance: less than 1Ω
SO38(1)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard voltage: 0V

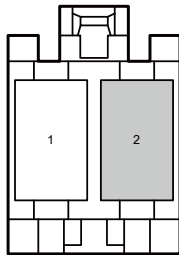
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the luggage compartment lamp is normal.

SO38 Luggage boot lamp harness connector



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO38 of the rear compartment lamp.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO38(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

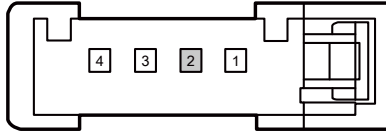
No

Repair or replace the harness.

Yes

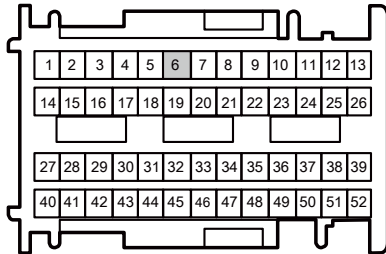
Step 5 | Check whether the circuit between trunk door lock motor and BCM is normal.

SO202 Backdoor lock motor harness connector



GE10-1993d

SO101a body control module harness connector 7



GE10-1994d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the trunk lock motor harness connector SO202.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	SO101a(6)	Standard resistance: less than 1Ω
SO202(2)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

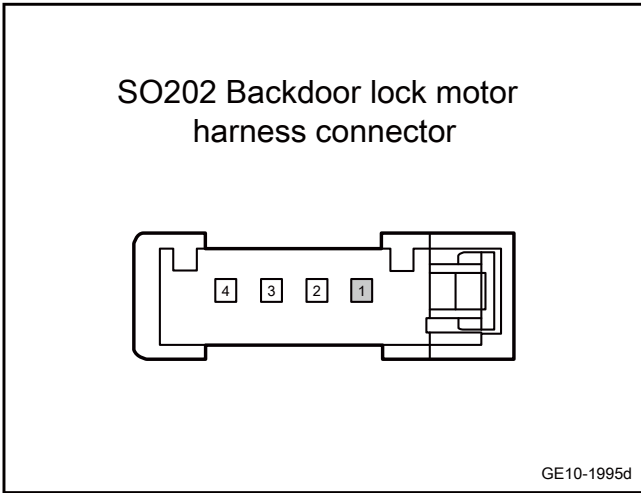
Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check whether the grounding circuit of the trunk door lock motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the trunk lock motor harness connector SO202.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO202(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 7** Replace the rear compartment lamp.

- A. Replace the rear compartment lamp. Refer to [Replacement of rear compartment lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Replace the trunk lock motor.

- A. Replace the trunk lock motor. Refer to [Refer to Replacement of the trunk lock motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 9** Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No



Step 10	Replace the BCM
------------	-----------------

A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 11	Reprogram and reset the BCM.
---------	------------------------------

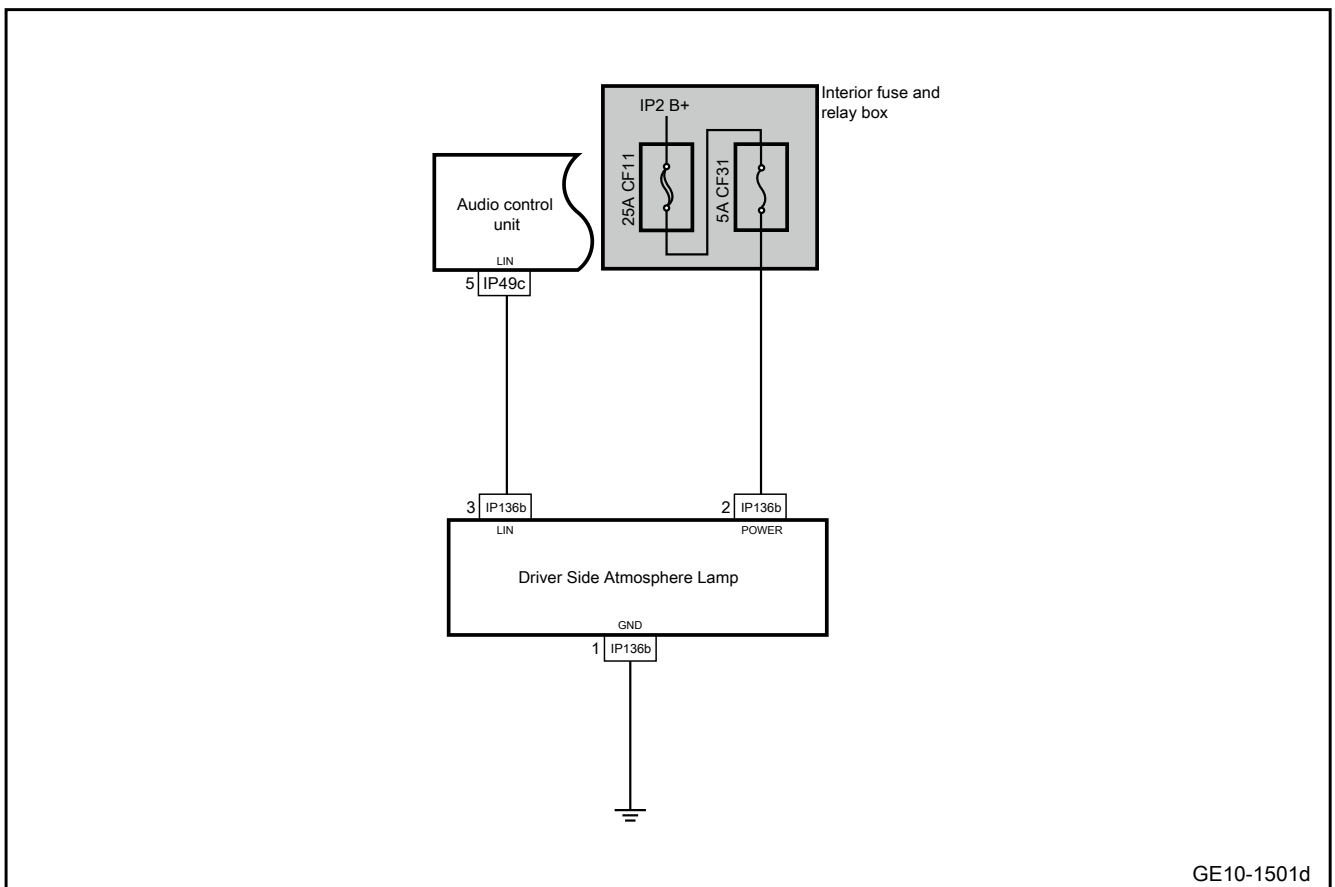
A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 12	System is normal.
------------	-------------------

### 10.3.6.19 Ambient light does not work

1. Schematic circuit diagram:



2. Diagnosis steps

This manual only diagnoses the malfunction of the ambient light at driver's side, and the diagnosis of other ambient lights is the same as that of the ambient light at driver's side.

**Step 1** Primary check.

- A. Check the atmosphere lamp, audio control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Inspect the fuse.

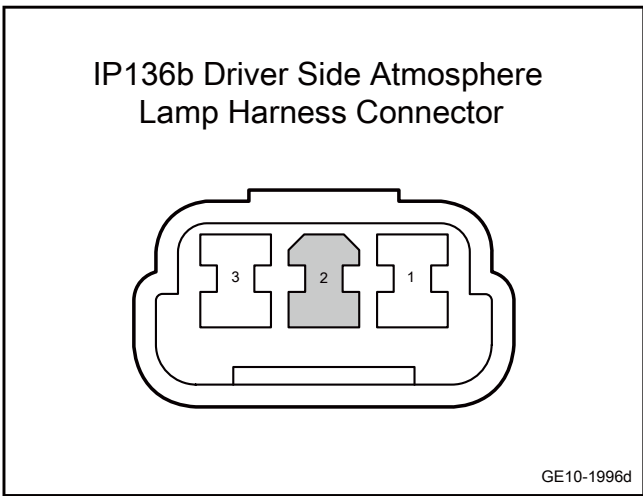
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF11 and check if it is blown.  
Rated fuse capacity: 30A  
Unplug interior fuse CF31 and check if it is blown.  
Rated fuse capacity: 5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the driver's side ambient light power wiring harness.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side ambient light harness connector IP136b.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP136b(2)	Vehicle body is grounded.	Standard voltage: 9-14V

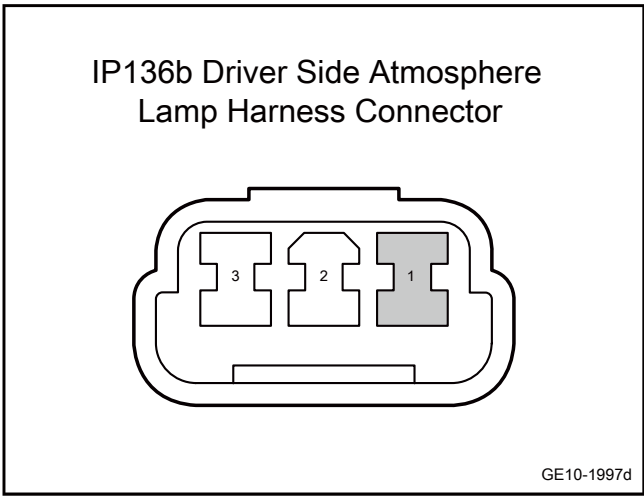
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the grounding harness of the driver's side ambient light.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side ambient light harness connector IP136b.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP136b(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

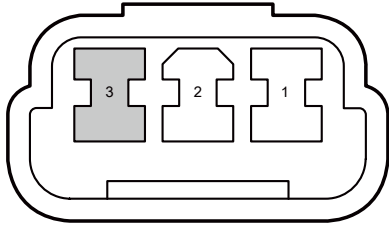
No

Repair or replace the harness.

Yes

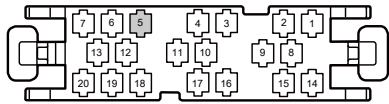
**Step 5** Check whether the wiring harness between the ambient light at driver's side and the audio host is open.

IP136b Driver Side Atmosphere Lamp Harness Connector



GE10-1998d

IP49c audio control unit harness connector C



GE10-1999d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP136b(3)	IP49c(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

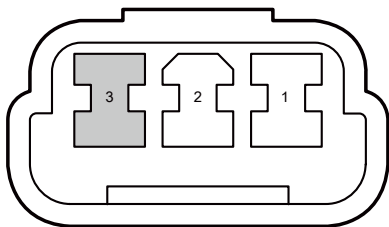
No

Repair or replace the harness.

Yes

Step 6 Check whether the wiring harness between the ambient light at driver's side and the audio host is short-circuited to the power supply.

IP136b Driver Side Atmosphere Lamp Harness Connector



GE10-2000d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP136b(3)	Vehicle body is grounded.	Standard voltage: 0V

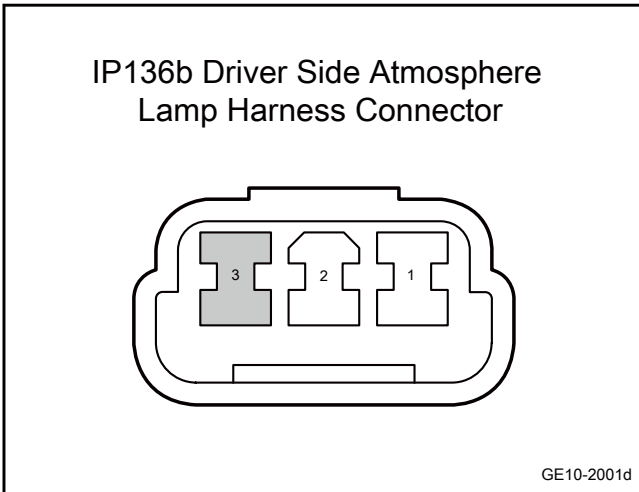
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the wiring harness between the ambient light at driver's side and the audio host is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the audio host harness connector IP49c.
- C. Disconnect the driver side ambient light harness connector IP136b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP136b(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the ambient light at driver's side.

- A. Replace the ambient light at driver's side. See [Replacement of the ambient light at driver's side](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Change the radio control unit.

- A. Check whether the radio control unit power supply or grounding harness is normal. Refer to [Radio control unit power supply fault](#)
- B. Replace the radio control unit, refer to [Replacement of radio control unit](#)

Next Step

**Step 10** Reprogram and reset the radio control unit.

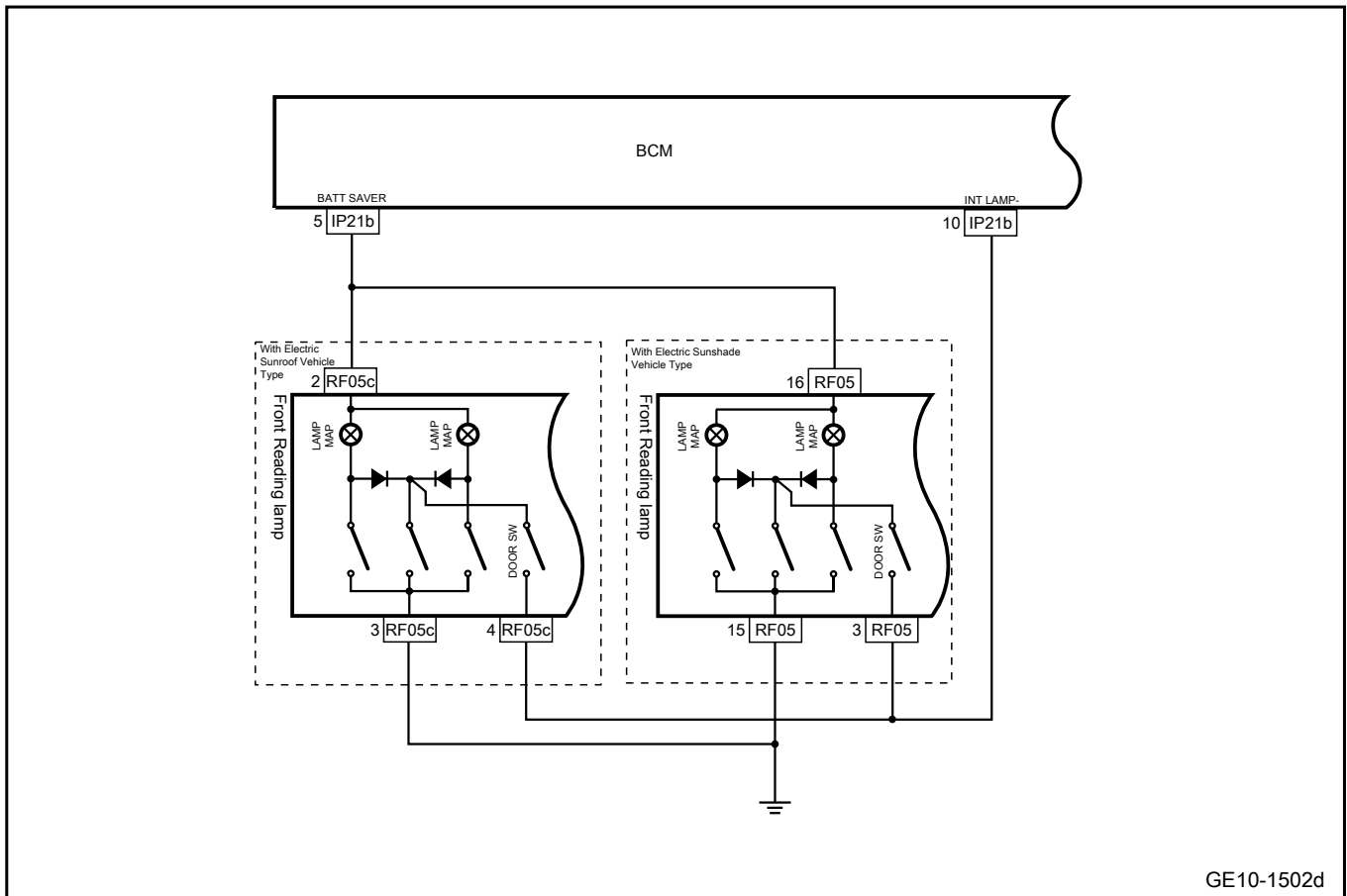
- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11	System is normal.
---------	-------------------

### 10.3.6.20 Inoperative front reading lamp

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front reading lamp for appearance damage.
- B. Check the harness connector of front reading lamp for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

Step 2	Check whether switch of the front reading lamp is catching.
--------	---

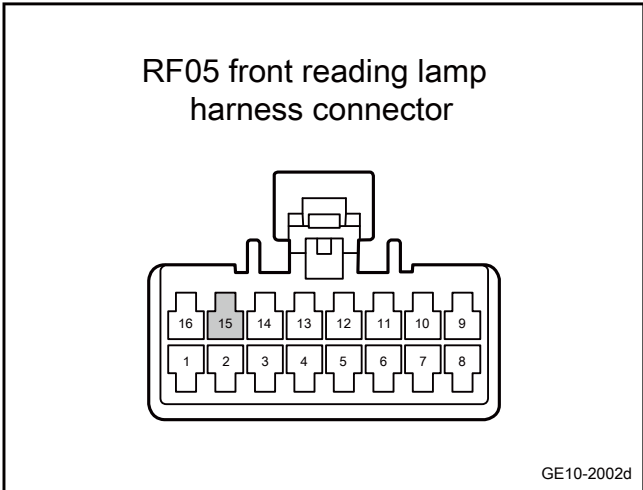
- A. Operate the switch of the front reading lamp,
- B. Check whether the switch is caught.

Yes

Replace the front reading lamp switch, refer to [Replacement of front reading lamp](#)

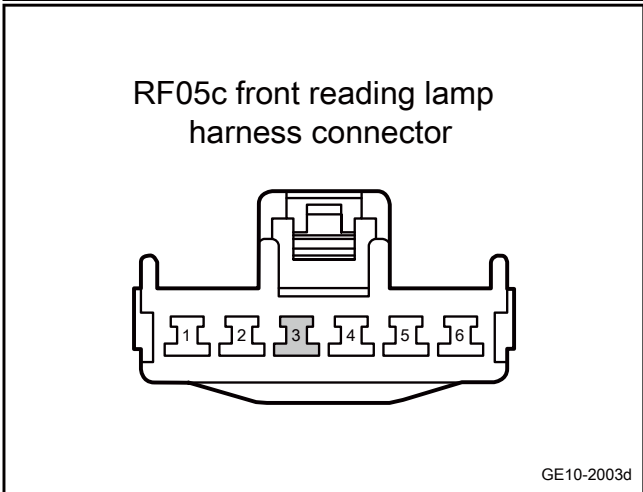
No

**Step 3** Check whether the grounding circuit of the front reading lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Disconnect the front reading lamp harness connector RF05c.
- D. Use a multimeter to measure each terminal according to the following table:

Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunshade	RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
Models with electric sunroof	RF05c(3)		



- E. Confirm whether the measured value meets the standard.

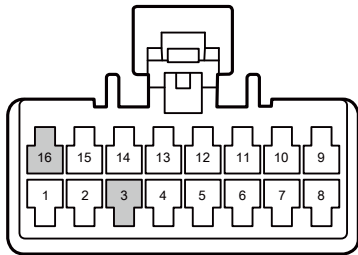
No

Repair or replace the harness.

Yes

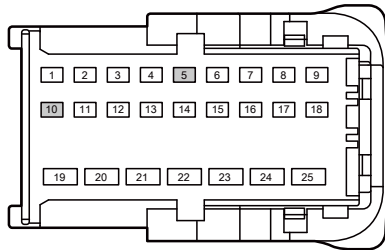
**Step 4** Check whether the circuits between the front reading lamp and BCM are open.

RF05 front reading lamp harness connector



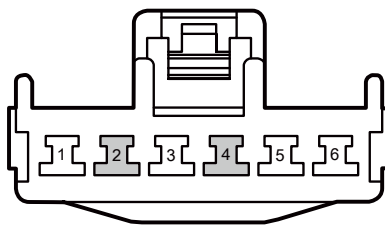
GE10-2004d

IP21b body control module harness connector 2



GE10-2005d

RF05c front reading lamp harness connector



GE10-2006d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05c.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Disconnect the BCM harness connector IP21b.
- E. Use a multimeter to measure each terminal according to the following table:

Configuration	Measure terminal 1	Measure terminal 2	Standard value
Models with electric sunshade	RF05(16)	IP21b(5)	Standard resistance: less than 1Ω
	RF05(3)	IP21b(10)	
Models with electric sunroof	RF05c(2)	IP21b(5)	
	RF05c(4)	IP21b(10)	

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

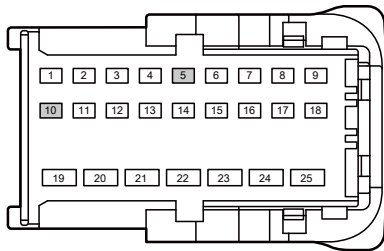
Yes

Step 5

Check whether the line between the front reading lamp and BCM is shorted to power supply.



IP21b body control module harness connector 2



GE10-2007d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05c.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Disconnect the BCM harness connector IP21b.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP21b(10)		

- G. Confirm whether the measured value meets the standard.

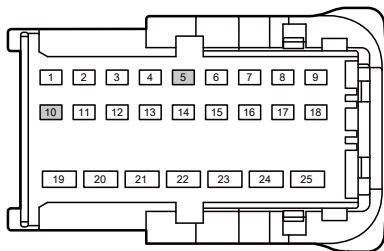
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the front reading lamp and BCM is shorted to GND.

IP21b body control module harness connector 2



GE10-2008d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05c.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Disconnect the BCM harness connector IP21b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP21b(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the front reading lamp.

- A. Replace the front reading lamp. Refer to [replacement of front reading lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 9 Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10 Reprogram and reset the BCM.

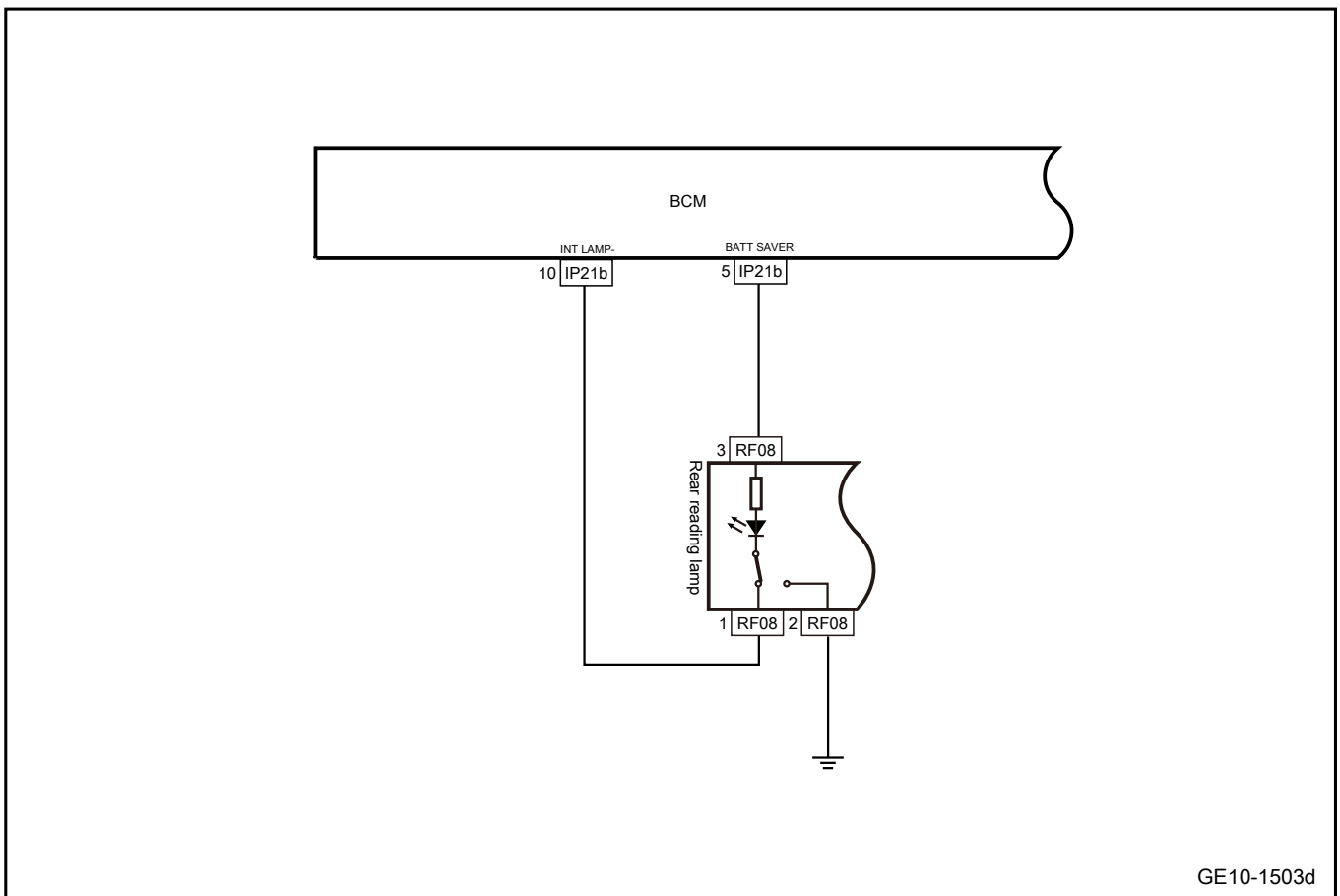
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11 System is normal.

### 10.3.6.21 Inoperative rear-row reading lamp

1. Schematic circuit diagram:



GE10-1503d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear-row reading lamp for appearance damage.
- B. Check the rear-row reading lamp harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

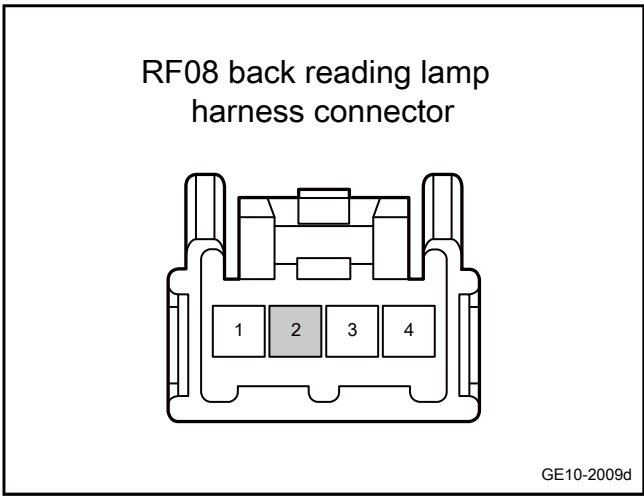
Step 2	Check whether the rear-row reading lamp switch is blocking.
--------	---

- A. Operate the rear-row reading lamp switch.
- B. Check whether the switch is caught.

Yes Replace the rear-row reading lamp switch, refer to [Replacement of rear-row reading lamp](#)

No

Step 3 Check whether the rear-row reading lamp grounding circuit is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear-row reading lamp harness connector RF08.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF08(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

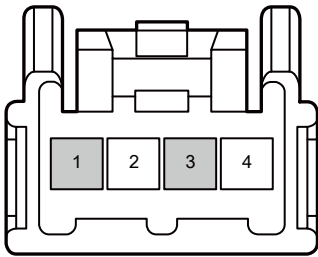
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the rear-row reading lamp and BCM is open.

RF08 back reading lamp harness connector



GE10-2010d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear-row reading lamp harness connector RF08.
- C. Disconnect the BCM harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the following table:

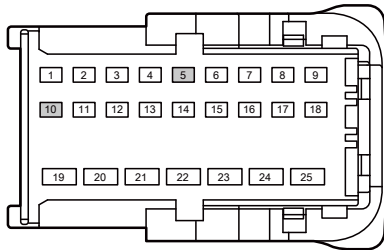
Measure terminal 1	Measure terminal 2	Standard value
RF08(3)	IP21b(5)	Standard resistance: less than 1Ω
RF08(1)	IP21b(10)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

IP21b body control module harness connector 2

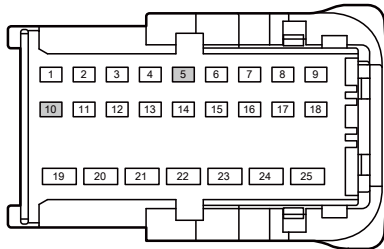


GE10-2011d

Yes

Step 5 Check whether the circuit between the rear-row reading lamp and BCM is shorted to power supply.

IP21b body control module harness connector 2



GE10-2012d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear-row reading lamp harness connector RF08.
- C. Disconnect the BCM harness connector IP21b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP21b(10)		

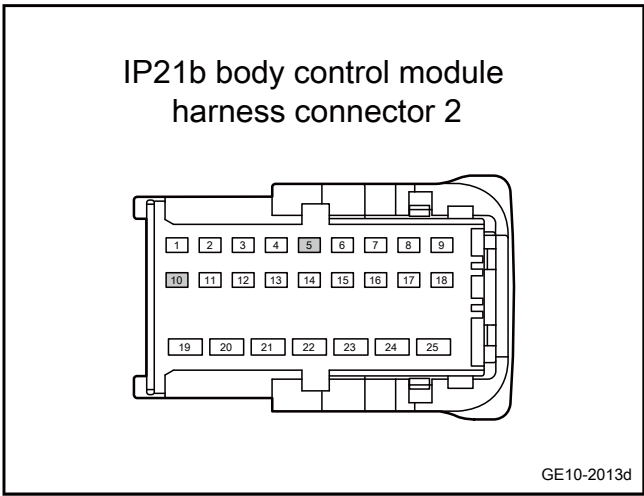
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the rear-row reading lamp and BCM is shorted to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear-row reading lamp harness connector RF08.
- C. Disconnect the BCM harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP21b(10)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the rear reading lamp.

- A. Replace the rear reading lamp. Refer to [Replacement of rear-row reading lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

**Step 9** Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10	Reprogram and reset the BCM.
---------	------------------------------

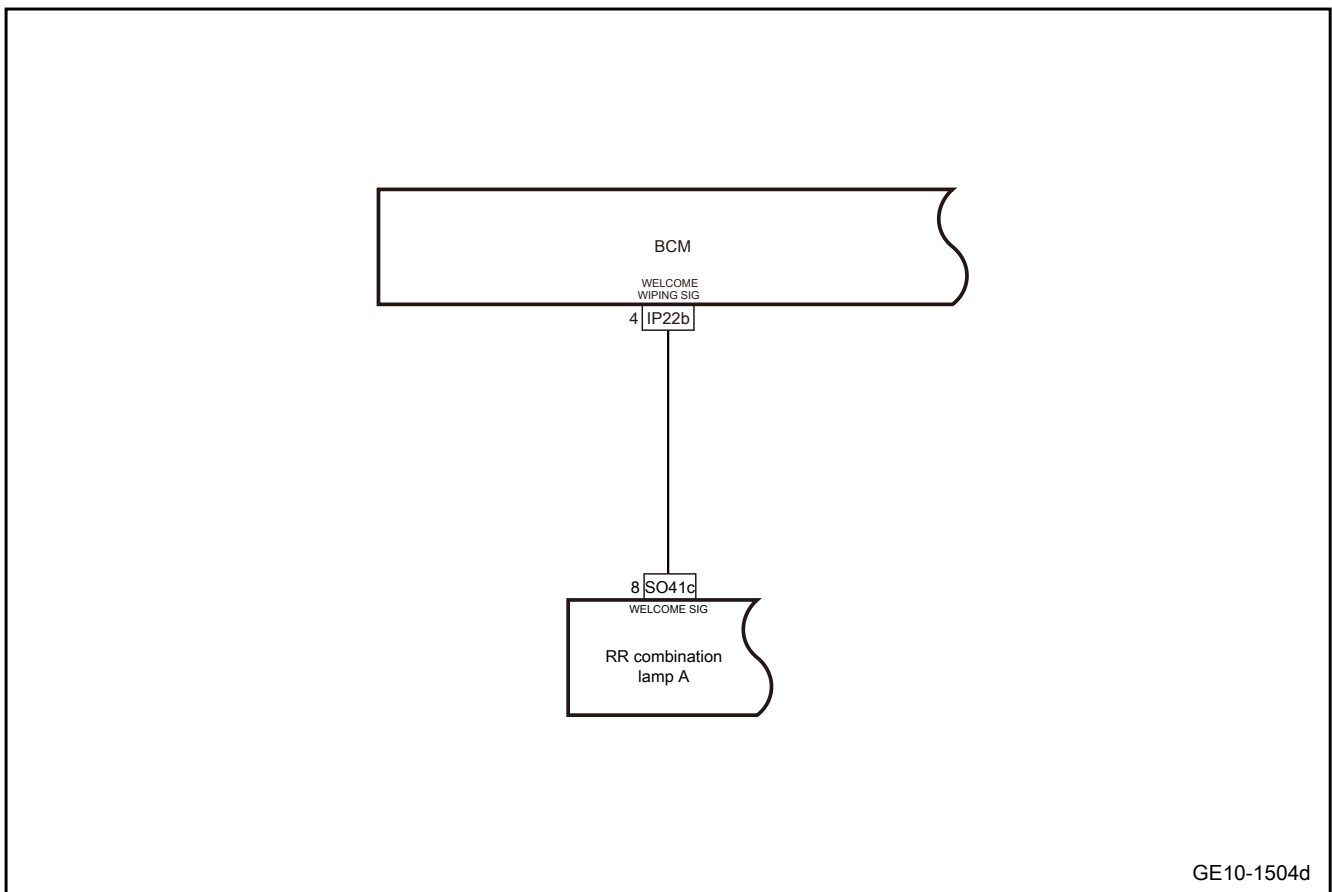
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11	System is normal.
---------	-------------------

### 10.3.6.22 Courtesy lights do not work

1. Schematic circuit diagram:



This manual only diagnoses the faults of the right rear combination lamp (courtesy lamp). The diagnosis of other position lamps is the same as that of the right rear combination lamp (courtesy lamp).

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

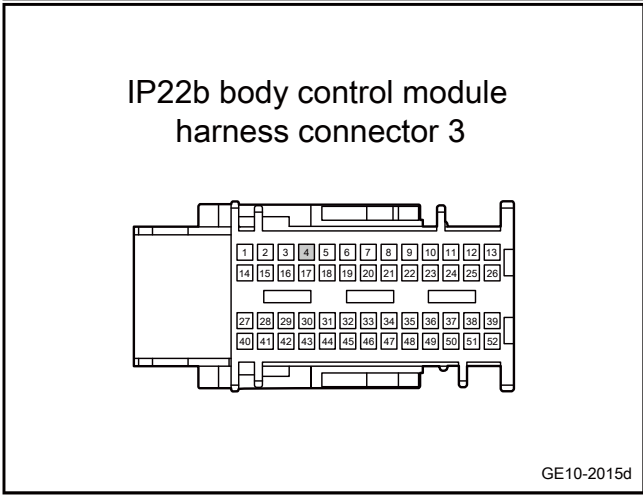
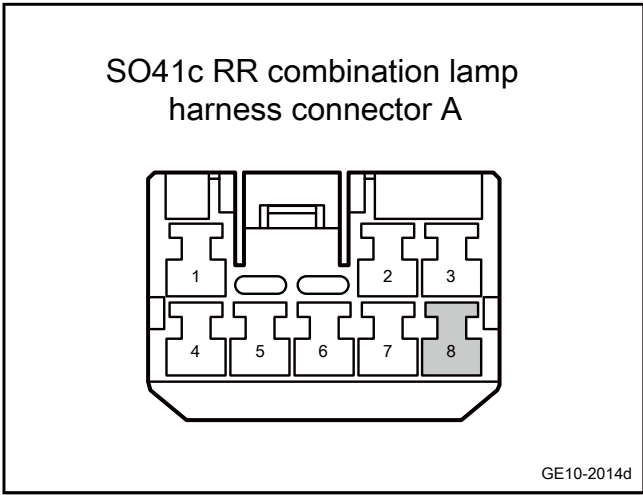
- A. Check the right rear combination lamp A and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check the wiring harness between the rear right combination lamp A and BCM.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect harness connector SO41c of the right rear combination lamp A.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(8)	IP22b(4)	Standard resistance: less than 1Ω
SO41c(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(8)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Replace the right rear combination lamp A.

- A. Replace the right rear combination lamp A. Refer to [Replacement of right rear combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No



Step 4 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 5 Reprogram and reset the BCM.

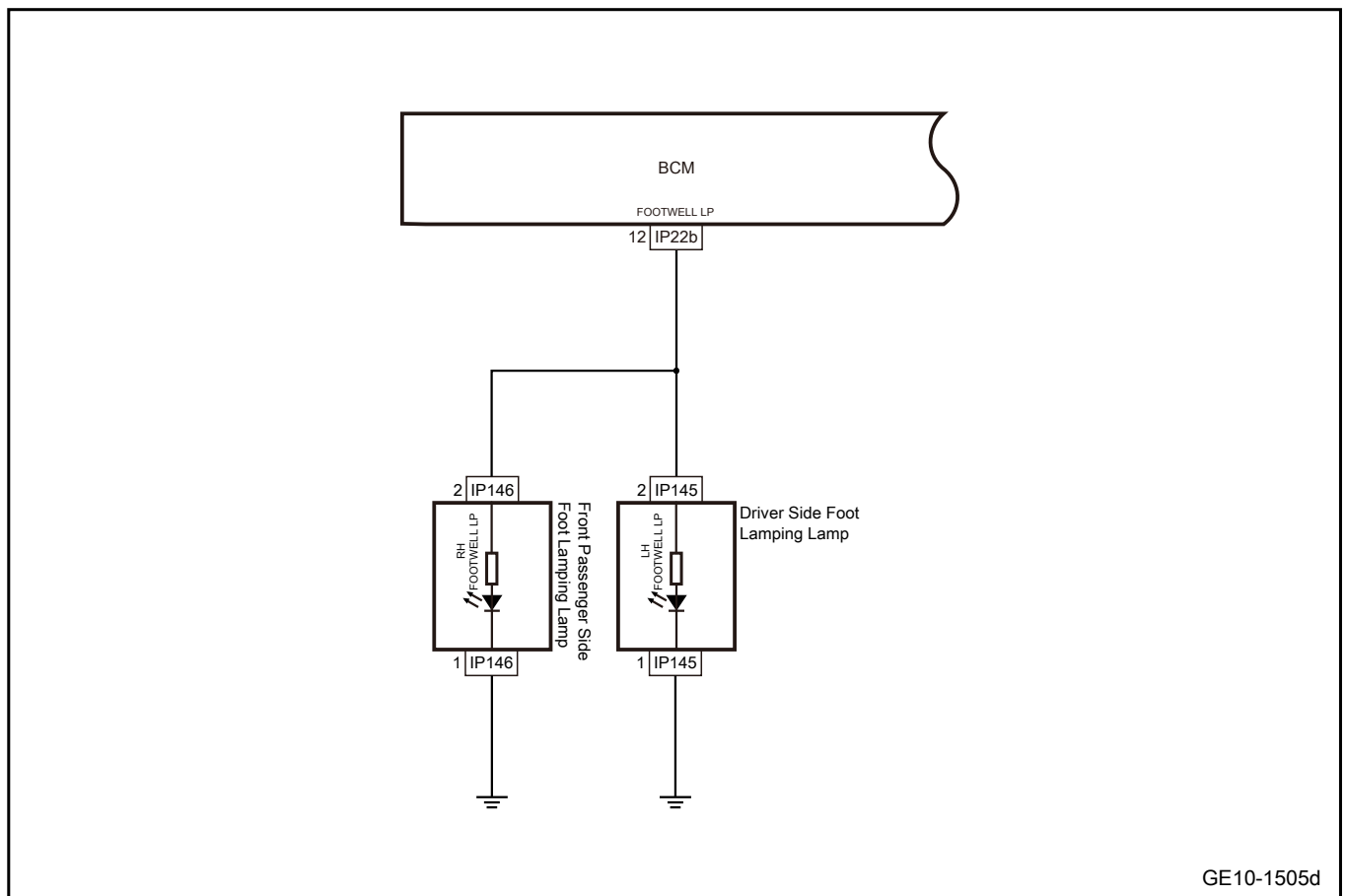
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6 System is normal.

### 10.3.6.23 Foot lights do not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check whether the appearance of foot lights is damaged.
- B. Check the foot floodlight harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

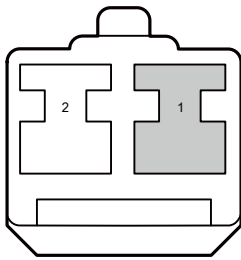
No

Repair or replace the faulty part.

Yes

Step 2 Check whether the foot floodlight grounding circuit is open.

IP145 Driver Side Foot Lamping Lamp Harness Connector



GE10-2016d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's footlight harness connector IP145.
- C. Disconnect the front passenger's foot light harness connector IP146.
- D. Use a multimeter to measure each terminal according to the following table:

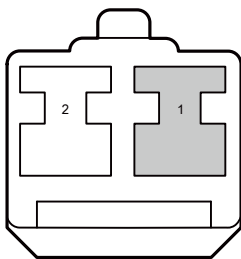
Measure terminal 1	Measure terminal 2	Standard value
IP145(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP146(1)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

IP146 Front Passenger Side Foot Lamping Lamp Harness Connector

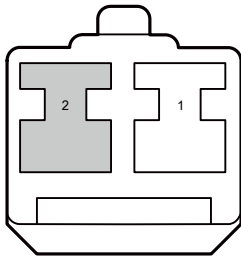


GE10-2017d

Yes

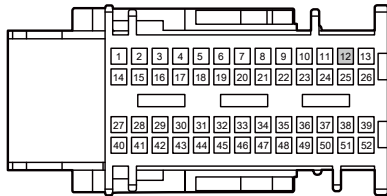
Step 3 Check whether the circuit between the foot floodlight and BCM is open.

IP145 Driver Side Foot Lamping Lamp Harness Connector



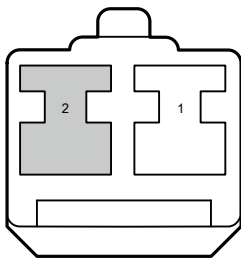
GE10-2018d

IP22b body control module harness connector 3



GE10-2019d

IP146 Front Passenger Side Foot Lamping Lamp Harness Connector



GE10-2020d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's footlight harness connector IP145.
- C. Disconnect the front passenger's foot light harness connector IP146.
- D. Disconnect the BCM harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	IP22b(12)	Standard resistance: less than 1Ω
IP146(2)	IP22b(12)	

- F. Confirm whether the measured value meets the standard.

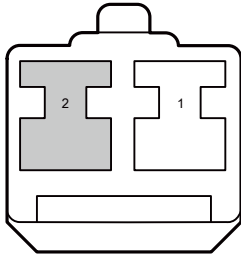
No

Repair or replace the harness.

Yes

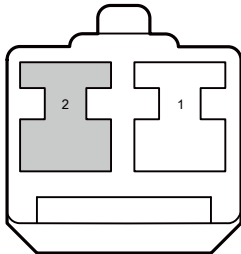
Step 4 Check whether the circuit between the foot floodlight and BCM is short to power supply.

IP145 Driver Side Foot Lamping Lamp Harness Connector



GE10-2021d

IP146 Front Passenger Side Foot Lamping Lamp Harness Connector



GE10-2022d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's footlight harness connector IP145.
- C. Disconnect the front passenger's foot light harness connector IP146.
- D. Disconnect the BCM harness connector IP22b.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	Vehicle body is grounded.	Standard voltage: 0V
IP146(2)		

- G. Confirm whether the measured value meets the standard.

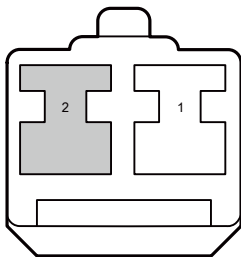
No

Repair or replace the harness.

Yes

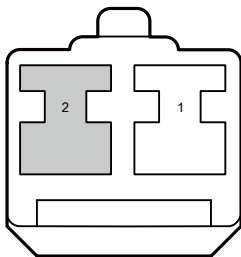
Step 5 | Check whether the circuit between the foot floodlight and BCM is short to GND.

IP145 Driver Side Foot Lamping Lamp Harness Connector



GE10-2023d

IP146 Front Passenger Side Foot Lamping Lamp Harness Connector



GE10-2024d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's footlight harness connector IP145.
- C. Disconnect the front passenger's foot light harness connector IP146.
- D. Disconnect the BCM harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP146(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the foot lights.

- A. Replace the foot lights. See [Footlight replacement](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 8 Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
------------	-------------------

### 10.3.7 Removal and installation

#### 10.3.7.1 Replacement of combination switch

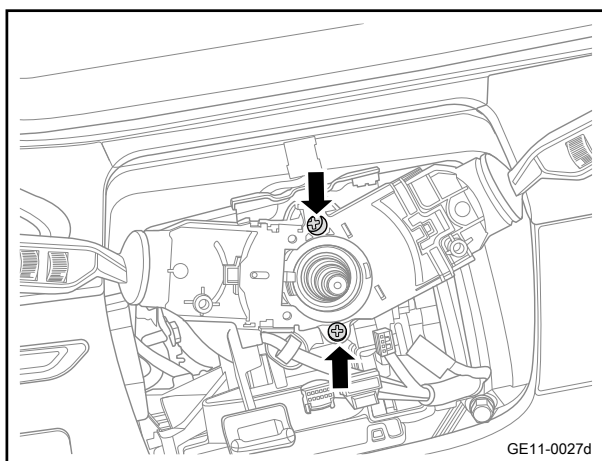
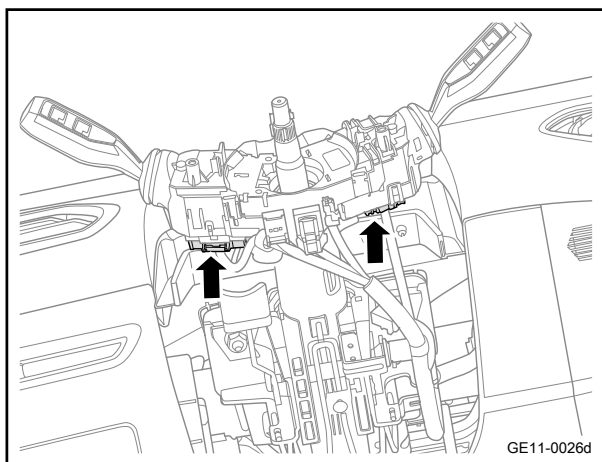
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

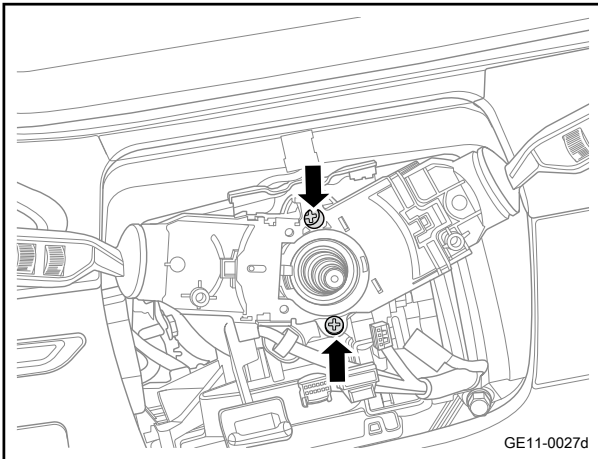
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the clock spring Refer to [Replacement of clock spring](#)
- 3 Disconnect the combination switch harness connector.

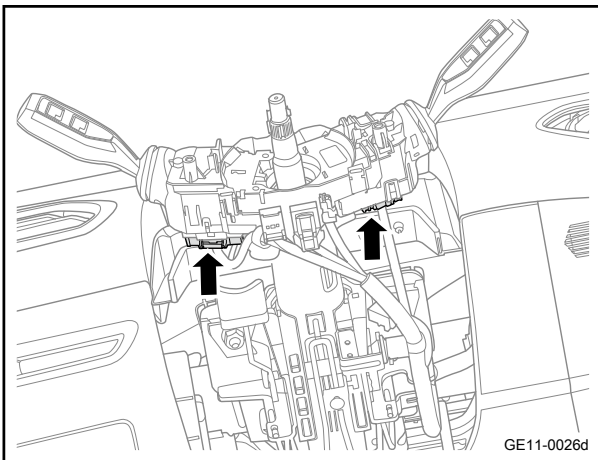


- 4 Remove the 2 fixing bolts of the combination switch.
- 5 Remove the combination switch.

##### Installation procedure



- 1 Move the combination switch to the installation position.
- 2 Install the 2 fixing bolts of the combination switch.  
Torque: 3N·m (metric) 2.2lb-ft (imperial system)



- 3 Connect the combination switch harness connector.

- 4 Install the clock spring.
- 5 Connect the negative cable of battery.

### 10.3.7.2 Replacement of front reading lamp assembly (Type I)

Removal procedure

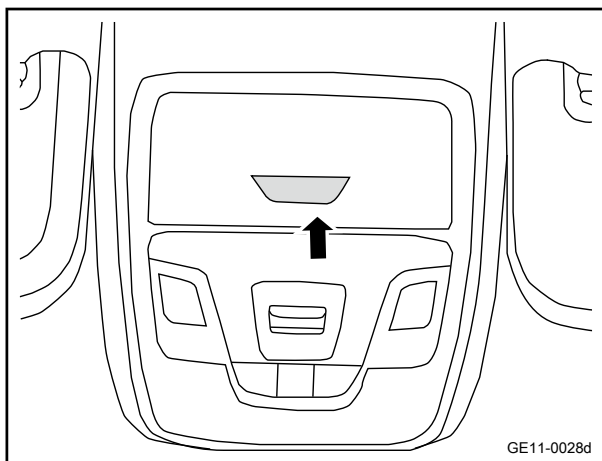


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

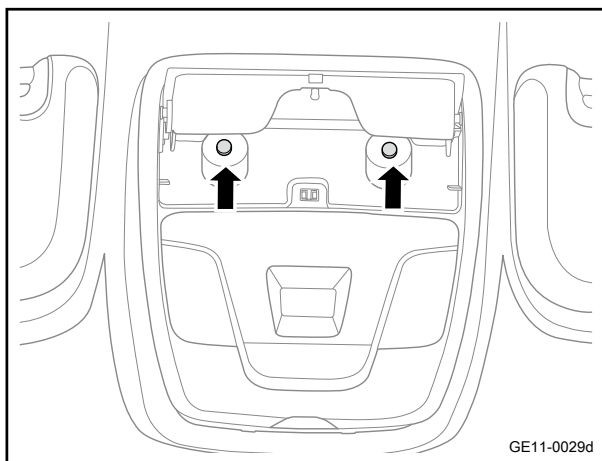
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Open the panel of the glasses case.

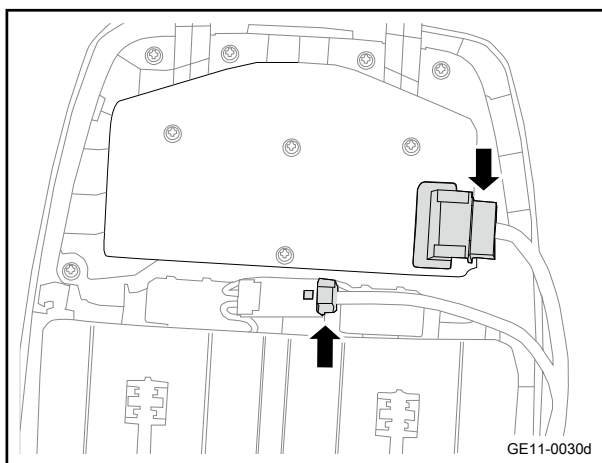


- 3 Remove the 2 fixing screws of the front reading lamp assembly.



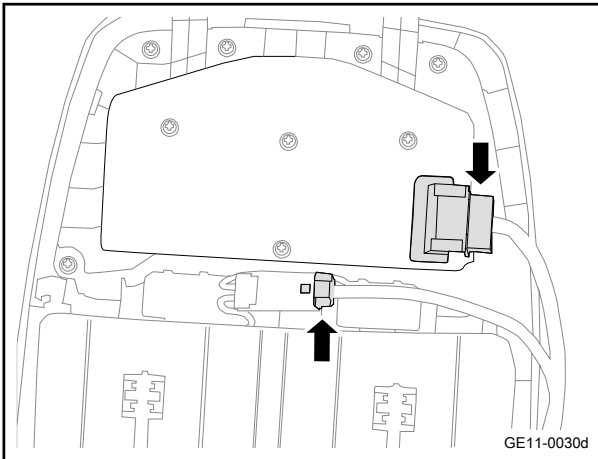
- 4 Pry off the front reading lamp assembly.

- 5 Disconnect the harness connector of the front reading lamp assembly.

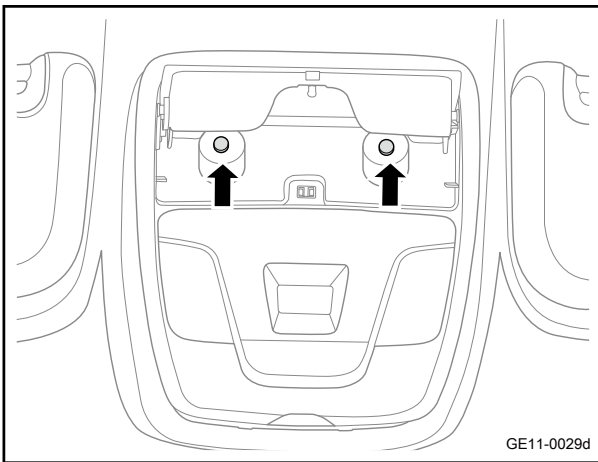


- 6 Remove the front reading lamp assembly.

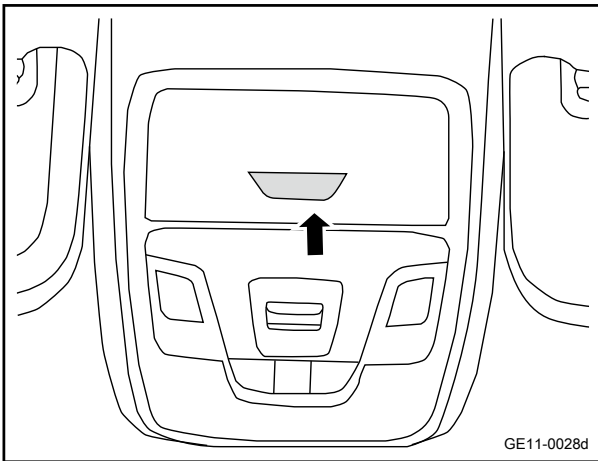
Installation procedure



- 1 Move the front reading lamp assembly to the installation position.
- 2 Connect the front reading lamp assembly harness connector.



- 3 Install the 2 fixing screws of the front reading lamp assembly.

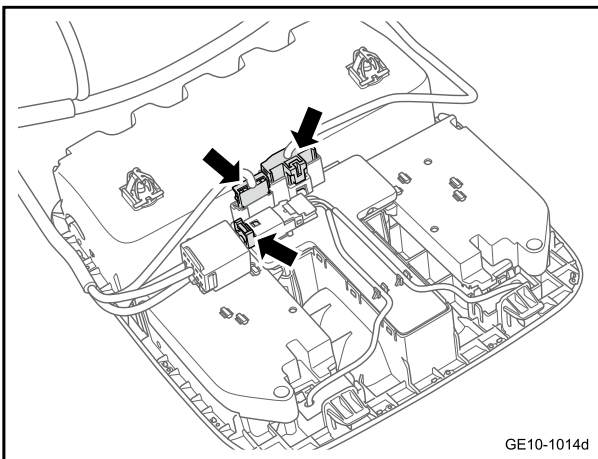
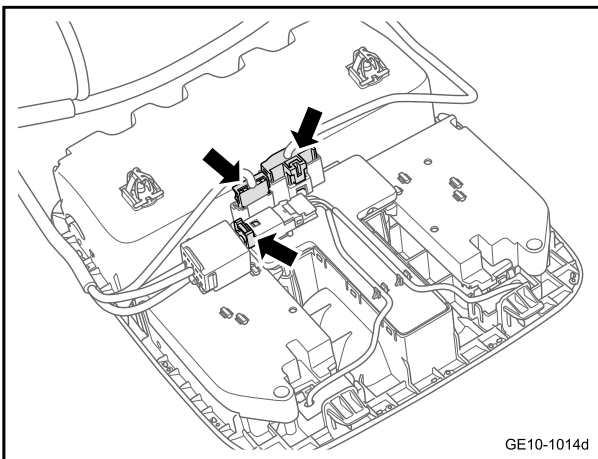
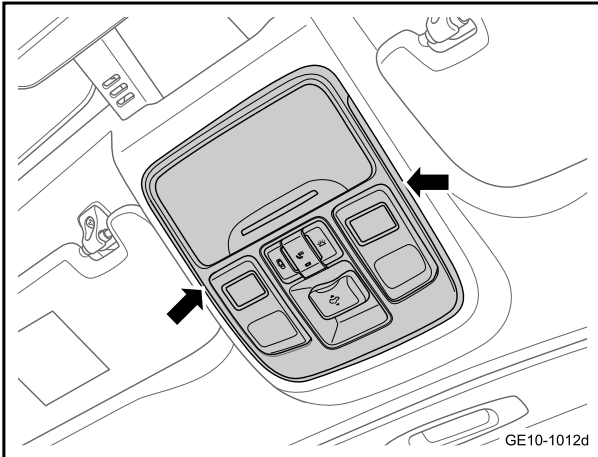


- 4 Close the panel of the glasses case.

- 5 Connect the negative cable of battery.

### 10.3.7.3 Replacement of front reading lamp assembly (Type II)

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Use a prying board to pry off the front reading lamp assembly.

#### Caution

Please use the special tools for vehicle body repair, otherwise it is easy to scratch the edge of the trim panel.

When prying off the front reading lamp assembly, avoid damaging the wiring harness connector on the back.

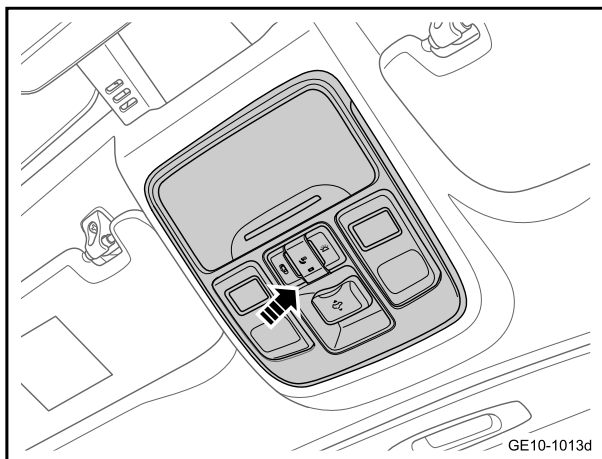
- 3 Disconnect the 3 wire harness connectors of the front reading lamp assembly.
- 4 Remove the front reading lamp assembly.

#### Installation procedure

- 1 Move the front reading lamp assembly to the installation position.
- 2 Connect the 3 wire harness connectors of the front reading lamp assembly.

#### Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".



- 3 Snap the front reading lamp assembly into the top cover trim panel.

- 4 Connect the negative cable of battery.

#### 10.3.7.4 Replacement of rear reading lamp assembly

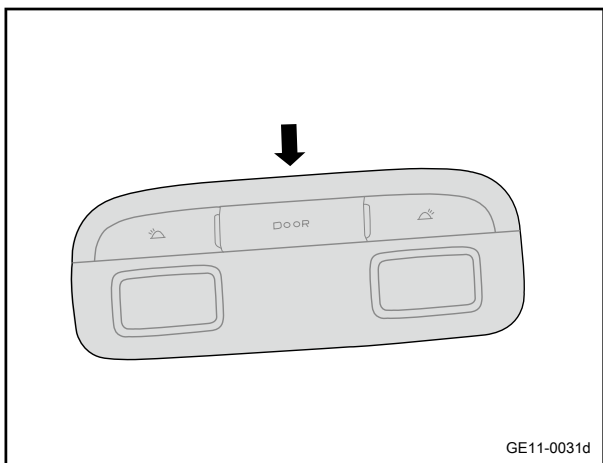
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

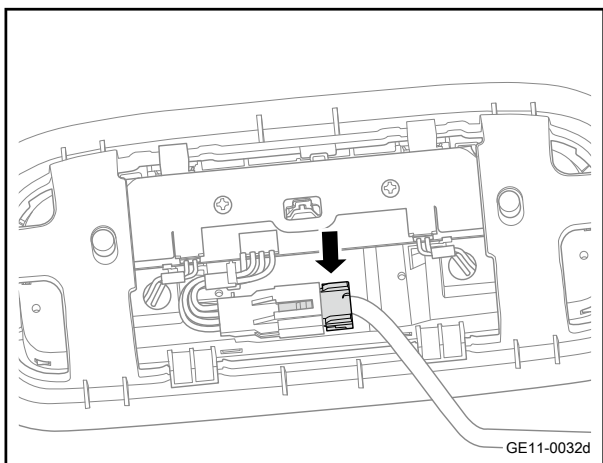
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

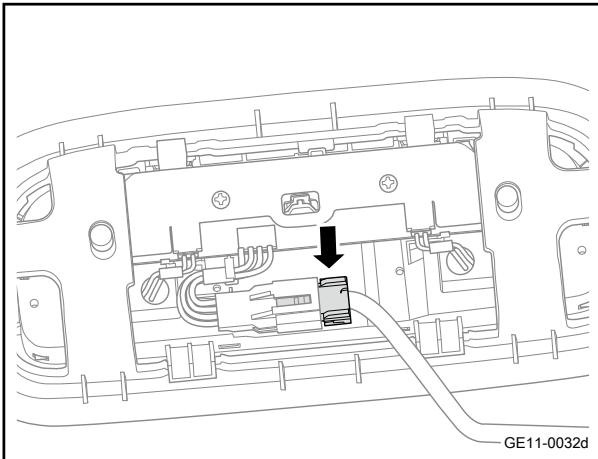
- 2 Pry down the rear reading lamp assembly.



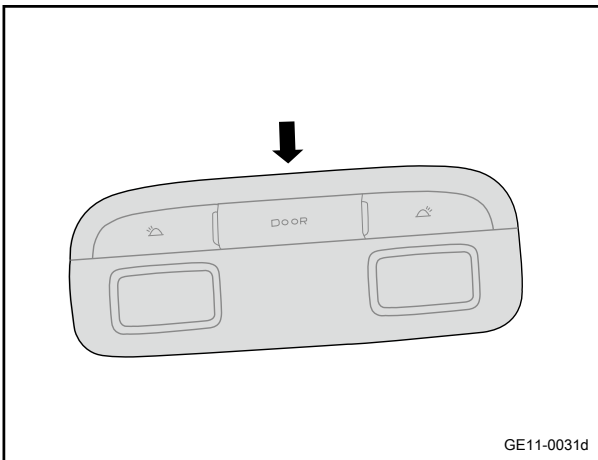
- 3 Disconnect the wiring harness connector of the rear reading lamp assembly.



Installation procedure



- 1 Connect the rear reading lamp assembly wiring harness connector.



- 2 Install the rear reading lamp assembly.

- 3 Connect the negative cable of battery.

### 10.3.7.5 Replacement of the luggage compartment lamp

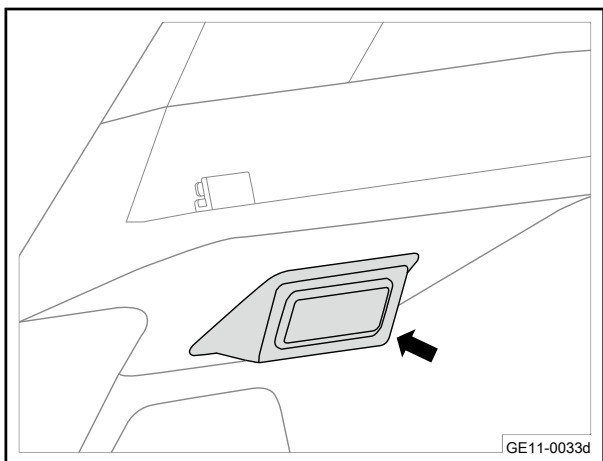
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

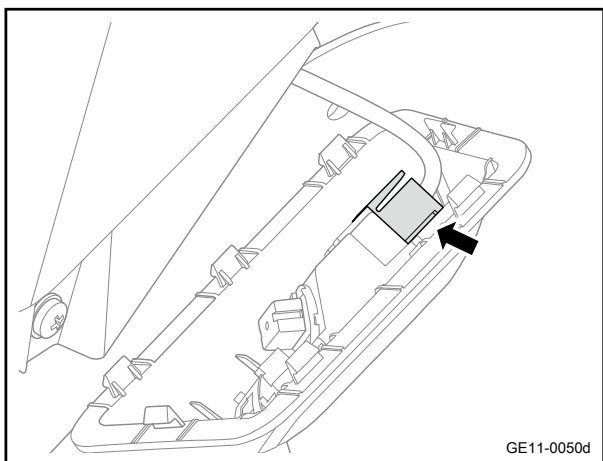
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Use a suitable tool to remove the luggage compartment lamp.

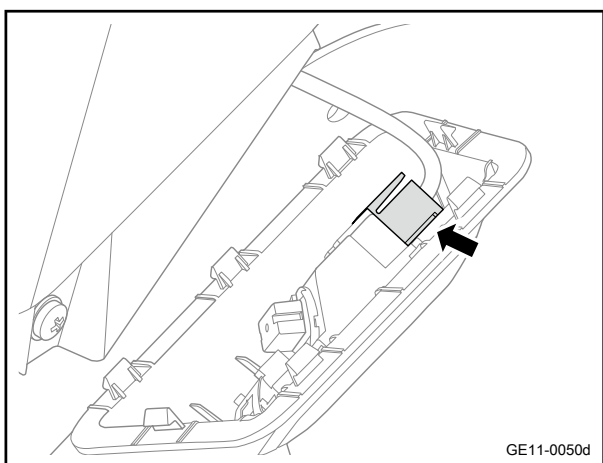


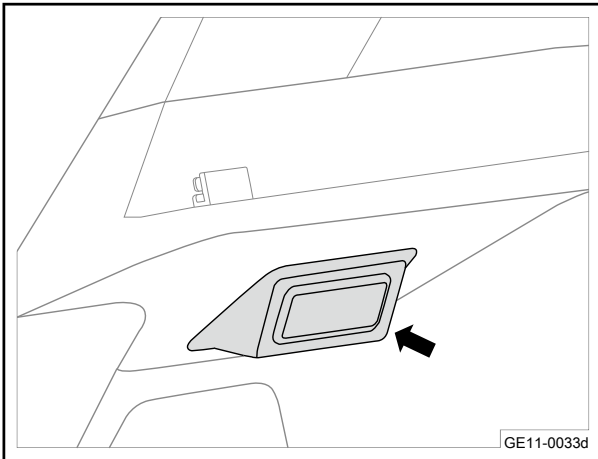
- 3 Disconnect the harness connector of the luggage compartment lamp.
- 4 Remove the luggage compartment lamp.



Installation procedure

- 1 Move the luggage compartment lamp to the installation position.
- 2 Connect the luggage compartment lamp harness connector.





- 3 Install the luggage compartment lamp.

- 4 Connect the negative cable of battery.

### 10.3.7.6 Replacement of the middle rear fog lamp assembly

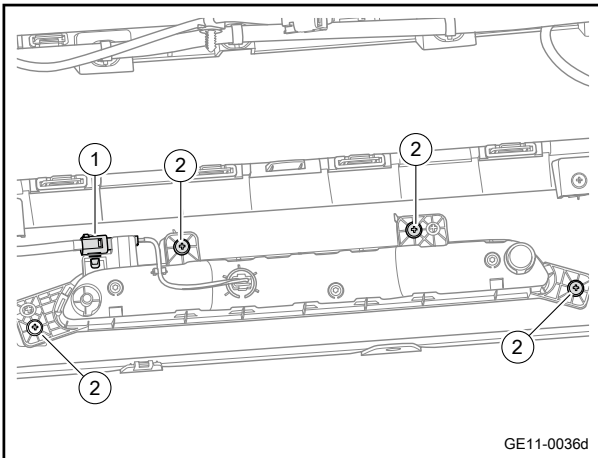
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

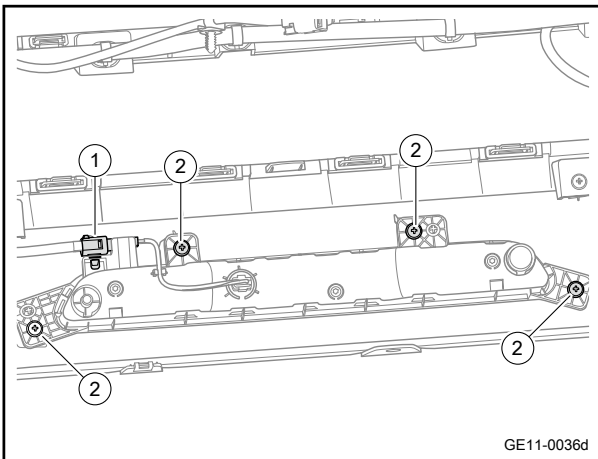
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the middle rear fog lamp assembly wire harness connector 1.
- 4 Remove the 4 fixing screws 2 of the middle rear fog lamp.
- 5 Remove the middle rear fog lamp assembly.



#### Installation procedure





- 1 Move the middle rear fog lamp assembly to the installation position.
- 2 Install the 4 fixing screws 2 of the middle rear fog lamp.  
Torque: 1.5N·m (metric) 1.1lb·ft (imperial system)
- 3 Connect the middle rear fog lamp assembly wiring harness connector 1.
- 4 Install the rear bumper.
- 5 Connect the negative cable of battery.

### 10.3.7.7 Replacement of high mount brake lamp assembly

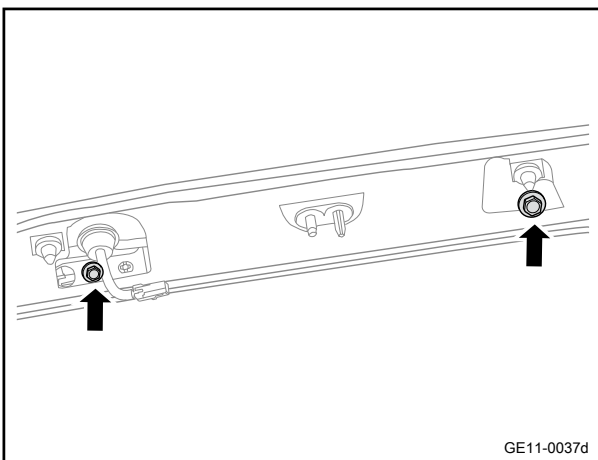
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

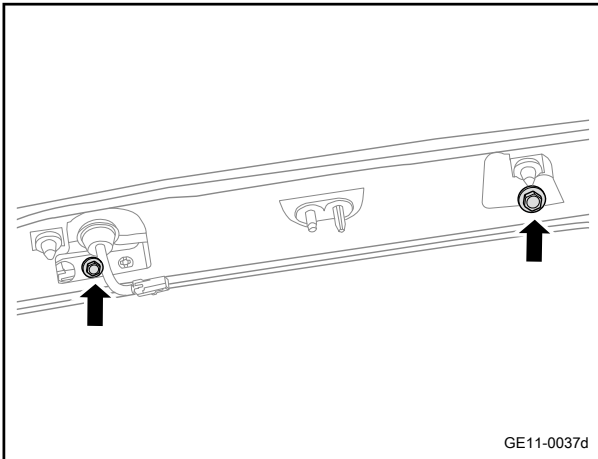
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 3 Remove the spoiler assembly. Refer to [Replacement of the spoiler assembly](#)
- 4 Remove the 2 fixing nuts of high-mounted brake lamp assembly.
- 5 Remove the high-mounted brake lamp assembly.



#### Installation procedure



- 1 Move the high-position brake lamp assembly to the installation position.
- 2 Install 2 fixing nuts of the high-mounted brake lamp assembly.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)

- 3 Install spoiler assembly.
- 4 Install the middle upper interior trim panel assembly of the backdoor.
- 5 Connect the negative cable of battery.

### 10.3.7.8 Replacement of the left front combination lamp assembly

#### Removal procedure

##### Caution

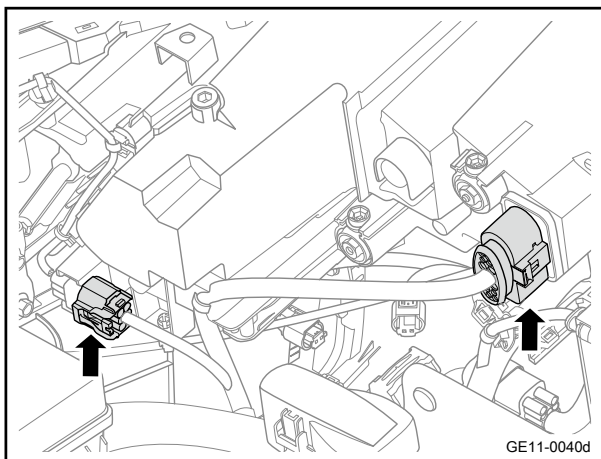
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

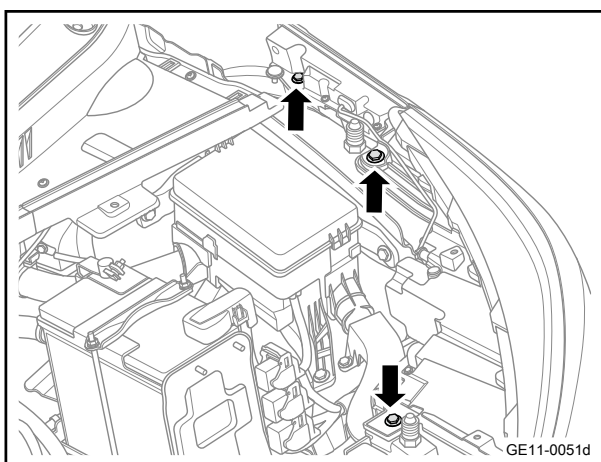
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

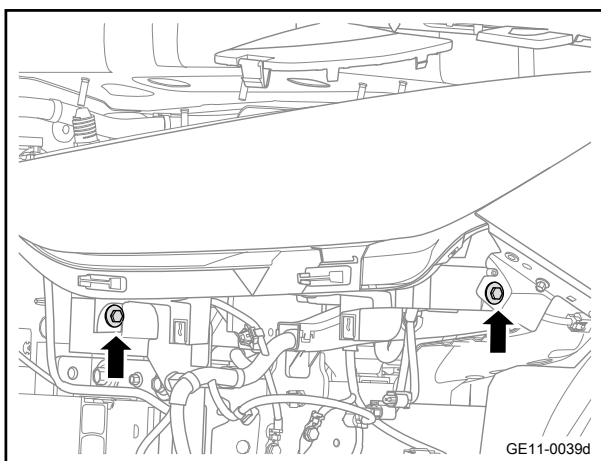
- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Remove the left mounting bracket of the front bumper. See [Replacement of the left mounting bracket of the front bumper](#)
- 4 Remove the trim plate on the left fender. See [Replacement of the decorative plate on the left fender](#)



- 5 Disconnect the harness connector of the left front combination lamp assembly.

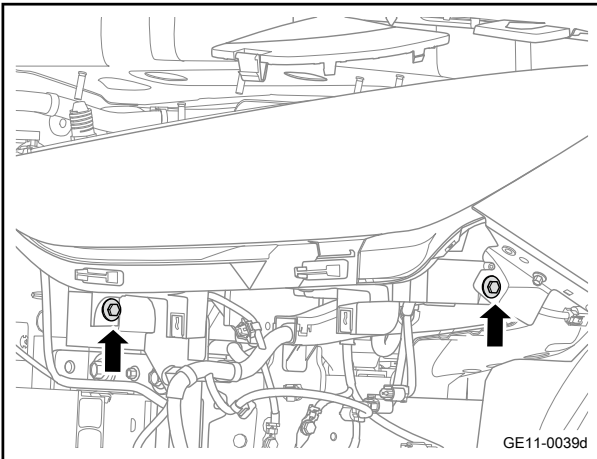


- 6 Remove the 3 fixing bolts at the upper part of the left front combination lamp assembly.

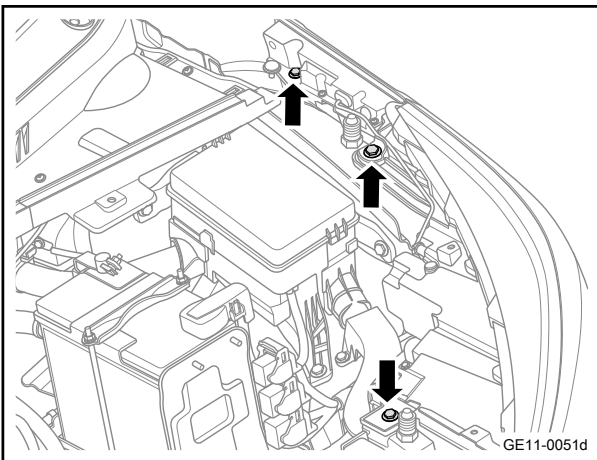


- 7 Remove the 2 fixing bolts at the lower part of the left front combination lamp assembly.
- 8 Remove the front combination lamp assembly.

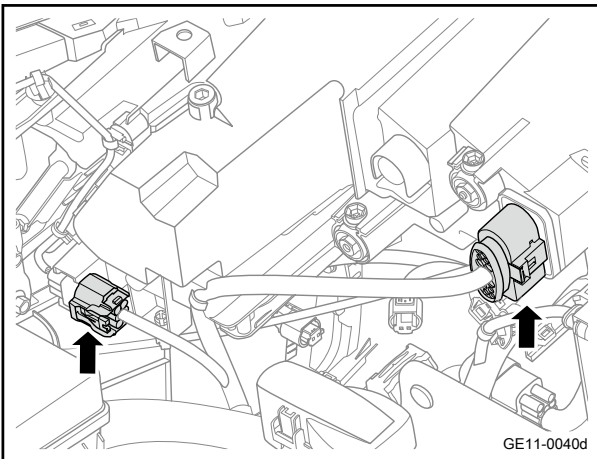
Installation procedure



- 1 Move the left front combination lamp assembly to the installation position.
- 2 Install 2 fixing bolts below the assembly-headlight cluster LH.  
Torque: 4.5N·m (metric) 3.3lb-ft (imperial system)



- 3 Install 3 fixing bolts at the lower part of the left front combination lamp assembly.  
Torque: 4.5N·m (metric) 3.3lb-ft (imperial system)



- 4 Connect the harness connector of the left front combination lamp assembly.

- 5 Install the trim panel on the left fender.
- 6 Install the left mounting bracket of the front bumper.
- 7 Install the front bumper assembly.
- 8 Connect the negative cable of battery.

### 10.3.7.9 Replacement of left combination lamp of the backdoor

Removal procedure

Caution

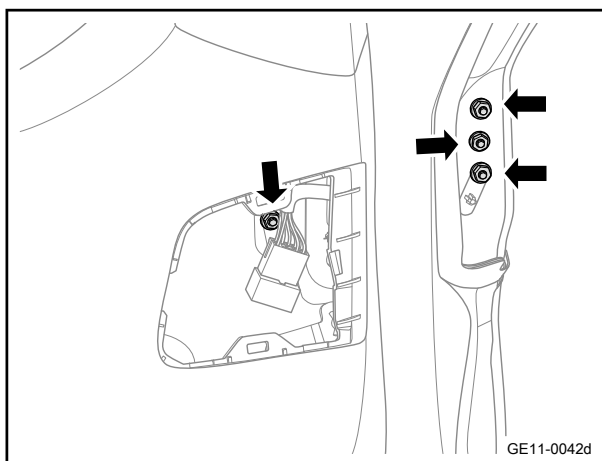
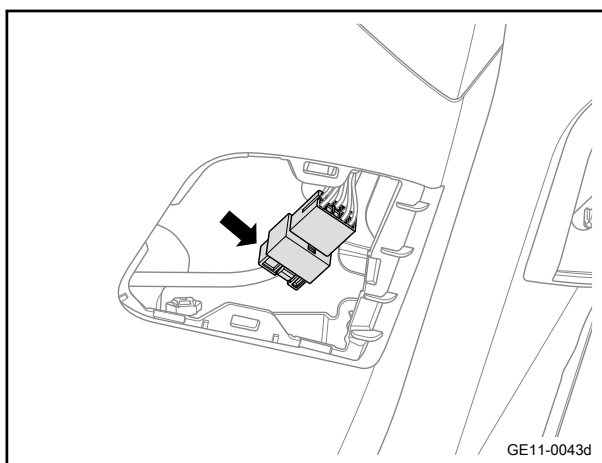
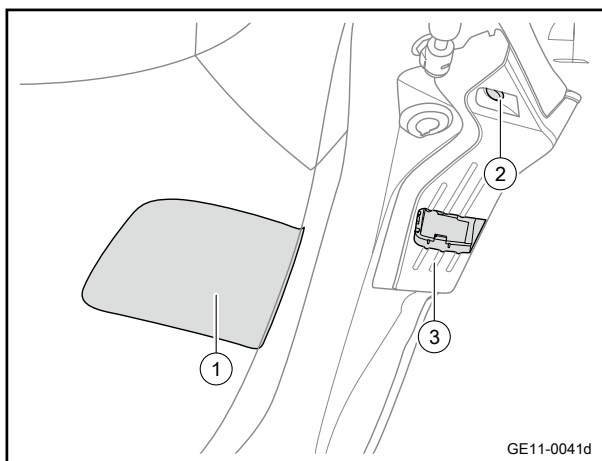
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

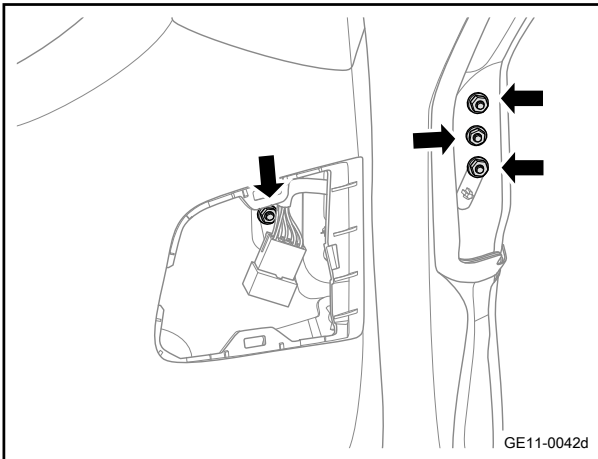
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the left combination lamp access cover 1 of the back door.
- 3 Remove the 1 fixed buckle 2 of the trim cover of the left combination lamp of the back door.
- 4 Remove the trim cover 3 of the left combination lamp of the back door.
- 5 Disconnect the left combination lamp harness connector of the back door.



- 6 Remove the 4 fixing nuts for the left combination lamp of the back door.
- 7 Remove the left combination lamp of the back door.

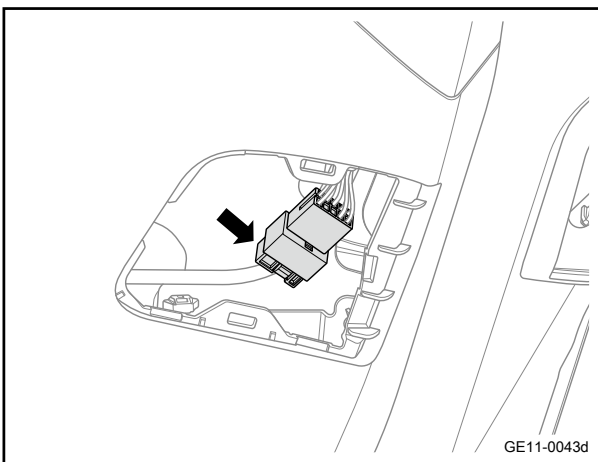
## Installation procedure



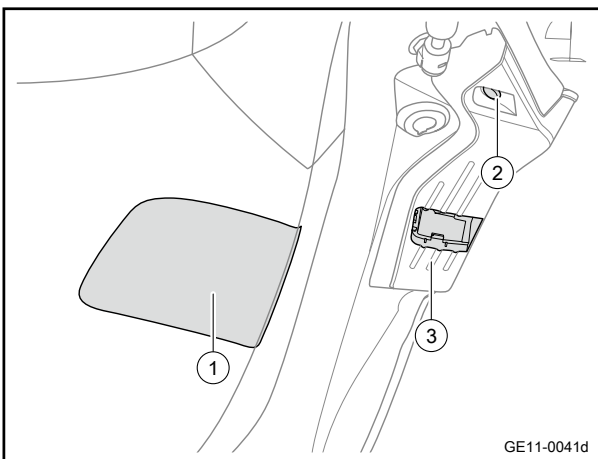
1 Move the left combination light of the back door to the installation position.

2 Install 4 fixing nuts for the left combination lamp of the back door.

Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)



3 Connect the left combination light wire harness connector of the back door.



4 Install the trim cover of the left combination lamp of the back door 3.

5 Install a fixed buckle 2 on the trim cover of the left combination lamp of the back door.

6 Install the back door left combination lamp access cover 1.

7 Connect the negative cable of battery.

### 10.3.7.10 Replacement of left rear side wall combination lamp

#### Removal procedure

**Caution**

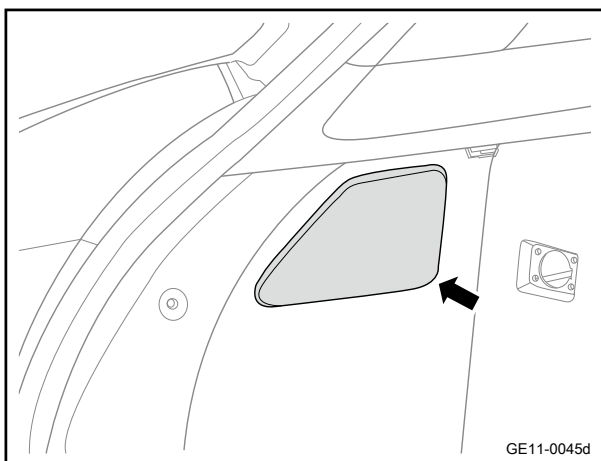
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

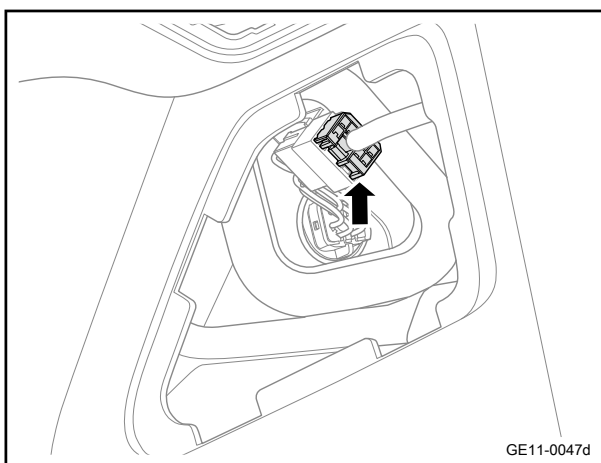
**Warning**

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

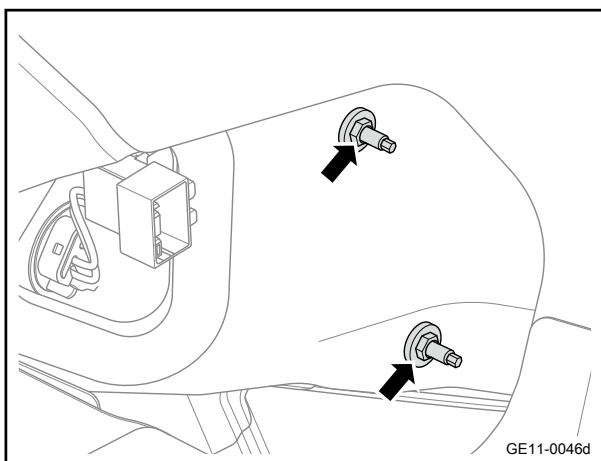
- 2 Remove the access cover of the left rear side body combination lamp.

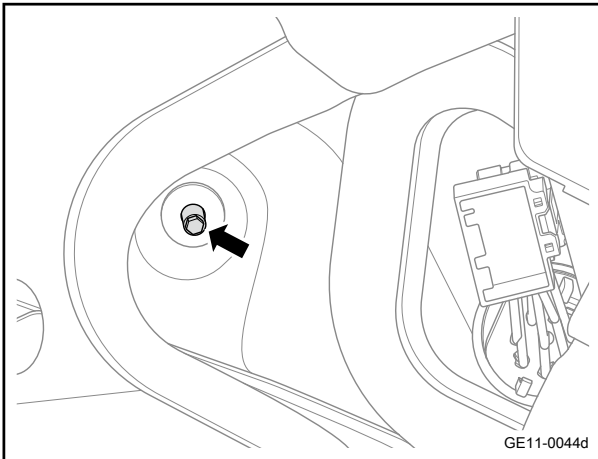


- 3 Disconnect the harness connector of the left rear combination lamp.



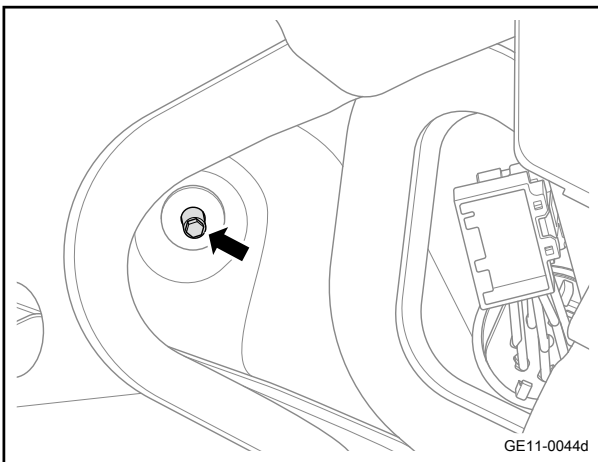
- 4 Remove 2 fixing bolts at the front of the left rear side wall combination lamp.



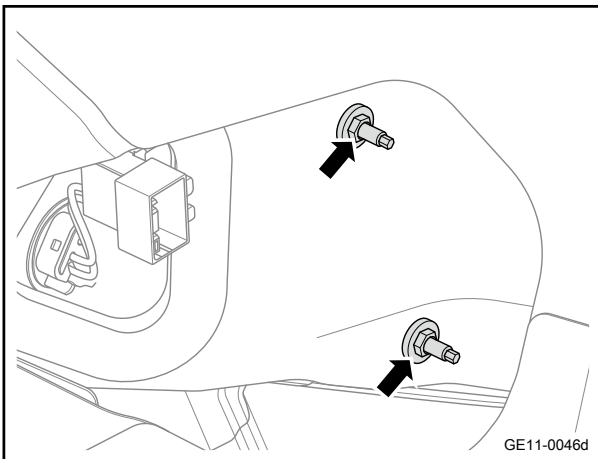


- 5 Remove 1 fixing bolts at the rear of the left rear side wall combination lamp.
- 6 Remove the left rear side body combination lamp.

#### Installation procedure

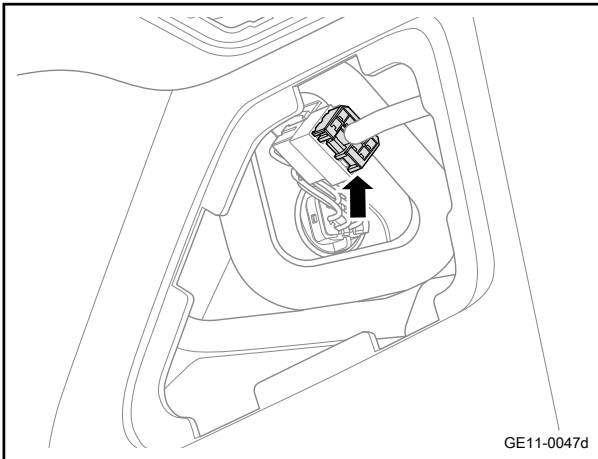


- 1 Move the left rear side body combination light to the installation position.
- 2 Install 1 fixing bolts at the rear of the left rear side wall combination lamp.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)

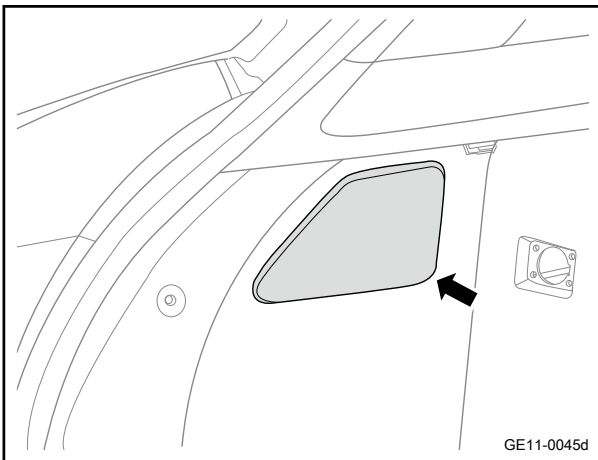


- 3 Install 2 fixing bolts at the front of the left rear side wall combination lamp.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)





- 4 Connect the harness connector of the left rear combination lamp.



- 5 Install the left rear side wall combination lamp access cover.

- 6 Connect the negative cable of battery.

### 10.3.7.11 Replacement of left rear license plate lamp

#### Removal procedure

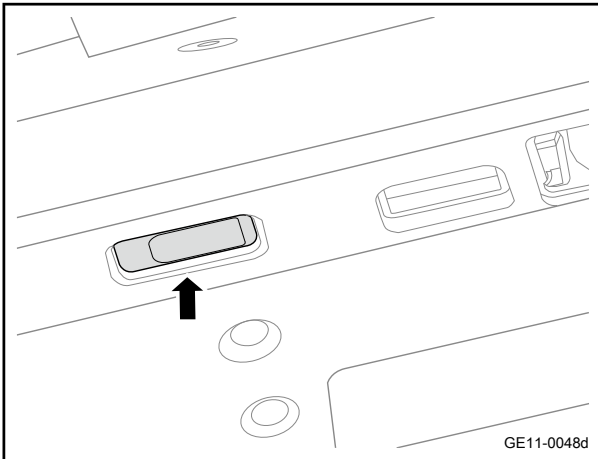
##### Caution

The disassembly and assembly methods are the same for the left and right sides.

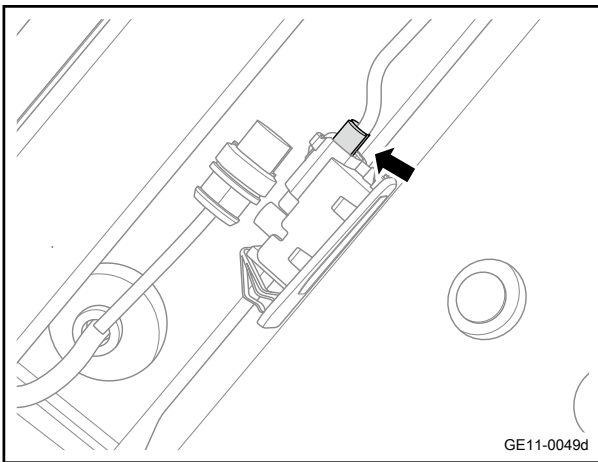
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

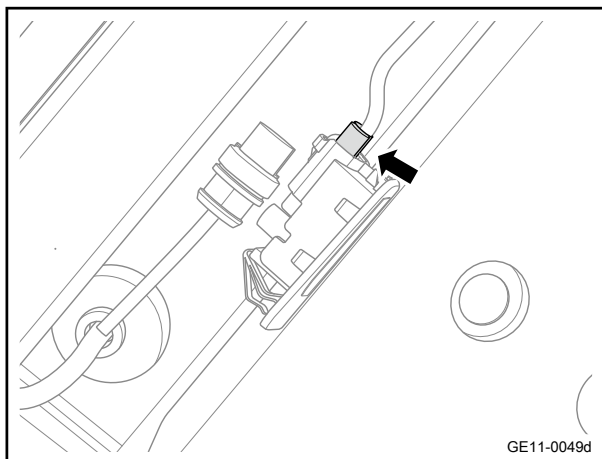


2 Pry off the left rear license plate lamp.

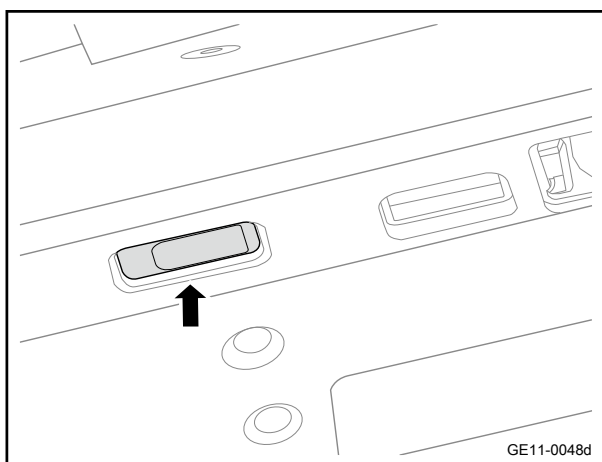


3 Disconnect the left rear license plate lamp harness connector.

Installation procedure



- 1 Connect the left rear license plate lamp harness connector.



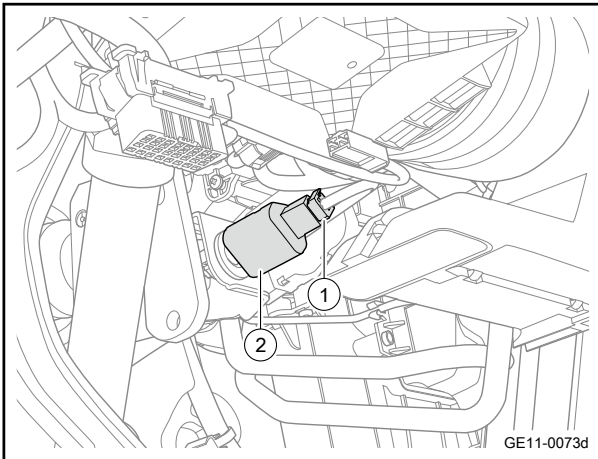
- 2 Install the left rear license plate lamp.

- 3 Connect the negative cable of battery.

### 10.3.7.12 Replacement of brake lamp switch

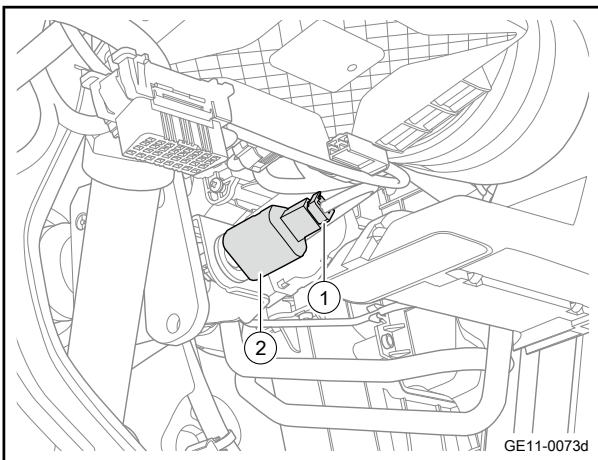
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)



- 3 Disconnect the harness connector 1 of brake lamp switch.
- 4 Turn counterclockwise to remove the brake lamp switch 2.

#### Installation procedure



- 1 Move the brake lamp switch to the installation position.
- 2 Rotate clockwise to install the brake lamp switch 2.
- 3 Connect the harness connector 1 of brake lamp switch.

- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Connect the negative cable of battery.

### 10.3.7.13 Replacement of left turn signal

#### Removal procedure

##### Caution

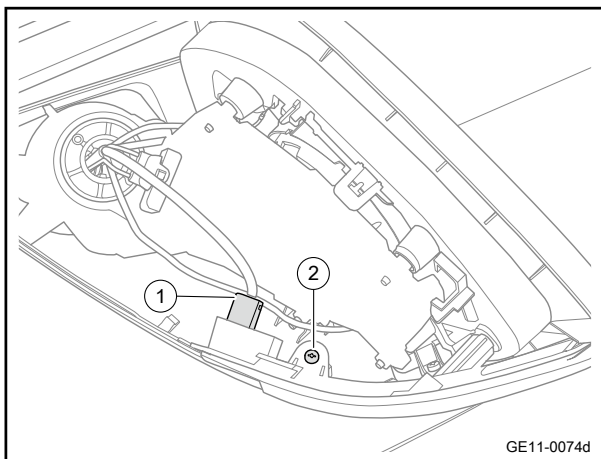
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

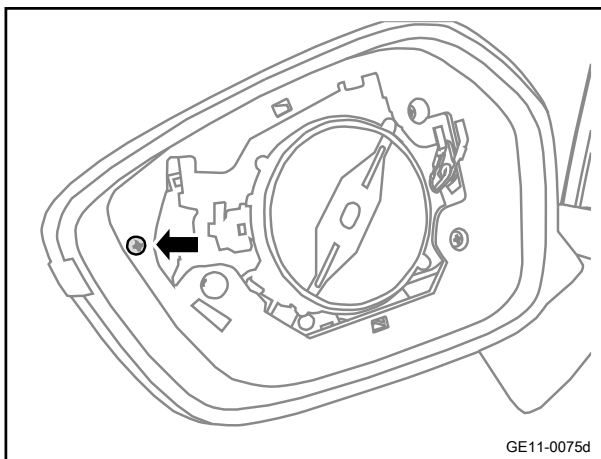
##### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the left power rearview mirror lens. Refer to [Replacement of left power rearview mirror lens](#)

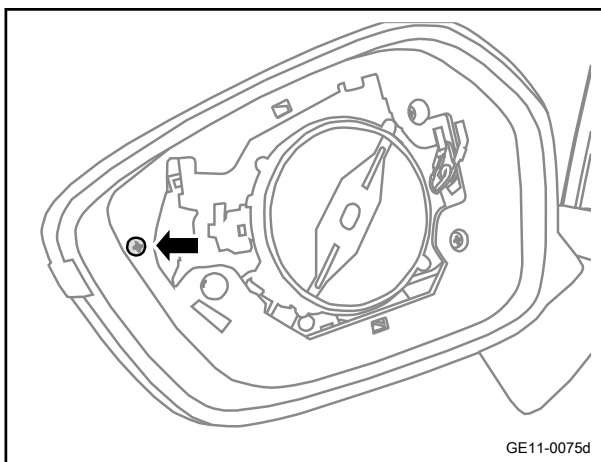


- 3 Disconnect the left turn signal harness connector 1.
- 4 Remove the 1 fixing screw 2 from the front of the left turn signal.

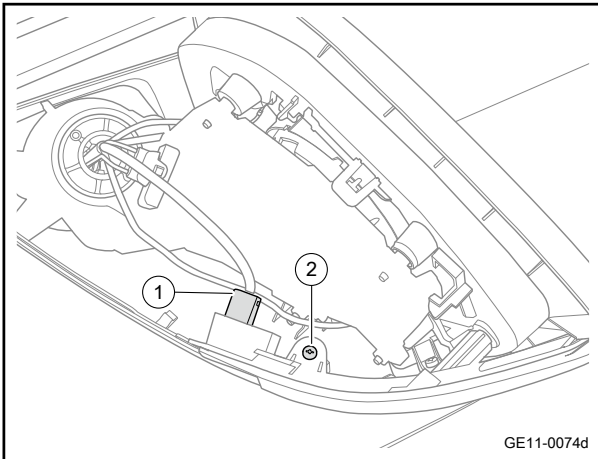


- 5 Remove the 1 fixing screw at the rear of the left turn signal.
- 6 Remove the left turn signal.

Installation procedure



- 1 Move the left turn signal to the installation position.
- 2 Install the 1 fixing screw at the rear of the left turn signal.  
Torque: 0.6N·m (metric) 0.4lb-ft (imperial system)



- 3 Install a fixing screw 2 at the front of the left turn signal.  
Torque: Nm ( metric system ) lb-ft ( imperial system )
- 4 Connect the left turn signal harness connector 1.

- 5 Install the left power rearview mirror lens.
- 6 Connect the negative cable of battery.

### 10.3.7.14 Headlight height adjustment switch assembly

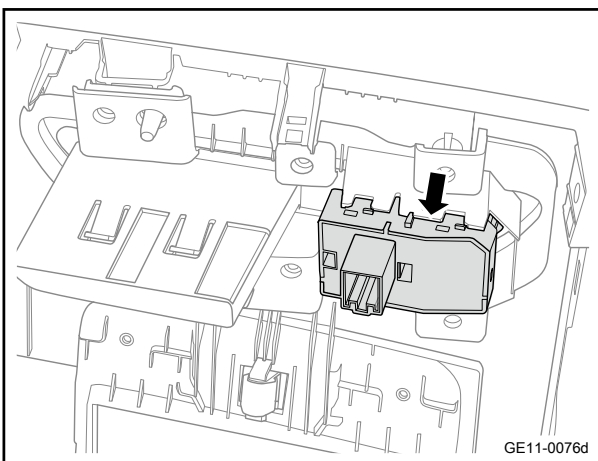
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

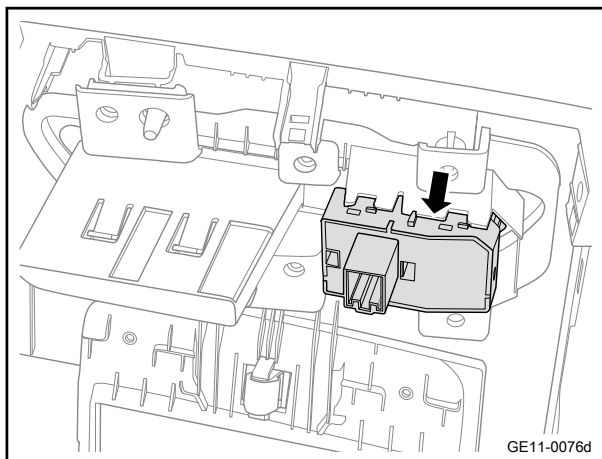
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 3 Pry off the headlight height adjustment switch assembly.



#### Installation procedure



- 1 Install the headlight height adjustment switch assembly.

- 2 Install the left lower fender apron assembly of the dashboard.
- 3 Connect the negative cable of battery.

### 10.3.7.15 Replacement of sunlight sensor

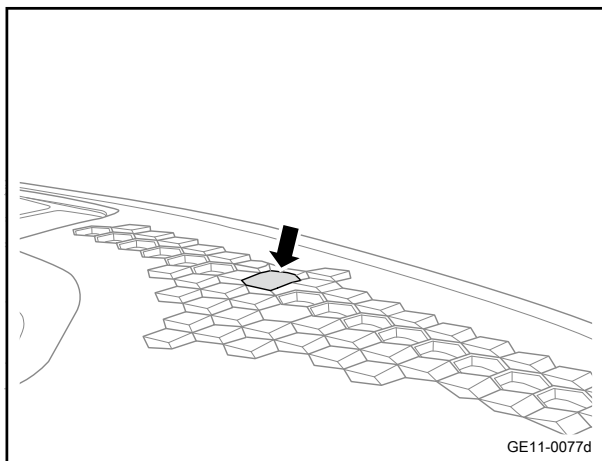
#### Removal procedure

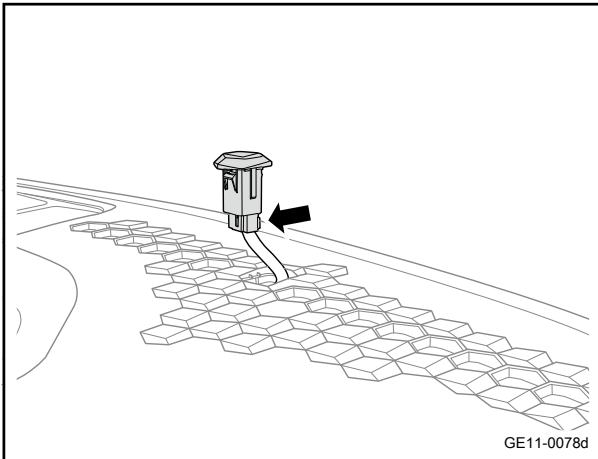
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

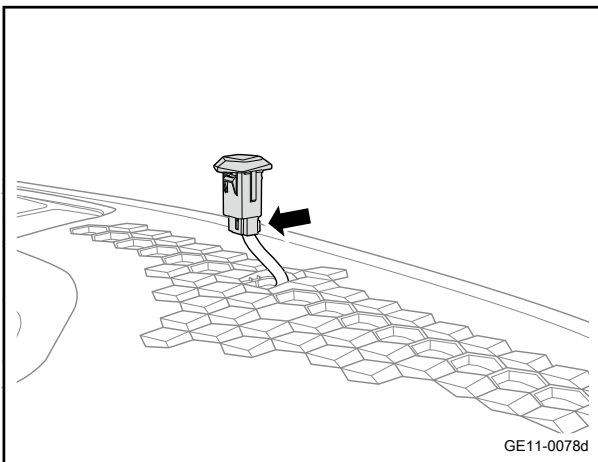
- 2 Pry off the sunlight sensor.



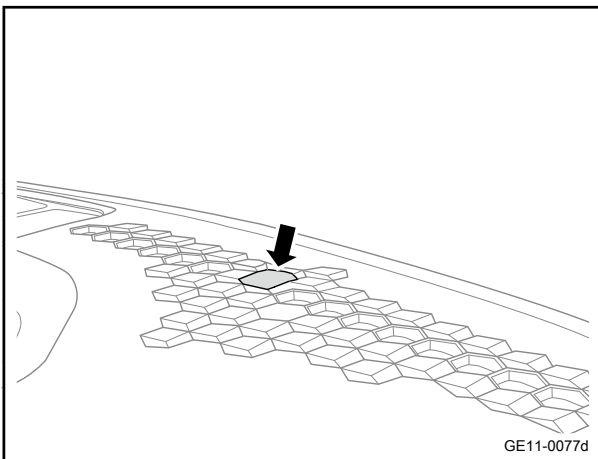


- 3 Disconnect the sunlight sensor harness connector.
- 4 Remove the sunlight sensor.

#### Installation procedure



- 1 Move the sunlight sensor to the installation location.
- 2 Connection the sunlight sensor harness connector.



- 3 Install the sunlight sensor.

- 4 Connect the negative cable of battery.

### 10.3.7.16 Replacement of hazard warning lamp switch

#### Removal procedure

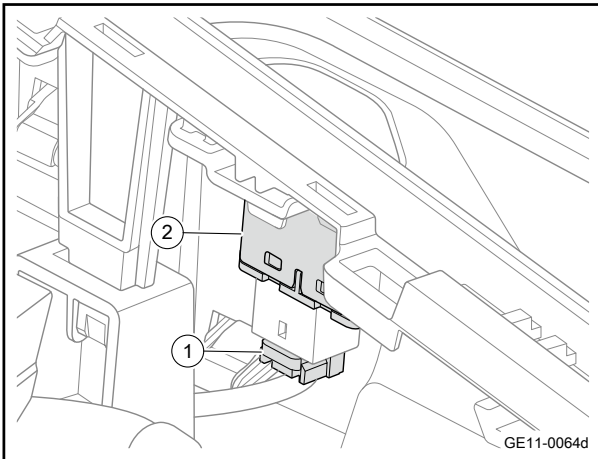


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

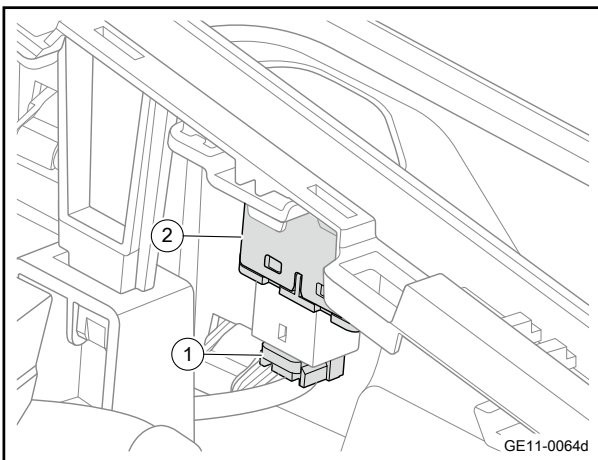
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 3 Disconnect the hazard warning switch harness connector 1.
- 4 Pry down the hazard warning switch 2.



#### Installation procedure

- 1 Install the hazard warning lamp switch 2.
- 2 Connect the hazard warning switch harness connector 1.



- 3 Install the auxiliary instrument switch pack.
- 4 Connect the negative cable of battery.

### 10.3.7.17 Replacement of dashboard ambient light

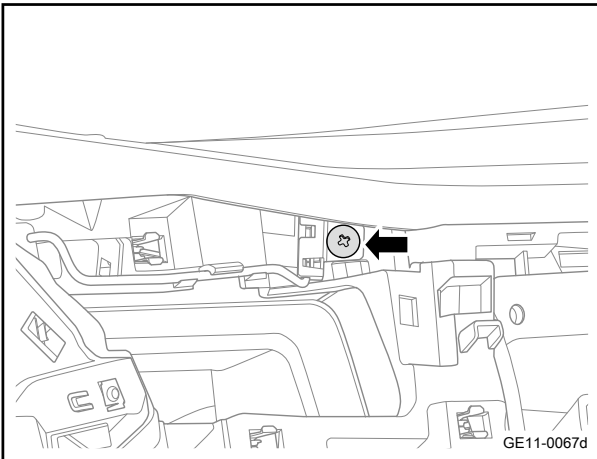
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

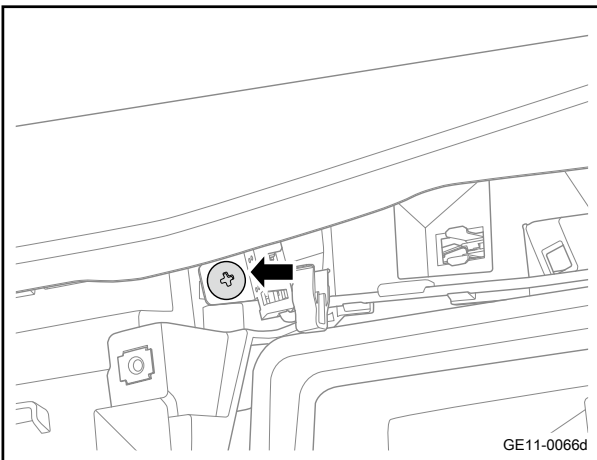
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)
- 3 Remove the 1 fixing screw on the left side of the dashboard ambient light.

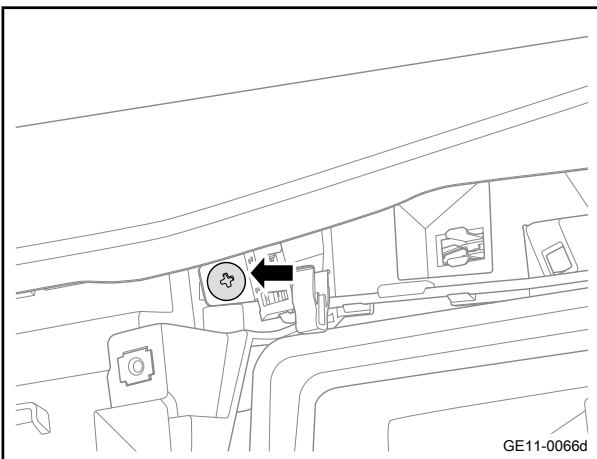


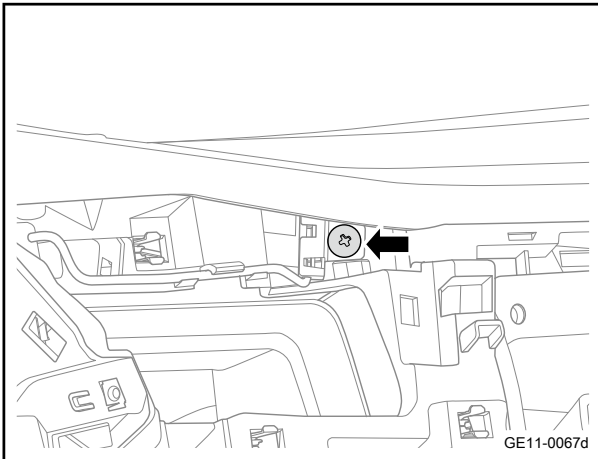
- 4 Remove the 1 fixing screw on the right side of the dashboard ambient light.
- 5 Remove the dashboard ambient light.



**Installation procedure**

- 1 Move the dashboard ambient light to the installation location.
- 2 Install 1 fixing screw on the right side of the dashboard ambient light.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)





- 3 Install a fixing screw on the left side of the dashboard ambient light.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 4 Install the dashboard body assembly.
- 5 Connect the negative cable of battery.

### 10.3.7.18 Replacement of the center console ambient light

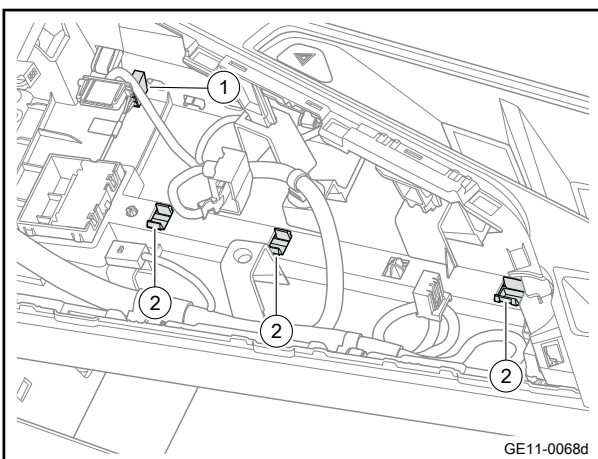
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

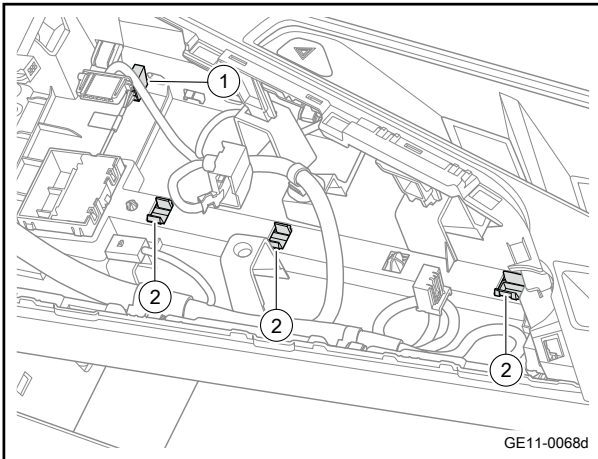
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 3 Disconnect the center console ambient light harness connector 1.
- 4 Disengage the fixed buckle 2 of the center console ambient light.
- 5 Remove the center console ambient light.



#### Installation procedure



- 1 Move the center console ambient light to the installation location.
- 2 Install the central console ambient light fixing buckle 2.
- 3 Connect the center console ambient light wiring harness connector 1.

- 4 Install the auxiliary instrument switch pack.
- 5 Connect the negative cable of battery.

### 10.3.7.19 Replacement of the left front door ambient light

#### Removal procedure

##### Caution

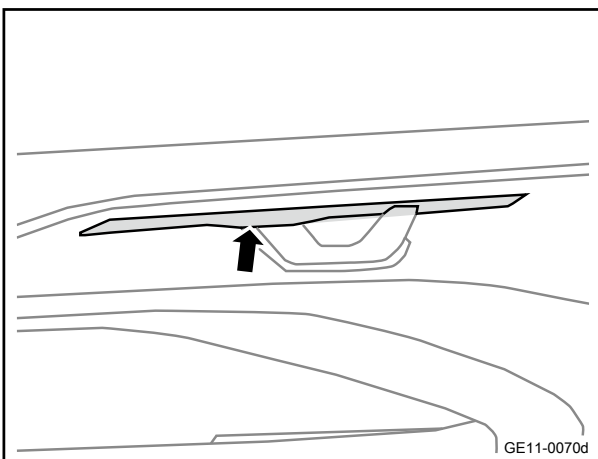
The disassembly and assembly methods are the same for the left and right sides.

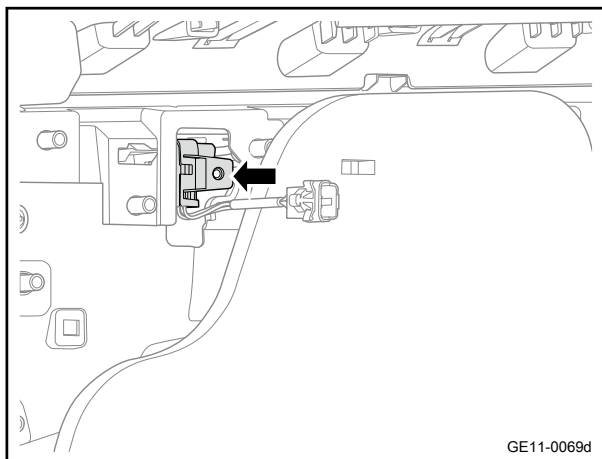
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

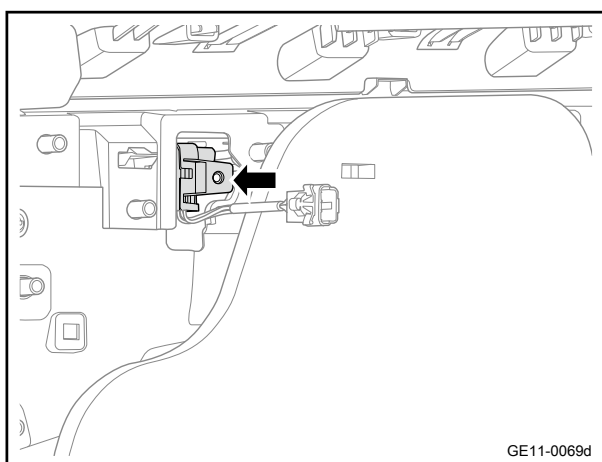
- 2 Remove the left front door switch panel assembly. See [Replacement of the left front door switch panel assembly](#)
- 3 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 4 Pry open the trim panel of the left front door ambient light.



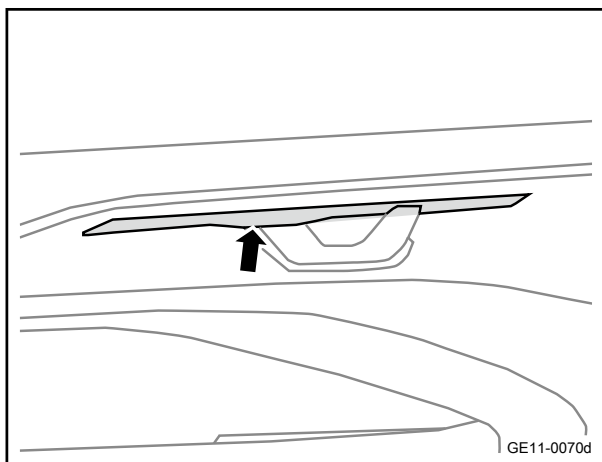


- 5 Remove the 1 fixing screw of the left front door ambient light.
- 6 Remove and disassemble the left front door ambient light.

#### Installation procedure



- 1 Move the front left door ambient light to the installation position.
- 2 Install 1 fixing screw of the left front door ambient light.  
Torque: Nm ( metric system ) lb-ft ( imperial system )



- 3 Install the trim panel of the left front door ambient light.

- 4 Install the FL door interior trim panel assembly.
- 5 Install the left front door switch panel assembly.
- 6 Connect the negative cable of battery.

### 10.3.7.20 Replacement of the left rear door ambient light

#### Removal procedure

**Caution**

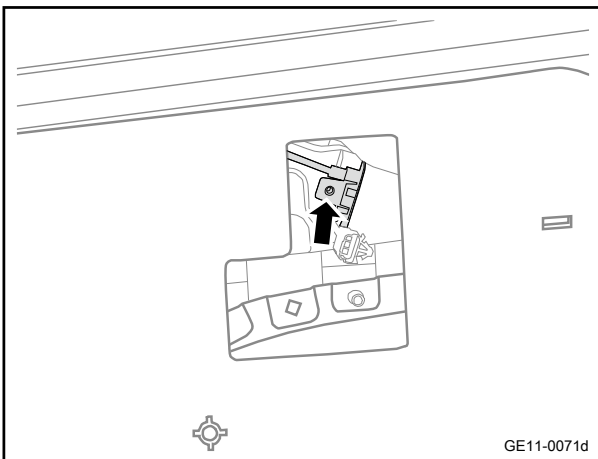
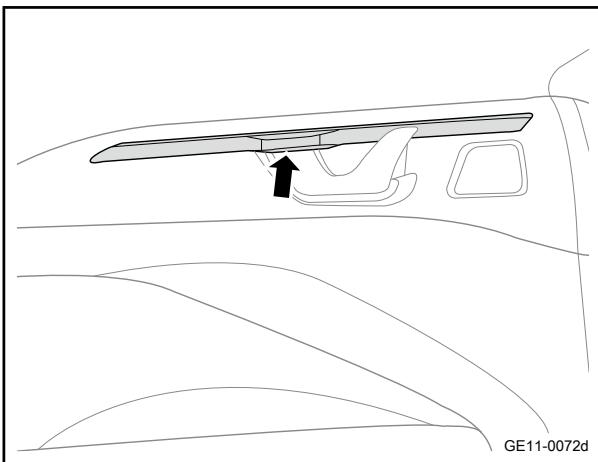
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

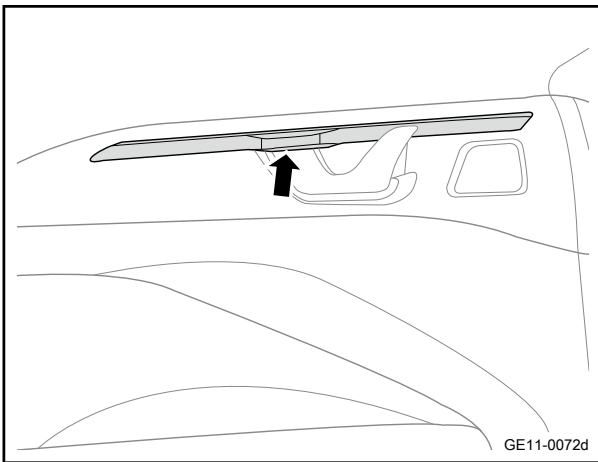
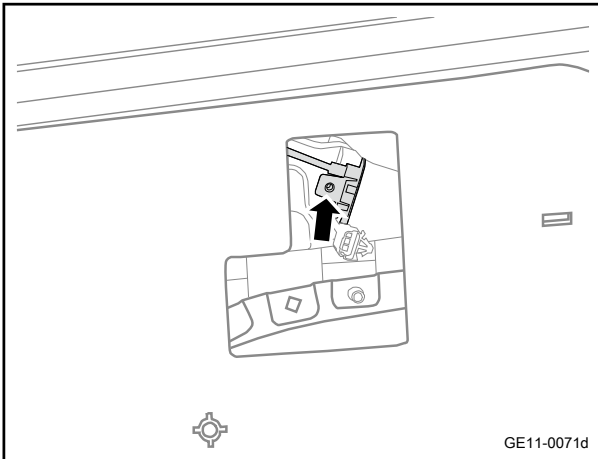
Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Remove the trim panel of the left rear door ambient light.



- 4 Remove the 1 fixing screw of the left rear door ambient light.
- 5 Remove the left rear door ambient light.

**Installation procedure**



- 1 Move the left rear door ambient light to the installation position.
- 2 Install a fixing screw for the left rear door ambient light.  
Torque: Nm ( metric system ) lb-ft ( imperial system )

- 3 Install the trim panel of the left rear door ambient light.

- 4 Install the RL door interior trim panel assembly.
- 5 Connect the negative cable of battery.

### 10.3.7.21 Replacement of full-width lamp of back door

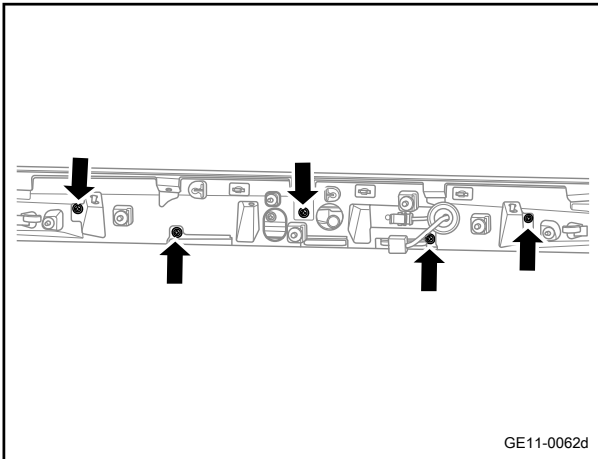
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

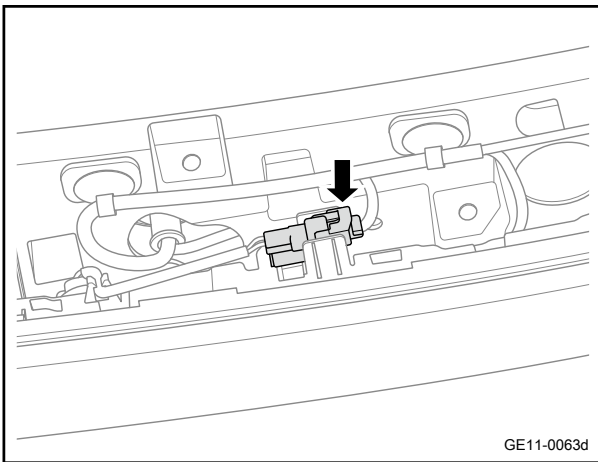
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

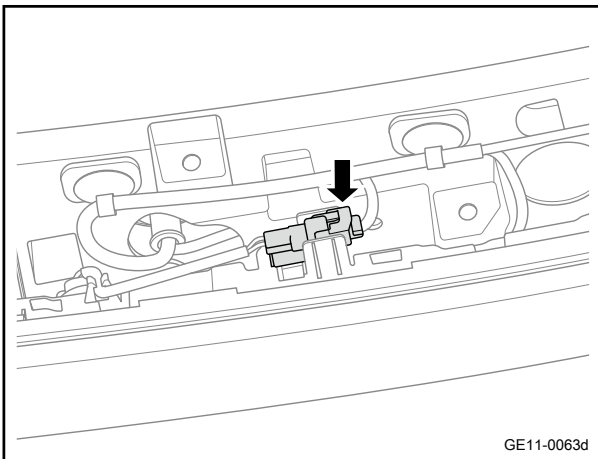
- 2 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)
- 3 Remove the exterior trim panel of the backdoor. See [Replacement of the outer trim panel of the back door](#)



- 4 Remove the 5 fixing screws of the back door full-width lamp.



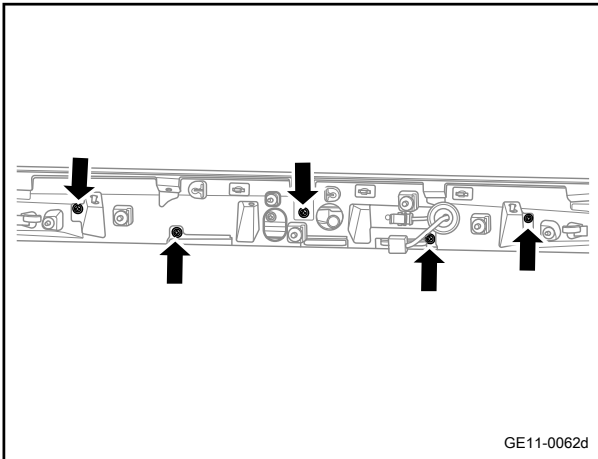
- 5 Disconnect the back door full-width lamp harness connector.
- 6 Remove the back door full-width lamp.



#### Installation procedure

- 1 Move the back door full-width lamp to the installation position.
- 2 Connect the back door full-width lamp harness connector.





- 3 Install 5 fixing screws of the back door full-width lamp.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 4 Install the exterior trim panel of the backdoor.
- 5 Install the lower trim panel assembly of the backdoor.
- 6 Connect the negative cable of battery.

### 10.3.7.22 Replacement of foot lights

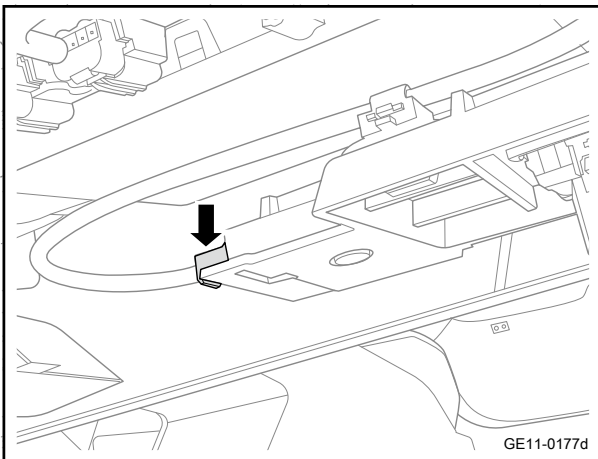
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

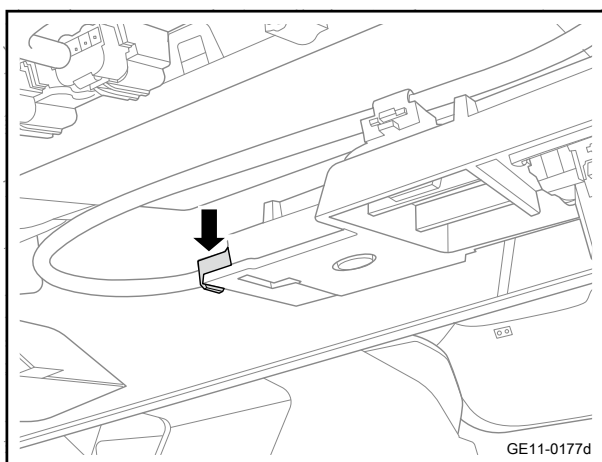
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the foot light harness connector.
- 3 Remove the foot lights.



#### Installation procedure



- 1 Move the foot lights to the installation position.
- 2 Connect the foot light harness connector.

- 3 Connect the negative cable of battery.

## 10.4 Glass/windows/rearview mirror

### 10.4.1 Specification

#### 10.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Exterior left rearview mirror fixing nut	M6	8 - 10	5.9 - 7.4
Front left door power window regulator assembly fixing nut	M6	8.5 - 11.5	6.3 - 8.5
Front left door power window regulator assembly fixing bolt	M6×12	8 - 10	5.9 - 7.4
Rear left door power window regulator assembly fixing nut	M6	8.5 - 11.5	6.3 - 8.5
Rear left door power window regulator assembly fixing bolt	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left front door glass assembly	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left rear door glass assembly	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of left rear door glass guide	M6×12	8 - 10	5.9 - 7.4
Fixing bolt of front left door glass guide	M6×12	8 - 10	5.9 - 7.4

## 10.4.2 Description and Operation

### 10.4.2.1 Description and operation

#### Description and operation of the window regulator

The window regulator has the following four operation modes: manual up, manual down, automatic up, and automatic down.

- Manual up

Pull up the window switch to manual gear (first gear) and hold it. The corresponding window regulator motor moves to make the window glass move up; release the switch and the window glass stops moving.

- Manual down

Press down the window switch to manual gear (first gear) and hold it, the corresponding window regulator motor moves to lower the movement of the window glass; release the switch, and the window glass stops moving.

- When one of the following conditions is met, the window regulating function is blocked

1. 45s after the start-and-stop switch is turned off.
2. Within 45s of turning off the start-and-stop switch, any front door opens.

- Automatic up

Pull up the window switch to the automatic gear (second gear), the left front window automatically rises to the highest position, or until the switch is pressed or pulled up again, the operation of the rest of the windows is the same.

- Automatic down

Press down the window switch to the automatic gear (second gear), the left front window will automatically drop to the bottom, or until the switch is pressed or pulled up again, the operation of the rest of the windows is the same.

- Open/close windows remotely

The start switch is set to OFF. Press and hold the unlocking button on the smart key to open the window; press and hold the locking button on the smart key to close the window. When the function of rolling up glass of locked door is turned on in the multimedia settings, press the lock button on the smart key, and the window will automatically close.

- Window locking switch

The window locking switch is on the driver side door, located between the window switches. Press the window locking switch to disable the function of opening and closing the front passenger side and rear windows. When the locking function is activated, the front passenger side and rear-row windows can be raised/lowered by using the driver side window

switch. To restore the function of opening and closing front passenger side and rear windows, press this switch again.

- Thermal protection of power windows

If the window is raised and lowered repeatedly in a short period of time, in order to protect the life of the motor, the window switch will temporarily fail. To restore the window opening and closing function, you need to wait for 30 minutes before the window opening and closing function can be restored.

- Anti-pinch function

During the automatic closing operation, if there is an object sandwiched between the glass and the window frame, the window will drop 150mm or drop to the bottom dead center position. If the window is hit hard, this function may work even if no object is caught. If the anti-pinch function does not work properly, the power window needs to perform self-learning.

- Anti-pinch power window self-learning

If the low-voltage battery of the vehicle is reconnected after power failure or does not work normally, it is necessary to perform self-learning by the power windows with anti-pinch function again.

The self-learning steps are as follows:

1. Pull up the window switch until the window is completely closed and continue to pull the switch up for at least 2 seconds and then release it, the anti-pinch motor will have the function of automatic rise and anti-pinch;
2. Press down the window switch to lower the window from the top to the bottom and continue to press the switch for at least 2 seconds and then release it, the anti-pinch motor will have a lowering soft stop function;
3. Perform an operation that rises the glass from the bottom to the top for 2 seconds.

#### Caution

1. It is necessary to replace the low-voltage battery or recharge the low-voltage battery of the vehicle before self-learning.

- Function of delayed operation

Within a period of time after the start-and-stop switch is placed in the OFF position, when the following conditions are met, the window switch can still be used to control the regulation of the window.

1. The doors at driver's side and the front passenger's side are not opened;
2. The smart key is not operated to unlock/lock the vehicle.

#### Instructions and operation of the exterior rearview mirrors

##### Without memory function

The upward, downward, leftward, and rightward adjustment of the exterior mirror is controlled by the exterior mirror adjustment switch at the driver's door. The rearview mirror has 3 controllers, the left and right selection switches is used to select the rearview mirror to be operated, and the direction button switch is used to adjust the position of the rearview mirror glass.

##### With memory function

The upward, downward, leftward, and rightward adjustments of the exterior mirrors are controlled by the seat module according to the exterior mirror adjustment switch signal on the driver's door. And adjust the position of the rearview mirror glass according to the required operation of the switch selection.

##### Function of folding the exterior rearview mirrors

The folding of the exterior mirror is controlled by the BCM module according to the exterior mirror adjustment switch signal on the driver's side door.

##### Function of defrosting exterior rearview mirrors

There is also a heating element in the mirror glass of the exterior rearview mirror. When the rear windshield defroster is switched on, the heating element of exterior rearview mirror will also operate.

### 10.4.3 How the system works

#### 10.4.3.1 Power management

##### Window control system

- The left front door glass regulator and the left rear door glass regulator share one power supply (EF41 25 A).
- The right front door glass regulator and the right rear door glass regulator share one power supply (CF14 25 A).

##### Caution

The four window regulator switches are under small current control high current, and have an overload current protection function: the four window lift motors all have a continuous output 8 s protection function.

##### Rearview mirror adjustment system

###### Without memory function

The power supply for the upward, downward, leftward, and rightward of the exterior mirrors comes from the exterior mirror adjustment switch CF07 10A fuse.

###### With memory function

The power supply for the upward, downward, leftward, and rightward of the exterior mirrors comes from the seat module EF40 25A and CF25 10A fuses.

###### Function of folding the exterior rearview mirrors

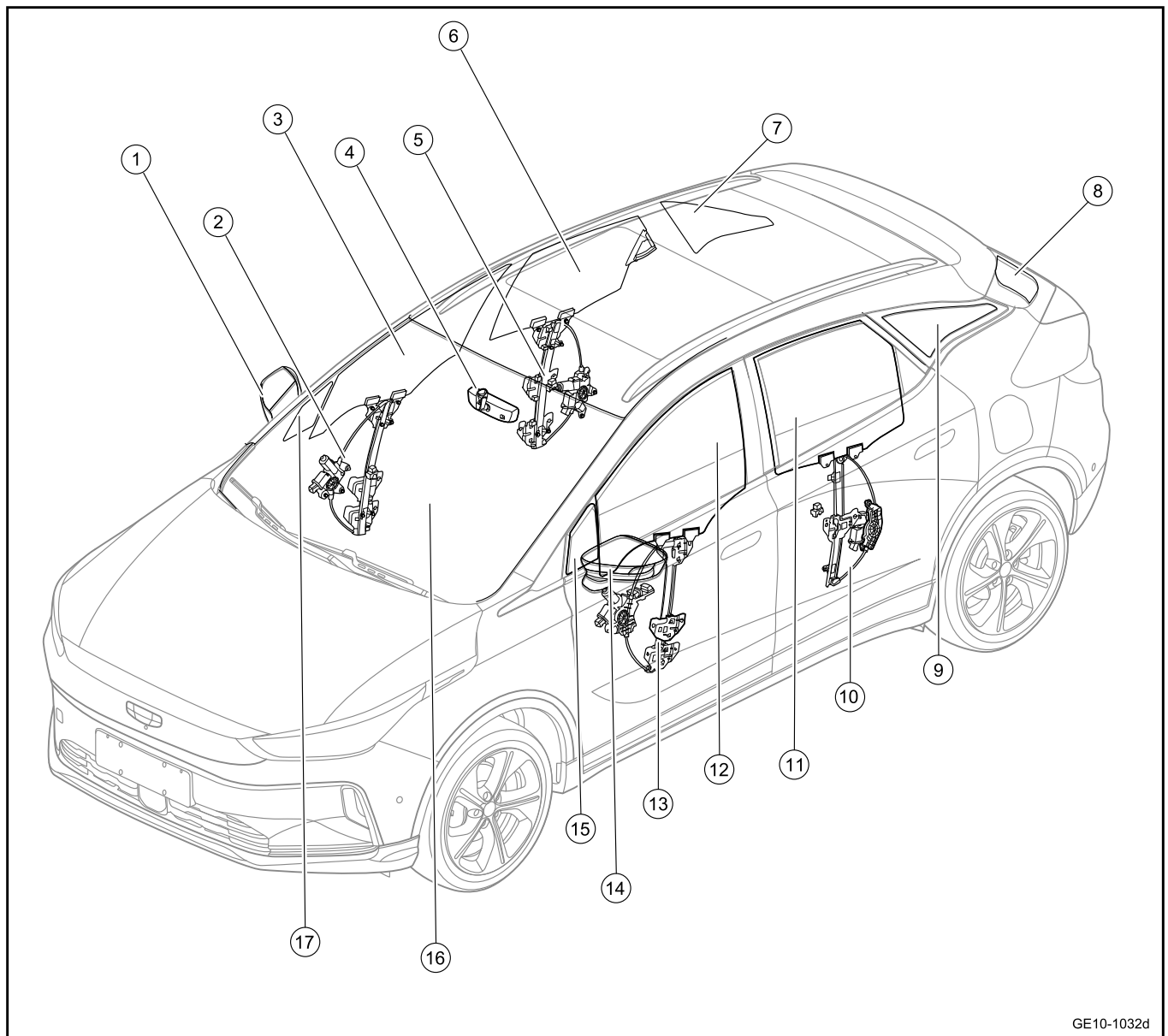
The power for folding and unfolding the exterior mirrors comes from the BCM module.

###### Function of defrosting exterior rearview mirrors

The defrosting power of the exterior mirror is controlled by BCM, and it is sent to the exterior mirror after passing through the rear defroster relay ER11 and fuse EF21 10A.

10.4.4 Part location

10.4.4.1 Part Position



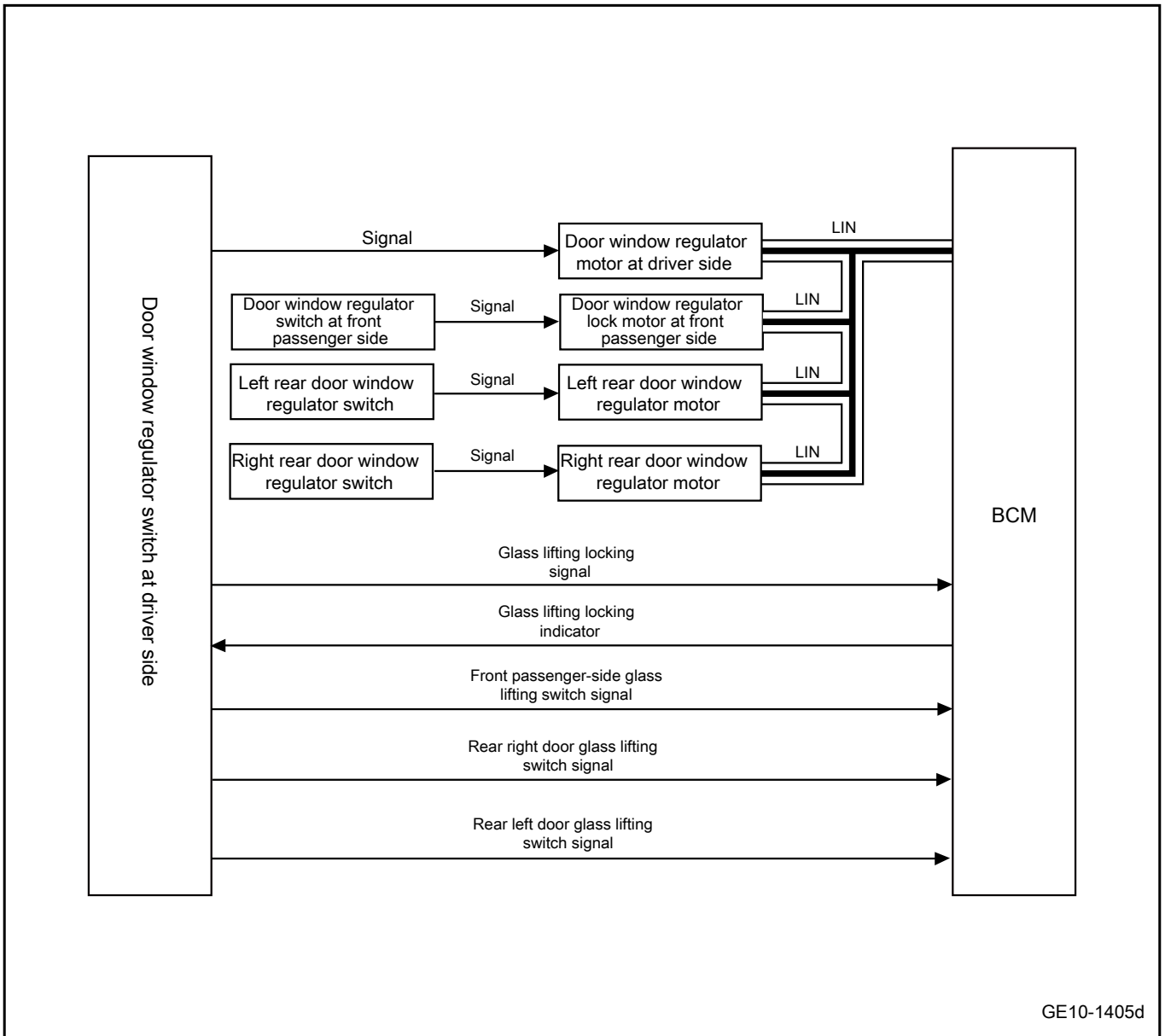
GE10-1032d

- |   |   |
|---|---|
| 1. Assembly-exterior rearview mirror RH             | 10. Rear left door power window regulator assembly  |
| 2. Front right door power window regulator assembly | 11. Left rear door glass assembly                   |
| 3. Right front door glass assembly                  | 12. Left front door glass assembly                  |
| 4. Exterior mechanical rearview mirror assembly     | 13. Front left door power window regulator assembly |
| 5. Rear right door power window regulator assembly  | 14. Assembly-exterior rearview mirror LH            |
| 6. Right rear door glass assembly                   | 15. Left front door corner window glass             |
| 7. Right rear door corner window glass assembly     | 16. Front windshield glass assembly                 |
| 8. Rear wind window glass assembly                  | 17. Right front door corner window glass            |
| 9. Left rear door corner window glass assembly      |   |

10.4.5 Electrical block diagram

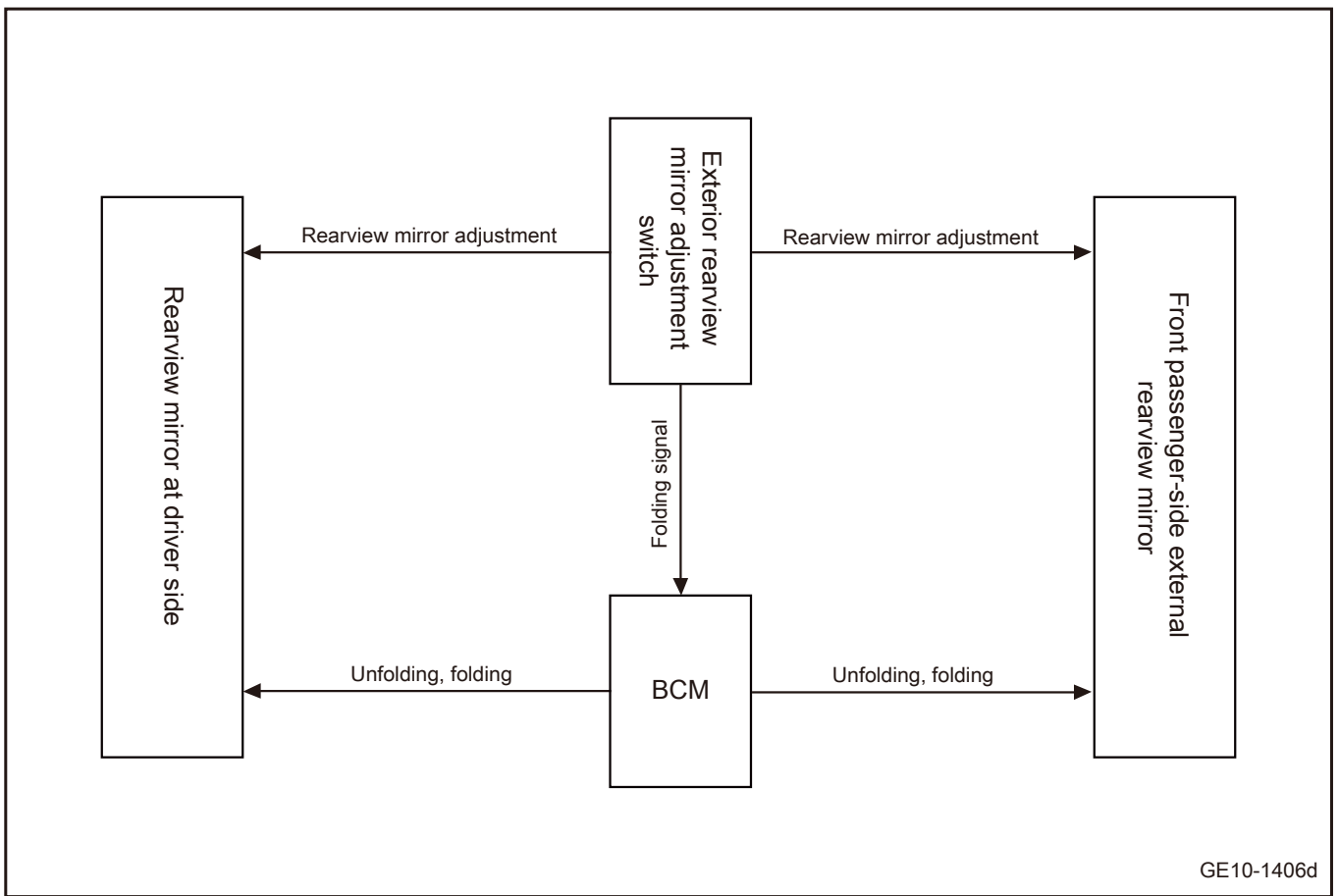
10.4.5.1 Electrical schematic diagram of glass and rearview mirror

Glass lifting

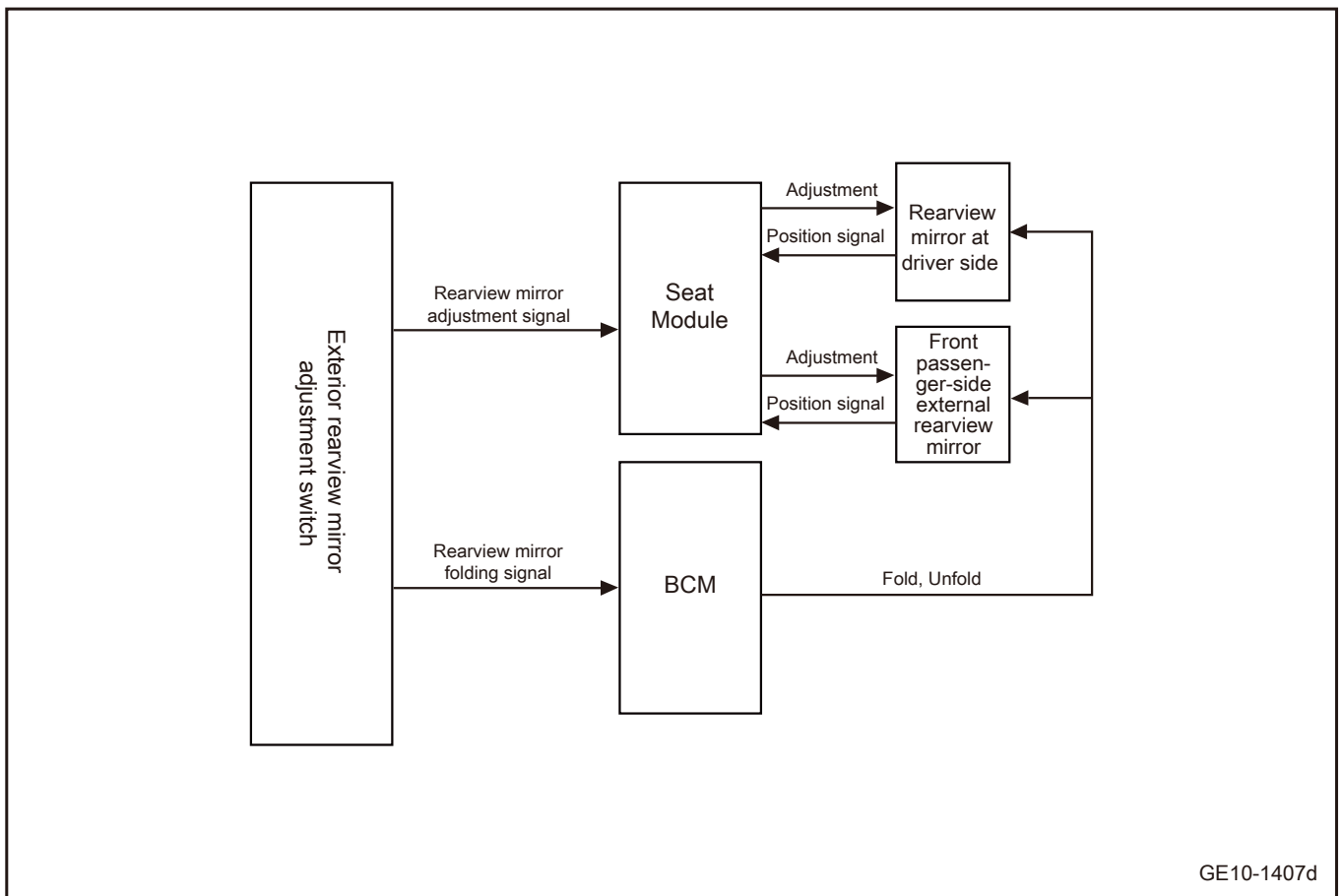


Rearview Mirror

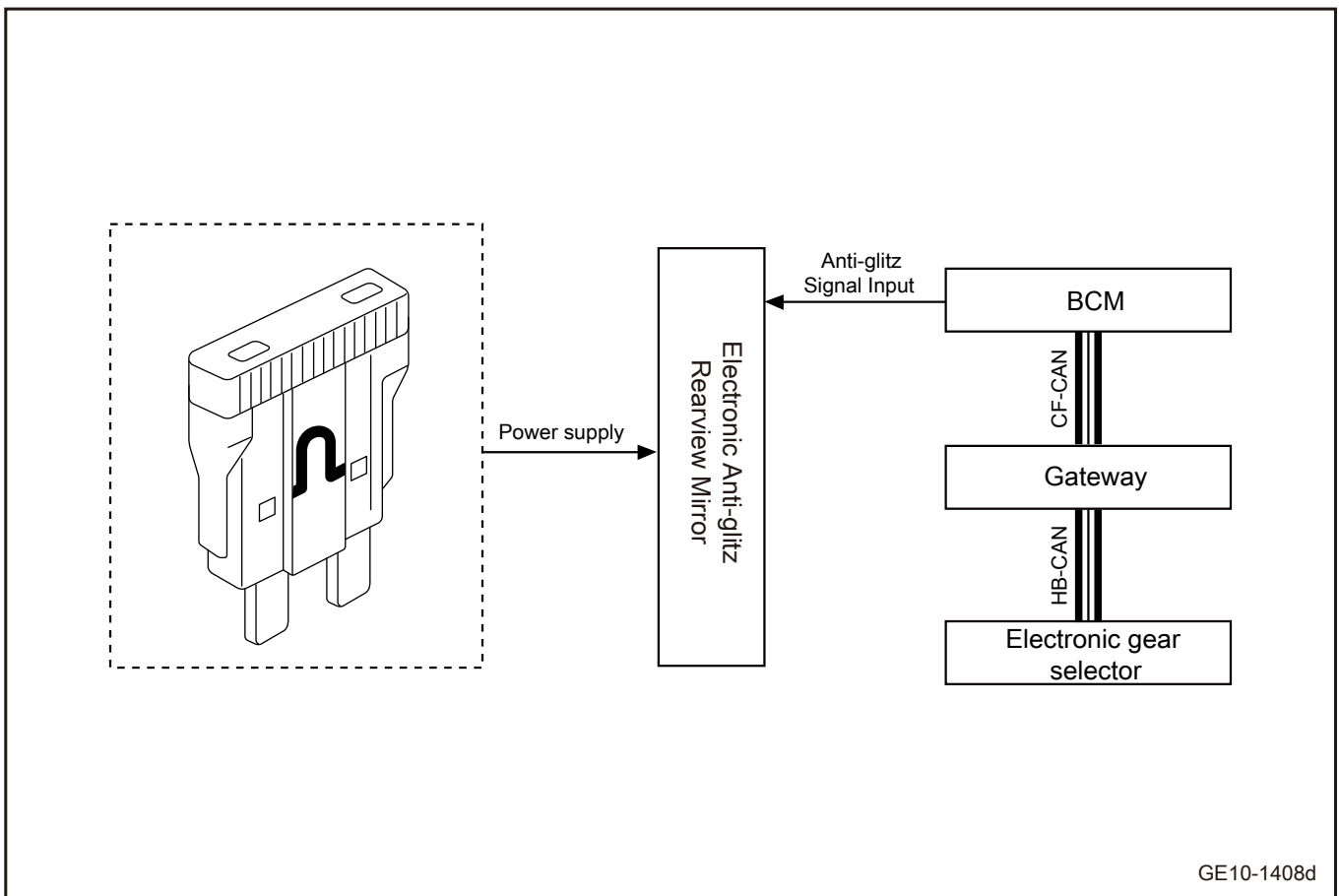




Rearview mirror ( with memory function)



Electronic anti-glare inner rearview mirror



## 10.4.6 Diagnostic information and steps

### 10.4.6.1 Diagnosis Description

Before diagnosis is started, refer to [Description and Operation](#). Familiarize yourself with system functions and operation procedures before starting system diagnosis. This helps to determine the correct troubleshooting steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the customer is normal. Any fault diagnosis should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

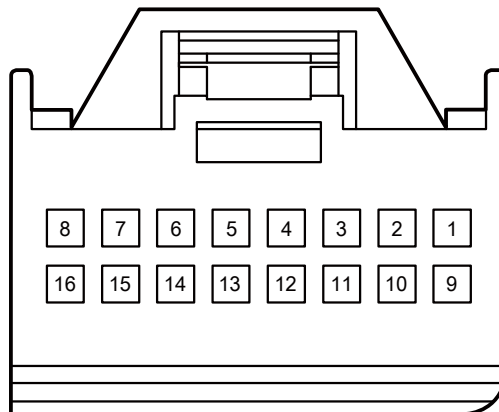
### 10.4.6.2 Routine inspection

- Check after-sales installations which may influence power windows and power rearview mirror system. Make sure that these installations will have no influence on the operation of power windows and power rearview mirror system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check and make sure the initialization of every window is normal.

### 10.4.6.3 List of glass, window, rearview mirror terminals

#### Harness connector for door window regulator switch at driver side

#### DR04 harness connector for door window regulator switch at driver side

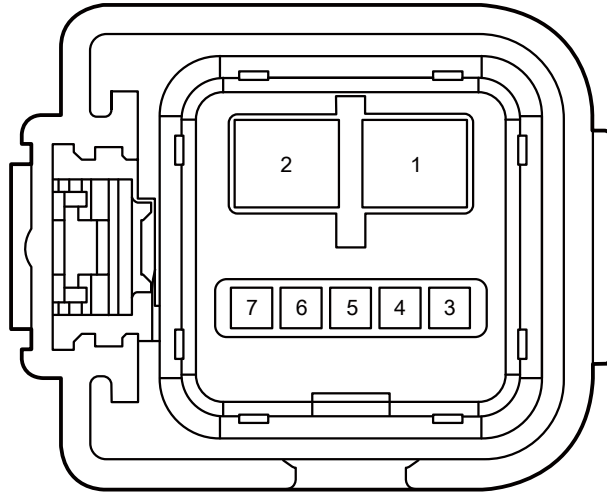


GE10-1443d

Terminal No.	Terminal name	Terminal description
1	Window locking switch signal	Vehicle window lock switch signal output
2	Window locking indicator lamp	Window lock indicator lamp power control input
3	-	-

Terminal No.	Terminal name	Terminal description
4	Driver side window regulating signal input	Driver side window regulating signal input
5	Driver side window regulating signal output	Driver side window regulating signal output
6	Front passenger side window regulating signal	Front passenger side window regulating signal output
7	Rear right window regulating signal	Rear right window regulating signal output
8	Rear left window regulating signal	Rear left window regulating signal output
9	Backlight lamp power supply	Backlight power supply input
10	Switch grounding	Central control lock switch, glass lift switch analog ground
11	Central lock switch signal	Central lock switch signal
12	-	-
13	Central lock status indicator signal	Central control lock status indication control signal input
14	Ground connection	Grounding circuit of the window regulator switch at driver side
15	-	-
16	-	-

## DR05a door glass regulator motor harness connector at driver side

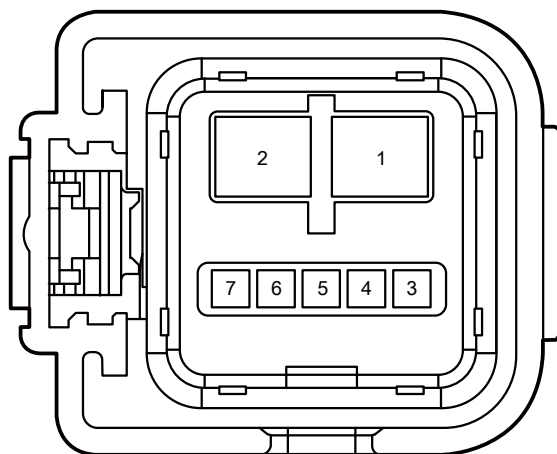
DR05a door glass lifting motor harness  
connector at driver side

GE10-1444d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Driver side door glass regulator motor grounding circuit
2	ALT power supply	Battery power supply of driver side door glass regulator motor
3	Signal input	Window lifting signal input
4	LIN	LIN data communication bus
5	-	-
6	-	-
7	Signal output	Window lifting switch signal output

## DR15a front passenger side window regulator motor harness connector

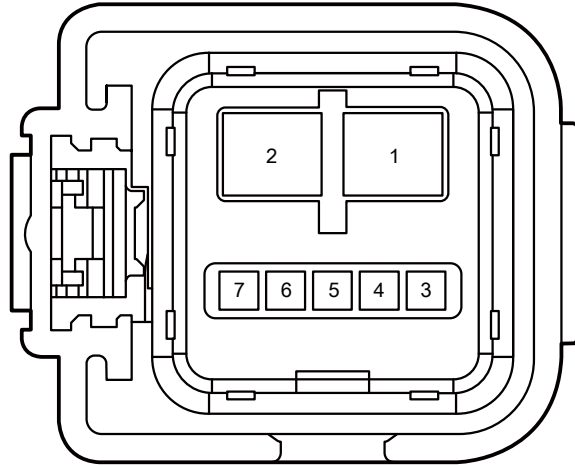
## DR15a harness connector for door glass lifting motor at front passenger side



GE10-1445d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Front passenger side door glass regulator motor grounding circuit
2	B+ Power supply	Battery power supply of front passenger side door glass regulator motor
3	Signal input	Window lifting signal input
4	LIN	LIN data communication bus
5	-	-
6	-	-
7	Signal output	Window lifting switch grounding circuit

## DR25a Rear left door window regulator motor harness connector

DR25a Rear left door window regulator  
motor harness connector

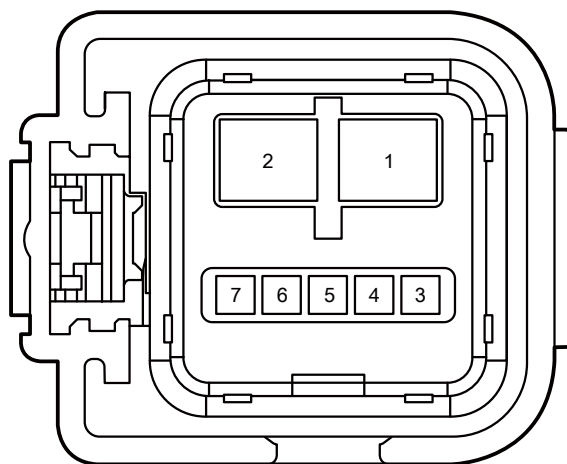
GE10-1446d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Grounding circuit of left rear door glass regulator motor
2	ALT power supply	Battery power supply of left rear door glass regulator motor
3	Signal input	Window lifting signal input
4	LIN	LIN data communication bus
5	-	-
6	-	-
7	Signal output	Window lifting switch grounding circuit



DR35a Rear right door window regulator motor harness connector

DR35a Rear right door window regulator motor harness connector

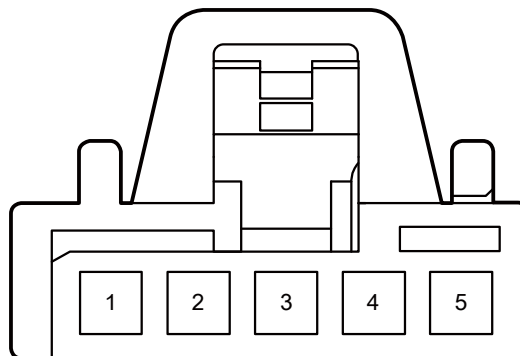


GE10-1447d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Grounding circuit of right rear door glass regulator motor
2	B+ Power supply	Battery power supply of right rear door glass regulator motor
3	Signal input	Window lifting signal input
4	LIN	LIN data communication bus
5	-	-
6	-	-
7	Signal output	Window lifting switch grounding circuit

## DR14 front passenger side window regulator switch harness connector

DR14 door glass lifting switch harness  
connector at front passenger side

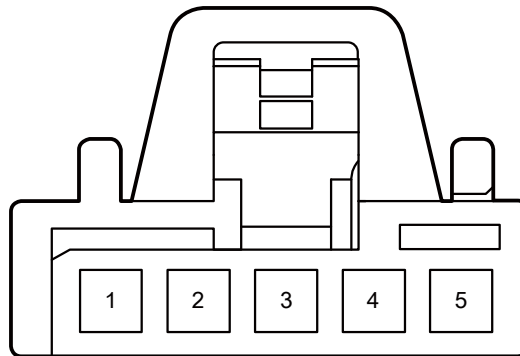


GE10-1448d

Terminal No.	Terminal name	Terminal description
1	Backlight lamp grounding	Back light grounding circuit
2	Backlight lamp power supply	Backlight power supply input
3	Signal input	Window regulator switch signal input
4	Signal output	Window regulator switch signal output
5	-	-

DR24 Rear left door window regulator switch harness connector

DR24 Rear left door window regulator  
switch harness connector

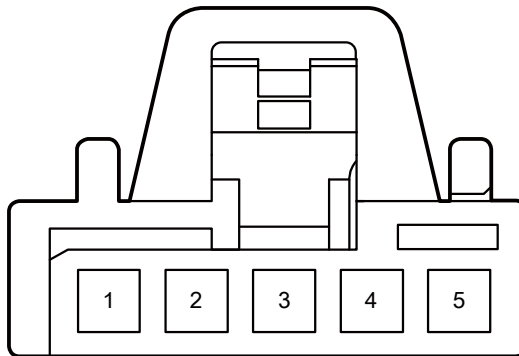


GE10-1449d

Terminal No.	Terminal name	Terminal description
1	Backlight lamp grounding	Back light grounding circuit
2	Backlight lamp power supply	Backlight power supply input
3	Signal input	Window regulator switch signal input
4	Signal output	Window regulator switch signal output
5	-	-

## DR34 Rear right door window regulator switch harness connector

DR34 Rear right door window regulator  
switch harness connector

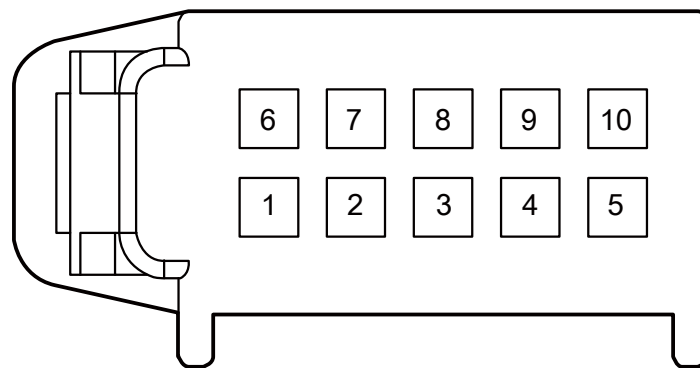


GE10-1450d

Terminal No.	Terminal name	Terminal description
1	Backlight lamp grounding	Back light grounding circuit
2	Backlight lamp power supply	Backlight power supply input
3	Signal input	Window regulator switch signal input
4	Signal output	Window regulator switch signal output
5	-	-

DR09 Exterior rearview mirror adjustment switch harness connector

DR09 external rearview mirror adjusting switch harness connector

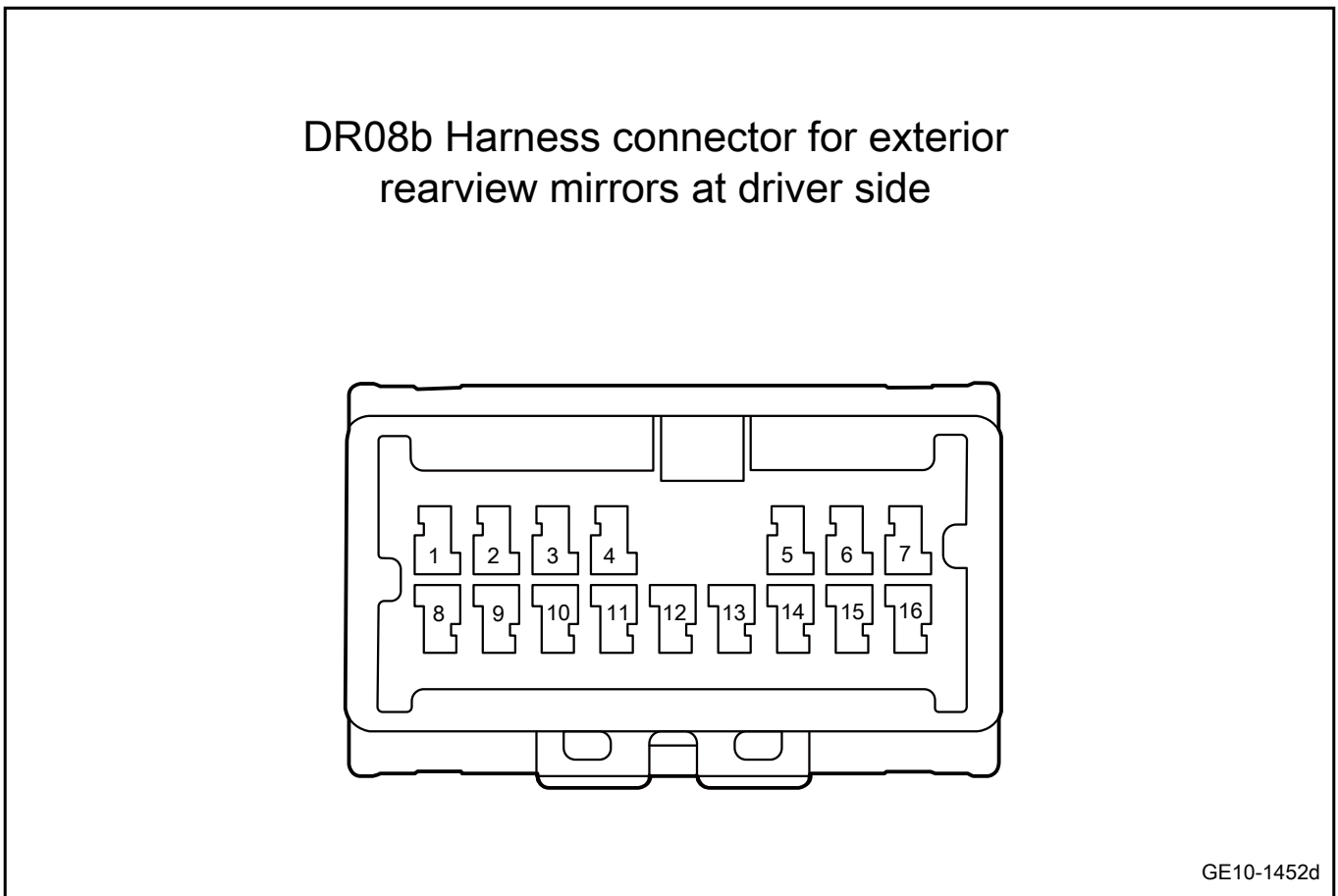


GE10-1451d

Terminal No.	Terminal name	Terminal description
1	Backlight lamp power supply	Backlight power supply input
2	Rearview mirror folding switch signal	Rearview mirror folding switch signal output
3	Ground connection	Back light grounding circuit
4	Common terminal for exterior rearview mirror adjustment	Common terminal for exterior rearview mirror adjustment motor
5	B+ Power supply	External rearview mirror adjustment switch battery power supply
6	Left and right adjustment of the driver's side mirror ( memory)/up and down adjustment of the driver's side mirror	Driver side exterior mirror left and right adjustment output ( memory)/ Driver side exterior mirror up and down adjustment output
7	Driver side exterior mirror up and down adjustment ( memory)/Driver side exterior mirror left and right adjustment	Driver side exterior mirror up and down adjustment output ( memory)/ Driver side exterior mirror left and right adjustment output

Terminal No.	Terminal name	Terminal description
8	Front passenger side exterior rearview mirror left and right adjustment ( memory)/Front passenger side exterior rearview mirror up and down adjustment	Front passenger side exterior rear view mirror left and right adjustment output ( memory) / Front passenger side exterior rear view mirror up and down adjustment output
9	Front passenger side exterior rearview mirror up and down adjustment ( memory)/Front passenger side exterior rearview mirror left and right adjustment	Front passenger side exterior rear view mirror up and down adjustment output ( memory)/Front passenger side exterior rear view mirror left and right adjustment output
10	-	-

DR08b Harness connector for exterior rearview mirrors at driver side

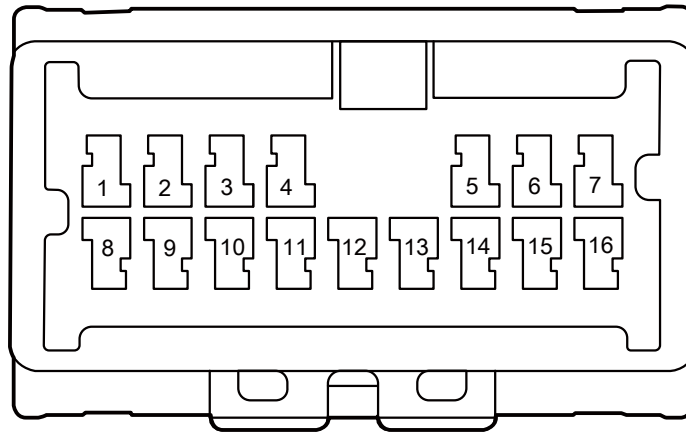


Terminal No.	Terminal name	Terminal description
1	Common terminal for rearview mirror adjustment	Common terminal for rearview mirror adjustment motor
2	Left-right adjustment of rearview mirrors	Rearview mirrors left and right adjustment signal

Terminal No.	Terminal name	Terminal description
3	Up-down adjustment of rearview mirrors	Rearview mirrors up-down adjustment signal
4	Turn signal power supply	Turn signals power supply input
5	Defroster & turn signal grounding	Driver side exterior rearview mirror grounding circuit
6	Heating power supply of rearview mirrors	Driver side exterior rearview mirror heating power supply
7	Folding of rearview mirrors	Folding of rearview mirrors
8	Unfolding of rearview mirrors	Unfolding of rearview mirrors
9	Blind spot monitoring indicator lamp signal positive	Blind spot monitoring indicator lamp signal (positive signal)
10	Blind spot monitoring indicator lamp signal negative	Blind spot monitoring indicator lamp grounding circuit
11	Memory sensor power supply	5V power supply of driver side exterior rearview mirror
12	Up and down memory position lamp signal	Up and down position signal output
13	Memory sensor grounding	Position sensor grounding circuit
14	Left and right memory position lamp signal	Left and right position signal output
15	-	-
16	-	-

## DR18c Harness connector for exterior rearview mirror at front passenger side

## DR18c harness connector for external rearview mirror at front passenger side



GE10-1453d

Terminal No.	Terminal name	Terminal description
1	Common terminal for rearview mirror adjustment	Common terminal for rearview mirror adjustment motor
2	Left-right adjustment of rearview mirrors	Rearview mirrors left and right adjustment signal
3	Up-down adjustment of rearview mirrors	Rearview mirrors up-down adjustment signal
4	Turn signal power supply	Turn signals power supply input
5	Defroster & turn signal grounding	Front passenger side exterior rearview mirror grounding circuit
6	Heating power supply of rearview mirrors	Front passenger side exterior rearview mirror heating power supply
7	Folding of rearview mirrors	Folding of rearview mirrors
8	Unfolding of rearview mirrors	Unfolding of rearview mirrors
9	Blind spot monitoring indicator lamp signal positive	Blind spot monitoring indicator lamp signal (positive signal)



Terminal No.	Terminal name	Terminal description
10	Blind spot monitoring indicator lamp signal negative	Blind spot monitoring indicator lamp grounding circuit
11	Memory sensor power supply	5V power supply of front passenger side exterior rearview mirror
12	Up and down memory position lamp signal	Up and down memory position lamp signal output
13	Memory sensor grounding	Position sensor grounding circuit
14	Left and right memory position lamp signal	Left and right memory position lamp signal output
15	-	-
16	-	-

#### 10.4.6.4 Fault symptom table

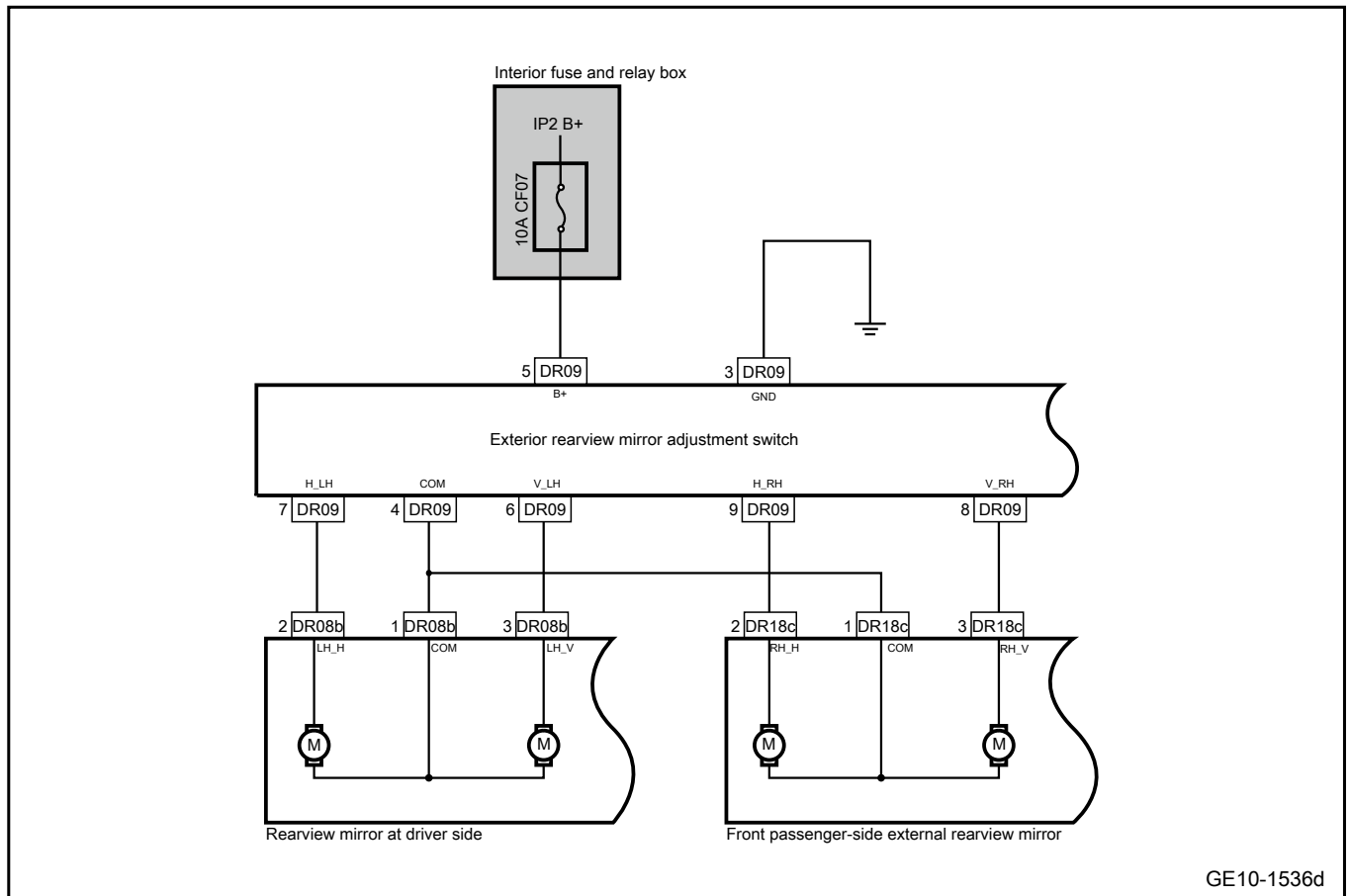
Symptom	Suspected parts	Measures / Reference
Electric rearview mirror cannot be adjusted	1. harness and connectors	Refer to <a href="#">Electric rearview mirrors cannot be adjusted</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4.后视镜	
Driver side exterior rearview mirror cannot be adjusted	1. harness and connectors	Refer to <a href="#">Driver side exterior rearview mirror cannot be adjusted</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirror at driver side	
Front passenger side exterior rearview mirror cannot be adjusted	1. harness and connectors	Refer to <a href="#">Front passenger side exterior rearview mirror cannot be adjusted</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirror at front passenger side	
Electric exterior rearview mirrors cannot be folded	1. harness and connectors	Refer to <a href="#">Electric exterior rearview mirrors cannot be folded</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirrors	
	5. BCM	
Electric rearview mirror cannot be adjusted (with memory module)	1. harness and connectors	See <a href="#">Electric rearview mirror cannot be adjusted (with memory module)</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirror at driver side	

Symptom	Suspected parts	Measures / Reference
	5. Exterior rearview mirror at front passenger side	
	6. Seat module	
Driver side exterior rearview mirror cannot be adjusted (with memory module)	1. harness and connectors	Refer to <a href="#">Driver side exterior rearview mirror cannot be adjusted (with memory module)</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirror at driver side	
	5. Seat module	
Front passenger side exterior rearview mirror cannot be adjusted (with memory module)	1. harness and connectors	Refer to <a href="#">Front passenger side exterior rearview mirror cannot be adjusted (with memory module)</a>
	2. Fuse	
	3. Adjustment switch of exterior rearview mirrors	
	4. Exterior rearview mirror at front passenger side	
	5. Seat module	
Vehicle window disabling function fails	1. harness and connectors	Refer to <a href="#">Vehicle window disabling function fails</a>
	2. Door glass regulator switch at driver side	
	3. BCM	
Electronic anti-glare rearview mirror does not work	1. harness and connectors	See <a href="#">Electronic anti-glare rearview mirror does not work</a>
	2. Fuse	
	3. Electronic anti-glare rearview mirror	
	4. Electronic shifter	
	5. BCM	
Driver's side window regulator motor does not work	1. harness and connectors	See <a href="#">Driver's side window lifting motor does not work</a>
	2. Fuse	
	3. Door glass regulator motor at driver side	
	4. Door glass regulator switch at driver side	
	5. BCM	
Front passenger side window regulator motor does not work	1. harness and connectors	Refer to <a href="#">Front passenger side window regulator motor does not work</a>
	2. Fuse	
	3. Front passenger side glass regulator switch	
	4. Front passenger door glass regulator motor	
	5. BCM	
The left front glass lifting switch cannot control the left rear door glass	1. harness and connectors	See <a href="#">Left front glass lifting switch cannot control the left rear door glass</a>

Symptom	Suspected parts	Measures / Reference
	2. Door glass regulator switch at driver side	
	3. BCM	

10.4.6.5 Electric rearview mirror cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF07 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the exterior rearview mirror adjustment switch is stuck.

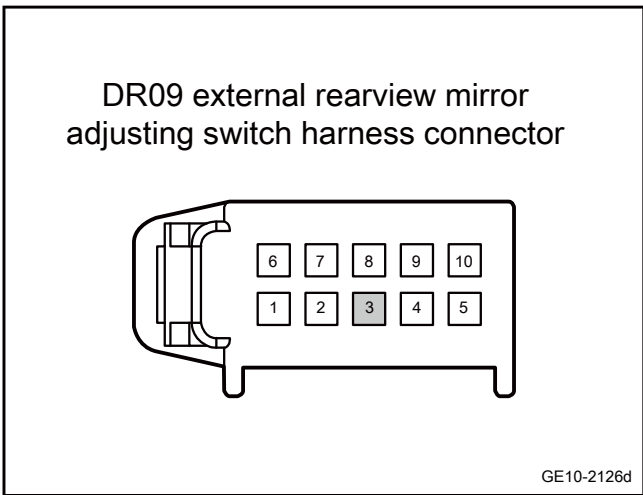
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

**Step 4** Check the grounding line of the exterior rearview mirror adjustment switch.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR09(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

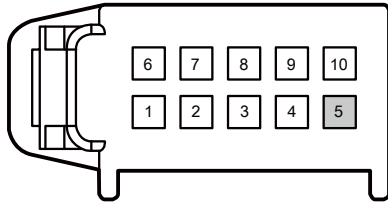
No

Repair or replace the harness.

Yes

**Step 5** Check the power supply line of the exterior rearview mirror adjustment switch.

DR09 external rearview mirror adjusting switch harness connector



GE10-2127d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR09(5)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

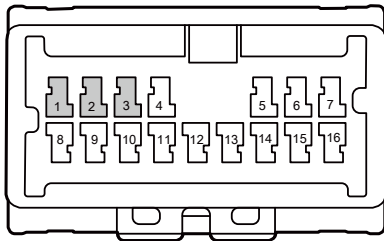
No

Repair or replace the harness.

Yes

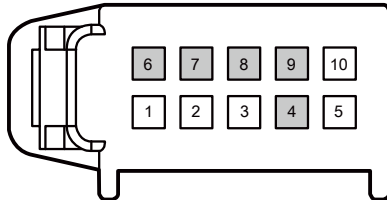
Step 6	Check whether the circuit between the exterior rearview mirror adjustment switch and the exterior rearview mirror is open.
--------	--

DR08b Harness connector for exterior rearview mirrors at driver side



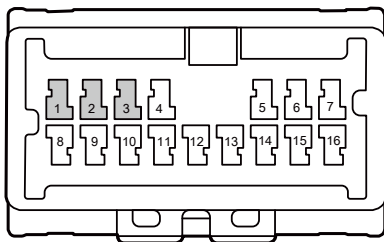
GE10-2128d

DR09 external rearview mirror adjusting switch harness connector



GE10-2129d

DR18c harness connector for external rearview mirror at front passenger side



GE10-2130d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	DR09(4)	Standard resistance: less than 1Ω
DR08b(2)	DR09(7)	
DR08b(3)	DR09(6)	
DR18c(1)	DR09(4)	
DR18c(2)	DR09(9)	
DR18c(3)	DR09(8)	

- F. Confirm whether the measured value meets the standard.

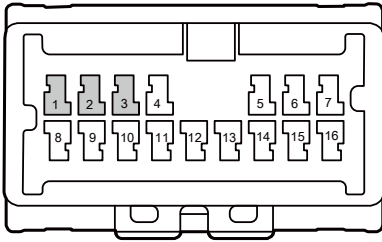
No

Repair or replace the harness.

Yes

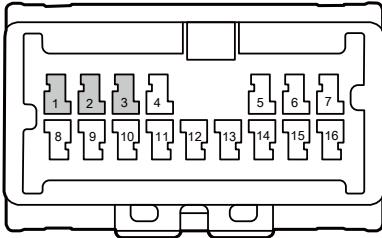
**Step 7** Check whether the circuit between the exterior rearview mirror adjustment switch and the exterior rearview mirror is short to GND.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-2131d

DR18c harness connector for external rearview mirror at front passenger side



GE10-2132d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
DR08b(2)		
DR08b(3)		
DR18c(1)		
DR18c(2)		
DR18c(3)		

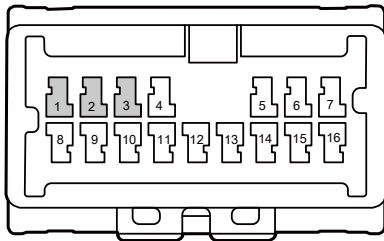
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

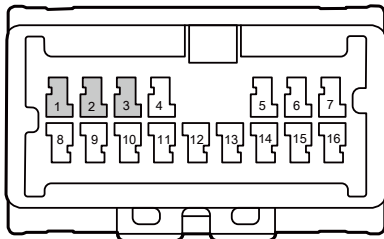
<b>Step 8</b>	Check whether the circuit between the exterior rearview mirror adjustment switch and the exterior rearview mirror is short to power supply.
---------------	---

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-2133d

DR18c harness connector for external rearview mirror at front passenger side



GE10-2134d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard voltage: equal to 0V
DR08b(2)		
DR08b(3)		
DR18c(1)		
DR18c(2)		
DR18c(3)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 9** Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 10** Replace the exterior rearview mirrors.

- A. Replace exterior rearview mirrors, refer to [Replacement of exterior rearview mirrors](#)

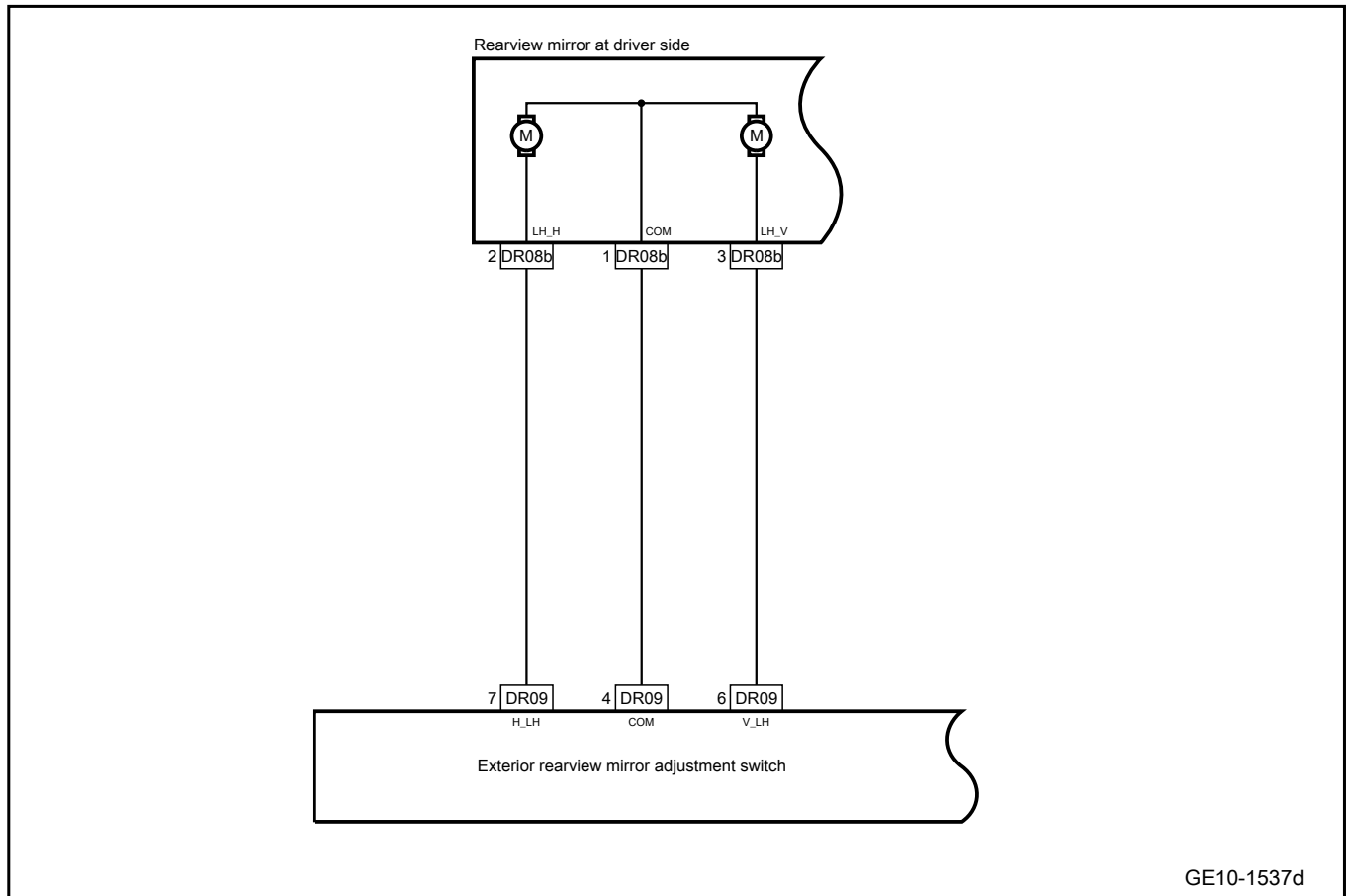
Next Step

**Step 11** System is normal.



### 10.4.6.6 Driver side exterior rearview mirror cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

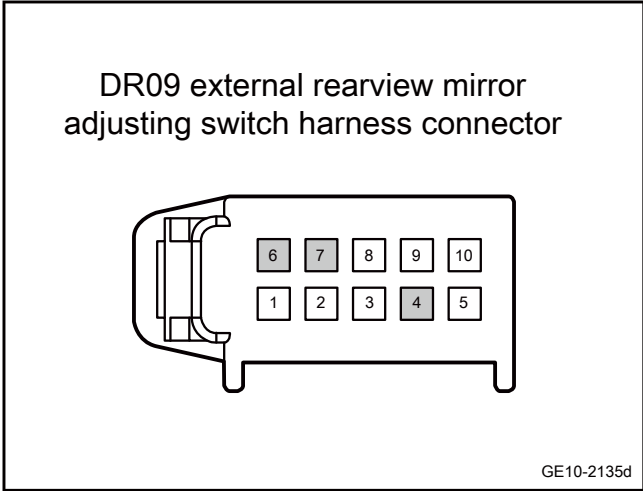
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

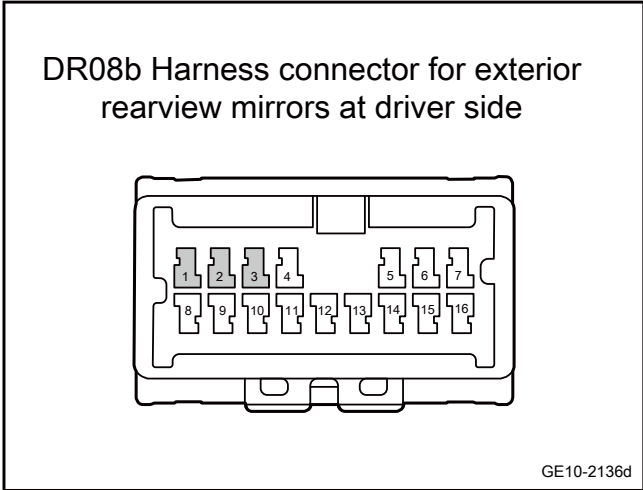
No

**Step 3** Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	DR08b(1)	Standard resistance: less than 1Ω
DR09(7)	DR08b(2)	
DR09(6)	DR08b(3)	



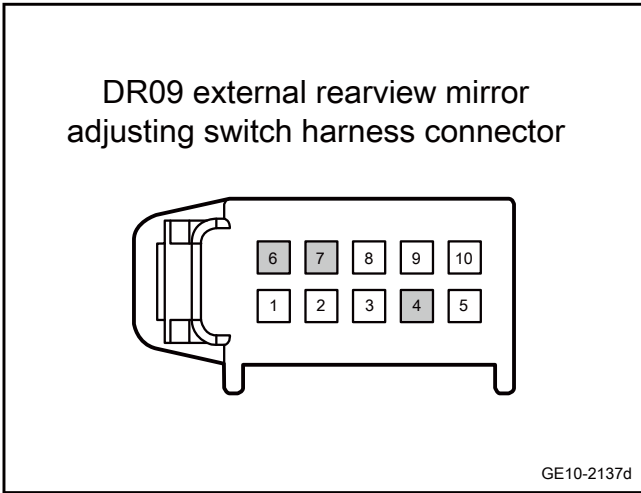
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

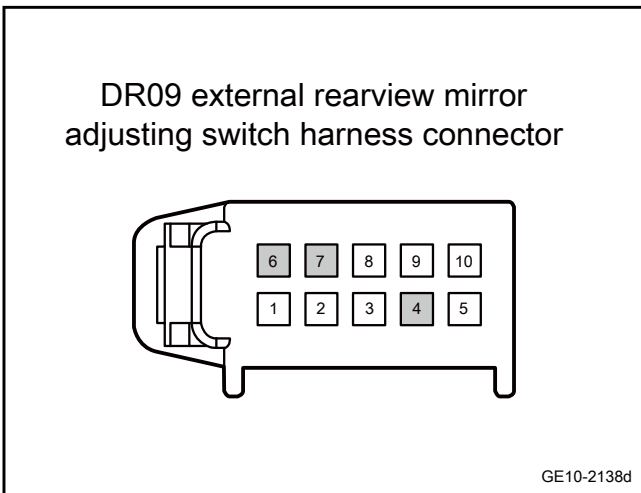
Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(7)		
DR09(6)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(7)		
DR09(6)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the driver side exterior rearview mirror

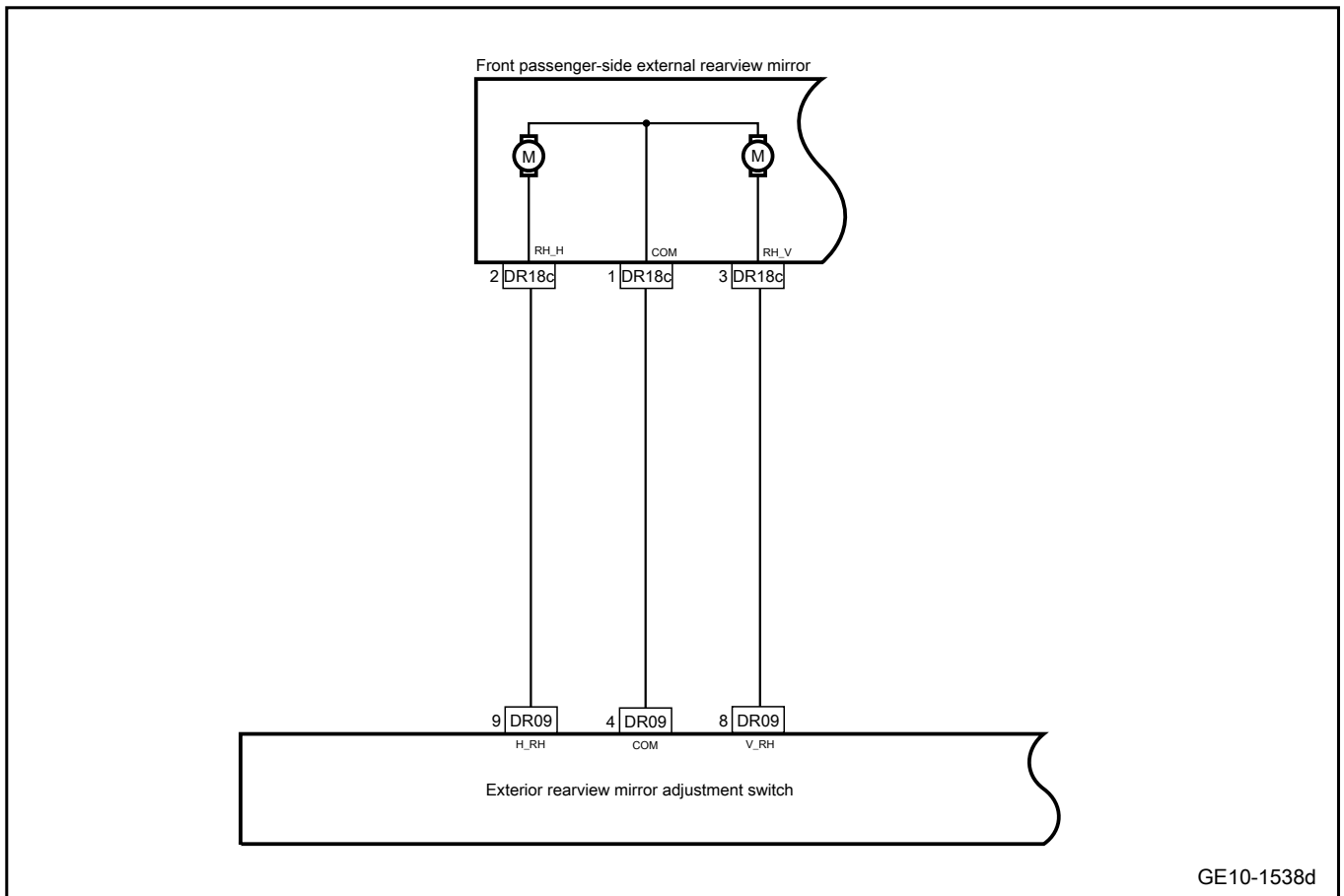
- A. Replace the driver side exterior rearview mirror, refer to [Replacement of driver side exterior rearview mirror](#)

Next Step

Step 8 System is normal.

### 10.4.6.7 Front passenger side exterior rearview mirror cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

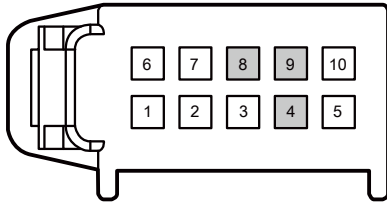
Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

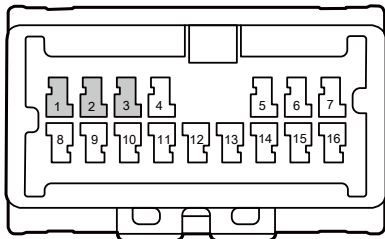
Step 3	Check whether the circuit between exterior rearview mirror adjustment switch and the front passenger side exterior rearview mirror is open.
--------	---

DR09 external rearview mirror adjusting switch harness connector



GE10-2139d

DR18c harness connector for external rearview mirror at front passenger side

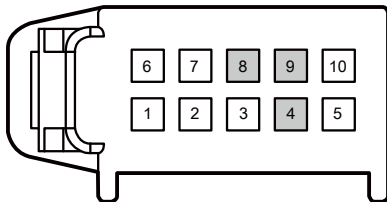


GE10-2140d

Yes

**Step 4** Check whether the circuit between the exterior rearview adjustment switch and the front passenger side exterior rearview is short to power supply.

DR09 external rearview mirror adjusting switch harness connector



GE10-2141d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	DR18c(1)	Standard resistance: less than 1Ω
DR09(9)	DR18c(2)	
DR09(8)	DR18c(3)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(9)		

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(8)		

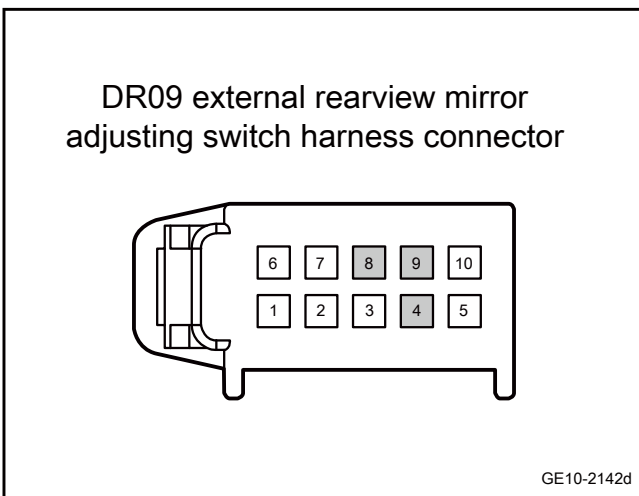
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the exterior rearview adjustment switch and the front passenger side exterior rearview is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(9)		
DR09(8)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace front passenger side exterior rearview mirror.

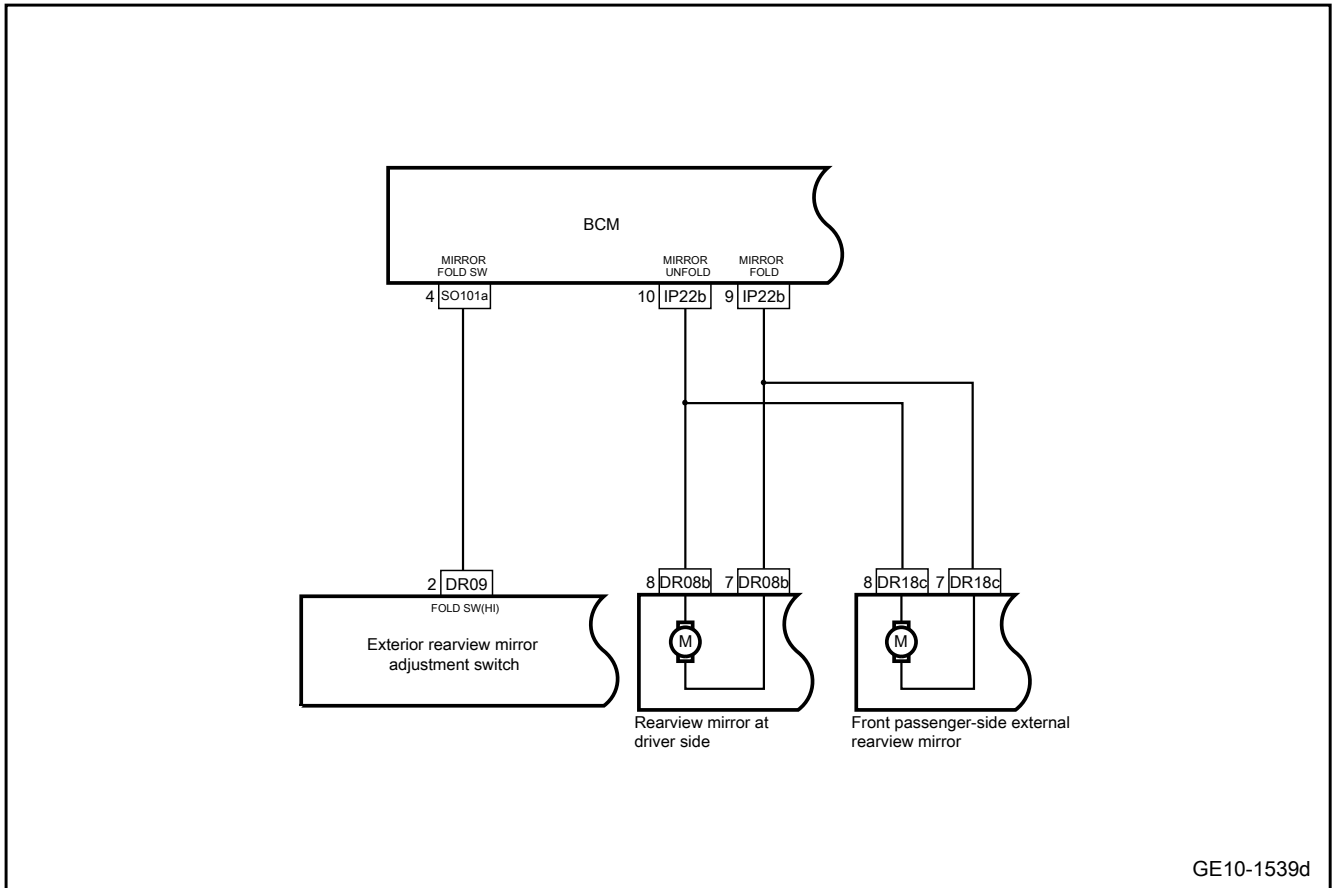
- A. Replace front passenger side exterior rearview mirror, refer to [Replacement of front passenger side exterior rearview mirror](#)

Next Step

Step 8	System is normal.
--------	-------------------

### 10.4.6.8 Electric exterior rearview mirrors cannot be folded

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check BCM, driver side rear exterior rearview mirror, front passenger side rear exterior rearview mirror, rear exterior rearview mirror adjustment switch harness contractor for any damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes



**Step 2** Check whether the exterior rearview mirror adjustment switch is stuck.

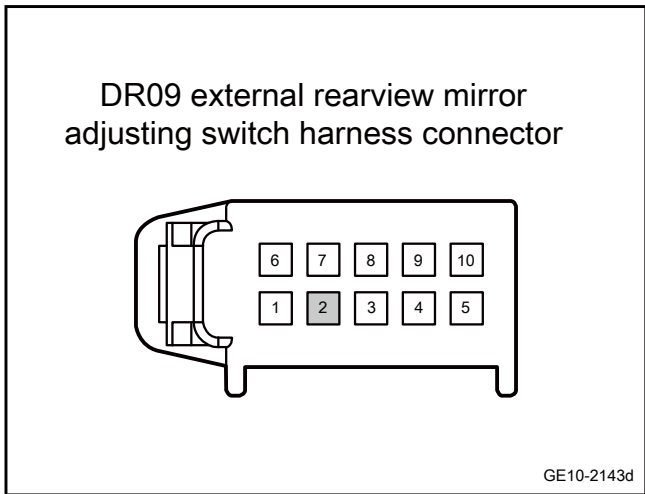
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

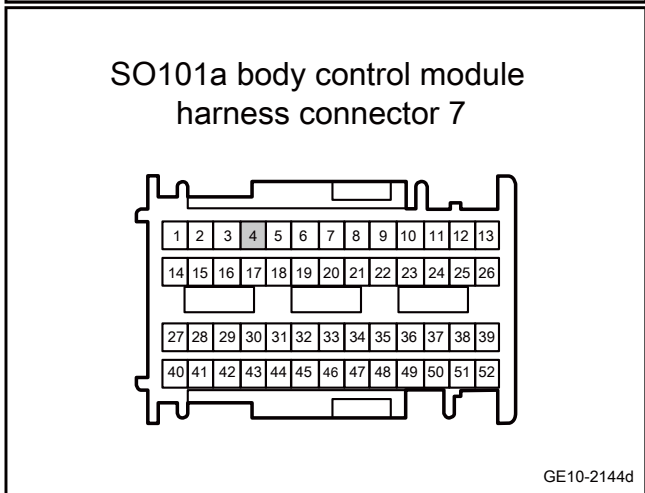
**Step 3** Check whether the circuit between BCM and exterior rearview mirror adjustment switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	SO101a(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.



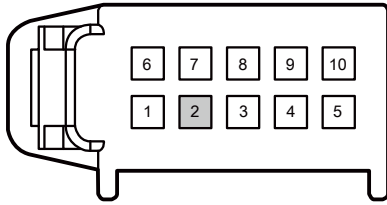
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between BCM and exterior rearview mirror adjustment switch is shorted to power supply.

DR09 external rearview mirror adjusting switch harness connector



GE10-2145d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

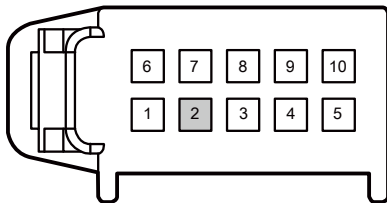
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between BCM and exterior rearview mirror adjustment switch is shorted to GND.

DR09 external rearview mirror adjusting switch harness connector



GE10-2146d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

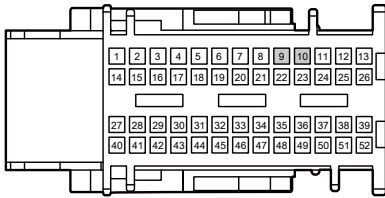
No

Repair or replace the harness.

Yes

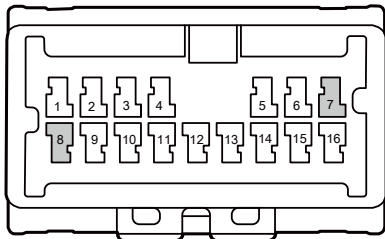
Step 6 Check whether the circuit between BCM and exterior rearview mirror is open.

IP22b body control module harness connector 3



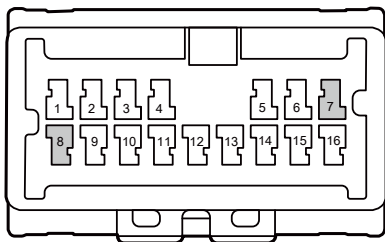
GE10-2147d

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-2148d

DR18c harness connector for external rearview mirror at front passenger side



GE10-2149d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	DR08b(8)	Standard resistance: less than 1Ω
IP22b(9)	DR08b(7)	
IP22b(10)	DR18c(8)	
IP22b(9)	DR18c(7)	

- F. Confirm whether the measured value meets the standard.

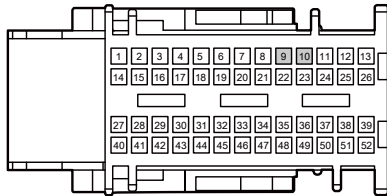
No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between BCM and exterior rearview mirror is shorted to GND.

IP22b body control module  
harness connector 3



GE10-2150d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(9)		

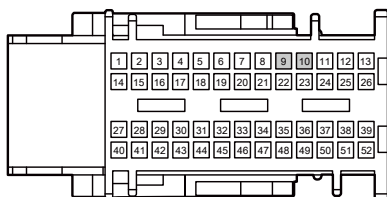
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between BCM and exterior rearview mirror adjustment switch is shorted to power supply.

IP22b body control module  
harness connector 3



GE10-2151d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(9)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9	Replace the exterior rearview mirror adjustment switch.
--------	---

- A. Replace the exterior rearview mirror adjustment switch. Refer to replacement of the exterior rearview mirror adjustment switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace the driver side exterior rearview mirror
---------	--

- A. Replace the driver side exterior rearview mirror Refer to [replacement of driver-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace front passenger side exterior rearview mirror.
---------	--

- A. Replace front passenger side exterior rearview mirror. Refer to [replacement of front passenger-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Check the BCM power supply and grounding circuit.
---------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13	Replace the BCM
---------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step	Reprogram and reset the BCM.
14	

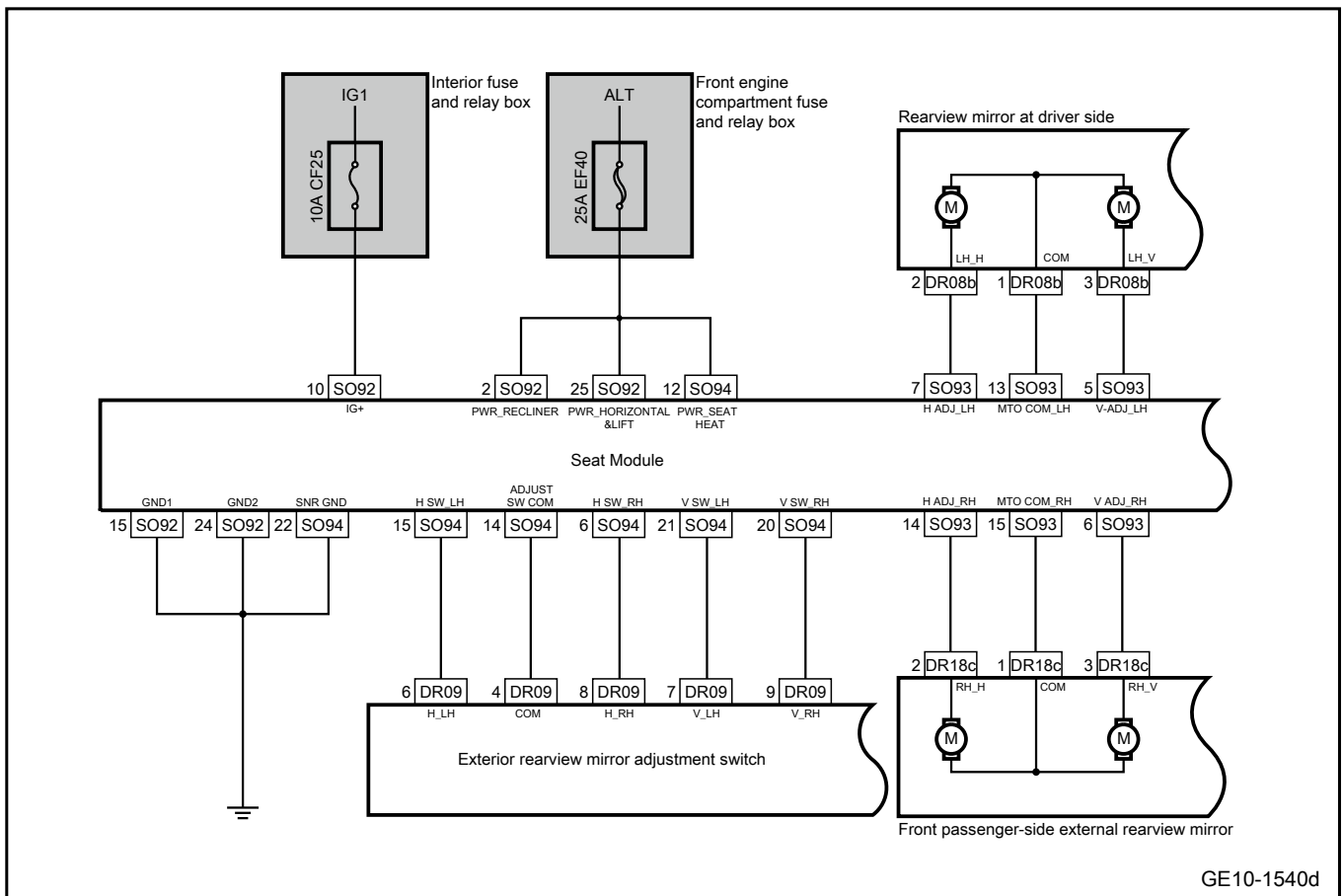
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step	System is normal.
15	

### 10.4.6.9 Electric rearview mirror cannot be adjusted (with memory module)

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** | Inspect the fuse.

A. Operate the starting switch to place the power in mode "OFF".

B. Unplug the EF40 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 25A

C. Unplug interior fuse CF25 and check if it is blown.

Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** | Check whether the exterior rearview mirror adjustment switch is stuck.

A. Operate the exterior rearview mirror adjustment switch.

B. Check whether the switch is caught.

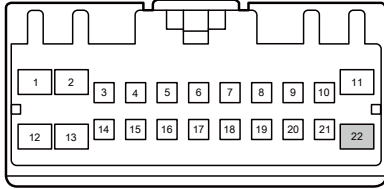
Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

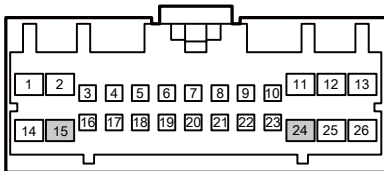
**Step 4** | Check the ground circuit of the seat module.

**SO94 Seat Module Harness Connector C**



GE10-2152d

**SO92 Seat Module Harness Connector A**



GE10-2153d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connectors SO94 and SO92.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO94(22)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO92(15)		
SO92(24)		

- D. Confirm whether the measured value meets the standard.

No

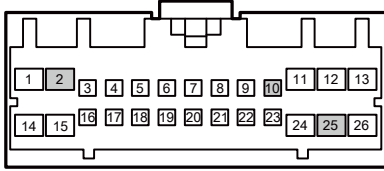
Repair or replace the harness.

Yes

**Step 5** | Check the power circuit of the seat module.

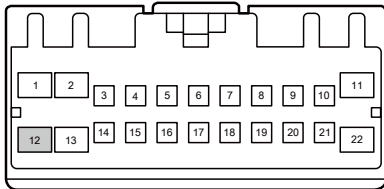


**SO92 Seat Module Harness Connector A**



GE10-2154d

**SO94 Seat Module Harness Connector C**



GE10-2155d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connectors SO92 and SO94.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO92(2)	Vehicle body is grounded.	Standard voltage: 11-14V
SO92(10)		
SO92(25)		
SO94(12)		

- E. Confirm whether the measured value meets the standard.

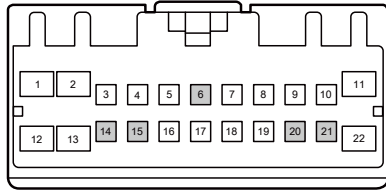
No

Repair or replace the harness.

Yes

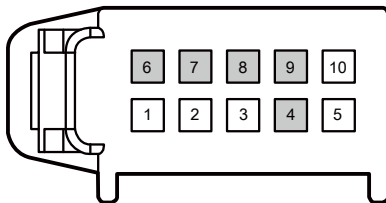
**Step 6** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is open.

**SO94 Seat Module Harness Connector C**



GE10-2156d

**DR09 external rearview mirror adjusting switch harness connector**



GE10-2157d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	DR09(8)	Standard resistance: less than 1Ω
SO94(14)	DR09(4)	
SO94(15)	DR09(6)	
SO94(20)	DR09(9)	
SO94(21)	DR09(7)	

- E. Confirm whether the measured value meets the standard.

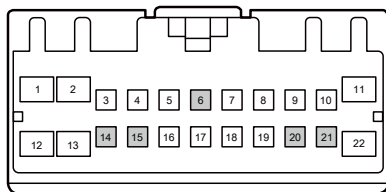
No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to ground.

**SO94 Seat Module Harness Connector C**



GE10-2158d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
SO94(14)		
SO94(15)		
SO94(20)		

Measure terminal 1	Measure terminal 2	Standard value
SO94(21)		

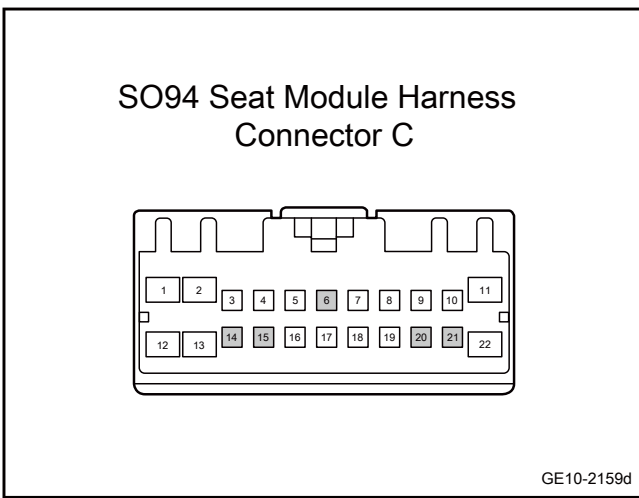
E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	Vehicle body is grounded.	Standard voltage: equal to 0V
SO94(14)		
SO94(15)		
SO94(20)		
SO94(21)		

F. Confirm whether the measured value meets the standard.

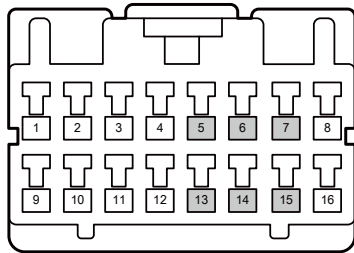
No

Repair or replace the harness.

Yes

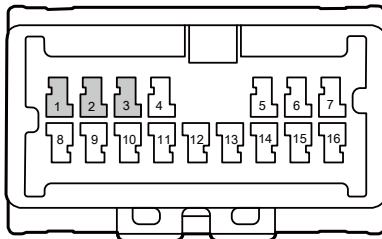
**Step 9** Check whether the circuit between the exterior rearview mirrors and the seat module is open.

**SO93 Seat Module Harness Connector B**



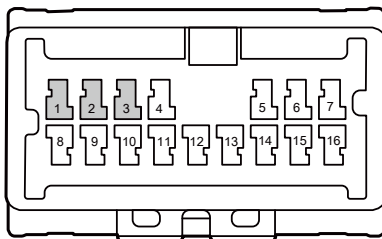
GE10-2160d

**DR08b Harness connector for exterior rearview mirrors at driver side**



GE10-2161d

**DR18c harness connector for external rearview mirror at front passenger side**



GE10-2162d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the front passenger side exterior rearview mirror harness connector.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	DR08b(1)	Standard resistance: less than 1Ω
SO93(7)	DR08b(2)	
SO93(5)	DR08b(3)	
SO93(15)	DR18c(1)	
SO93(14)	DR18c(2)	
SO93(6)	DR18c(3)	

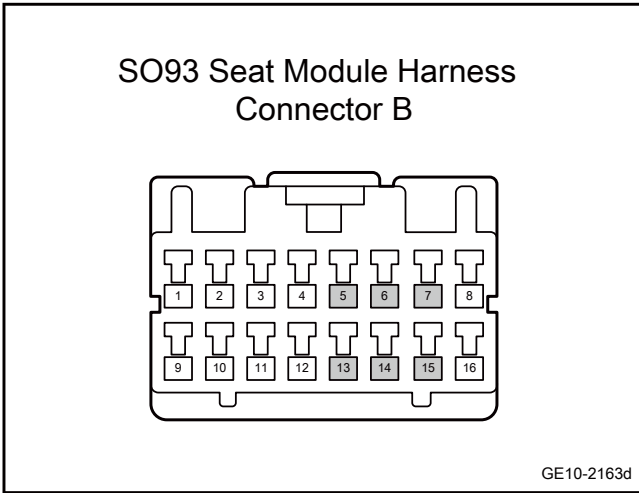
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10	Check whether the circuit between the exterior rearview mirrors and the seat module is short to ground.
---------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the front passenger side exterior rearview mirror harness connector.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	Vehicle body is grounded.	Standard resistance: greater than 10KΩ
SO93(7)		
SO93(5)		
SO93(15)		
SO93(14)		
SO93(6)		

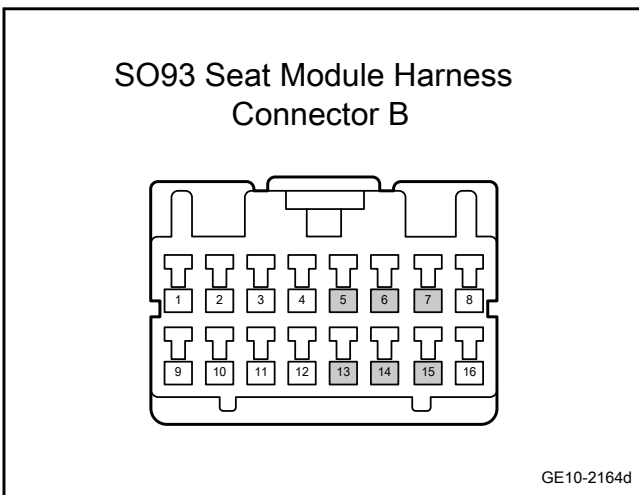
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 11** Check whether the circuit between the exterior rearview mirrors and the seat module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the front passenger side exterior rearview mirror harness connector.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	Vehicle body is grounded.	Standard voltage: equal to 0V
SO93(7)		
SO93(5)		
SO93(15)		
SO93(14)		

Measure terminal 1	Measure terminal 2	Standard value
SO93(6)		

G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 12	Replace the seat module.
------------	--------------------------

A. To replace the seat module, see [Replacement of the Seat Module](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Replace the exterior rearview mirrors.
------------	--

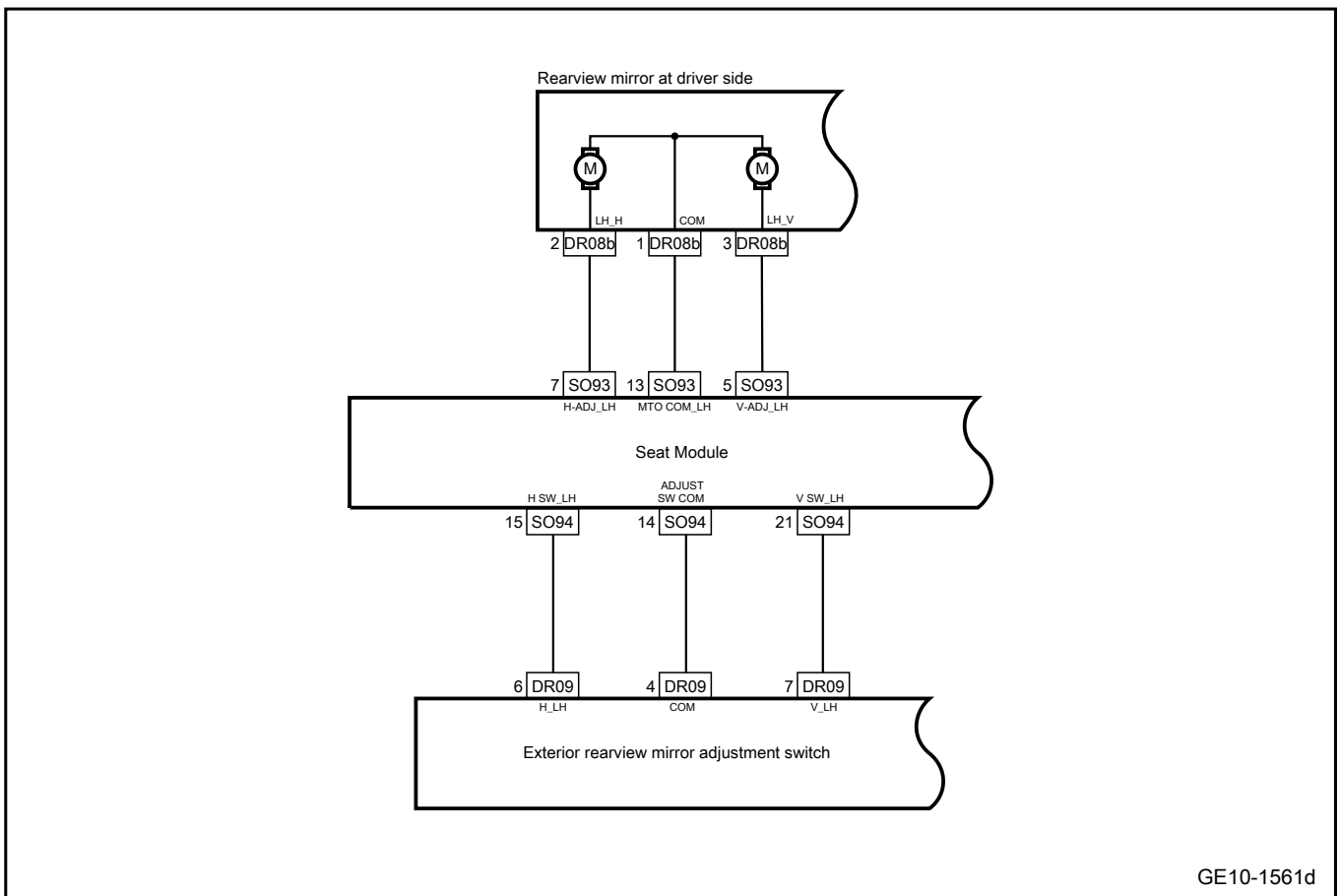
A. Replace exterior rearview mirrors, refer to [Replacement of exterior rearview mirrors](#)

Next Step

Step 14	System is normal.
------------	-------------------

### 10.4.6.10 Driver side exterior rearview mirror cannot be adjusted (with memory module)

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

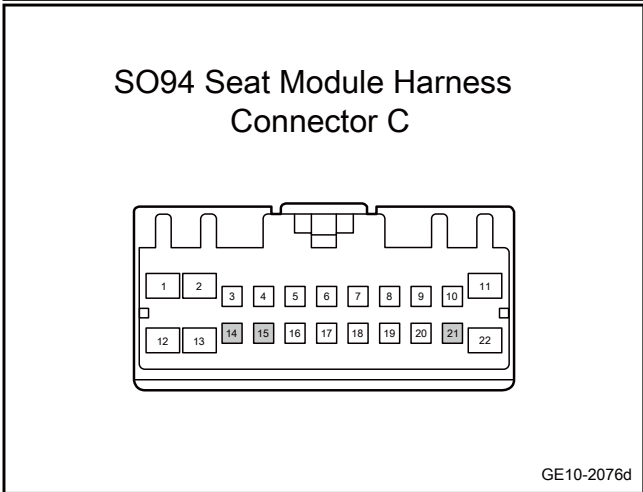
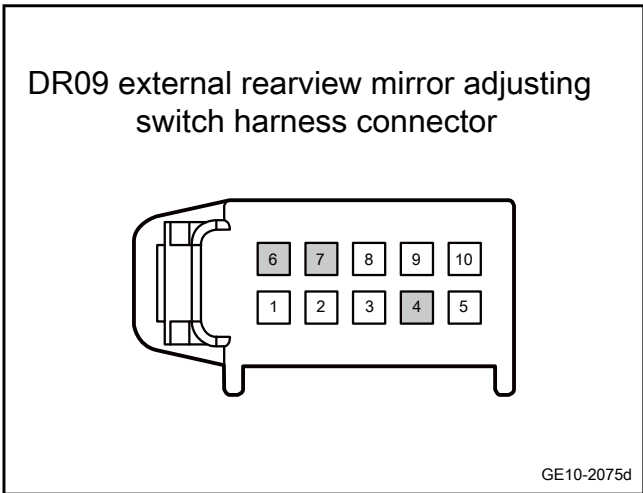
Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes ➤ Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

**Step 3** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(7)	SO94(21)	
DR09(6)	SO94(15)	

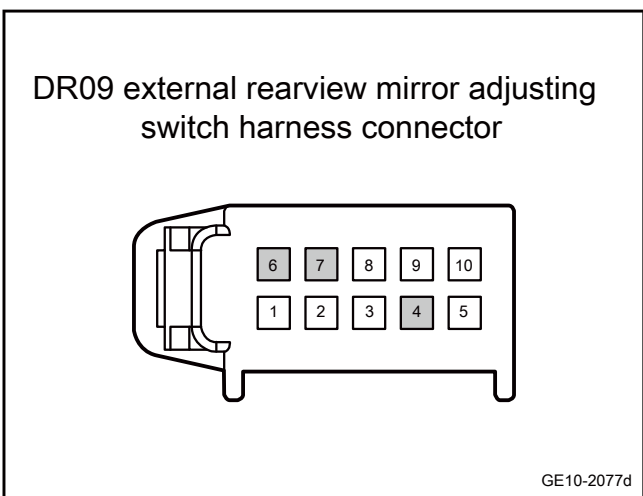
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(7)		



Multimeter connection 1	Multimeter connection 2	Standard value
DR09(6)		

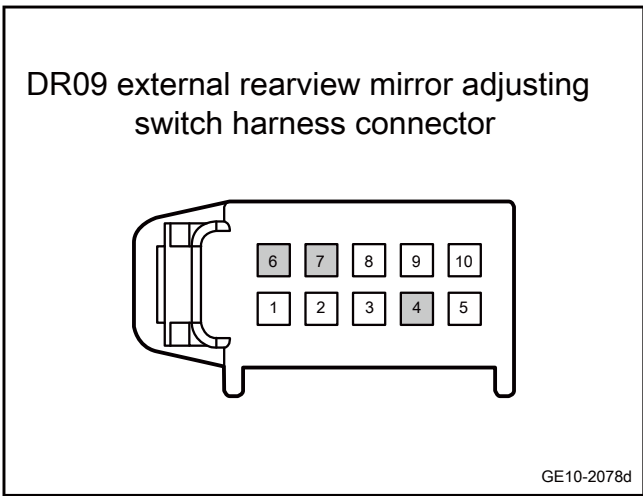
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(7)		
DR09(6)		

E. Confirm whether the measured value meets the standard.

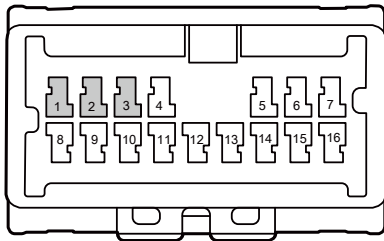
No

Repair or replace the harness.

Yes

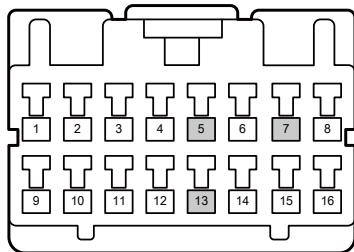
**Step 6** Check whether the circuit between the driver's side mirror and the seat module is open.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-2079d

SO93 Seat Module Harness Connector B



GE10-2080d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	SO93(13)	Standard resistance: less than 1Ω
DR08b(2)	SO93(7)	
DR08b(3)	SO93(5)	

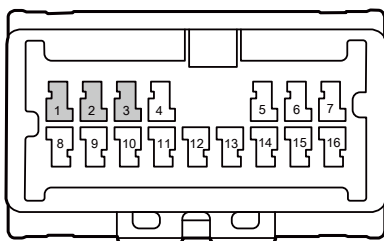
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 7** Check whether the circuit between the driver's side exterior rearview mirror and the seat module is short to ground.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-2081d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(2)		
DR08b(3)		

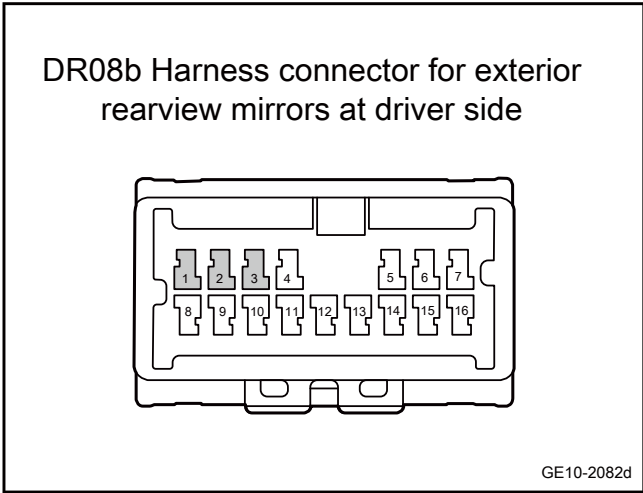
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the driver's side mirror and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR08b(2)		
DR08b(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 10** Replace the seat module.

- A. To replace the seat module, see [Replacement of the Seat Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the driver side exterior rearview mirror
---------	--

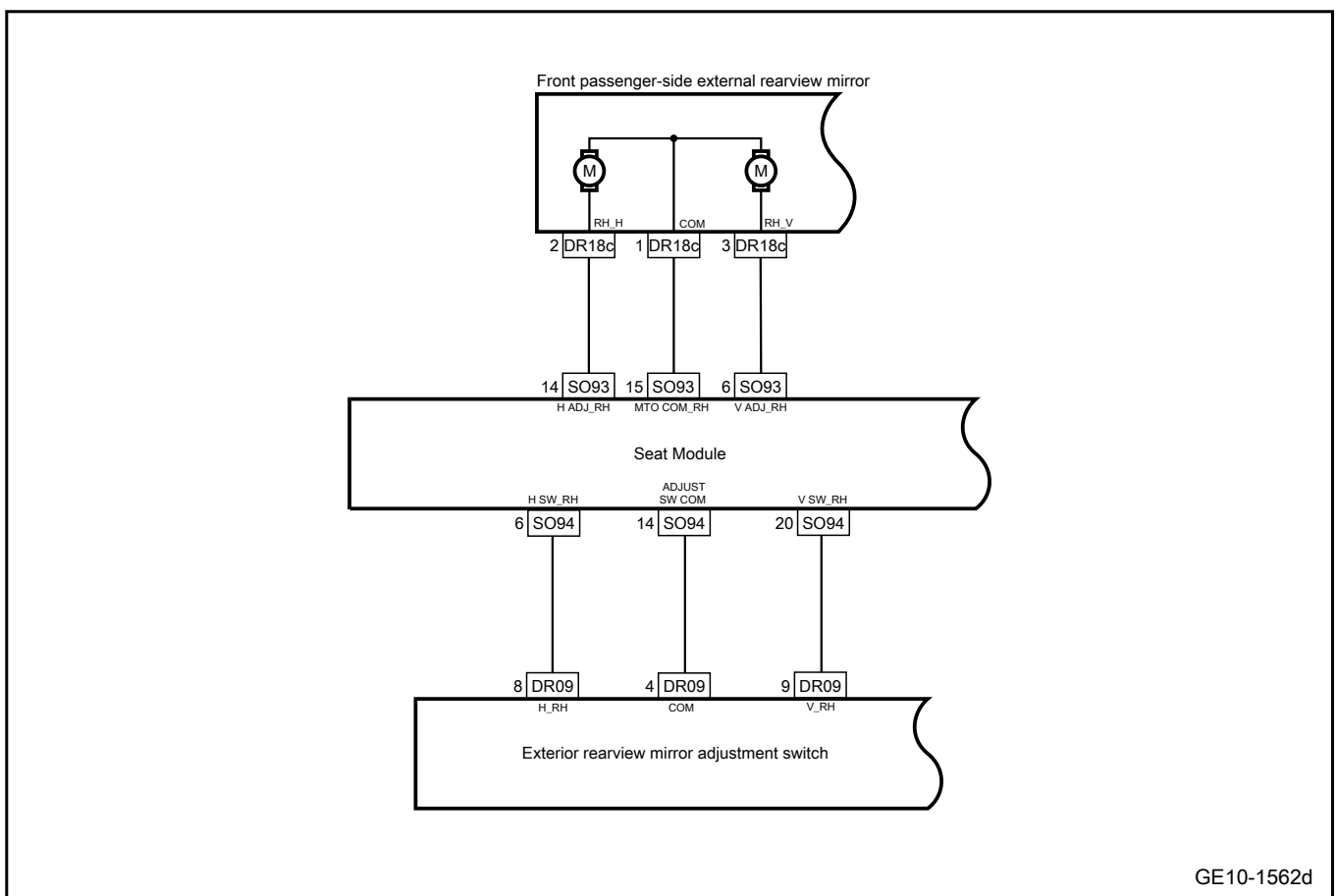
- A. Replace the driver side exterior rearview mirror, refer to [Replacement of driver side exterior rearview mirror](#)

Next Step

Step 12	System is normal.
---------	-------------------

### 10.4.6.11 Front passenger side exterior rearview mirror cannot be adjusted (with memory module)

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Check whether the exterior rearview mirror adjustment switch is stuck.

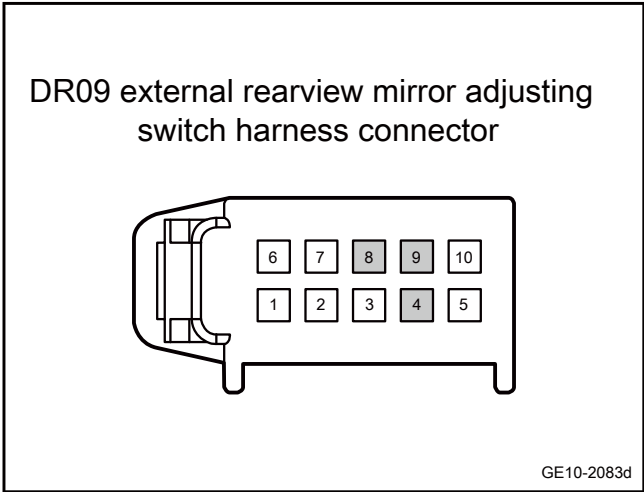
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

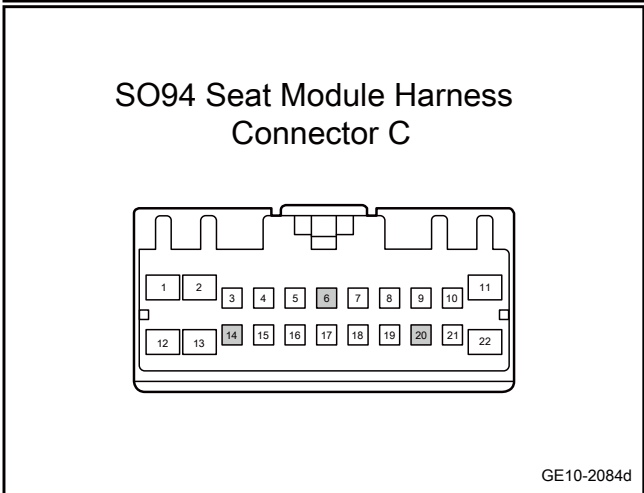
**Step 3** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(8)	SO94(6)	
DR09(9)	SO94(20)	

- E. Confirm whether the measured value meets the standard.

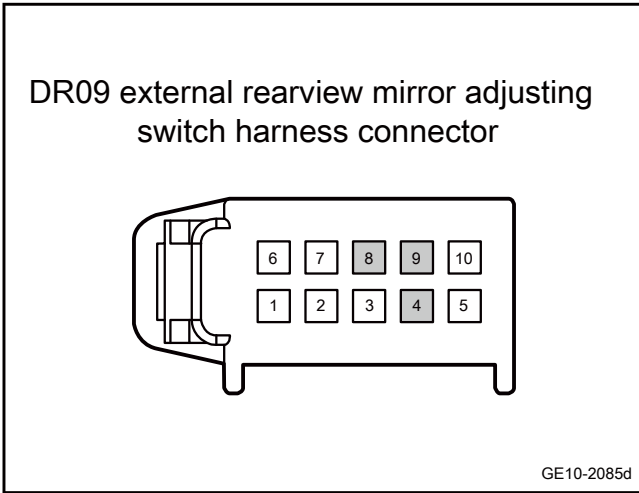


No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(8)		
DR09(9)		

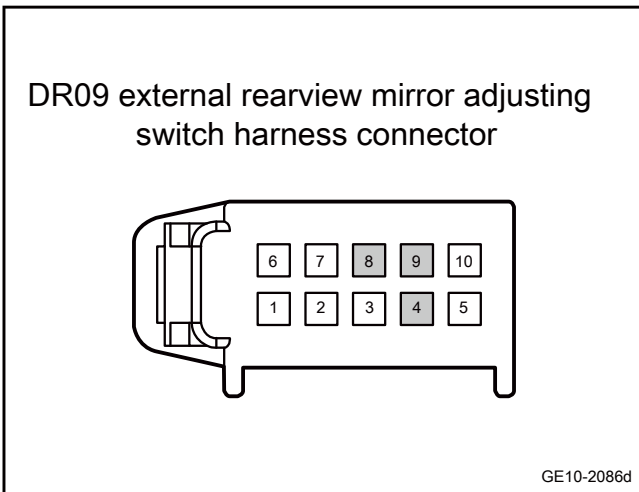
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the exterior rearview mirror adjustment switch and seat module is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(8)		
DR09(9)		

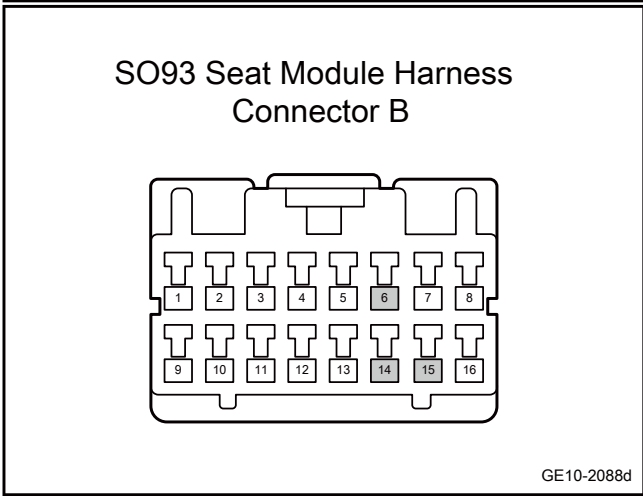
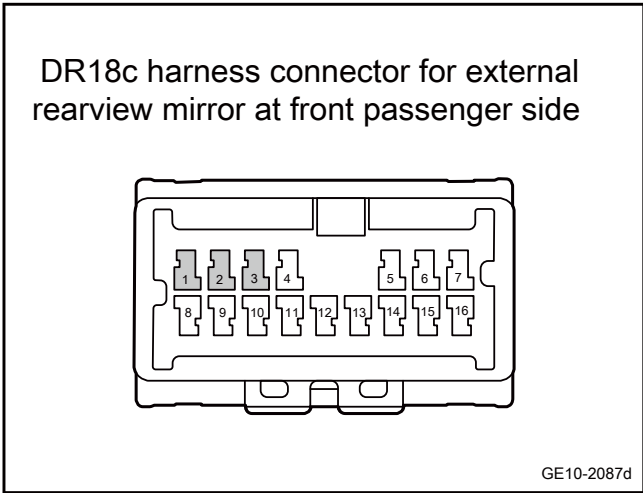
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the front passenger side exterior mirror and the seat module is open.



Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the following table:

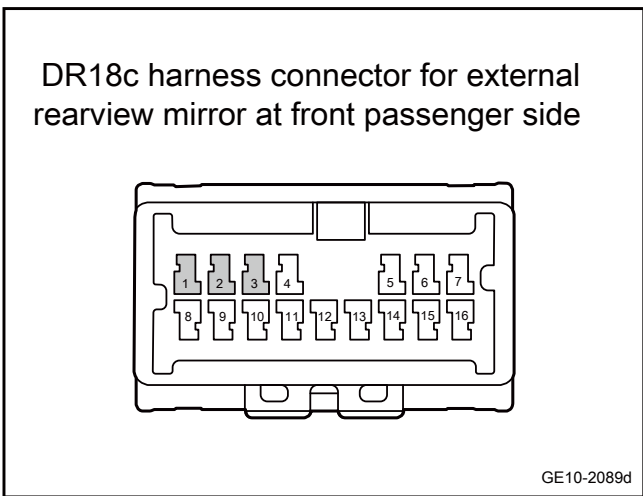
Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	SO93(15)	Standard resistance: less than 1Ω
DR18c(2)	SO93(14)	
DR18c(3)	SO93(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

**Step 7** Check whether the circuit between the front passenger side exterior rearview mirror and the seat module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	Vehicle body is grounded.	Standard voltage: 0V
DR18c(2)		
DR18c(3)		

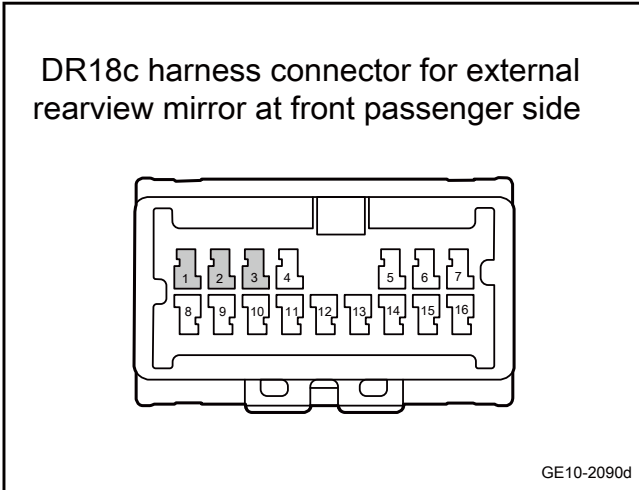
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the front passenger side exterior rearview mirror and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the following table:

Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR18c(2)		
DR18c(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch, refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 10** Replace the seat module.

- A. To replace the seat module, see [Replacement of the Seat Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No



Step 11	Replace front passenger side exterior rearview mirror.
---------	--

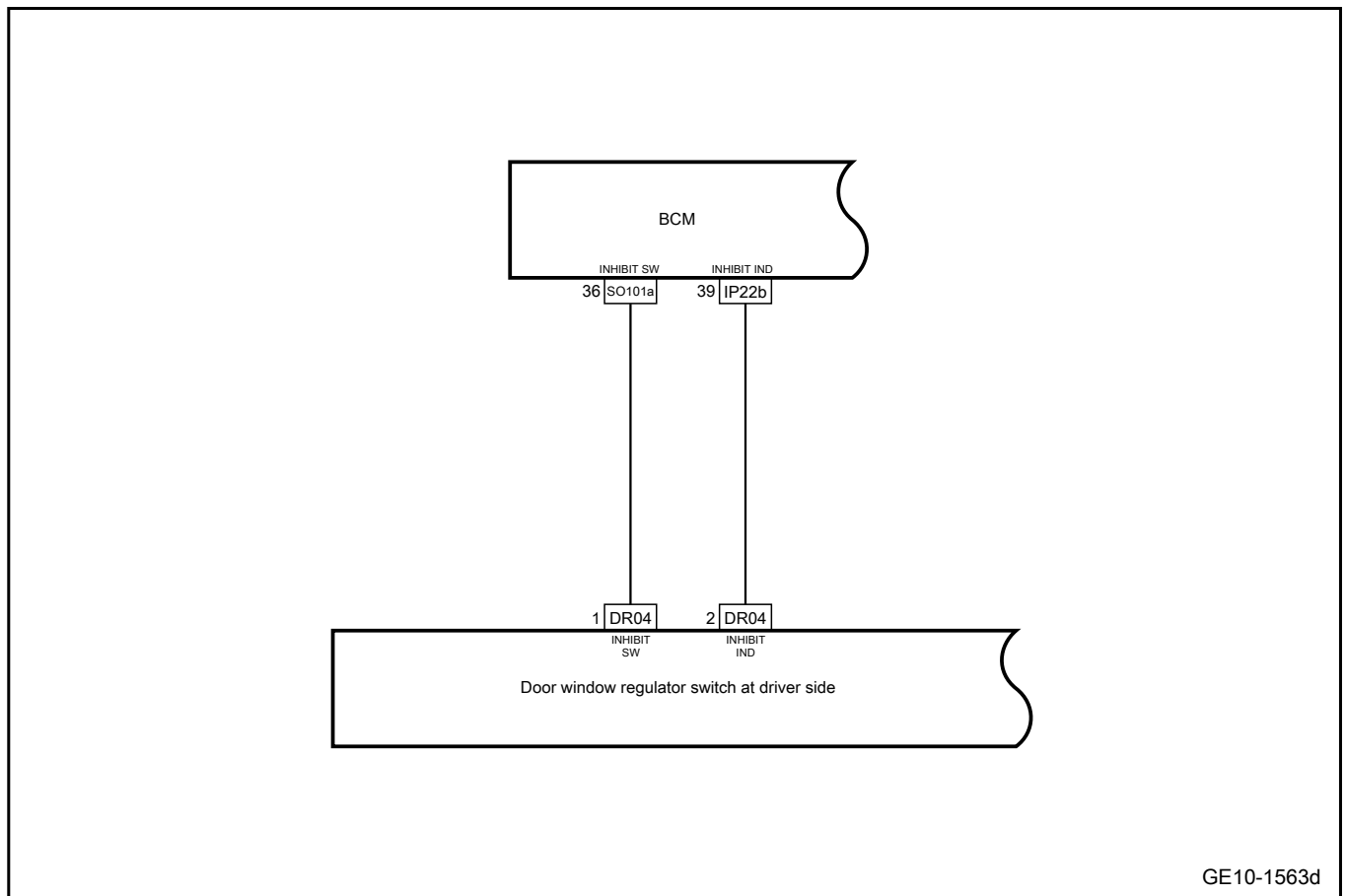
- A. Replace front passenger side exterior rearview mirror, refer to [Replacement of front passenger side exterior rearview mirror](#)

Next Step

Step 12	System is normal.
---------	-------------------

### 10.4.6.12 Vehicle window disabling function fails

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check glass lifter switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

Step 2 Check whether the driver side door power window switch is catching.

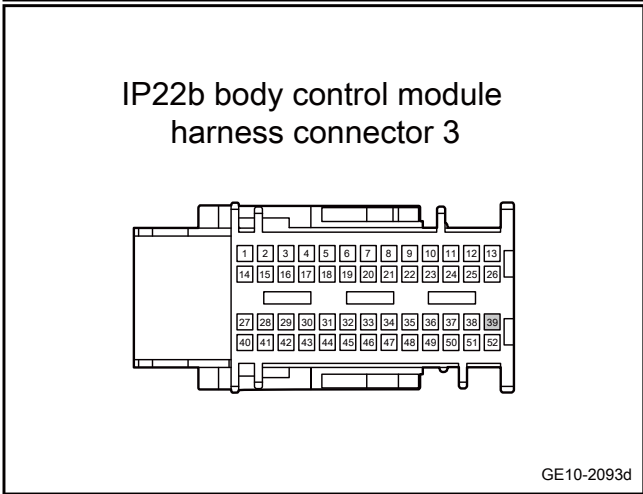
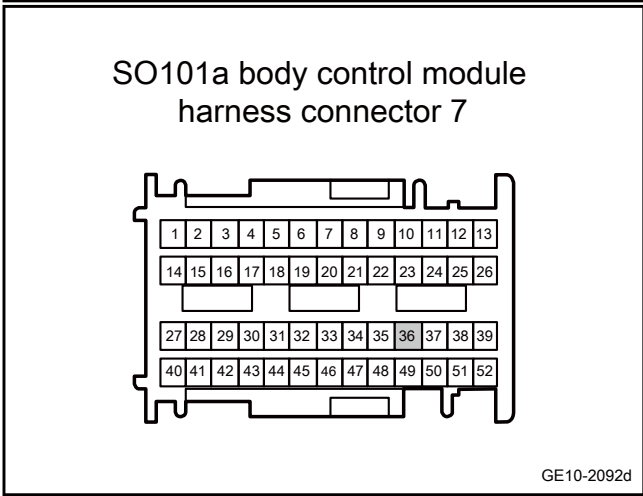
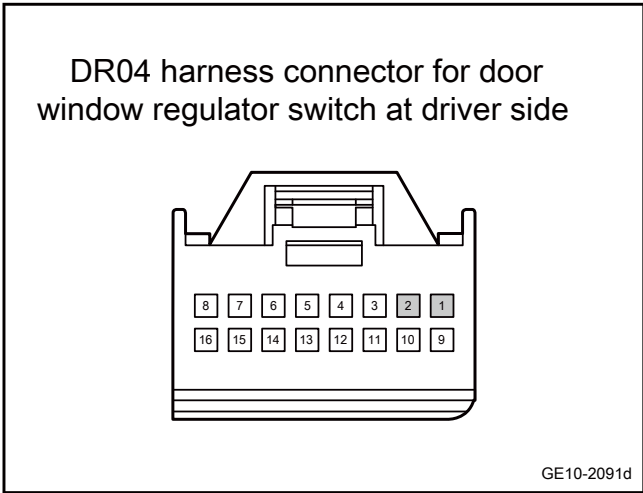
- A. Operate the driver side door power window switch.
- B. Check whether the switch is caught.

Yes

Replace the driver side door glass regulator switch, refer to [Replacement of the driver side door glass regulator switch](#)

No

Step 3 Check whether the line between the glass lifter switch of the driver side door and BCM is circuit open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	SO101a(36)	Standard resistance: less than 1Ω
DR04(2)	IP22b(39)	

- E. Confirm whether the measured value meets the standard.

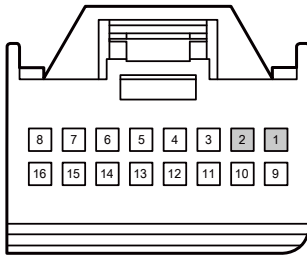
No

Repair faulty lines or replace the harness.

Yes

**Step 4** Check whether the line between the glass lifter switch of the driver side door and BCM is shorted to the power supply.

DR04 harness connector for door window regulator switch at driver side



GE10-2094d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	Vehicle body is grounded.	Standard voltage: 0V
DR04(2)		

- F. Confirm whether the measured value meets the standard.

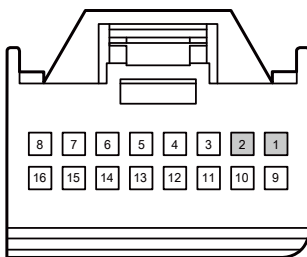
No

Repair faulty lines or replace the harness.

Yes

Step 5 Check whether the line between the glass lifter switch of the driver side door and BCM is shorted to GND.

DR04 harness connector for door window regulator switch at driver side



GE10-2095d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR04(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair faulty lines or replace the harness.

Yes

Step 6 Replace the driver side door power window switch.

- A. Replace the driver side door glass regulator switch, refer to [Replacement of the driver side door glass regulator switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Check the BCM power supply and grounding circuit.
--------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 8	Replace the BCM
--------	-----------------

- A. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

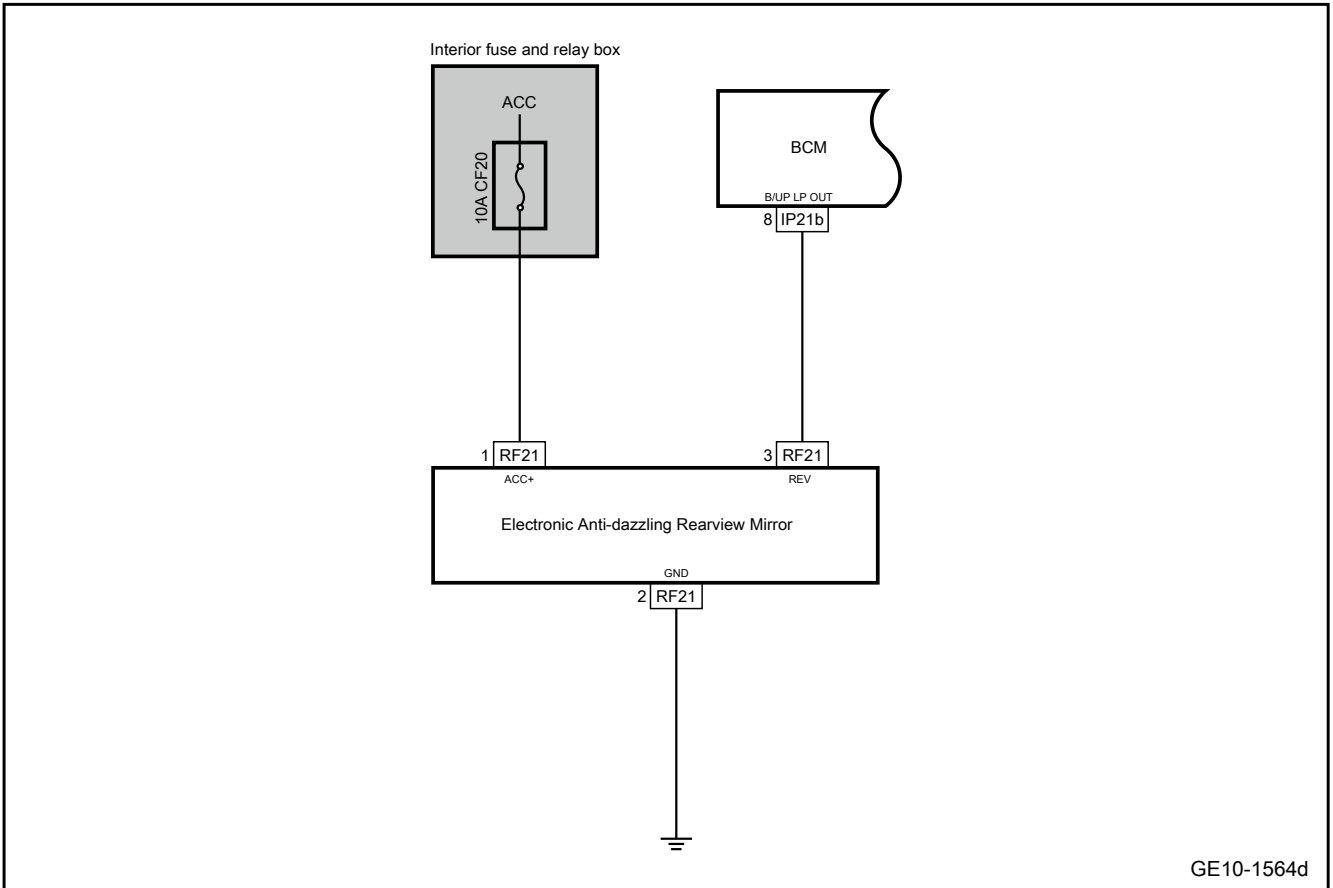
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
---------	-------------------

### 10.4.6.13 Electronic anti-glare rearview mirror does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the BCM, electronic anti-dazzling rearview mirror harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

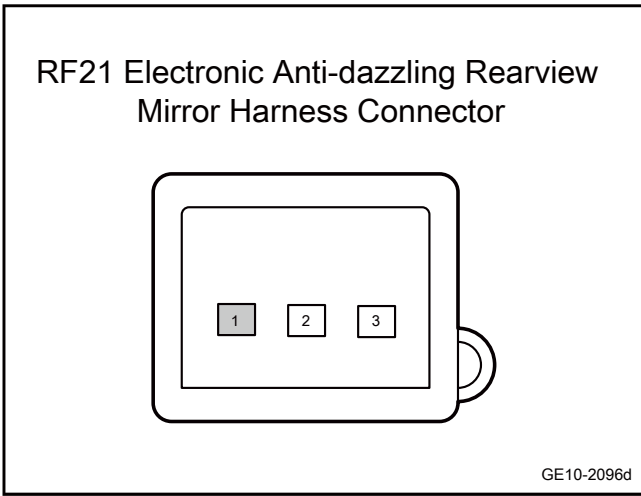
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF20 and check if it is blown.  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the power circuit of the electronic anti-glare rearview mirror.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic anti-glare rearview mirror harness connector RF21.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

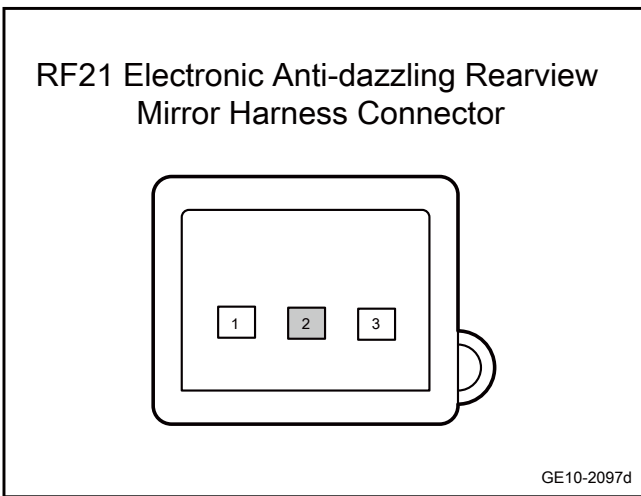
Measure terminal 1	Measure terminal 2	Standard value
RF21(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 4** Check the grounding circuit of the electronic anti-glare rearview mirror.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the electronic anti-glare rearview mirror harness connector RF21.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF21(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

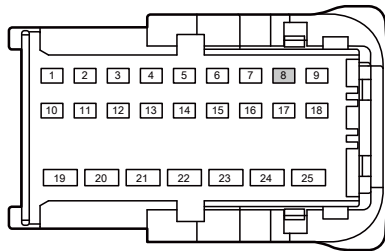
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

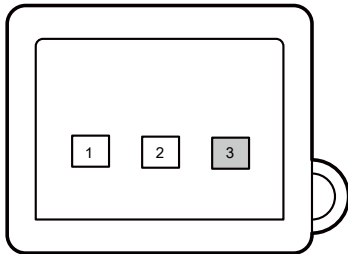
**Step 5** Check whether the circuit between BCM and electronic anti-dazzling rearview mirror is open.

IP21b body control module harness connector 2



GE10-2098d

RF21 Electronic Anti-dazzling Rearview Mirror Harness Connector



GE10-2099d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the electronic anti-glare rearview mirror harness connector RF21.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(8)	RF21(3)	Standard resistance: less than 1Ω

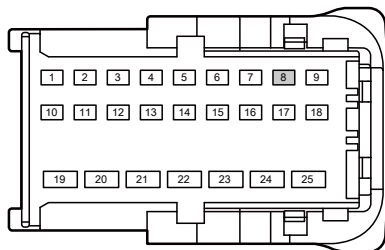
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between BCM and electronic anti-dazzling rearview mirror is short to power supply.

IP21b body control module harness connector 2



GE10-2100d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the electronic anti-glare rearview mirror harness connector RF21.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(8)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

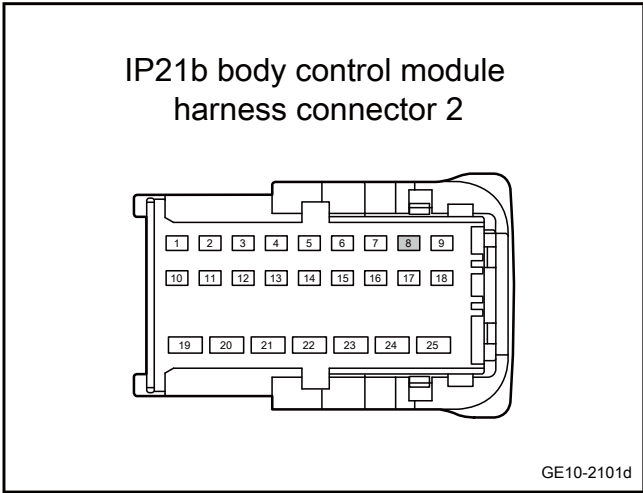


No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between BCM and electronic anti-dazzling rearview mirror is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the electronic anti-glare rearview mirror harness connector RF21.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the electronic anti-glare rearview mirror.

- A. Replace the electronic anti-glare rearview mirror. See [Replacement of electronic anti-glare rearview mirror](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

**Step 10** Replace the BCM

A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 11	Reprogram and reset the BCM.
---------	------------------------------

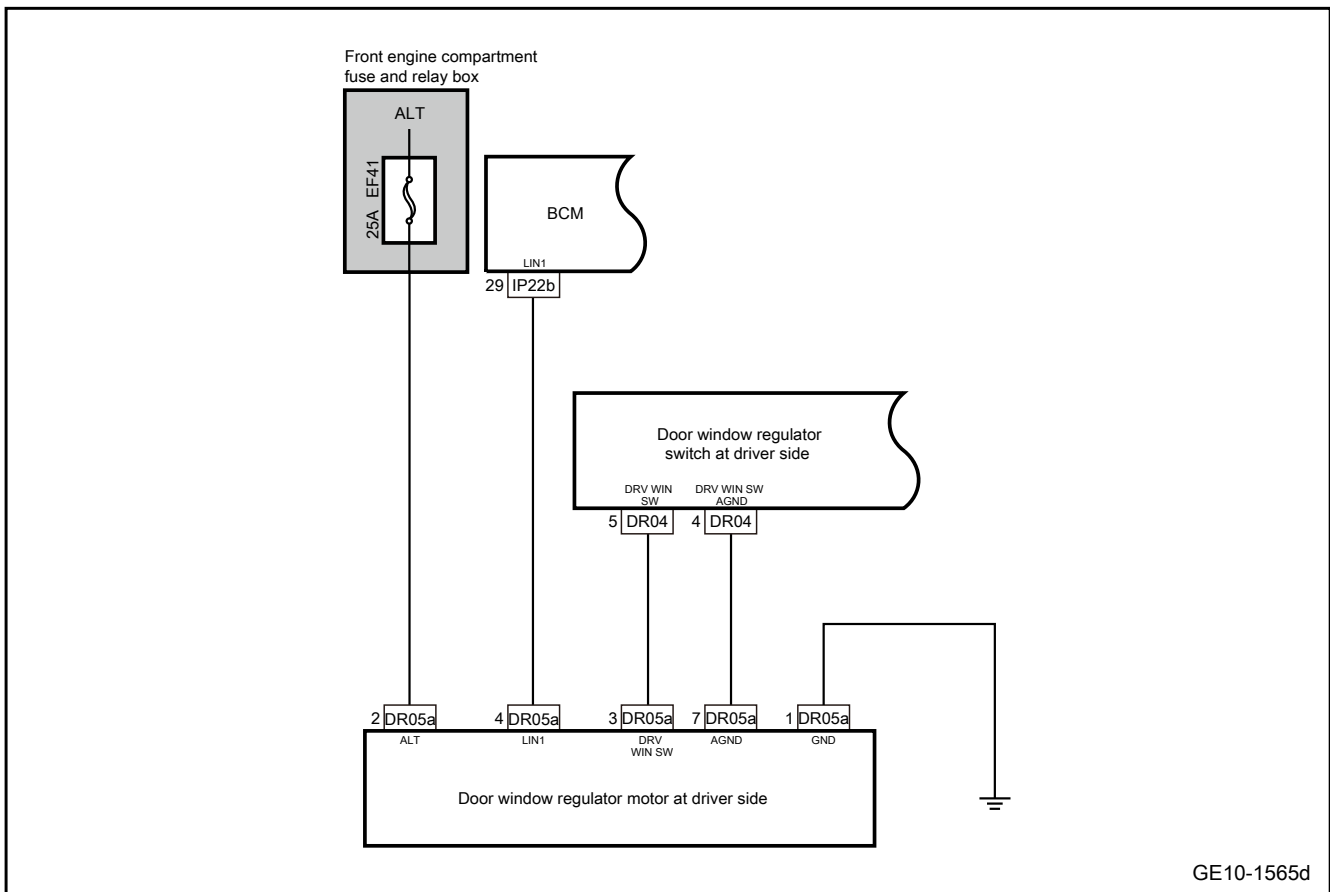
A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 12	System is normal.
---------	-------------------

### 10.4.6.14 Driver's side window regulator motor does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check BCM, driver side door glass regulator motor, driver side door glass regulator switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the EF41 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 25A

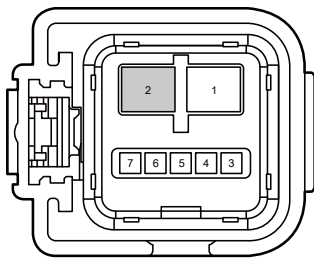
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** | Check the driver side door glass regulator motor power supply circuit.

DR05a door glass lifting motor harness connector at driver side



GE10-2102d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

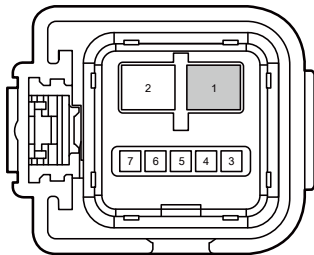
No

Repair or replace the harness.

Yes

**Step 4** | Check the grounding circuit of the driver side door glass regulator motor.

DR05a door glass lifting motor harness connector at driver side



GE10-2103d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

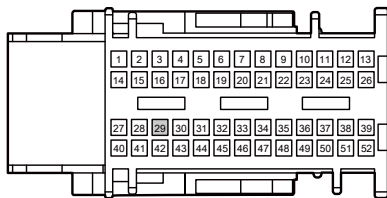
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between BCM and the driver side door glass regulator motor is open.

IP22b body control module harness connector 3



GE10-2104d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Use a multimeter to measure each terminal according to the following table:

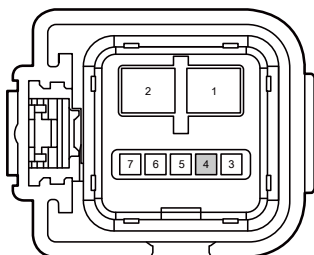
Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	DR05a(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

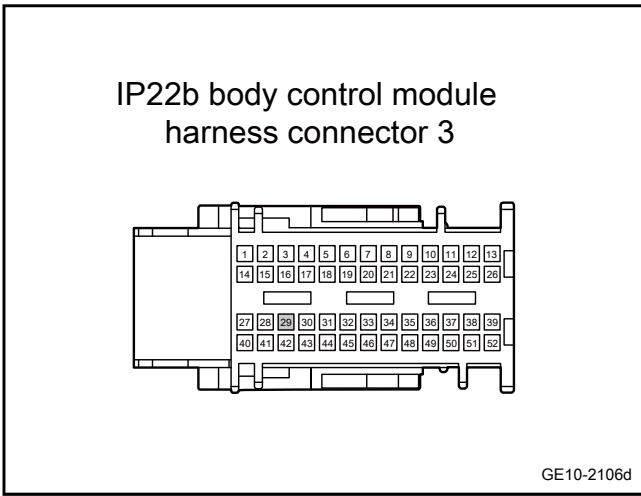
DR05a door glass lifting motor harness connector at driver side



GE10-2105d

Yes

**Step 6** Check whether the circuit between BCM and the driver side door glass regulator motor is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

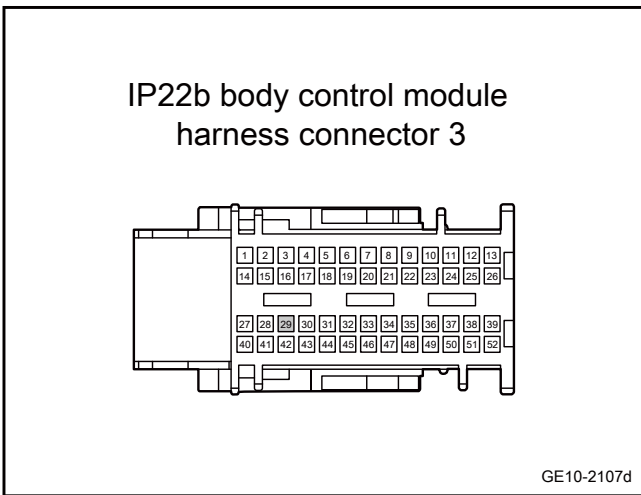
Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between BCM and the driver side door glass regulator motor is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Use a multimeter to measure each terminal according to the following table:

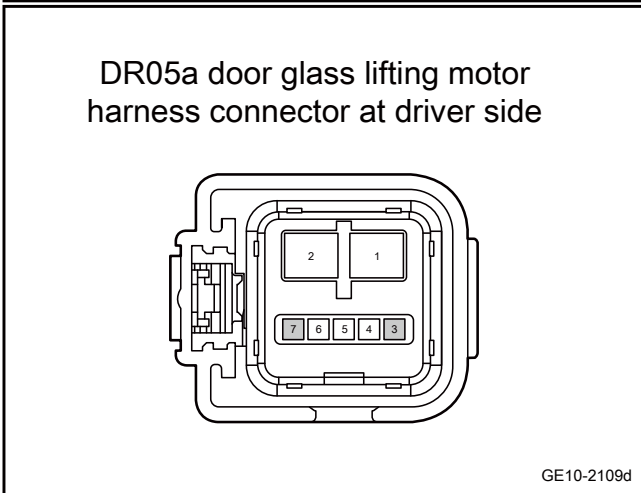
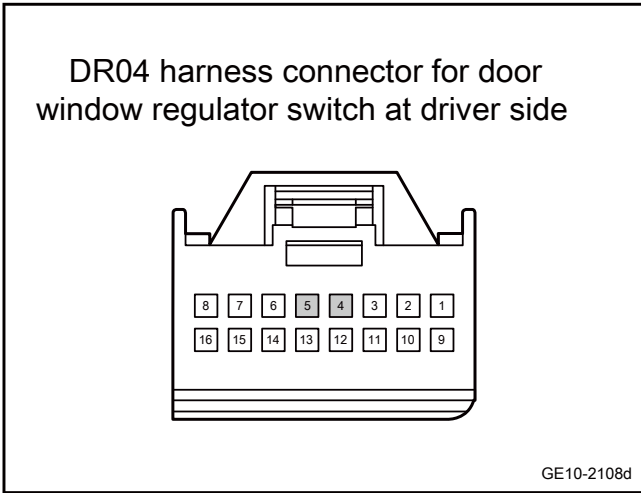
Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the driver side door glass regulator switch and the front passenger side door glass regulator motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(4)	DR05a(7)	Standard resistance: less than 1Ω
DR04(5)	DR05a(3)	

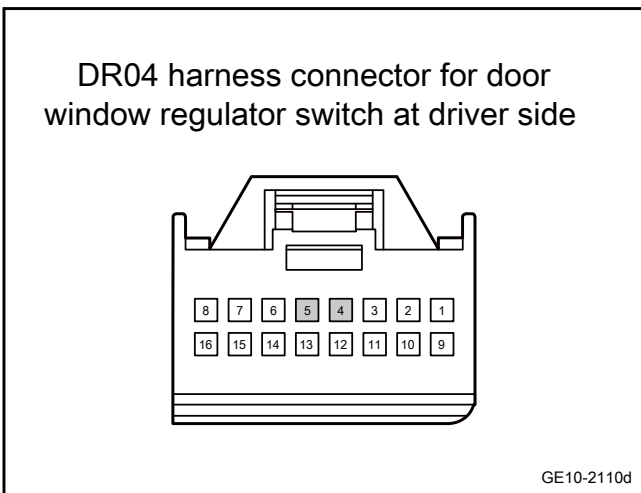
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check whether the circuit between the driver side door glass regulator switch and the driver side door glass regulator motor is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(4)	Vehicle body is grounded.	Standard voltage: equal to 0V

Measure terminal 1	Measure terminal 2	Standard value
DR04(5)		

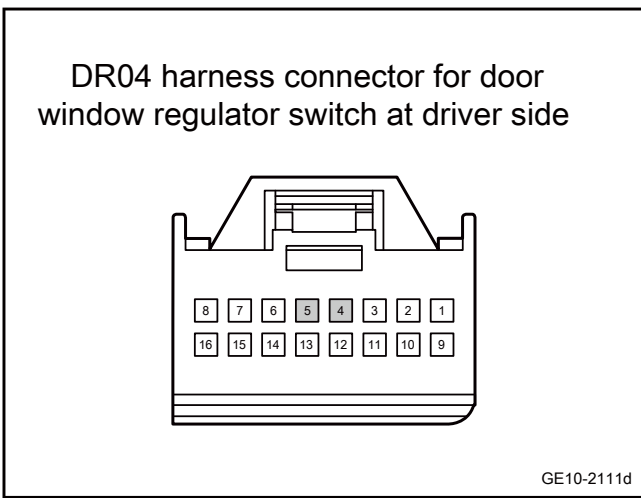
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10	Check whether the circuit between the driver side door glass regulator switch and the driver side door glass regulator motor is short to ground.
---------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the harness connector DR05a of the glass lifter motor of the driver side door.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR04(5)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 11	Replace the glass lifter motor of the driver side door.
---------	---

- A. Replace the glass lifter motor of the driver side door. Refer to replacement of the glass lifter motor of the driver side door
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Replace the driver side door power window switch.
---------	---

- A. Replace the driver side door power window switch.  
Refer to replacement of driver side door power window switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 14	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 15	Reprogram and reset the BCM.
------------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

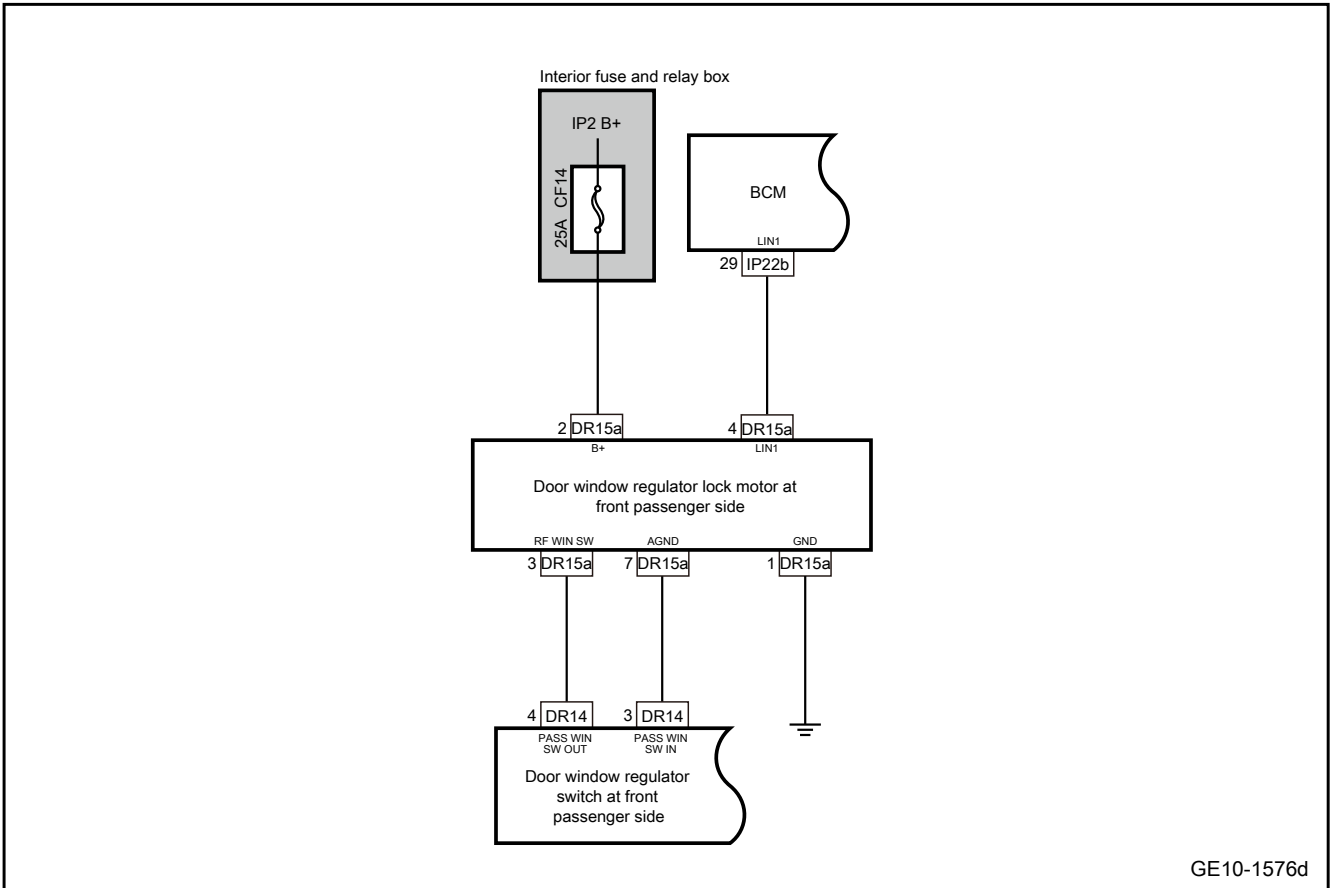
Next Step

Step 16	System is normal.
------------	-------------------

### 10.4.6.15 Front passenger side window regulator motor does not work

1. Schematic circuit diagram:





2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check BCM, front passenger side door glass regulator motor, front passenger side door glass regulator switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

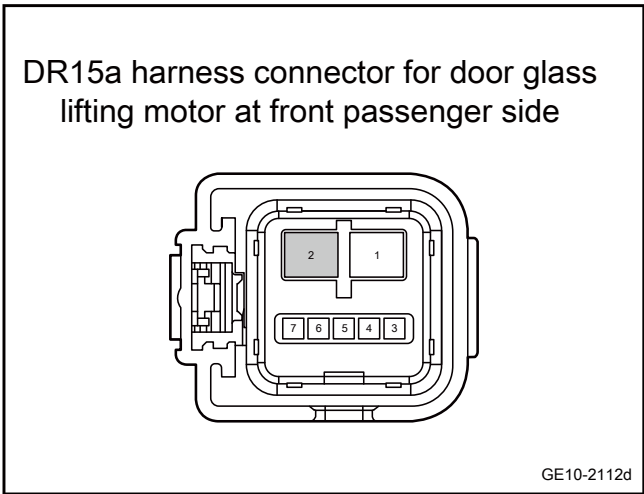
- A. Operate the starting switch to place the power in mode "OFF".
  - B. Unplug interior fuse CF14 and check if it is blown.
- Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the front passenger side door glass regulator motor power supply circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

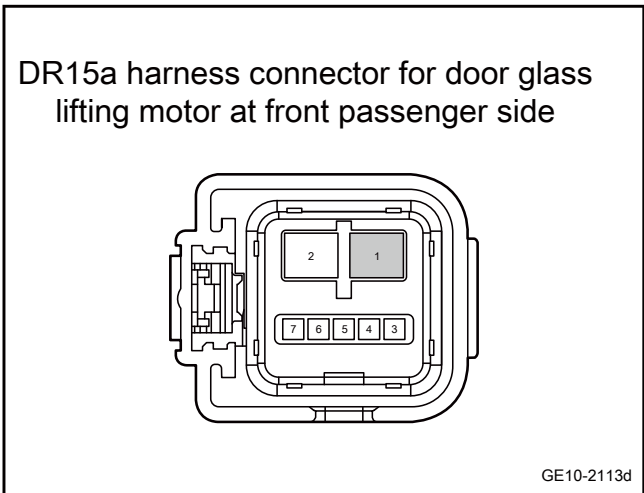
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check the front passenger side door glass regulator motor grounding circuit.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

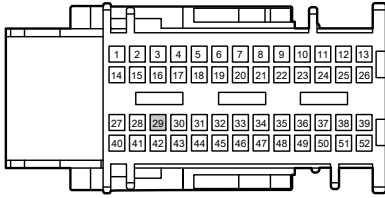
No

Repair or replace the harness.

Yes

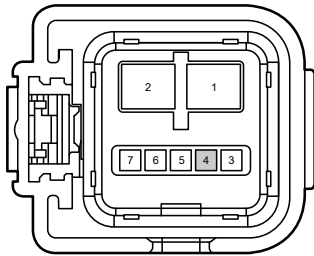
**Step 5** Check whether the circuit between BCM and the front passenger side door glass regulator motor is open.

IP22b body control module  
harness connector 3



GE10-2114d

DR15a harness connector for door glass  
lifting motor at front passenger side



GE10-2115d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	DR15a(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

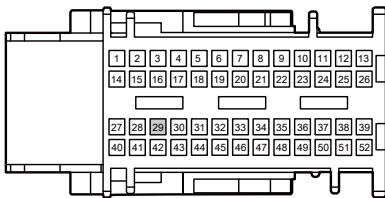
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between BCM and the passenger side door glass regulator motor is short to power supply.

IP22b body control module  
harness connector 3



GE10-2116d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard voltage: equal to 0V

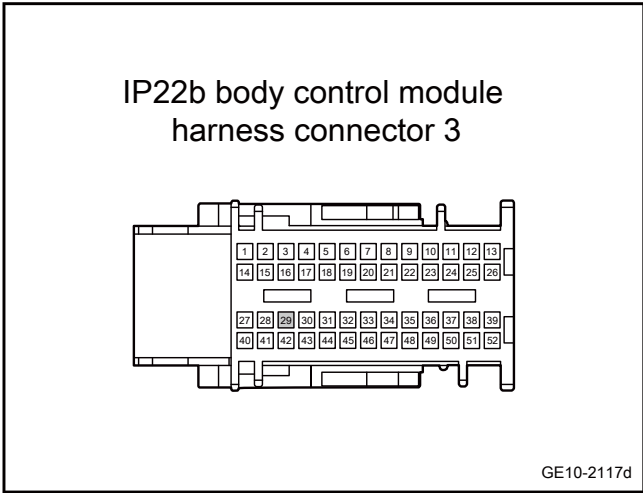
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between BCM and the passenger side door glass regulator motor is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

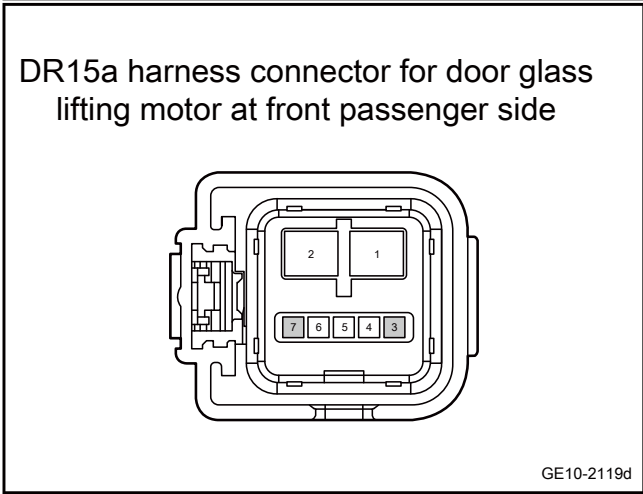
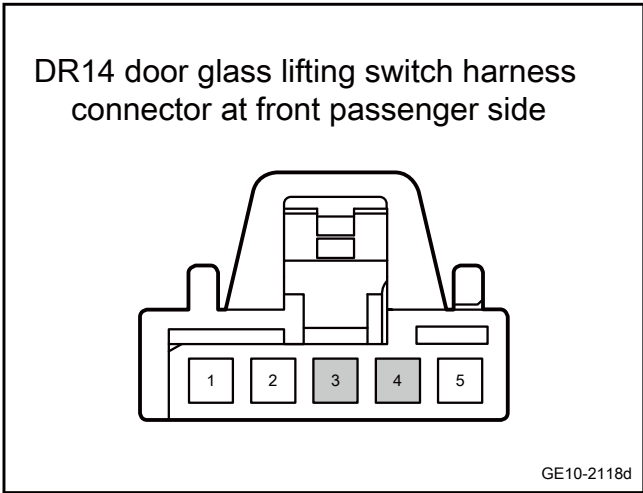
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the front passenger side door glass lifter switch and the front passenger side door glass lifter motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR14 of the front passenger side door power window switch.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR14(3)	DR15a(7)	Standard resistance: less than 1Ω
DR14(4)	DR15a(3)	

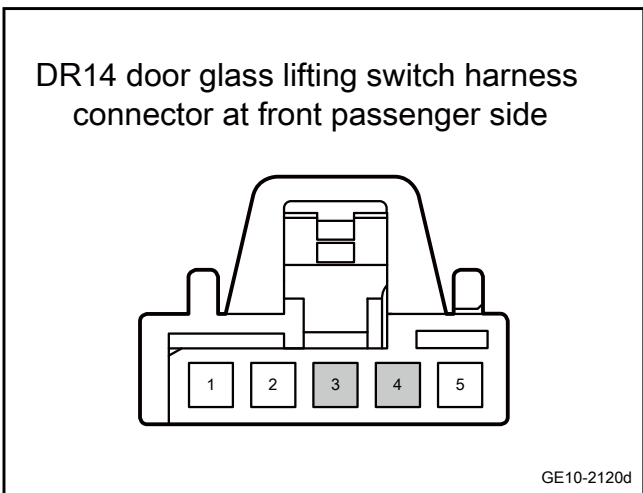
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Check whether the circuit between the front passenger side door glass lifter switch and the front passenger side door glass lifter motor is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR14 of the front passenger side door power window switch.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR14(3)	Vehicle body is grounded.	Standard voltage: equal to 0V

Measure terminal 1	Measure terminal 2	Standard value
DR14(4)		

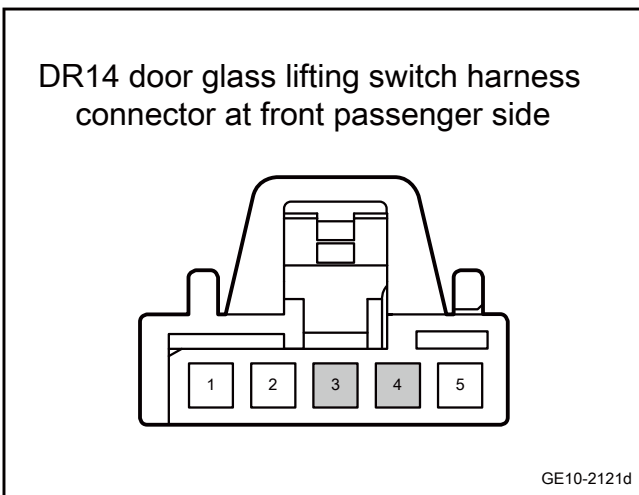
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 10** Check whether the circuit between the front passenger side door glass lifter switch and the front passenger side door glass lifter motor is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR14 of the front passenger side door power window switch.
- C. Disconnect the harness connector DR15a of the front passenger side door glass lift motor.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR14(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR14(4)		

E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 11** Replace the front passenger side door glass lift motor.

- A. Replace the front passenger side door glass lift motor. Refer to replacement of front passenger side door glass lift motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 12** Replace the front passenger side door power window switch.

- A. Replace the front passenger side door power window switch. Refer to [Replacement of passenger side door glass regulator switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Check the BCM power supply and grounding circuit.
------------	---

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 14	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 15	Reprogram and reset the BCM.
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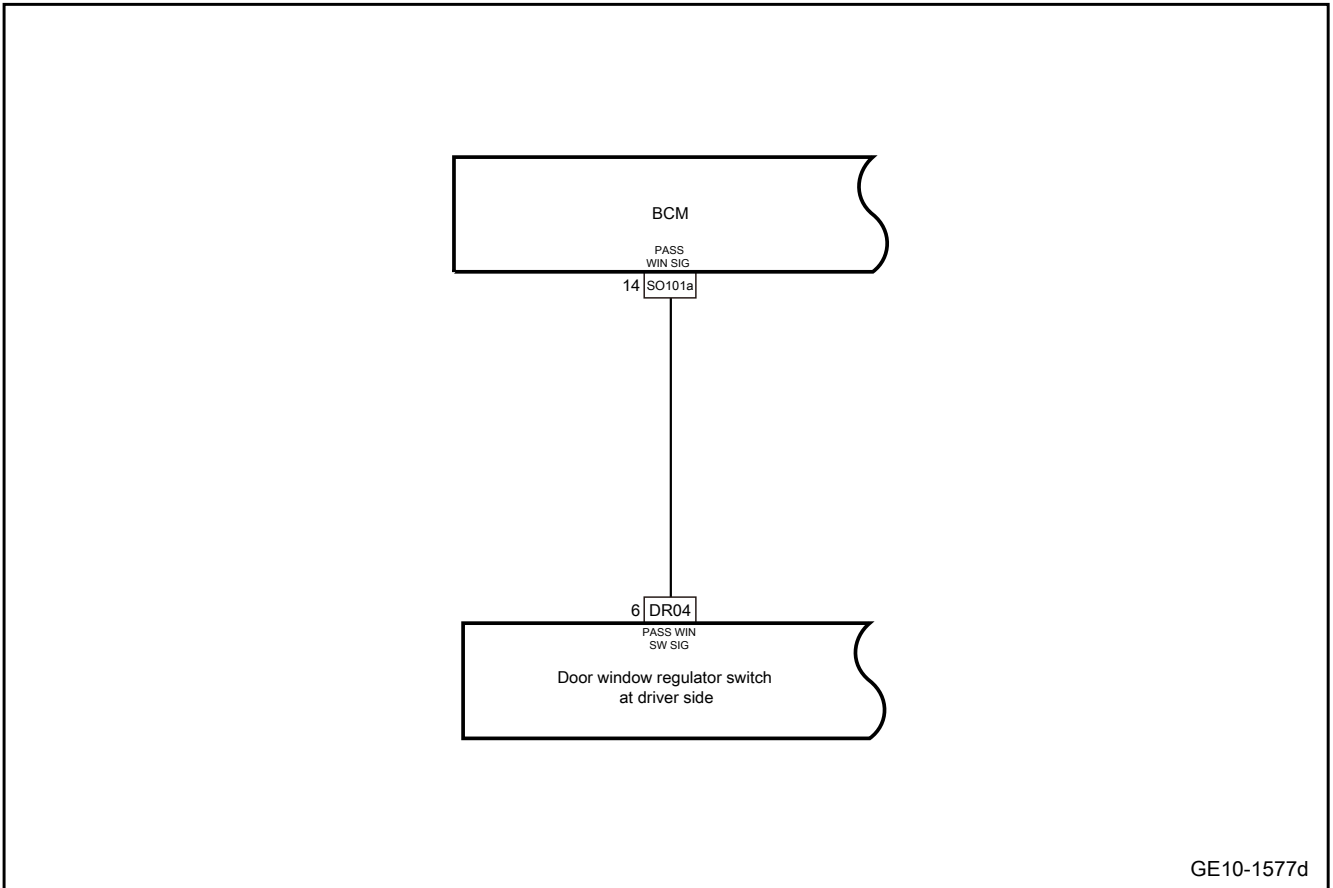
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 16	System is normal.
------------	-------------------

### 10.4.6.16 The left front glass lifting switch cannot control the left rear door glass

1. Schematic circuit diagram:



This manual only diagnoses the fault that the left front glass switch cannot control the left rear door glass, and the left rear door glass switch can control the left rear door glass lift.

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check BCM, driver side door glass regulator switch harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

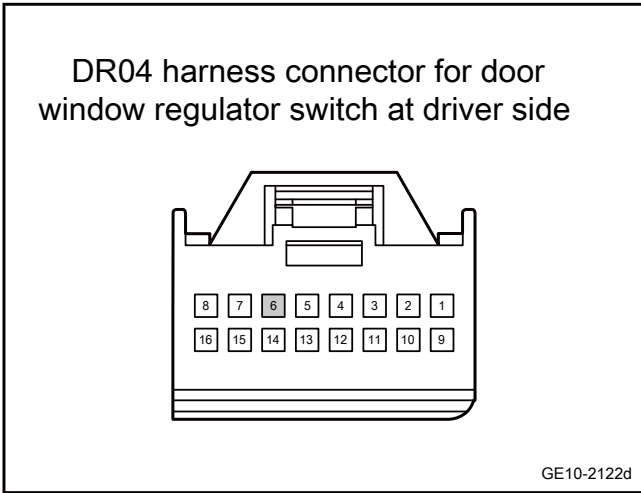
No

Repair or replace the faulty part.

Yes

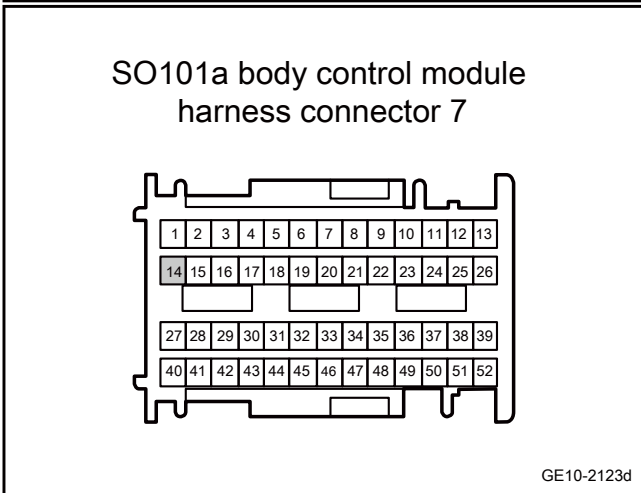
Step 2	Check whether the line between the glass lifter switch of the driver side door and BCM is circuit open.
--------	---





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(6)	SO101a(14)	Standard resistance: less than 1Ω



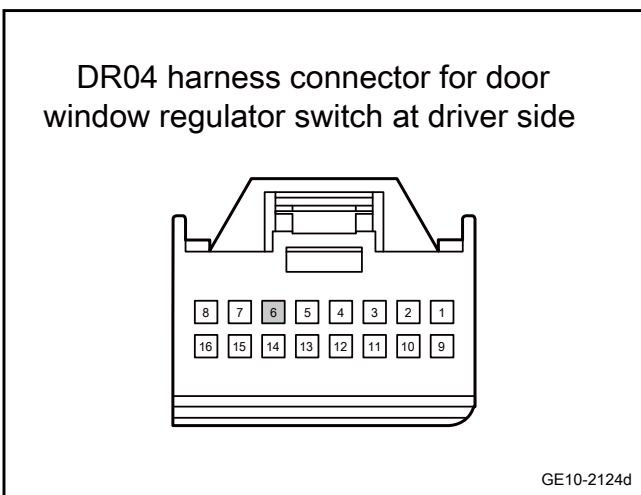
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Check whether the line between the glass lifter switch of the driver side door and BCM is shorted to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the BCM harness connector SO101a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(6)	Vehicle body is grounded.	Standard voltage: equal to 0V

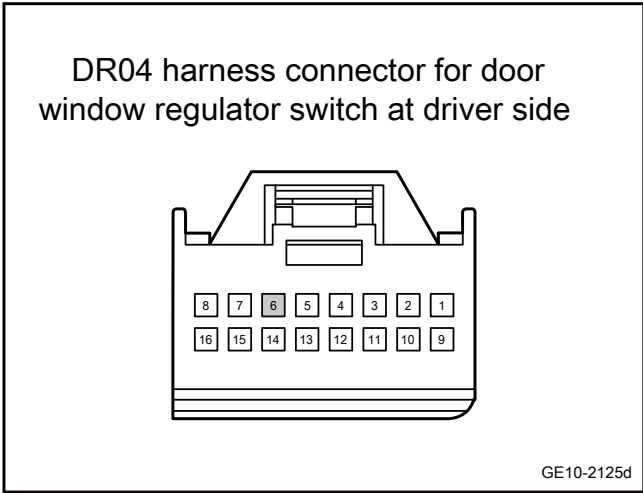
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the line between the glass lifter switch of the driver side door and BCM is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR04 of the driver side door power window switch.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the driver side door power window switch.

- A. Replace the driver side door power window switch. Refer to replacement of driver side door power window switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Check the BCM power supply and grounding circuit.

- A. Refer to [BCM power failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

**Step 7** Replace the BCM

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 8	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	System is normal.
--------	-------------------

### 10.4.6.17 Initialization of glass lift

Each time the system loses initialization, the initialization operation must be repeated to restore the anti-pinch function. The initialization operation is as follows

- Pull up the window switch to close the window completely. After releasing the window switch, pull up the window switch again and hold it for more than 2 seconds.
- After pressing down the window switch to fully open the window, pull up the window switch to fully close the window.
- After opening the window, perform an automatic window closing operation.
- If the window is automatically closed to the fully closed position, the self-learning is completed, and the window has automatic closing and anti-pinch functions. Otherwise, repeat the above steps.
- After initialization, all the specified system functions must be operational.
- During the initialization, the voltage of the control module must not drop below 9V.
- When the power supply voltage on the control module drops momentarily but is still greater than 6V, the initialized status remains effective.

#### Caution

1. Auto up, anti-clamp, and comfort switch off functions are not provided if the initialization procedure has not been executed or is lost. Manual up, down and auto down functions are still available.

Initialization will be lost when the following situations occur (if anti-clamp function is equipped)

- The power supply is cut off.
- When the lifter moves, the power supply voltage drops below 6V.
- The control module detected an illogical ripple signal.

## 10.4.7 Removal and installation

### 10.4.7.1 Replacement of the left exterior rearview mirror

#### Removal procedure

##### Caution

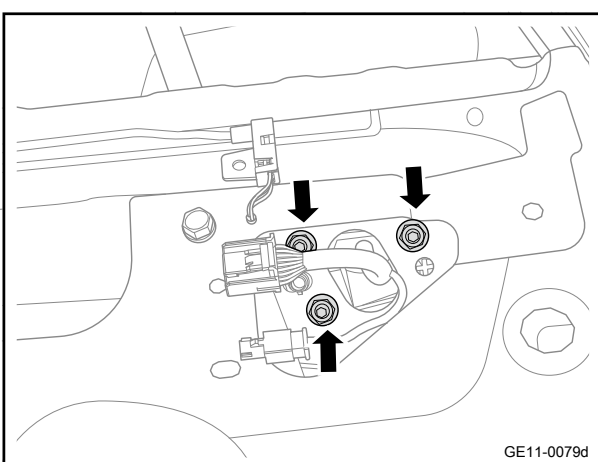
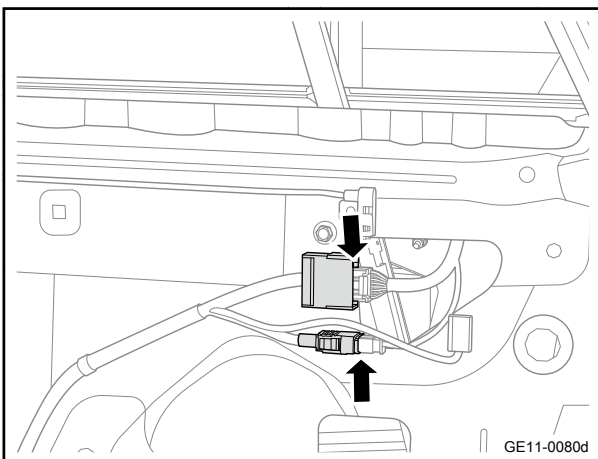
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

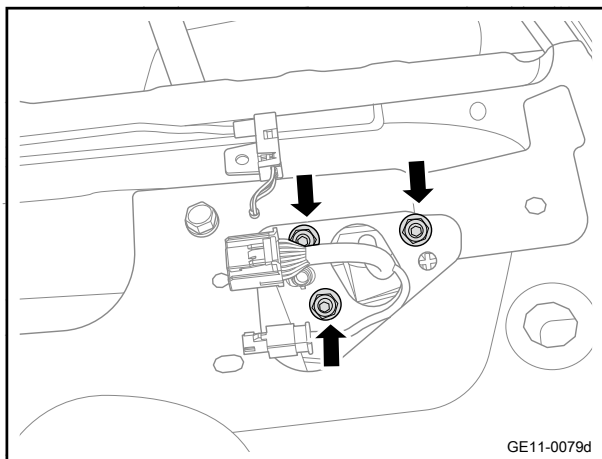
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 3 Disconnect the left exterior rear view mirror harness connector.

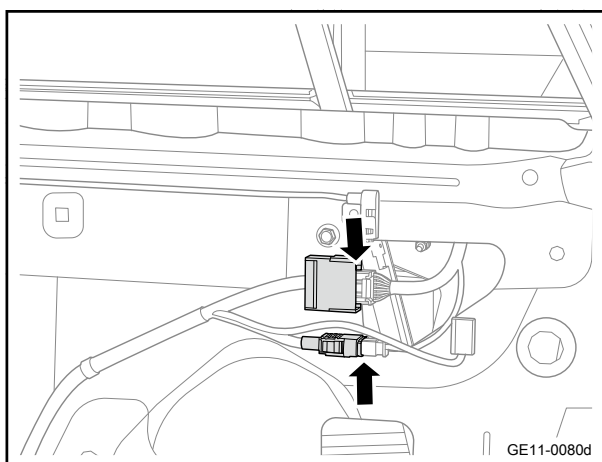


- 4 Remove the 3 fixing nuts of the left exterior rearview mirror.
- 5 Remove the left exterior rearview mirror.

#### Installation procedure



- 1 Move the left exterior rearview mirror to the installation position.
- 2 Install the 3 fixing nuts of the left exterior rearview mirror.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

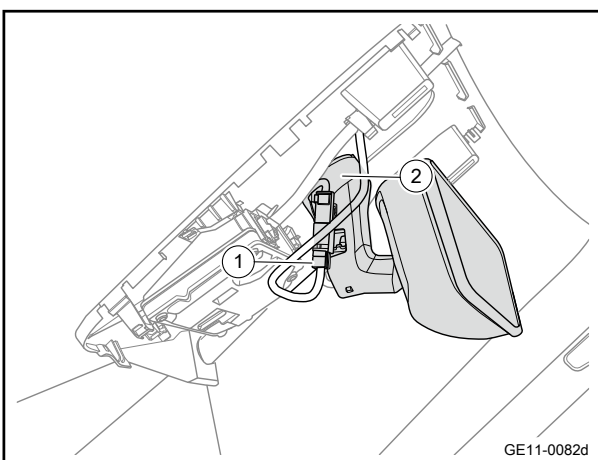
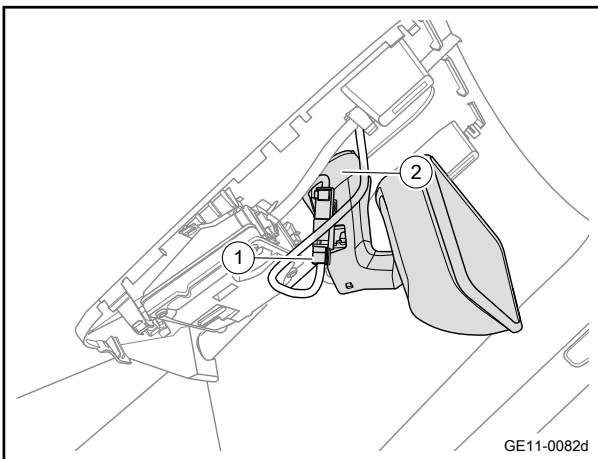
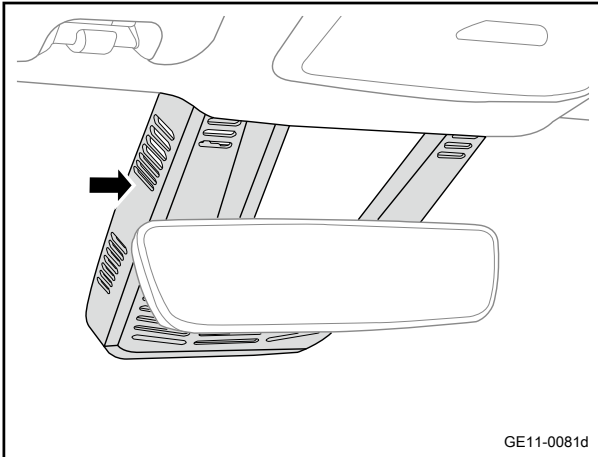


- 3 Connect the left exterior rearview mirror harness connector.

- 4 Install the FL door interior trim panel assembly.
- 5 Connect the negative cable of battery.

#### 10.4.7.2 Replacement of electronic anti-glare interior rearview mirror assembly

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Pry off the trim cover of the electronic anti-glare inner rearview mirror mounting block.

- 3 Disconnect the wiring harness connector 1 of the electronic anti-glare inner rearview mirror assembly.

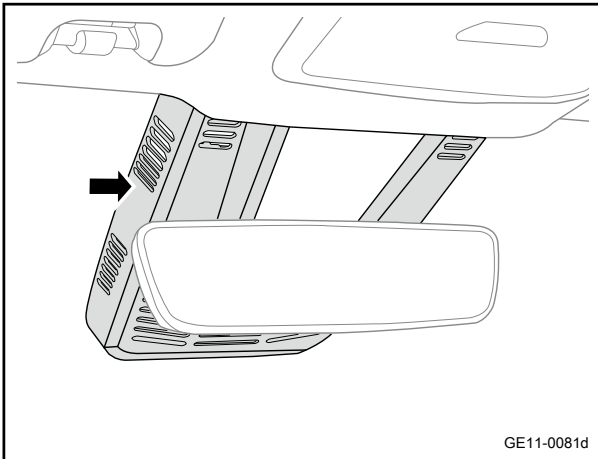
- 4 Take off the electronic anti-glare inner rearview mirror assembly 2.

#### Installation procedure

- 1 Install the electronic anti-glare inner rearview mirror assembly 2.
- 2 Connect the wiring harness connector 1 of the electronic anti-glare inner rearview mirror assembly.

#### Caution

When installing the rear-view mirror, follow the glass tilt direction and apply even force to avoid damaging the front windshield glass.



- 3 Install the trim cover of the electronic anti-glare inner rearview mirror mounting block.

- 4 Connect the negative cable of battery.

### 10.4.7.3 Replacement of left power rearview mirror lens

#### Removal procedure

##### Caution

The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

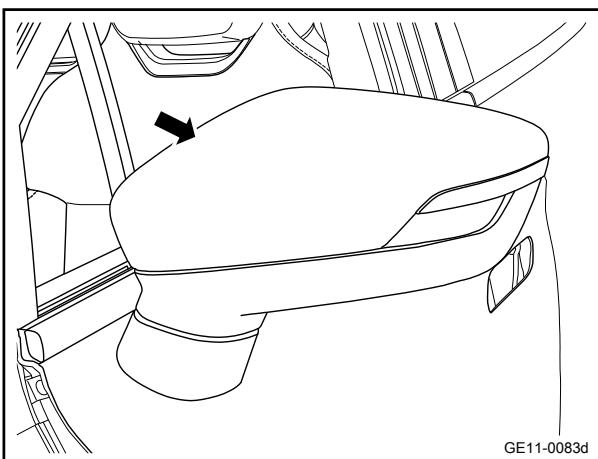
##### Warning

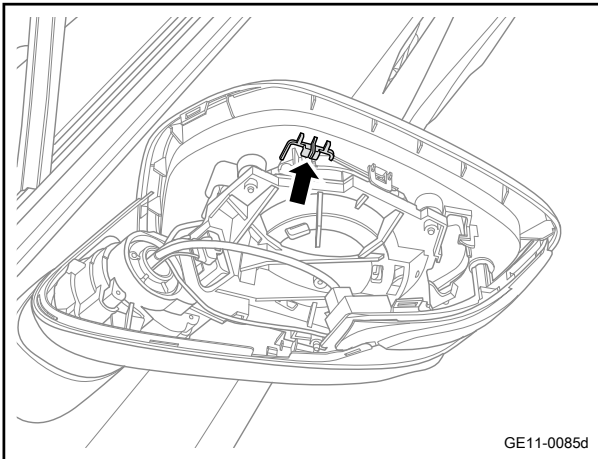
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Use a suitable tool to remove the upper cover of the left power rearview mirror.

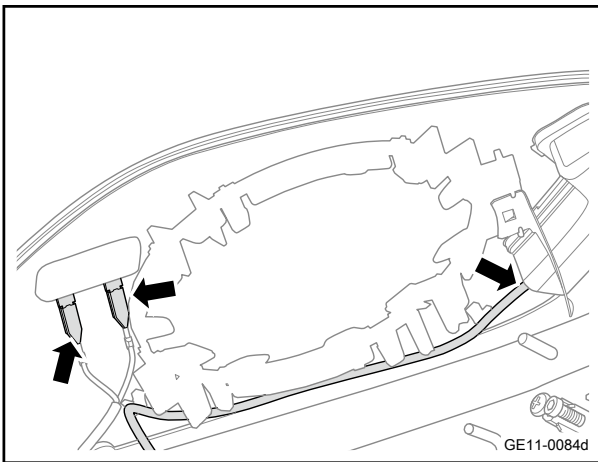
##### Caution

Be careful to scratch the outer cover of the electric rearview mirror when disassembling.

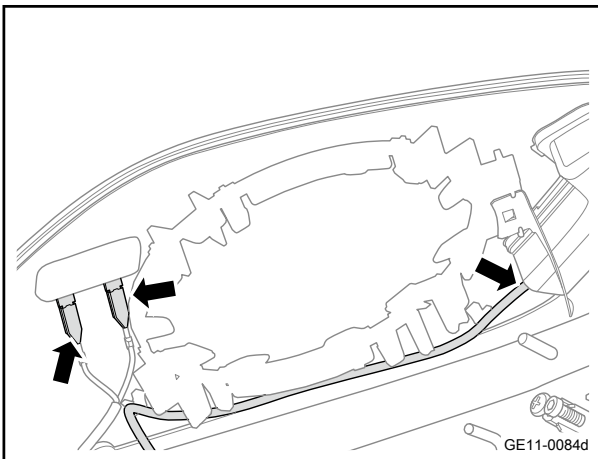




- 3 Pry down the left power rearview mirror lens.



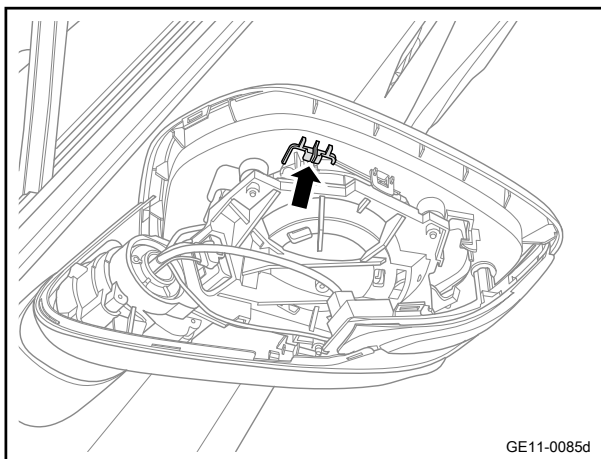
- 4 Disconnect the left power rearview mirror lens harness connector.
- 5 Remove the left power rearview mirror lens.



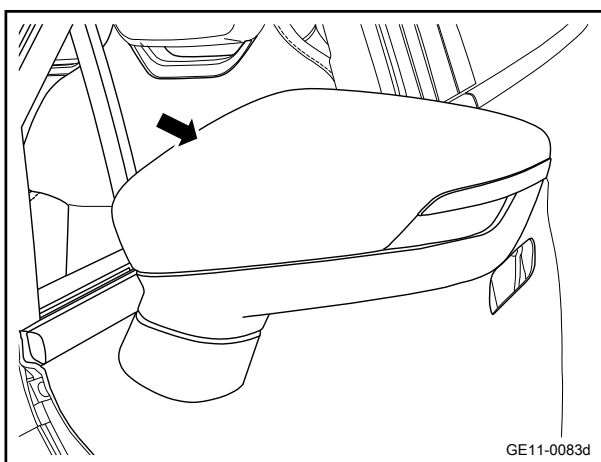
#### Installation procedure

- 1 Move the left power rearview mirror lens to the installation position.
- 2 Connect the lens harness connector of the left power rearview mirror.





- 3 Install the left power rearview mirror lens.



- 4 Install the upper cover of the left power rearview mirror.

- 5 Connect the negative cable of battery.

#### 10.4.7.4 Replacement of the exterior rearview mirror switch

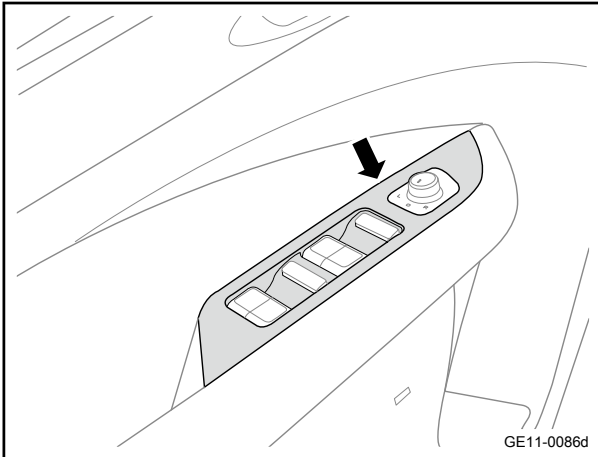
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

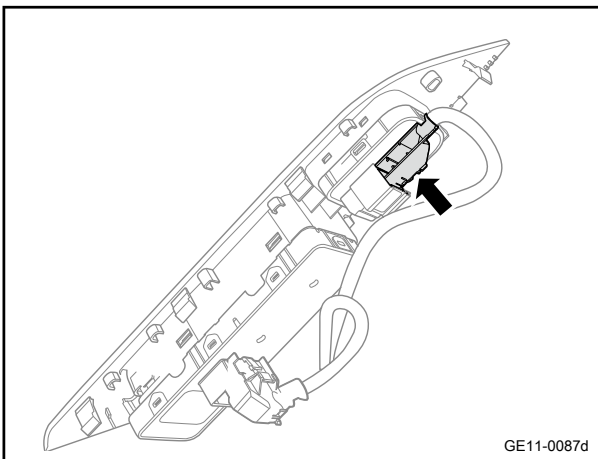
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Pry down the left front door switch panel assembly.



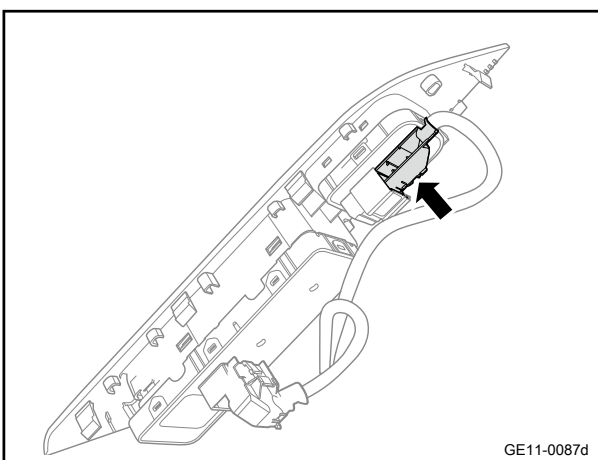
- 3 Disconnect the exterior rearview mirror switch harness connector.

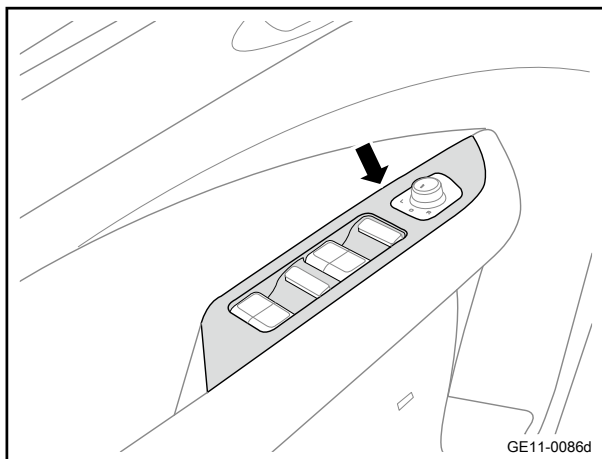
- 4 Remove the exterior rearview mirror switch.



**Installation procedure**

- 1 Move the exterior rearview mirror switch to the installation position.
- 2 Connect the exterior rearview mirror switch harness connector.





- 3 Install the left front door switch panel assembly.

- 4 Connect the negative cable of battery.

#### 10.4.7.5 Replacement of power window regulator switch assembly of the left front door

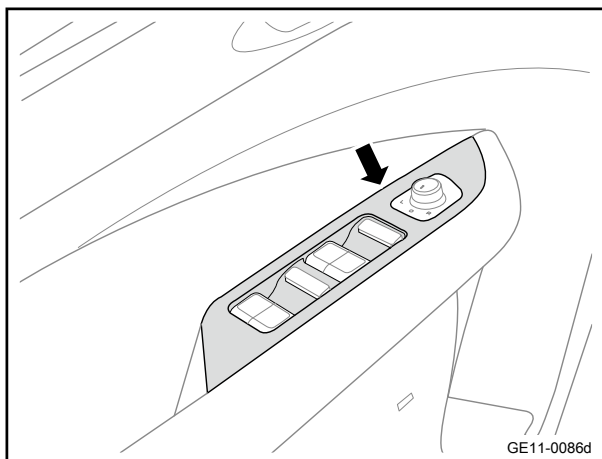
##### Removal procedure

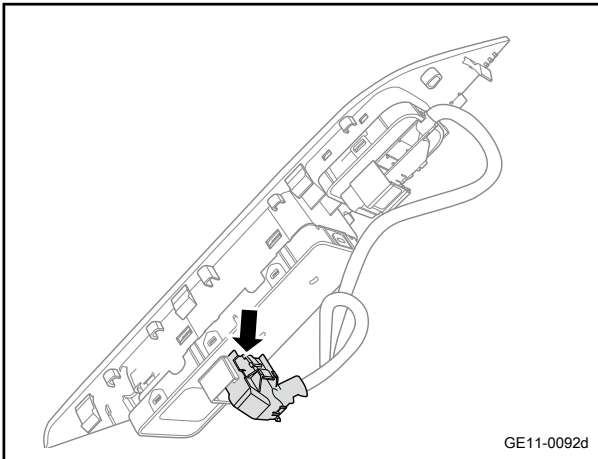
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

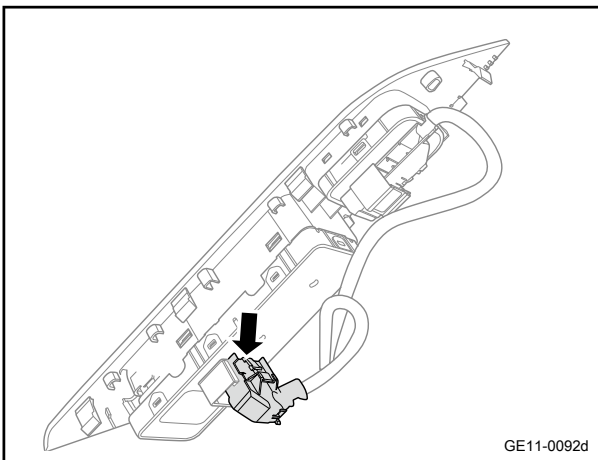
- 2 Pry down the left front door switch panel assembly.



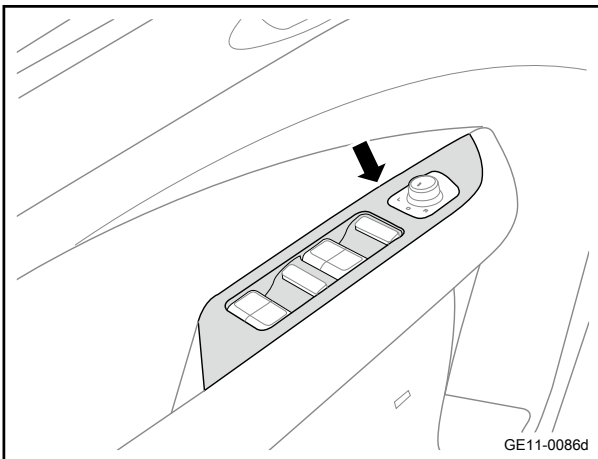


- 3 Disconnect the wire harness connector of the left front door power window regulator switch assembly.
- 4 Remove the switch assembly of the left front door power window regulator.

#### Installation procedure



- 1 Move the switch assembly of the left front door power window regulator to the installation position.
- 2 Connect the wiring harness connector of the left front door power window regulator switch assembly.



- 3 Install the left front door switch panel assembly.

- 4 Connect the negative cable of battery.

#### 10.4.7.6 Replacement of front left door power window regulator assembly

##### Removal procedure

**Caution**

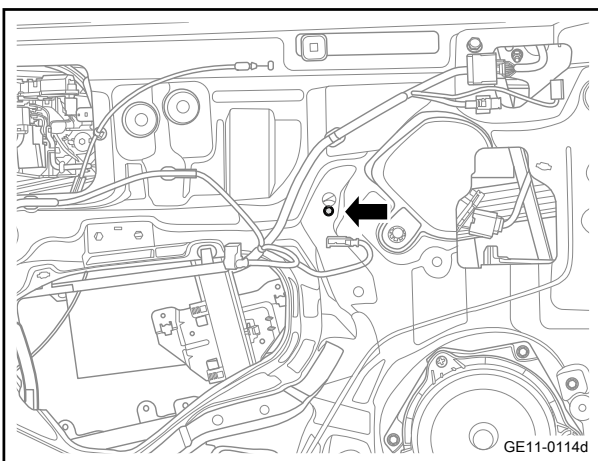
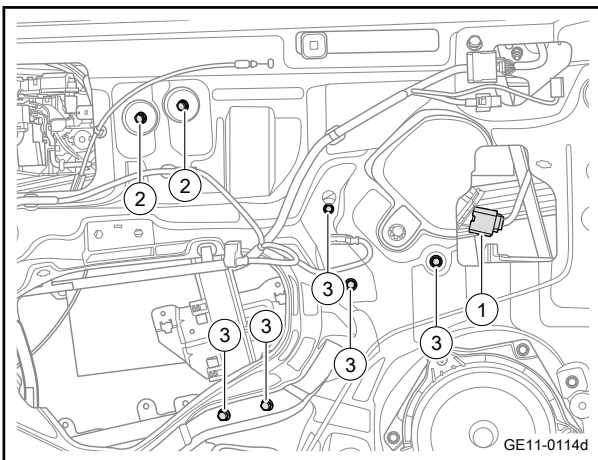
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

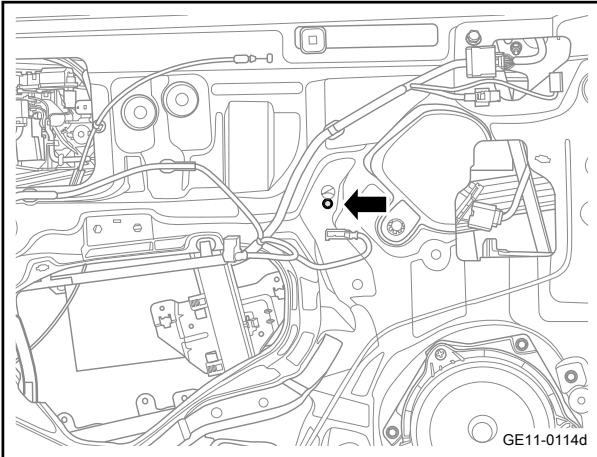
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door glass assembly. See [Replacement of left front door glass assembly](#)
- 3 Disconnect the harness connector 1 of the front left door electric window lifter assembly.
- 4 Remove the 2 fixing nuts 2 of the front left door power window regulator assembly.
- 5 Remove the 5 fixing bolt 3 of the front left door power window regulator assembly.

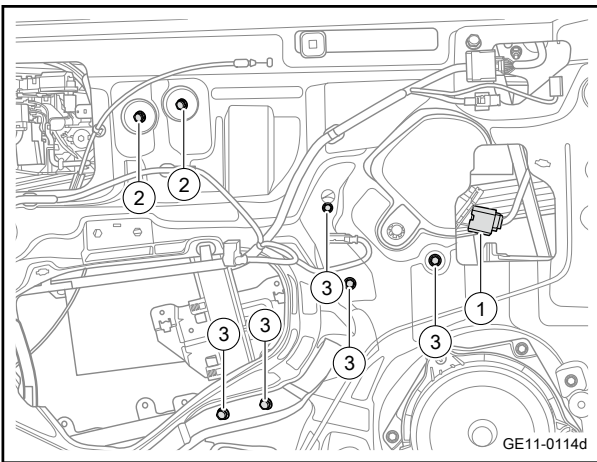


- 6 Loosen the 1 fixing bolt of the front left door power window regulator assembly.
- 7 Remove the left front door power window regulator assembly.

**Installation procedure**



- 1 Move the left front door power glass regulator assembly to the installation position.
- 2 Tighten one fixing bolt of the left safety door power glass regulator assembly.  
Torque: 9N.m (metric) 6.6lb-ft (imperial system)



- 2 Install 4 fixing bolt 3 of the left front door power window regulator assembly.  
Torque: 9N.m (metric) 6.6lb-ft (imperial system)
- 3 Install 2 fixing nuts 2 of the left front door power window regulator assembly.  
Torque: 10N.m (metric) 7.4lb-ft (imperial system)
- 4 Connect the harness connector 1 of the front left door electric window lifter assembly.

- 5 Install the front left door glass lifter assembly.
- 6 Connect the negative cable of battery.

#### 10.4.7.7 Replacement of single-connection switch assembly of power window regulator

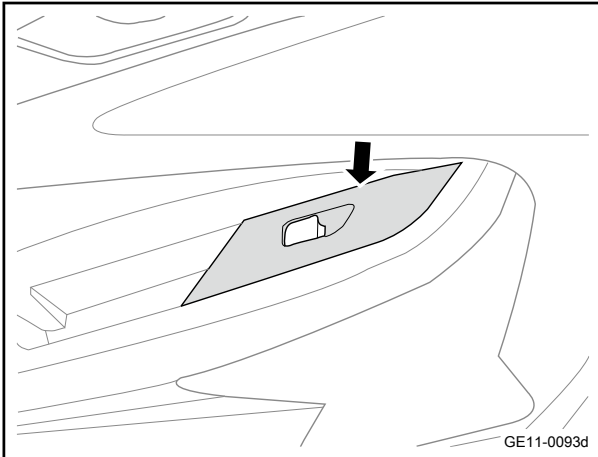
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

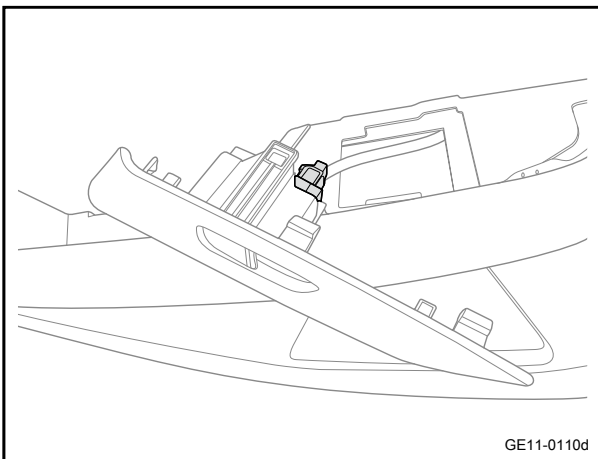
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Pry down the left rear door switch panel assembly.



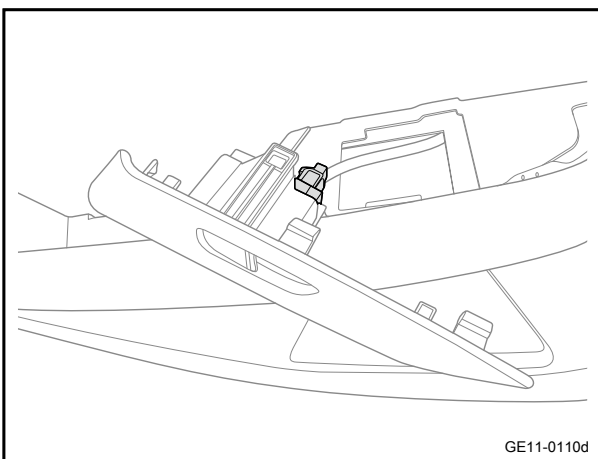
- 3 Disconnect the wire harness connector of the single-connection switch assembly of power window regulator.

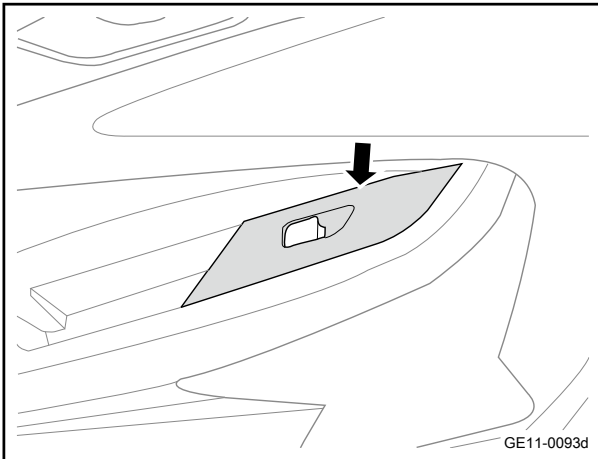


- 4 Take off the single-connection switch assembly of power window regulator.

Installation procedure

- 1 Move the single-connection switch assembly of power window regulator to the installation position.
- 2 Connect the wire harness connector of the single-connection switch assembly of power window regulator.





- 3 Install the left rear door switch panel assembly.

- 4 Connect the negative cable of battery.

### 10.4.7.8 Replacement of rear left door power window regulator assembly

#### Removal procedure

##### Caution

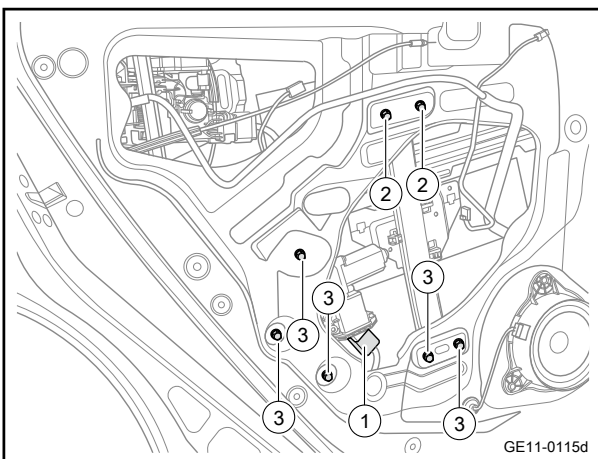
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

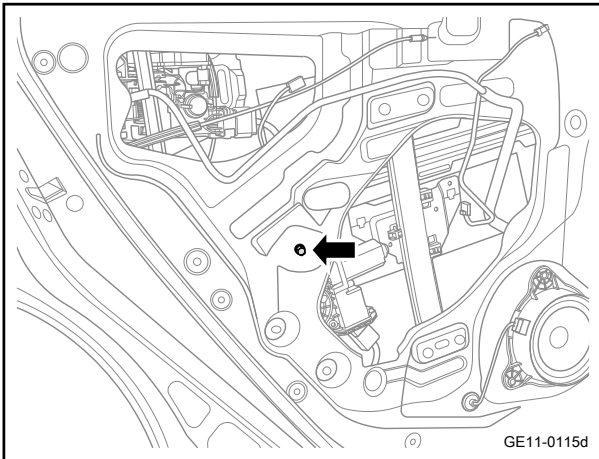
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left rear door glass assembly. See [Replacement of left front door glass assembly](#)
- 3 Disconnect the harness connector 1 of the rear left door power window regulator assembly.
- 4 Remove 2 fixing nuts 2 of the rear left door power window regulator assembly.
- 5 Remove 5 fixing bolt 3 of the rear left door power window regulator assembly.

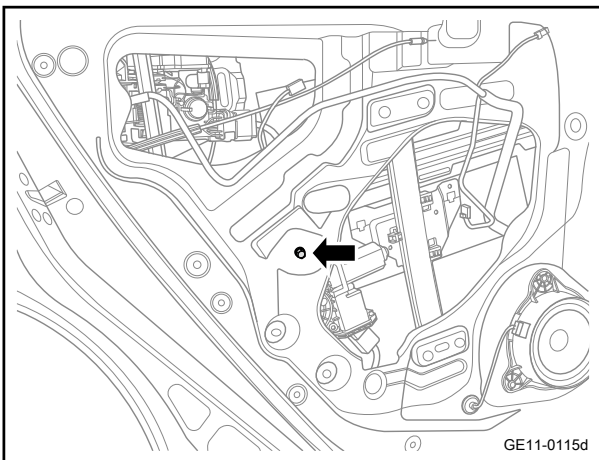




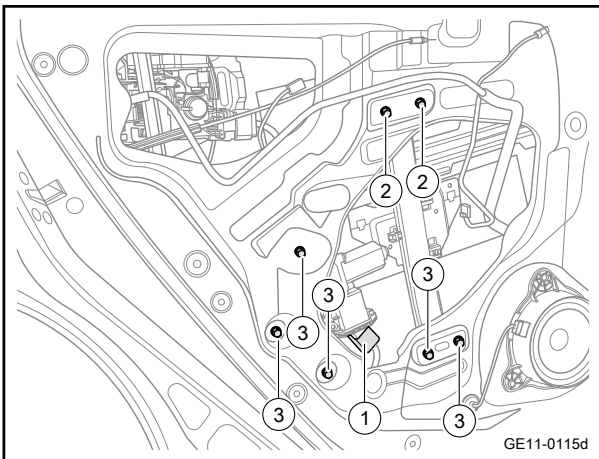


- 6 Remove 1 fixing nut of the rear left door power window regulator assembly.
- 7 Take off the rear left door power window regulator assembly.

Installation procedure



- 1 Move the left rear door power glass regulator assembly to the installation position.
- 2 Tighten 1 fixing nuts of the rear left door power window regulator assembly.



- 3 Install 5 fixing bolt 3 of the left rear door power window regulator assembly.  
Torque: 9N.m (metric) 6.6lb-ft (imperial system)
- 4 Install 2 fixing nuts 2 of the left rear door power window regulator assembly.  
Torque: 10N.m (metric) 7.4lb-ft (imperial system)
- 5 Connect the harness connector 1 of the rear left door power window regulator assembly.

- 6 Install the left rear door glass assembly
- 7 Connect the negative cable of battery.

**10.4.7.9 Replacement of the front left door glass assembly**

Removal procedure

**Caution**

The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

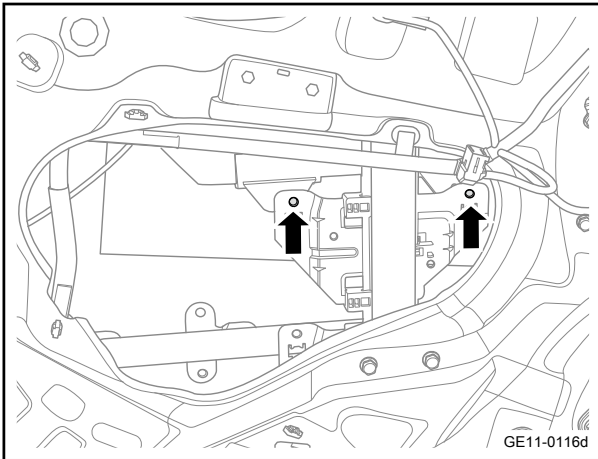
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

**Caution**

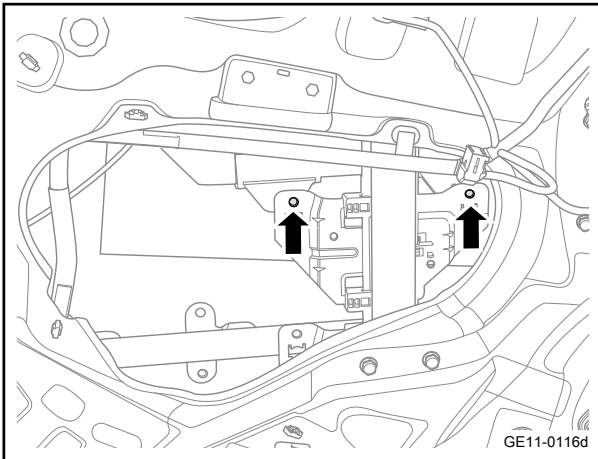
Raise the window glass to a suitable height before disconnecting the negative electrode of the battery for easy disassembly.

The glass must be supported when removing the glass fixing bolts.

- 2 Remove the left front door switch panel assembly. See [Replacement of the left front door switch panel assembly](#)
- 3 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 4 Remove the waterproof membrane of the left front door. See [Replacement of the left front waterproof membrane](#)
- 5 Remove the 2 fixing bolts of the left front door glass assembly.
- 6 Remove the left front door glass assembly.



Installation procedure



- 1 Move the left front door glass assembly to the installation position.

#### Caution

Insert the front and rear ends of the glass into the guide groove, hold the glass with both hands and run it up and down, confirm that there is no jamming, and put it into the lifting bracket near the B-pillar.

- 2 Install the 2 fixing bolts of the left front door glass assembly.

Torque: 9N·m (metric) 6.6lb-ft (imperial system)

#### Caution

Align the glass mounting hole with the regulator through hole for installation:

Pre-tighten the auxiliary positioning hole (waist-type hole) first, and then pre-tighten the main positioning hole (round hole).

Fasten the main positioning hole first, and then the auxiliary positioning hole.

- 3 Install the left front door waterproof membrane.
- 4 Install the FL door interior trim panel assembly.
- 5 Install the left front door switch panel assembly.
- 6 Connect the negative cable of battery.

### 10.4.7.10 Replacement of the left front door angled glass

#### Removal procedure

#### Caution

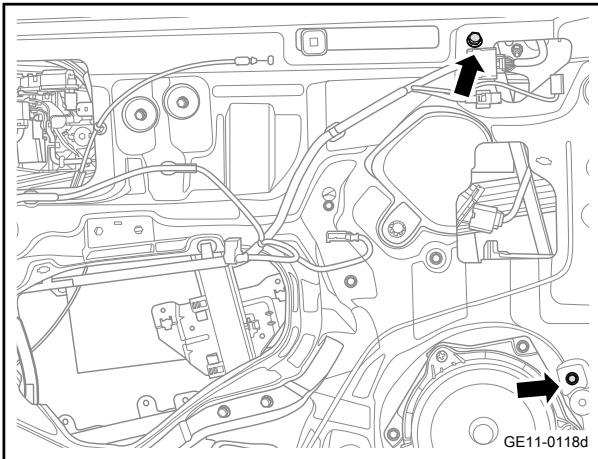
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

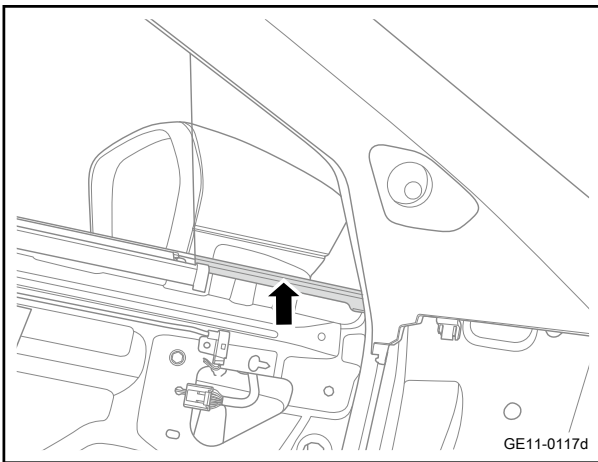
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door glass assembly. See [Replacement of left front door glass assembly](#)

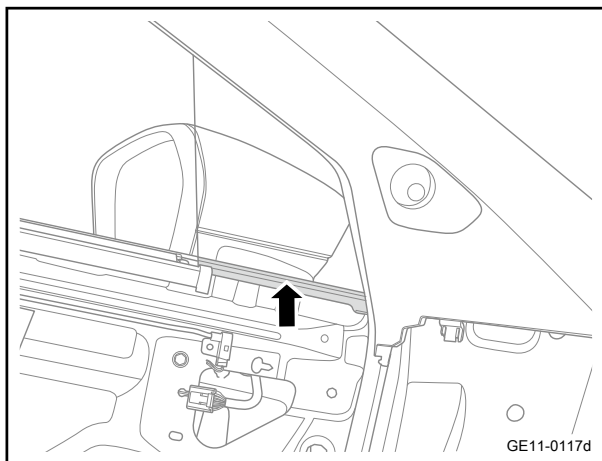


- 3 Remove the 2 fixing bolts of the front guide rail of the left front door glass assembly.
- 4 Remove the front guide rail of the left front door glass assembly.

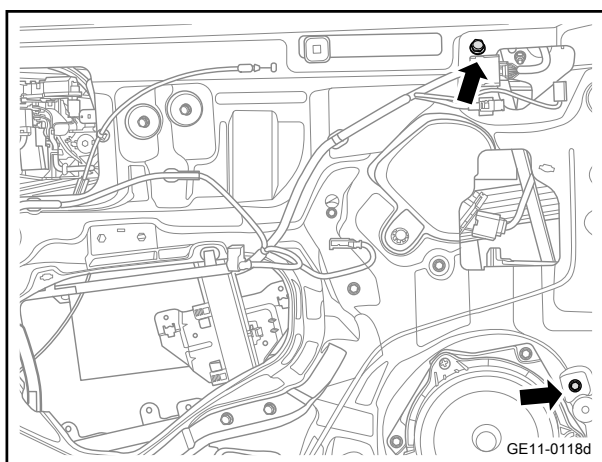


- 5 Remove the left front door corner window glass.

Installation procedure



- 1 Move the left front door corner window glass to the installation position.



- 2 Install the two fixing bolts of the front guide rail of the left front door glass assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the front left door glass lifter assembly.
- 4 Connect the negative cable of battery.

#### 10.4.7.11 Replacement of left rear door glass assembly

Removal procedure

**Caution**

The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

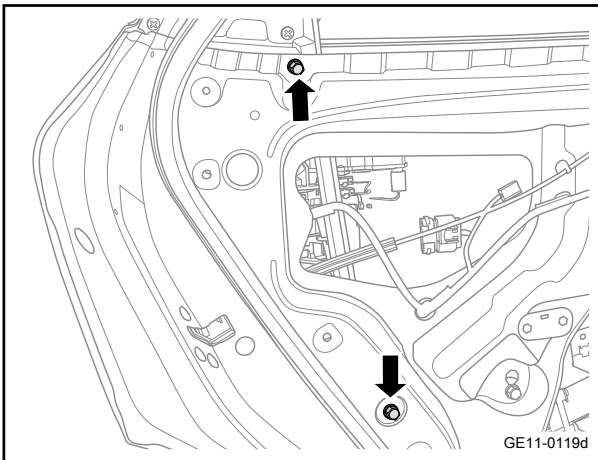
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

**Caution**

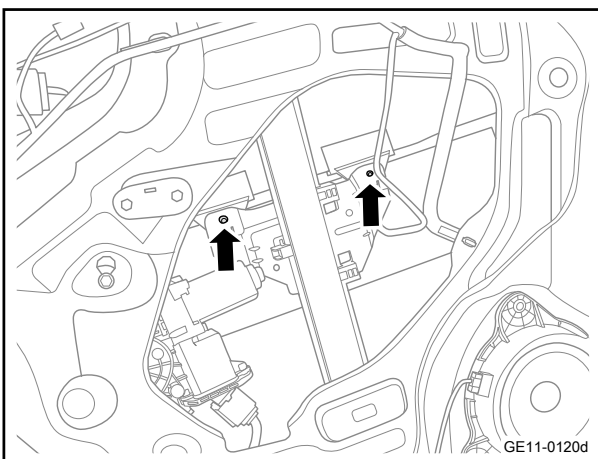
Raise the window glass to a suitable height before disconnecting the negative electrode of the battery for easy disassembly.

The glass must be supported when removing the glass fixing bolts.

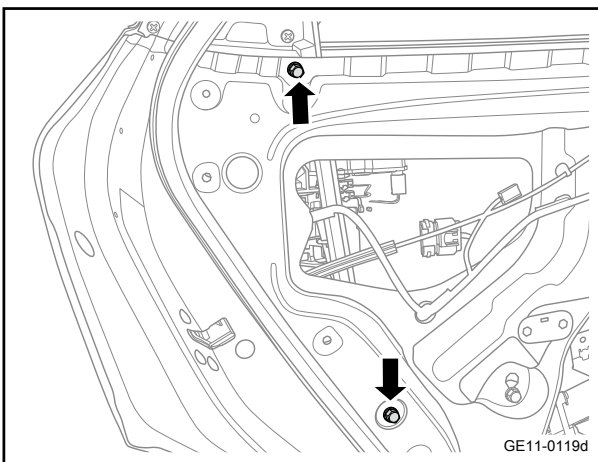
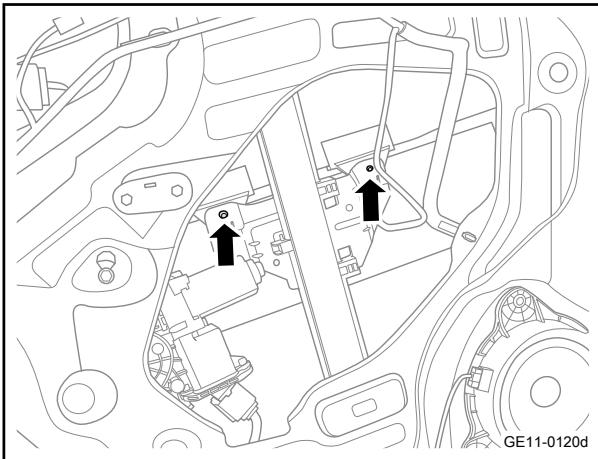
- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Remove the waterproof membrane of the left rear door. See [Replacement of the left rear waterproof membrane](#)
- 4 Remove the 2 fixing bolts of the left rear door glass guide groove.



- 5 Remove the 2 fixing bolts of the left rear door glass assembly.
- 6 Remove the left rear door glass assembly.



## Installation procedure



- 1 Move the left rear door glass assembly to the installation position.

- 2 Install the 2 fixing bolts of the left rear door glass assembly.

Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the two fixing bolts of the left rear door glass guide groove.

Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 4 Install the left rear door waterproof membrane.
- 5 Install the RL door interior trim panel assembly.
- 6 Connect the negative cable of battery.

#### 10.4.7.12 Replacement of front windshield glass assembly

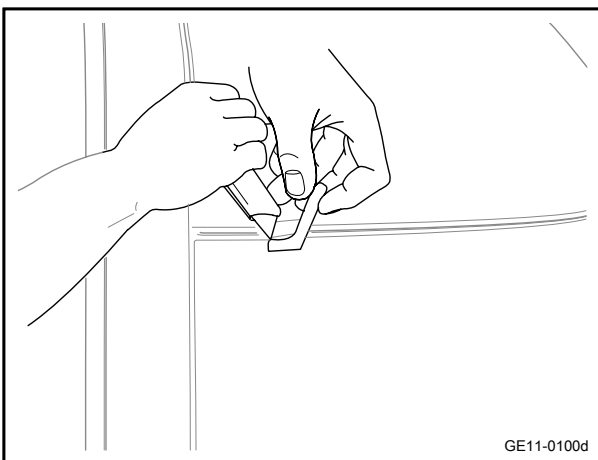
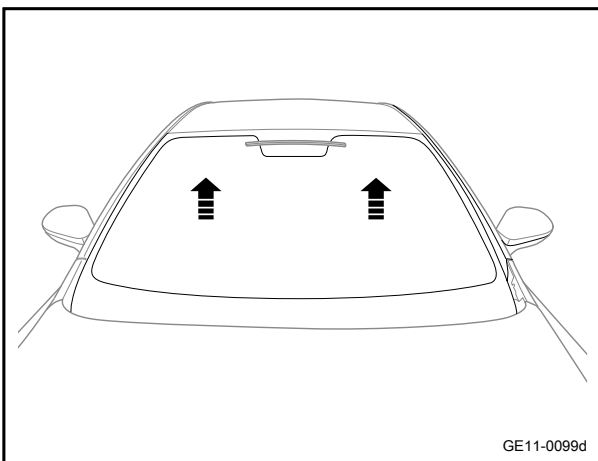
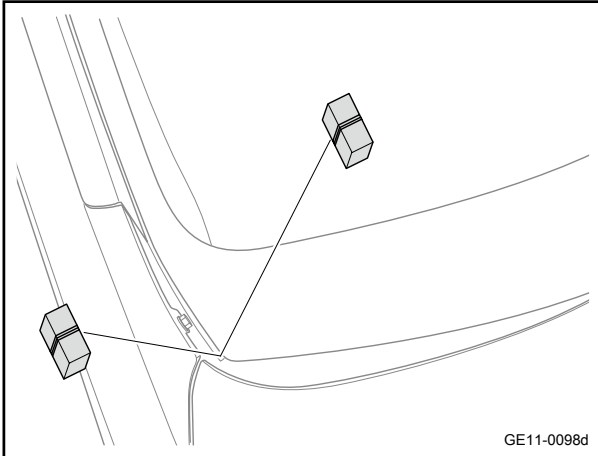
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front wiper arm assembly. See [Replacement of left wiper arm assembly](#)
- 3 Dismount the ventilation cover plate assembly. See [Replacement of vent cover assembly](#)



- 4 Disassemble the upper trim panel assembly on the left and right A-pillars. Refer to [Replacement of A-pillar upper trim panel assembly](#)
- 5 Remove the front monocular camera. See [Replacement of front monocular camera](#)
- 6 Remove the interior rearview mirror assembly. See [Replacement of interior rearview mirror assembly](#)
- 7 Use a thin wire to cut the glass glue around the front windshield glass assembly.

#### Caution

Wrap wooden blocks on both ends of the thin steel wire, which should be done by two people together to facilitate disassembly. Place a plastic gasket on the instrument panel during operation to protect the instrument panel from scratches.

- 8 Use tools to remove the windshield from the front windshield frame of the vehicle body.

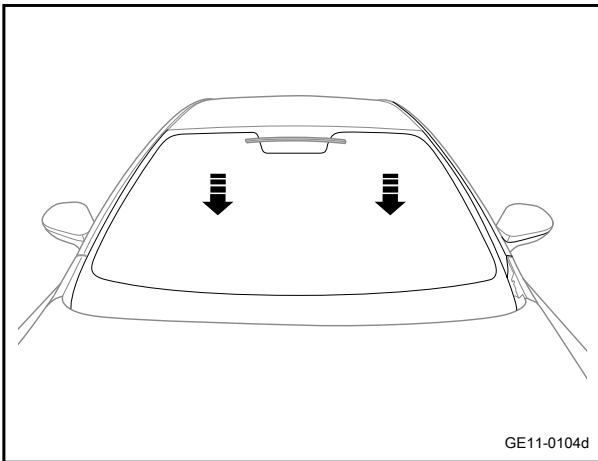
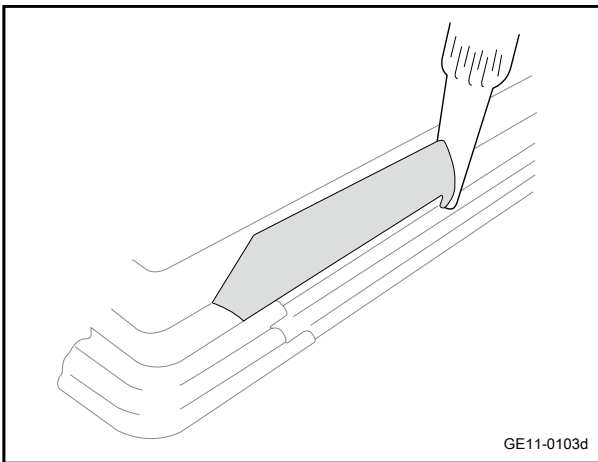
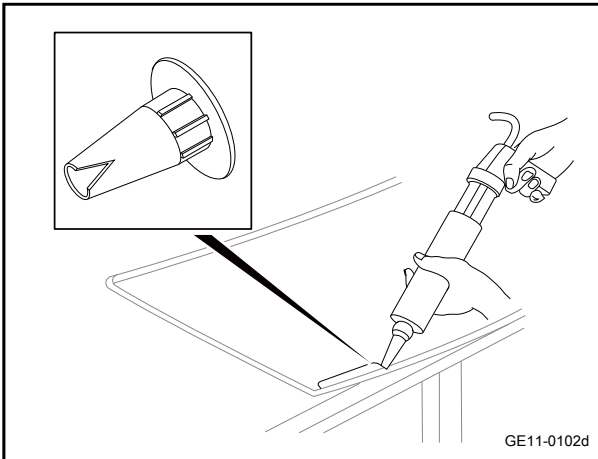
#### Caution

Watch out when operating. This step requires cooperation of two persons.

- 9 Use a blade to eliminate adhesive on the front windshield.
- 10 Use a blade to eliminate bonding agents on the window frame of front windshield for the body.
- 11 Use a dedicated cleaner to clean the inner surface edge of windshield.

Installation procedure





- 1 Use the Geely dedicated glass sealant nozzle to make the flange edge of the sprayed glass glue reach 8mm (0.3in) wide and 8mm (0.3in) high.

- 2 Use an extension-type filling gun to evenly and continuously paint the flange edge of glass sealants to ensure even width of this glue.

- 3 With the help of an assistant, install the windshield glass into the windshield frame of the vehicle body with a suction cup.

#### Caution

Watch out when operating. This step requires cooperation of two persons.

- 4 Press the windshield, and then stick the tape on the sealing strip, the windshield and the windshield frame to fix the windshield.
- 5 Let the adhesive dry for more than 24 hours.
- 6 Pour water on the front windshield to check for leaks. If there are water leaks, dry the front windshield and plug the leak with adhesive. If there is still water leak, remove the front windshield and repeat the entire repair procedure.
- 7 Install the interior rearview mirror assembly.
- 8 Install the front monocular camera.
- 9 Install the left and right A-pillar upper trim panel assembly.
- 10 Install the plenum mounting assembly.

- 11 Install the front wiper arm assembly.
- 12 Connect the negative cable of battery.

### 10.4.7.13 Replacement of rear windshield glass assembly

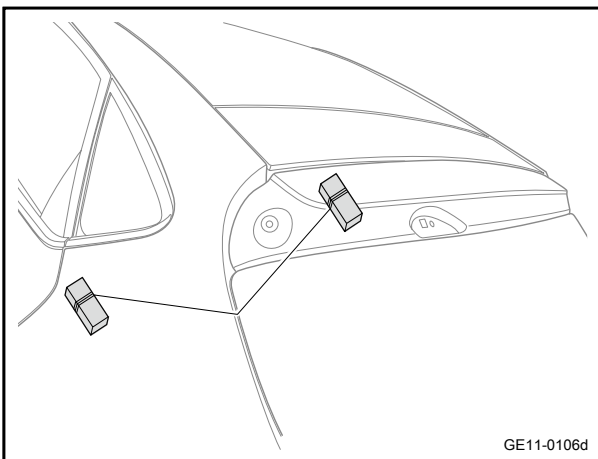
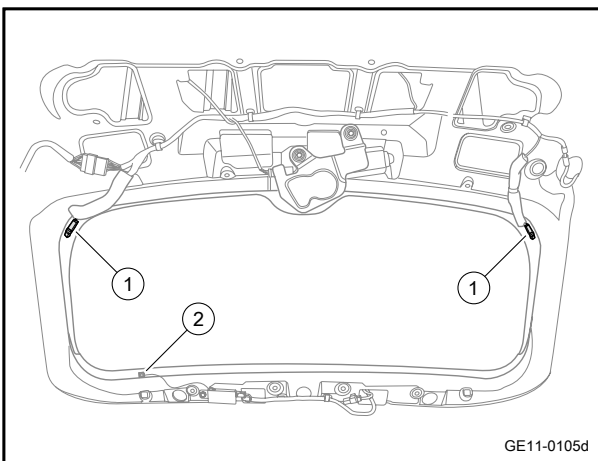
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

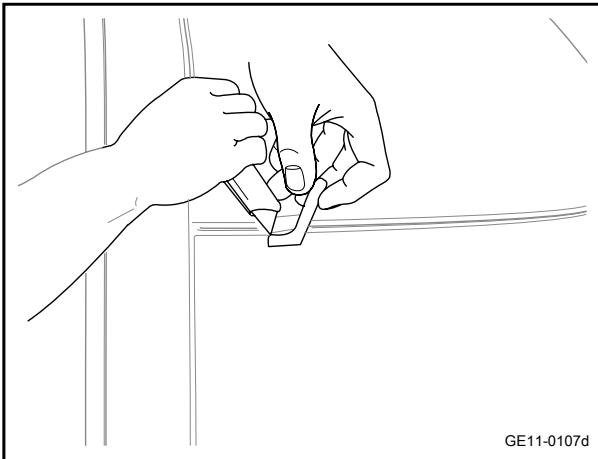
- 2 Disassemble the rear wiper arm blade assembly. See [Replacement of rear wiper blade assembly](#)
- 3 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)
- 4 Remove the spoiler assembly. Refer to [Replacement of the spoiler assembly](#)
- 5 Disconnect the rear defroster harness connector 1 and the antenna amplifier harness connector 2.



- 6 Use a thin steel wire to cut the glass sealant around the rear windshield.
- 7 Remove the backdoor glass assembly.

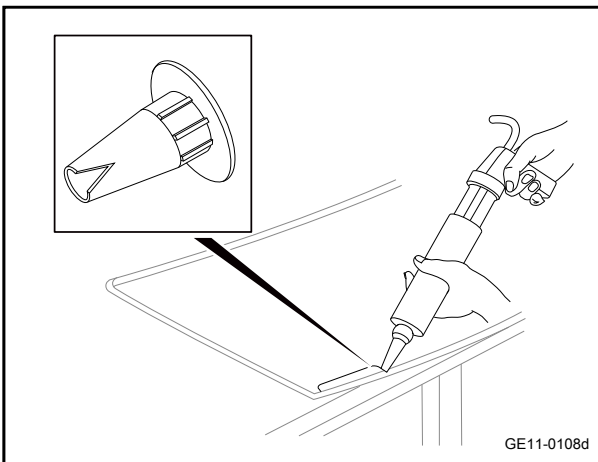
#### Caution

Wrap wooden blocks on both ends of the thin steel wire, which should be done by two people together to facilitate disassembly.

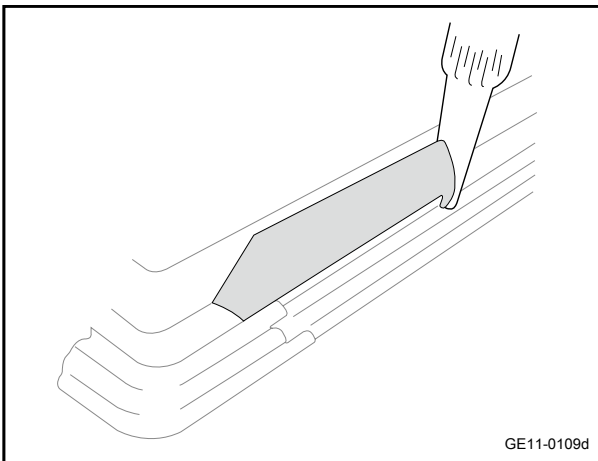


- 8 Use a blade to remove the adhesive from the backdoor glass.
- 9 Use a blade to remove the adhesive from the backdoor glass window frame of the vehicle body.
- 10 Use dedicated cleaner to clean the edge of the inner surface of the backdoor glass.

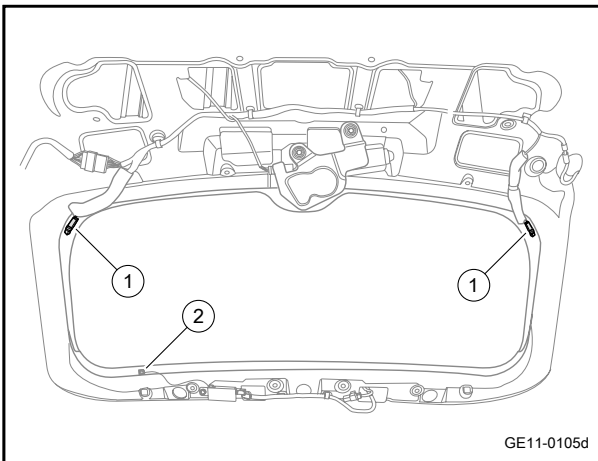
#### Installation procedure



- 1 Use the Geely dedicated glass sealant nozzle to make the flange edge of the sprayed glass glue reach 8mm (0.3in) wide and 8mm (0.3in) high.



- 2 Use an extension-type filling gun to evenly and continuously paint the flange edge of glass sealants to ensure even width of this glue.
- 3 With the help of an assistant, use a suction cup to install the back door glass into the rear windshield window frame of the vehicle body.
- 4 Press the backdoor glass, and then stick the tape on the backdoor glass and the window frame of the rear windshield to fix the backdoor glass.
- 5 Let the adhesive dry for more than 24 hours.
- 6 Pour water on the back door glass to check for leaks. If water leaks, dry the rear backdoor glass and plug the leak with glass sealant. If there is still water leak, remove the backdoor glass and repeat the entire repair procedure. Connect the rear windshield defogger harness connector.



- 7 Connect the rear defrosting harness connector 1 and the antenna amplifier harness connector 2.

- 8 Install spoiler assembly.
- 9 Install the lower trim panel assembly of the backdoor.
- 10 Install the rear wiper arm blade assembly.
- 11 Connect the negative cable of battery.

#### 10.4.7.14 Replacement of rear door corner window glass assembly

##### Removal procedure

##### Caution

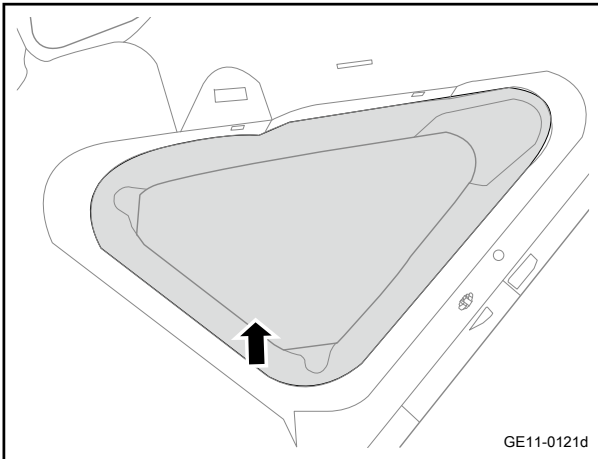
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left trim panel assembly of the luggage compartment. See [Replacement of left trim panel assembly of the luggage compartment](#)
- 3 Remove the upper trim panel assembly of the left C-pillar. Refer to [Replacement of left C-pillar upper trim panel assembly](#)



- 4 Use a suitable tool to cut and remove the rear door corner window glass glue.

**Caution**

When cutting the corner window glass, pay attention to the three pin positions in the position shown in the figure.

- 5 Remove the rear door corner window glass assembly.

**Installation procedure**

- 1 Coat the rear door corner window glass assembly with the specified glass glue as required.

**Caution**

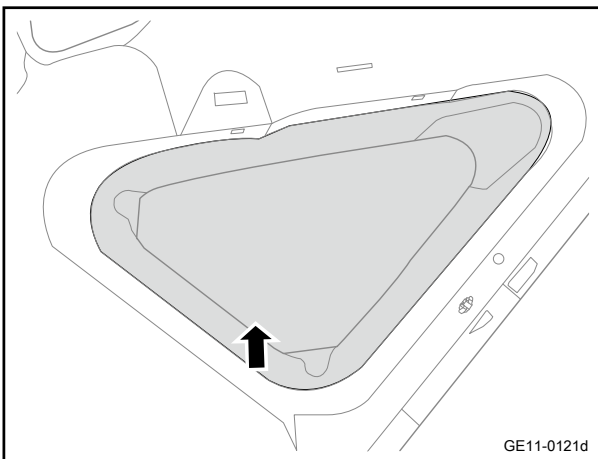
When cutting the corner window glass, pay attention to the three pin positions in the position shown in the figure.

- 2 Move the rear corner window glass to the installation position and install it.

**Caution**

Before installation, the corner window installation position needs to be wiped clean with a special cleaning agent.

When installing, pay attention to the three staples on the corner window, which need to be aligned and then installed.



- 3 Install the left C-pillar upper trim panel assembly.
- 4 Install the left trim panel assembly of the luggage compartment.
- 5 Connect the negative cable of battery.

## 10.5 Wiper/washing system

### 10.5.1 Specification

#### 10.5.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing nut of left/right wiper arm assembly	M10	35 - 41	25.8 - 30.3
Fixing bolt of spray kettle with washing motor assembly	M6×25	5 - 7	3.7 - 5.2
Rear wiper motor assembly fixing bolt	M6×25	6 - 8	4.4 - 5.9
Fixing nut of rear hanging piece	M6	6 - 8	4.4 - 5.9
Install wiper motor and fixing bolts of wiper linkage	M6×28	8 - 10	5.9 - 7.4

## 10.5.2 Description and Operation

### 10.5.2.1 Instructions and Operations

Wiper/ washer system is composed of the following parts:

- Vehicle Body Control Module (BCM)
- Wiper/washer switch
- Front washer fuse
- Washer fluid reservoir
- Front wiper motor and connecting rod
- Rear wiper motor and connecting rod
- Washer fluid pump
- Front wiper arm
- Washer nozzle

Wiper/washer can realize four control modes including high speed, low speed, intermittent and inching. The wiper switch is located at the control lever on the right side of steering column.

#### Front wiper/washer system

Front wiper system is composed of wiper/washer switch, wiper motor, connecting rod, wiper arm and wiper blades. The front wiper motor is of low current type. The BCM will continue to drive the front wiper until it returns to the stop position, and then turn off the power relay. The wiper system is driven by permanent magnetic motor. The wiper motor is installed on the front wall, connected with the front wiper linkage directly. Wiper switch is a component of the wiper/washer system.

#### Rear wiper/ washer system

Rear wiper system is composed of wiper/washer switch, wiper motor, connecting rod, wiper arm and wiper blades. The rear wiper motor is of high current type, the BCM will be turned off immediately, and the rear wiper will return under the self-return mechanism. There is a self-return unit in the rear wiper circuit, which is composed of a worm gear and a cam plate. Its purpose is to still maintain the circuit complete temporarily after the wiper/washer switch is turned off, and break the circuit until the wiper arm completely returns to the initial position. The wiper system is driven by a permanent magnetic motor. The wiper motor is installed on the rear door sheet, connected with the rear wiper linkage directly. Wiper switch is a component of the wiper/washer system.

#### Windshield washer system

The windshield washer system is composed of washer fluid, fluid reservoir, washer fluid pump, hose, nozzle and wiper/washer switch. The washer fluid reservoir of windshield is installed under the front right headlamp assembly, at front of front right wing liner. Washer fluid pump is fixed on the washer

fluid reservoir. The washer fluid pump sends the washer fluid to two nozzles through hose. Washer switch is also a component of wiper/washer switch.

### 10.5.3 How the system works

#### 10.5.3.1 System Working Principles

After front wiper switch provides signal to BCM and BCM receives grounding signal of wiper switch, front wiper motor is started. When the wiper switch is in low speed gear, current flows from the low speed brush of the motor into the armature coil, creating a large counter electromotive force, resulting in the motor rotation at low speed. When the wiper switch is in high speed gear, current flows from the high speed brush of the motor into the armature coil, creating a small counter electromotive force, resulting in the motor rotation at high speed. When the wipe washer is switched on, the wiper spray pump is in working status and the wiper motor starts to rotate in low gear. When the wiper switch is switched off, the wiper motor will not stop immediately and continue to turn for a while under the inertia effect of the armature. Meanwhile, the armature generates counter electromotive force, which will generate electric brake on the wiper motor and the motor will stop at the fixed position immediately.

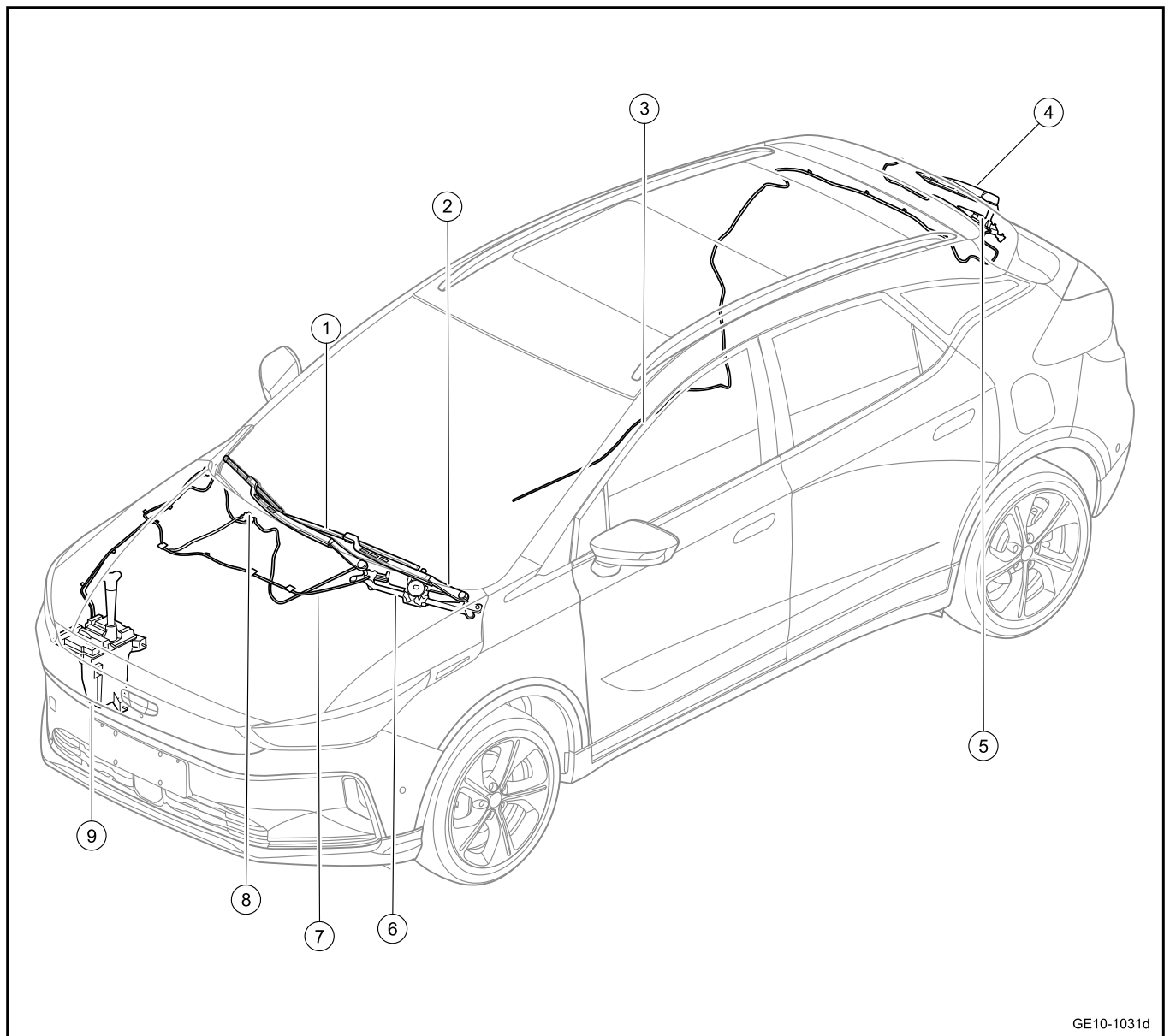
The wiper switch provides signals to the body control module (BCM). After the BCM receives the ground signal of the wiper switch, the rear wiper motor controls the rotation of the rear wiper motor; when the wiper switch is turned on, the BCM controls the rear wiper relay to pull in, and the current flows from the motor brushes into the armature coil, and then the wiper motor starts to rotate; when the wiper switch intermittently turns on, the wiper relay pulls on after the BCM intermittent control, and the current flows into the electricity from the motor brushes intermittently. Pivot coil, the rear wiper motor starts to rotate intermittently; when the wiper switch is off, if it is in the initial position, the rear wiper immediately stops rotating, if it is not in the initial position, the rear wiper will continue to rotate under the drive of the reset pin current until it reaches the initial position next time and stops rotating. After continuously operating the washer switch for 1 second, the wiper motor also starts to rotate.

The front/rear washing switch provides a signal to the BCM for windshield washing. After receiving the grounding signal of the washing switch, the BCM controls the forward/reverse of the washing motor to realize the water spray washing action of the front/rear windshields respectively.



## 10.5.4 Part location

### 10.5.4.1 Part Position

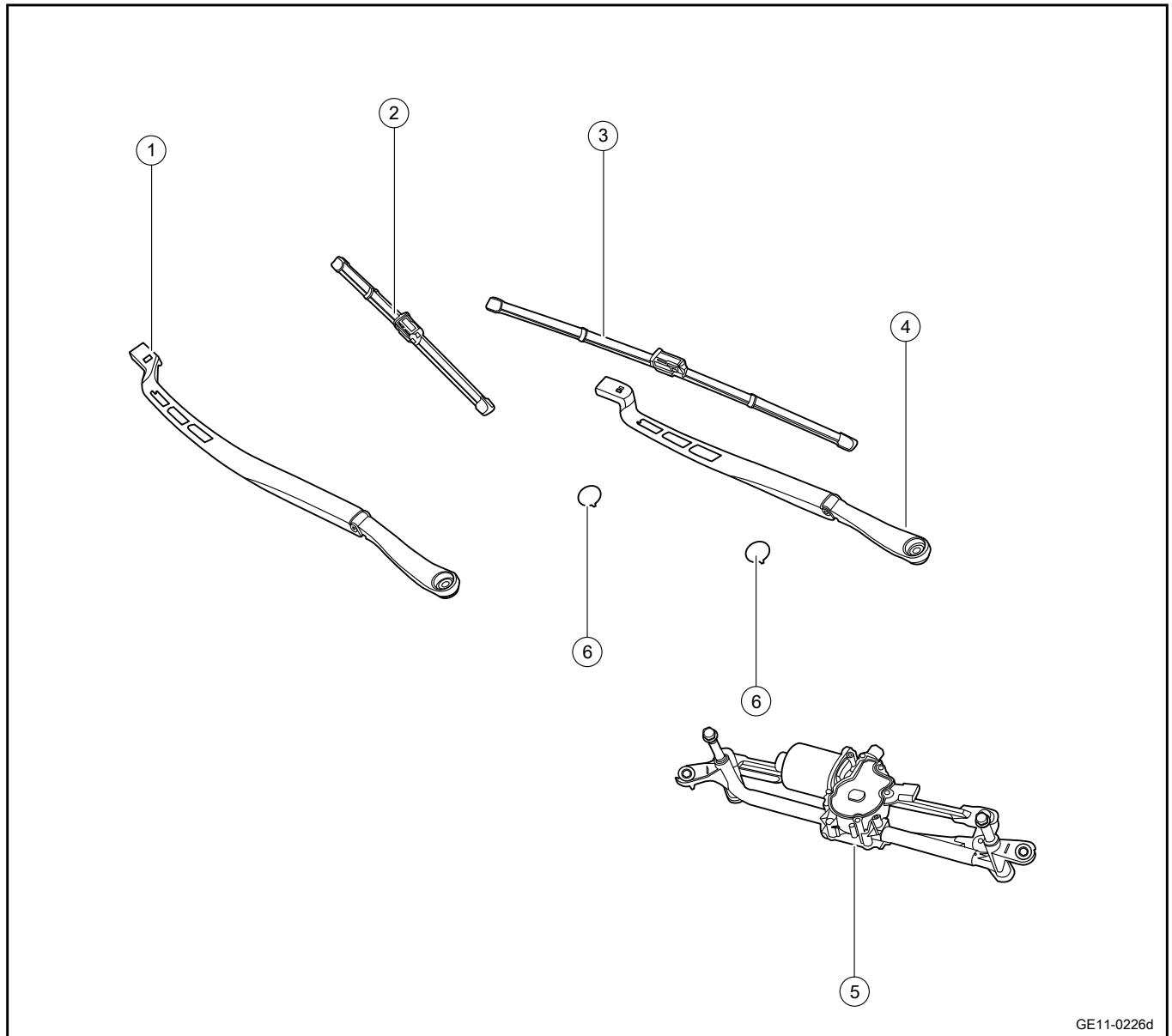


GE10-1031d

- |                                  |   |
|----------------------------------|---|
| 1. Left wiper blade assembly     | 6. Assembly-wiper motor and wiper linkage     |
| 2. Left wiper arm assembly       | 7. Front washer hose assembly                 |
| 3. Rear washer hose assembly     | 8. Front washer nozzle assembly               |
| 4. Rear wiper arm blade assembly | 9. Sprinkling can with washing motor assembly |
| 5. Rear wiper motor assembly     |   |

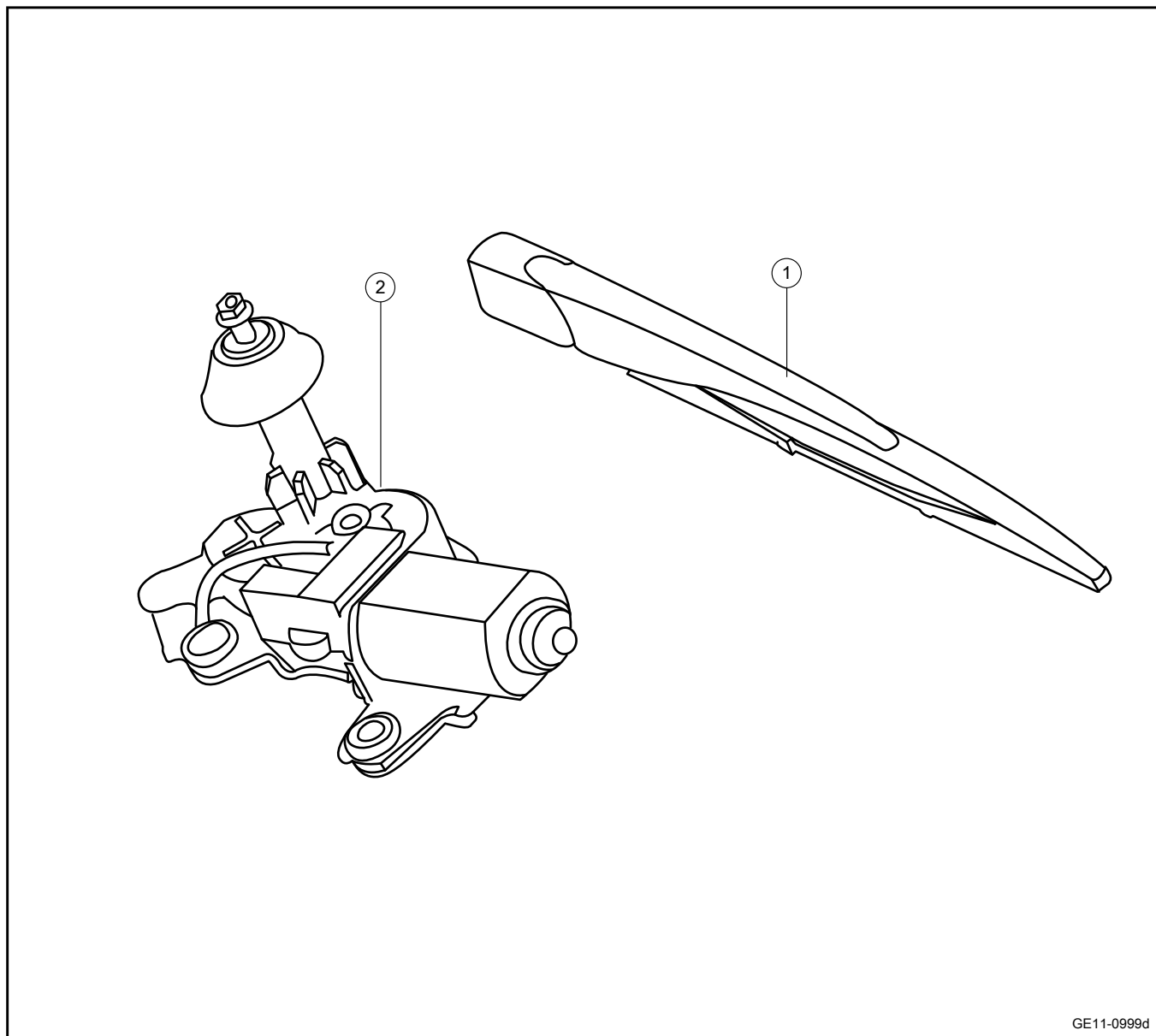
## 10.5.5 Exploded view

## 10.5.5.1 Exploded view (front wiper)



- |    |                           |    |  |
|----|---------------------------|----|--|
| 1. | Right wiper arm assembly  | 4. | Left wiper arm assembly                |
| 2. | Right wiper assembly      | 5. | Assembly-wiper motor and wiper linkage |
| 3. | Left wiper blade assembly | 6. | Nut caps of front wiper arm            |

10.5.5.2 Exploded view (rear wiper)



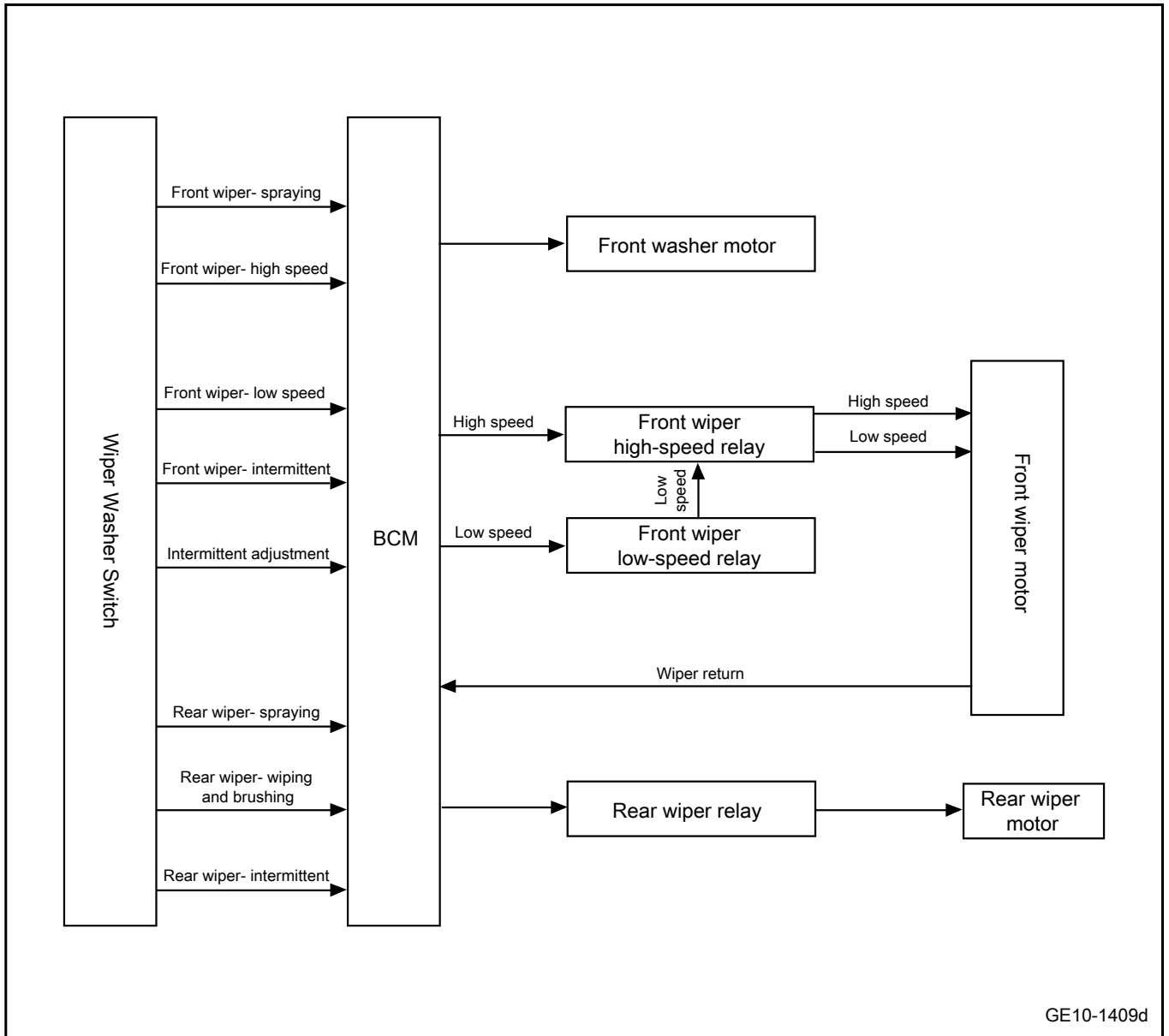
GE11-0999d

1. Rear wiper arm blade assembly

2. Rear wiper motor assembly

10.5.6 Electrical block diagram  
Electrical block diagram

10.5.6.1 Electrical schematic diagram of wiper system



## 10.5.7 Diagnostic information and steps

### 10.5.7.1 Diagnosis Description

Before diagnosis of wipers/cleaning system, refer to [Description and Operation](#) and [System Working Principles](#). Understand and familiarize yourself with working principle of wiper/ cleaning system before starting system diagnosis. This helps to determine the DTC steps when a fault occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of wiper/ cleaning system should start with visual inspection. The visual inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

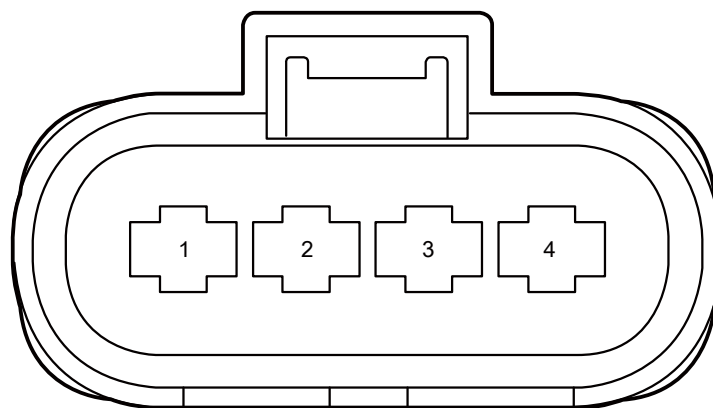
### 10.5.7.2 Routine inspection

- The check may affect the after-sales installations of wiper/cleaning system operations and it is needed to guarantee that these installations will not affect wiper/cleaning system operations.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and confirm that the washer liquid level of washer fluid tank is normal.

### 10.5.7.3 List of wiper terminals

#### CA18 front wiper motor harness connector

#### CA18 front wiper motor harness connector

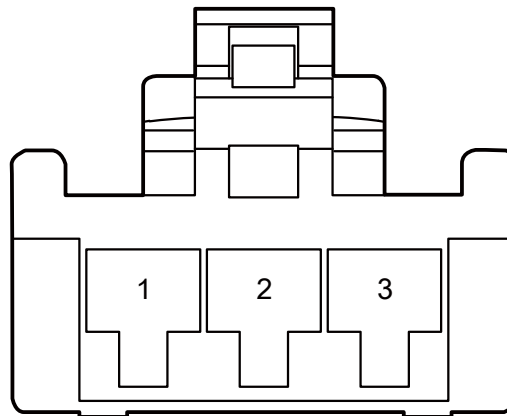


GE10-1572d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Front wiper motor grounding circuit
2	Reset	Front wiper motor reset signal input
3	Low Gear	Front wiper motor low speed signal input
4	High Gear	Front wiper motor high speed signal input

## SO89 rear wiper motor harness connector

## SO89 rear wiper motor harness connector

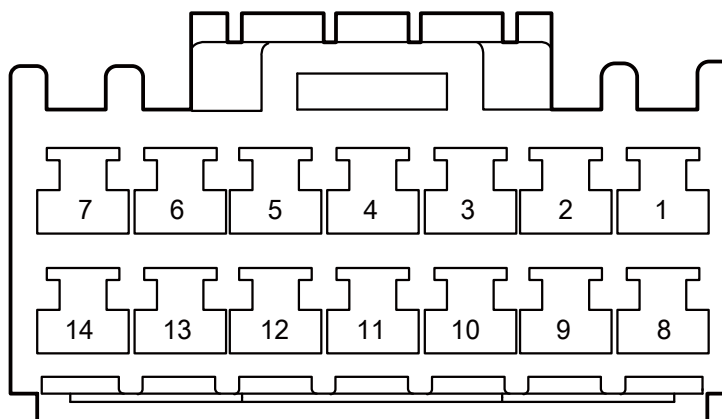


GE10-1573d

Terminal No.	Terminal name	Terminal description
1	Reset signal	Rear wiper motor reset signal input
2	Motor positive	Rear wiper motor control signal input
3	Motor negative	Grounding circuit of the rear wiper motor

IP42 wiper combination switch harness connector

IP42 wiper combination switch harness connector



GE10-1454d

Terminal No.	Terminal name	Terminal description
1	Front wiper inching signal	Front wiper inching signal output
2	Front wiper reset signal	Front wiper reset signal output
3	Front wiper low speed signal	Front wiper low speed signal output
4	-	-
5	Rear washer switch signal	Rear washer switch signal output
6	Ground connection	Rear wiper, rear washing ground circuit
7	Rear wiper intermittent signal	Rear wiper intermittent signal output
8	Front wiper intermittent signal	Front wiper intermittent signal output
9	Front wiper high speed signal	Front wiper high speed signal output
10	Ground connection	Front wiper, front washing ground circuit
11	Front washer switch signal	Front washer signal output
12	Intermittent time adjustment switch negative	Intermittent time adjustment switch signal (negative signal)

Terminal No.	Terminal name	Terminal description
13	Intermittent time adjustment switch positive	Intermittent time adjustment switch signal (positive signal)
14	Rear wiper switch signal	Rear wiper switch signal output

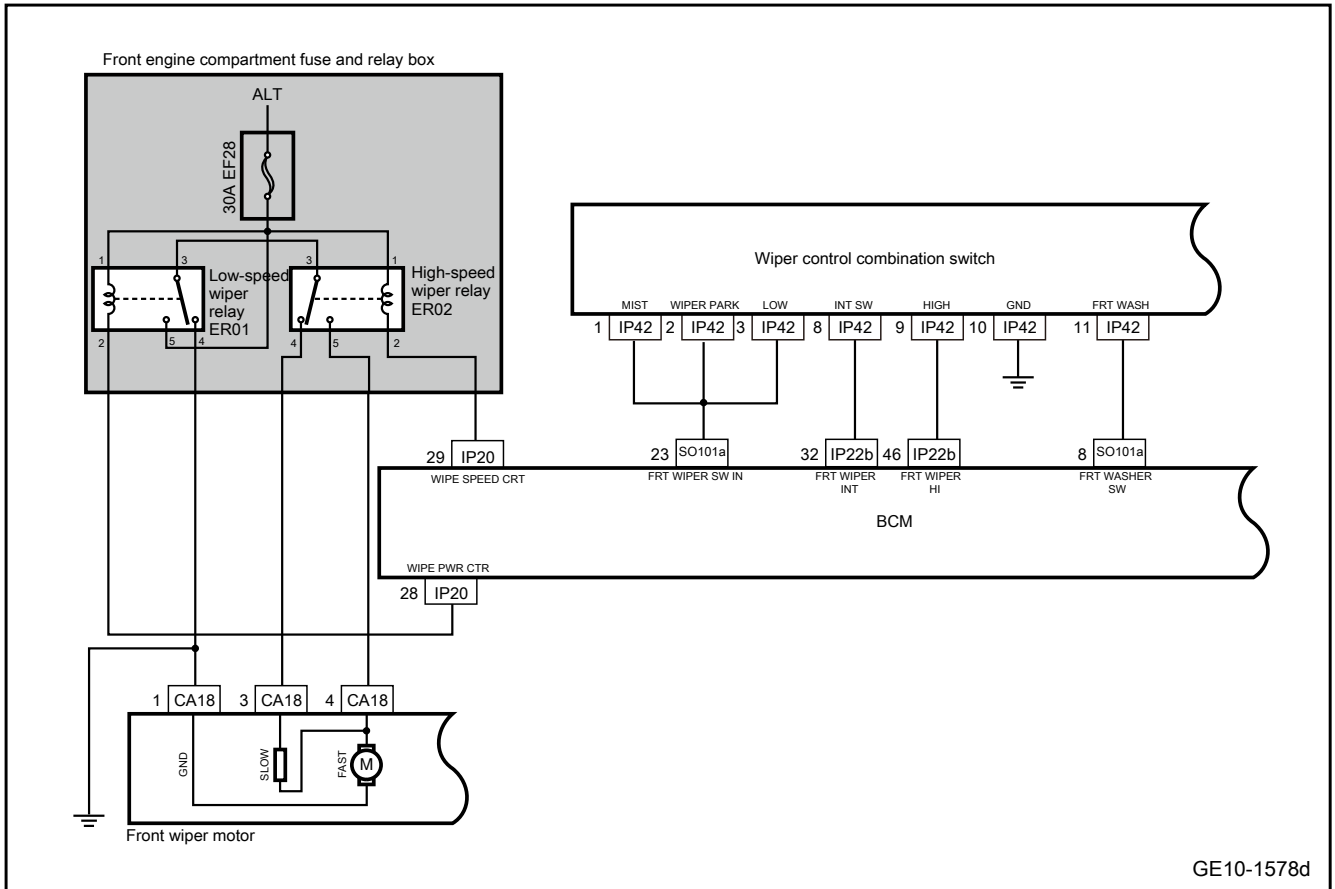
#### 10.5.7.4 Fault symptom table

Symptom	Possibility and cause	Measures
Wipers are inoperative at all gears	1. Fuse	Refer to <a href="#">Woper does not work at any gear</a>
	2. Low-speed wiper relay	
	3. High-speed wiper relay	
	4. Harness and connector	
	5. BCM	
	6. Wiper motor	
	7. Wiper combination switch	
The wiper is inoperative at low gear	1. Harness and connector	See <a href="#">Wiper does not work in low gear</a>
	2. High-speed wiper relay	
	3. Wiper motor	
	4. BCM	
	5. Wiper combination switch	
The wiper is inoperative at high gear	1. Harness and connector	See <a href="#">Wiper does not work in high gear</a>
	2. High-speed wiper relay	
	3. Wiper motor	
	4. BCM	
	5. Wiper combination switch	
The front rain wiper is inoperative low gear at intermittent gear	1. Harness and connector	Refer to inoperation of the front rain wiper at intermittent gear
	2. BCM	
	3. Wiper combination switch	
Invalid automatic reset function of wipers	1. Wiper motor	Refer to <a href="#">Invalid automatic reset function of wipers</a>
	2. Harness and connector	
	3. BCM	
Inoperative rear rain wiper	1. Fuse	Refer to <a href="#">Inoperative rear rain wiper</a>
	2. Rear wiper relay	
	3. Harness and connector	
	4. BCM	
	5. Rear wiper motor	
	6. Wiper combination switch	
The wiper does not spray water	1. Harness and connector	See <a href="#">Wiper does not spray water</a>
	2. Wiper combination switch	
	3. Washer motor	
	4. BCM	



### 10.5.7.5 Wipers are inoperative at all gears

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front wiper motor, wiper combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the wiper combination switch is blocking.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the EF28 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check the front wiper relay.

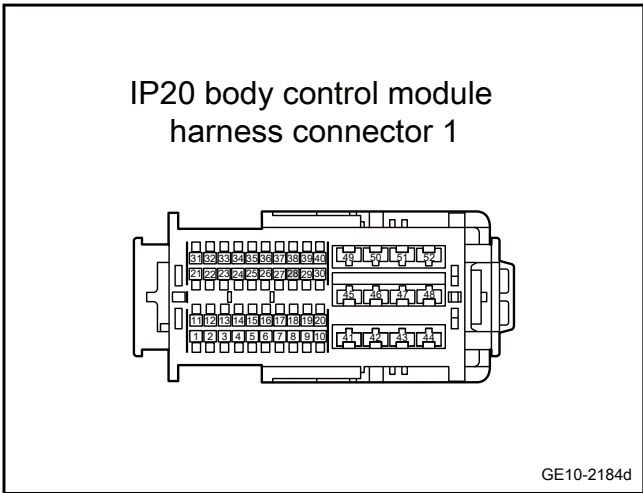
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 4** Check whether the harness between the low-speed wiper relay and BCM is circuit open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	ER01(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

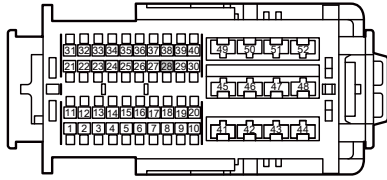
No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between low speed wiper relay and BCM is shorted to power supply.

IP20 body control module harness connector 1



GE10-2185d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Check whether the harness between low speed wiper relay and high speed wiper relay is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the high speed wiper relay ER02.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER02(3)	ER01(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 7** Check whether the harness between low speed wiper relay and high speed wiper relay is shorted to GND.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the high speed wiper relay ER02.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER02(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

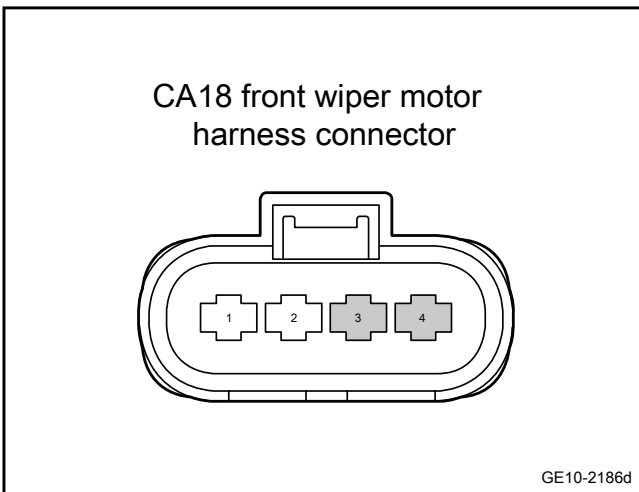
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between high speed wiper relay and front wiper motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the high speed wiper relay ER02.
- C. Disconnect front wiper motor harness connector CA18.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER02(4)	CA18(3)	Standard resistance: less than 1Ω
ER02(5)	CA18(4)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Check whether the circuit between high speed wiper relay and front wiper motor is short to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the high speed wiper relay ER02.
- C. Disconnect front wiper motor harness connector CA18.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER02(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
ER02(5)		

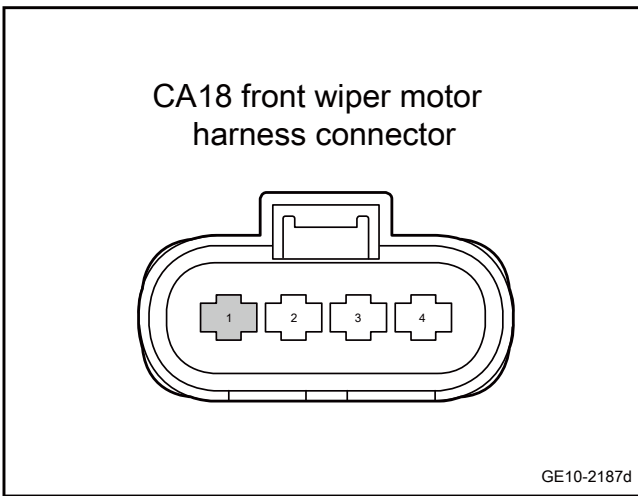
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10	Check front wiper motor grounding line.
---------	---



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

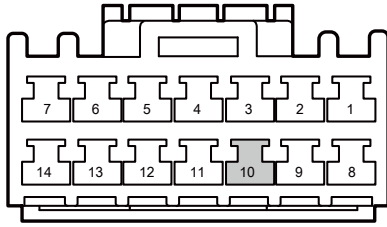
No

Repair faulty lines or replace the harness.

Yes

Step 11	Check whether the grounding harness of wiper combination switch is functioning properly.
---------	--

IP42 wiper combination switch harness connector



GE10-2188d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector IP42.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(10)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

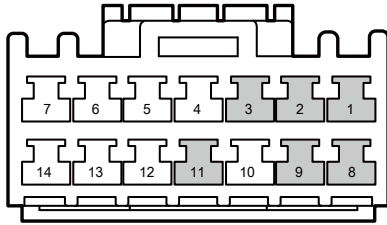
No

Repair faulty lines or replace the harness.

Yes

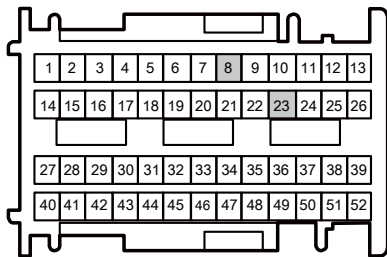
Step 12	Check whether the circuit between the wiper combination switch and BCM is open.
---------	---

IP42 wiper combination switch harness connector



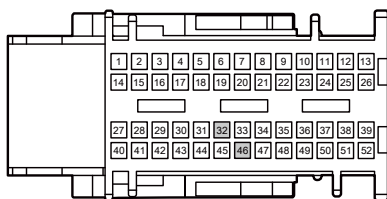
GE10-2189d

SO101a body control module harness connector 7



GE10-2190d

IP22b body control module harness connector 3



GE10-2191d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector IP42.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(1)	SO101a(23)	Standard resistance: less than 1Ω
IP42(2)	SO101a(23)	
IP42(3)	SO101a(23)	
IP42(8)	IP22b(32)	
IP42(9)	IP22b(46)	
IP42(11)	SO101a(8)	

- E. Confirm whether the measured value meets the standard.

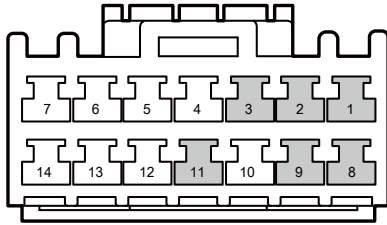
Repair faulty lines or replace the harness.

No

Yes

Step 13	Check whether the circuit between the wiper combination switch and BCM is short to GND.
------------	---

IP42 wiper combination switch harness connector



GE10-2192d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector IP42.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP42(2)		
IP42(3)		
IP42(8)		
IP42(9)		
IP42(11)		

- E. Confirm whether the measured value meets the standard.

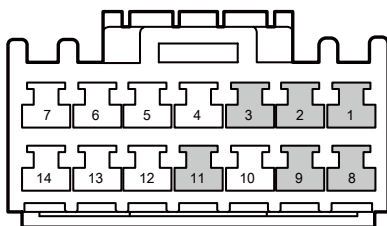
No

Repair faulty lines or replace the harness.

Yes

Step 14	Check whether the circuit between the wiper combination switch and BCM is short to power supply.
---------	--

IP42 wiper combination switch harness connector



GE10-2193d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector IP42.
- C. Disconnect BCM harness connector SO101a and IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(1)	Vehicle body is grounded.	Standard voltage: equal to 0V
IP42(2)		
IP42(3)		
IP42(8)		
IP42(9)		
IP42(11)		

- F. Confirm whether the measured value meets the standard.



No

Repair faulty lines or replace the harness.

Yes

Step 15	Replace front wiper motor.
------------	----------------------------

- A. Replace front wiper motor, refer to Replacement of front wiper motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 16	Replace wiper combination switch.
------------	-----------------------------------

- A. Replace wiper combination switch, refer to Replacement of wiper combination switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 17	Replace the BCM
------------	-----------------

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 18	Reprogram and reset the BCM.
------------	------------------------------

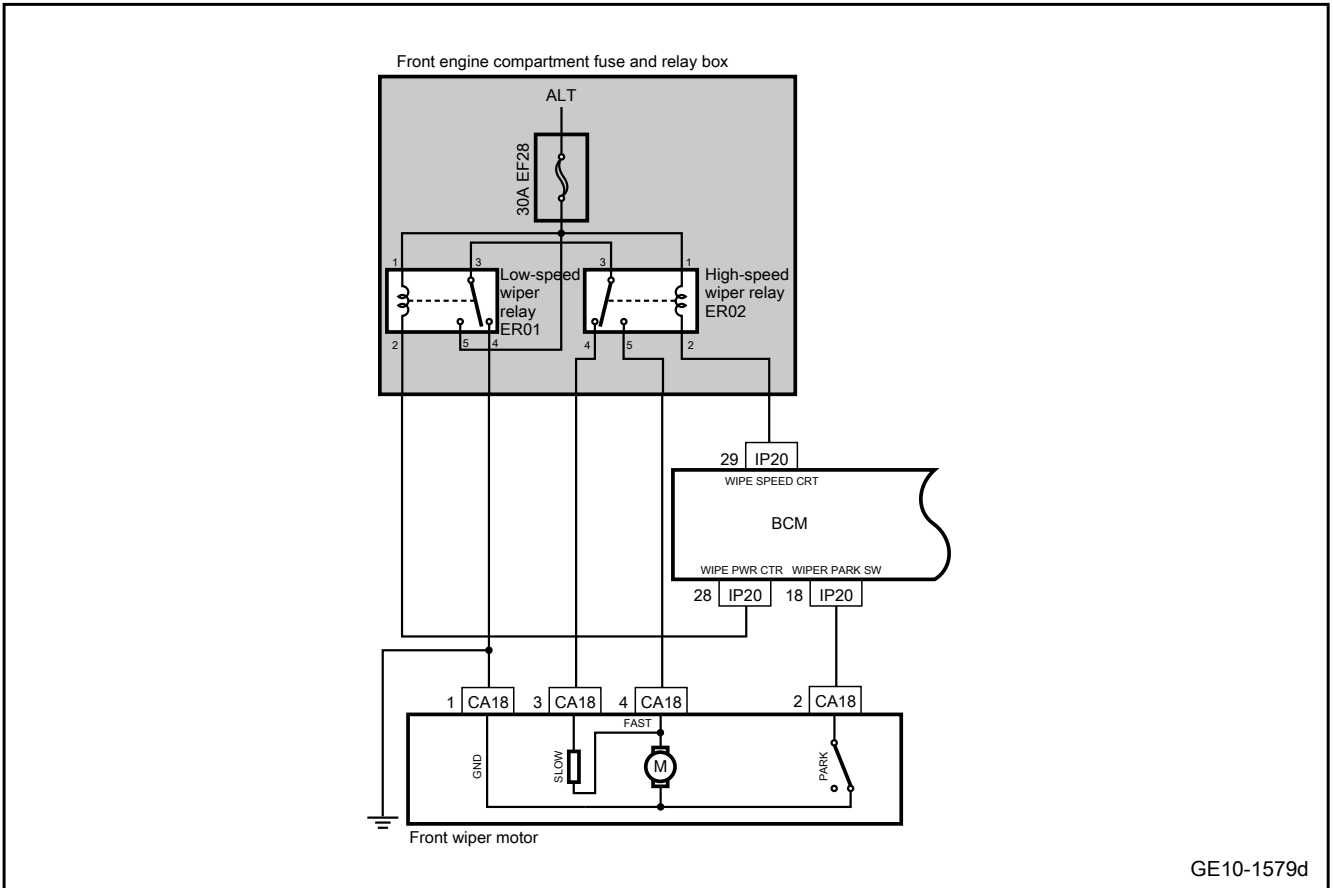
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 19	System is normal.
------------	-------------------

### 10.5.7.6 Invalid automatic reset function of wipers

1. Schematic circuit diagram:



GE10-1579d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the front wiper operates normally without interference.
- B. Check the front wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Check the wiper combination switch for the phenomenon of catching.
- D. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the front wiper relay.
--------	------------------------------

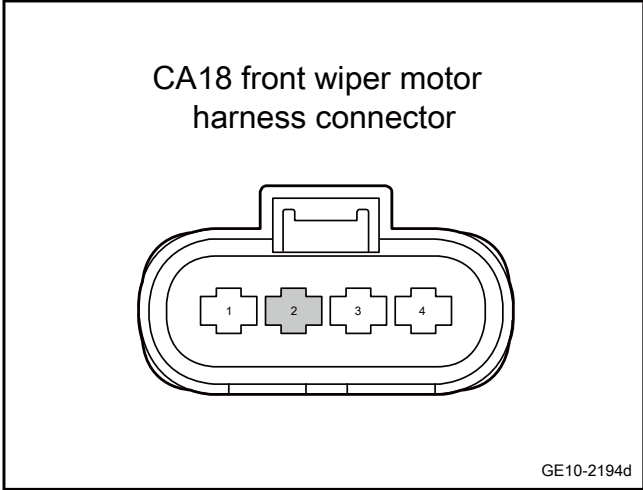
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

No

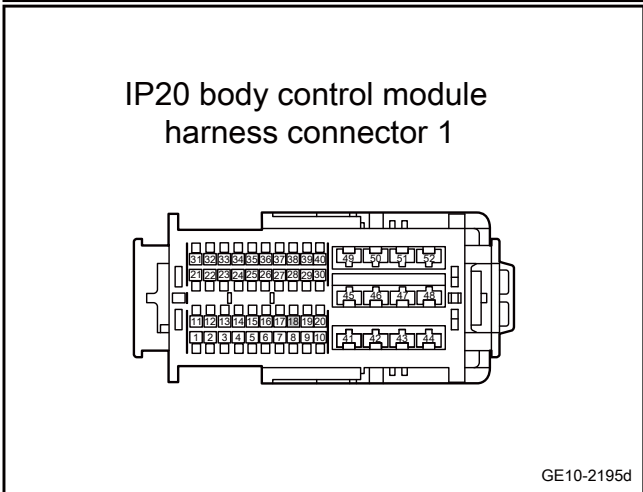
**Step 3** Check whether the harness between the front wiper motor and BCM is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(2)	IP20(18)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

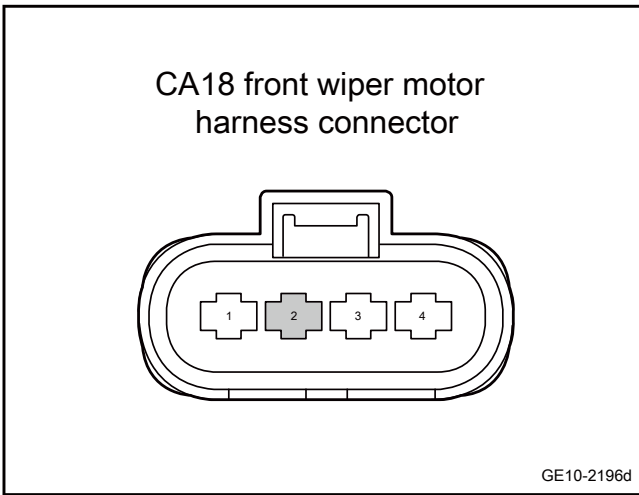


No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the front wiper motor and BCM is shorted to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the BCM harness connector IP20.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(2)	Vehicle body is grounded.	Standard voltage: 0V

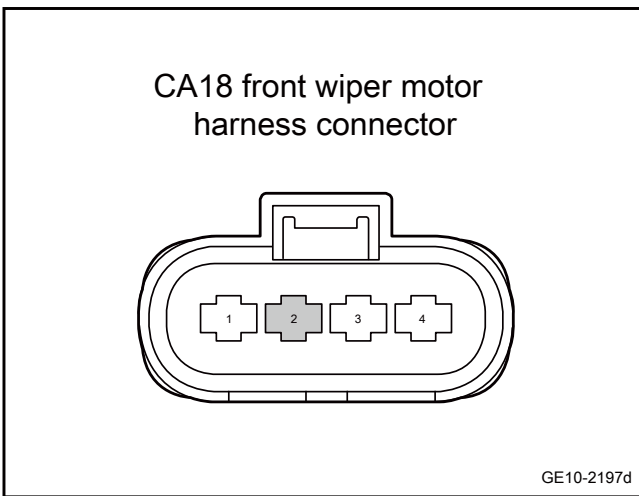
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the harness between the front wiper motor and BCM is shorted to GND.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace front wiper motor.

- A. Replace front wiper motor, refer to Replacement of front wiper motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the BCM

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 8 Reprogram and reset the BCM.

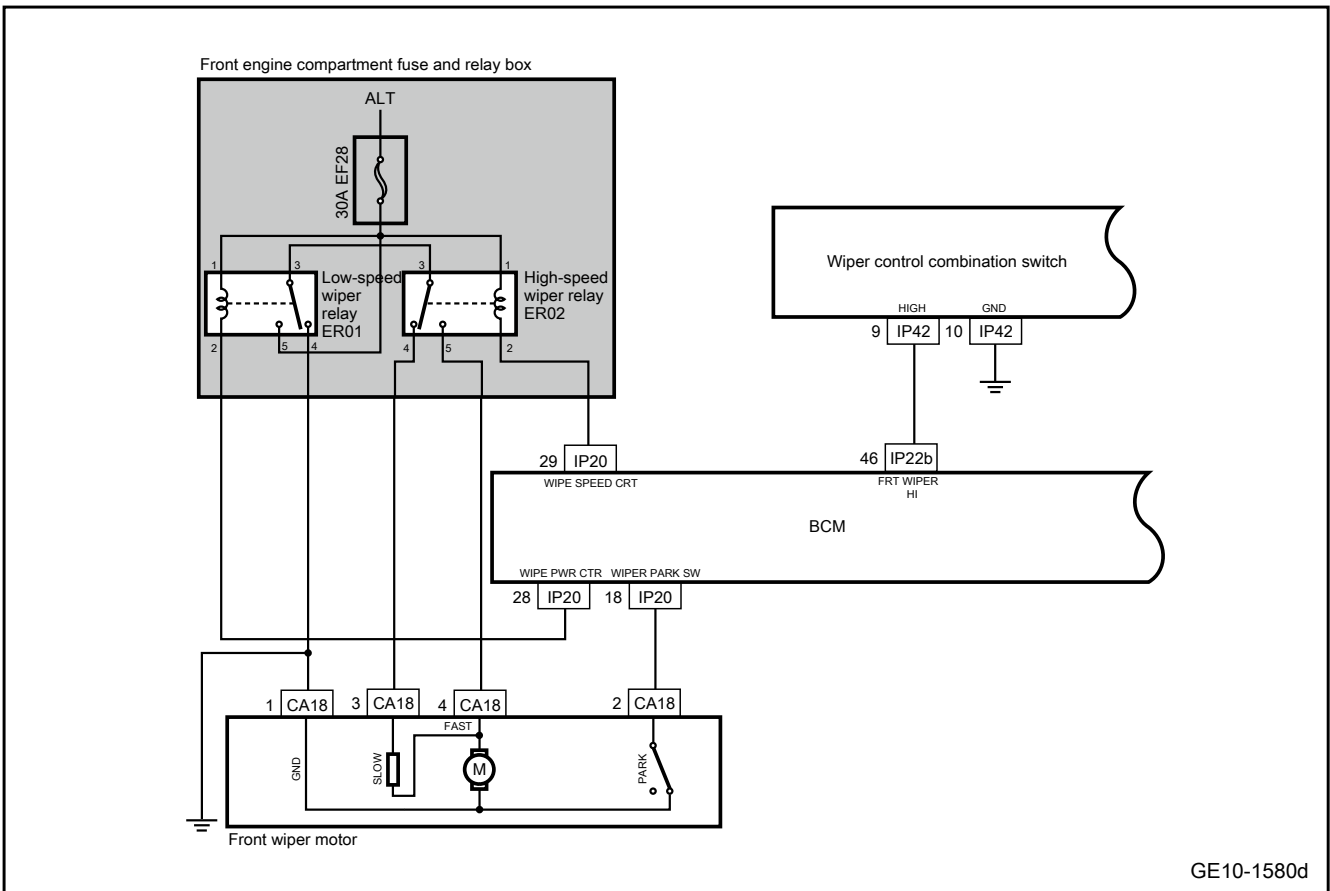
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9 System is normal.

### 10.5.7.7 The wiper is inoperative at high gear

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the wiper combination switch, BCM, wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check the wiper combination switch for the phenomenon of catching.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the front wiper relay.

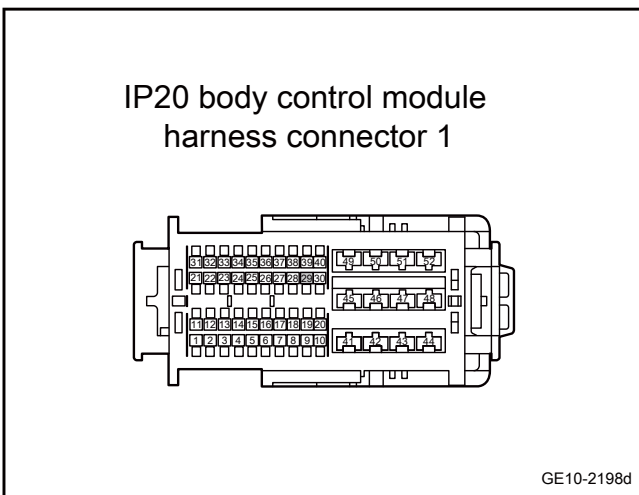
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

No

Step 3 Check whether the harness between the high speed wiper relay and BCM is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(29)	ER02(2)	Standard resistance: less than 1Ω

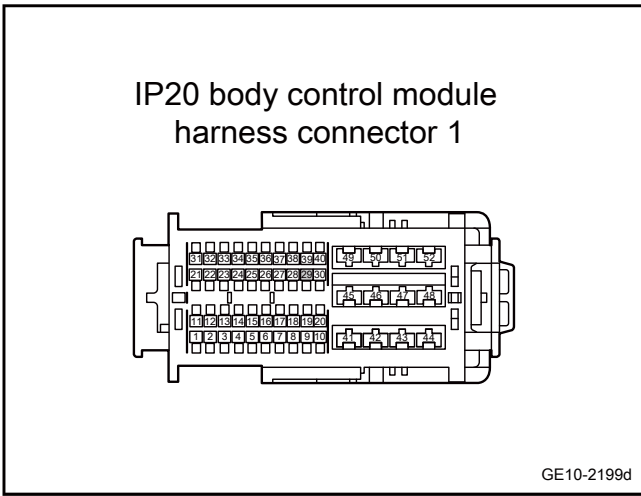
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between high speed wiper relay and BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Unplug the high speed wiper relay ER02.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

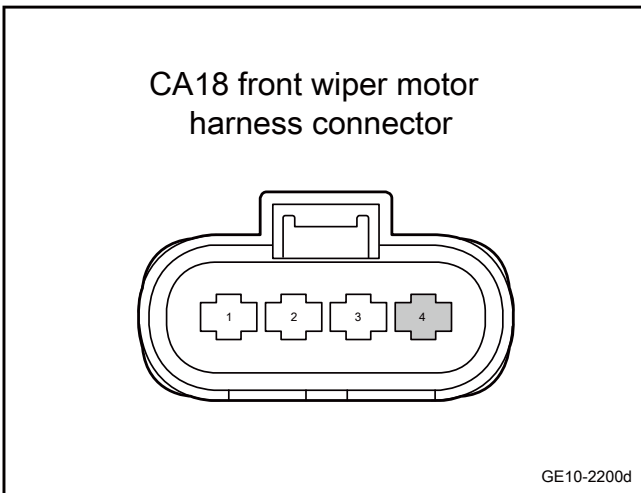
Measure terminal 1	Measure terminal 2	Standard value
IP20(29)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 5** Check whether the harness between high speed wiper relay and front wiper motor is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(4)	ER02(5)	Standard resistance: less than 1Ω

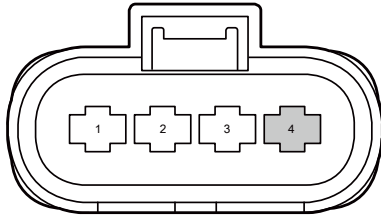
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between high speed wiper relay and front wiper motor is short to ground.

CA18 front wiper motor harness connector



GE10-2201d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

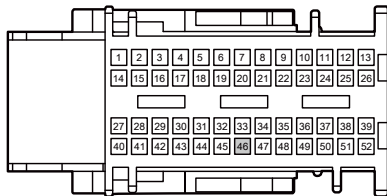
No

Repair or replace the harness.

Yes

**Step 7** Check whether the harness between the wiper combination switch and BCM is open.

IP22b body control module harness connector 3



GE10-2202d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect wiper combination switch harness connector IP42.
- D. Use a multimeter to measure each terminal according to the following table:

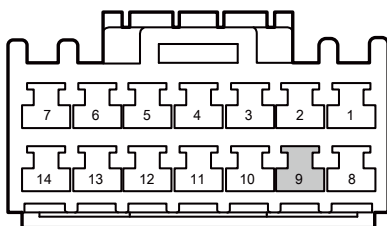
Measure terminal 1	Measure terminal 2	Standard value
IP22b(46)	IP42(9)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

IP42 wiper combination switch harness connector

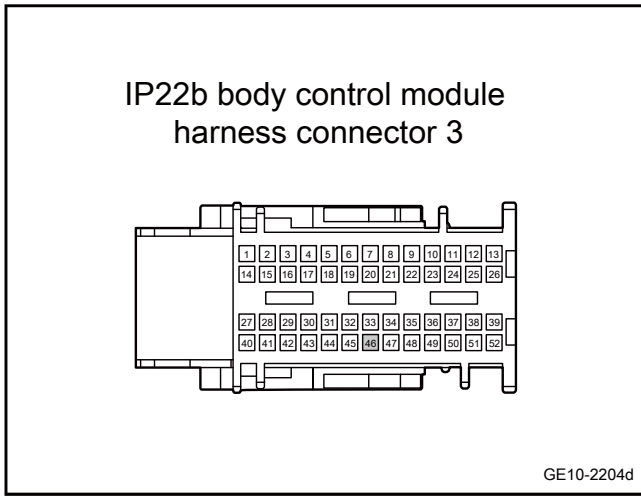


GE10-2203d

Yes



**Step 8** Check whether the circuit between the wiper combination switch and BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Disconnect wiper combination switch harness connector IP42.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(46)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace front wiper motor.

- A. Replace front wiper motor, refer to Replacement of front wiper motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 10** Replace wiper combination switch.

- A. Replace wiper combination switch, refer to Replacement of wiper combination switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 11** Replace the BCM

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 12	Reprogram and reset the BCM.
------------	------------------------------

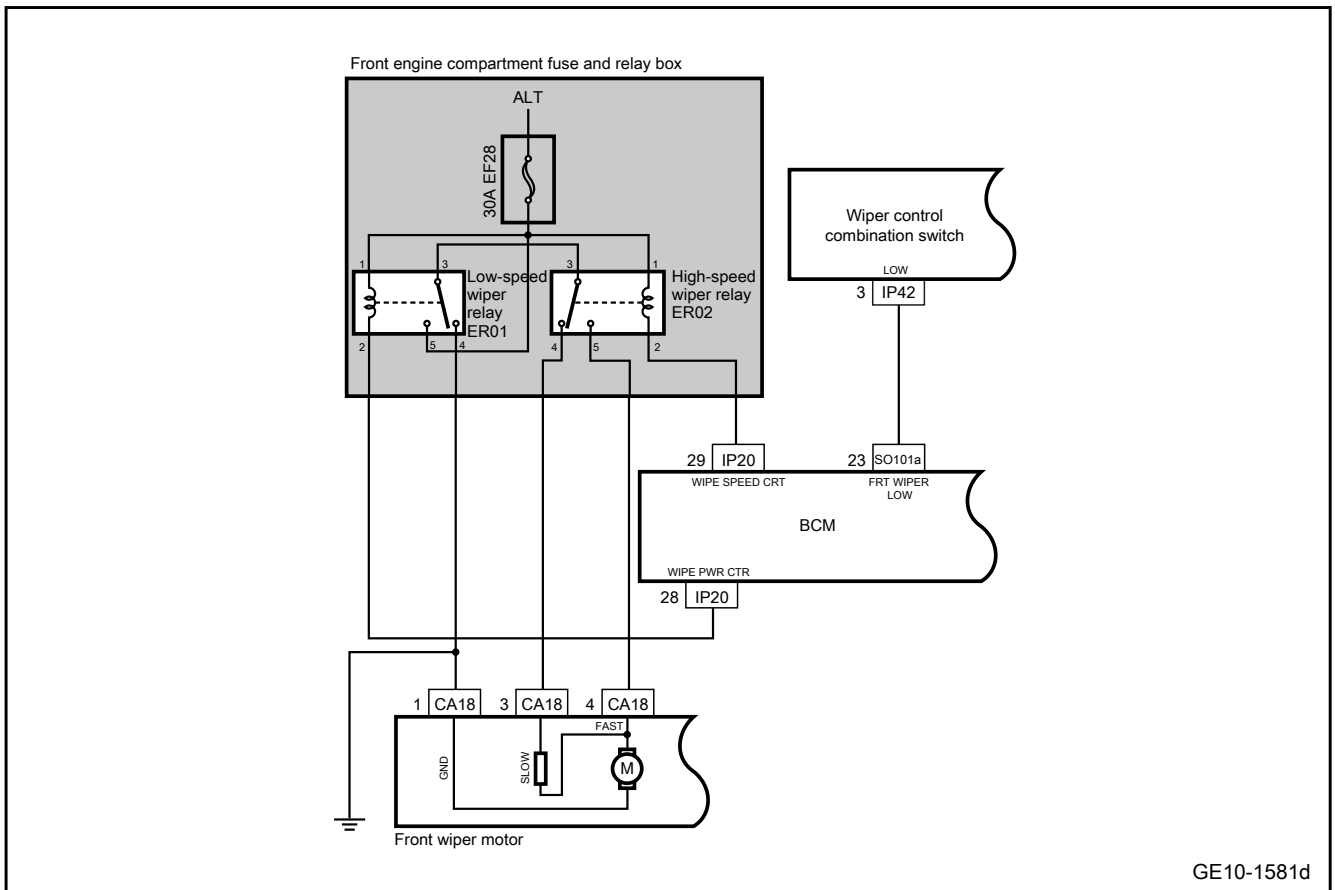
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 13	System is normal.
------------	-------------------

### 10.5.7.8 The wiper is inoperative at low gear

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the wiper combination switch, front wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check the wiper combination switch for the phenomenon of catching.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the front wiper relay.
--------	------------------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- C. Confirm whether the system is normal.

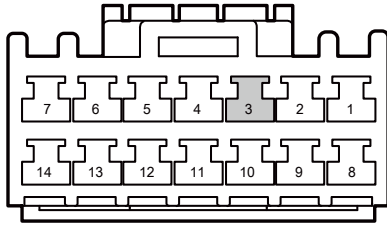
Yes

System is normal.

No

Step 3	Check the harness between the wiper combination switch and BCM.
--------	---

IP42 wiper combination switch harness connector



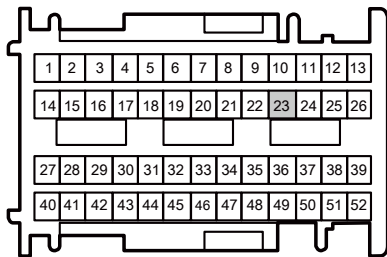
GE10-2205d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(3)	SO101a(23)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

SO101a body control module harness connector 7



GE10-2206d

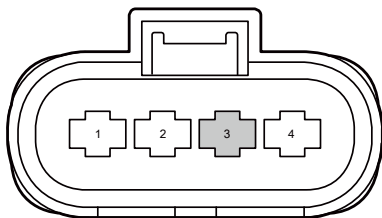
No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between high speed wiper relay and front wiper motor is open.

CA18 front wiper motor harness connector



GE10-2207d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(3)	ER02(4)	Standard resistance: less than 1Ω

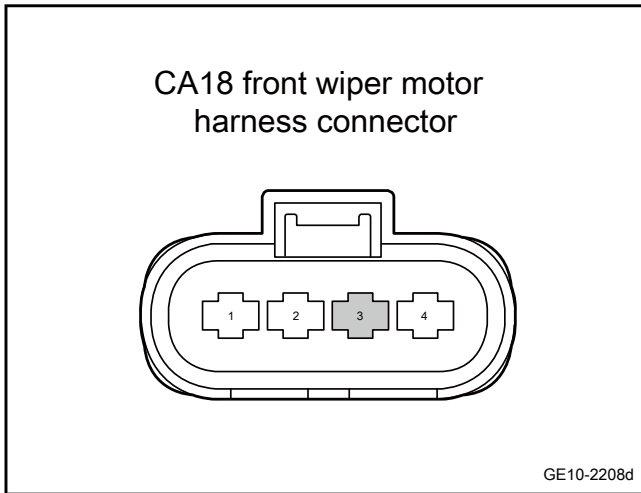
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between high speed wiper relay and front wiper motor is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA18(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace wiper combination switch.

- A. Replace wiper combination switch. Refer to [Replacement of wiper combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace front wiper motor.

- A. Replace front wiper motor, refer to Replacement of front wiper motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Replace the BCM

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

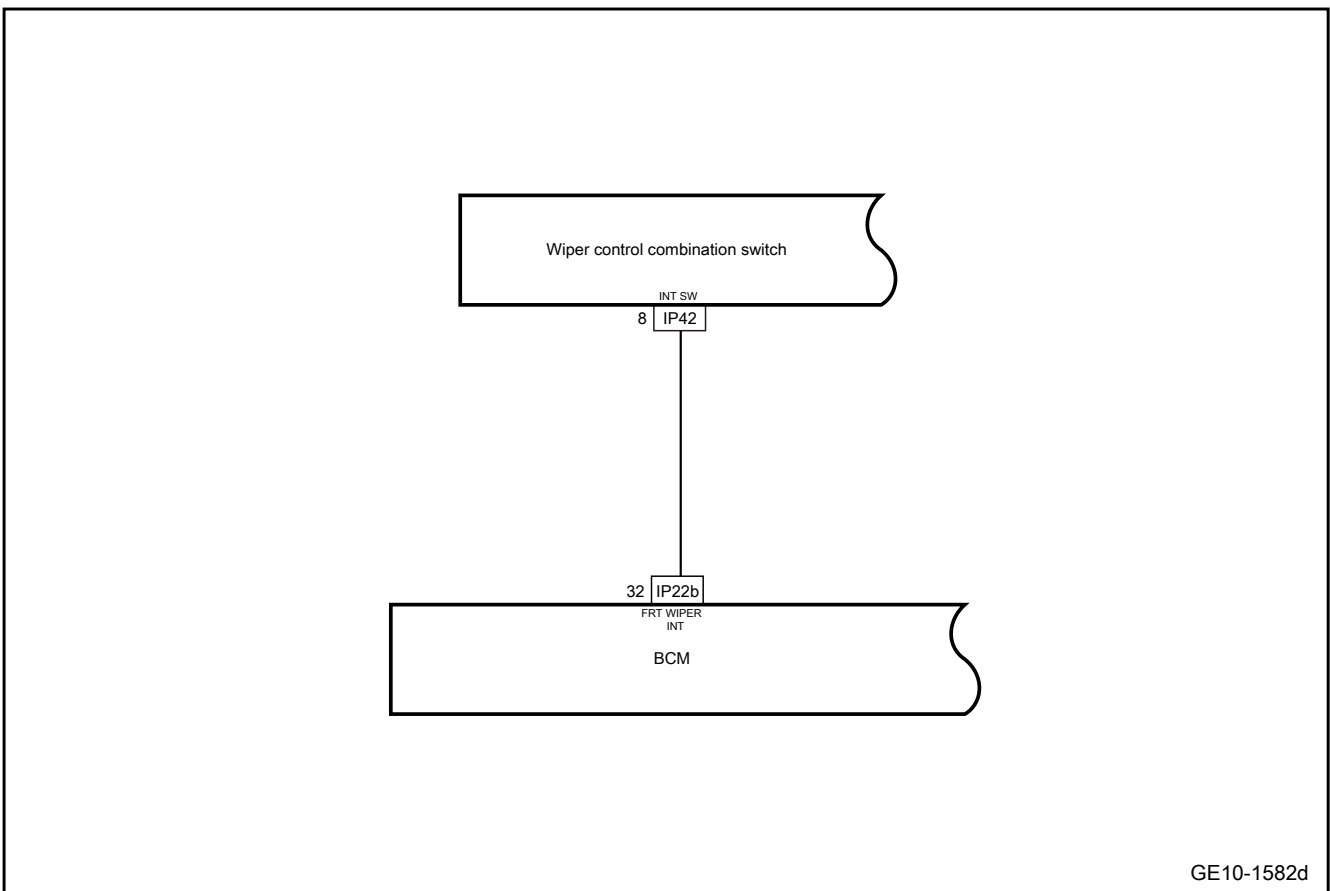
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
---------	-------------------

### 10.5.7.9 The wiper is inoperative at intermittent gear

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

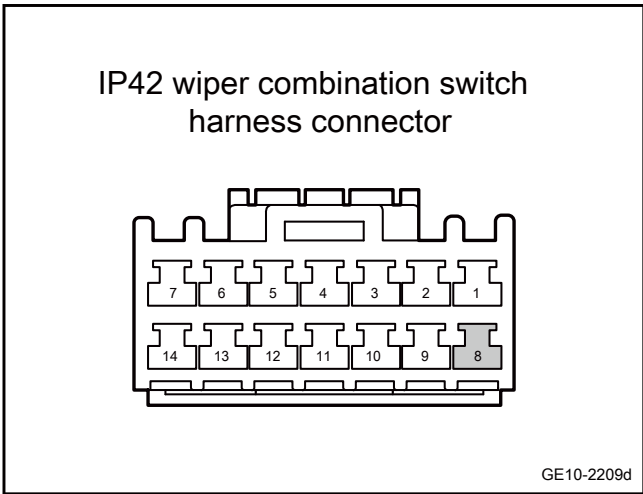
- A. Check the BCM, wiper combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check the wiper combination switch for the phenomenon of catching.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

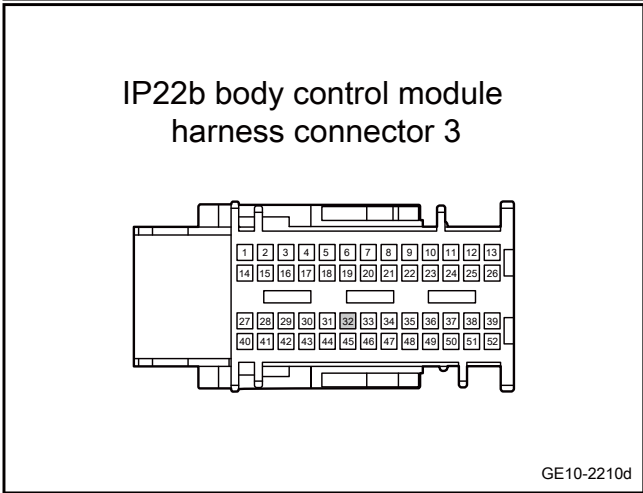
**Step 2** Check whether the harness between the wiper combination switch and BCM is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(8)	IP22b(32)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

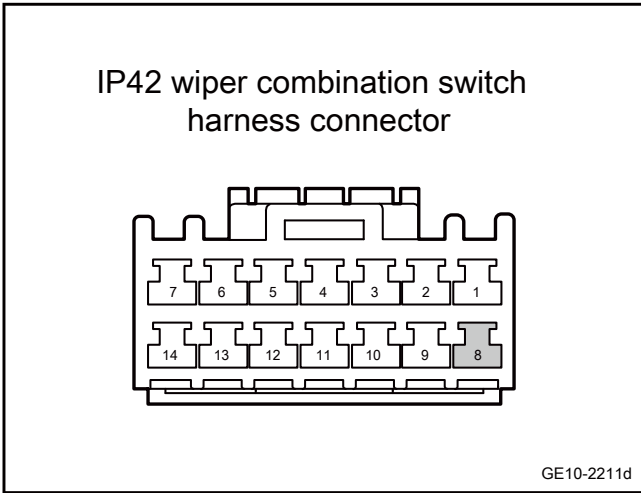


No

Repair faulty lines or replace the harness.

Yes

**Step 3** Check whether the circuit between the wiper combination switch and BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Disconnect the BCM harness connector IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(8)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No

Repair faulty lines or replace the harness.

Yes

**Step 4** | Replace wiper combination switch.

- A. Replace wiper combination switch, refer to Replacement of wiper combination switch
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 5** | Replace the BCM

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

**Step 6** | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

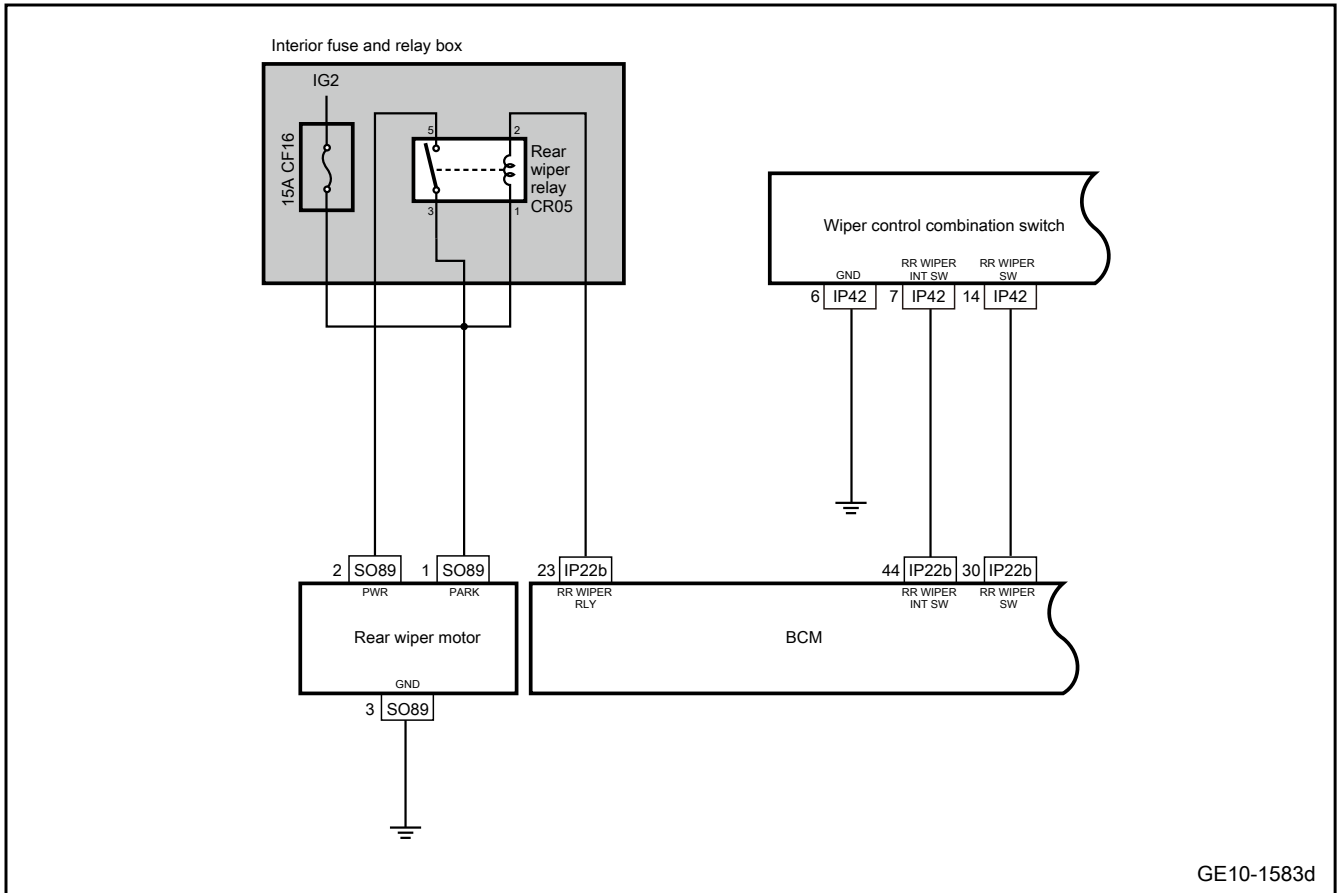
Next Step

**Step 7** | System is normal.



10.5.7.10 Inoperative rear rain wiper

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the rear wiper activity is normal and without interference phenomenon.
- B. Check the rear wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Check the rear rain wiper switch for sticking.
- D. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the rear rain wiper fuse
--------	--------------------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug interior fuse CF16 and check if it is blown.  
Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the rear rain wiper relay CR05

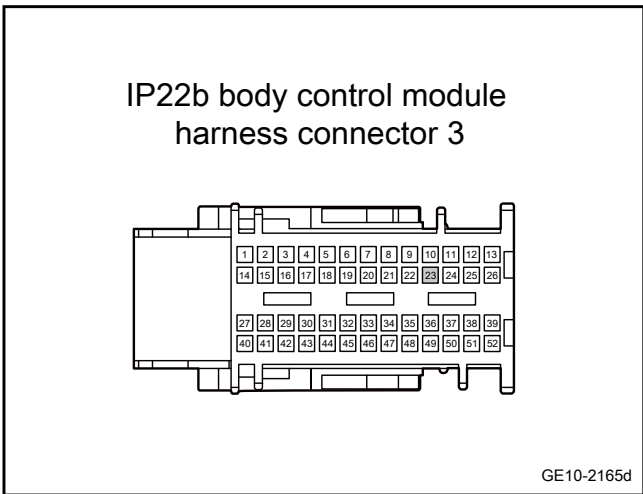
- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the rear rain wiper relay CR05 and replace with a new one of the same model.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Check whether the circuit between the rear wiper relay and BCM is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the rear rain wiper relay CR05
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	CR05(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

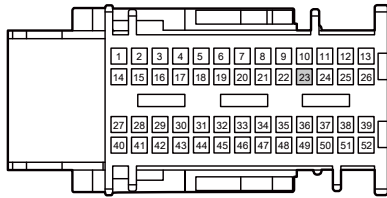
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the rear wiper relay and BCM is short to power supply.

IP22b body control module  
harness connector 3



GE10-2166d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP22b.
- C. Unplug the rear rain wiper relay CR05
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

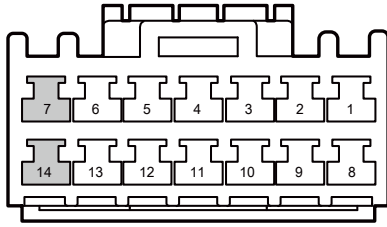
No

Repair or replace the harness.

Yes

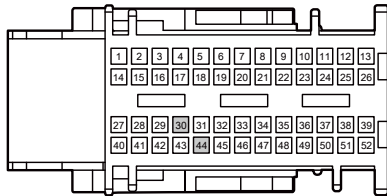
**Step 6** Check whether the harness between the wiper combination switch and BCM is open.

IP42 wiper combination switch harness connector



GE10-2167d

IP22b body control module harness connector 3



GE10-2168d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Disconnect the BCM harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(7)	IP22b(44)	Standard resistance: less than 1Ω
IP42(14)	IP22b(30)	

- E. Confirm whether the measured value meets the standard.

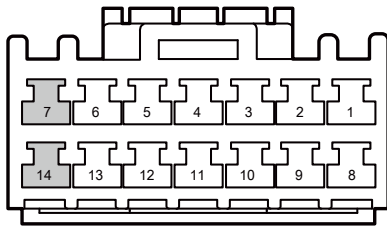
No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the wiper combination switch and BCM is short to power supply.

IP42 wiper combination switch harness connector



GE10-2169d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Disconnect the BCM harness connector IP22b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(7)	Vehicle body is grounded.	Standard voltage: equal to 0V
IP42(14)		

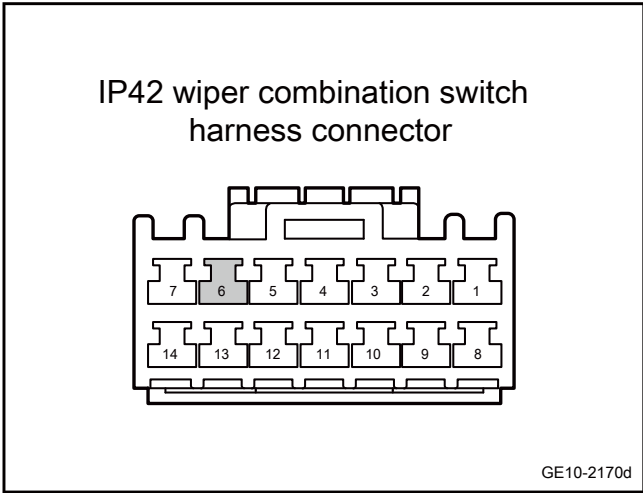
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the grounding harness of wiper combination switch is functioning properly.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect wiper combination switch harness connector IP42.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(6)	Vehicle body is grounded.	Standard resistance: less than 1Ω

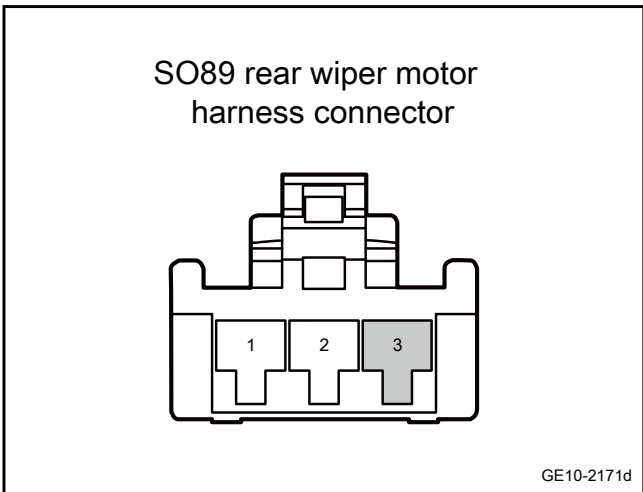
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Check whether the grounding harness of rear rain wiper motor is functioning properly.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear wiper motor harness connector SO89.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO89(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

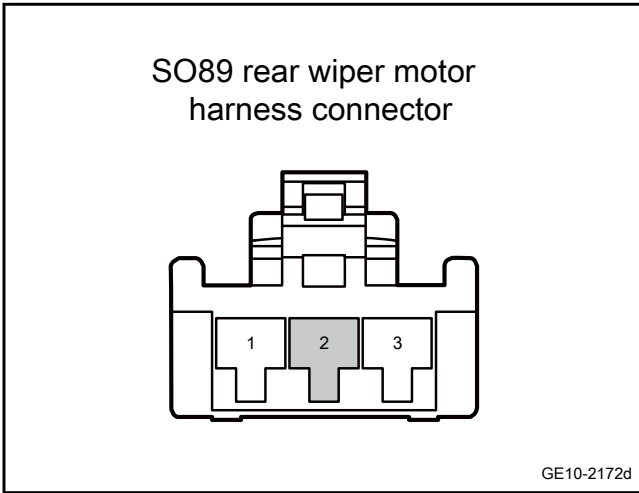
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 10** Check whether the wiring harness between the rear wiper motor and the rear wiper relay is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear wiper motor harness connector SO89.
- C. Unplug the rear rain wiper relay CR05
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO89(2)	CR05(5)	Standard resistance: less than 1Ω
SO89(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 11 Replace the rear wiper motor.

- A. Replace the rear wiper motor, refer to Replacement of rear wiper motor
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12 Replace wiper combination switch.

- A. Replace wiper combination switch, refer to Replacement of wiper combination switch
- B. Make sure the repair is completed.

Yes

System is normal.

No

Step 13 Replace the BCM

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 14	Reprogram and reset the BCM.
------------	------------------------------

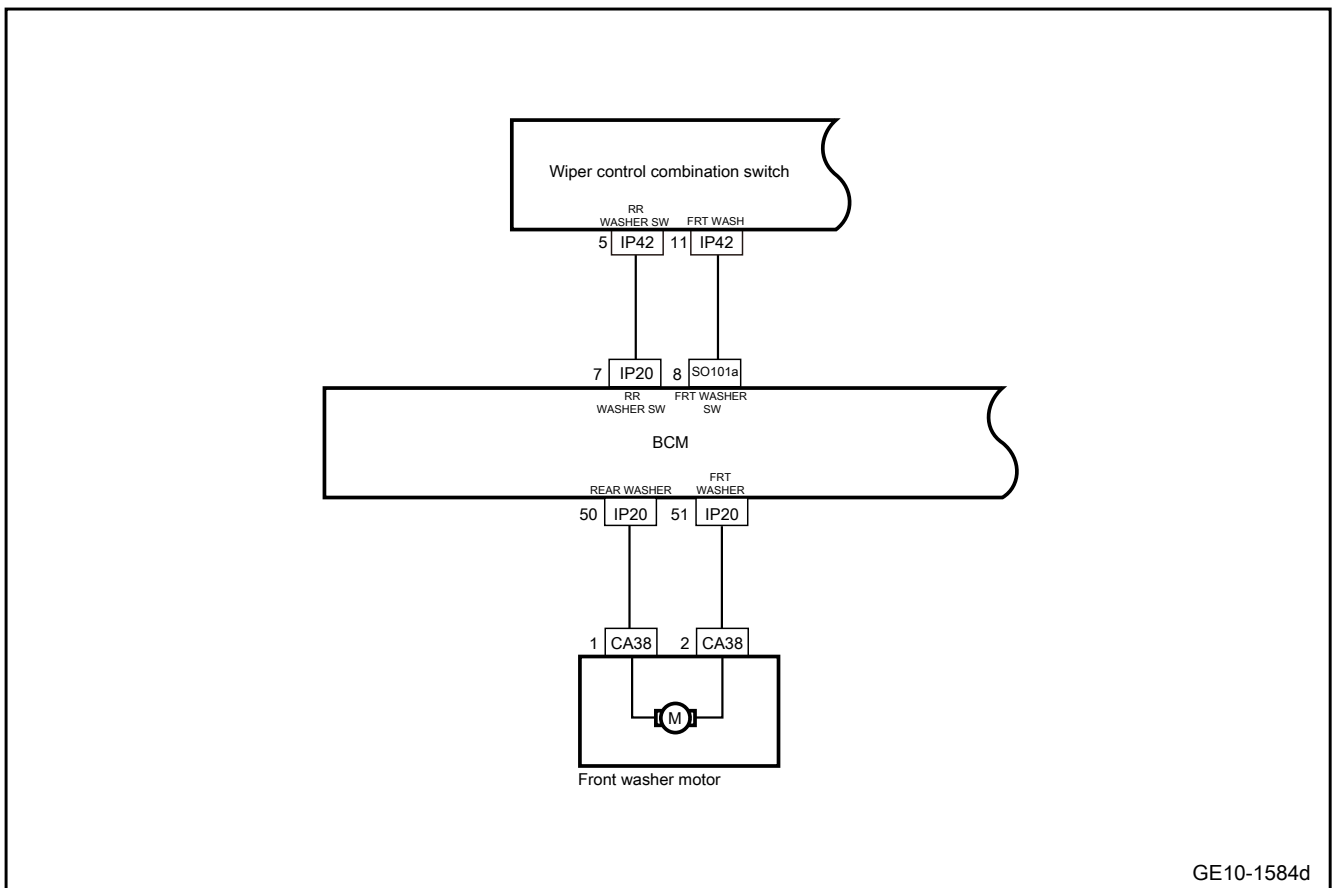
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 15	System is normal.
------------	-------------------

### 10.5.7.11 The wiper does not spray water

1. Schematic circuit diagram:



GE10-1584d

2. Diagnosis steps:

Step 1 Primary check.

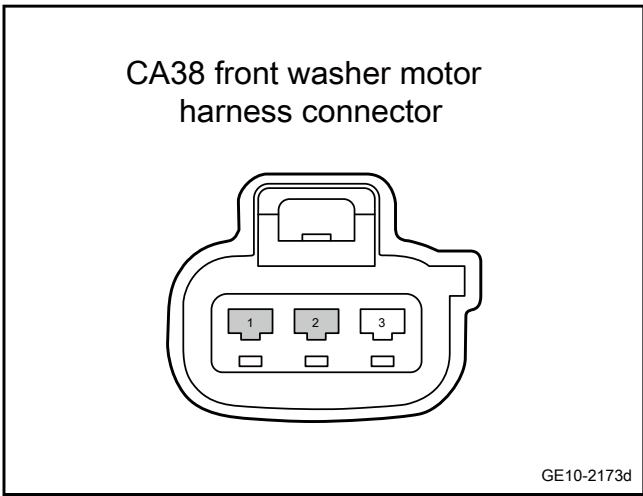
- A. Check the front washer motor, wiper combination switch and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

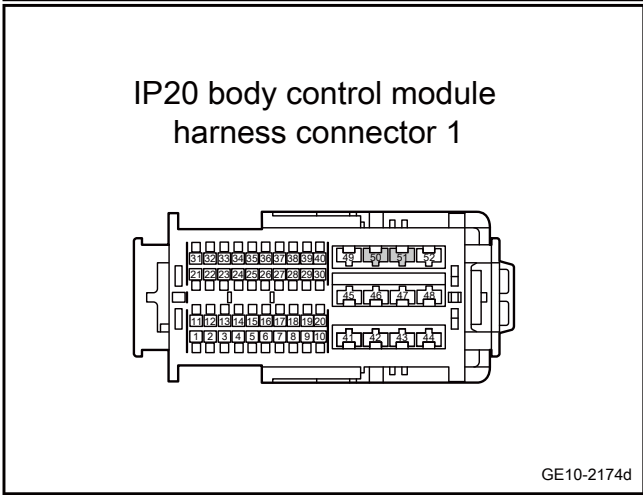
Step 2 Check whether the circuit between the front washer motor and BCM is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front washer motor harness connector CA38.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	IP20(50)	Standard resistance: less than 1Ω
CA38(2)	IP20(51)	

- E. Confirm whether the measured value meets the standard.



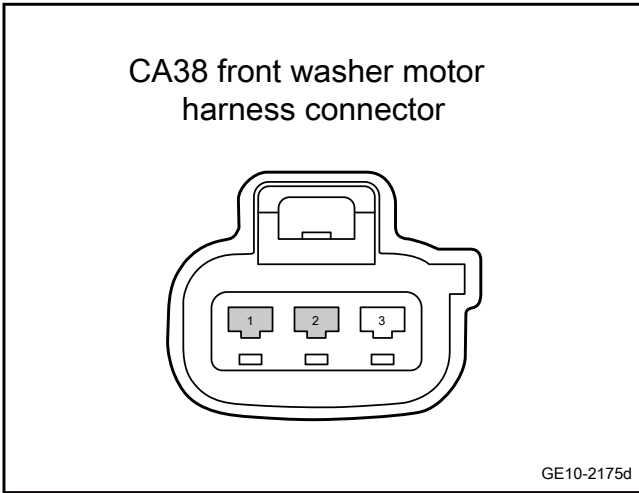
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the front washer motor and BCM is short to power supply.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front washer motor harness connector CA38.
- C. Disconnect the BCM harness connector IP20.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Turn on the front washer switch.
- F. Use a multimeter to measure each terminal according to the following table:

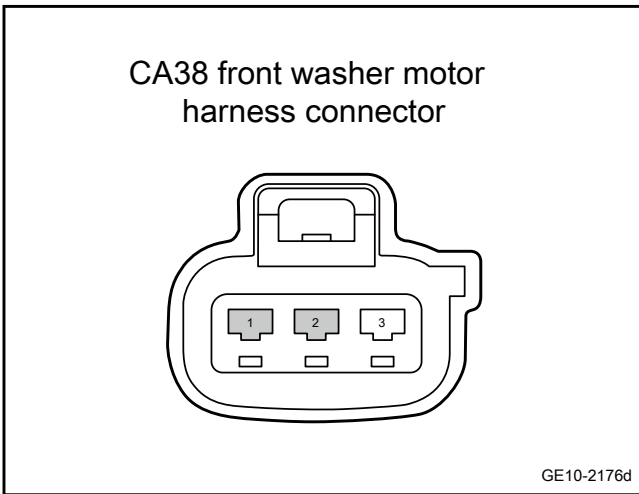
Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard voltage: 0V
CA38(2)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 4** | Check whether the circuit between the front washer motor and BCM is short to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front washer motor harness connector CA38.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA38(2)		

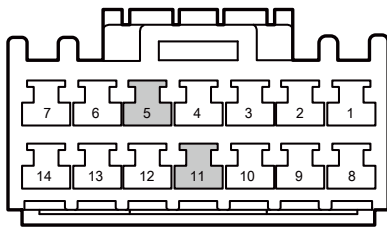
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

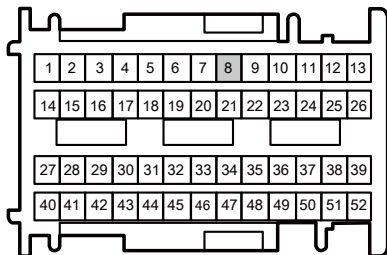
**Step 5** | Check whether the circuit between BCM and the wiper combination switch is normal.

IP42 wiper combination switch harness connector



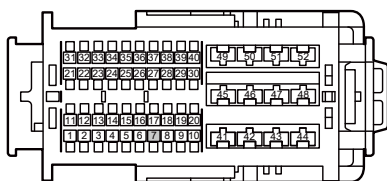
GE10-2177d

SO101a body control module harness connector 7



GE10-2178d

IP20 body control module harness connector 1



GE10-2179d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connector SO101a and IP20.
- C. Disconnect wiper combination switch harness connector IP42.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(11)	SO101a(8)	Standard resistance: less than 1Ω
IP42(5)	IP20(7)	

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP42(11)	Vehicle body is grounded.	Standard voltage: equal to 0V
IP42(5)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the front washer motor.

- A. Replace the front washer motor. Refer to [Replacement of front washer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace wiper combination switch.
--------	-----------------------------------

- A. Replace wiper combination switch. Refer to [Replacement of wiper combination switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 8	Replace the BCM
--------	-----------------

- A. Check BCM power supply and grounding harness, refer to BCM power supply fault
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 9	Reprogram and reset the BCM.
--------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 10	System is normal.
---------	-------------------

## 10.5.8 Removal and installation

### 10.5.8.1 Replacement of left wiper assembly

#### Removal procedure

##### Caution

The disassembly and assembly methods are the same for the left and right sides.

- 1 Open the front engine compartment hood

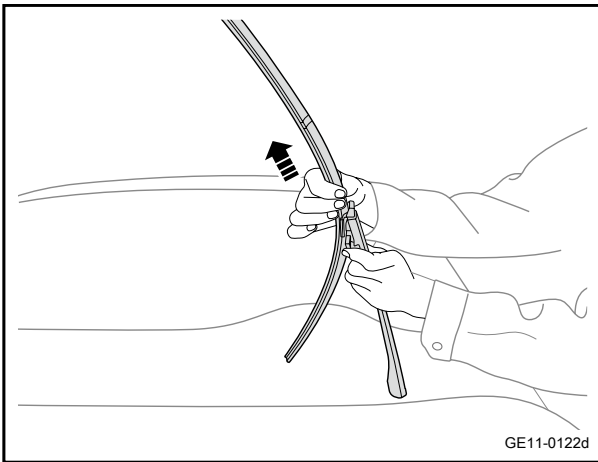
##### Caution

Before disassembly, set the wiper to the maintenance mode and turn off the ignition switch.

- 2 Raise the left wiper arm assembly and press the left wiper assembly to release the buckle.
- 3 Pull out and remove the left wiper assembly in the direction indicated by the arrow.

##### Caution

After removing the wiper blade assembly, if it is not replaced immediately, it is necessary to gently put down the wiper arm by hand to prevent damaging the front windshield glass mistakenly.

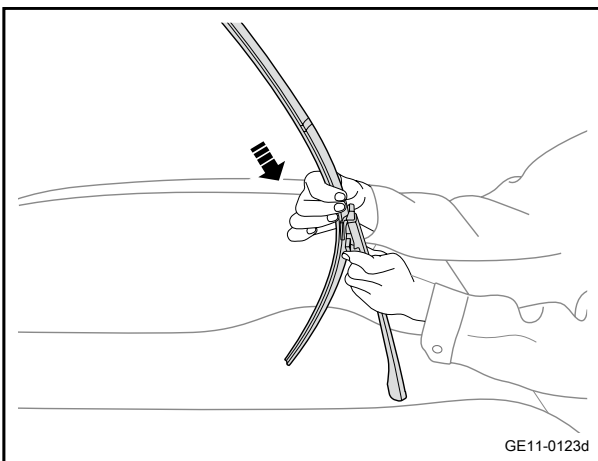


#### Installation procedure

- 1 Raise the left wiper arm assembly, install the left wiper assembly in the direction indicated by the arrow, and confirm the installation is in place.
- 2 Put down the left wiper arm assembly.

##### Caution

After the new blade is installed, turn off the maintenance mode.



- 3 Close the front engine compartment hood

### 10.5.8.2 Replacement of left wiper arm assembly

#### Removal procedure

**Caution**

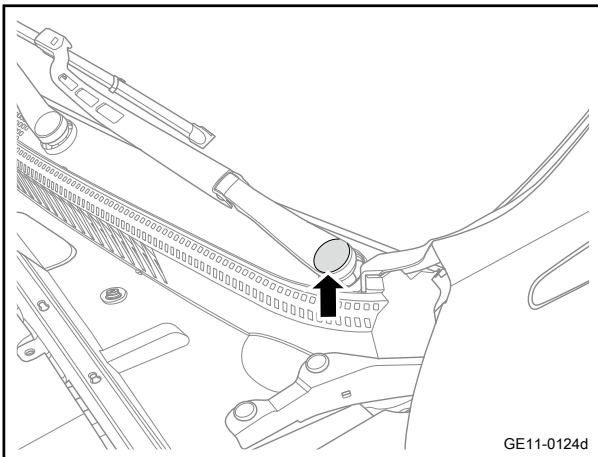
The disassembly and assembly methods are the same for the left and right sides.

- 1 Open the front engine compartment hood

**Caution**

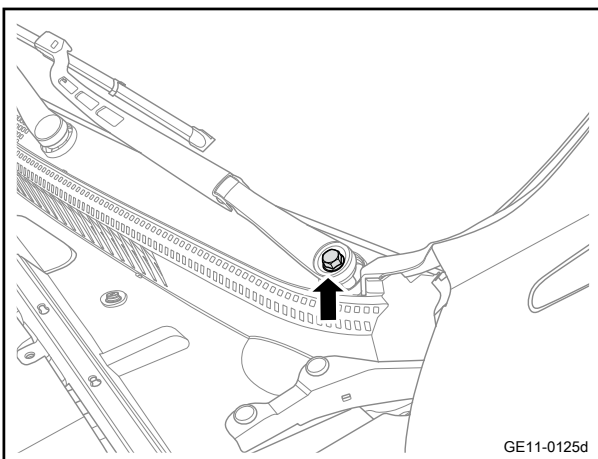
Before disassembly, set the wiper to the maintenance mode and turn off the ignition switch.

- 2 Remove the nut cover of the left wiper arm assembly.



- 3 Remove the nut of the left wiper arm assembly.

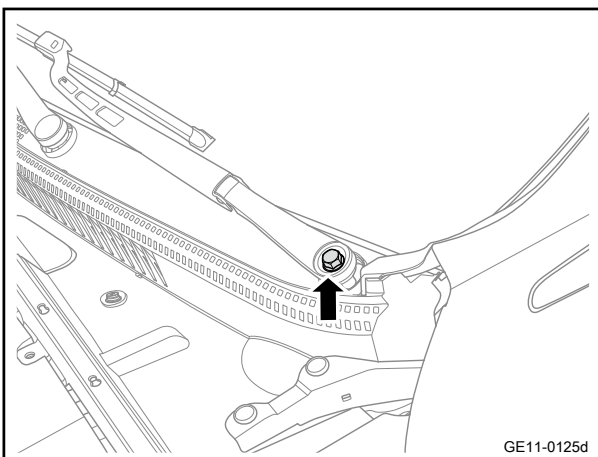
- 4 Remove the left wiper arm assembly.

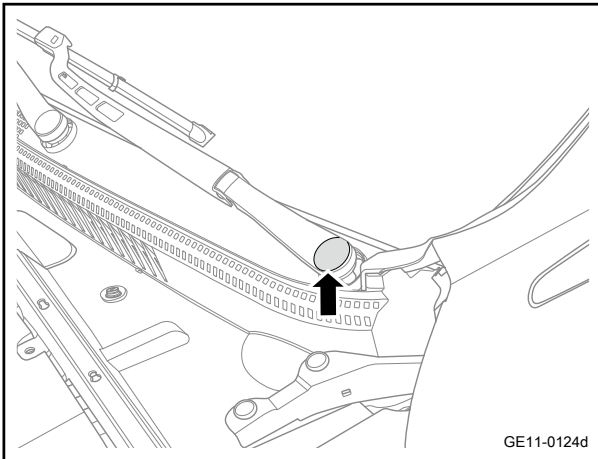
**Installation procedure**

- 1 Move the left wiper arm assembly to the installation position.
- 2 Install the nut of the left wiper arm assembly.  
Torque: 38N·m (metric) 28lb·ft (imperial system)

**Caution**

After the new blade is installed, turn off the maintenance mode.





- 3 Install the nut cover of the left wiper arm assembly.

- 4 Close the front engine compartment hood

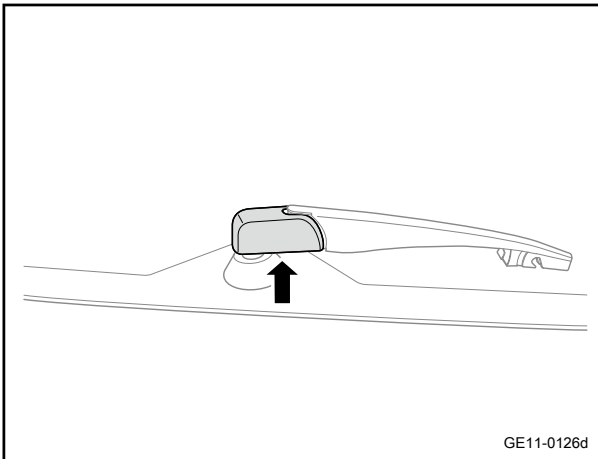
### 10.5.8.3 Replacement of the rear wiper arm blade assembly

#### Removal procedure

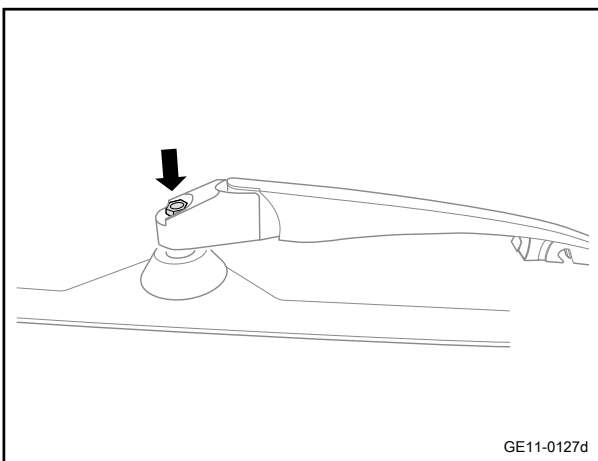
#### Caution

Before disassembly, stop the rear wiper arm blade assembly at a suitable position and turn off the ignition switch.

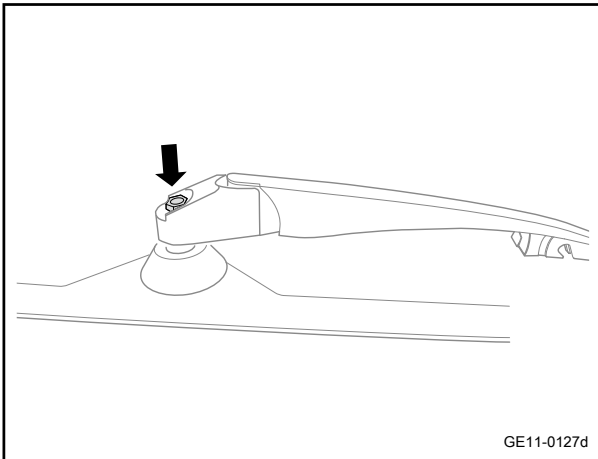
- 1 Remove the nut cover of the rear wiper arm blade assembly.



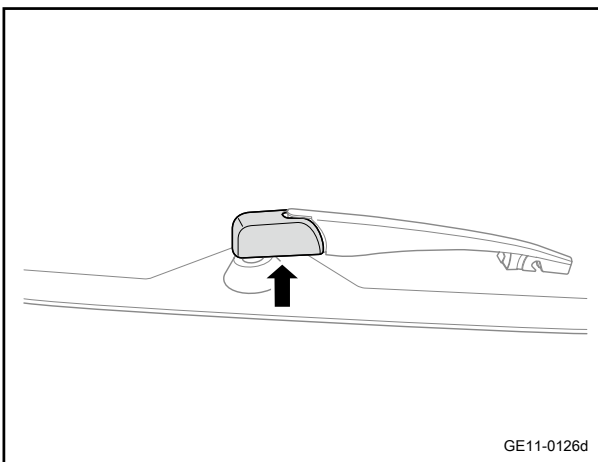
- 2 Remove 1 fixed nut of the rear wiper arm blade assembly.
- 3 Remove the wiper blade assembly of the rear wiper arm.



## Installation procedure



- 1 Move the rear wiper arm blade assembly to the installation position.
- 2 Install the 1 fixing nut of the rear wiper arm blade assembly of the rear wiper arm.  
Torque: 7N·m (metric) 5.2lb-ft (imperial system)

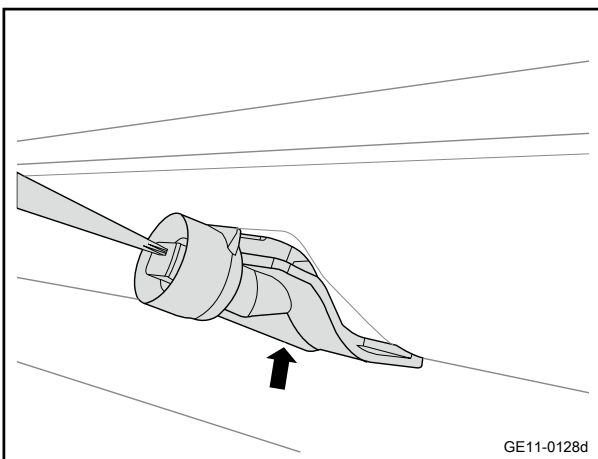


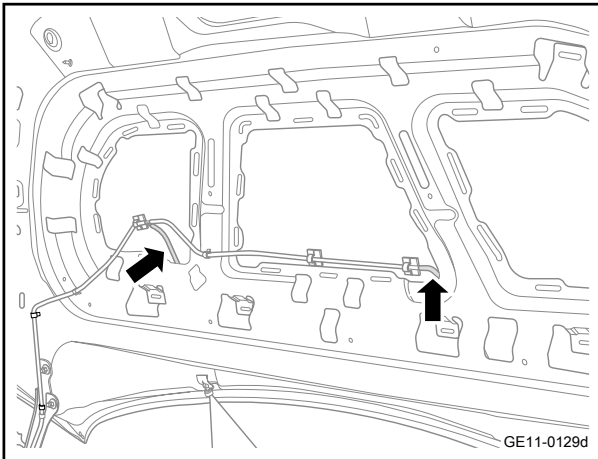
- 3 Install the nut cover of the rear wiper arm blade assembly.

### 10.5.8.4 Replacement of front washer nozzle assembly

## Removal procedure

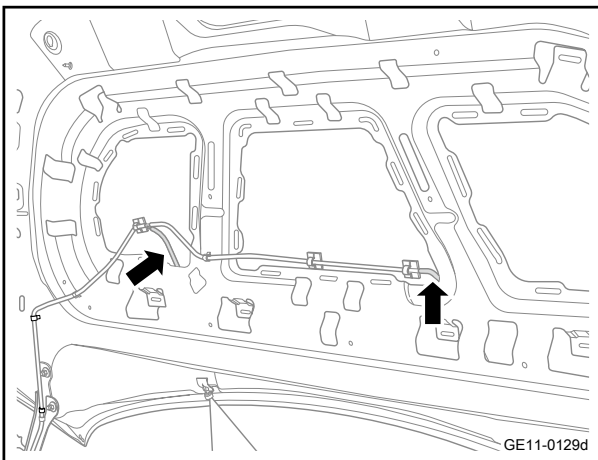
- 1 Open the front engine compartment hood.
- 2 Remove the front engine compartment sound insulation pad. See [Replacement of front engine compartment sound insulation pad](#)
- 3 Use suitable tools to remove the front washer nozzle.



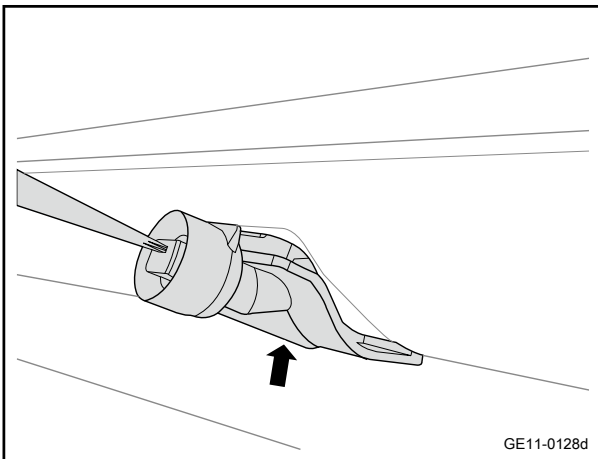


- 4 Disconnect the front washer nozzle from the front washer hose.
- 5 Remove the front washer nozzle assembly.

#### Installation procedure



- 1 Move the front washer nozzle assembly to the installation position.
- 2 Connect the front washer nozzle and front washer hose.



- 3 Install the front washer nozzle.

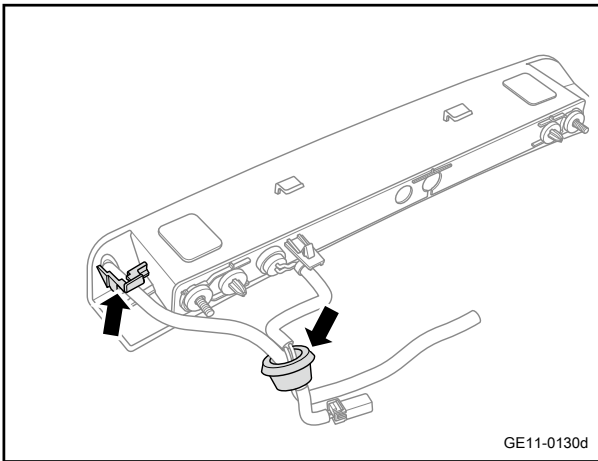
- 4 Install the front engine compartment sound insulation pad.
- 5 Close the front engine compartment hood.

#### 10.5.8.5 Replacement of the rear washer nozzle assembly

##### Removal procedure

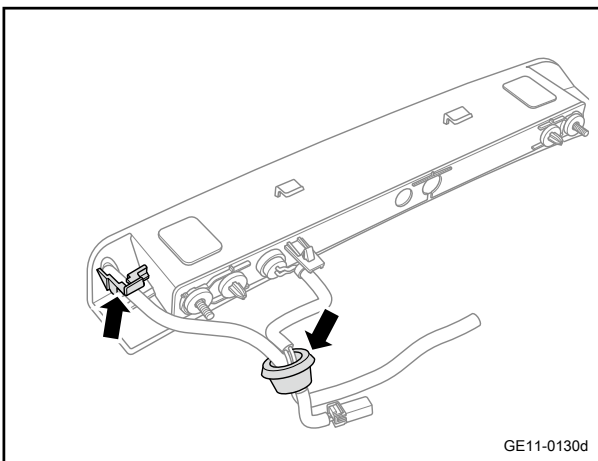


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 3 Remove the spoiler assembly. Refer to [Replacement of the spoiler assembly](#)
- 4 Remove the high-mounted brake lamp assembly. Refer to [Replacement of high-mounted brake lamp assembly](#)
- 5 Take off the rear washer nozzle assembly.
- 6 Use suitable tools to remove the rear washer nozzle assembly.



#### Installation procedure

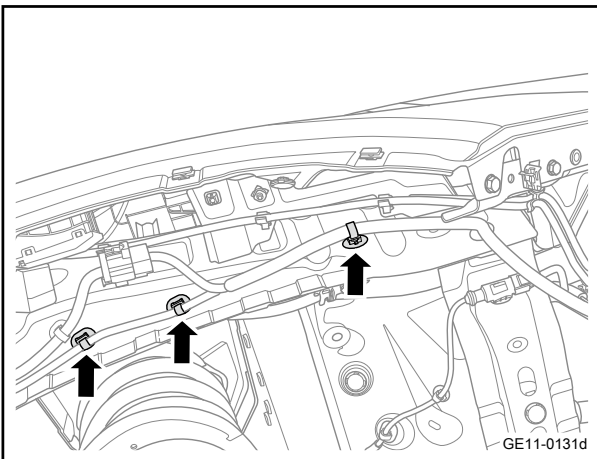
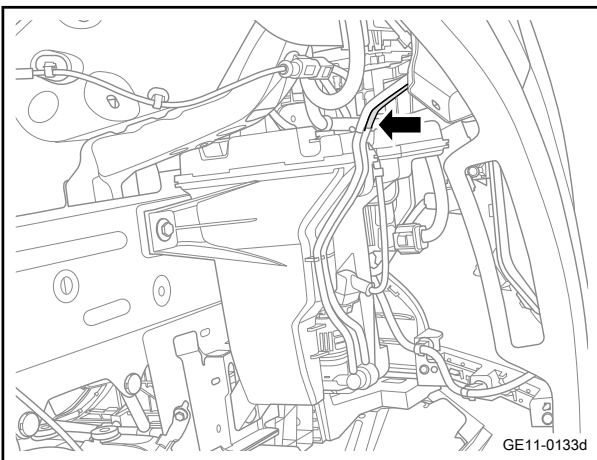
- 1 Move the rear washer nozzle assembly to the installation position.
- 2 Pass the water pipe through the spoiler, install the high-position brake lamp, and then pass the water pipe through the blockage.
- 3 Install the high-mounted brake lamp assembly.
- 4 Install spoiler assembly.
- 5 Install the middle upper interior trim panel assembly of the backdoor.
- 6 Connect the negative cable of battery.

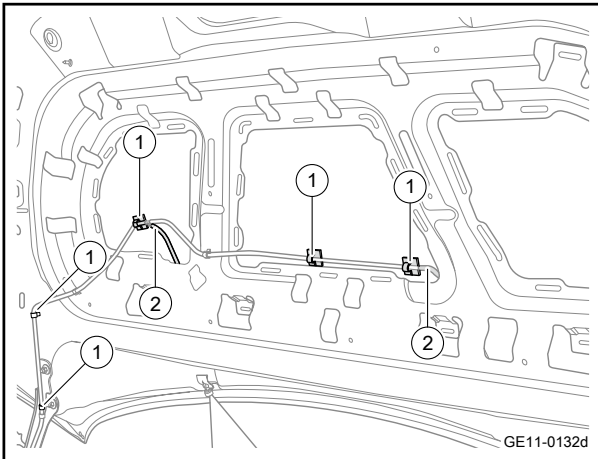


### 10.5.8.6 Replacement of the front washer hose assembly

#### Removal procedure

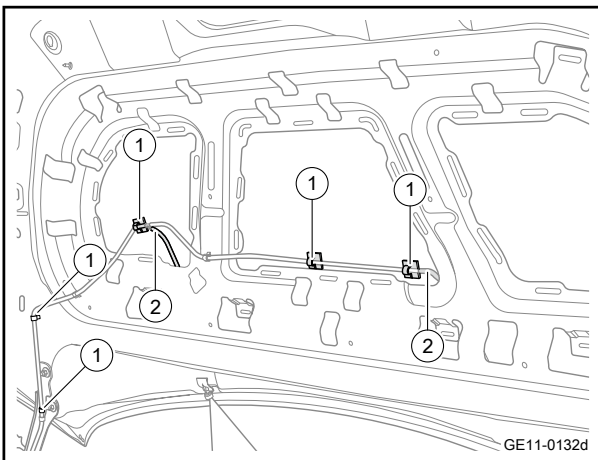
- 1 Open the front engine compartment hood.
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front right wheel. Refer to [Replacement of wheels](#)
- 4 Remove the front engine compartment sound insulation pad. See [Replacement of front engine compartment sound insulation pad](#)
- 5 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)
- 6 Disconnect the front washer hose assembly and the sprinkling can with washer motor assembly
- 7 Disengage the buckle of the washer hose at the right front body.



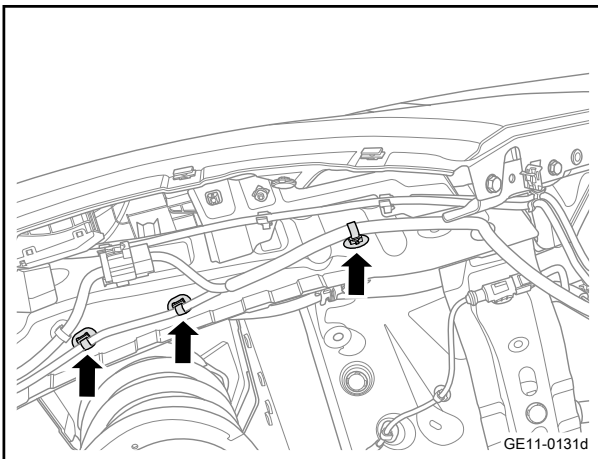


- 8 Disengage the washer hose buckle 1 of the front engine compartment cover.
- 9 Disconnect the front washer hose from the front washer nozzle 2
- 10 Remove the front washer hose assembly.

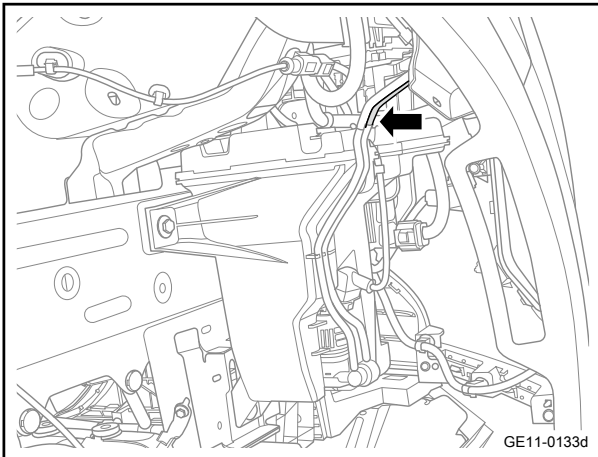
Installation procedure



- 1 Move the front washer hose assembly to the installation position.
- 2 Connect the front washer hose to the front washer nozzle 2.
- 3 Install the washer hose buckle 1 of front engine compartment cover.



- 4 Install the washer hose buckle at the right front body.



- 5 Connect the front washer hose assembly to the sprinkling can with washer motor assembly
- 6 Install the front wing liner RH.
- 7 Install the front engine compartment sound insulation pad.
- 8 Install the front right wheel.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

### 10.5.8.7 Replacement of rear washer hose assembly

#### Removal procedure

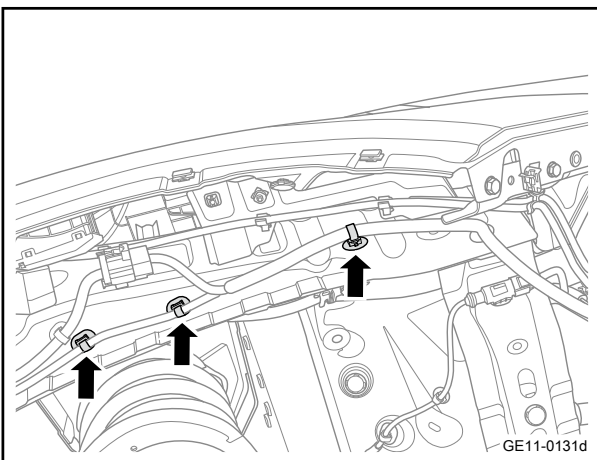
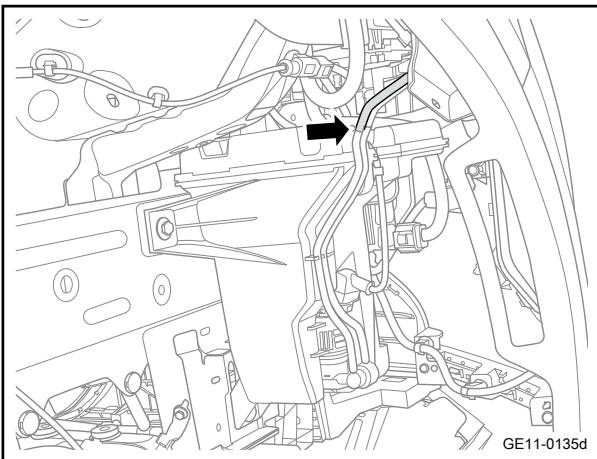
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

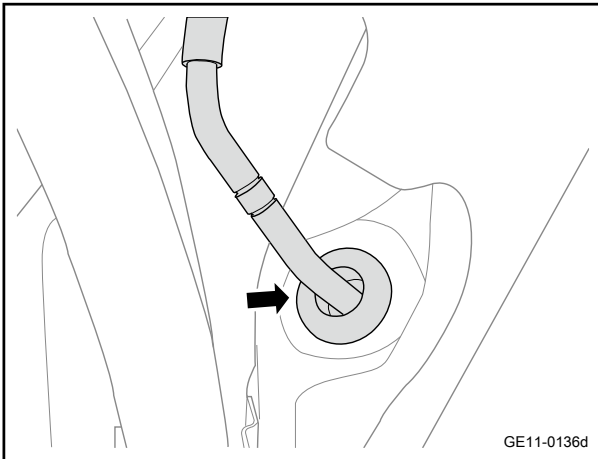
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front right wheel. Refer to [Replacement of wheels](#)
- 4 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)
- 5 Remove the right front door sill trim panel assembly. Refer to [Replacement of left front door sill trim panel assembly](#)
- 6 Remove the lower trim panel assembly of the right A-pillar. Refer to [Replacement of left A-pillar lower trim panel assembly](#)
- 7 Remove the lower trim panel assembly of the right B-pillar. Refer to [Replacement of left B-pillar lower trim panel assembly](#)
- 8 Remove the right rear door sill trim panel assembly. Refer to [Replacement of left rear door sill trim panel assembly](#)

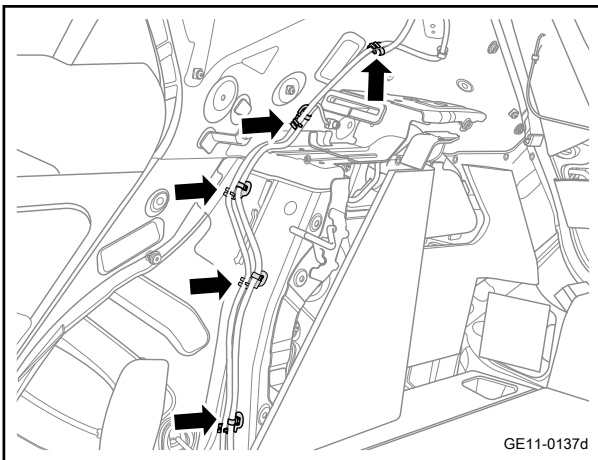
- 9 Remove the rear-row seat cushions. See [Replacement of rear seat cushions](#)
- 10 Remove the rear seat backrests. See [Replacement of rear seat backrests](#)
- 11 Remove the right rear door sill trim panel assembly. Refer to [Replacement of left rear door sill trim panel assembly](#)
- 12 Remove the lower trim panel assembly of right C-pillar. Refer to [Replacement of the left C-pillar lower trim panel assembly](#)
- 13 Install the rear wall interior trim panel assembly. Refer to [Replacement of rear wall interior trim panel assembly](#)
- 14 Remove the right trim panel assembly of the luggage compartment. See [Replacement of left trim panel assembly of the luggage compartment](#)
- 15 Remove the lower trim panel assembly of right C-pillar. Refer to [Replacement of the left C-pillar lower trim panel assembly](#)
- 16 Disconnect the hose from the washer with washer motor assembly from the sprinkling can and drain the washing liquid.



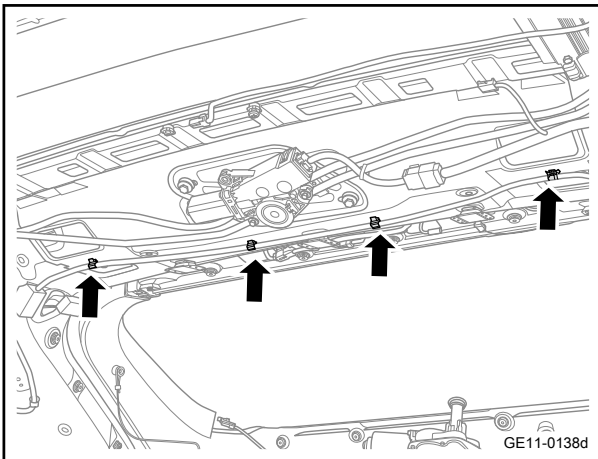
- 17 Separate the rear washer hose from the right front body.



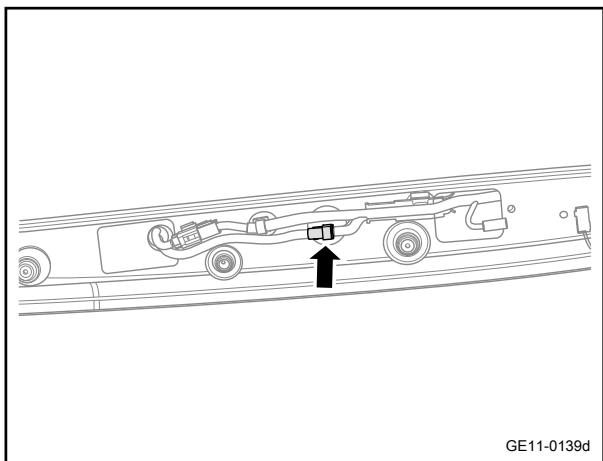
- 18 Separate the rubber waterproof plug for the rear washer hose from the right front body.



- 19 Separate the rear washer hose from the upper part of the luggage compartment.

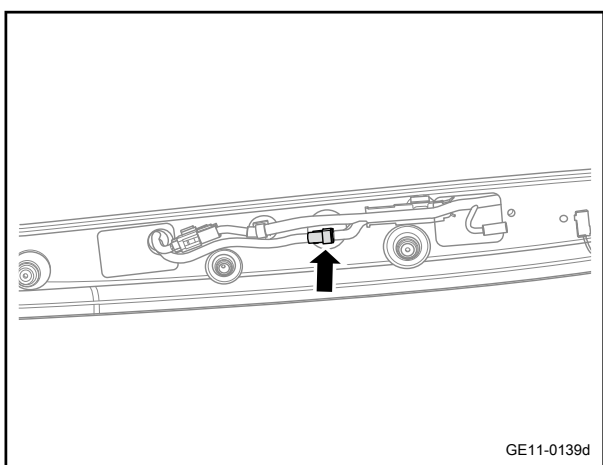


- 20 Separate the rear washer hose connector from the rear roof.

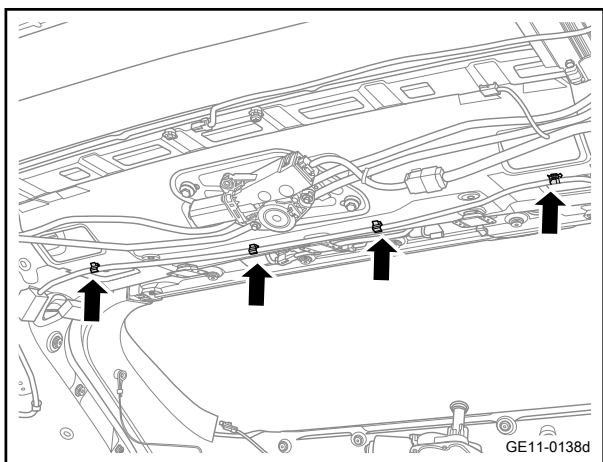


- 21 Break the connection between the rear washer hose assembly and the rear nozzle.
- 22 Remove the rear washer hose assembly.

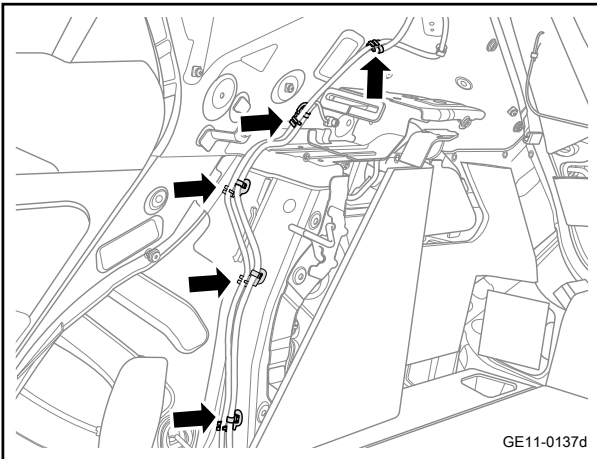
Installation procedure



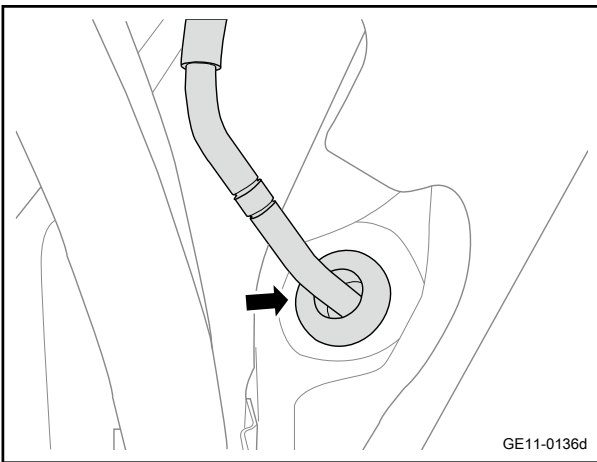
- 1 Move the rear washer hose assembly to the installation position.
- 2 Connect the rear washer hose assembly and the rear nozzle.



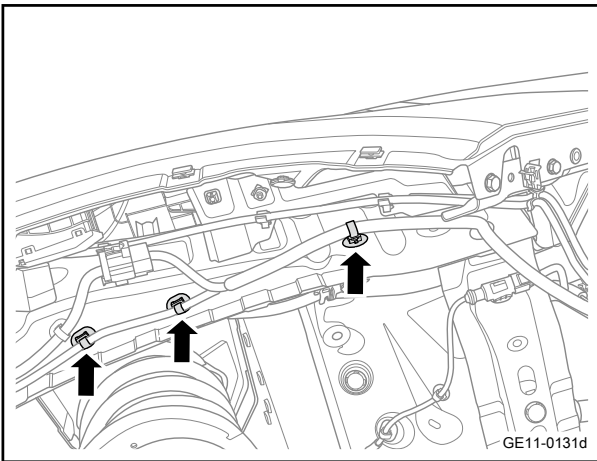
- 3 Install the rear washer hose connector and the rear washer hose to the rear roof.



- 4 Install the washer hose above the luggage compartment.

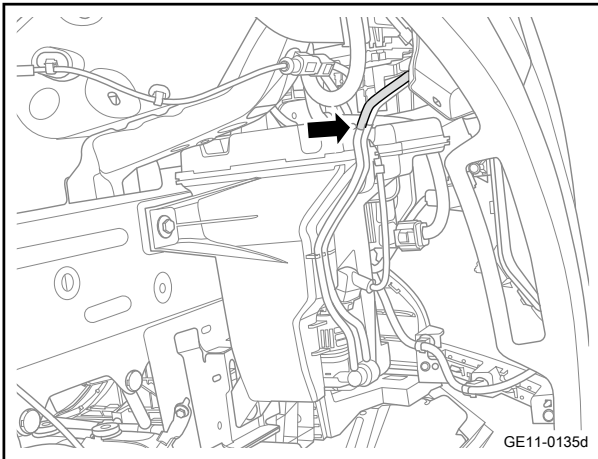


- 5 Install the rubber waterproof plug of the washer hose to the right front body.



- 6 Install the washer hose at the right front body.





- 7 Install the rear washer hose to the washing motor assembly of the sprinkling can and fill it with cleaning fluid.

- 8 Install the right C-pillar lower trim panel assembly.
- 9 Install the right trim panel assembly of the luggage compartment.
- 10 Install the assembly-interior trim panel rear wall.
- 11 Install the right C-pillar lower trim panel assembly.
- 12 Install the right rear door sill trim panel assembly.
- 13 Install the rear seat backrests.
- 14 Install the rear-row seat cushions.
- 15 Install the right rear door sill trim panel assembly.
- 16 Install the right B-pillar lower trim panel assembly.
- 17 Install the right A-pillar lower trim panel assembly.
- 18 Install the right front door sill trim panel assembly.
- 19 Install the front wing liner RH.
- 20 Install the front right wheel.
- 21 Lower the vehicle.
- 22 Connect the negative cable of battery.

#### 10.5.8.8 Replacement of sprinkling can with washer motor assembly

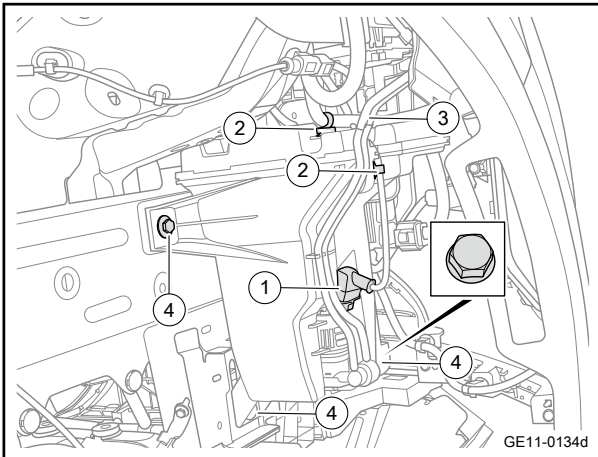
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

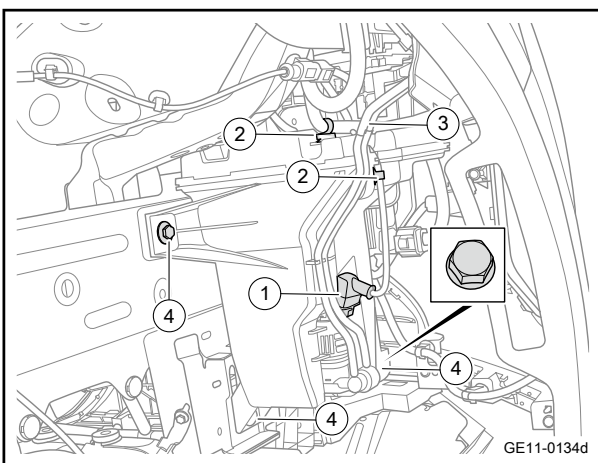
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front right wheel. Refer to [Replacement of wheels](#)
- 4 Remove the front right fender liner. Refer to [Replacement of front right fender liner](#)



- 5 Disconnect the harness connector 1 of the sprinkling can with washer motor.
- 6 Disengage retaining clip 2 of harness.
- 7 Disconnect the front and rear washer hoses 3.
- 8 Remove the 3 fixing bolts 4 of the sprinkling can with washer motor assembly.
- 9 Take off the sprinkling can with washing motor assembly.

#### Installation procedure



- 1 Move the sprinkling can with washing motor assembly to the installation position.
- 2 Install the 3 fixing bolts 4 of the sprinkling can with washing motor assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Connect the front and rear washer hoses 3.
- 4 Install the wire harness fixing buckle 2.
- 5 Connect the harness connector 1 of the sprinkling can with washer motor.
- 6 Install the front wing liner RH.
- 7 Install the front right wheel.
- 8 Lower the vehicle.
- 9 Connect the negative cable of battery.

### 10.5.8.9 Replacement of assembly-wiper motor and wiper linkage

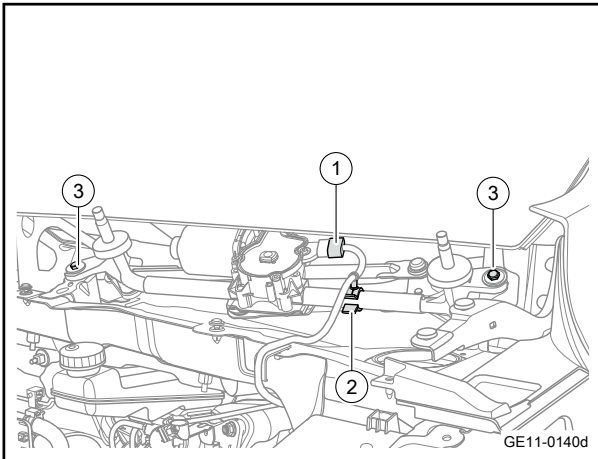
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

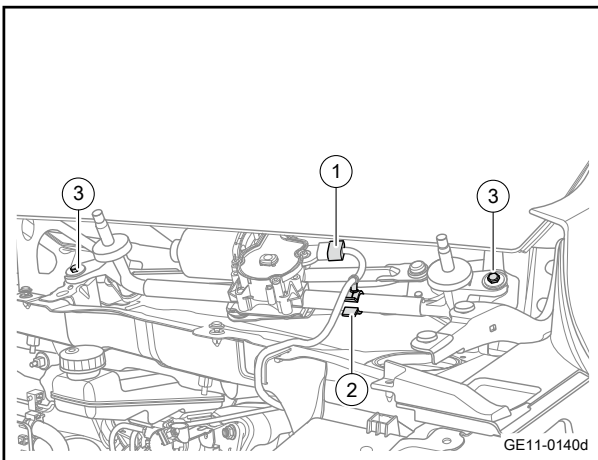
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disassemble the left and right wiper arm assemblies. See [Replacement of left wiper arm assembly](#)
- 3 Dismount the ventilation cover plate assembly. See [Replacement of vent cover assembly](#)



- 4 Disconnect the wiper motor and connecting rod assembly harness connector 1.
- 5 Disengage the wiper motor and connecting rod assembly harness buckle 2.
- 6 Remove the 2 fixing bolts 3 of the wiper motor and connecting rod assembly.
- 7 Remove the lower wiper motor c/w connecting rod assembly.

#### Installation procedure



- 1 Move the wiper motor and connecting rod assembly to the installation position.
- 2 Install 2 fixing bolts 3 of wiper motor and connecting rod assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install the wiper motor and connecting rod assembly wire harness buckle 2.
- 4 Connect the wiper motor and connecting rod assembly wiring harness connector 1.
- 5 Install the plenum mounting assembly.
- 6 Install the left and right wiper arm assemblies.
- 7 Connect the negative cable of battery.

#### 10.5.8.10 Replacement of rear wiper motor assembly

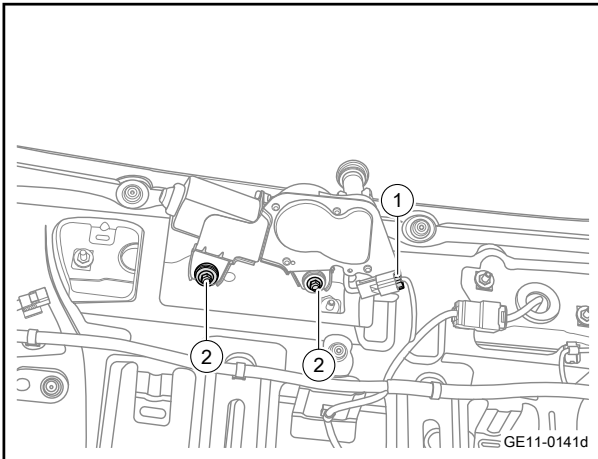
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

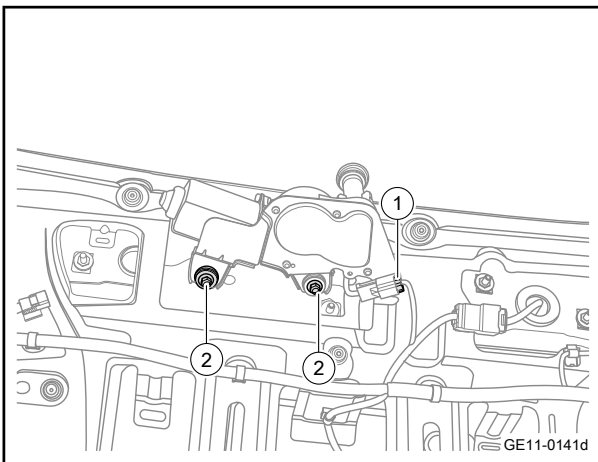
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disassemble the rear wiper arm blade assembly. See [Replacement of rear wiper blade assembly](#)
- 3 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)



- 4 Disconnect the rear wiper motor assembly harness connector 1.
- 5 Remove the 2 fixing nuts 2 of the wiper motor assembly.
- 6 Remove the rear wiper motor assembly.

#### Installation procedure



- 1 Move the rear wiper motor assembly to the installation position.
- 2 Install the 2 fixing nuts 2 of the wiper motor assembly.  
Torque: 7N·m (metric) 5.2lb-ft (imperial system)
- 3 Connect the rear wiper motor assembly harness connector 1.

- 4 Install the lower trim panel assembly of the backdoor.
- 5 Install the rear wiper arm blade assembly.
- 6 Connect the negative cable of battery.

## 10.6 Combination instrument/driver information system

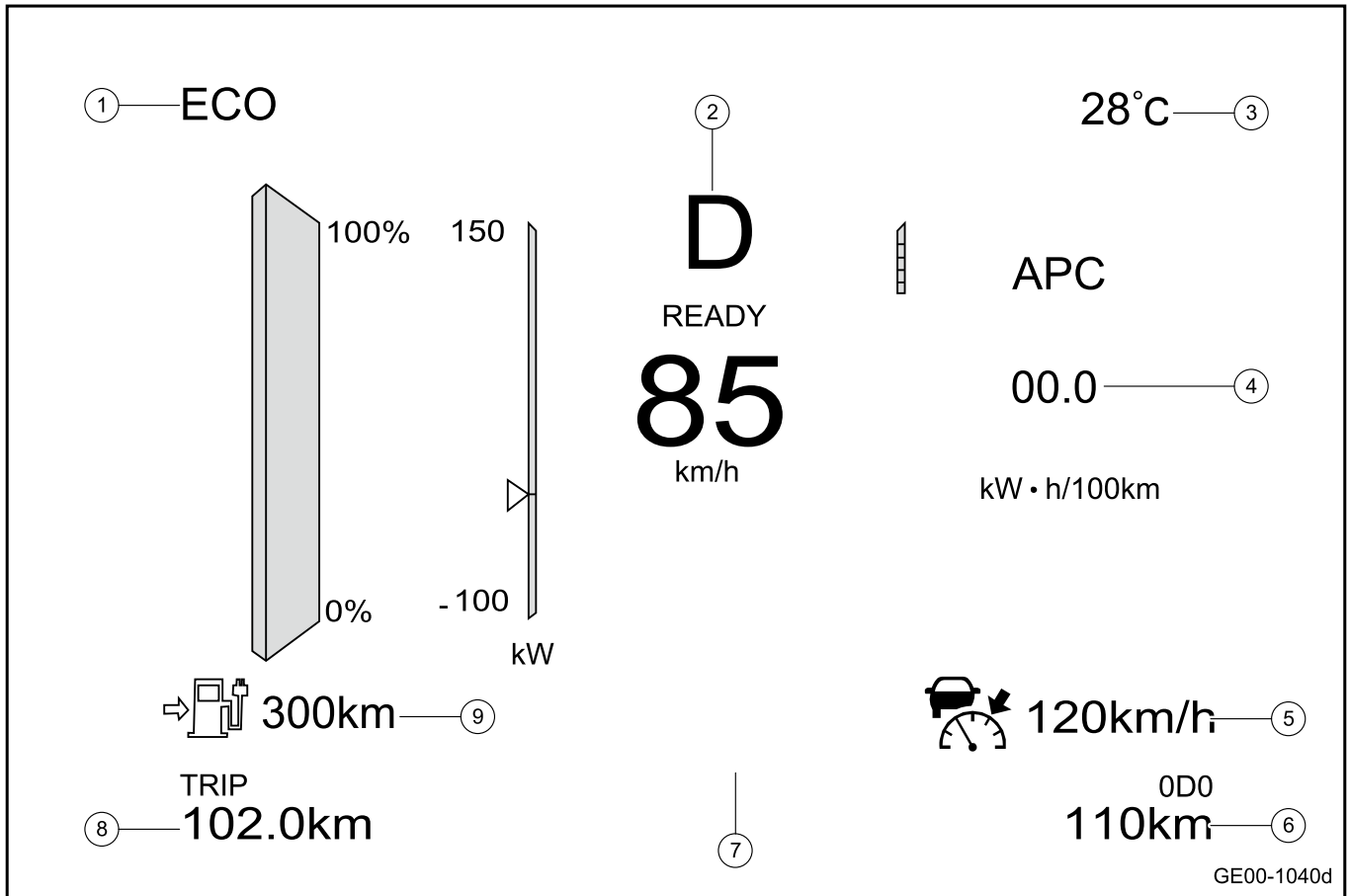
### 10.6.1 Specification

#### 10.6.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fascia console assembly fixing bolt	M6×20	3.2 - 4.8	2.4 - 3.5
Fixing bolt of cluster instrument controller assembly	M6×16	8 - 10	5.9 - 7.4
Fixing bolt of head-up display	M6×16	8.5 - 11.5	6.3 - 8.5
Auxiliary fascia console switch pack fixing screw	ST4.2	1 - 2	0.7 - 1.5

## 10.6.2 Description and Operation

## 10.6.2.1 Display description



## 1. Drive modes

According to the driving mode currently selected by the driver, it is displayed as ECO, SPORT, ECO+.

## 2. Gear display

According to the gear currently selected by the driver, it is displayed as P, N, R, and D.

## 3. Outside temperature

According to the current outside temperature display, the display range is  $-40^{\circ}\text{C}$ ~ $60^{\circ}\text{C}$ . When the temperature outside the vehicle is lower than  $4^{\circ}\text{C}$ , the displayed temperature value will flash for 1 minute and then it will be always displayed (when flashing, if the temperature outside the vehicle rises to  $5^{\circ}\text{C}$  or higher, it will stop flashing immediately).

## 4. Information display

- Graphical and textual information for prompts and alarms.
- ECU information (average power consumption, instantaneous power consumption, tire status).
- Troubleshooting.
- Menu settings.

## 5. Intelligent navigation/adaptive cruise display

This area displays the cruise speed and cruise indicator lamp.

## 6. Accumulated mileage

Shows the total mileage of the vehicle.

7. Special function display

Displays the instructions of lane keeping assist, cruise control and other functions.

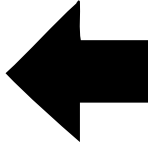
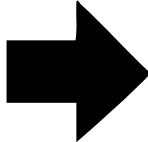



8. Mileage subtotal


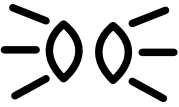



Shows the mileage of the vehicle since the last reset.

9. Endurance mileage






Display the current mileage of the vehicle

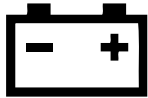




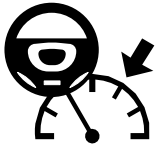
10.6.2.2 Indicator lamp description






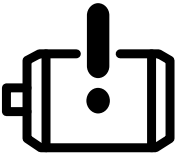
Serial No.	Indicator lamp	Light symbol	Color
1	Left turn signal	 GE11-1153d	Green
2	Right turn signal	 GE11-1152d	Green
3	High beam indicator	 GE10-1044d	Blue
4	Rear fog lamp indicator	 GE11-1157d	Yellow
5	Low outdoor temperature indicator lamp	 GE11-1330d	White




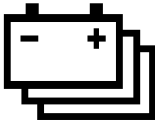
Serial No.	Indicator lamp	Light symbol	Color
6	Intelligence high beam control (IHBC) indicator lamp	 GE11-1317d	White, yellow
7	Position lamp indicator	 GE11-1155d	Green
8	ABS fault warning lamp	 GE11-1161d	Yellow
9	EBD fault warning lamp	EBD GE11-1162d	Yellow
10	Brake system failure warning lamp	 GE11-1160d	Red, yellow
11	Parking brake indicator lamp	 GE11-1150d	Red, Green



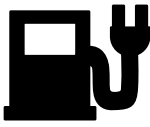


Serial No.	Indicator lamp	Light symbol	Color
12	Electronic parking brake system (EPB) fault warning lamp	 <p>GE11-1316d</p>	Yellow
13	Automatic vehicle hold (AVH) status indicator lamp	<p>AUTO HOLD</p> <p>GE10-1043d</p>	Green, red
14	Airbag failure warning lamp	 <p>GE11-1164d</p>	Red
15	Seat belt warning lamp	 <p>GE11-1163d</p>	Red
16	ESC fault warning lamp	 <p>GE11-1300d</p>	Yellow
17	ESC OFF indicator lamp	 <p>GE11-1301d</p>	Yellow

Serial No.	Indicator lamp	Light symbol	Color
18	Low-voltage battery charging fault warning lamp	 GE11-1159d	Red
19	Automatic emergency braking system (AEB) failure warning lamp	 GE11-1319d	Red
20	Automatic emergency braking system (AEB) turn off indicator lamp	 GE11-1319d	Yellow
21	Adaptive cruise control (ACC) status indicator lamp	 GE11-1320d	Gray, green
22	Adaptive cruise control (ACC) fault warning lamp	 GE11-1322d	Red
23	Intelligent Cruise Control (ICC) status indicator lamp	 GE11-1327d	Gray, green, orange, red

Serial No.	Indicator lamp	Light symbol	Color
24	Lane Keeping Assist (LKA) status indicator lamp	 GE11-1321d	Green, red
25	EPS fault warning lamp	 GE11-1302d	Yellow
26	TPMS warning lamp	 GE11-1165d	Yellow
27	Reducer failure warning lamp	 GE11-1306d	Yellow, red
28	System fault warning lamp	 GE11-1156d	Red
29	Motor and controller overheating warning lamp	 GE10-1041d	Red

Serial No.	Indicator lamp	Light symbol	Color
30	Power battery failure warning lamp	 GE11-1151d	Red
31	Charging cable connection indicator lamp	 GE11-1310d	Red
32	Power limit indicator lamp	 GE11-1307d	Yellow
33	Ready-to-run indicator lamp	READY GE11-1149d	Green
34	Power battery low level indicator lamp	 GE11-1323d	Yellow
35	Economic mode indicator lamp	ECO GE11-1312d	Green

Serial No.	Indicator lamp	Light symbol	Color
36	Sport mode indicator lamp	<p style="text-align: center;"><b>SPORT</b></p> <p style="text-align: center;"><small>GE11-1313d</small></p>	Red
37	Long distance mode indicator lamp	<p style="text-align: center;"><b>ECO+</b></p> <p style="text-align: center;"><small>GE11-1326d</small></p>	Green
38	Low speed alarm off indicator lamp	 <p style="text-align: center;"><small>GE11-1305d</small></p>	Yellow
39	HDC system indicator lamp	 <p style="text-align: center;"><small>GE11-1324d</small></p>	Green, yellow
40	Power battery charging indicator lamp	 <p style="text-align: center;"><small>GE11-1308d</small></p>	Yellow

### 10.6.3 How the system works

#### 10.6.3.1 How the system works

##### Instrument backlight

The brightness of instrument backlight is controlled by judging the key gear, position lamp and MMI backlight adjustment signal, and sends out the backlight brightness level CAN signal;

Regardless of whether the driving mode is related or not, the background color signal sent by the MMI in the ECO+ mode is blue, which is consistent with the ECO mode;

The blue and red renderings are only different from the ECO/SPORT symbol;

The skin color is always linked with the driving mode.

##### Battery capacity meter

The battery capacity meter simulates the percentage of the current remaining capacity through the ratio of the colored bar to the battery height. When the power battery's remaining capacity is relatively sufficient, the bar is displayed in green; when the remaining capacity is less than or equal to 20% but greater than 10%, the bar is displayed in yellow; when the remaining capacity is less than or equal to 10%, the bar is displayed in red.

Please charge the battery in time when the color of the bar on the battery capacity meter turns to yellow or red.

##### Power table

The battery capacity meter displays the current output power and recovered power of the drive motor, in kW, and the display range is -100~150kW.

The battery capacity meter indicates in the blue area, indicating that the drive motor is consuming electrical output power.

The power meter indicates in the green area, indicating that the drive motor is recovering energy to charge the power battery.

When the vehicle speed is greater than or equal to 2 kilometers/hour, the power meter starts to display the output power, and when the vehicle speed is greater than or equal to 7 kilometers/hour, the power meter starts to display the recovered power.

##### Outdoor temperature

The accuracy is 0.5°C. If the signal is an integer, the integer will be displayed without decimal point. For example, if the temperature is 23°C, it will display 23°C instead of 23.0°C;

##### Clock

Time setting includes: combination meter time setting-steering wheel button input (MMI button operation CAN signal), combination meter time setting-audio touch screen setting input (MMI clock CAN signal);

When there is no external input, the combination meter uses its own clock crystal oscillator signal as the initial display time to display and time; when receiving either the steering wheel button setting signal (MMI button operation CAN signal), MMI setting signal (MMI clock CAN signal) any input, the combination meter takes the received input signal as the initial display time and uses the crystal oscillator of the combination meter to continue timing;

When the battery is powered on for the first time, start timing from 00:00:00;

##### Gear

Gearshift operation:

- a. When there is a gear shifting action, the gear effect becomes greater, the current gear is displayed in real time, and the gear shifting action is completed in 2S;
- b. The judgment of the shifting action is based on the 'change of the new and old gear information'. After confirming that there is a gear change, the current gear after the current shift is enlarged, and it will be restored after 2S.
- c. Press the P gear button, the gear display becomes larger, and 2S resumes after the gear shifting is completed.

##### Mileage subtotal/accumulated mileage

Mileage subtotal/accumulated mileage is calculated through the integration of vehicle speed to time;

The mileage subtotal is displayed and updated once every 0.1km, and the cumulative mileage is displayed once every 1km;

The display range of mileage subtotal: 0.0 ~ 999.9km, reset from 0 after 999.9km; the cumulative display range of mileage: 0-999999km, keep this value unchanged after exceeding 999999km;

When the vehicle speed signal is greater than 220km/h and is valid, the meter will normally perform subtotal accumulation according to the vehicle speed of 220km/h.

Refer to HMI definition for mileage subtotal reset operation;

The accumulated mileage reset operation can only be performed 3 times, and the accumulated mileage of 3 times reset must be less than 500km. For the reset operation, please refer to the HMI definition;

Note: when the total mileage is cleared, the mileage subtotal is also cleared, and the maintenance mileage is cleared;

In order to prevent the total mileage value from being lost, the meter updates the value stored in the EEPROM every 1 kilometer. After the battery is powered off, the maximum error of the total mileage is 1 km. If the total mileage value read from EEPROM is invalid, the corresponding display position will display '—'.

After ignition, the meter will check the total mileage value in RAM. If the RAM value is lost or invalid, re-read the total mileage value from the EEPROM. The accuracy of the total mileage value saved in RAM is 1 km.

#### Average power consumption

Average power consumption = (accumulated total power consumption/accumulated mileage) \* 100; average power consumption within the entire driving range;

Display range: 0.0-99.9kW·h/100km, resolution: 0.1kW·h/100km;

On the instrument, the battery will be updated after traveling 0.5 km or the average power consumption is cleared after traveling 0.5 km, and then the average power consumption data will be updated every 10s;

Calculate from READY=1; the current is still calculated if the current is negative; when the average power consumption is cleared for the first 0.5 kilometers or when the average power consumption is calculated as a negative value, the average power consumption displays —kW·h/100km;

The average power consumption shows the state before 15 power off, that is, the average power consumption of the meter displays the value before 15 power off when the power is turned on again after 15 power off;

Refer to HMI definition for the operation of resetting average power consumption;

When the signal is overtime or the signal is invalid, the average power consumption is displayed —kW·h/100km; after the signal returns to normal, based on the previous data loss, the received signal will be indicated normally;

#### Instantaneous power consumption

Instantaneous power consumption = refresh time (accumulated total power consumption/accumulated mileage) \* 100; (1s)

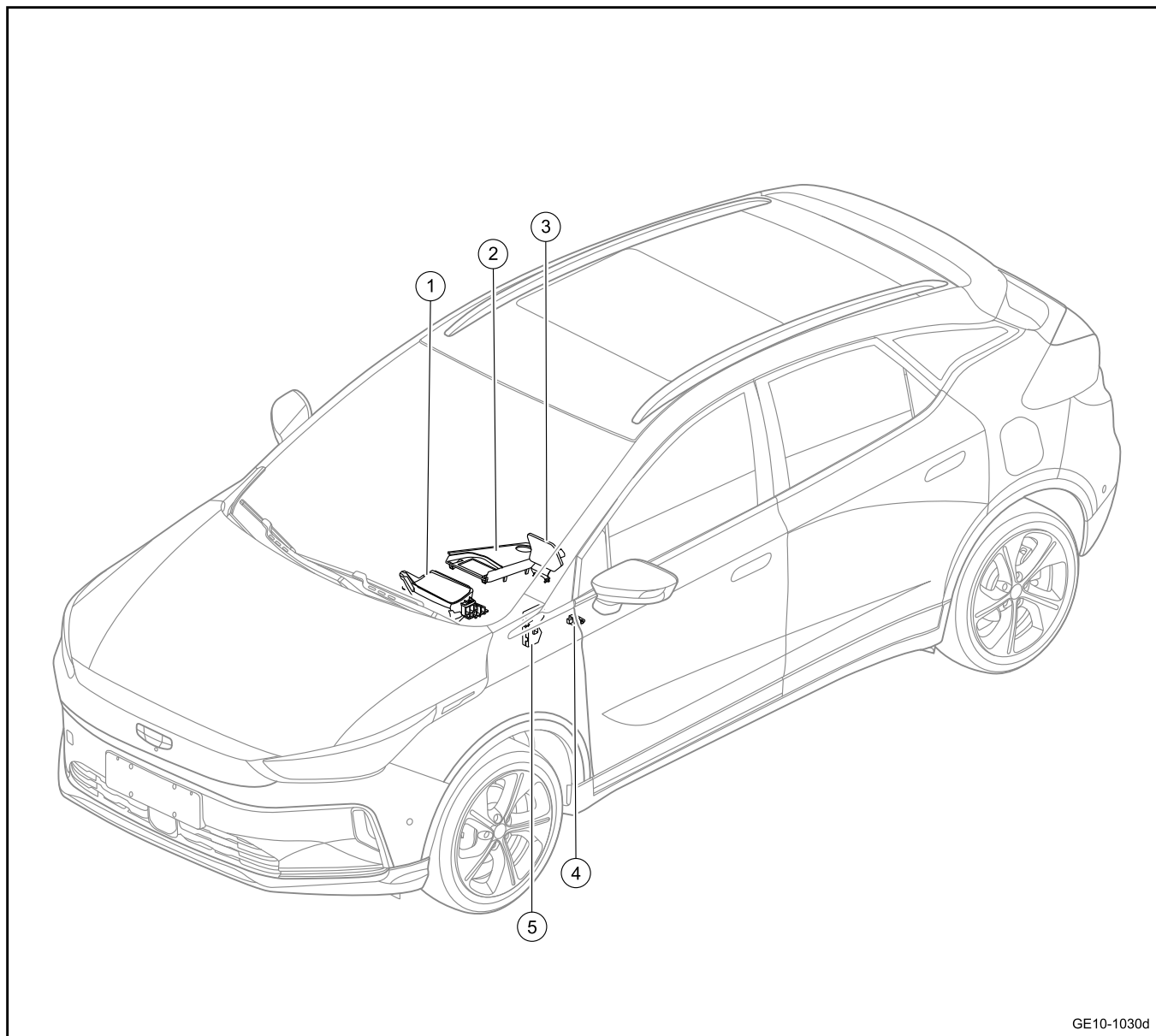
Display range: -99.9–99.9kW·h/100km, resolution: 0.1kW·h/100km;

Calculate from READY=1, and vehicle speed>0km/h, display updating time 1s;

When the vehicle speed = 0km/h, the instantaneous power consumption display —kW·h/100km;

10.6.4 Part location

10.6.4.1 Part Position

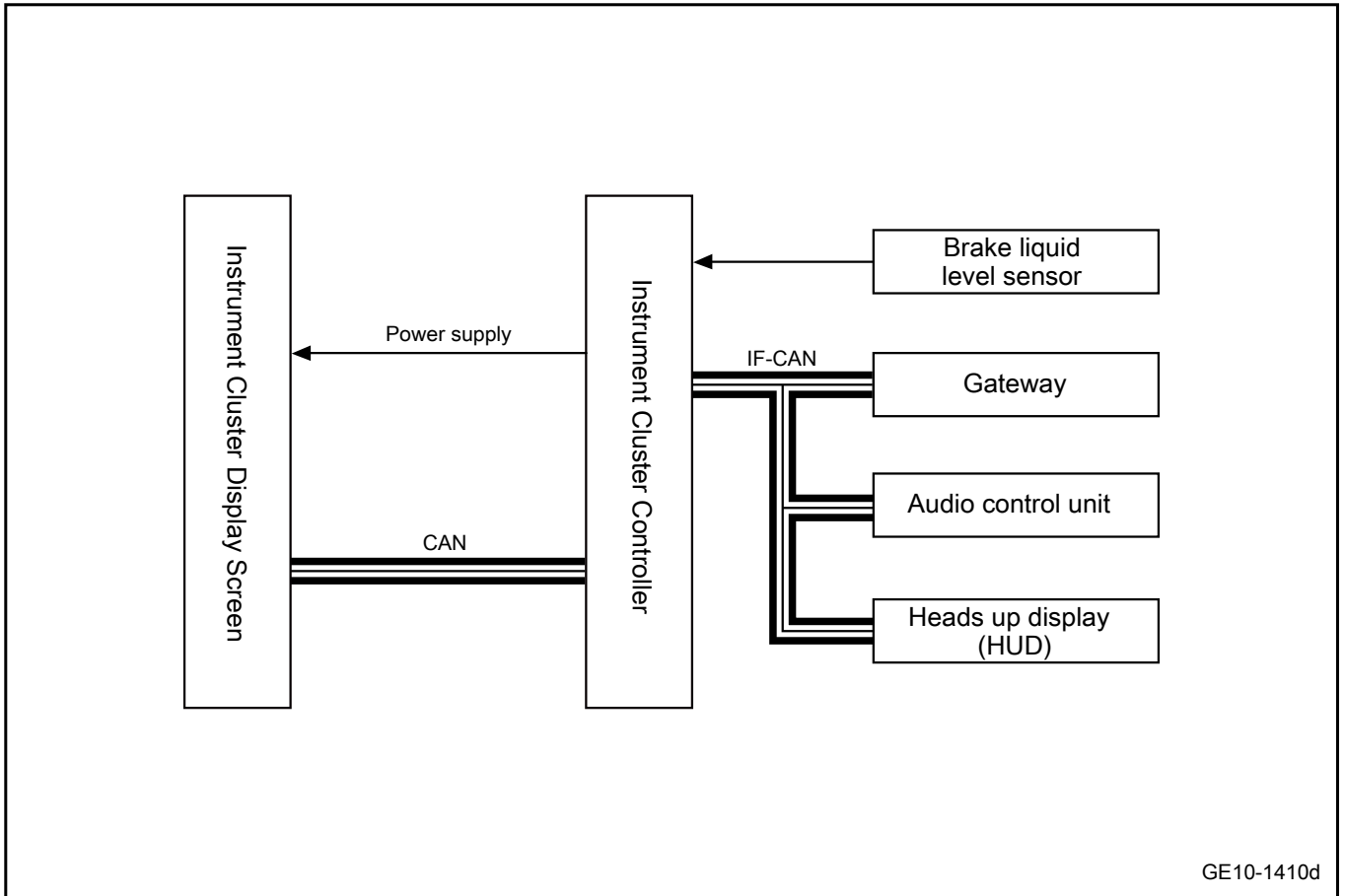


- |                                     |   |
|-------------------------------------|---|
| 1. Heads up display (HUD)           | 4. Dashboard switch assembly                |
| 2. Auxiliary instrument switch pack | 5. Instrument cluster control unit assembly |
| 3. Combination instrument assembly  |   |



10.6.5 Electrical block diagram

10.6.5.1 Electrical schematic diagram of the instrument cluster system



10.6.6 Diagnostic information and steps

10.6.6.1 Diagnosis Description

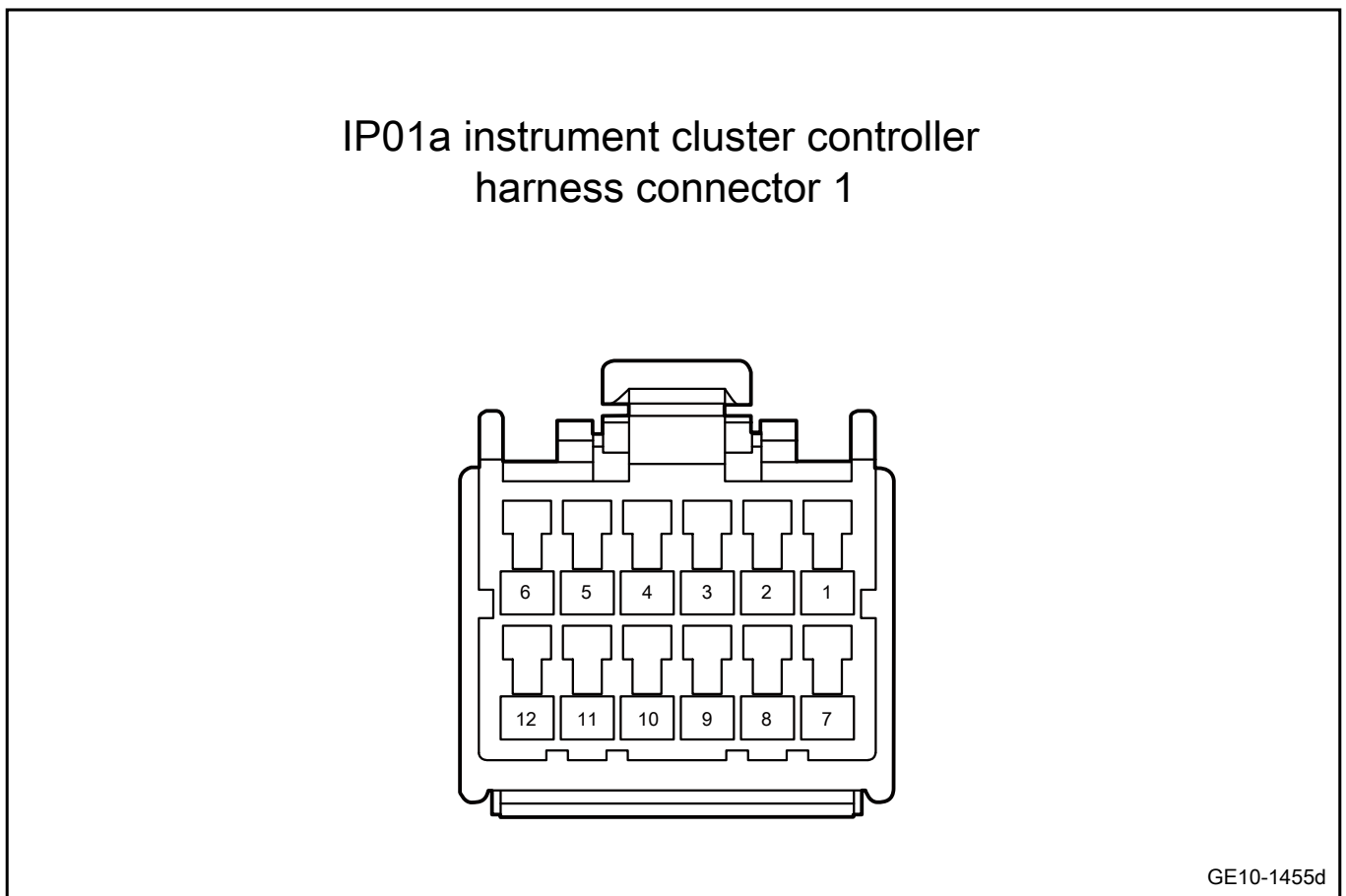
Before fault diagnosis of instrument cluster/driver information system, refer to and [Description and Operation](#) and [System Working Principles](#). Understand and familiarize yourself with operating principles of combination instrument/driver information system before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of instrument cluster/driver information system should be started with visual inspection, and then the maintenance personnel are guided for the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

10.6.6.2 Routine inspection

- Check after-sales installations that may affect the operation of instrument cluster/driver information system. Make sure these installations will have no influence in the operation of instrument cluster/driver information system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and make sure the sensors of various instrument display information are normal.

10.6.6.3 Instrument cluster terminal list

IP01a IP cluster harness connector 1



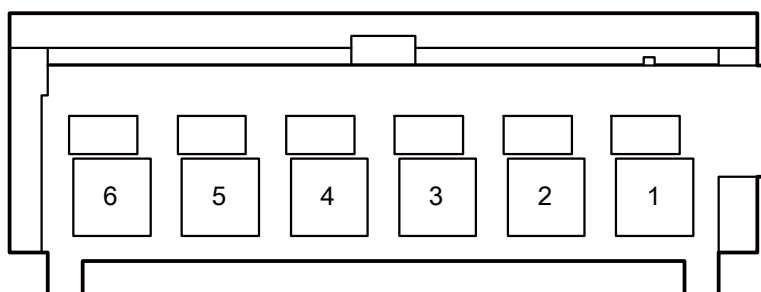
GE10-1455d

Terminal No.	Terminal name	Terminal description
1	B+ Power supply	Instrument cluster battery power supply
2	IG1 power supply	Instrument cluster ACC\ON\START power supply
3	-	-

Terminal No.	Terminal name	Terminal description
4	IF CAN-L	Infotainment CAN low line
5	IF CAN-H	Infotainment CAN high line
6	Brake liquid level sensor signal	Brake liquid level sensor signal
7	Ground connection	Instrument cluster grounding circuit
8	Ground connection	Instrument cluster grounding circuit
9	-	-
10	-	-
11	-	-
12	-	-

IP261b IP cluster harness connector 2

IP261b combination instrument controller harness connector 2

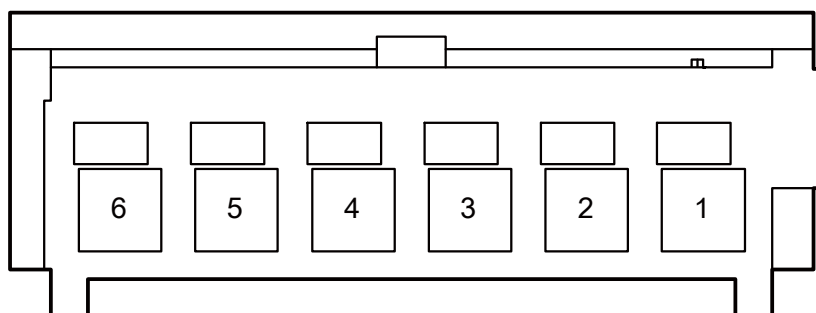


GE10-1456d

Terminal No.	Terminal name	Terminal description
1	CAN-L	Private CAN low line
2	CAN-H	Private CAN high line
3	-	-
4	-	-
5	Instrument display ground	Instrument display grounding circuit
6	Instrument display power supply	Instrument display power circuit

IP351 IP cluster display screen harness connector

IP351 instrument cluster screen  
harness connector



GE10-1457d

Terminal No.	Terminal name	Terminal description
1	Power supply	Instrument display assembly power supply circuit
2	Ground connection	Instrument display assembly grounding circuit
3	-	-
4	-	-
5	CAN-H	Private CAN high line
6	CAN-L	Private CAN low line

10.6.6.4 Fault symptom table

Symptom	Suspected parts	Maintenance method
Power supply fault of combination instrument	1. Fuse	Refer to <a href="#">combination instrument power failure</a>
	2. Harness and connector	
	3. Instrument cluster control unit	
Communication fault of combination instrument	1. Harness and connector	Refer to <a href="#">Instrument cluster communication fault</a>
	2. Gateway	
	3. Instrument cluster control unit	
Brake fluid level indicator lamp failure	1. Harness and connector	Refer to <a href="#">Braking fluid level indicator lamp fault</a>
	2. Instrument cluster control unit	
	3. Braking fluid level sensor	

Symptom	Suspected parts	Maintenance method
Instrument cluster display failure	1. Harness and connector	See <a href="#">Instrument cluster display screen failure</a>
	2. Instrument cluster display screen	
	3. Instrument cluster control unit	
HUD power failure	1. Harness and connector	See <a href="#">Head up display power failure</a>
	2. Fuse	
	3. Heads up display (HUD)	
Head up display (HUD) communication failure	1. Harness and connector	See <a href="#">Head up display communication failure</a>
	2. Gateway	
	3. Heads up display (HUD)	

### 10.6.6.5 List of Diagnostic Trouble Codes (DTC) of instrument cluster controller

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Control module input voltage is low	Refer to <a href="#">combination instrument power failure</a>
U300617	Control module input voltage is high	
U007300	CAN bus off	Refer to <a href="#">Instrument cluster communication fault</a>
U012287	Communication with ESC is lost	
U013187	Communication with EPS is lost	
U014087	Communication with BCM is lost	
U014687	Communication with the gateway is lost.	
U015187	Communication with ACU is lost	
U016487	Communication with AC is lost	
U021487	Communication with the keyless entry system is lost.	
U023587	Communication with the front radar module is lost.	
U120387	Communication with the front camera module is lost.	
U017087	Communication with the side rear radar module is lost.	
U011287	Communication with BMSH is lost	
U016087	Communication with AVAS is lost	
U111487	Communication with VCU is lost	
U111587	Communication with OBC is lost	
U011087	Communication with IPU is lost	
U015687	Communication with MMI is lost	
U010387	Loss of communication with electronic gear selector module	
U020887	Communication with DSCU is lost.	
U111A87	Communication with IB is lost	
U023687	Communication with ESCL is lost	

### 10.6.6.6 List of Diagnostic Trouble Codes (DTC) of head-up display

Diagnostic Trouble Code	Description	Fault location/elimination method
U014087	Communication with BCM is lost	See <a href="#">Head up display communication failure</a>
U015587	Communication with IPK is lost	
U015687	Communication with MMI is lost	
U014687	Communication with GW is lost	
U111487	Communication with VCU is lost	
U120387	Communication with FCS is lost	
U007300	CAN bus off	
U300616	Control module input voltage is low	See <a href="#">Head up display power failure</a>
U300617	Control module input voltage is high	

### 10.6.6.7 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.6.6.8 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 10.6.6.9 Data stream list

IPK

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km

## HUD

Serial No.	DID description	Physical value range	Unit
1	Vehicle speed	0-460.6875	km/h
2	Odometer	0-999999.9	km

## 10.6.6.10 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by IPK can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

## Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- Operate the start-and-stop switch to place the power in mode "OFF".
- Connect the scan tool.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Select “IPK”/“action test”.
- Refer to the following table and conduct active test.

## IPK

Diagnostic apparatus display item	Test components	Control range
Buzzer test	IPK	ON/OFF
TFT LCD test	IPK	All pixels are white/all pixels are black/ all pixels are red/all pixels are green/all pixels are blue
Alarm lamp test	IPK	ON/OFF

## HUD

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by HUD can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

**Note**

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Operate the start-and-stop switch to place the power in mode "OFF".
- b. Connect the scan tool.
- c. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- d. Select "HUD"/"action test".
- e. Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Timer value	HUD	0-100s
Test image number	HUD	0-15
Brightness value	HUD	0-100%
Eye box position	HUD	0-100

**10.6.6.11 Power supply fault of combination instrument**

## 1. DTC description:

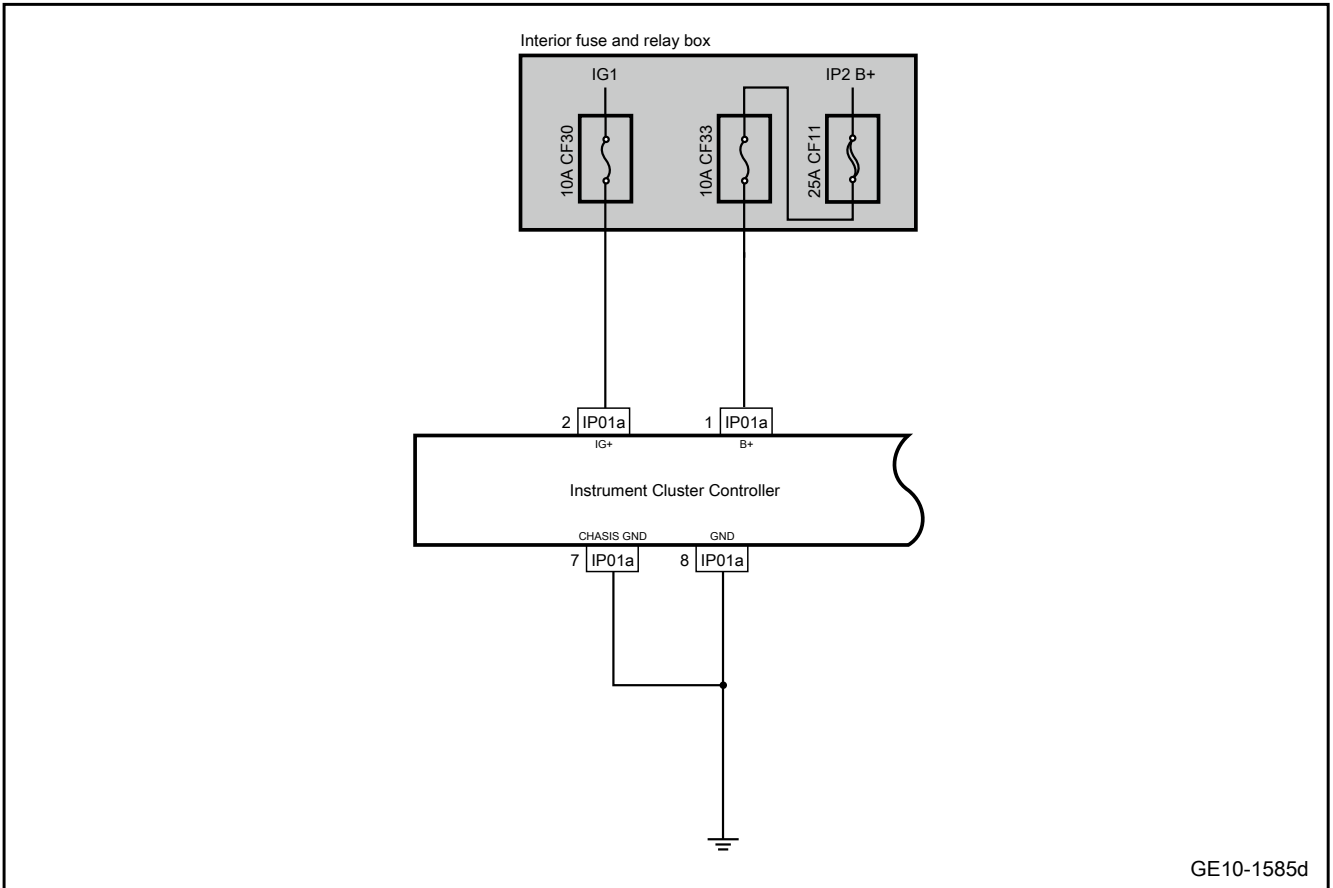
Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measure the voltage < 9V	1. KL_15 == open 2. Diagnosis service \$85 is not activated	1. Battery 2. Circuit 3. Fuse 4. Instrument cluster control unit
U300617	Measure the voltage > 16 V		

## 3. Schematic circuit diagram:





GE10-1585d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

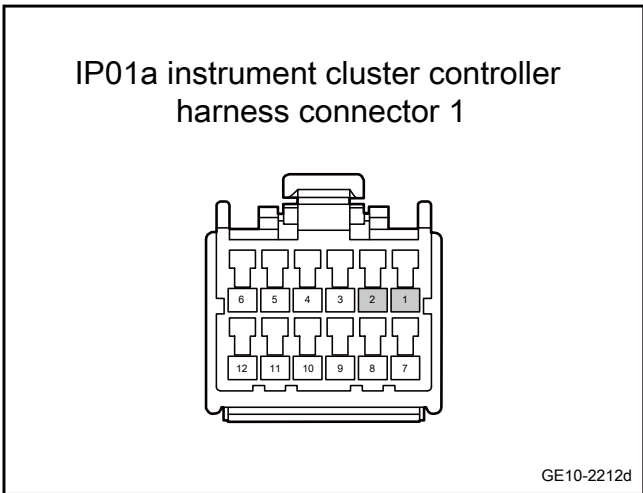
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF11 and check whether the fuse CF11 is blown.  
  
Rated fuse capacity: 25A
- C. Pull off the interior fuses CF30, CF33 and check whether they are blown.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the power circuit of the instrument cluster controller is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the instrument cluster controller harness connector IP01a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP01a(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP01a(2)		

- E. Confirm whether the measured value meets the standard.

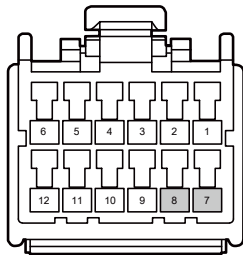
No

Repair or replace the harness.

Yes

**Step 5** | Check whether instrument cluster controller grounding harness is normal.

IP01a instrument cluster controller harness connector 1



GE10-2213d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the instrument cluster controller harness connector IP01a.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP01a(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP01a(8)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the instrument cluster controller.

- A. Replace the instrument cluster controller. Refer to [Replacement of instrument cluster controller](#)

Next Step

**Step 7** Reprogram and reset the instrument cluster controller.

- A. Reprogram and reset the instrument cluster controller, refer to [Programming and setting each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

### 10.6.6.12 Communication fault of combination instrument

#### 1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U012287	Communication with ESC is lost
U013187	Communication with EPS is lost
U014087	Communication with BCM is lost
U014687	Communication with the gateway is lost.
U015187	Communication with ACU is lost
U016487	Communication with AC is lost
U021487	Communication with the keyless entry system is lost.
U023587	Communication with the front radar module is lost.
U120387	Communication with the front camera module is lost.
U017087	Communication with the side rear radar module is lost.
U011287	Communication with BMSH is lost
U016087	Communication with AVAS is lost
U111487	Communication with VCU is lost
U111587	Communication with OBC is lost
U011087	Communication with IPU is lost
U015687	Communication with MMI is lost
U010387	Loss of communication with electronic gear selector module
U020887	Communication with DSCU is lost.
U111A87	Communication with IB is lost
U023687	Communication with ESCL is lost

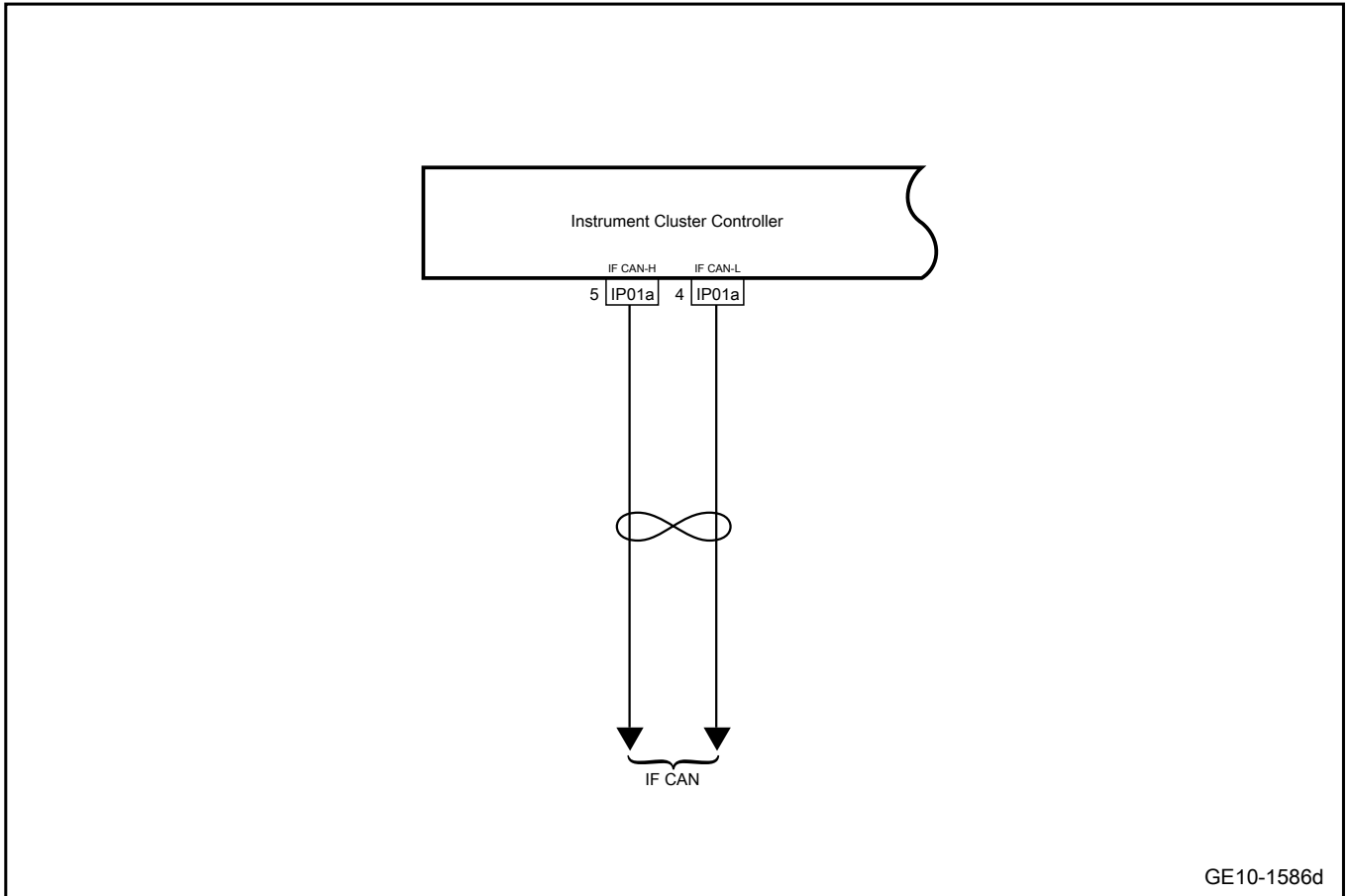
#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. The supply voltage of the CAN bus node is in the range of 9-16V. 2. The TDiagenable condition is met 3.KL_15==open 4. Diagnosis service \$85 is not activated	1. Harness 2. Diagnostic interface 3. Instrument cluster control unit

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	Frame loss is tested. ( ID= 0x125 period timer: 20 milliseconds) ( defined in CMX)	1. The supply voltage of the CAN bus node is in the range of 9-16V; 2. No bus disconnection is detected, and the electronic control unit is on this controller LAN; 3. KL_15=On; 4. The TDiagenable condition is met; 5. Diagnosis service \$85 is not activated; 6. The diagnosis configured in DID F110 is valid offline	
U013187	Frame loss is tested. ( ID= 0x150 period timer: 20 milliseconds) ( defined in CMX)		
U014087	No ID received for more than 250ms: 1F0\1F2 signal or continuous >500ms without receiving ID:284\285\286 \2FD signal If configured without TPMS, ignore 2FD \1F2		
U014687	No ID received for more than 500ms: 250\2FC signal		
U015187	Frame loss is tested. ( ID= 0x380 cycle time: 200ms) (defined in CMX)		
U016487	Frame loss is tested. ( ID= 0x2F1 cycletimer:100ms) (defined in CMX)		
U021487	ID: Either PEPS_0x1E2_ TimeoutFlag or PEPS_0x272_ TimeoutFlag in the 2FC message is 1		
U023587	No receipt of ID:1A2\1A3\1A6 information for more than 250ms		
U120387	ID:1B0\1B2 signal is not received for more than 250ms or ID:2E0 signal is not received for more than 500ms		
U017087	No receipt of ID: 2E4 information for more than 500ms		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	No ID received for more than 2500ms: 354 signal or last> 500ms missed ID: 17A signal received or lasted> 250ms not received ID: 17B signal or ID: 250 BMSH_0x0B0_ TimeoutFlag or BMSH_0x178_ TimeoutFlag or BMSH_0x211_ TimeoutFlag in the message is 1		
U016087	No receipt of ID: 2B2 information for more than 500ms		
U111487	No ID received for more than 250ms: 162\1A5\165 signal		
U111587	No ID received for more than 500ms: 220\222 signal		
U011087	Continuous> 250ms No ID:0A8 signal or ID:250 IPU_0x176_ TimeoutFlag or IPU_0x360_ TimeoutFlag in the ID: 250 message is not received. Either one is 1		
U015687	Frame loss is tested. (ID= 0x2A4 cyclic timer: 100ms) ( defined in CMX)		
U010387	No receipt of ID: 145 information for more than 250ms		
U020887	No receipt of ID: 2D2 information for more than 500ms		
U111A87	No receipt of ID: 225 information for more than 500ms		
U023687	No receipt of ID: 279 information for more than 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the instrument cluster controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the IF-CAN bus.
--------	--

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN network is normal.

No

Check or repair the IF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4	Replace the instrument cluster controller.
--------	--

- A. Check the instrument cluster power supply and grounding harness. Refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)

Next Step

Step 5	Reprogram and reset the instrument cluster controller.
--------	--

- A. Reprogram and reset the instrument cluster controller. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

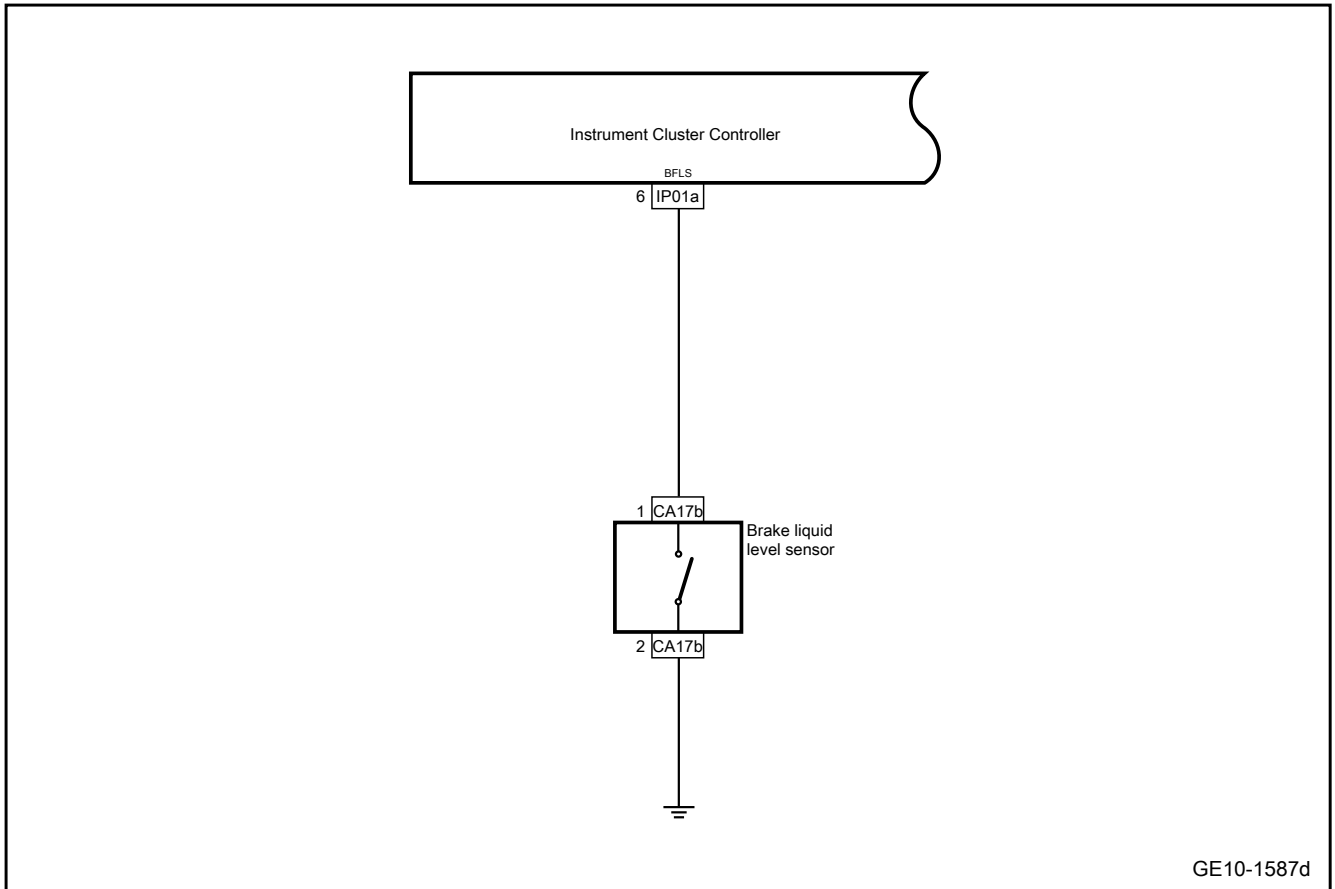
No

Step 7	System is normal.
--------	-------------------



10.6.6.13 Brake fluid level indicator lamp failure

1. Schematic circuit diagram:



GE10-1587d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of braking fluid sensor for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

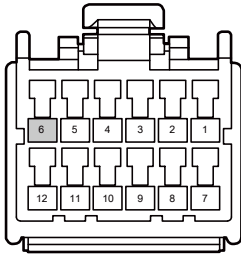
No

Repair or replace the faulty part.

Yes

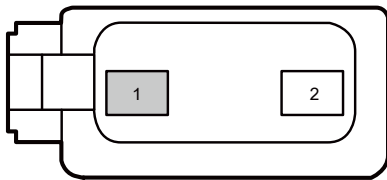
Step 2	Check whether the harness between the instrument cluster controller and braking fluid sensor is normal.
--------	---

IP01a instrument cluster controller  
harness connector 1



GE10-2214d

CA17b brake liquid level sensor  
harness connector



GE10-2215d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA17b of braking fluid level sensor
- C. Disconnect the instrument cluster controller harness connector IP01a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP01a(6)	CA17b(1)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP01a(6)	Vehicle body is grounded.	Standard voltage: equal to 0V

- G. Confirm whether the measured value meets the standard.

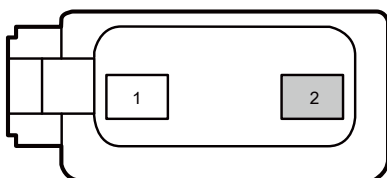
No

Repair or replace the harness.

Yes

Step 3 Check whether the grounding harness of braking fluid sensor is normal.

CA17b brake liquid level sensor  
harness connector



GE10-2216d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector CA17b of braking fluid level sensor
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA17b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace braking fluid sensor.

- A. Replace braking fluid sensor, refer to replacement of braking fluid sensor
- B. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Replace the instrument cluster controller.

- A. Check the instrument cluster controller power supply and grounding harness, refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)

Next Step

Step 6 Reprogram and reset the instrument cluster controller.

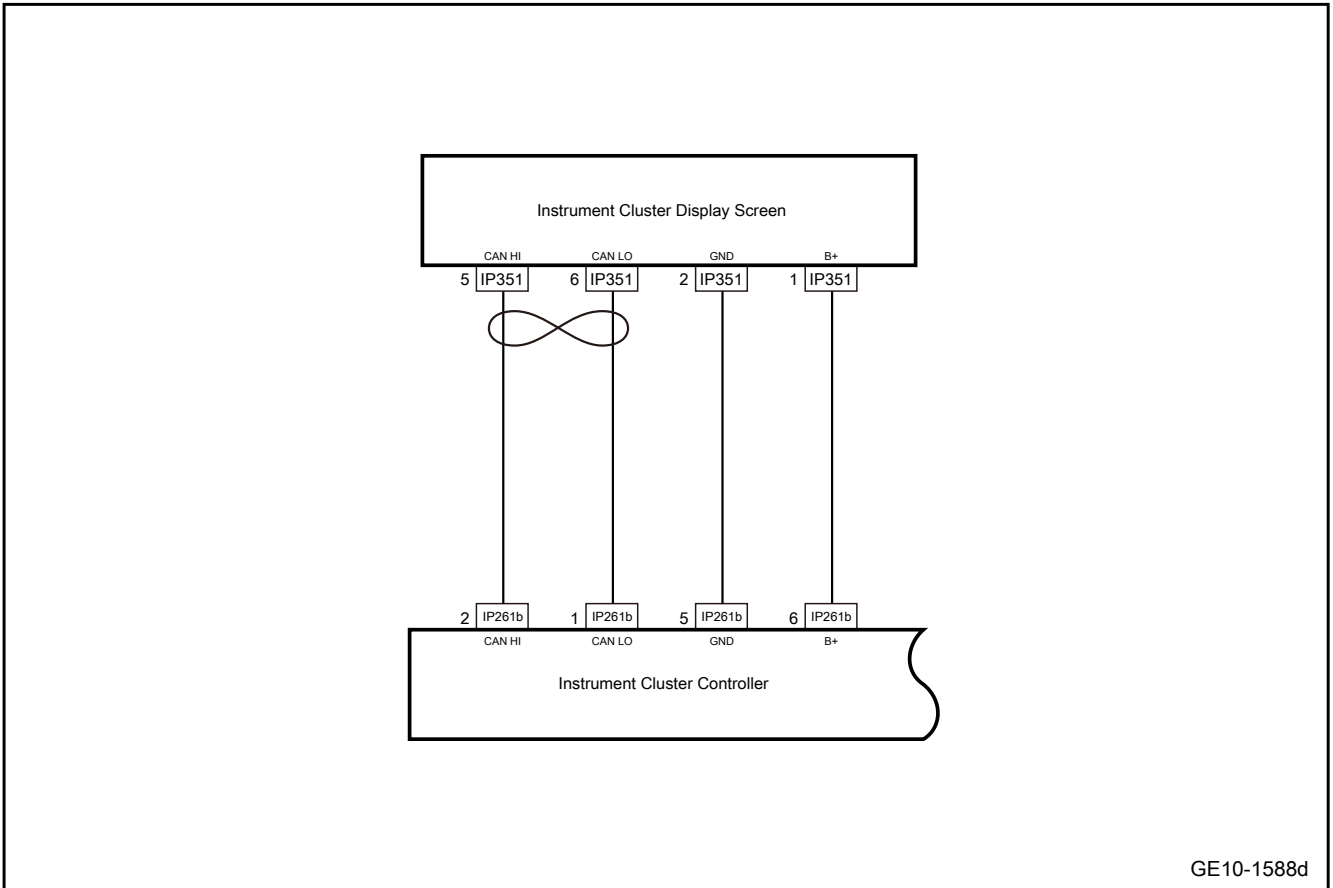
- A. Reprogram and reset the instrument cluster controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 7 System is normal.

### 10.6.6.14 Instrument cluster display failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster display screen harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

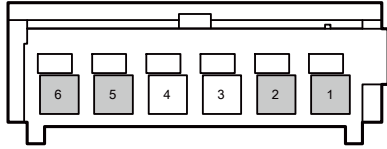
No

Repair or replace the faulty part.

Yes

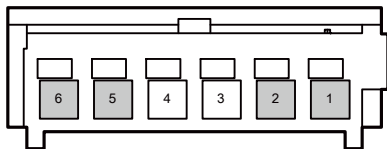
Step 2	Check whether the wiring harness between the instrument cluster controller and the instrument cluster display screen is normal.
--------	---

IP261b combination instrument controller harness connector 2



GE10-2217d

IP351 instrument cluster screen harness connector



GE10-2218d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the instrument cluster display screen harness connector IP351.
- C. Disconnect the instrument cluster controller harness connector IP261b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(6)	IP351(1)	Standard resistance: less than 1Ω
IP261b(5)	IP351(2)	
IP261b(2)	IP351(5)	
IP261b(1)	IP351(6)	
IP351(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP351(2)		
IP351(5)		
IP351(6)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP351(1)	Vehicle body is grounded.	Standard voltage: equal to 0V
IP351(2)		
IP351(5)		
IP351(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the instrument cluster display screen.

- A. Replace the instrument cluster display screen, refer to [Replacement of instrument cluster display screen](#)
- B. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4	Replace the instrument cluster controller.
--------	--

- A. Check the instrument cluster controller power supply and grounding harness, refer to [Instrument cluster controller power supply failure](#)
- B. Replace the instrument cluster controller, refer to [Replacement of instrument cluster controller](#)

Next Step

Step 5	Reprogram and reset the instrument cluster controller.
--------	--

- A. Reprogram and reset the instrument cluster controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6	System is normal.
--------	-------------------

### 10.6.6.15 HUD power failure

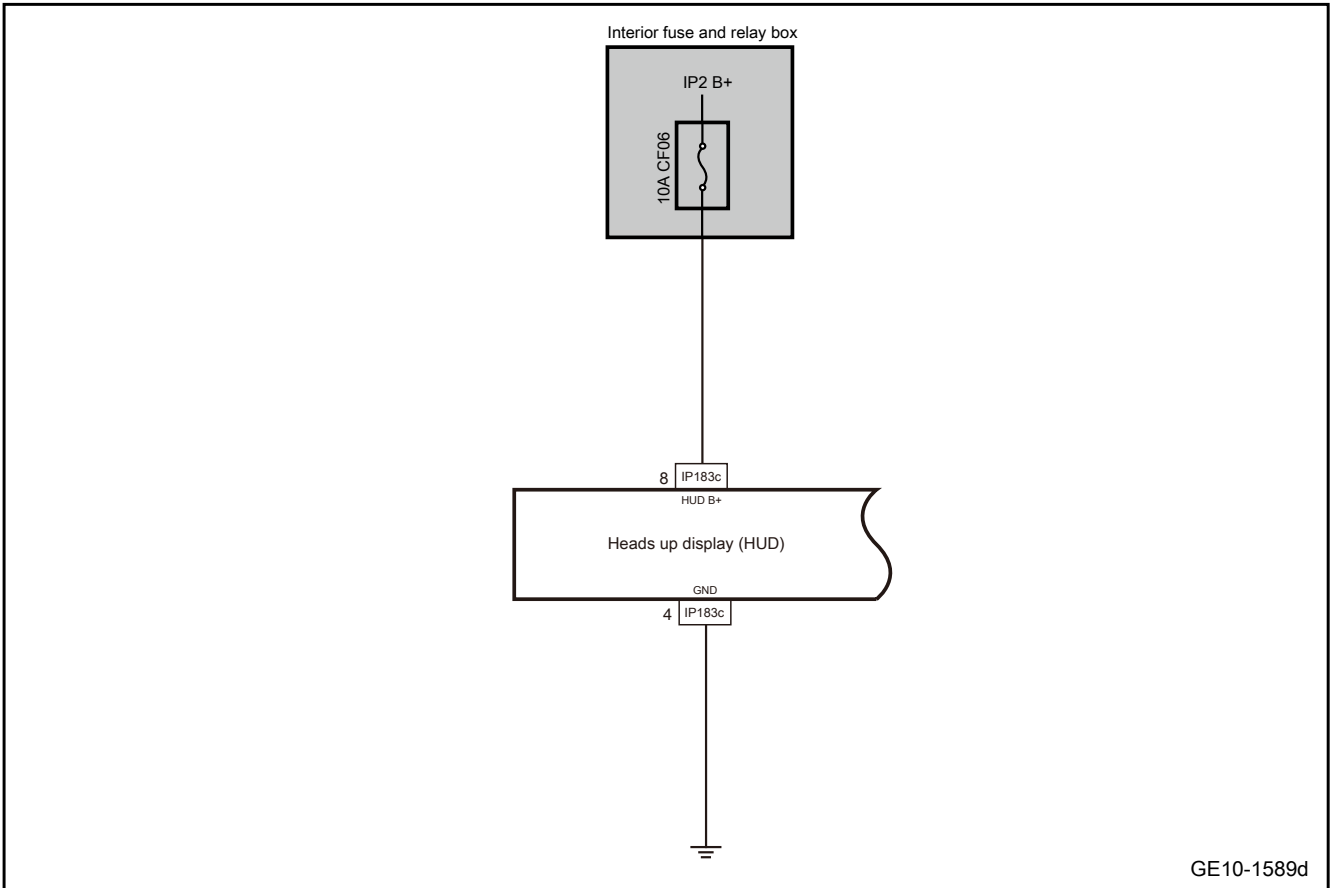
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measure the voltage<9V	1. Ignition status is "Ignition ON".	1. Battery 2. Circuit 3. Fuse 4. Heads up display (HUD)
U300617	Measure the voltage>16 V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the HUD module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF06 and check whether the fuse CF06 is blown.

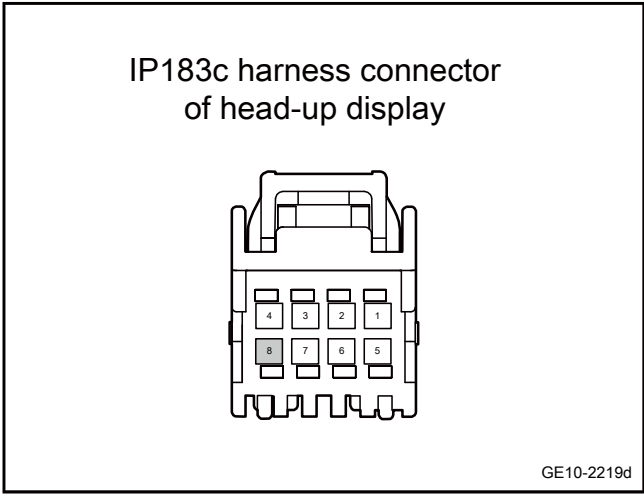
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the HUD power circuit is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the HUD module harness connector IP183c.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP183c(8)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

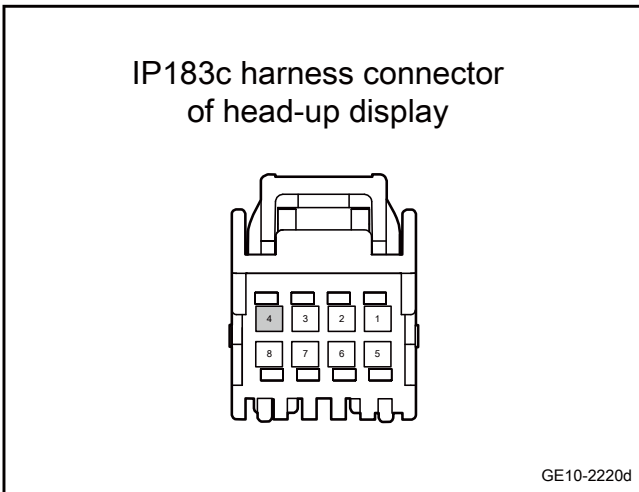
No

Repair or replace the harness.

Yes

**Step 5** | Check whether the grounding harness of HUD module is normal.





- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the HUD module harness connector IP183c.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP183c(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the heads up display (HUD).

- A. Replace the heads up display (HUD). See [Replacement of head up display](#)

Next Step

**Step 7** Reprogram and reset the HUD.

- A. Reprogram and set the HUD, refer to [Programing and setting each module of the complete vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

### 10.6.6.16 Head up display (HUD) communication failure

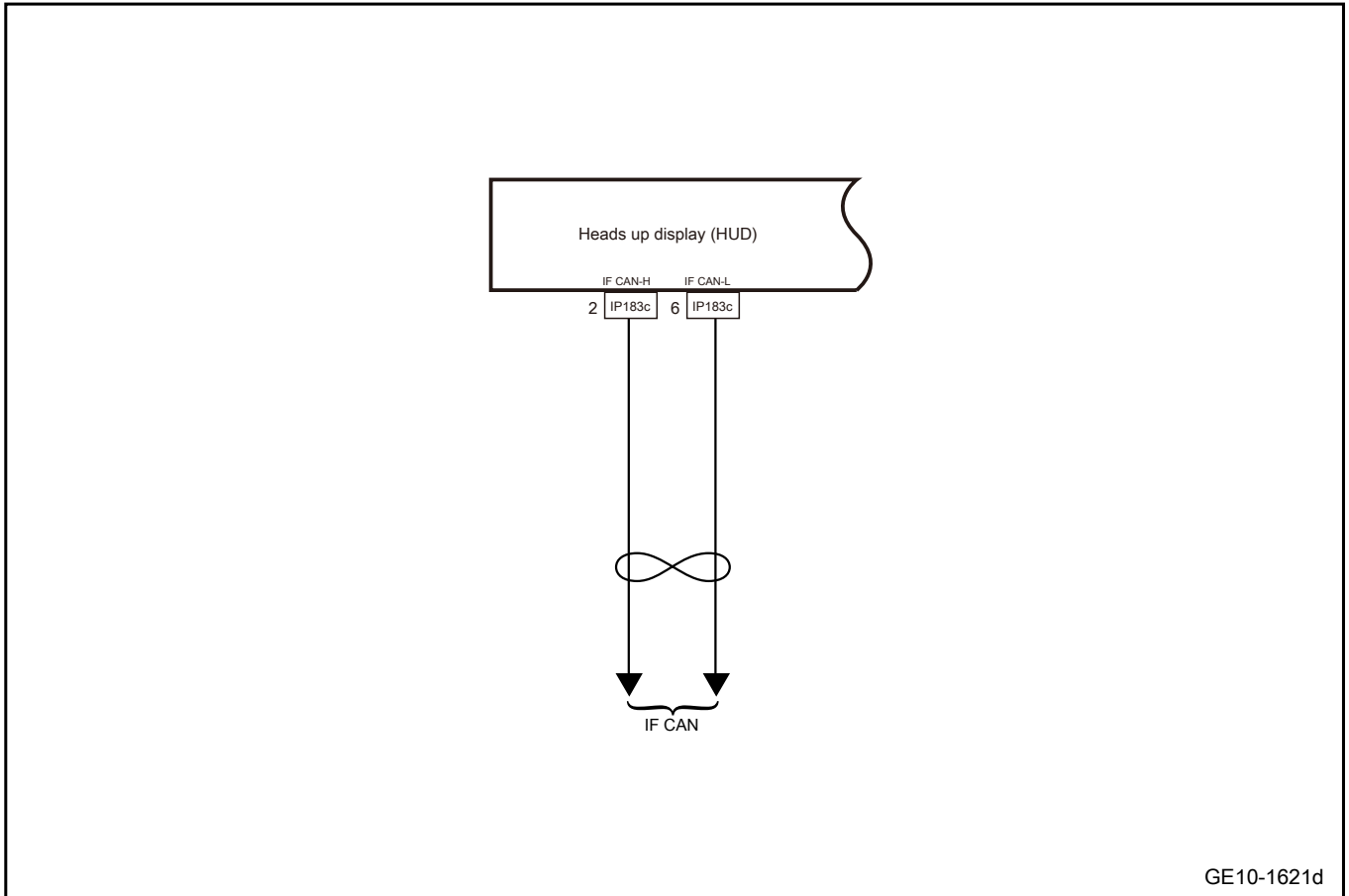
#### 1. DTC description:

Diagnostic Trouble Code	Description
U014087	Communication with BCM is lost
U015587	Communication with IPK is lost
U015687	Communication with MMI is lost
U014687	Communication with GW is lost
U111487	Communication with VCU is lost
U120387	Communication with FCS is lost
U007300	CAN bus off

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U014087	BCM lost (ID=0x1F0) information for 250 milliseconds	1. The supply voltage of the CAN bus node is in the range of 9-16V. 2. The TDiagenable condition is met 3. No bus disconnection is detected, and there are more than 1000ms after recovery of last bus disconnection 4. Ignition status is "Ignition ON".	1. Harness 2. Diagnostic interface 3. Heads up display (HUD)
U015587	5T lost IPK (ID=0x26D) message		
U015687	5T lost MMI (ID=0x2A4) message		
U014687	5T lost GW (ID=0x2FC) message		
U111487	VCU_HBCAN (ID=0x162) message loss for 250 milliseconds		
U120387	FCS (ID=0x1B0) messages lost within 250 milliseconds		
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. The supply voltage of the CAN bus node is in the range of 9-16V. 2. Bus disconnection is detected	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the HUD harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the IF-CAN bus.
--------	--

- A. Perform IF-CAN network integrity check, refer to [IF-CAN bus network integrity check](#)
- B. Confirm whether the IF-CAN network is normal.

No

Check or repair the IF-CAN bus communication faults, and replace or repair the harness if necessary.

Yes

Step 4	Replace the heads up display (HUD).
--------	-------------------------------------

- A. Check the head up display power and ground wiring harness. See [Head up display power failure](#)
- B. Replace the head up display, see [Replacement of head up display](#)

Next Step

Step 5	Reprogram and reset the HUD.
--------	------------------------------

- A. Reprogram and reset the HUD. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

### 10.6.6.17 Mileage zero clearing

#### 1. Diagnosis steps

Step 1	Enter the first level menu and select the 'mileage reset' function in the first level menu.
--------	---

Next Step

Step 2	Click 'OK' to enter the first prompt interface.
--------	---

Next Step

Step 3	Click 'Next' to start.
--------	------------------------

Next Step

Step 4	The interface of the diagnostic instrument prompts: The mileage is cleared successfully.
--------	--

Next Step

Step 5	The diagnostic tool interface prompts: the mileage reset failed.
--------	--

Next Step

Step 6	The end.
--------	----------

## 10.6.7 Removal and installation

### 10.6.7.1 Replacement of instrument cluster assembly

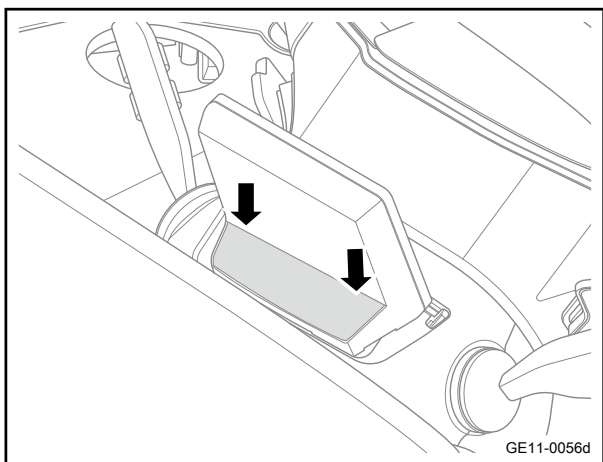
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

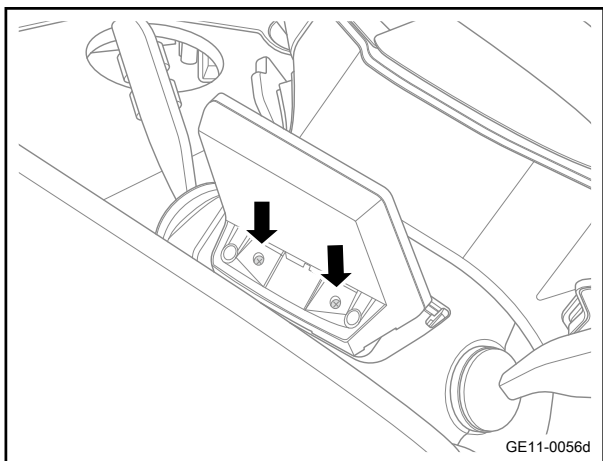
#### Warning

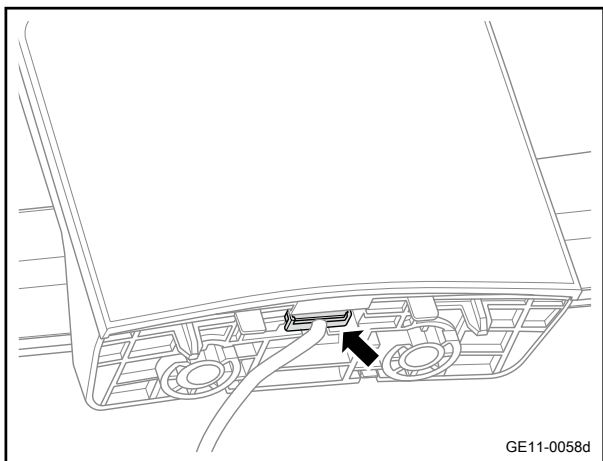
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Pry off the bolt hole cover of the instrument cluster assembly.



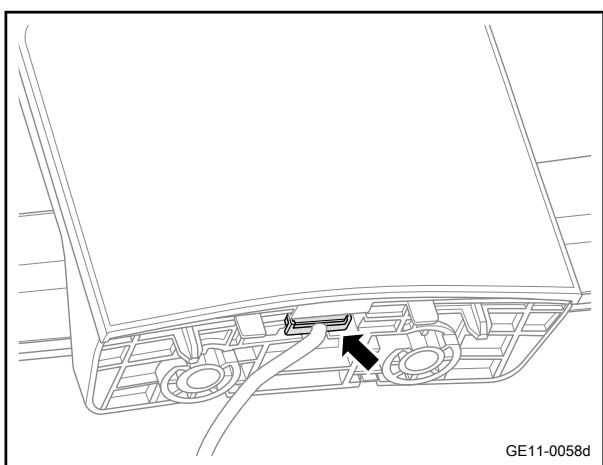
- 3 Remove the 2 fixing bolts of the instrument cluster assembly.



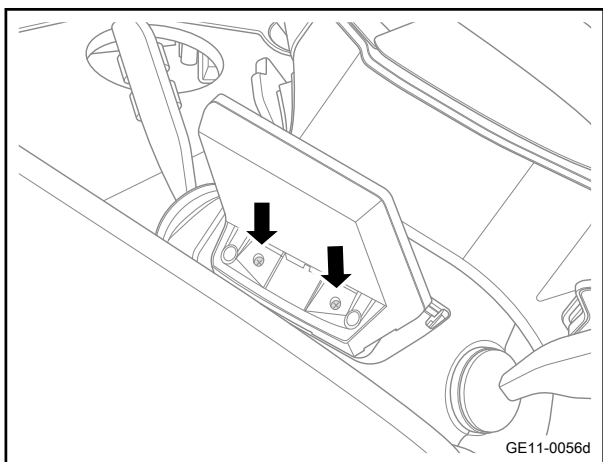


- 4 Disconnect the instrument cluster assembly harness connector.
- 5 Remove the instrument cluster assembly.

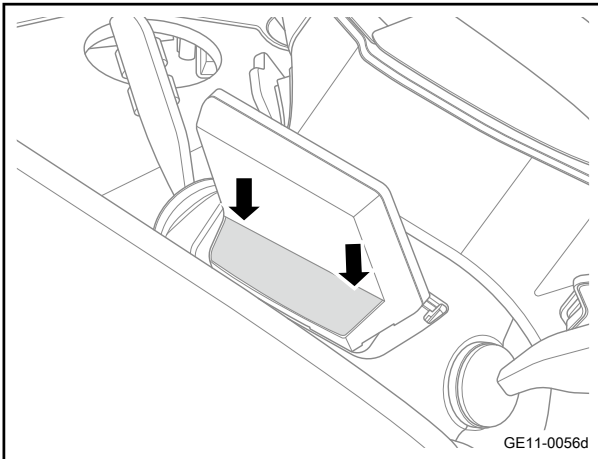
Installation procedure



- 1 Move the instrument cluster assembly to the installation location.
- 2 Connect the combination instrument harness connector.



- 3 Install the 2 fixing bolts of the instrument cluster assembly.  
Torque: 4N·m (metric) 3.0lb-ft (imperial system)



- 4 Install the bolt hole cover plate of the instrument cluster assembly.

- 5 Connect the negative cable of battery.

### 10.6.7.2 Replacement of the instrument cluster control unit assembly

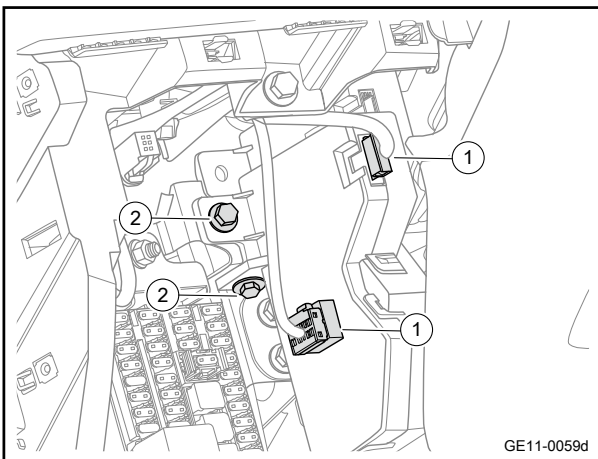
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

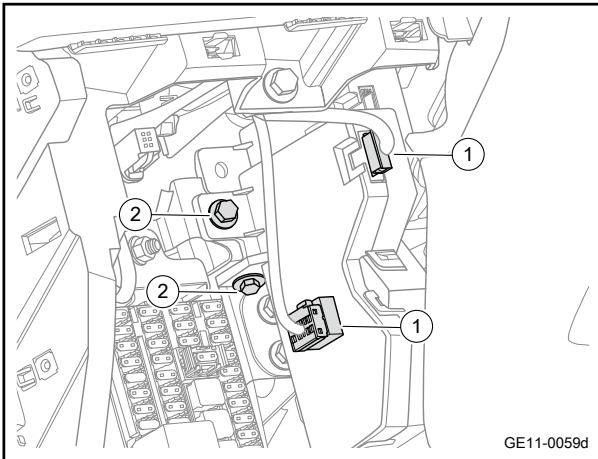
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 3 Disconnect the harness connector 1 of the Instrument cluster control unit assembly.
- 4 Remove the 2 fixing bolts 2 of the instrument cluster controller assembly.
- 5 Remove the instrument cluster controller assembly.



#### Installation procedure





- 1 Move the instrument cluster controller assembly to the installation location.
- 2 Install the 2 fixing bolts 2 of the instrument cluster controller assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Connect the harness connector 1 of the Instrument cluster control unit assembly.

- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Connect the negative cable of battery.

### 10.6.7.3 Replacement of head-up display (HUD)

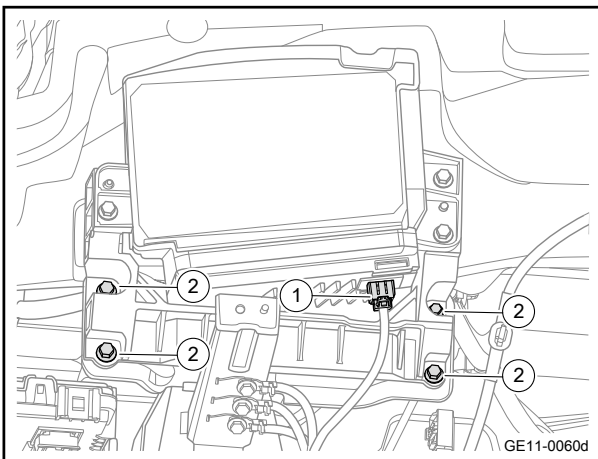
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

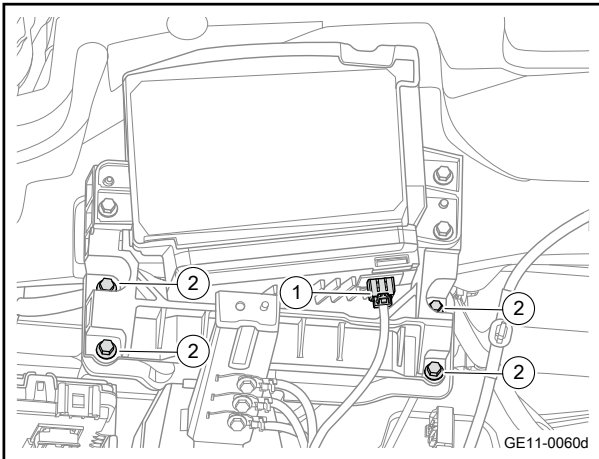
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the dashboard body assembly. See [Replacement of instrument panel body assembly](#)
- 3 Disconnect the head-up display harness connector 1.
- 4 Remove the 4 fixing bolts 2 of the head-up display.
- 5 Remove the head-up display.



#### Installation procedure



- 1 Move the HUD to the installation position.
- 2 Install the 4 fixing bolts 2 of the head-up display.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 3 Connect the head-up display harness connector 1.

- 4 Install the dashboard body assembly.
- 5 Connect the negative cable of battery.

#### 10.6.7.4 Replacement of auxiliary fascia console switch pack

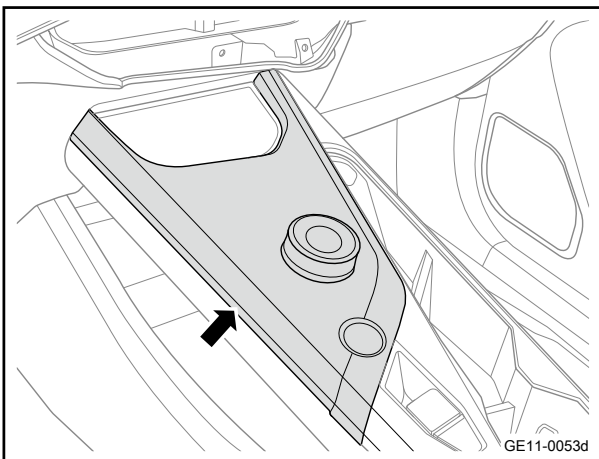
##### Removal procedure

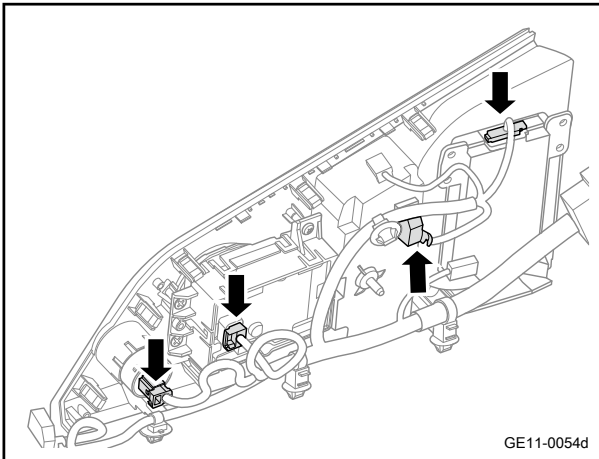
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

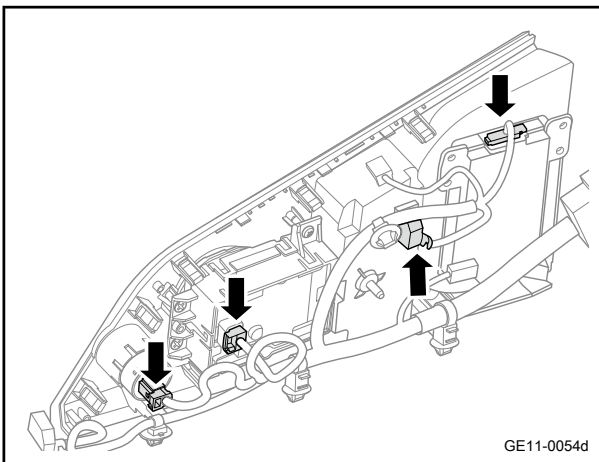
- 2 Pry off the auxiliary fascia console switch pack.



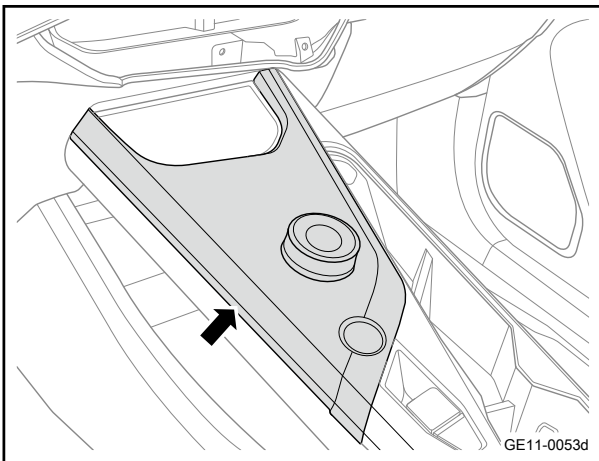


- 3 Disconnect auxiliary fascia console switch pack harness connector.
- 4 Remove the auxiliary fascia console switch pack.

Installation procedure



- 1 Move the auxiliary fascia console switch pack to the installation position.
- 2 Connect the auxiliary fascia console switch pack harness connector.



- 3 Install the auxiliary instrument switch pack.

- 4 Connect the negative cable of battery.

10.6.7.5 Replacement of the dashboard switch pack

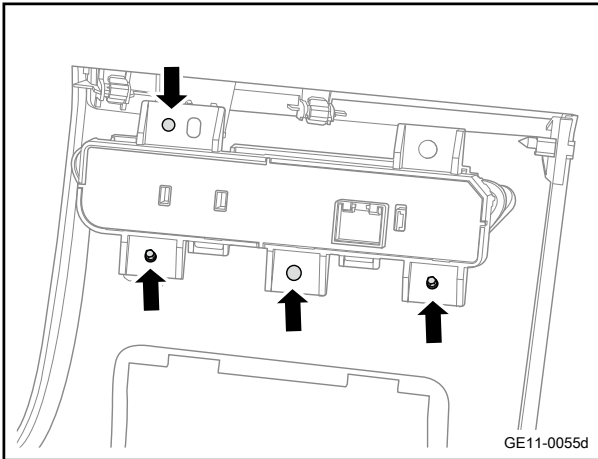
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

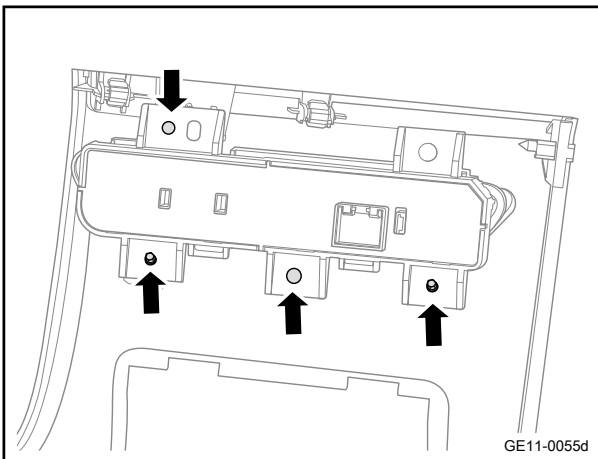
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 3 Remove the 4 fixing screws of the instrument panel switch pack.
- 4 Remove the the dashboard switch assembly.



Installation procedure

- 1 Move the instrument panel switch pack to the installation position.
- 2 Install the 4 fixing screws of the instrument panel switch pack.  
Torque: Nm ( metric system ) lb-ft ( imperial system )



- 3 Install the left lower fender apron assembly of the dashboard.
- 4 Connect the negative cable of battery.

## 10.7 Sunroof

### 10.7.1 Specification

#### 10.7.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of top cover sunshade motor	M6×20	8 - 10	5.9 - 7.4
Fixing bolt of top cover sunshade assembly	M6×20	8 - 10	5.9 - 7.4
Fixing nut of top cover sunshade assembly	M6	8 - 10	5.9 - 7.4
Left C-pillar lower trim panel assembly fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left rear pillar middle trim panel assembly fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Sunroof motor fixing bolt	M5×30	2.8 - 3.2	2.1 - 2.4
Fixing bolts on both sides of sunroof frame	M5×30	8 - 10	5.9 - 7.4
Fixing bolts at the front section of the sunroof frame	M5×30	8 - 10	5.9 - 7.4
Fixing bolts at the rear end of the sunroof frame	M5×5	0.2 - 0.3	0.1 - 0.2

#### 10.7.1.2 Sunroof motor specification

Parameter	Rated value
Operating voltage range	9 - 16 V
Normal working voltage	12.5 - 13.5 V
Maximum locked-rotor current	25 A
Waiting current	20 mA
Sleep current	1 mA

## 10.7.2 Description and Operation

### 10.7.2.1 Description and operation

#### System composition

- Sunroof control module
- Sunroof switch
- Sunshade module
- Sunshade switch
- Sunroof
- Sunroof sunshade

#### Sunroof opening/closing

Push the sunroof switch back to the extreme position and release it, and the sunroof glass panel with the sun visor will automatically open to the maximum position.

Push the sunroof switch backward slightly, and the sunroof glass panel will inching slide when it is opened.

Push the sunroof switch forward to the limit position and release it, the sunroof glass panel will automatically slide to the fully closed position, and the sun visor needs to be closed manually.

Push the sunroof switch forward slightly, and the sunroof glass panel will slide when it is closed.

During the operation of the sunroof, if there is any other key operation, the current movement will be stopped.

#### Turn on/off

#### Flying up opening

When the sunroof is in the closed position, press the sunroof switch to open the sunroof.

#### Flying up closing

The sunroof is in the position where tilt starts, and the sunroof will be completely closed when the sunroof is closed.

#### Close sunroof remotely

Press and hold the smart key lock button to completely close the sunroof.

#### Anti-pinch function

##### Sunroof slide anti-pinch

The sunroof has an anti-pinch function. During the automatic closing process, after an anti-pinch event is detected, the anti-pinch returning action will be performed.

There is no anti-pinch function in the manual closing mode of the sunroof.

When the sunroof is closed, if a pinch prevention occurs once, and another pinch prevention occurs within 10 seconds, the anti-pinch function and automatic operation function will be temporarily invalid. At this time, the automatic operation and anti-pinch function can be restored after the sunroof is closed manually.

#### Initialization

When the initial position of the sunroof is invalid, it can be executed by initializing the settings.

- Press the sunroof switch to move the sunroof to the fully open position.
- After the sunroof reaches the limit distance, it returns to a certain distance to the fully open position and stops.
- After 1 second, the sunroof will start to lift and close.
- After the sunroof reaches the fully closed position, it starts to slide open.
- After the sunroof reaches the fully open position, it starts to slide to close.
- After the sunroof reaches the fully closed position, it stops, and the self-learning is over, and the switch is released.

#### Power sunshade

##### Sunroof sunshade opening/closing

- Toggle the sunshade switch backwards and release it, and the sunshade will slide when it is opened.
- Toggle the sunshade switch backwards and hold it, and the sunshade curtain will automatically open to the fully open position.
- Toggle the sunshade switch forward and release it, and the sunshade will slide when it is closed.
- Toggle the sunshade switch forward and hold it, and the sun shade automatically slides to the fully closed position.

#### One-touch to open/close self-learning of electric sunshade

After the motor of the electric sunshade has been running continuously for more than 60 seconds, self-learning is required to realize the function of one-touch opening/closing the electric sunshade.

The self-learning steps are as follows:

- Toggle the sun shade switch forward and hold it until the sun shade is completely closed, then release the sun shade switch.
- Toggle the sunshade switch forward again and hold it for 13 seconds, the electric sunshade motor will emit two beeps, and the function of one-touch opening/closing the electric sunshade will complete the self-learning.

### 10.7.3 How the system works

#### 10.7.3.1 System Working Principles

The sunroof switch will fail in the following three situations:

1. After the start-and-stop switch is placed in the non-ON position, either the driver's door or the front passenger's door is opened;
2. 1 minute after the start-and-stop switch is placed in the non-ON position to start timing;
3. Operate the smart key to unlock/lock the vehicle.

When the sunroof operation condition is met, and the sunroof control module recognizes that the sunroof switch is manipulated, it controls the operating direction of the sunroof motor according to the received switch signal.

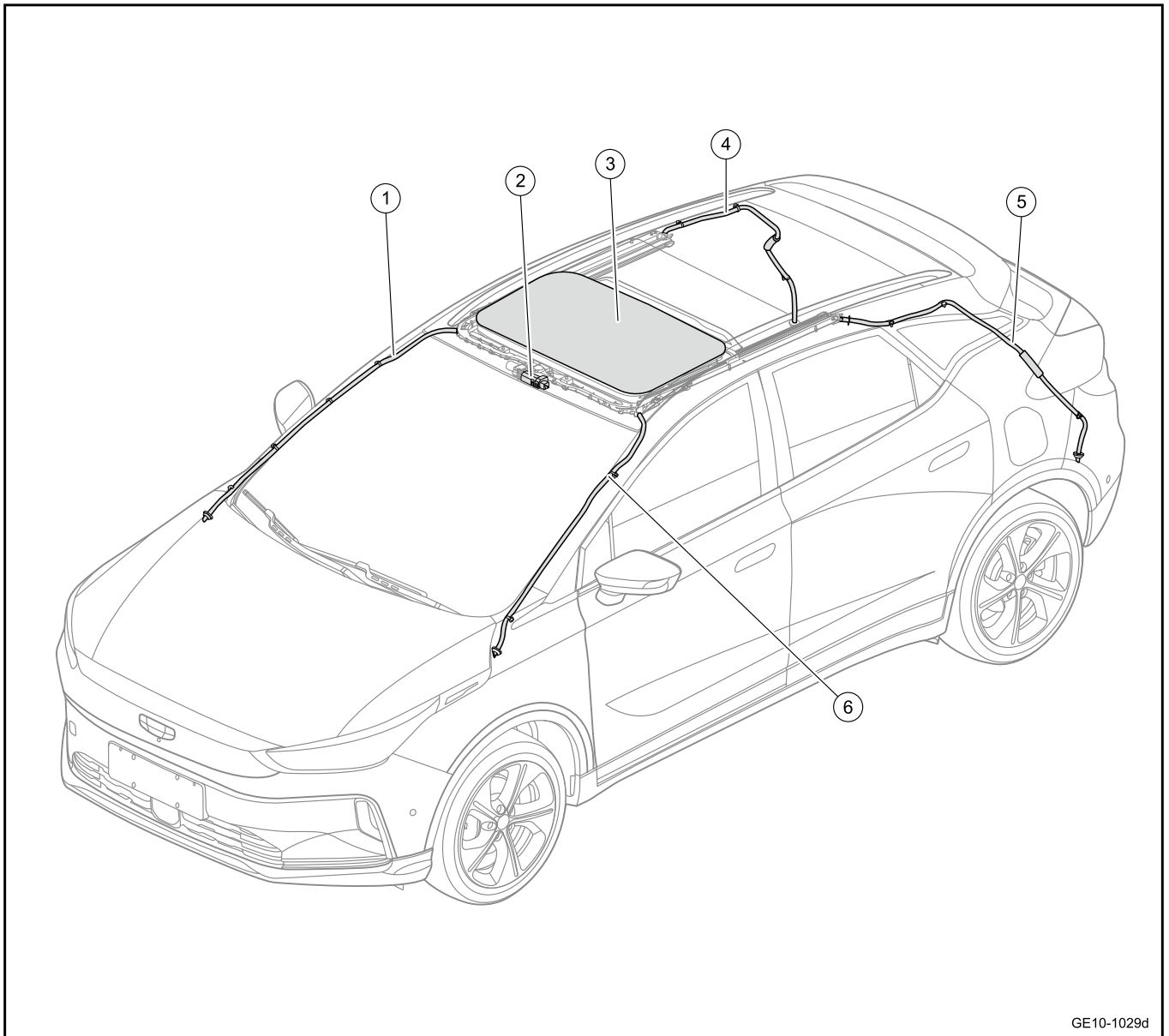
When the sunshade switch is manipulated, the sunshade module activates the sunshade motor to operate according to the switch signal.

When the vehicle uses the remote control to close the sunroof, press and hold the locking key on the smart key.

When the conditions are met (the start-and-stop switch is set to OFF, the door is closed, the sunroof is initialized normally, etc.), the key request signal is analyzed by BCM and controls the sunroof control module to close the sunroof through the LIN line.

## 10.7.4 Part location

## 10.7.4.1 Component location (ordinary skylight)

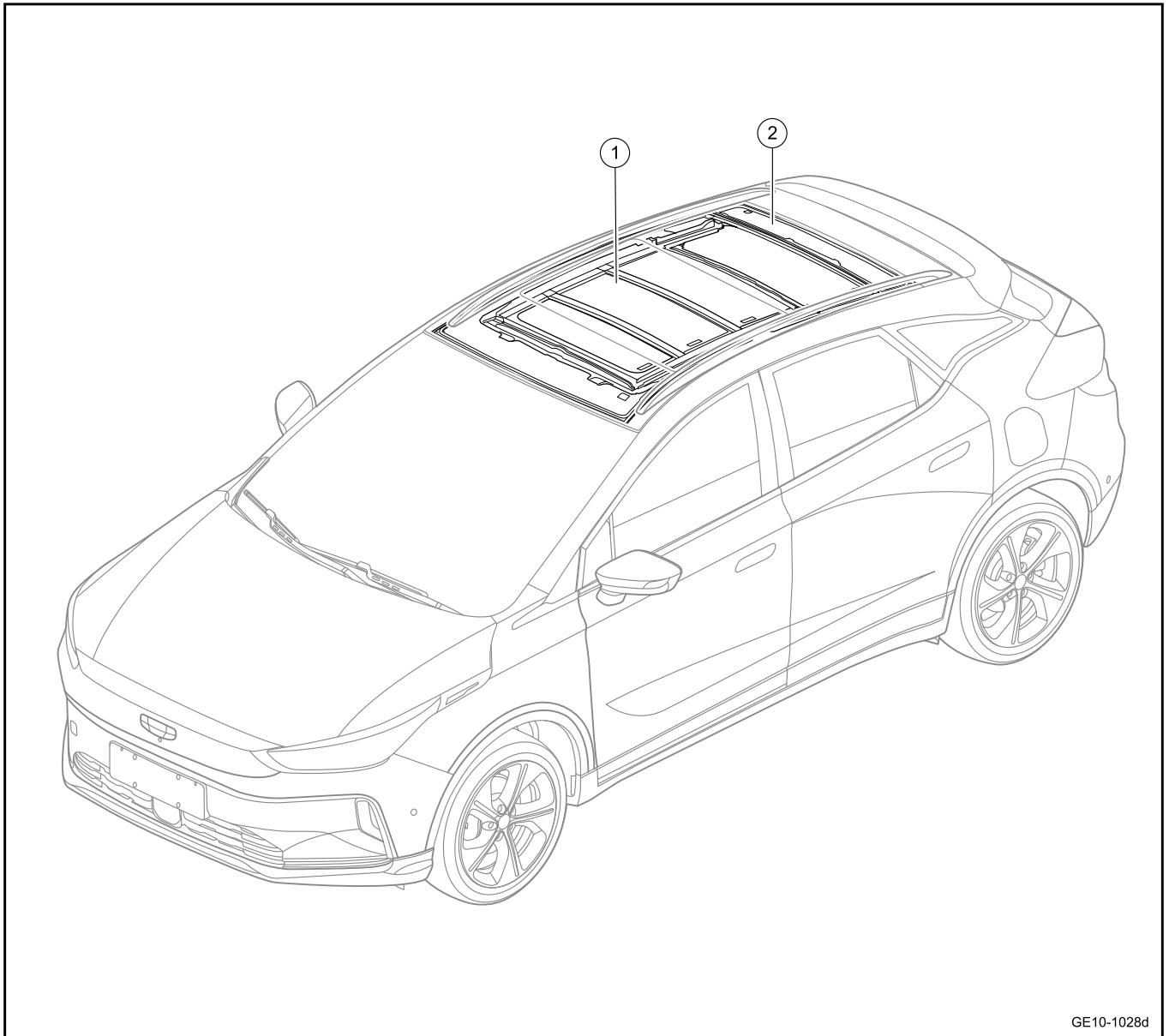


GE10-1029d

- |  |   |
|--|---|
| 1. Right water drain pipe of front sunroof | 4. Right water drain pipe of rear sunroof |
| 2. Sunroof motor                           | 5. Left water drain pipe of rear sunroof  |
| 3. Sunroof glass assembly                  | 6. Left water drain pipe of front sunroof |



10.7.4.2 Component location (panoramic glass)

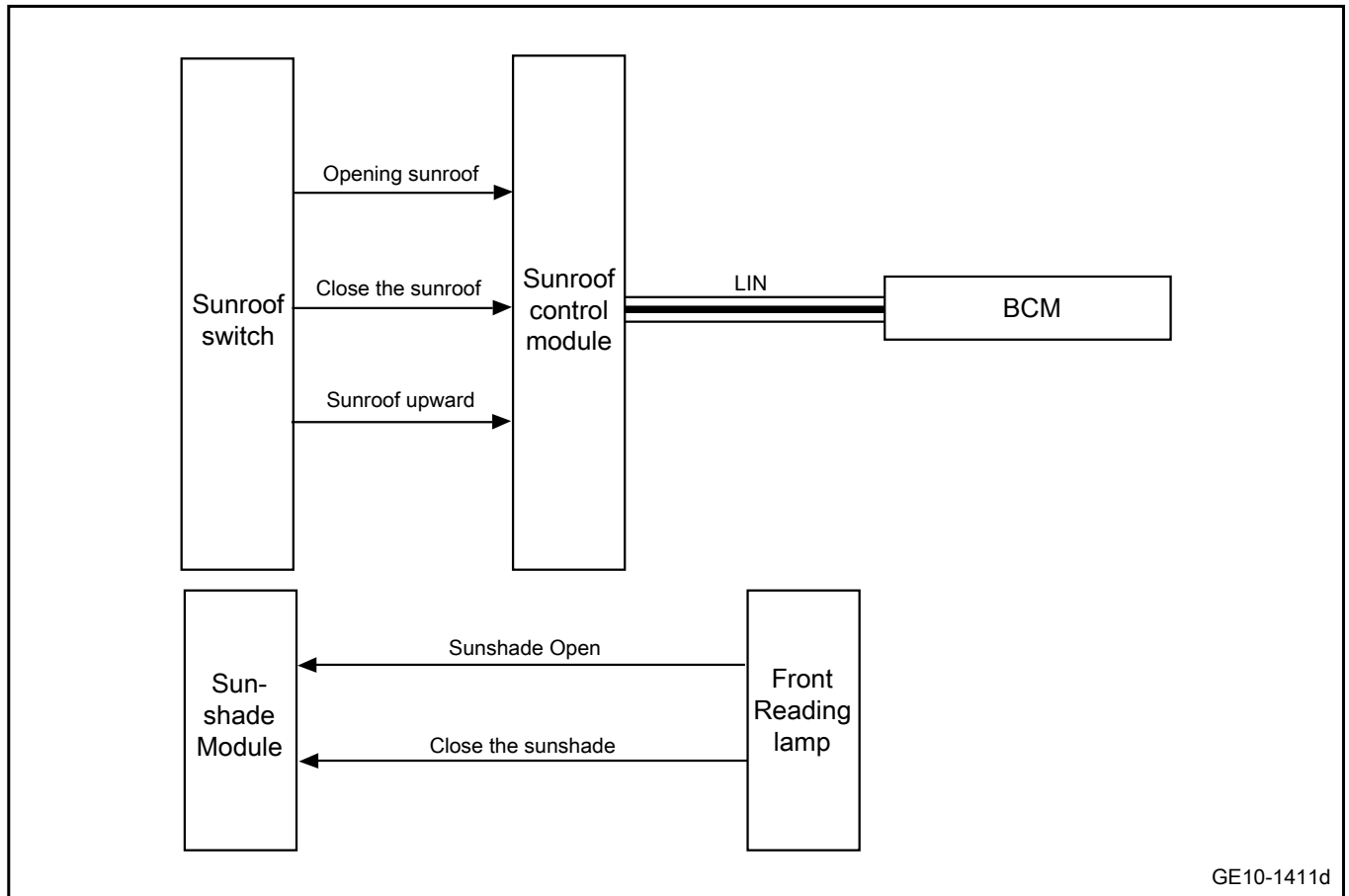


1. Panoramic glass front glass assembly

2. Panoramic glass rear glass assembly

10.7.5 Electrical block diagram

10.7.5.1 Electrical schematic diagram of sunroof system



## 10.7.6 Diagnostic information and steps

### 10.7.6.1 Diagnosis Description

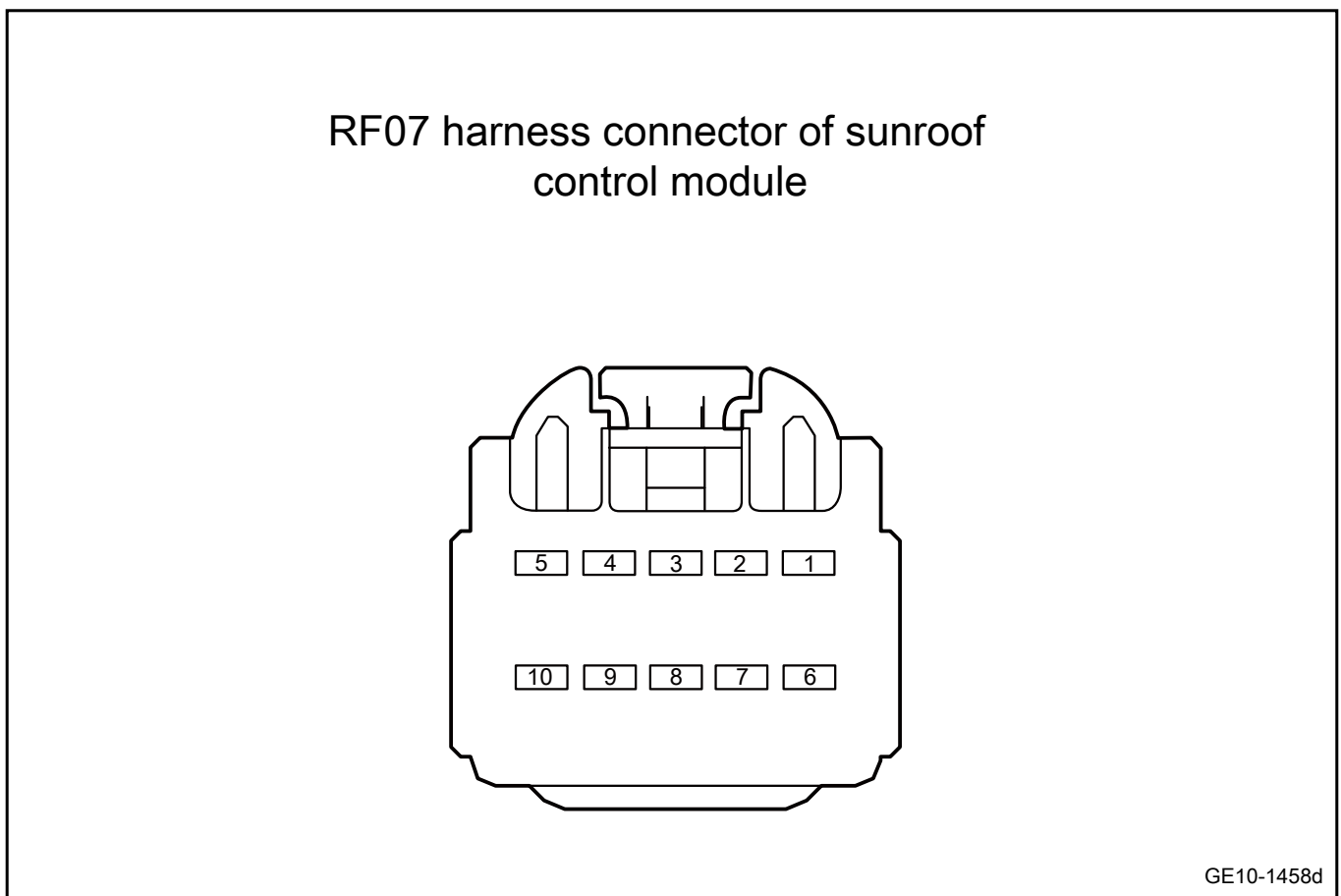
Before diagnosing the sunroof fault, refer to [Description and Operation](#) and [System Working Principles](#). Understand and familiarize yourself with the working principle of the sunroof, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of sunroof should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.7.6.2 Routine inspection

- Check after-sale installations that may affect the normal operation of the sunroof and ensure that these installations cannot affect the sunroof.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and ensure that the sunroof is initialized properly.

### 10.7.6.3 Sunroof connector terminal table

#### RF07 sunroof control module harness connector

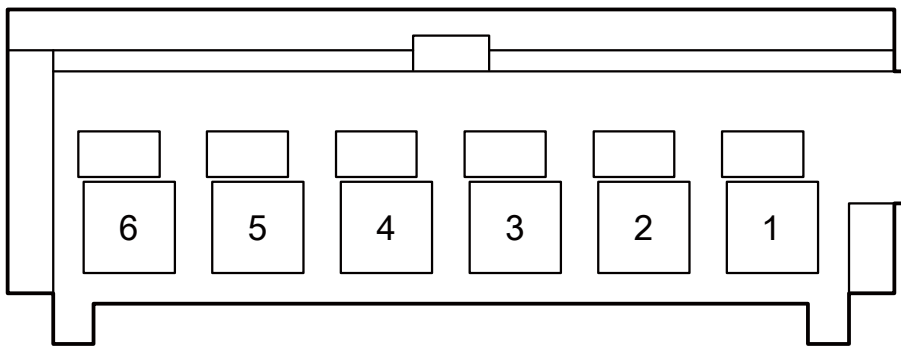


Terminal No.	Terminal name	Terminal description
1	Ground connection	Sunroof control module grounding circuit
2	Sunroof opening	Sunroof open signal input
3	IG1 power supply	Sunroof control module ACC\ON\START power supply
4	Sunroof closing	Sunroof close signal input

Terminal No.	Terminal name	Terminal description
5	LIN	LIN data communication bus
6	B+ Power supply	Sunroof control module battery power supply
7	Sunroof upward	Sunroof tilt signal input
8	Ground connection	Sunroof control module grounding circuit
9	-	-
10	-	-

RF09c sunroof switch harness connector

RF09c harness connector of sunroof switch

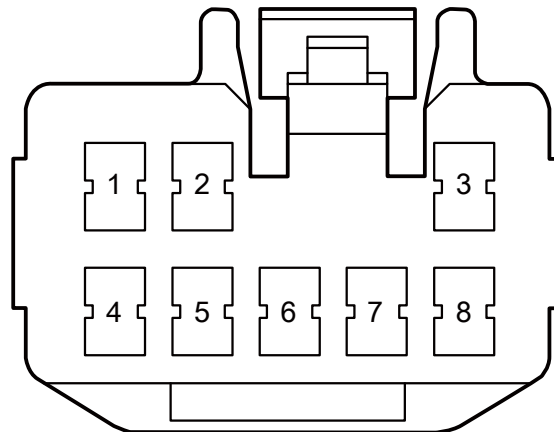


GE10-1459d

Terminal No.	Terminal name	Terminal description
1	Ground connection	Sunroof switch grounding circuit
2	Sunroof opening	Sunroof open signal output
3	Sunroof closing	Sunroof close signal output
4	Sunroof upward	Sunroof tilt signal output
5	SOS switch signal	SOS switch signal output
6	SOS indicator power supply	SOS indicator lamp power supply input

SO203 sunshade module harness connector

SO203 Sunshade Module Harness Connector



GE10-1574d

Terminal No.	Terminal name	Terminal description
1	B+ Power supply	Sunshade module battery power supply
2	Ground connection	Sunshade module grounding circuit
3	IG1 power supply	Sunshade module ACC\ON\START power supply
4	Sunshade closing	Sunshade close signal input
5	Sunshade opening	Sunshade opening signal input
6	-	-
7	-	-
8	-	-

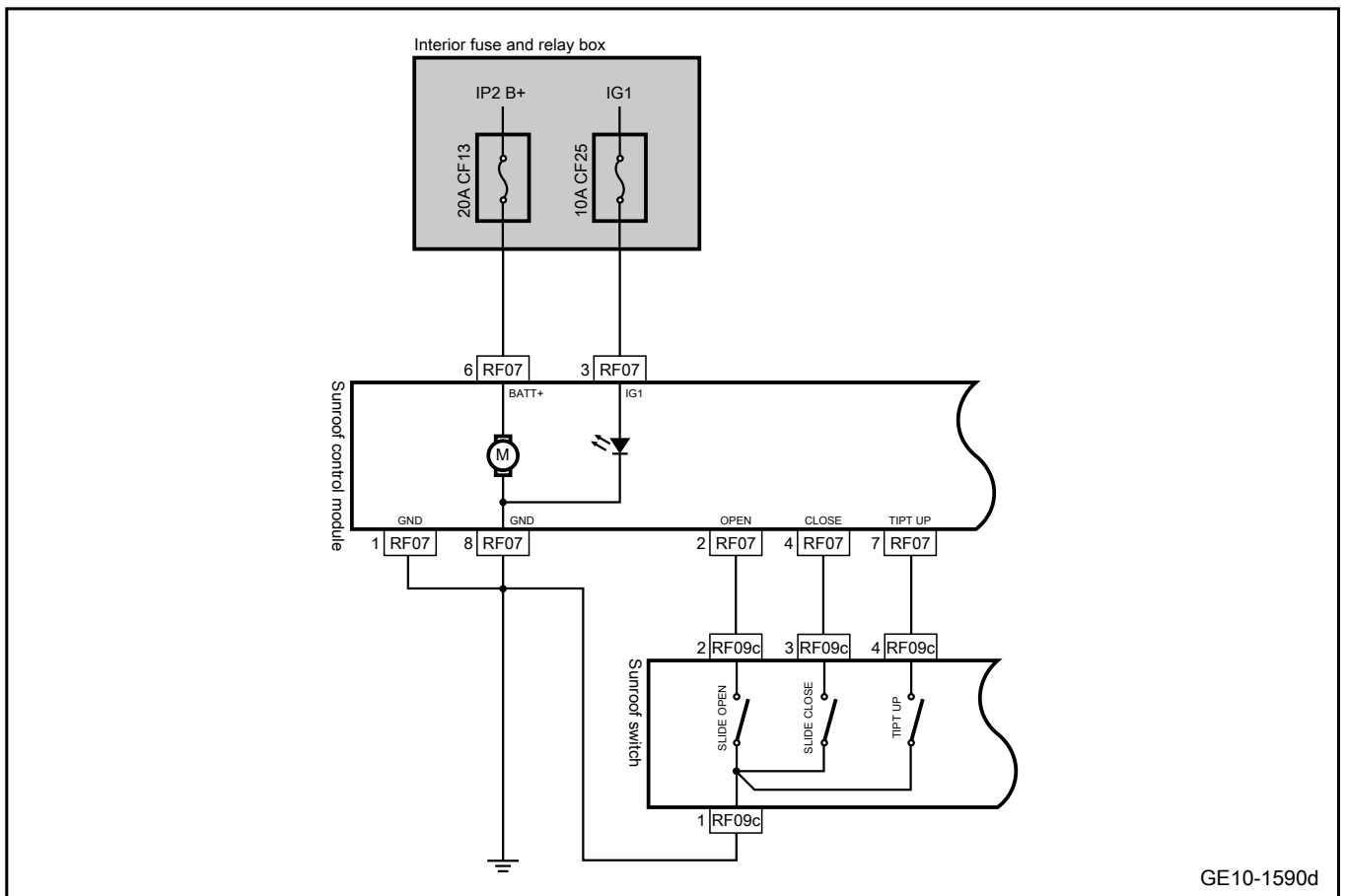
10.7.6.4 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Inoperation of sunroof	1. Harness and connector	Refer to <a href="#">Sunroof does not work</a>
	2. Fuse	
	3. Sunroof switch	
	4. Sunroof control module	
The sunroof cannot be opened	1. Harness and connector	Refer to <a href="#">The sunroof cannot be opened</a>
	2. Sunroof switch	
	3. Sunroof control module	
The sunroof cannot be closed	1. Harness and connector	Refer to <a href="#">The sunroof cannot be closed</a>

Fault Symptom	Suspected fault location	Maintenance plan
	2. Sunroof switch	
	3. Sunroof control module	
The sunroof cannot be lifted	1. Harness and connector	Refer to <a href="#">The sunroof cannot be Tilted</a>
	2. Sunroof switch	
	3. Sunroof control module	
The sunshade does not work	1. Harness and connector	See <a href="#">The sunshade does not work</a>
	2. Fuse	
	3. Sunshade module	
The sunshade cannot be opened	1. Harness and connector	See <a href="#">The sunshade cannot be opened</a>
	2. Front reading light (sunshade switch)	
	3. Sunshade module	
The sunshade cannot be closed	1. Harness and connector	See <a href="#">The sunshade cannot be closed</a>
	2. Front reading light (sunshade switch)	
	3. Sunshade module	

10.7.6.5 Inoperation of sunroof

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of sunroof control module for damage, poor contact, aging, loosening, etc.
- B. Check whether the sunroof switch sticks.
- C. Check whether the sunroof slot is plugged by foreign matters.
- D. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

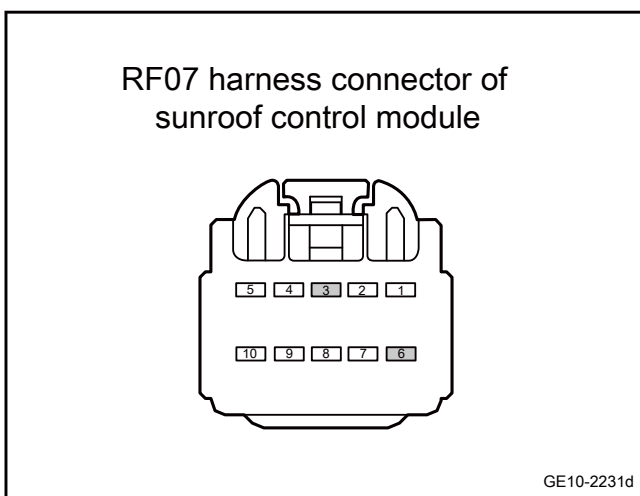
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the indoor fuse relay box fuse CF13 and check whether the fuse is blown.  
  
Rated fuse capacity: 20A
- C. Unplug the indoor fuse relay box fuse CF25 and check whether the fuse is blown.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3	Check whether the power circuit of sunroof control module is normal.
--------	--



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(3)	Vehicle body is grounded.	Standard voltage: 11-14V
RF07(6)		

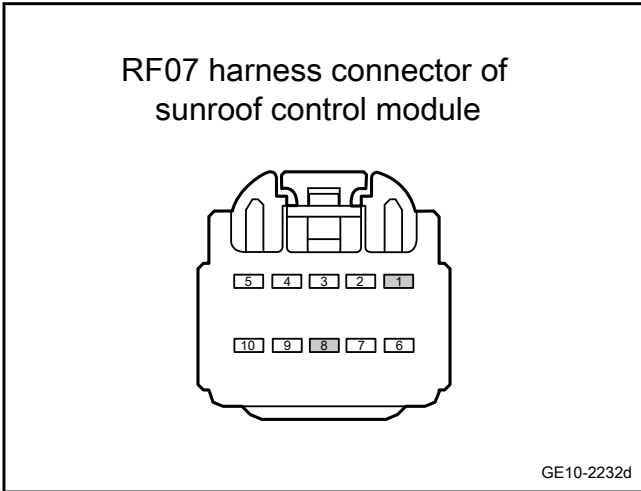
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding circuit of sunroof control module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
RF07(8)		

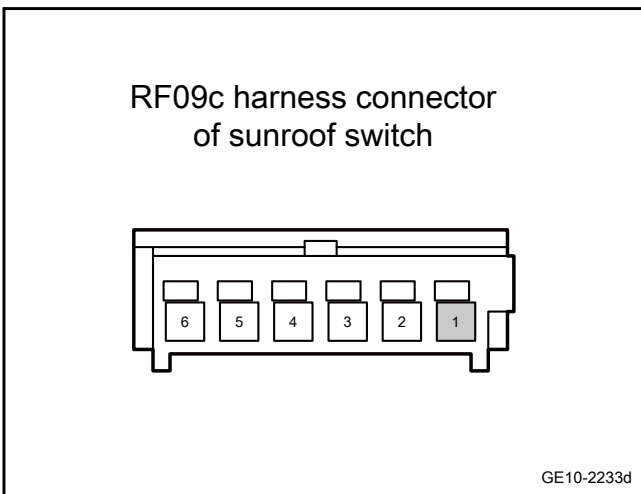
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding circuit of the sunroof switch is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect sunroof switch harness connector RF09c.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

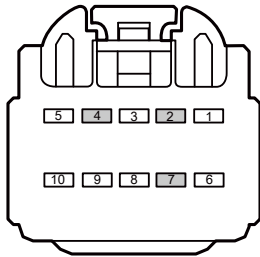
Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the sunroof switch and sunroof control module is open.

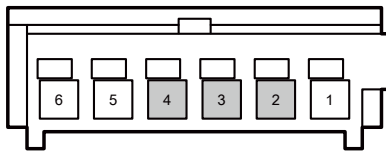


RF07 harness connector of sunroof control module



GE10-2234d

RF09c harness connector of sunroof switch



GE10-2235d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(2)	RF09c(2)	Standard resistance: less than 1Ω
RF07(4)	RF09c(3)	
RF07(7)	RF09c(4)	

- E. Confirm whether the measured value meets the standard.

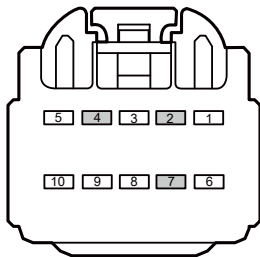
No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the sunroof switch and sunroof control module is short to ground.

RF07 harness connector of sunroof control module



GE10-2236d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
RF07(4)		
RF07(7)		

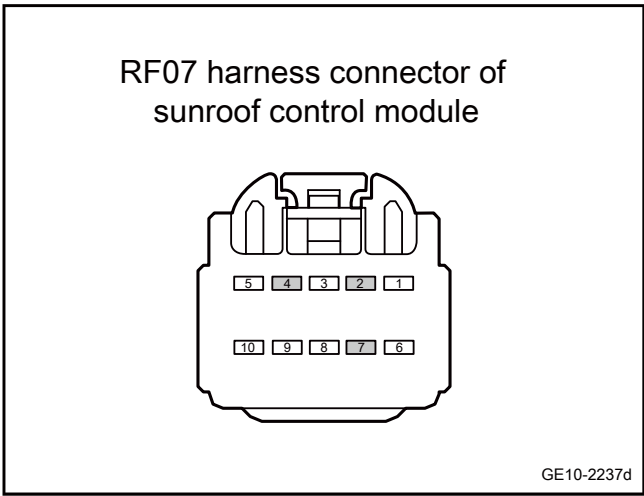
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the circuit between the sunroof switch and sunroof control module is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(2)	Vehicle body is grounded.	Standard voltage: equal to 0V
RF07(4)		
RF07(7)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the sunroof switch.

- A. Replace the sunroof switch, see [Replacement of sunroof switch](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 10** Replace sunroof control module.

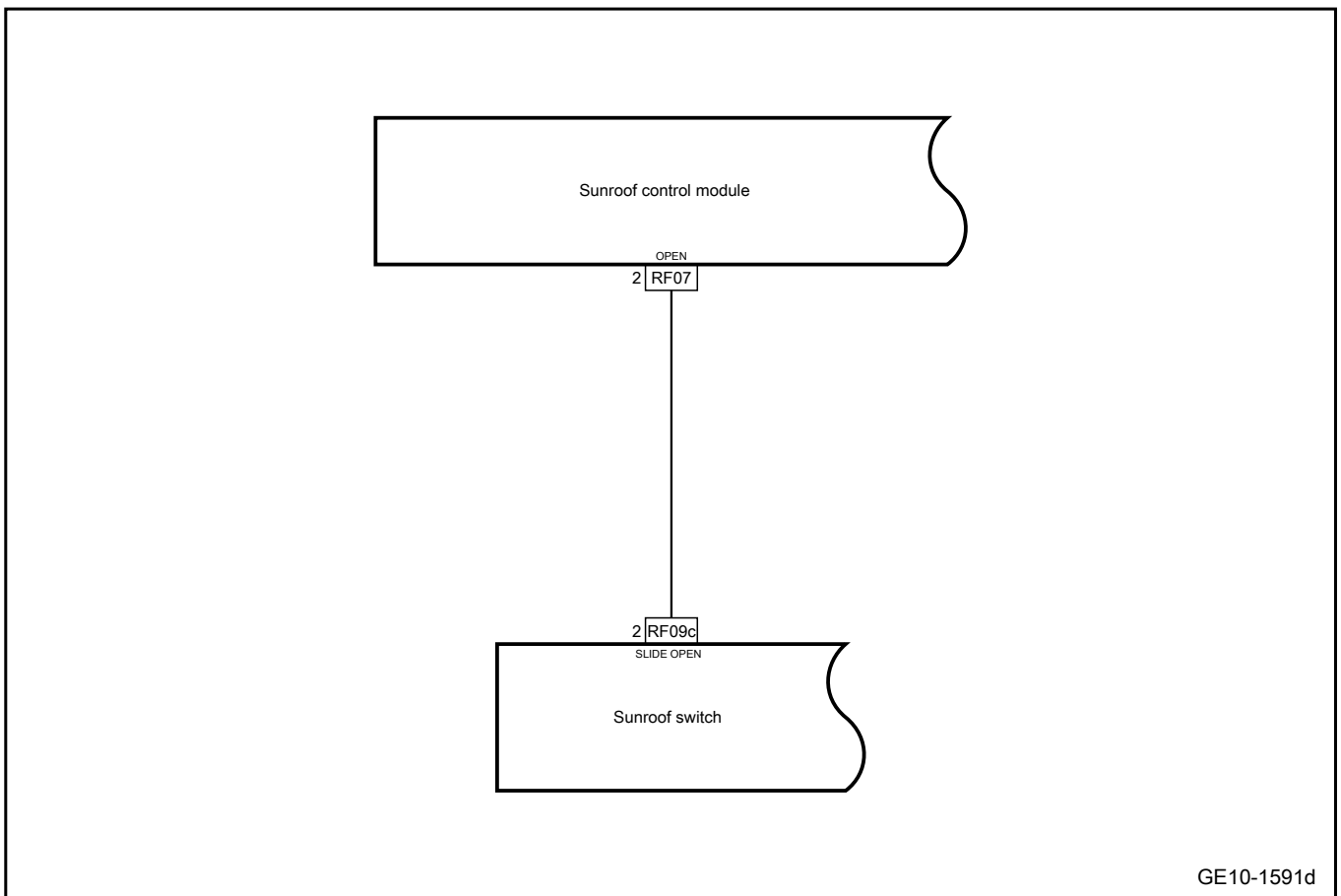
- A. Replace sunroof control module, refer to Replacement of Sunroof Control Module

Next Step

**Step 11** System is normal.

10.7.6.6 The sunroof cannot be opened

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the sunroof control module, sunroof switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the sunroof switch sticks.
- C. Check whether the sunroof slot is plugged by foreign matters.
- D. Confirm whether the above items are normal.

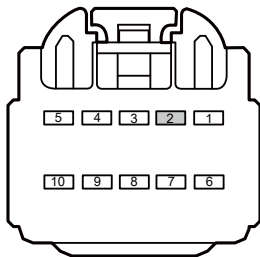
No

Repair or replace the faulty part.

Yes

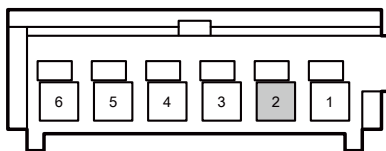
Step 2	Check whether the circuit between the control module of the sunroof and the sunroof switch is open.
--------	---

RF07 harness connector of sunroof control module



GE10-2238d

RF09c harness connector of sunroof switch



GE10-2239d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect the front sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF07(2)	RF09c(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

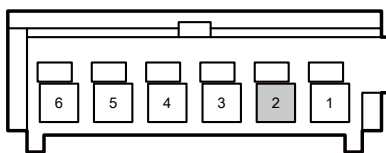
No

Repair or replace the harness.

Yes

**Step 3** Check whether the harness between the control module of the sunroof and the sunroof switch is short to GND.

RF09c harness connector of sunroof switch



GE10-2240d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

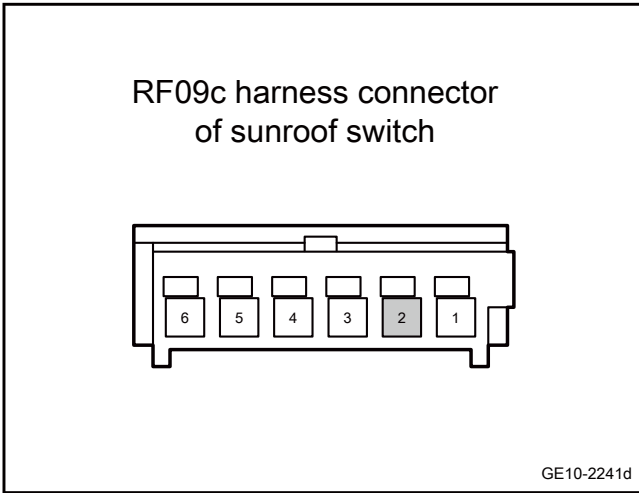
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the control module of the sunroof and the sunroof switch is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the sunroof switch.

- A. Replace the sunroof switch, see [Replacement of sunroof switch](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace sunroof control module.

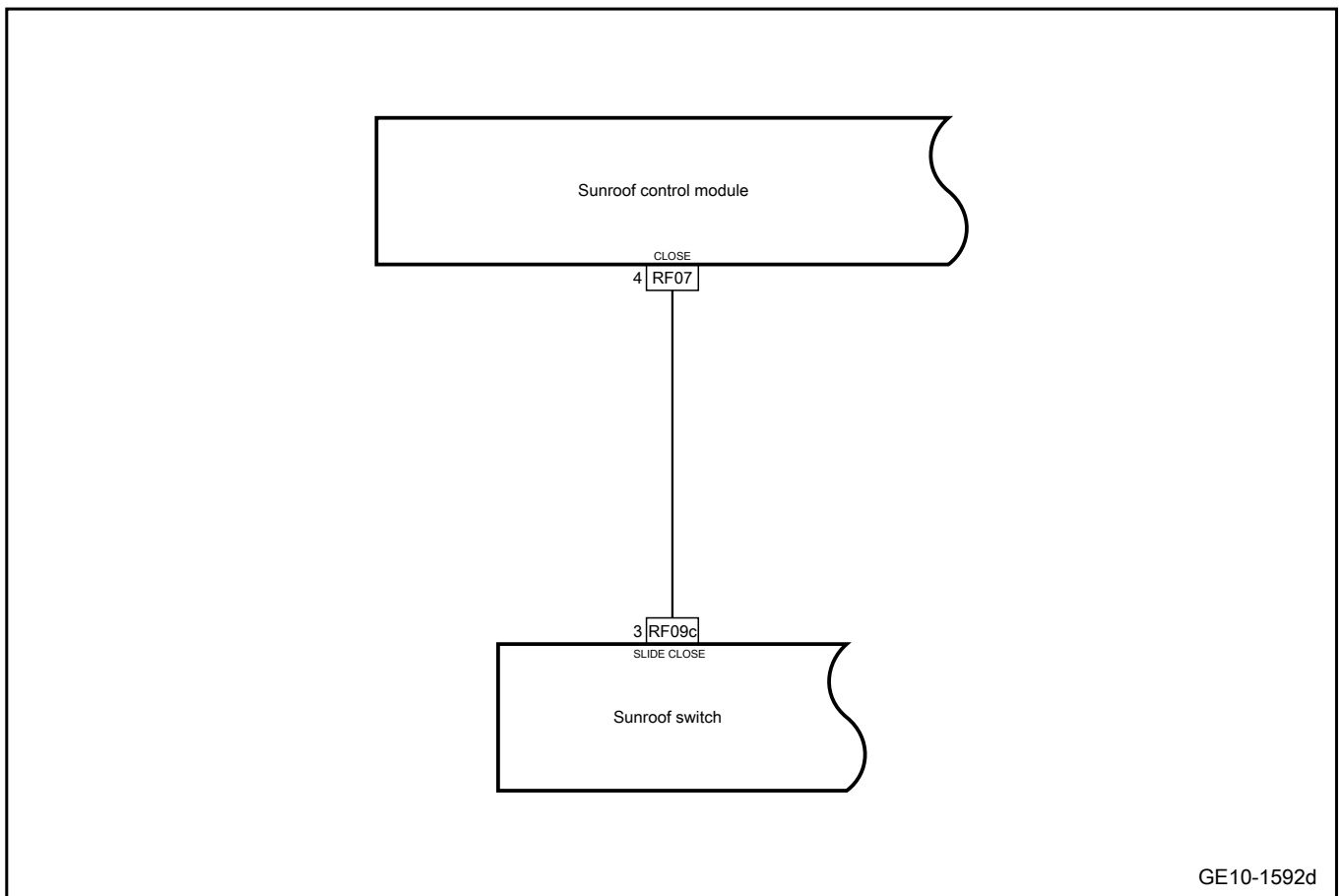
- A. Replace sunroof control module, refer to Replacement of Sunroof Control Module

Next Step

**Step 7** System is normal.

### 10.7.6.7 The sunroof cannot be closed

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

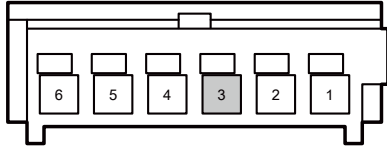
- A. Check the sunroof control module, sunroof switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Whether the slide way of the sunroof is worn.
- C. Check whether the sunroof slot is plugged by foreign matters.
- D. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes →

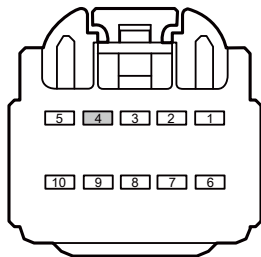
Step 2	Check whether the circuit between the control module of the sunroof and the sunroof switch is open.
--------	---

RF09c harness connector of sunroof switch



GE10-2242d

RF07 harness connector of sunroof control module



GE10-2243d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(3)	RF07(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

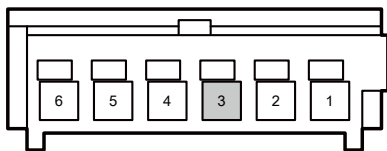
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between the control module of the sunroof and the sunroof switch is short to GND.

RF09c harness connector of sunroof switch



GE10-2244d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

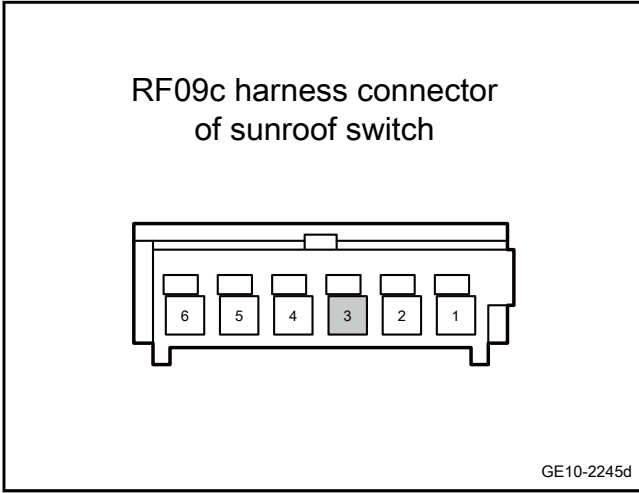
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the control module of the sunroof and the sunroof switch is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the sunroof switch.

- A. Replace the sunroof switch, see [Replacement of sunroof switch](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace sunroof control module.

- A. Replace sunroof control module, refer to Replacement of Sunroof Control Module

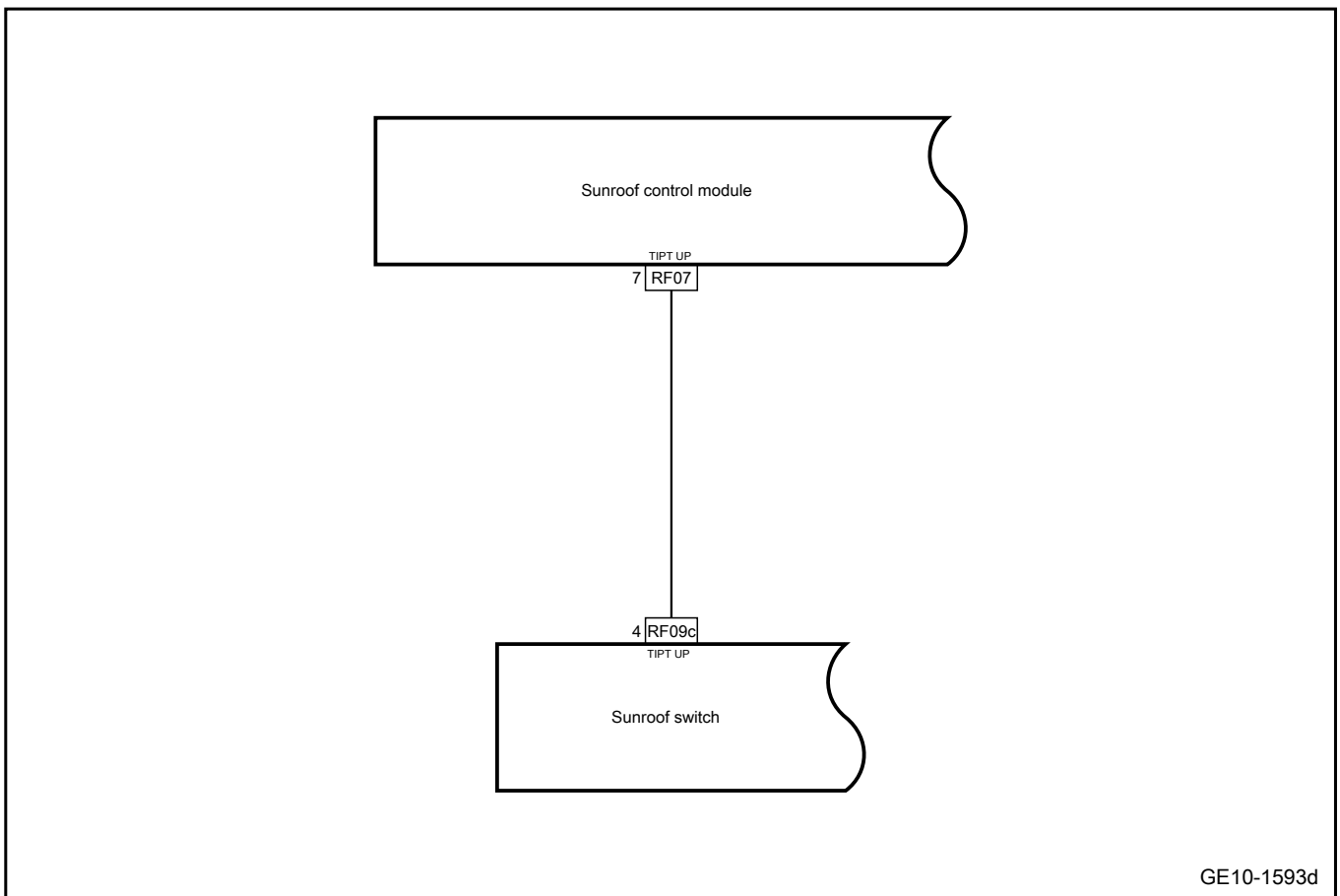
Next Step

**Step 7** System is normal.

### 10.7.6.8 The sunroof cannot be lifted

1. Schematic circuit diagram:





2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the sunroof control module, sunroof switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the sunroof sealing strip is aging and worn.
- C. Confirm whether the above items are normal.

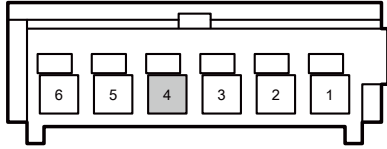
No

Repair or replace the faulty part.

Yes

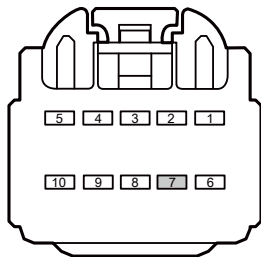
Step 2	Check whether the circuit between the control module of the sunroof and the sunroof switch is open.
--------	---

RF09c harness connector of sunroof switch



GE10-2246d

RF07 harness connector of sunroof control module



GE10-2247d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(4)	RF07(7)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

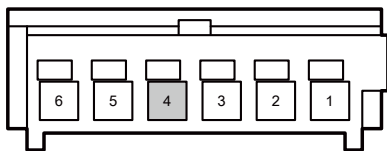
No

Repair or replace the harness.

Yes

**Step 3** Check whether the harness between the control module of the sunroof and the sunroof switch is short to GND.

RF09c harness connector of sunroof switch



GE10-2248d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

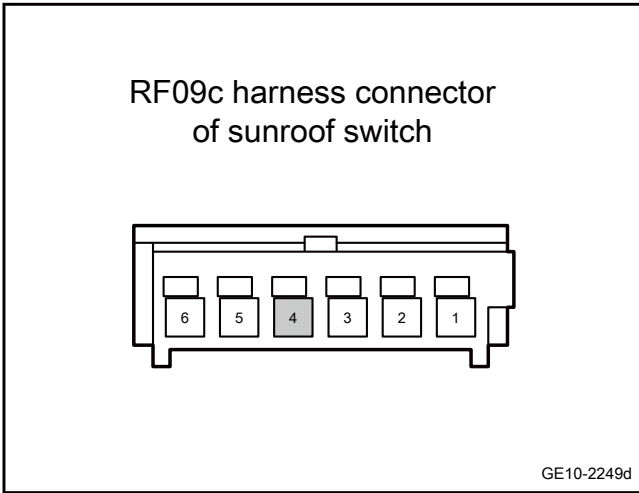
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the harness between the control module of the sunroof and the sunroof switch is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector RF07 of sunroof control module.
- C. Disconnect sunroof switch harness connector RF09c.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF09c(4)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the sunroof switch.

- A. Replace the sunroof switch, see [Replacement of sunroof switch](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 6** Replace sunroof control module.

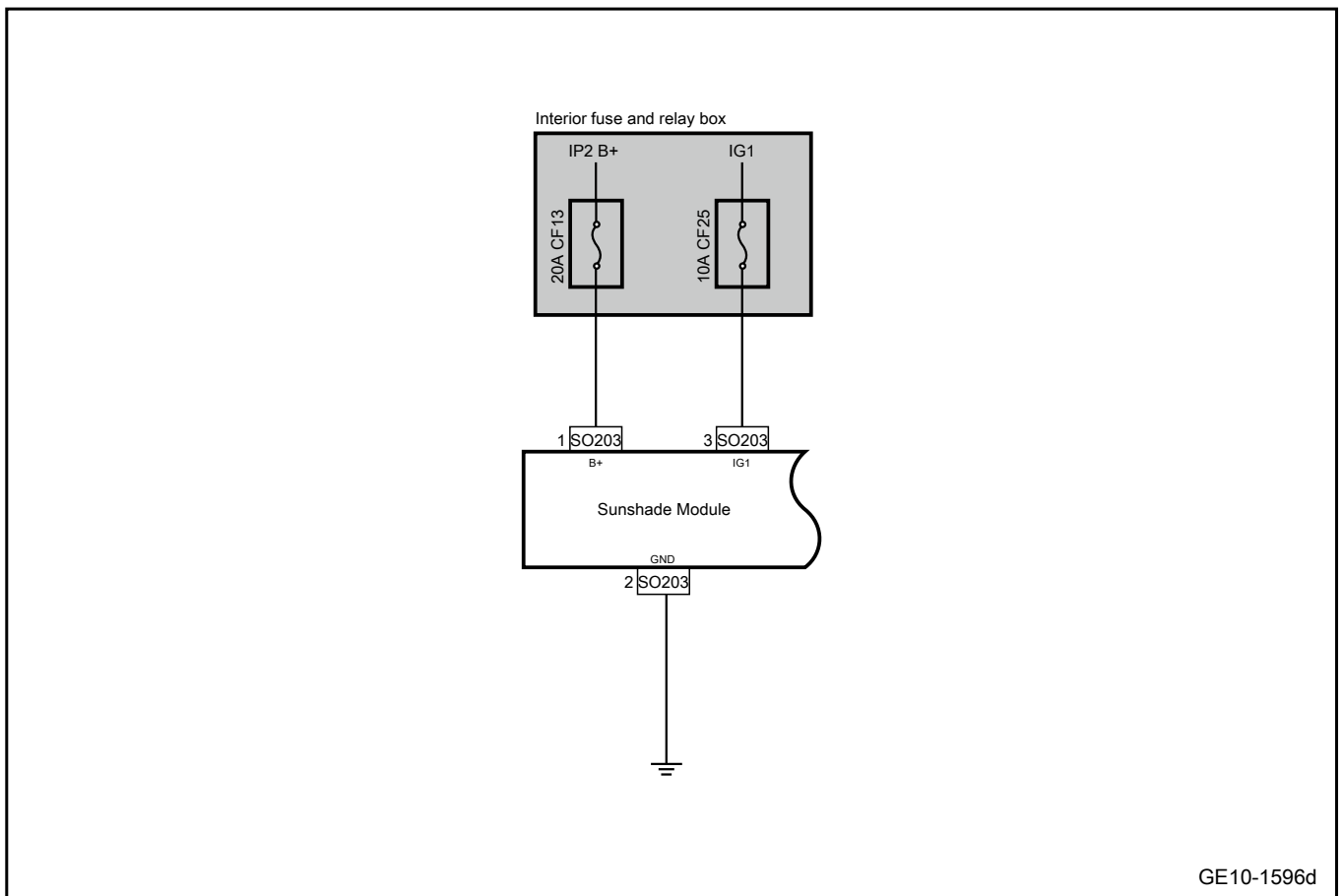
- A. Replace sunroof control module, refer to Replacement of Sunroof Control Module

Next Step

**Step 7** System is normal.

### 10.7.6.9 The sunshade does not work

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the sunshade module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the sunvisor rail is blocked or stuck by foreign matter.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

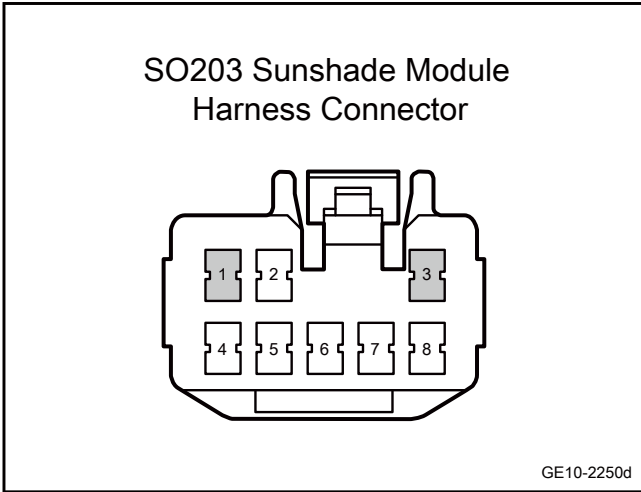
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the indoor fuse relay box fuse CF13 and check whether the fuse is blown.  
  
Rated fuse capacity: 20A
- C. Unplug the indoor fuse relay box fuse CF25 and check whether the fuse is blown.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the power circuit of the sunshade module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO203(1)	Vehicle body is grounded.	Standard voltage: 11-14V
SO203(3)		

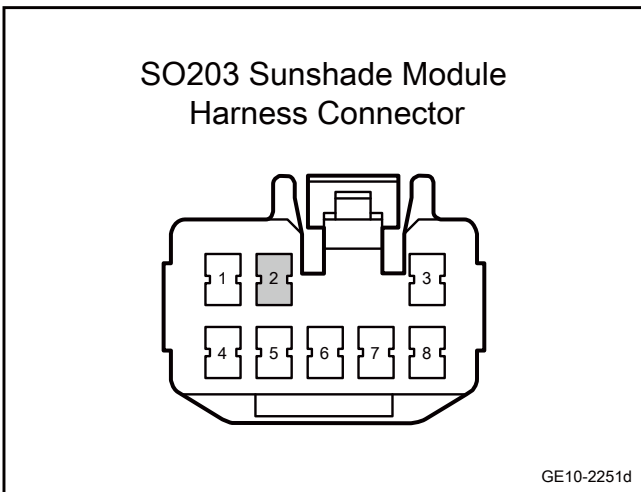
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding circuit of the sunshade module is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect harness connector SO203 of sunroof control module.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO203(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the sunshade module.
--------	------------------------------

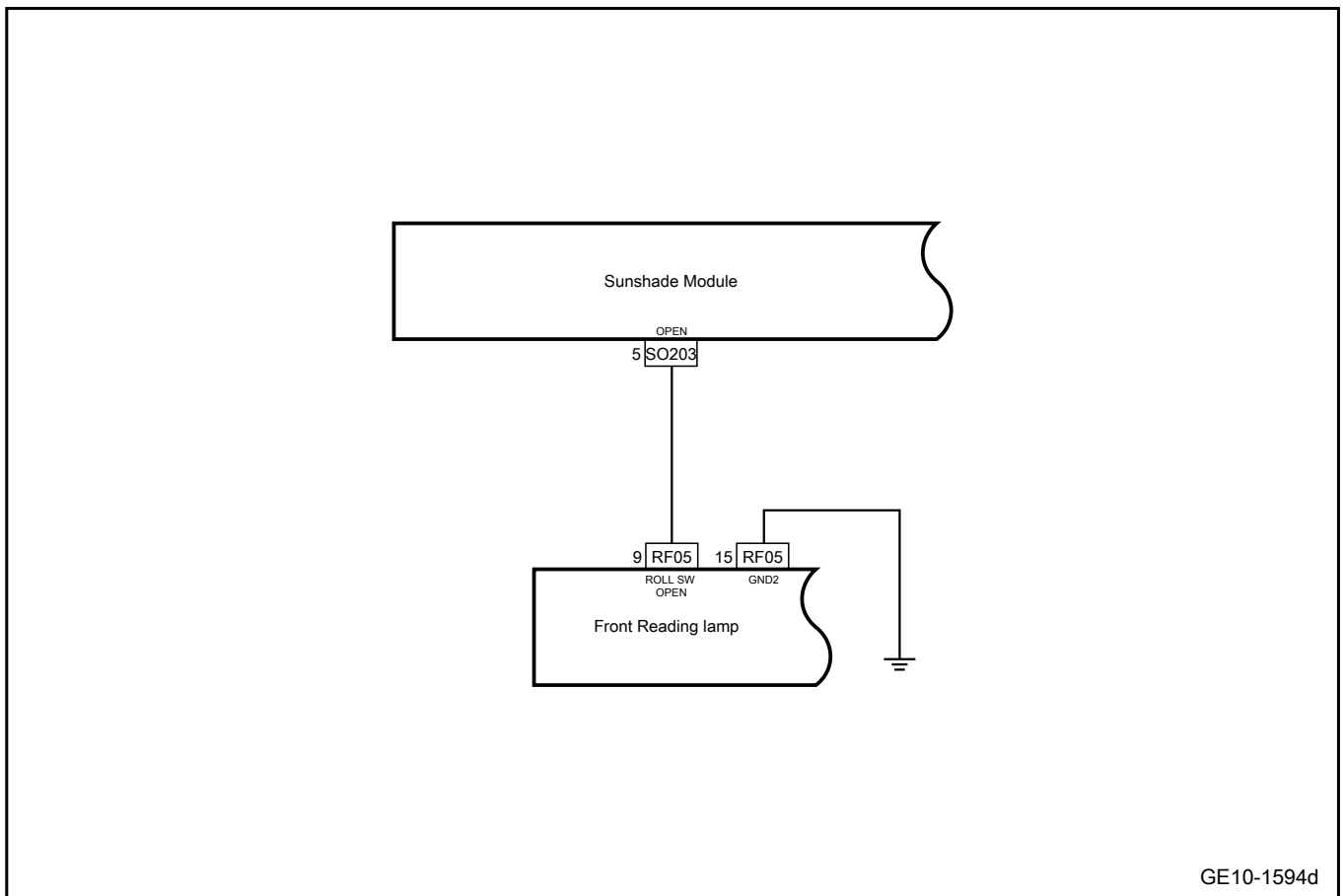
- A. Replace the sunshade module, see [Replacement of sunshade module](#)

Next Step

Step 6	System is normal.
--------	-------------------

### 10.7.6.10 The sunshade cannot be opened

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

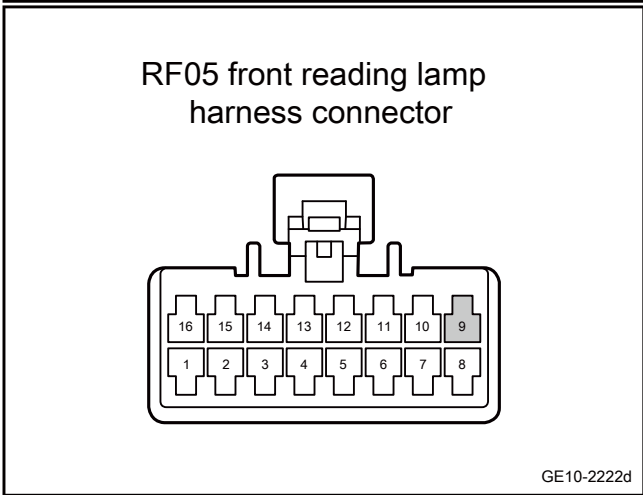
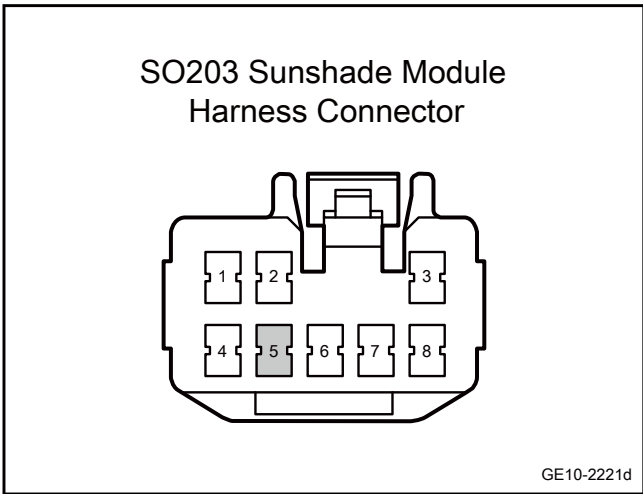
- A. Check the sunshade module, front reading lamp harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the sunvisor rail is blocked or stuck by foreign matter.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.
------------------------------------

Yes

**Step 2** Check whether the circuit between the sunshade module and the front reading lamp is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO203(5)	RF05(9)	Standard resistance: less than 1Ω

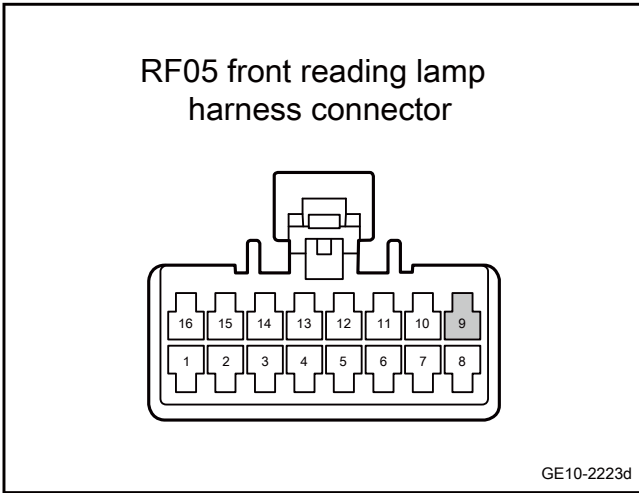
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 3** Check whether the circuit between the sunshade module and the front reading lamp is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

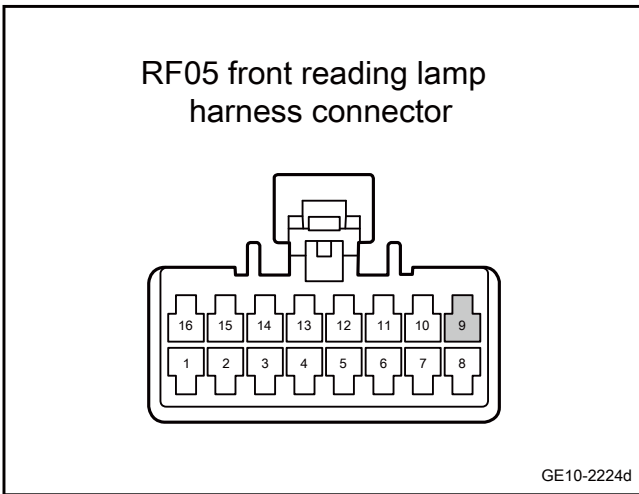
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** | Check whether the circuit between the sunshade module and the front reading lamp is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(9)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

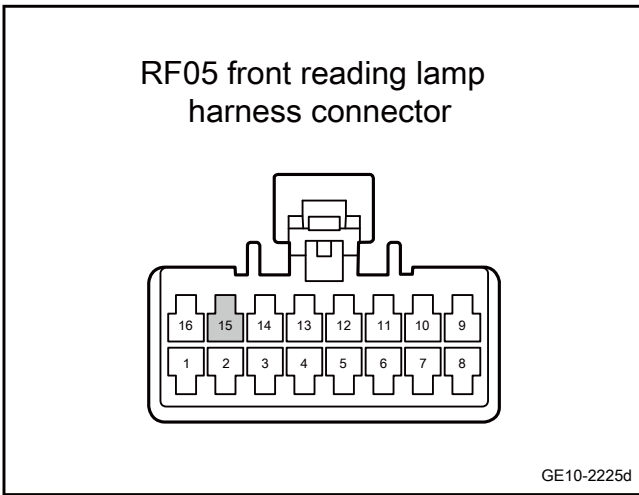
No

Repair or replace the harness.

Yes

**Step 5** | Check whether the wiring between the front reading lamp and the body ground is normal.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the front reading lamp.

- A. Replace front reading lamp, refer to replacement of front reading lamp
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

**Step 7** Replace the sunshade module.

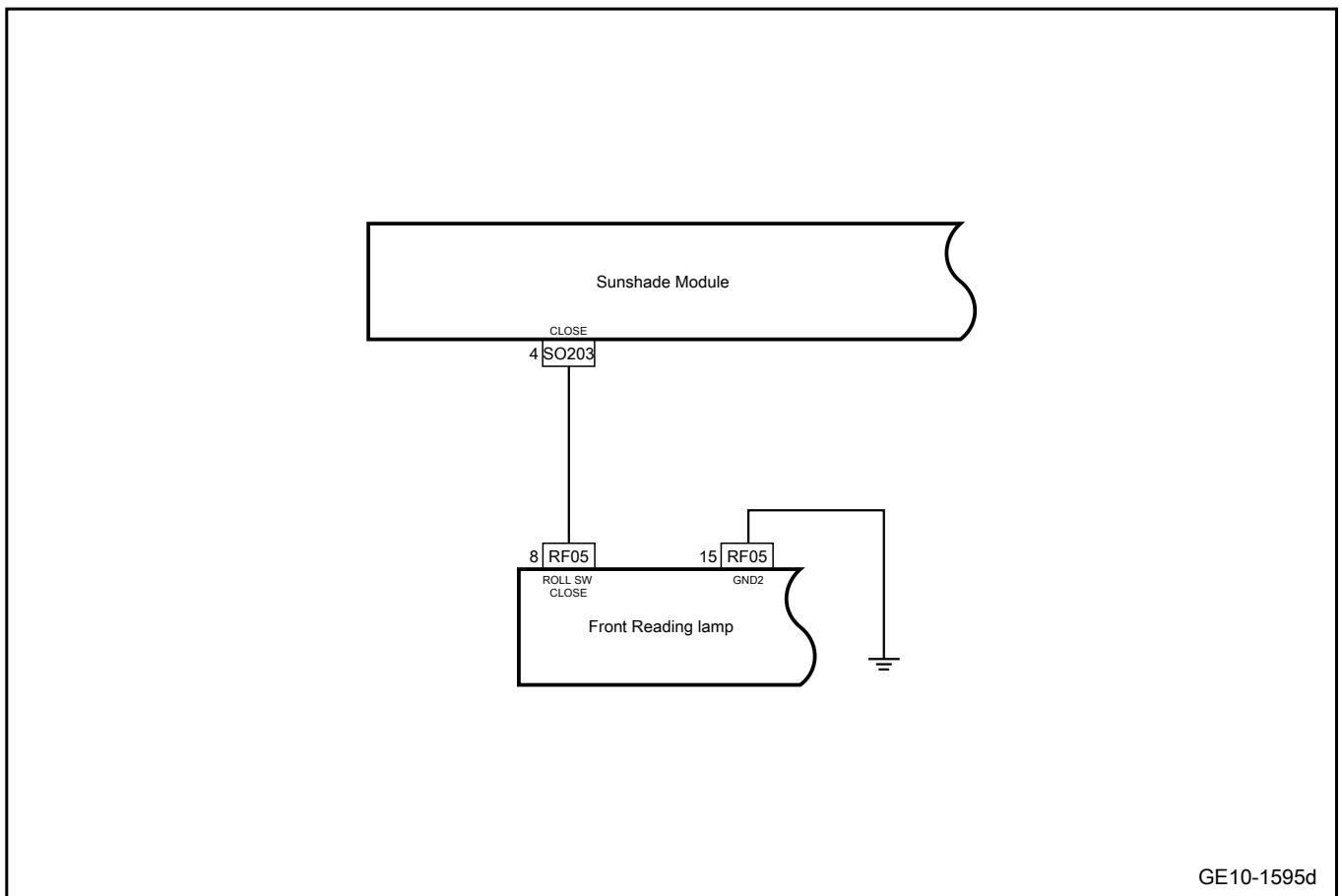
- A. Replace the sunshade module, see [Replacement of sunshade module](#)

Next Step

**Step 8** System is normal.

### 10.7.6.11 The sunshade cannot be closed

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the sunshade module, front reading lamp harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the sunvisor rail is blocked or stuck by foreign matter.
- C. Confirm whether the above items are normal.

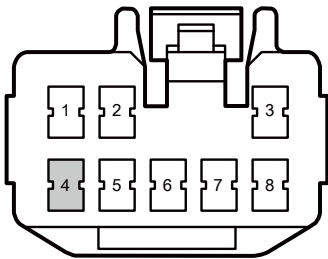
No

Repair or replace the faulty part.

Yes

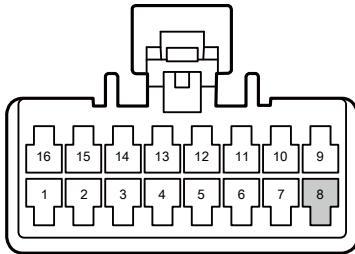
Step 2	Check whether the circuit between the sunshade module and the front reading lamp is open.
--------	---

SO203 Sunshade Module  
Harness Connector



GE10-2226d

RF05 front reading lamp  
harness connector



GE10-2227d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO203(4)	RF05(8)	Standard resistance: less than 1Ω

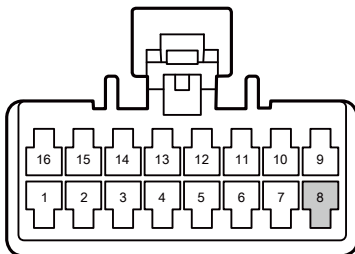
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the circuit between the sunshade module and the front reading lamp is short-circuited to ground.

RF05 front reading lamp  
harness connector



GE10-2228d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

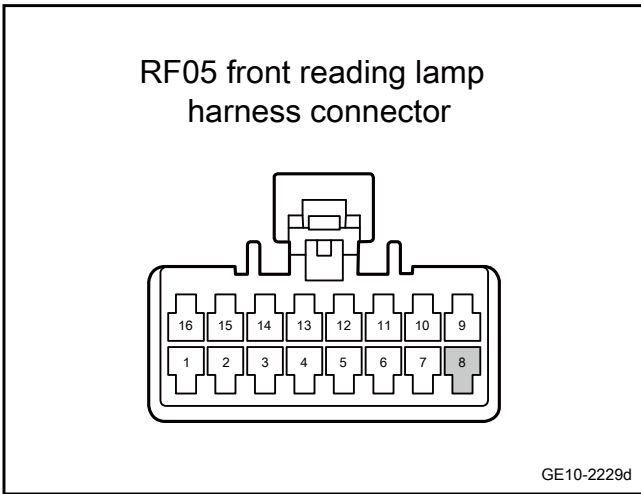
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the sunshade module and the front reading lamp is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the front reading lamp harness connector RF05.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(8)	Vehicle body is grounded.	Standard voltage: 0V

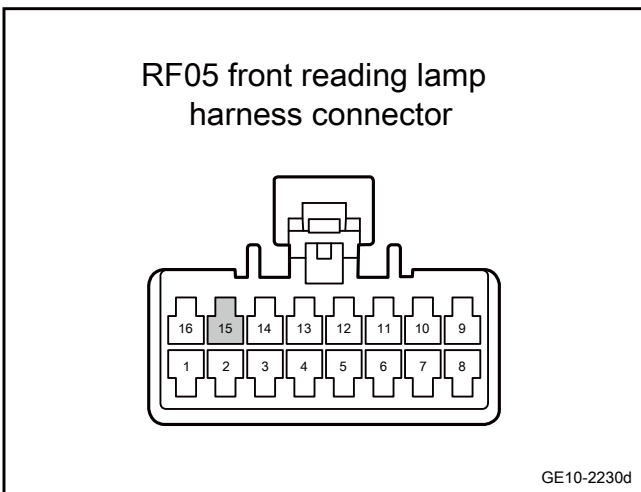
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring between the front reading lamp and the body ground is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front reading lamp harness connector RF05.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the front reading lamp.

- A. Replace front reading lamp, refer to replacement of front reading lamp
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the sunshade module.

- A. Replace the sunshade module, see [Replacement of sunshade module](#)

Next Step

Step 8 System is normal.

### 10.7.6.12 Sunroof initialization

This operation can be performed when the initial position is lost:

- a. Initialization of sunroof glass: when the sunroof glass is in the fully closed position, press and hold the closing direction switch for more than 10s, the sunroof will perform the initialization action until the sunroof glass returns to the closed position and release the hand, the initialization learning is complete
- b. Sunroof shade initialization: when the sunshade is in the fully closed position, press and hold the closing direction switch for more than 10s, the sunshade will perform the initialization action until the sunshade returns to the closed position and release it, and the initialization learning is complete

## 10.7.7 Removal and installation

### 10.7.7.1 Replacement of front glass assembly of sunroof

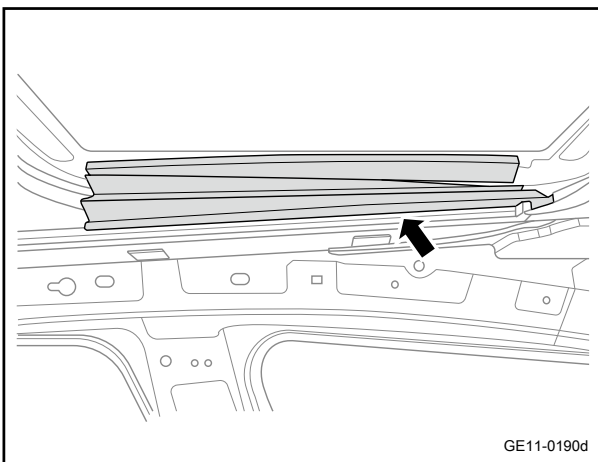
#### Removal procedure

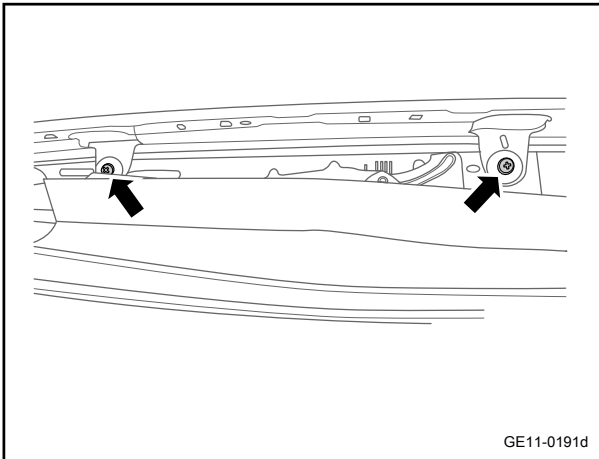
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

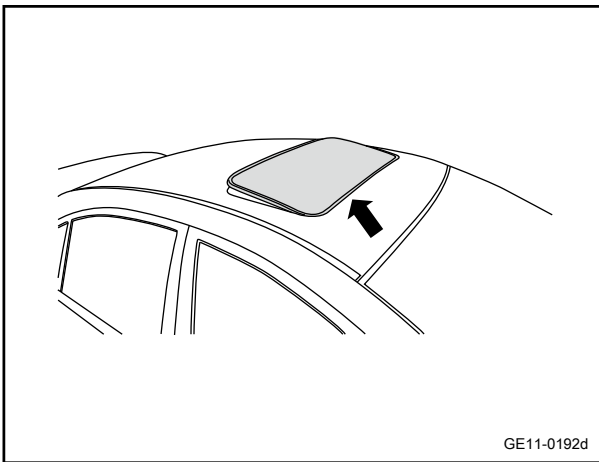
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)
- 3 Remove the left and right sunroof dust covers.





- 4 Remove the 2 fixing bolts of the front glass assembly of the left and right sunroof.

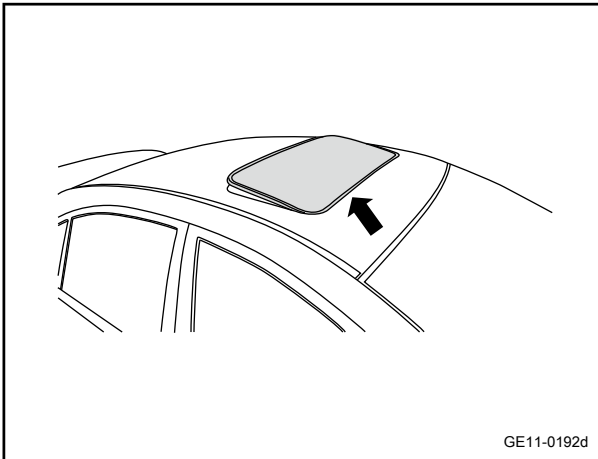


- 5 Move up and out the front glass assembly of the sunroof.

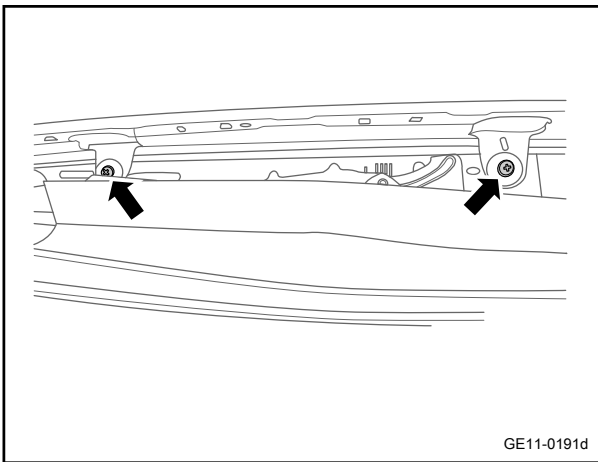
**Caution**

This step requires two people to work together

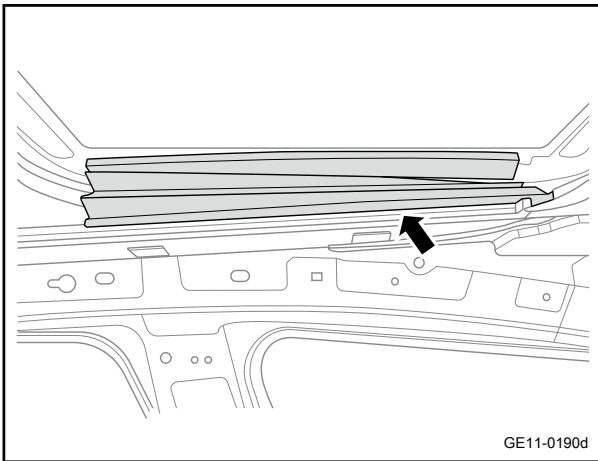
Installation procedure



- 1 Move the sunroof front glass assembly to the installation position.



- 2 Install and fasten the two fixing bolts of the front glass assembly of the left and right sunroof. Screw on the fixing bolts but do not tighten them.
- 3 Adjust the front glass assembly of the sunroof so that it is flush with the roof and the four sides keep the same gap with the frame, and tighten the fixing bolts of the left and right sunroof front glass assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



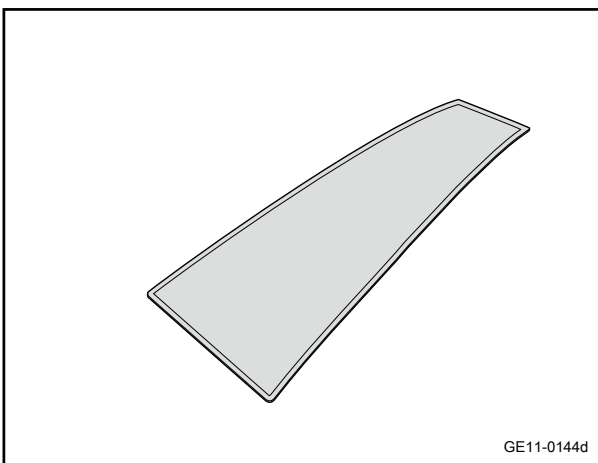
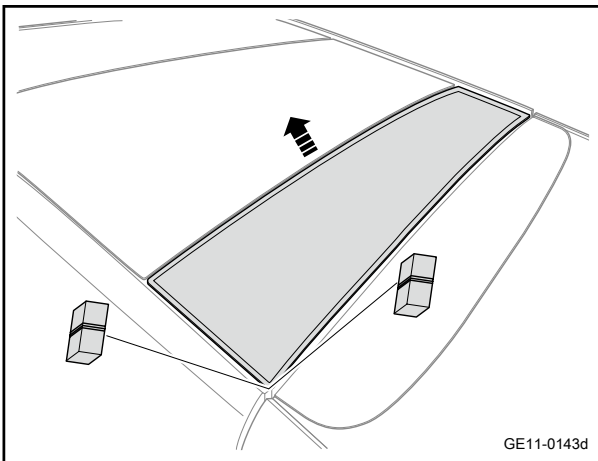
- 4 Install the left and right sunroof dust covers.

- 5 Install assembly-headlining panel roof.
- 6 Connect the negative cable of battery.

### 10.7.7.2 Replacement of rear sunroof glass assembly

Removal procedure





- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)
- 3 Cut the glass glue around the rear glass of the sunroof with a fine wire.

**Caution**

Wrap wooden blocks on both ends of the thin steel wire, which should be done by two people together to facilitate disassembly.

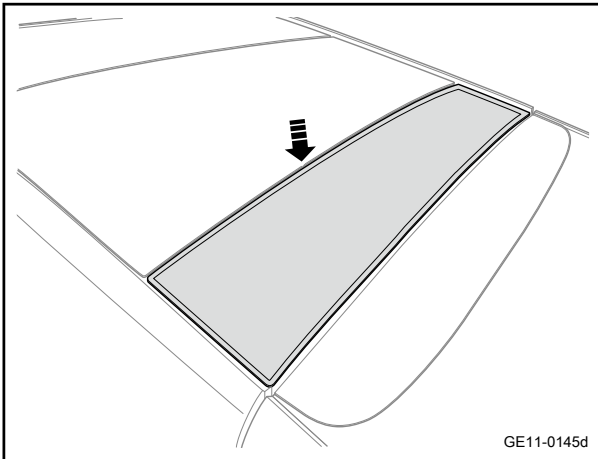
- 4 Remove the rear glass assembly of the sunroof.

**Caution**

**This step requires two people to work together**

- 5 Use a blade to remove the adhesive from the rear glass of the sunroof and the adhesive from the rear glass window frame of the sunroof.
- 6 Use a lint-free cloth dampened with a 50/50 volume ratio of industrial alcohol and water mixture to clean the edge of the inner surface of the sunroof glass.

Installation procedure



- 1 Install the rear glass assembly of the sunroof, and install the glass sealant evenly on the joint surface of the front roof and the rear glass assembly of the sunroof.

Standard value: 8 mm (0.3in) wide and 8 mm (0.3in) high

#### Caution

Let the adhesive dry for 24 hours, and pour water on the glass behind the sunroof to check for leaks. If there are water leaks, dry the rear sunroof glass and plug the leak with adhesive. If there is still water leak, remove the rear sunroof glass and repeat the entire repair procedure.

- 2 Install assembly-headlining panel roof.
- 3 Connect the negative cable of battery.

### 10.7.7.3 Replacement of sunroof motor

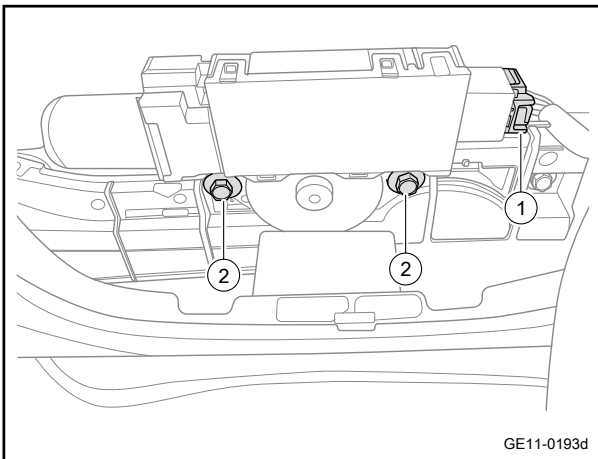
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

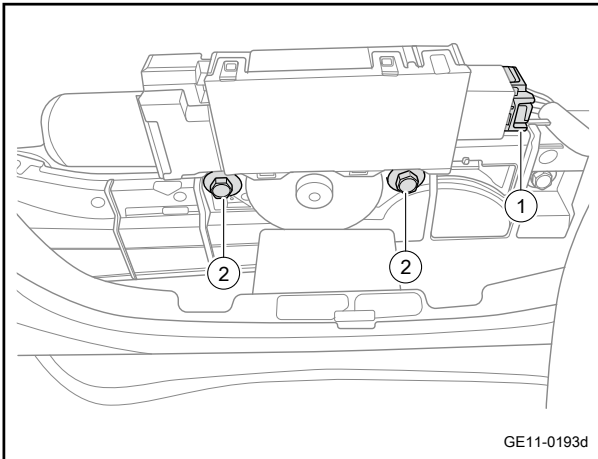
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front reading lamp assembly. Refer to [Replacement of front reading lamp assembly](#)
- 3 Disconnect the sunroof motor harness connector 1.
- 4 Install 2 fixing bolts 2 of the sunroof motor.
- 5 Remove the sunroof motor.



#### Installation procedure



- 1 Move the sunroof motor to the installation position.
- 2 Install 2 fixing bolts 2 of sunroof motor.  
Torque: 3N·m (metric) 2.2lb-ft (imperial system)
- 3 Connect the sunroof motor harness connector 1.

- 4 Install the front reading lamp assembly.
- 5 Connect the negative cable of battery.

#### 10.7.7.4 Replacement of sunroof switch assembly

Refer to [Replacement of front reading lamp assembly](#)

#### 10.7.7.5 Replacement of sunroof frame

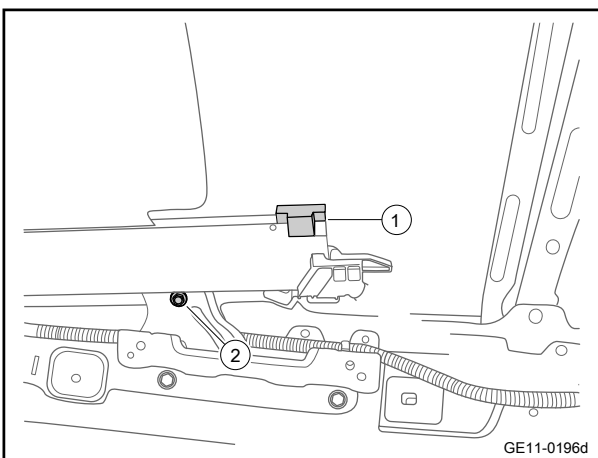
Removal procedure

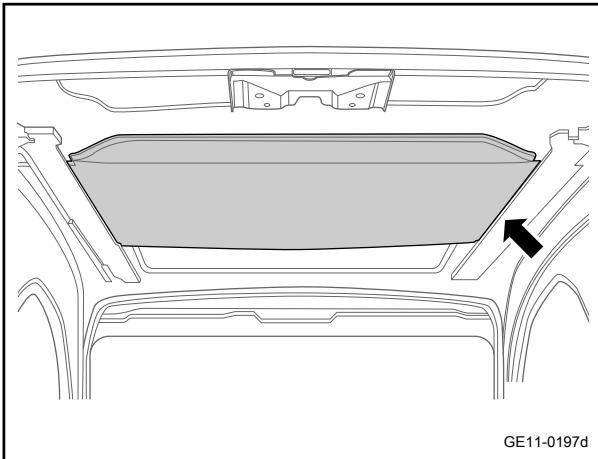
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

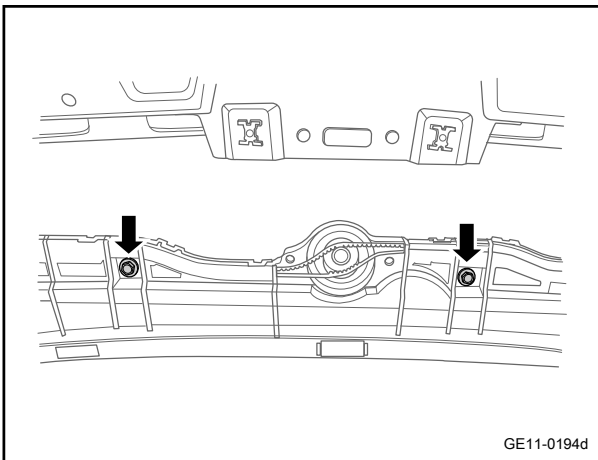
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the sunroof motor. Refer to [Replacement of sunroof motor](#)
- 3 Remove the front water pipe of the sunroof. See [Replacement of the front water pipe \(left\) of the sunroof](#)
- 4 Remove the rear water pipe of the sunroof. See [Replacement of the rear water pipe \(right\) of the sunroof](#)
- 5 Remove the left and right limit blocks 1 of the sunroof sunshade.
- 6 Remove the left and right fixing bolts 2 at the rear end of the sunroof frame.

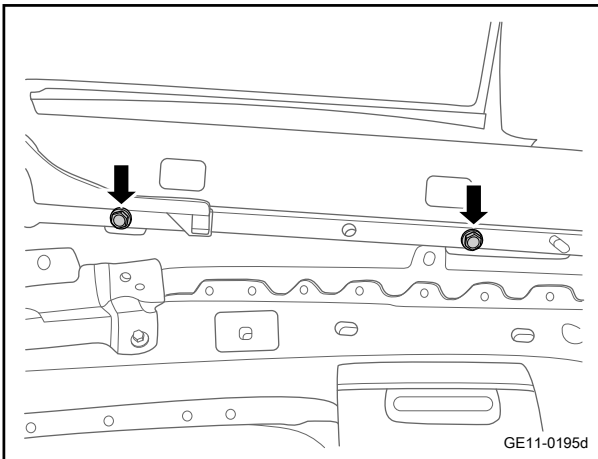




7 Remove the sunroof sunshade.



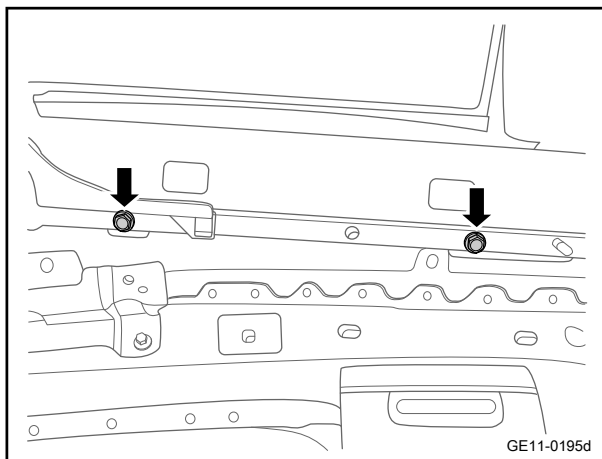
8 Remove sunroof frame front 2 fixing bolts.



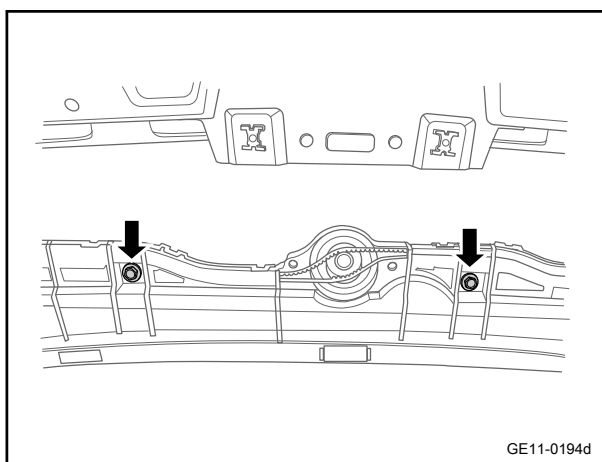
9 Remove 2 fixing bolts on each side of the sunroof frame.

10 Take off the sunroof frame.

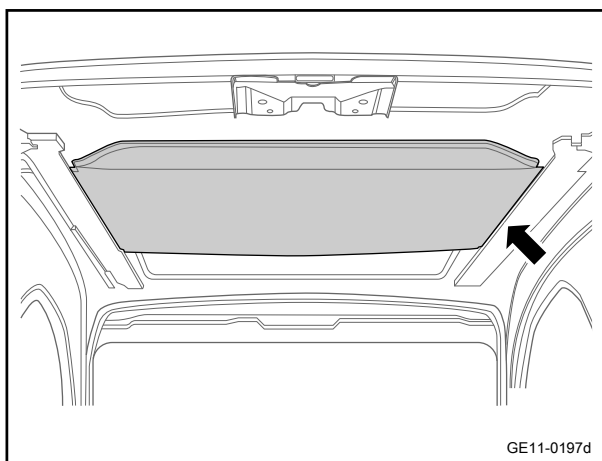
Installation procedure



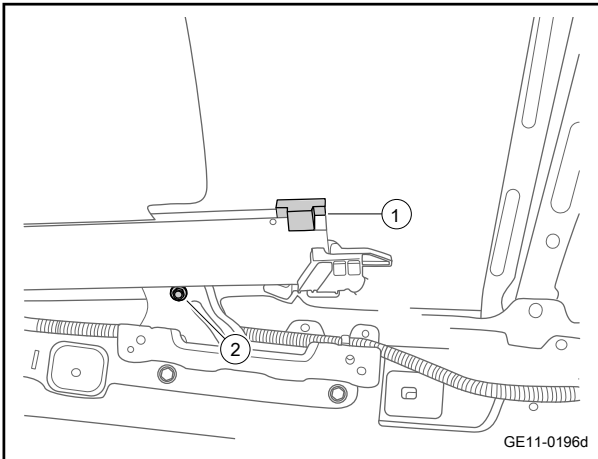
- 1 Move the sunroof frame to the installation position.
- 2 Install 2 fixing bolts on each side of the sunroof frame.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



- 3 Install sunroof frame front 2 fixing bolts.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



- 4 Install the sunroof sunshade.



- 5 Install the left and right fixing bolts 2 at the rear end of the sunroof frame.

Torque: 0.3N·m (metric) 0.2lb-ft (imperial system)

- 6 Install the left and right limit blocks 1 of the sunroof sunshade.

- 7 Install the rear water pipe of the sunroof.
- 8 Install the front water pipe of the sunroof.
- 9 Install the sunroof motor.
- 10 Connect the negative cable of battery.

### 10.7.7.6 Replacement of sun visor assembly of the roof

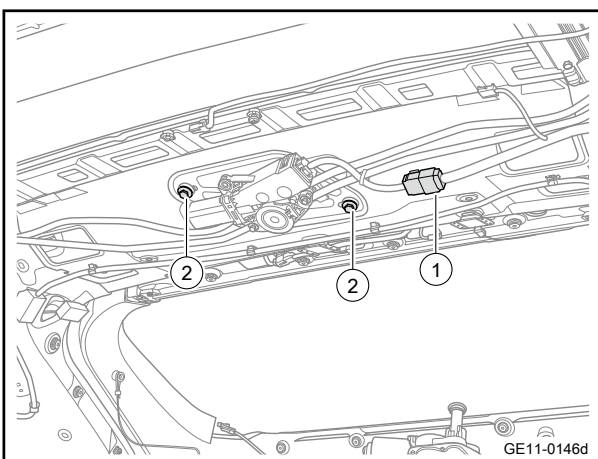
#### Removal procedure

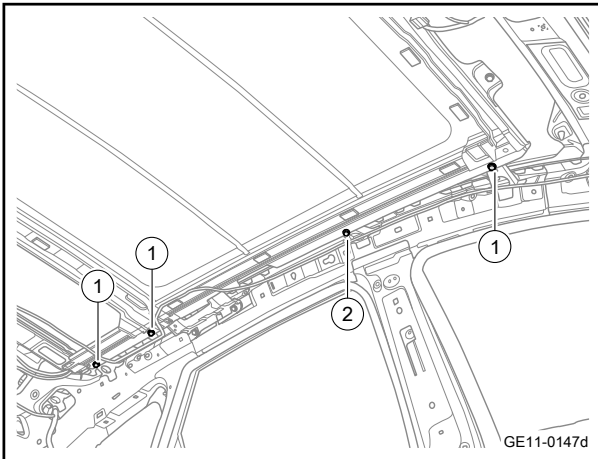
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)
- 3 Disconnect the harness connector 1 of sun visor motor of the roof.
- 4 Remove the 2 fixing bolts 2 of the sun visor motor of the roof.



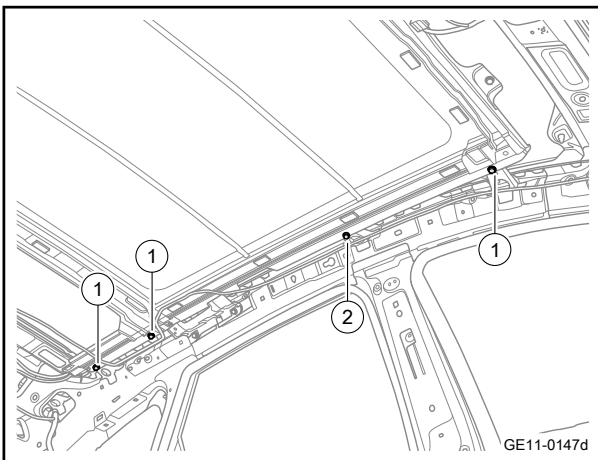


- 5 Remove the 3 fixing bolts 1 on the left and right sides of the sun visor assembly of the roof.
- 6 Remove one fixing nut 2 on the left and right sides of the sun visor assembly of the roof.
- 7 Remove the sun visor assembly of the roof.

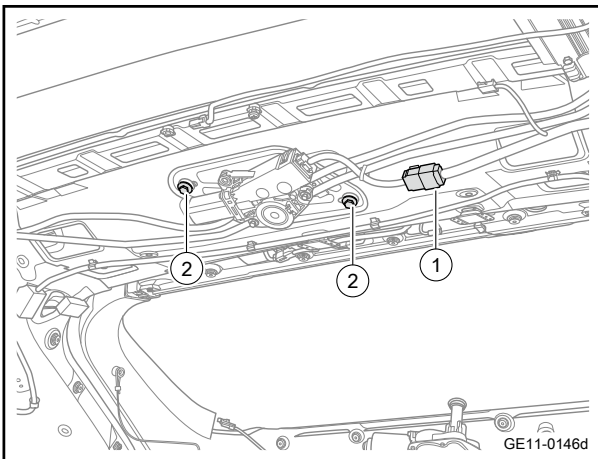
#### Caution

This step requires two people to work together

#### Installation procedure



- 1 Move the sun visor assembly of the roof to the installation position.
- 2 Install one fixing nut 2 on the left and right sides of the sun visor assembly of the roof.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install 3 fixing bolts 1 on the left and right sides of the sun visor assembly of the roof.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)



- 4 Install the 2 fixing bolts 2 of the sun visor motor of the roof.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 5 Connect the harness connector 1 of sun visor motor of the roof.

- 6 Install assembly-headlining panel roof.
- 7 Connect the negative cable of battery.

### 10.7.7.7 Replacement of the front water pipe (left) of the sunroof

#### Removal procedure

**Caution**

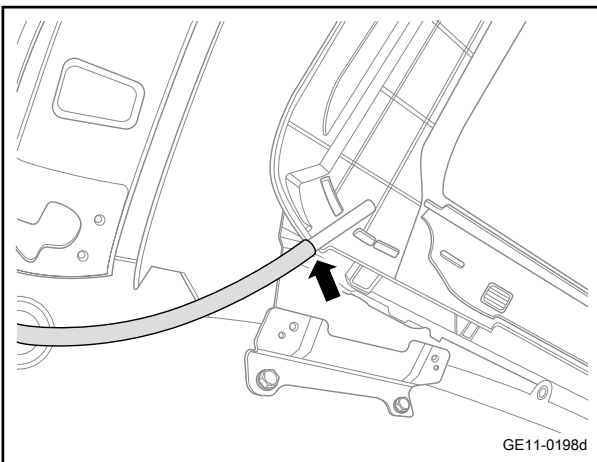
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

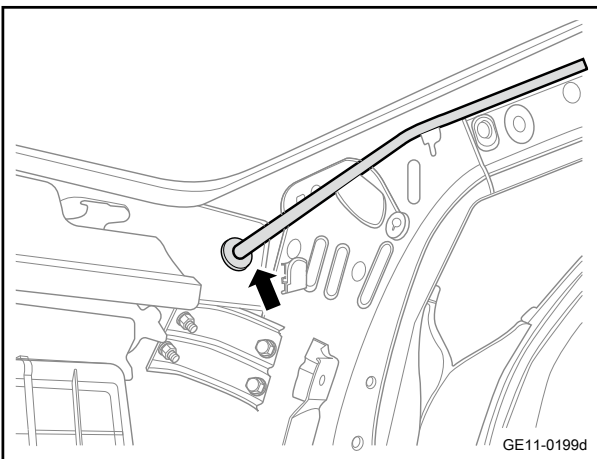
**Warning**

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

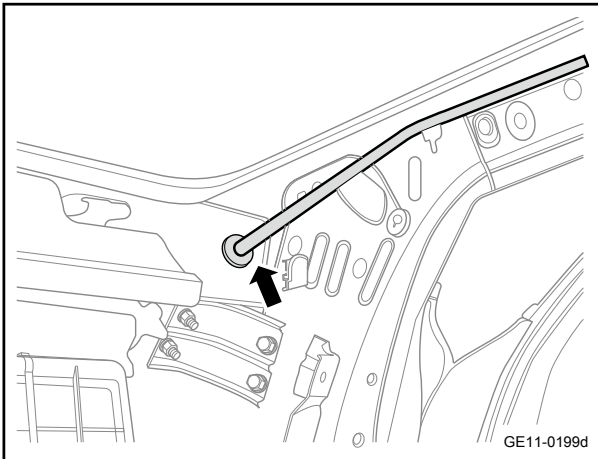
- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)
- 3 Disconnect the front water pipe (left) of the sunroof from the sunroof frame.



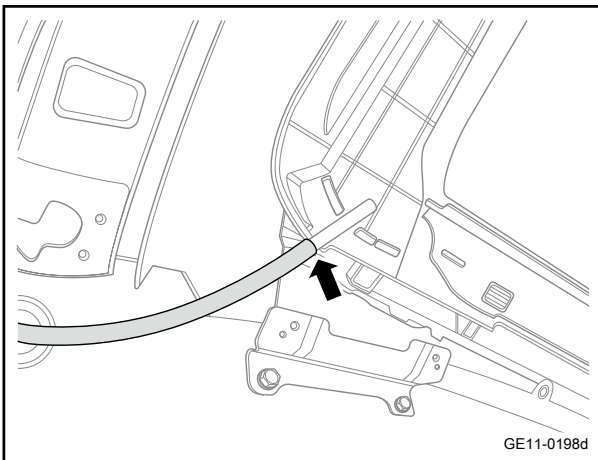
- 4 Disconnect the front water pipe (left) of the sunroof from the front end of the vehicle body.
- 5 Remove the front water pipe (left) of the sunroof.

**Installation procedure**





- 1 Move the front water pipe (left) of the sunroof to the installation position.
- 2 Connect the front water pipe (left) of the sunroof to the front end of the vehicle body.



- 3 Connect the front water pipe (left) of the sunroof with the sunroof frame.

- 4 Install assembly-headlining panel roof.
- 5 Connect the negative cable of battery.

### 10.7.7.8 Replacement of the rear water pipe (right) of the sunroof

#### Removal procedure

##### Caution

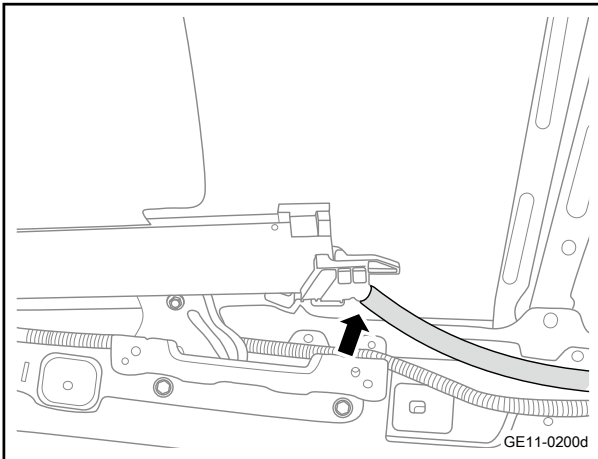
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

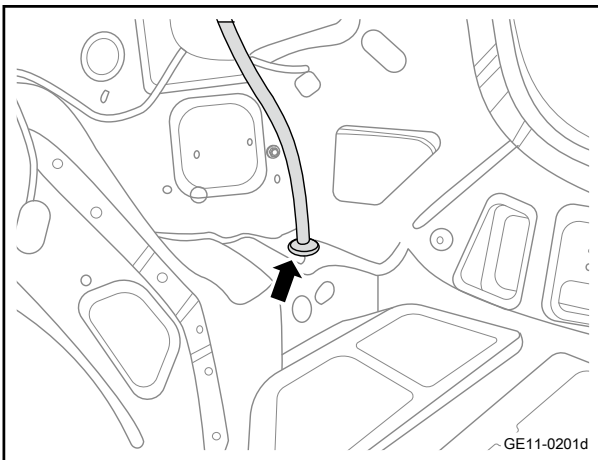
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

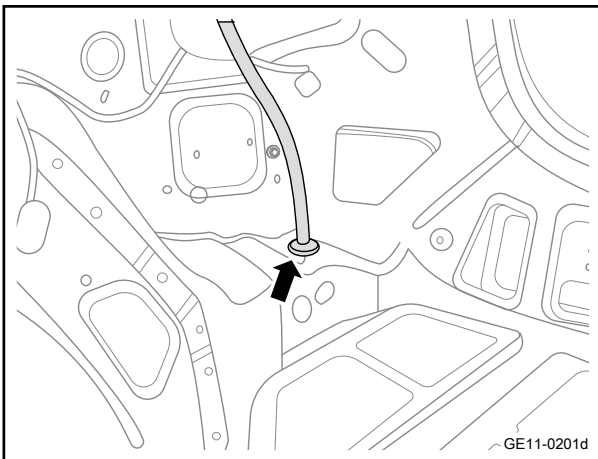
- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)



- 3 Break the connection between the rear water pipe (left) of the sunroof and the sunroof frame.

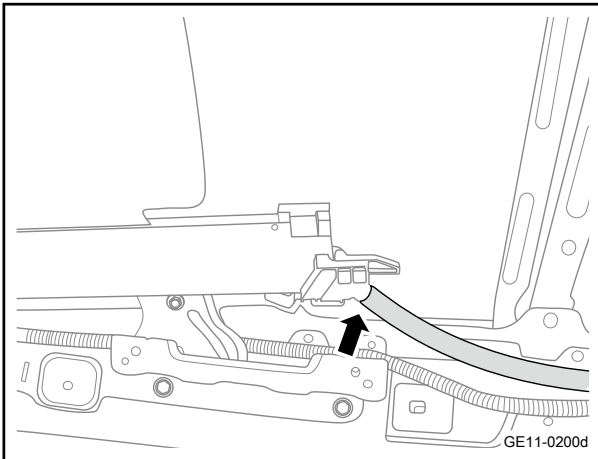


- 4 Break the connection between the rear water pipe (left) of the sunroof from the rear end of the vehicle body.
- 5 Remove the front water pipe (left) of the sunroof.



#### Installation procedure

- 1 Move the rear water pipe (left) of the sunroof to the installation position.
- 2 Connect the rear water pipe (left) of the sunroof to the rear end of the vehicle body.



- 3 Connect the rear water pipe (left) of the sunroof and the sunroof frame.

- 4 Install assembly-headlining panel roof.
- 5 Connect the negative cable of battery.

### 10.7.7.9 Replacement of panoramic glass

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)

- 3 Cut the glass glue around the sunroof glass with a fine wire.

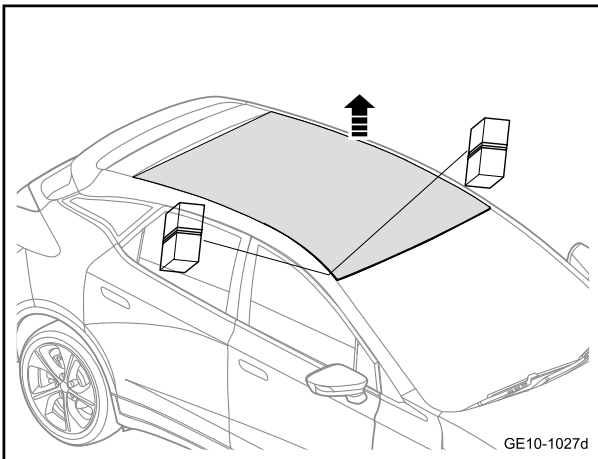
#### Caution

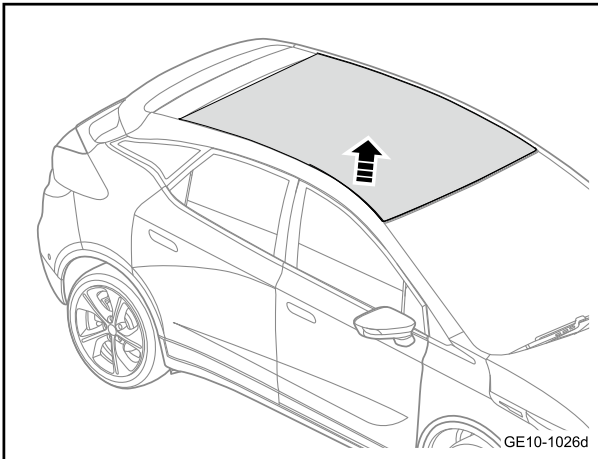
Wrap wooden blocks on both ends of the thin steel wire, which should be done by two people together to facilitate disassembly.

- 4 Remove the sunroof glass assembly.

#### Caution

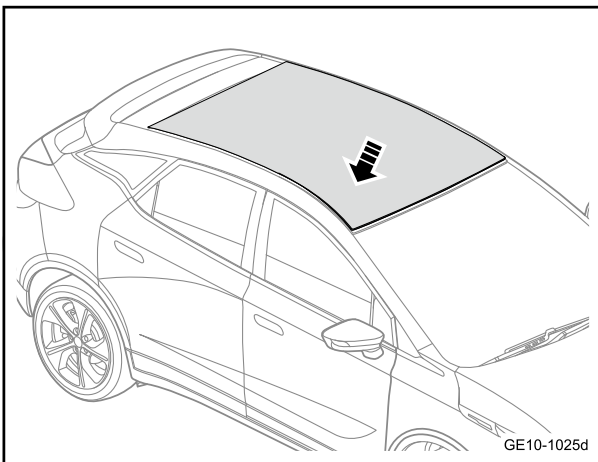
This step requires two people to work together





- 5 Use a blade to remove the adhesive from the sunroof glass and the adhesive from the sunroof glass frame.
- 6 Use a lint-free cloth dampened with a 50/50 volume ratio of industrial alcohol and water mixture to clean the edge of the inner surface of the sunroof glass.

#### Installation procedure



- 1 Install the sunroof glass assembly and apply glass sealant evenly on the joint surface of the roof and sunroof glass assembly before installation.

Standard value: 8 mm (0.3in) wide and 8 mm (0.3in) high

#### Caution

Let the adhesive dry for 24 hours, and pour water on the sunroof glass to check for leaks. If there are water leaks, dry the sunroof glass and plug the leak with adhesive. If there is still water leak, remove the sunroof glass and repeat the entire repair procedure.

- 2 Install assembly-headlining panel roof.
- 3 Connect the negative cable of battery.

## 10.8 Central control door lock

### 10.8.1 Specification

#### 10.8.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of left front door lock	-	5 - 7	3.7 - 5.2
Fixing bolt of door lock assembly	M8×22	20 - 26	14.8 - 19.2
Backdoor lock assembly fixing bolt	M8×22	20 - 26	14.8 - 19.2
Backdoor lock catch assembly fixing bolt	M8×22	20 - 26	14.8 - 19.2

## 10.8.2 Description and Operation

### 10.8.2.1 General

#### Door lock

- Door lock is mainly composed of motor, micro switch, shell, pull rod, etc.
- There are one motor and two microswitches in the door lock. The working voltage of the motor is 9~16V, one of the micro switches controls the door lock status signal, and the other controls the door control switch signal.
- Two door lock switches are set on the system, one in the front left door lock and the other in the front left door central control switch. The lock signals of the two door lock switches are input to the same input terminal of BCM, but the unlock signals are input separately. The driver door key lock cylinder can only unlock the door individually, but can lock all doors.

#### Mechanical key unlocking and locking

The driver's door lock has a mechanical unlocking and locking device. When using mechanical unlocking method, insert the mechanical key into the lock hole and turn it clockwise to unlock the driver's door. Turn counterclockwise to lock four doors.

#### Locking and unlocking remotely

##### Unlocking

- Press the unlock button on the smart key to unlock the complete vehicle, the turn signal flashes 3 times for confirmation, and the position lamp is on; press and hold the unlock button, the four door glass windows open. Press and hold the back door unlocking button, the back door enters the unlocked state.

##### Lock up

- Press the locking button on the smart key, the complete vehicle will be locked, and the turn signal will flash once; press and hold the unlocking button to close the four door glass windows. If any of the four doors, the front engine compartment cover, and the rear door is not closed, press the locking button on the smart key, and the vehicle will sound 5 consecutive alarms to remind the locking failure.

#### Automatic locking and unlocking

##### Automatic re-locking

Within 30 seconds of unlocking the vehicle using the smart key, if any one of the front engine hood, four doors, and rear door is not opened, the doors will be automatically relocked. The exterior lights go out and the vehicle enters a defense state.

##### Automatic locking during driving

The start-and-stop switch is set to ON, and when the vehicle speed is greater than 20 km/h, the four-vehicle doors will be automatically locked.

#### Caution

The automatic driving lock function can be adjusted in the multimedia settings to adjust the automatic locking speed or choose to turn off this function.

Remind to unlock when the key is left in the vehicle

The start-and-stop switch is set to OFF, and the smart key is left in the vehicle. When the vehicle is being locked, there will be an alarm.

Automatic central control unlocking upon stop

After the vehicle is automatically locked, if the vehicle is stopped and the start-and-stop switch is set to OFF, the door is automatically unlocked.

##### Collision unlocking

In case of severe head-on collision in travel, the four doors are unlocked automatically so that the occupants can leave the vehicle quickly.

##### Priority of control gate lock

- Priority: When several signals are valid at the same time: collision unlocking>front door key switch signal>remote control signal>central control door lock>automatic unlocking and automatic locking function
- When one of the above signals is valid, and the corresponding action is being performed. Another signal occurs at this time and will be ignored. But when a collision unlock signal occurs, BCM immediately executes the collision unlock action.

### 10.8.3 How the system works

#### 10.8.3.1 System Working Principles

##### Lock operation

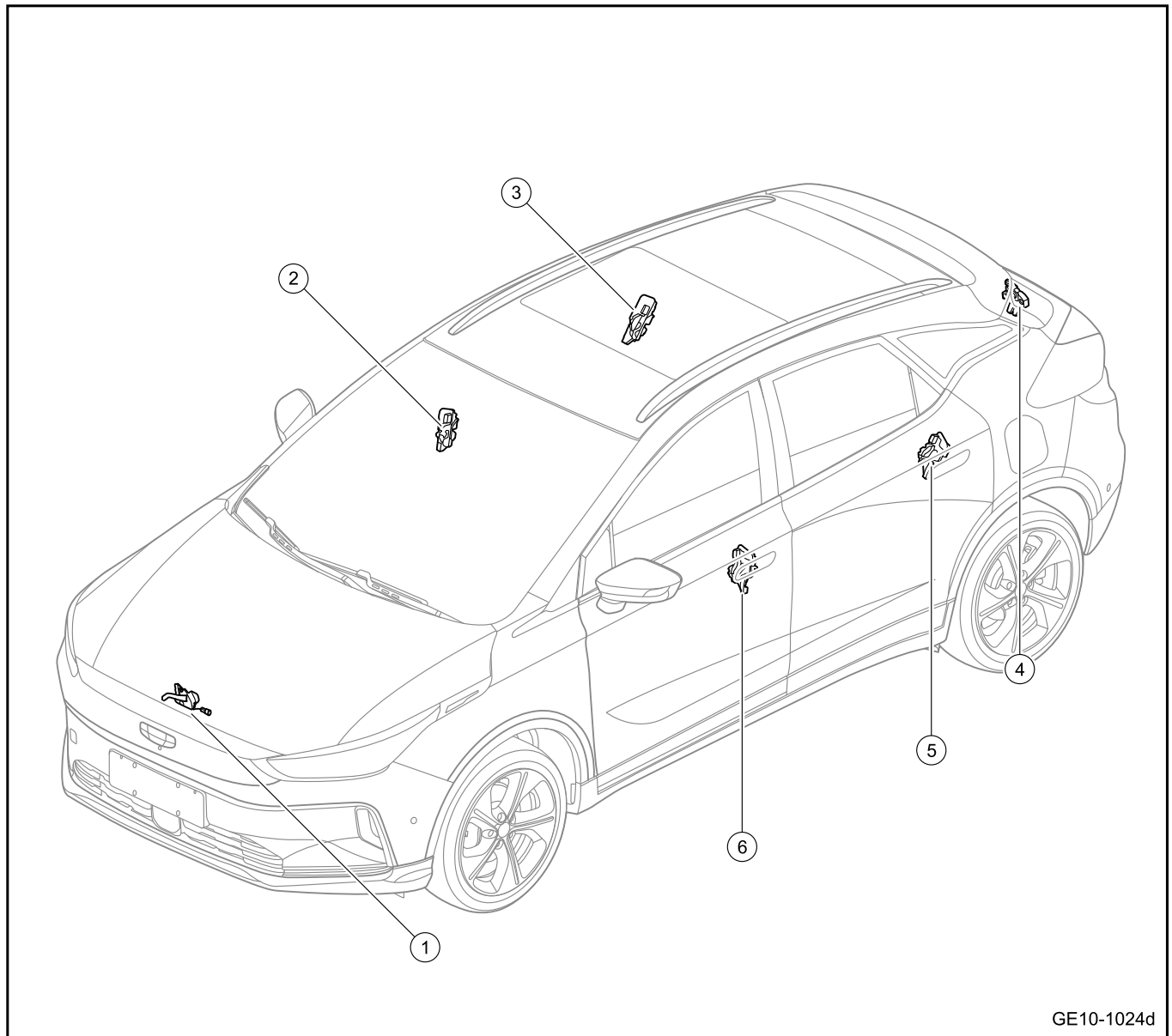
When BCM receives the input signal of switch lock or meets the conditions of automatic lock, it outputs power from the lock output terminal of BCM and controls the door lock motor of five doors to perform lock operation.

##### Unlock operation

When BCM receives the input signal of switch unlock or meets the conditions of automatic unlock, it outputs power from the unlock output terminal of BCM and controls the door lock motor of four doors plus the backdoor to perform unlock operation. The backdoor can be opened separately by operating the backdoor switch and controlled by BCM through keyless entry.

## 10.8.4 Part location

## 10.8.4.1 Part Position



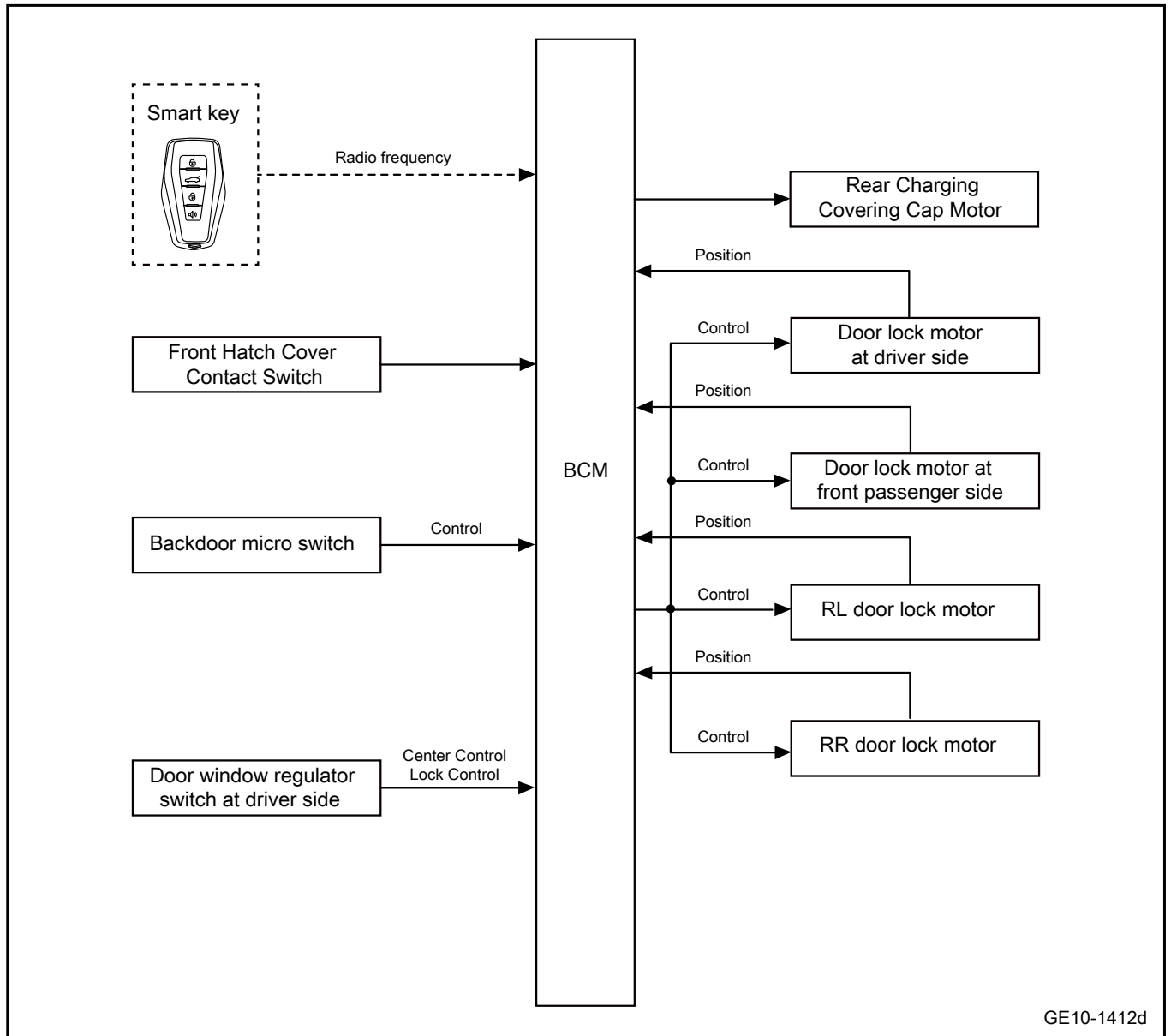
GE10-1024d

- |  |                             |
|--|-----------------------------|
| 1. Front engine compartment cover lock | 4. Luggage compartment lock |
| 2. Right front door lock               | 5. Left rear door lock      |
| 3. Right rear door lock                | 6. Left front door lock     |



10.8.5 Electrical block diagram

10.8.5.1 Electric schematic diagram of the central control door lock system



## 10.8.6 Diagnostic information and steps

### 10.8.6.1 Diagnosis Description

Before diagnosing the fault of the central control door lock, refer to [Description and Operation](#) and [System Working Principles](#). Understand and familiarize yourself with the working principle of the central locking and the start the system diagnosis, which helps to determine the correct fault diagnosis steps in case of failure, and more importantly, helps to determine whether the condition described by the distributor is normal operation. Any fault diagnosis of the central control door lock should begin with routine inspection to guide the maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.8.6.2 Routine inspection

- Check the after-sales installations which may affect central locking and ensure these installations cannot affect the normal work of central locking.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- If all the door lock operations fail, check and repair any poor contact or open circuit of the power supply or grounding circuit before replacing the door lock.

### 10.8.6.3 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Mechanical keys cannot lock/open doors	<ol style="list-style-type: none"> <li>1. Power supply fault of the central lock</li> <li>2. Poor contact of the unlocking/locking switch in the left front door lock machine</li> <li>3. Poor contact of the harness plug</li> <li>4. Poor contact at relevant ground point</li> <li>5. Harness fault</li> <li>6. Central lock motor fault</li> <li>7. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair the power supply line.</li> <li>2. Repair the harness and plug.</li> <li>3. Repair the grounding point fault.</li> <li>4. Replace the door lock motor assembly.</li> <li>5. Repair BCM and replace BCM if necessary.</li> </ol>
The central lock switch cannot lock/open the door	<ol style="list-style-type: none"> <li>1. Power supply fault of the central lock</li> <li>2. Central lock switch on the left front window regulator switch assembly fault</li> <li>3. Poor contact of the harness plug</li> <li>4. Poor contact at relevant ground point</li> <li>5. Harness fault</li> <li>6. Central lock motor fault</li> <li>7. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair the power supply line.</li> <li>2. Repair the harness and plug.</li> <li>3. Repair the grounding point fault.</li> <li>4. Repair the left front door window regulator switch.</li> <li>5. Replace the door lock motor assembly.</li> <li>6. Repair BCM and replace BCM if necessary.</li> </ol>
Only the left front door lock cannot lock/open the door.	<ol style="list-style-type: none"> <li>1. Power supply fault of the central lock</li> <li>2. Poor contact of the left front door lock harness plug</li> <li>3. Poor contact at the ground point of the left front door lock</li> <li>4. Harness fault</li> <li>5. Central lock motor of the left front door fault</li> <li>6. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair the power supply line.</li> <li>2. Repair the harness and plug.</li> <li>3. Repair the grounding point fault.</li> <li>4. Replace the door lock motor assembly.</li> <li>5. Repair BCM and replace BCM if necessary.</li> </ol>

Fault Symptom	Suspected fault location	Maintenance plan
The remote control cannot lock/open the door	<ol style="list-style-type: none"> <li>1. Electromagnetic interference in the service environment</li> <li>2. Remote control fault</li> <li>3. Power supply fault of the central lock</li> <li>4. Poor contact of the harness plug</li> <li>5. Poor contact at relevant ground point</li> <li>6. Harness fault</li> <li>7. Central lock motor fault</li> <li>8. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Move to a non-interference environment for use.</li> <li>2. Repair the battery of the remote controller and replace the remote controller if necessary.</li> <li>3. Repair the power supply line.</li> <li>4. Repair the harness and plug.</li> <li>5. Repair the grounding point fault.</li> <li>6. Replace the door lock motor assembly.</li> <li>7. Repair BCM and replace BCM if necessary.</li> </ol>
In the anti-theft state, the central lock cannot automatically latch.	<ol style="list-style-type: none"> <li>1. Insufficient power supply voltage</li> <li>2. Poor contact of the harness plug</li> <li>3. Poor contact at relevant ground point</li> <li>4. Harness fault</li> <li>5. Central lock motor contact switch fault</li> <li>6. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair the power supply line.</li> <li>2. Repair the harness and plug.</li> <li>3. Repair the grounding point fault.</li> <li>4. Replace the door lock motor assembly.</li> <li>5. Repair BCM and replace BCM if necessary.</li> </ol>
The door lock hops while driving.	<ol style="list-style-type: none"> <li>1. Door lock mechanism fault</li> <li>2. Poor contact of the harness plug</li> <li>3. Poor contact at relevant ground point</li> <li>4. Harness fault</li> <li>5. Central lock motor contact switch fault</li> <li>6. BCM fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the mechanical mechanism of the door lock and replace the door lock mechanism when necessary.</li> <li>2. Repair the harness and plug.</li> <li>3. Repair the grounding point fault.</li> <li>4. Replace the door lock motor assembly.</li> <li>5. Repair BCM and replace BCM if necessary.</li> </ol>

### 10.8.6.4 Smart key remote function is invalid

#### 1. Diagnosis steps

#### Caution

This diagnostic procedure applies to the situations that the smart key cannot lock/open all doors and the central locking switch function is normal.

Step 1	Check the smart key battery voltage.
--------	--------------------------------------

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Open the smart key rear cover and take out the battery.
- C. Use a multimeter to measure the battery voltage.

Standard voltage: 2.17-3.6V

- D. Confirm whether the measured value meets the standard.

No

Replace the smart key battery.

Yes

Step 2 Replace the smart key.

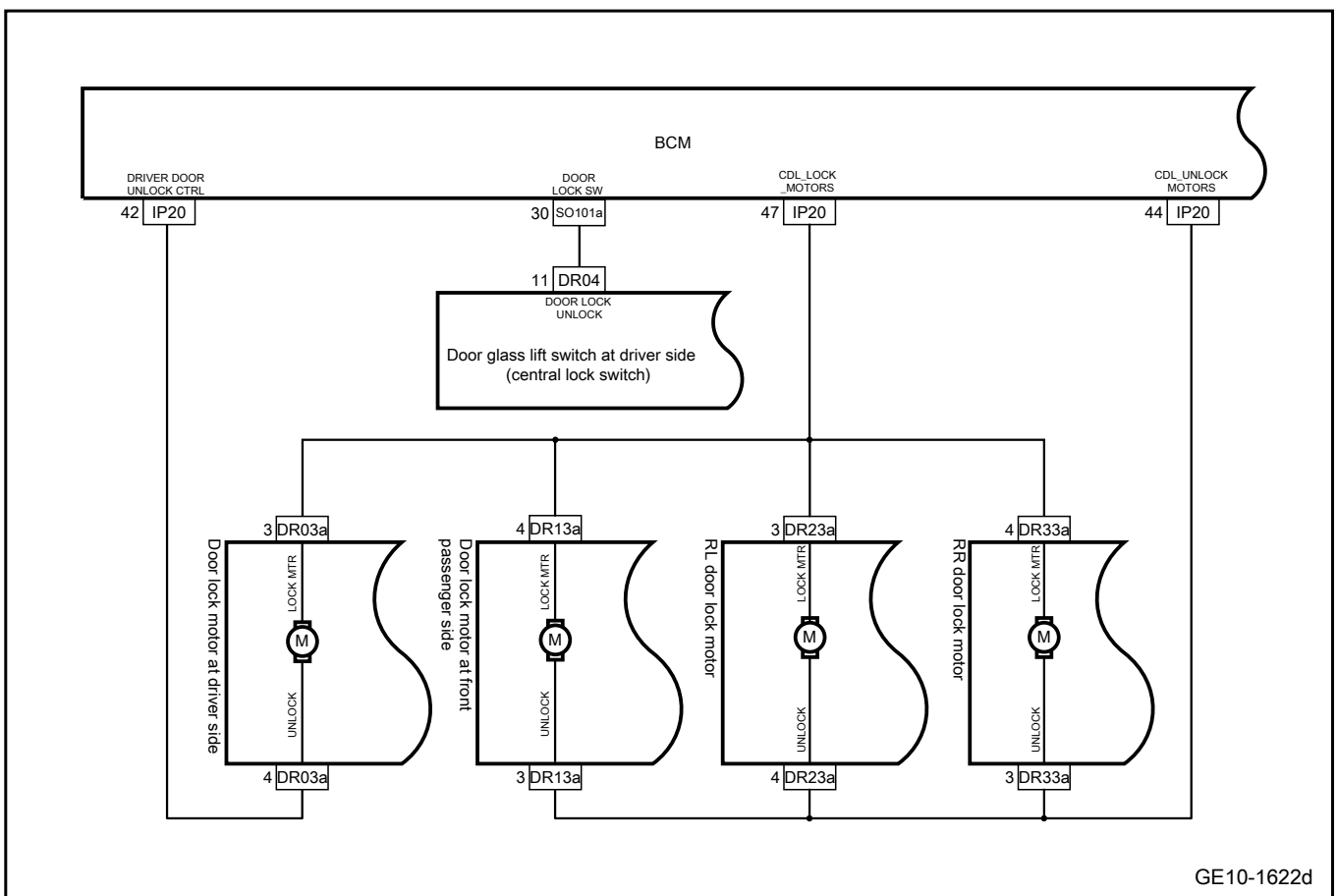
- A. Replace the smart key.
- B. Match the smart key.
- C. Confirm the remote function of the smart key is normal.

Next Step

Step 3 The diagnosis is finished.

### 10.8.6.5 All central locks cannot be locked

1. Schematic circuit diagram:



GE10-1622d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the BCM, all door lock harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

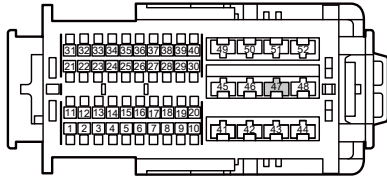
No

Repair or replace the faulty part.

Yes

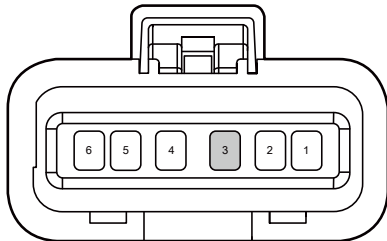
Step 2	Check whether the BCM blocking output circuit is open.
--------	--

IP20 body control module harness connector 1



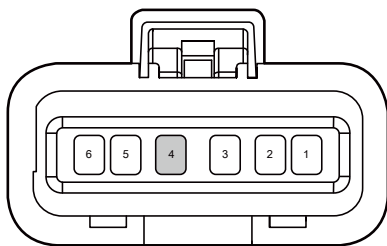
GE10-2252d

DR03a door lock motor harness connector at driver side



GE10-2253d

DR13a harness connector for door lock motor at front passenger side



GE10-2254d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. Disconnect front passenger side door lock motor harness connector DR13a.
- E. Disconnect the left rear backdoor lock motor harness connector DR23a.
- F. Disconnect the right rear backdoor lock motor harness connector DR33a.
- G. Use a multimeter to measure each terminal according to the following table:

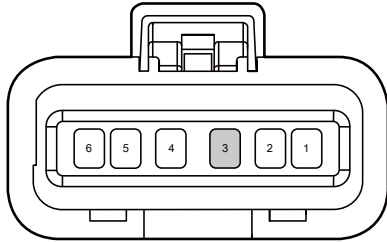
Measure terminal 1	Measure terminal 2	Standard value
IP20(47)	DR03a(3)	Standard resistance: less than 1Ω
	DR13a(4)	
	DR23a(3)	
	DR33a(4)	

- H. Confirm whether the measured value meets the standard.

No

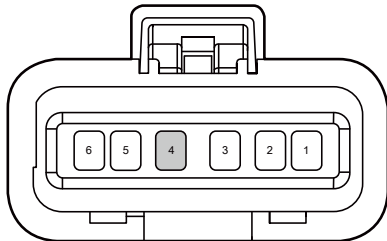
Repair or replace the harness.

DR23a Rear left door lock motor harness connector



GE10-2255d

DR33a Rear right door lock motor harness connector

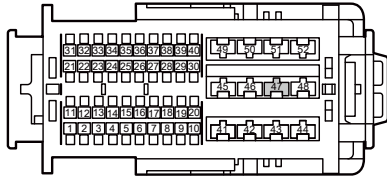


GE10-2256d

Yes

Step 3	Check whether the BCM blocking output circuit is short-circuited to ground.
--------	---

IP20 body control module  
harness connector 1



GE10-2252d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. Disconnect front passenger side door lock motor harness connector DR13a.
- E. Disconnect the left rear backdoor lock motor harness connector DR23a.
- F. Disconnect the right rear backdoor lock motor harness connector DR33a.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(47)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- H. Confirm whether the measured value meets the standard.

No

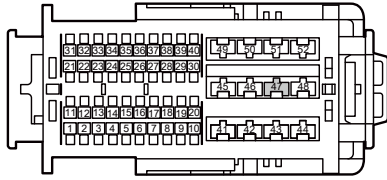
Repair or replace the harness.

Yes

Step 4 | Check whether the BCM blocking output circuit is short-circuited to the power supply.



IP20 body control module harness connector 1



GE10-2252d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. Disconnect front passenger side door lock motor harness connector DR13a.
- E. Disconnect the left rear backdoor lock motor harness connector DR23a.
- F. Disconnect the right rear backdoor lock motor harness connector DR33a.
- G. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- H. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(47)	Vehicle body is grounded.	Reference voltage: equal to 0V

- I. Confirm whether the measured value meets the standard.

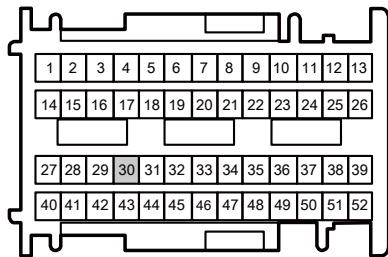
No

Repair or replace the harness.

Yes

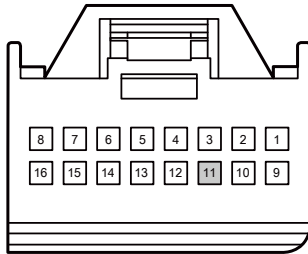
Step 5 Check whether the circuit between the driver side glass regulator switch and BCM is open.

SO101a body control module harness connector 7



GE10-2280d

DR04 harness connector for door window regulator switch at driver side



GE10-2269d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(30)	DR04(11)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

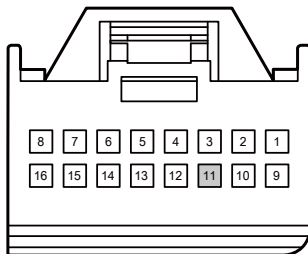
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the driver side glass regulator switch and BCM is short to GND.

DR04 harness connector for door window regulator switch at driver side



GE10-2269d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

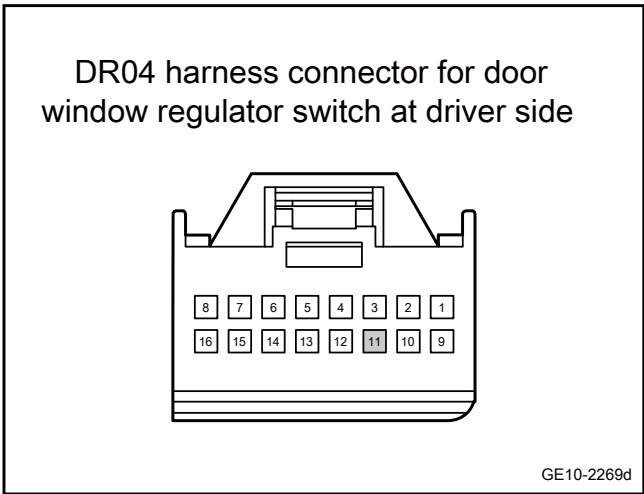
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the driver side glass regulator switch and BCM is short to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR04(11)	Vehicle body is grounded.	Reference voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** Replace the driver side door glass regulator switch.

- A. Replace the driver side door glass regulator switch, refer to [Replacement of the driver side door glass regulator switch](#)
- B. Confirm whether the trouble is removed.

Yes System is normal.

No

**Step 9** Replace the BCM

- A. Check whether the power supply of control module BCM and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

**Step 10** Reprogram and reset the BCM.

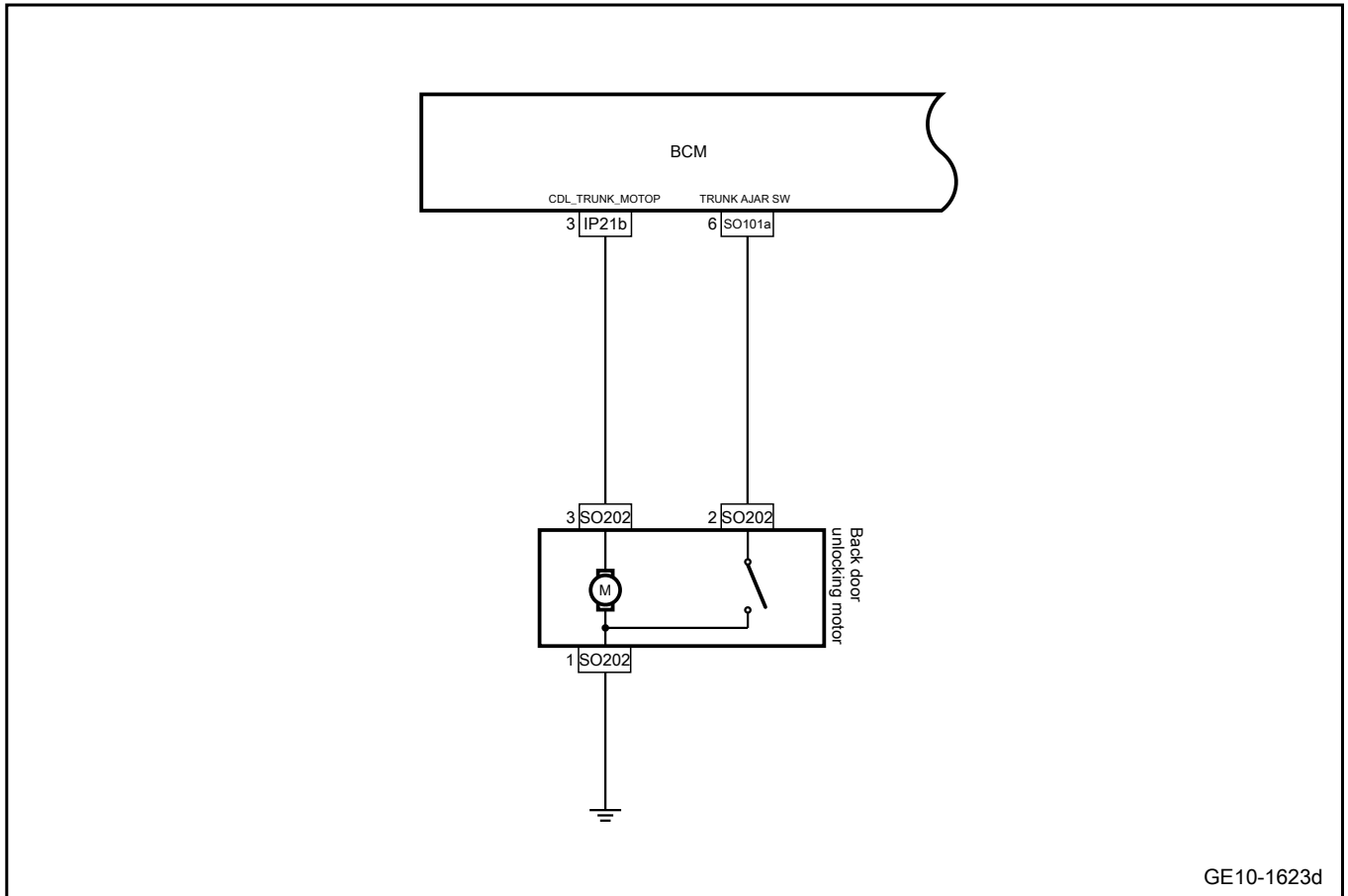
- A. Reprogram and reset the BCM module. Refer to [BCM programming and setting](#)

Next Step

Step 11	System is normal.
---------	-------------------

### 10.8.6.6 Inoperative rear backdoor lock motor

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether harness connector on backdoor lock motor indicates the signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

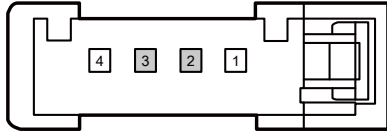
No

Repair or replace the faulty part.
------------------------------------

Yes

Step 2	Check whether the line between BCM and backdoor lock motor is open.
--------	---

SO202 Backdoor lock motor harness connector

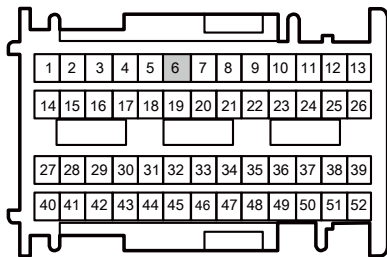


GE10-2257d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the BCM harness connector SO101a.
- D. Disconnect the luggage compartment lock motor harness connector SO202.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	SO101a(6)	Standard
SO202(3)	IP21b(3)	resistance: less than 1Ω

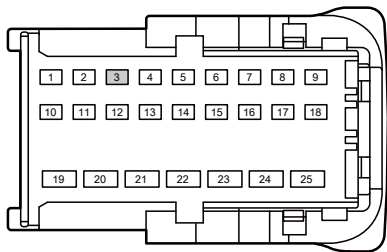
SO101a body control module harness connector 7



GE10-2258d

- F. Confirm whether the measured value meets the standard.

IP21b body control module harness connector 2



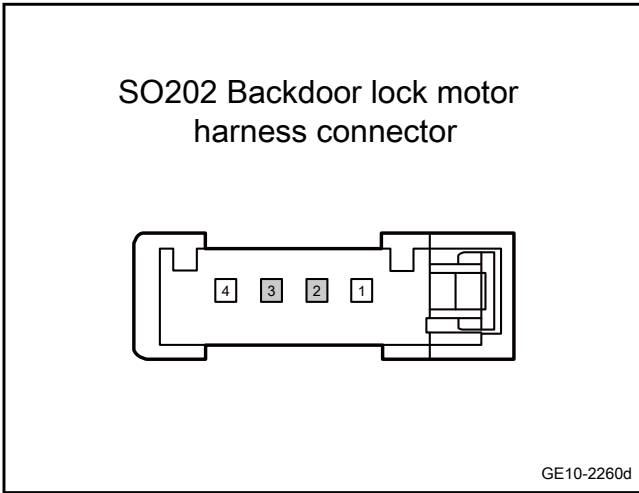
GE10-2259d

No

Repair or replace the harness.

Yes

Step 3 Check whether the line between BCM and backdoor lock motor is shorted to GND.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the BCM harness connector SO101a.
- D. Disconnect the luggage compartment lock motor harness connector SO202.
- E. Use a multimeter to measure each terminal according to the following table:

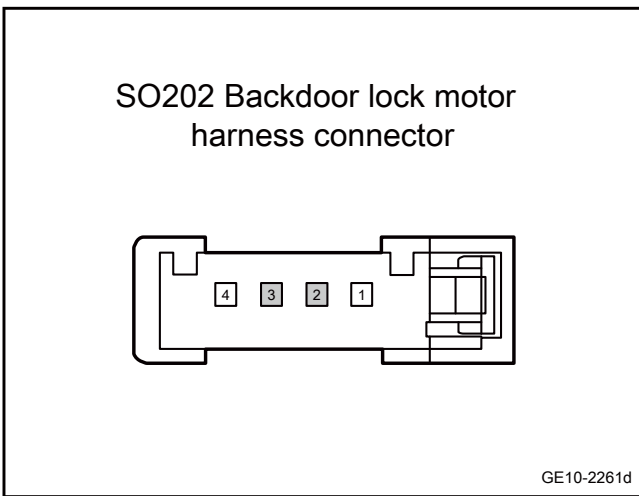
Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO202(3)		

- F. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

**Step 4** Check whether the line between BCM and backdoor lock motor is shorted to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP21b.
- C. Disconnect the BCM harness connector SO101a.
- D. Disconnect the luggage compartment lock motor harness connector SO202.
- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

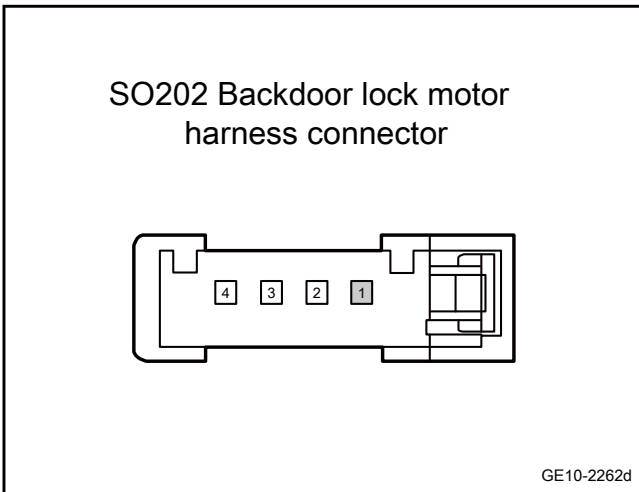
Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	Vehicle body is grounded.	Standard voltage: 0V
SO202(3)		

- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

**Step 5** Check backdoor lock motor grounding harness.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the backdoor lock motor harness connector SO202.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO202(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace backdoor lock motor.

- A. Replace the luggage compartment lock motor, see [Replacement of the luggage compartment lock motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the BCM

- A. Check whether the power supply of control module BCM and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

**Step 8** Reprogram and reset the BCM.

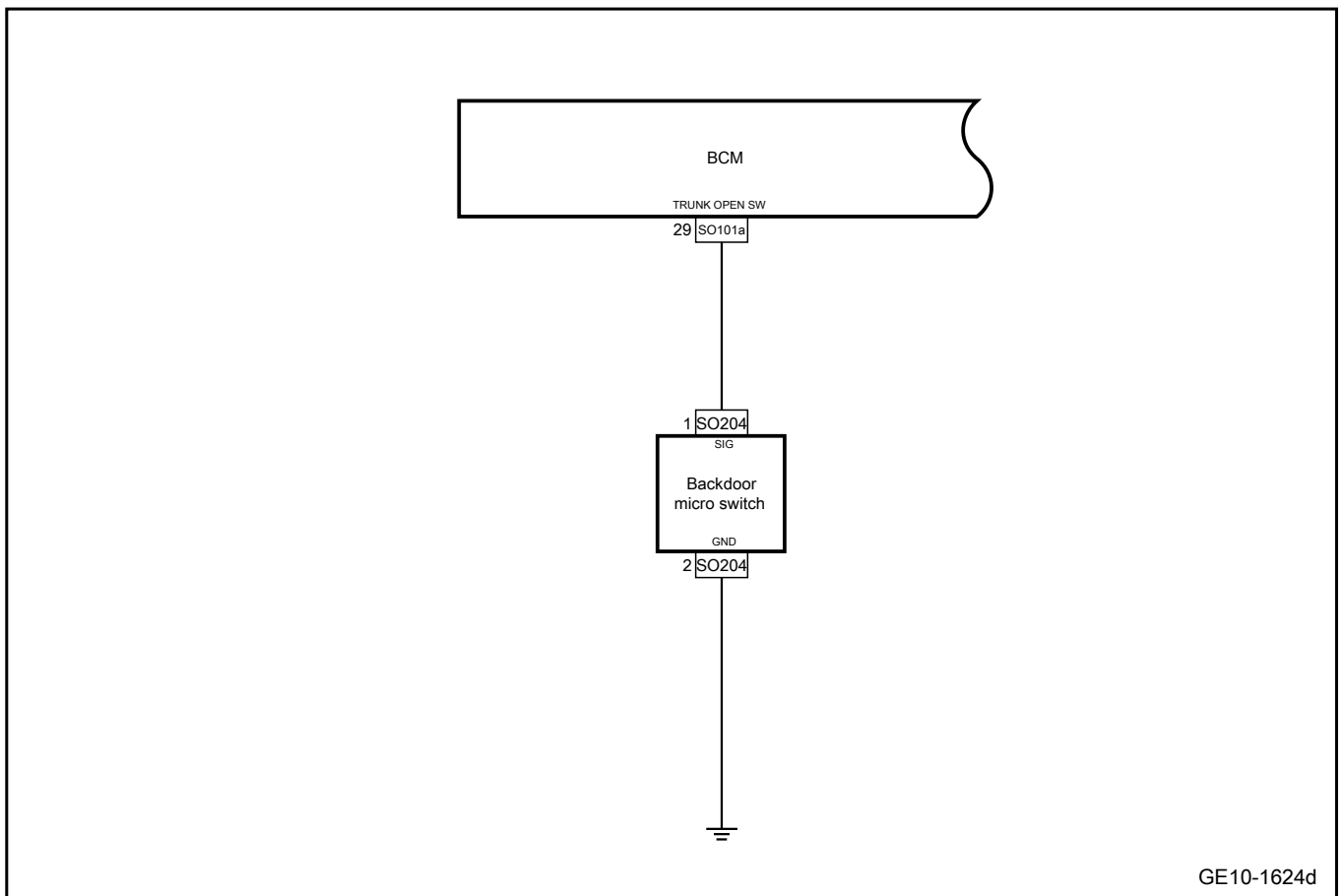
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 9** System is normal.

### 10.8.6.7 Backdoor micro switch fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the backdoor microswitch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the backdoor lock switch is caught.
- C. Confirm whether the above items are normal.

No

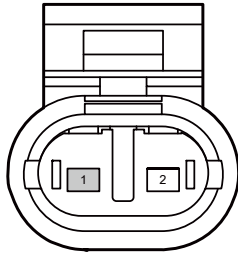
Repair or replace the faulty part.

Yes

Step 2	Check whether the circuit between the BCM and the backdoor microswitch is open.
--------	---

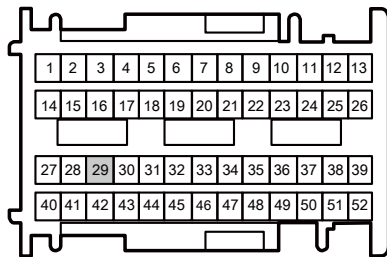


SO204 Rear Back Door Micro Switch Harness Connector



GE10-2263d

SO101a body control module harness connector 7



GE10-2264d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the backdoor microswitch harness connector SO204.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO204(1)	SO101a(29)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

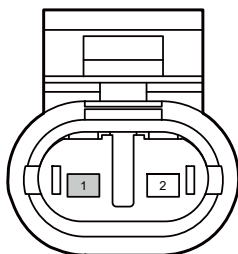
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the BCM and the backdoor microswitch is short to GND.

SO204 Rear Back Door Micro Switch Harness Connector



GE10-2265d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the backdoor microswitch harness connector SO204.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO204(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

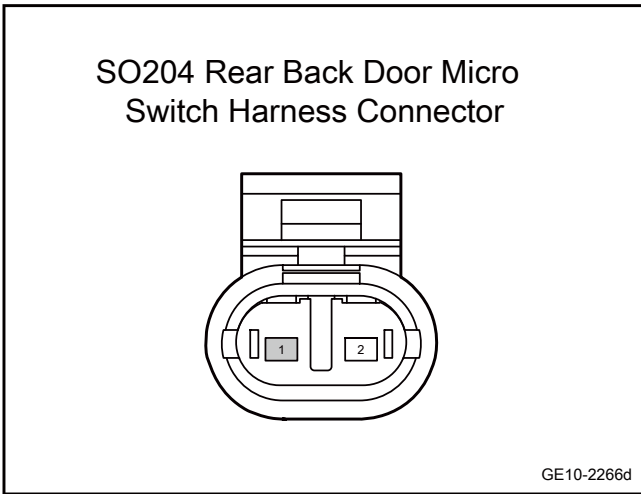
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the BCM and the backdoor microswitch is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the backdoor microswitch harness connector SO204.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO204(1)	Vehicle body is grounded.	Standard voltage: 0V

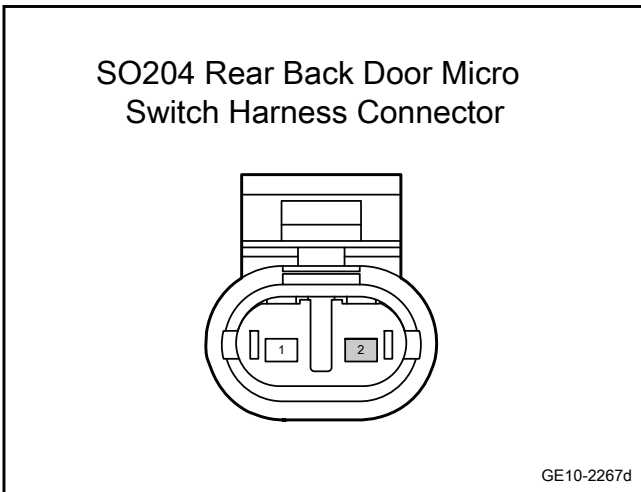
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding circuit of the rear door micro switch is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the backdoor microswitch harness connector SO204.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO204(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the micro switch of the backdoor.

- A. Replace the backdoor micro switch, refer to Replacement of backdoor micro switch
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 | Replace the BCM

- A. Check whether the power supply of control module BCM and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 8 | Reprogram and reset the BCM.

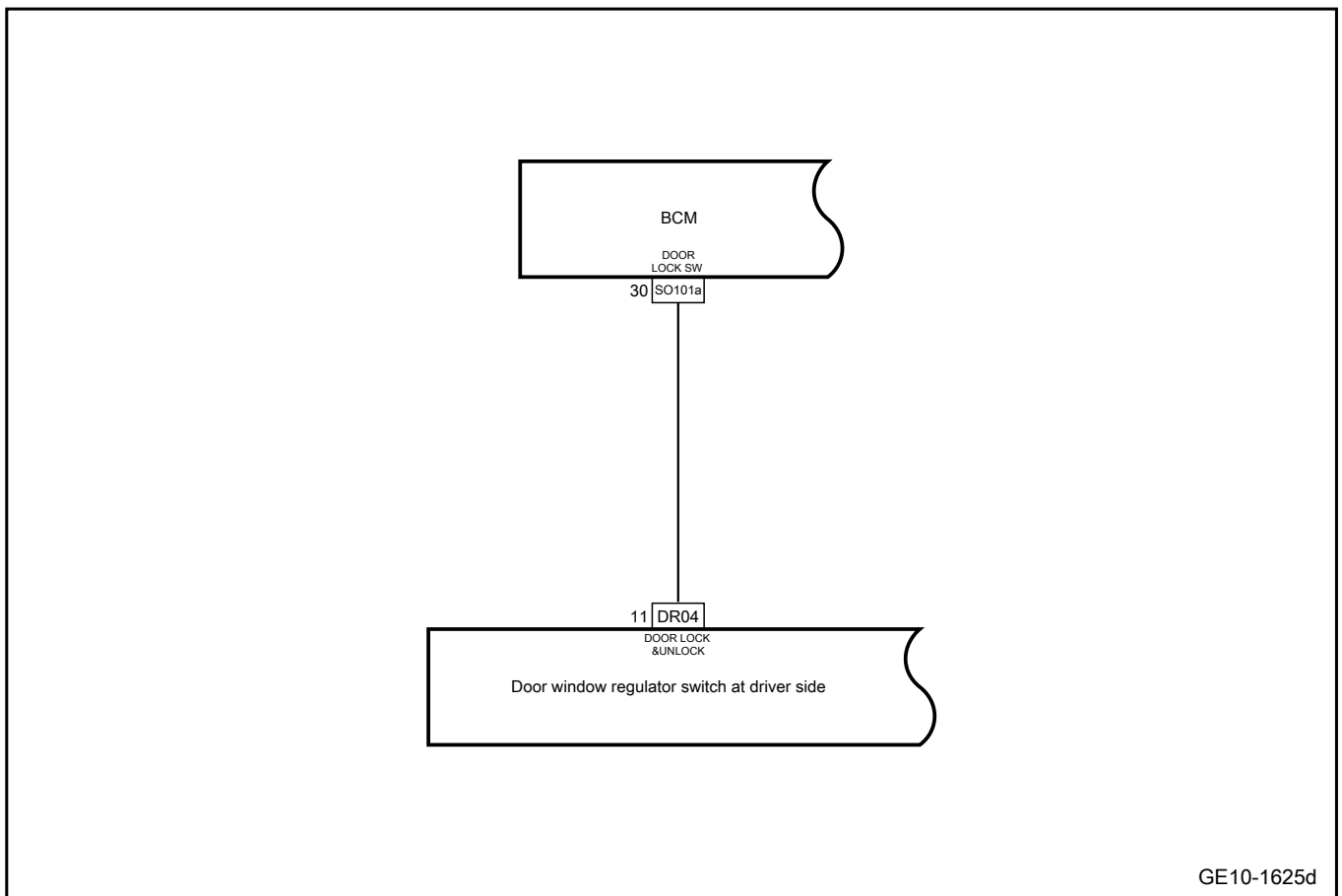
- A. Reprogram and reset the BCM module. Refer to [BCM programing and setting](#)

Next Step

Step 9 | System is normal.

### 10.8.6.8 Central control lock switch cannot control all central locks

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check glass lifter switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Check whether the driver side door glass regulator switch is blocking.
- C. Confirm whether the above items are normal.

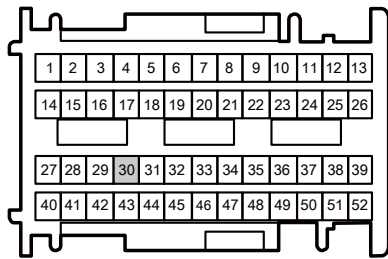
No

Repair or replace the faulty part.

Yes

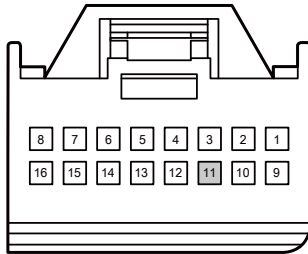
Step 2	Check whether the circuit between BCM and window regulator switch at driver side is open.
--------	---

SO101a body control module harness connector 7



GE10-2268d

DR04 harness connector for door window regulator switch at driver side



GE10-2269d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(30)	DR04(11)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

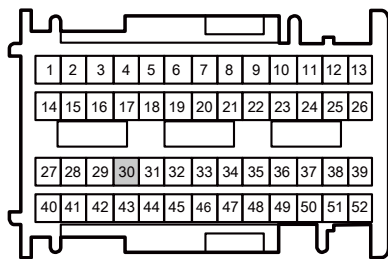
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between BCM and windowregulator switch at driver side is short to GND.

SO101a body control module harness connector 7



GE10-2270d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(30)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

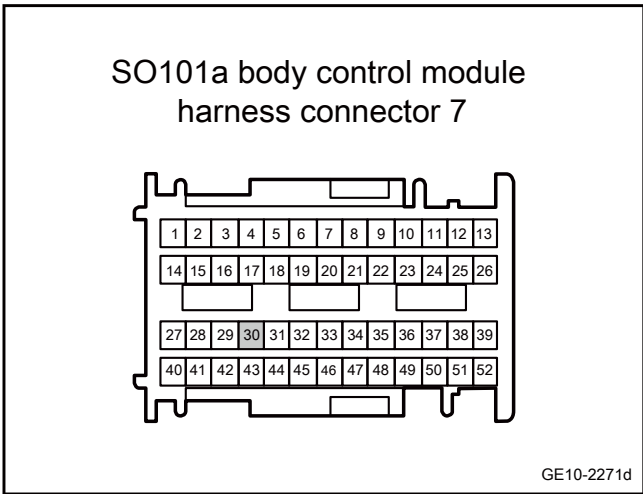
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between BCM and window regulator switch at driver side is short to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Disconnect the driver side glass regulator switch harness connector DR04.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(30)	Vehicle body is grounded.	Reference voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the driver side door power window switch.

- A. Replace the driver side door glass regulator switch, refer to [Replacement of the driver side door glass regulator switch](#)
- B. Confirm whether the central control lock works normally.

Yes

System is normal.

No

**Step 6** Replace the BCM

- A. Check whether the power supply of control module BCM and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

**Step 7** Reprogram and reset the BCM.

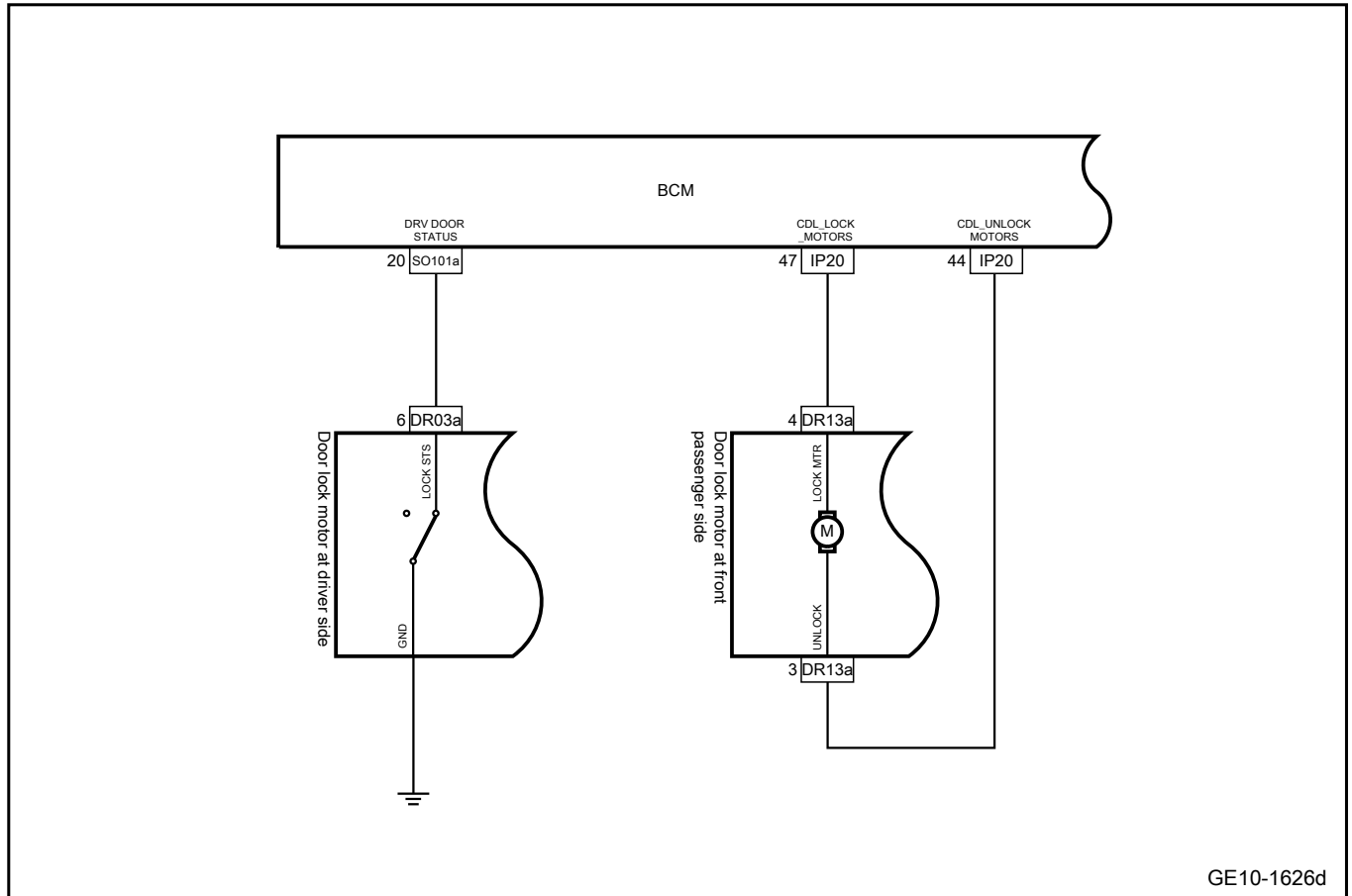
- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 | System is normal.

10.8.6.9 The front passenger side door lock should not be locked with the driver side

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 | Primary check.

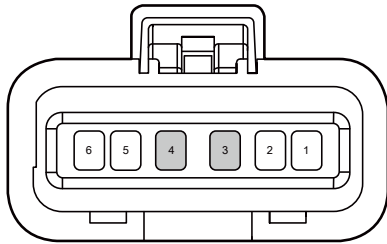
- A. Check driver side door lock motor, front passenger side door lock motor and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

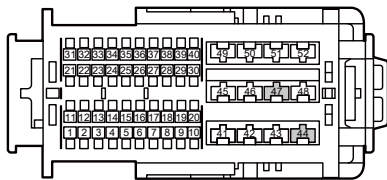
Step 2 | Check whether the circuit between the front passenger side door lock motor and the BCM is open.

DR13a harness connector for door lock motor at front passenger side



GE10-2272d

IP20 body control module harness connector 1



GE10-2273d

Yes

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	IP20(47)	Standard resistance: less than 1Ω
DR13a(3)	IP20(44)	

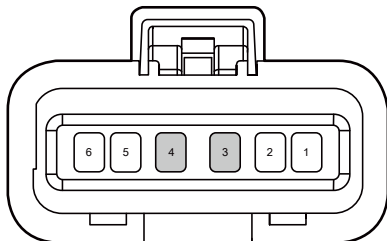
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the circuit between BCM and the front passenger side door lock motor is short to GND.

DR13a harness connector for door lock motor at front passenger side



GE10-2274d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR13a(3)		

- E. Confirm whether the measured value meets the standard.

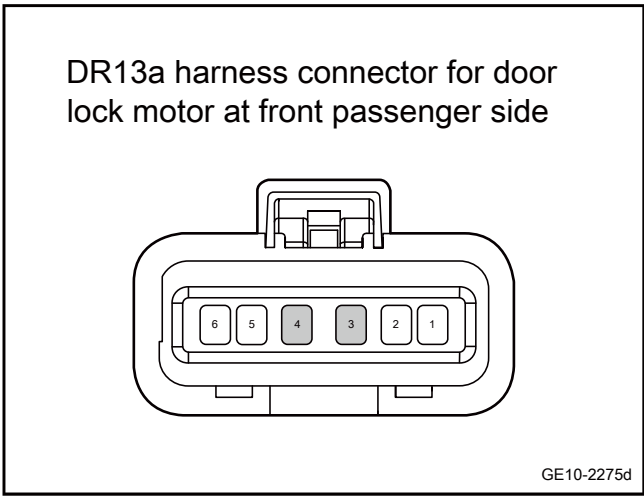
No

Repair or replace the harness.



Yes

**Step 4** Check whether the circuit between BCM and the front passenger side door lock motor is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the BCM harness connector IP20.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	Vehicle body is grounded.	Standard voltage: equal to 0V
DR13a(3)		

- F. Confirm whether the measured value meets the standard.

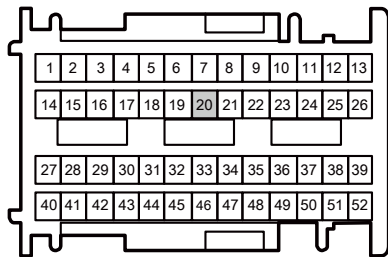
No

Repair or replace the harness.

Yes

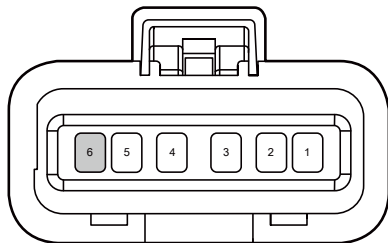
**Step 5** Check whether the circuit between BCM and the driver side door lock motor is open.

SO101a body control module harness connector 7



GE10-2276d

DR03a door lock motor harness connector at driver side



GE10-2277d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(20)	DR03a(6)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

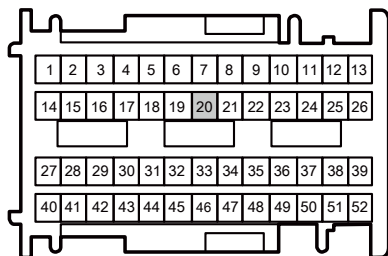
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between BCM and the driver side door lock motor is short to GND.

SO101a body control module harness connector 7



GE10-2278d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

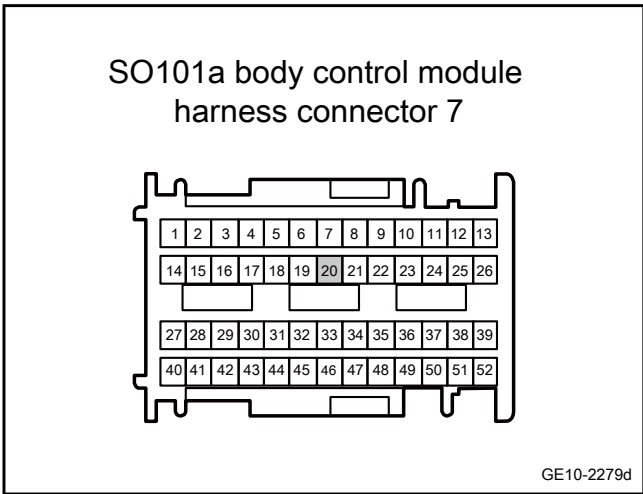
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between BCM and the driver side door lock motor is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the BCM harness connector SO101a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(20)	Vehicle body is grounded.	Standard voltage: equal to 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 8** Replace the front passenger side door lock motor.

- A. Replace the front passenger side door lock engine, refer to the replacement of front passenger side door lock engine
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 9** Replace the driver side door lock motor.

- A. Replace the driver side door lock motor, refer to [Replacement of driver side door lock motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

**Step 10** Replace the BCM

- A. Check whether the power supply of control module BCM and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of BCM](#)

Next Step

Step 11	Reprogram and reset the BCM.
---------	------------------------------

- A. Reprogram and reset the BCM module. Refer to [BCM programing and setting](#)

Next Step

Step 12	System is normal.
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## 10.8.7 Removal and installation

### 10.8.7.1 Replacement of front left door lock

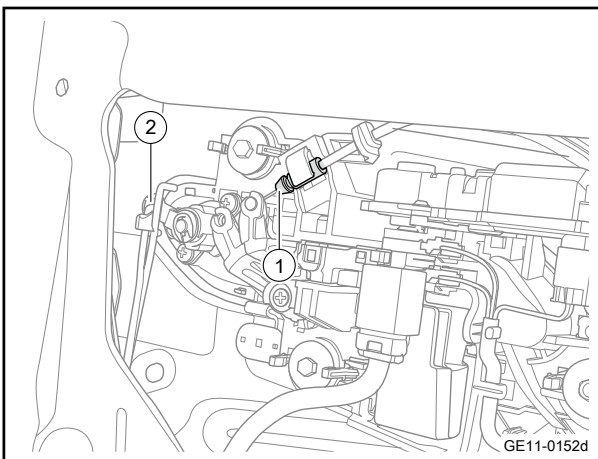
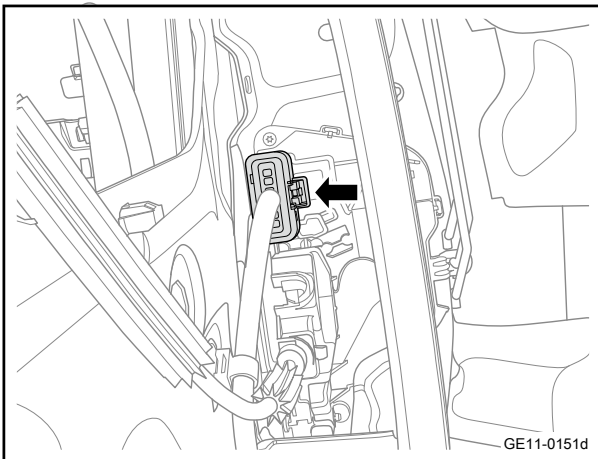
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

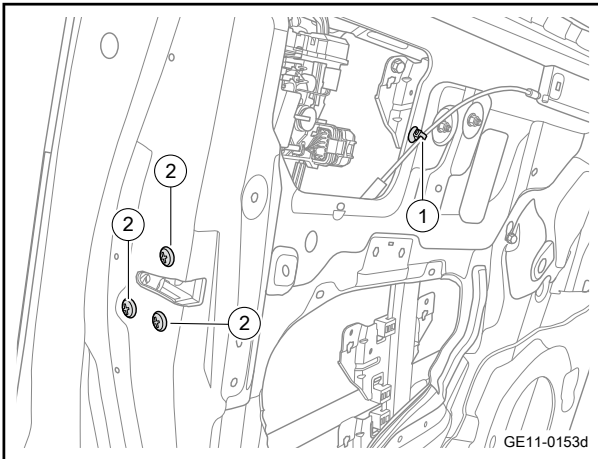
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 3 Remove the waterproof membrane of the left front door. See [Replacement of the left front door waterproof membrane](#)
- 4 Disconnect the FL door lock harness connector.

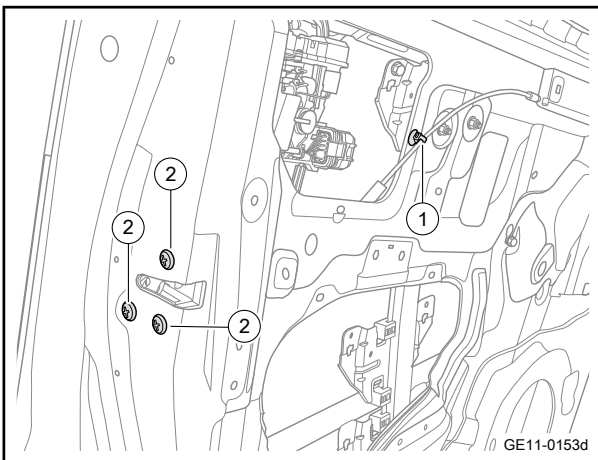


- 5 Disengage the outward-opening cable buckle 1 of the front door.
- 6 Disengage the FL door lock cylinder tie bar 2.

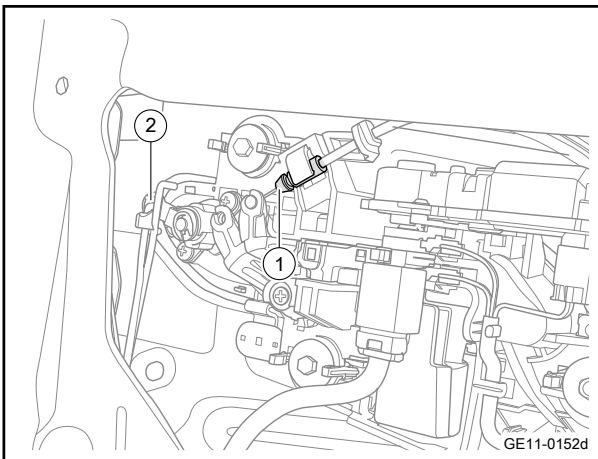


- 7 Disengage the inward-opening cable buckle 1 of the front door.
- 8 Remove the 3 fixing bolts 2 of the left front door lock.
- 9 Remove the left front door lock.

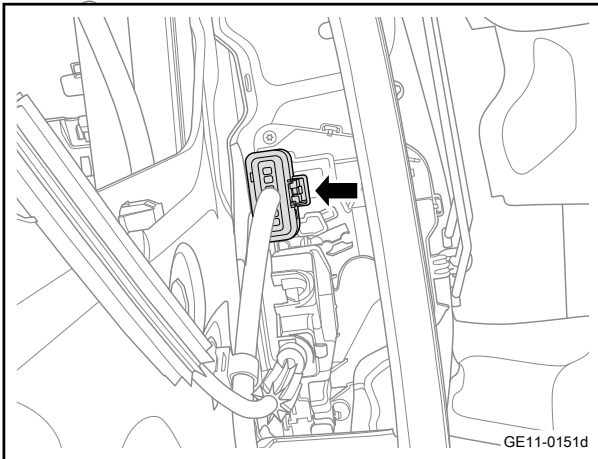
#### Installation procedure



- 1 Move the front left door lock to the installation position.
- 2 Install 3 fixing bolts 2 of FL door lock.  
Torque: 6N.m (metric) 4.4lb-ft (imperial system)
- 3 Install the inward-opening cable buckle 1 of the front door.



- 4 Install the front left door lock cylinder rod 2.
- 5 Install the outward-opening cable buckle 1 of the front door.



- 6 Connect the FL door lock harness connector.

- 7 Install the left front door waterproof membrane.
- 8 Install the FL door interior trim panel assembly.
- 9 Connect the negative cable of battery.

### 10.8.7.2 Replacement of the left rear door lock

#### Removal procedure

##### Caution

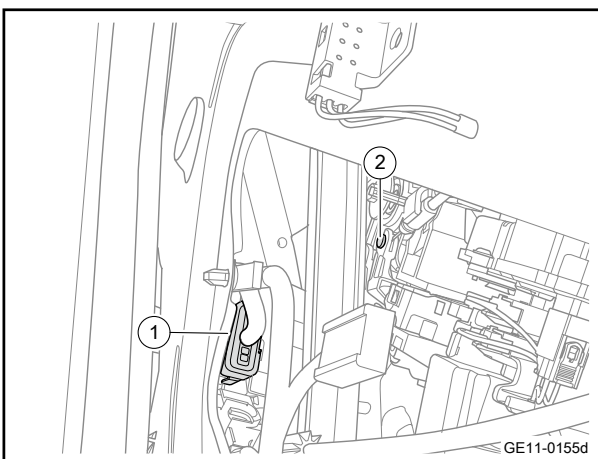
The disassembly and assembly methods are the same for the left and right sides.

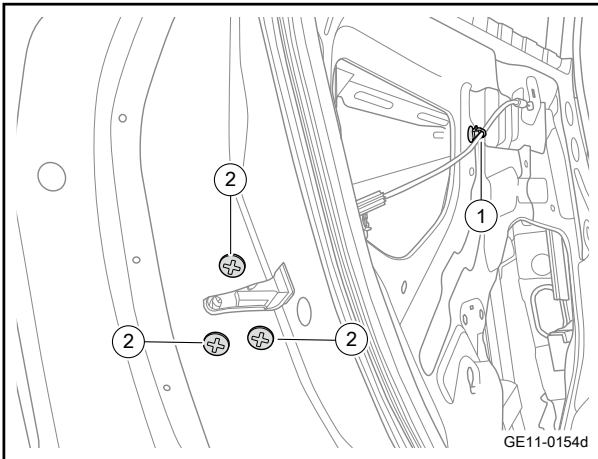
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

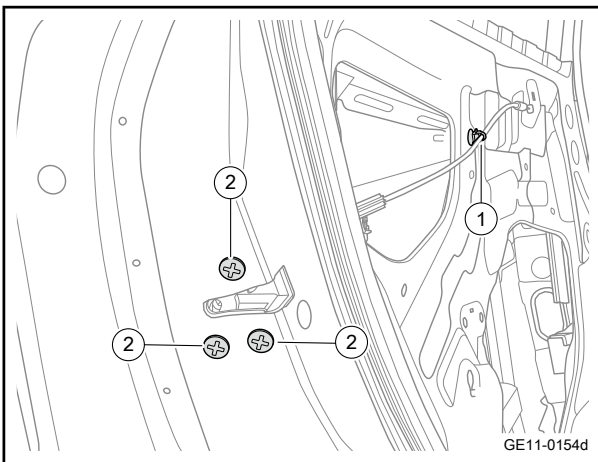
- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Remove the waterproof membrane of the left rear door. See [Replacement of the left rear door waterproof membrane](#)
- 4 Disconnect the left rear door lock harness connector 1.
- 5 Disengage the outward-opening cable buckle 2 of the rear door.



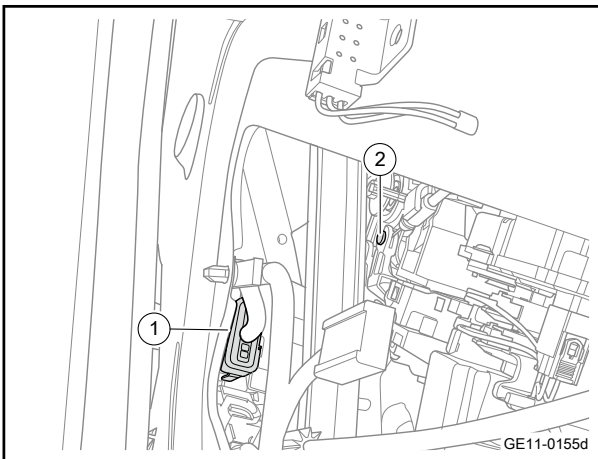


- 6 Disengage the outward-opening cable fixing buckle 2 of the rear door.
- 7 Remove the 3 fixing bolts 2 of the left rear door lock.
- 8 Remove the left rear door lock.

#### Installation procedure



- 1 Move the left rear door lock to the installation position.
- 2 Install 3 fixing bolts 2 of RL door lock.  
Torque: 6N.m (metric) 4.4lb-ft (imperial system)
- 3 Install the outward-opening cable fixing buckle 2 of the rear door.



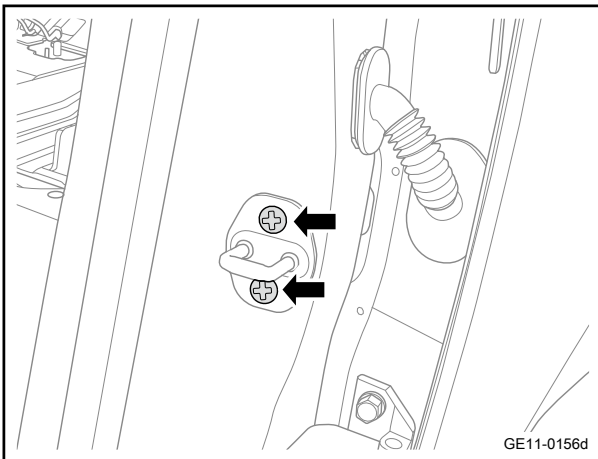
- 4 Install the outward-opening cable 2 of the rear door.
- 5 Connect the left rear door lock harness connector 1.

- 6 Install the left rear door waterproof membrane.
- 7 Install the RL door interior trim panel assembly.
- 8 Connect the negative cable of battery.

### 10.8.7.3 Replacement of door lock buckle assembly

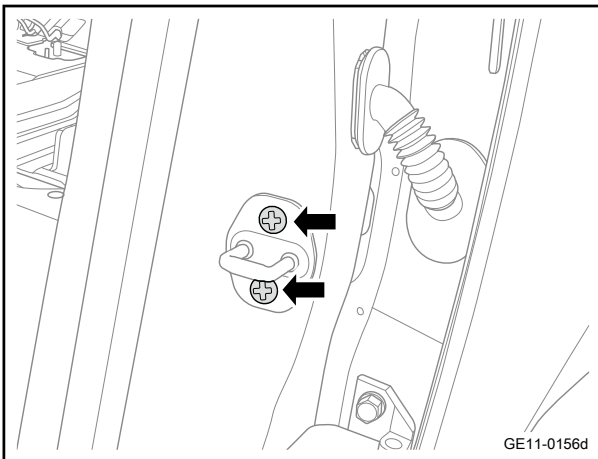
#### Removal procedure





- 1 Open doors.
- 2 Remove the 2 fixing bolts of door lock buckle assembly.
- 3 Remove the door lock buckle assembly.

#### Installation procedure



- 1 Move the door lock assembly to the installation position.
- 2 Install the 2 fixing bolts of door lock buckle assembly.  
Torque: 23N·m (metric) 17lb-ft (imperial system)

- 3 Close doors.

#### 10.8.7.4 Replacement of the backdoor lock assembly

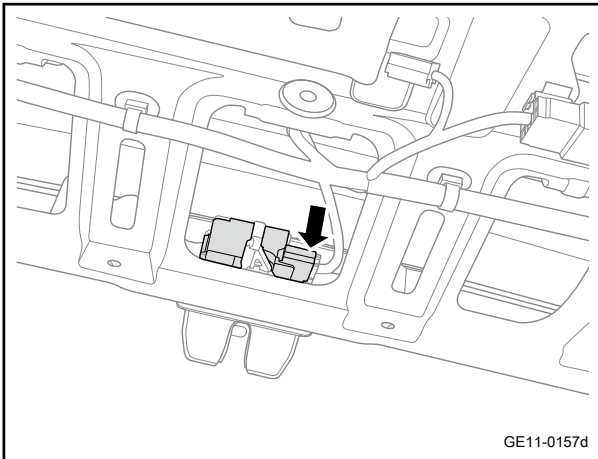
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

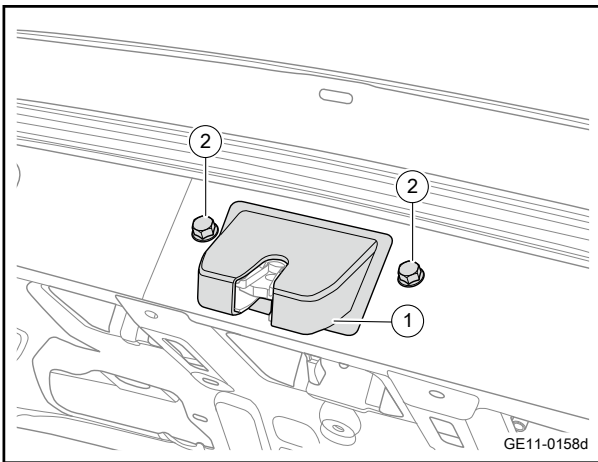
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

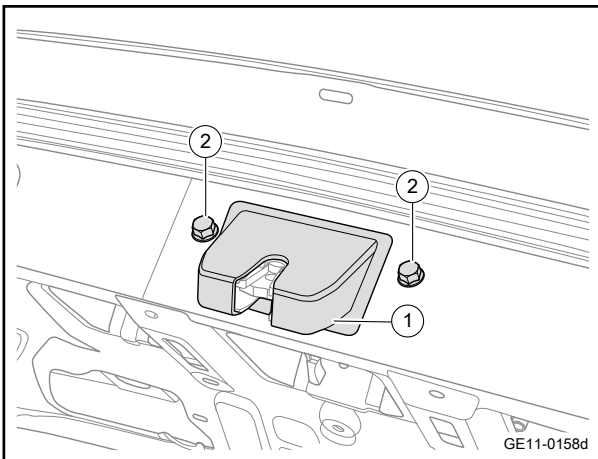
- 2 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)



- 3 Disconnect the harness connector of backdoor lock assembly.

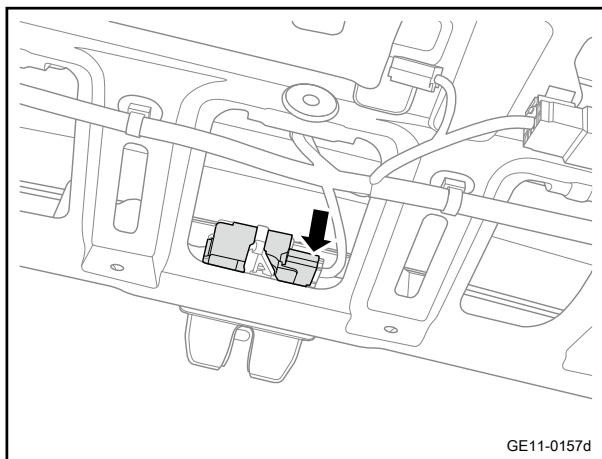


- 4 Pry down the back door lock body sheath 1.
- 5 Remove the 2 fixing bolts 2 of backdoor lock assembly.
- 6 Remove the backdoor lock assembly.



#### Installation procedure

- 1 Move the back door lock assembly to the installation position.
- 2 Install the 2 fixing bolts of backdoor lock assembly.  
Torque: 23N·m (metric) 17lb-ft (imperial system)
- 3 Install the backdoor lock body sheath 1.



- 4 Connect the backdoor lock assembly harness connector.

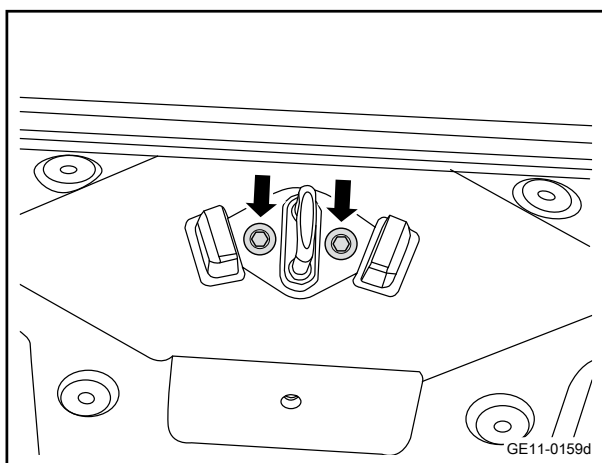
- 5 Install the lower trim panel assembly of the backdoor.

- 6 Connect the negative cable of battery.

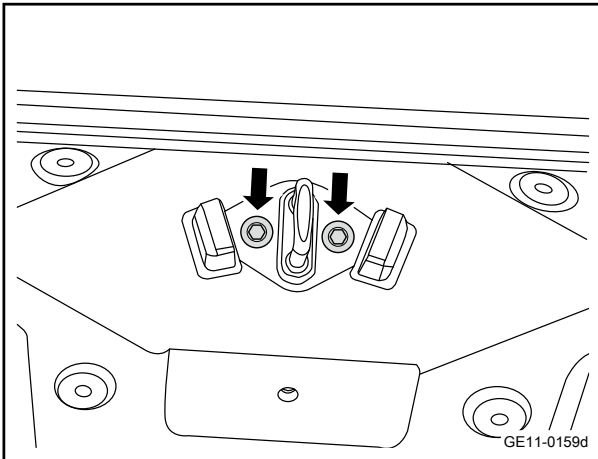
### 10.8.7.5 Replacement of the backdoor lock buckle assembly

#### Removal procedure

- 1 Open the backdoor.
- 2 Install the rear wall interior trim panel assembly. Refer to [Replacement of rear wall interior trim panel assembly](#)
- 3 Remove 2 fixing bolts 2 of backdoor lock buckle assembly.
- 4 Remove the backdoor lock buckle assembly.



#### Installation procedure



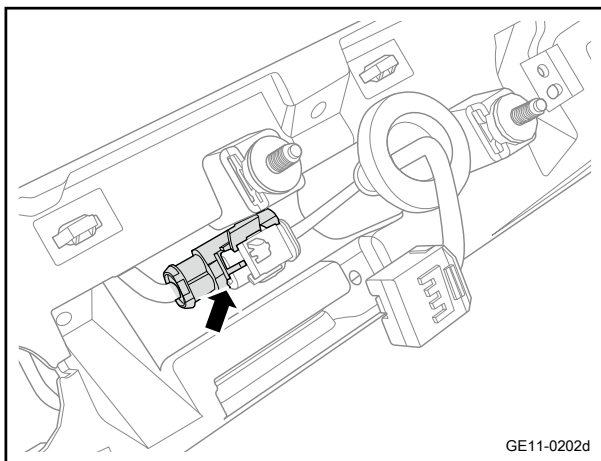
- 1 Move the back door lock assembly to the installation position.
- 2 Install the 2 fixing bolts of backdoor lock buckle assembly.  
Torque: 23N·m (metric) 17lb·ft (imperial system)

- 3 Install the assembly-interior trim panel rear wall.
- 4 Close the backdoor.

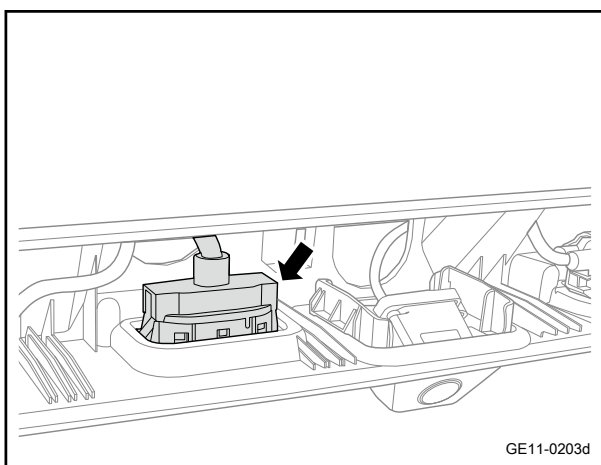
### 10.8.7.6 Replacement of microswitch

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the outer trim panel assembly of the back door. See [Replacement of the outer trim panel assembly of the back door](#)
- 3 Remove the full-width lamp of the back door. See [Replacement of full-width lamp of the back door](#)

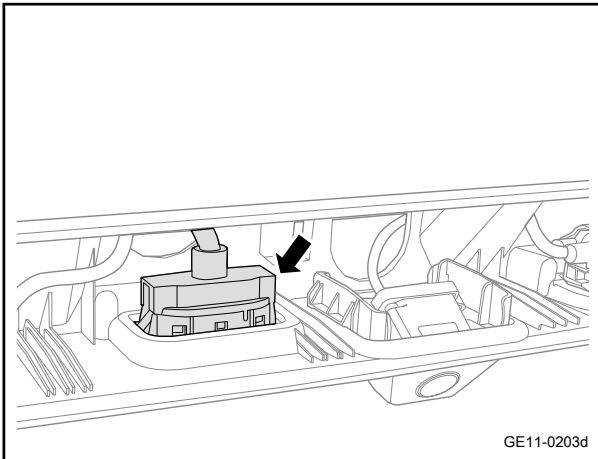


4 Disconnect the microswitch harness connector.

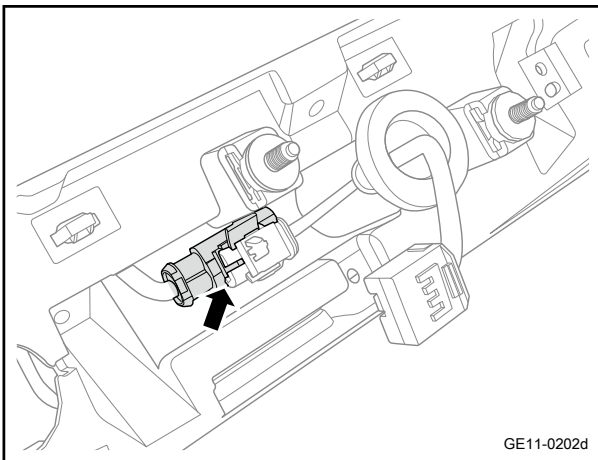


5 Pry down the micro switch.

Installation procedure



1 Install the micro switch.



2 Connect the microswitch harness connector.

3 Install the full-width lamp of the back door.

4 Install the backdoor exterior trim panel assembly.

5 Connect the negative cable of battery.

### 10.8.7.7 Replacement of the central control door lock button

See [Replacement of power window regulator switch assembly of the left front door](#)

## 10.9 Remote control anti-theft system

### 10.9.1 Specification

#### 10.9.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Front keyless entry receiving antenna fixing screw	ST4.2	1 - 2	0.7 - 1.5
Middle keyless entry receiving antenna fixing screw	ST4.2	1 - 2	0.7 - 1.5
Rear PEPS receiving antenna fixing screw	M6×16	3 - 5	2.2 - 3.7

## 10.9.2 Description and Operation

### 10.9.2.1 General

Remote anti-theft system is an auxiliary vehicle alarm system that is triggered in the occasion of a forced invasion. The system is used together with central locking system. Radio frequency interference or battery exhaustion can fail the system.

The remote anti-theft system composes of the following main components:

- Body control module (integrated with PEPS function)
- Smart key
- Keyless entry + keyless locking sensor
- Vehicle key search antenna
- Start and Stop Button
- Door handle control module
- Concealed door handle
- Front engine compartment cover, four-door lock, luggage compartment lock micro switch

The remote control anti-theft system is designed to sound an alarm when someone forcibly opens the door. In the alarm system, the anti-theft horn will sound intermittently and the turn signal lights will flash at the same time. After 30s, the horn stops working, and only the left and right flashes flash for 5 minutes. When all doors are closed, the alarm will continue to sound for 30 seconds. After 30s, the horn and flashes stop the alarm, and the door is locked, and the system returns to the active state. The remote anti-theft system will not affect the starting or normal operation of the vehicle.

#### Remote control door lock

- Power supply system OFF status, and press the unlocking button on the remote controller twice within 500ms to unlock four doors, then the turn signal lamp flashes three times for confirmation, and the internal light fades on, with the position lamp on.
- When the power supply is in the OFF state, press the lock button on the remote controller once to lock the four doors of the vehicle, turn on the turn signal for 1 second and then go out, the inner lamps gradually goes out, and the position lamp goes out.

#### Front engine compartment cover micro switch

There is a contact switch under the engine compartment cover, which is disconnected when the engine compartment cover is closed; once the engine compartment cover is opened, the switch is closed and sends a grounding signal to the BCM, and the BCM sends a prompt message to the instrument via the CAN bus according to this signal.

#### Boot lid contact switch

The luggage compartment is equipped with a contact switch. If the boot lid is closed, the switch will be disconnected; if the luggage compartment is opened, this switch will be connected and send the grounding signal to BCM. Afterward, according to this signal and with the help of the CAN bus, the BCM will send the message of lightening the warning lamp to indicate that the luggage compartment (tail gate) is opened to the instrument.

#### Door contact switch

All door lock body assembly is equipped with a contact switch. If the doors are closed, the switches will be disconnected; if one of the doors is opened, the contact switch inside the door will be connected and send the grounding signal to BCM. Afterward, according to this signal and with the help of the CAN bus, the BCM will send the message of “door is opened” to the instrument.

#### Entry anti-theft

- When the power supply is in the OFF state, close the door, use the remote control lock button to lock the door (press the locking button once), and the turn signal will flash once. Enter the anti-theft state after 3s.
- When the doors are automatically locked, the system will automatically enter the anti-theft state.
- When using the remote control lock button to lock the door, if any door is not closed, the smart key cannot be used to lock the vehicle.
- When the external anti-theft alarm system is in the unlocked state, set the start-and-stop switch to the OFF position. If the doors are closed and the two covers are not completely closed, perform a keyless lock or use the smart key to lock the door (press the lock button once), the turn signal flashes 3 times, the system will enter the reminding state, the horn will beep twice every 2 seconds, and enter the partial defense state after 10 seconds. After 10 seconds, if all the doors are closed, the external burglar alarm system will enter the fortified state. If there are still doors that are not closed, the external burglar alarm system will enter the partially fortified state, and only the closed doors can trigger the alarm.

#### Passive Entry Passive Start (PEPS)

Passive Entry Passive Start. As long as you bring a legal smart key into a certain area around the vehicle, the low-frequency antenna of the vehicle will find the key and activate the smart key, the smart key will send a high-frequency verification signal, and BCM (PEPS) will receive and verify whether it is legal. BCM will control the door lock to automatically unlock the door, the door handle will pop out automatically, pull the door handle, the door will open. After



the vehicle is successfully unlocked, the turn signal flashes 3 times and the position lamp turns on.

Passive Entry Passive Start, that is, press the starting button to start the vehicle. When the driver presses the start-and-stop switch and the system is successfully verified, the vehicle starts successfully.

When there are high-voltage charging piles, solar charging piles, signal transmission towers and other strong interference sources around the vehicle, it will affect the key search and temporarily disable the function. Please pay attention to the locking status!

The keyless unlocking and keyless locking functions require a lot of power for the complete vehicle. When the key stays around the vehicle for more than 1 minute or the vehicle has not been used for 7 days, this function will be temporarily disabled. After the start-and-stop switch will be set to the ON position, these functions will be back to normal. This function can be turned on or off through the multimedia display settings.

### 10.9.3 How the system works

#### 10.9.3.1 System Working Principles

##### Remote unlock or lock

When the button on the smart key is pressed, the smart key sends a request signal to the BCM, and the BCM (PEPS) receives and verifies whether it is legal. If the verification is passed, the BCM will control the door lock to automatically unlock or lock, and the door controller will communicate with the BCM through the LIN line. BCM performs signal transmission, and executes the pop-up and concealment of hidden door handles, while BCM performs corresponding functions.

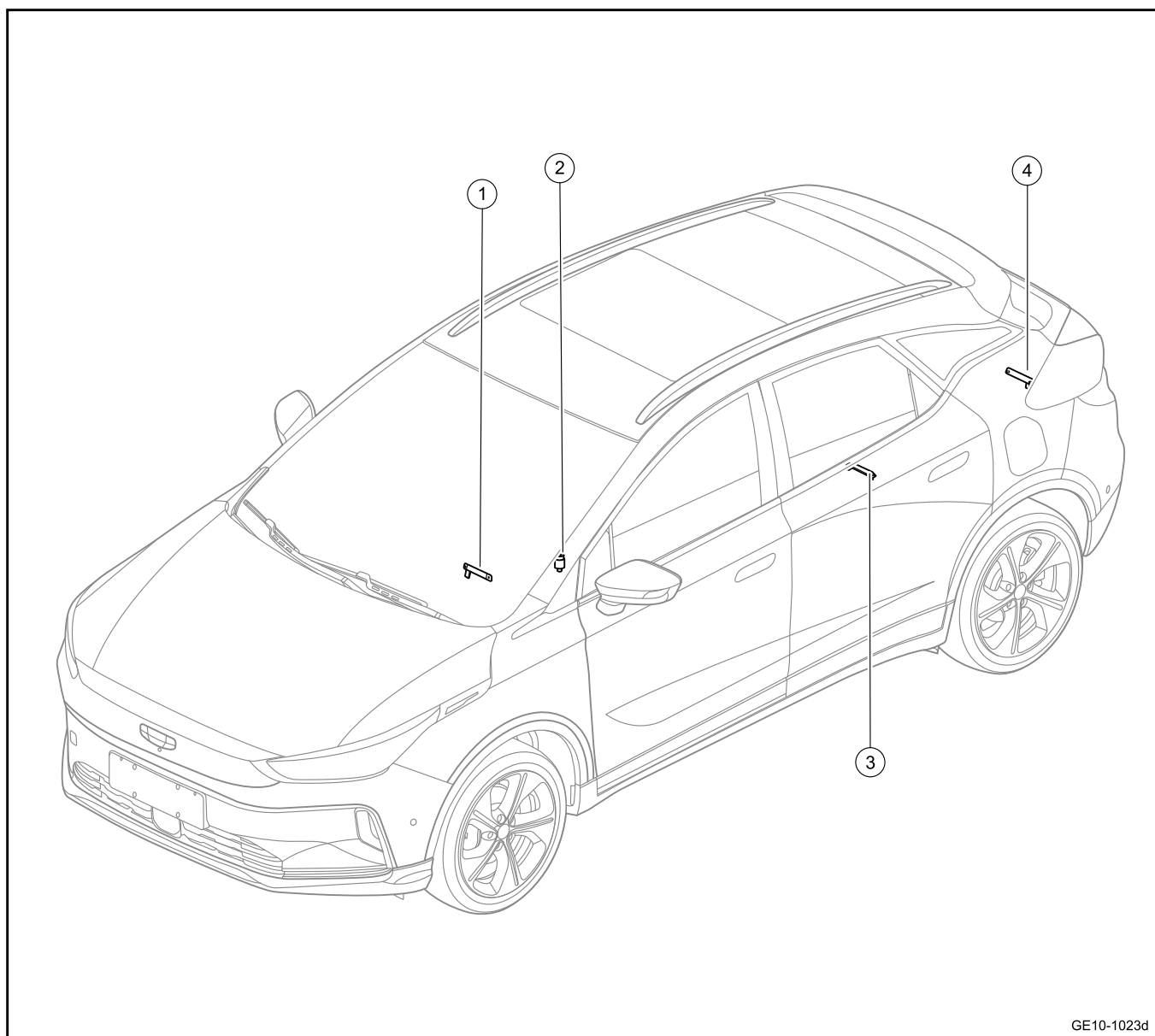
##### Passive Entry Passive Start (PEPS)

Passive Entry Passive Start. As long as you bring a legal smart key into a certain area around the vehicle, the low-frequency antenna of the vehicle will find the key and activate the smart key, the smart key will send a high-frequency verification signal, and BCM (PEPS) will receive and verify whether it is legal. The BCM will control the door lock to automatically unlock, the door controller will transmit the signal with the BCM through the LIN line, and execute the hidden door handle pop-up, pull the door handle, and the door will open.

Passive Entry Passive Start. When the driver presses the start switch, the BCM detects the effectiveness of the surrounding remote control, and the remote control sends a signal to respond to the vehicle. At this time, the BCM performs anti-theft matching with the IPU through the CAN network system. After the matching is successful, the IPU sends a signal To the VCU, if there is no abnormality, the VCU sends a close main relay signal to the BMS. The BMS receives the signal and closes the main positive and main negative relays. After the relay closes successfully, the VCU sends a signal to communicate with the IPU. If there is no abnormality, the READY lamp is lit. The vehicle started successfully.

10.9.4 Part location

10.9.4.1 Part Position

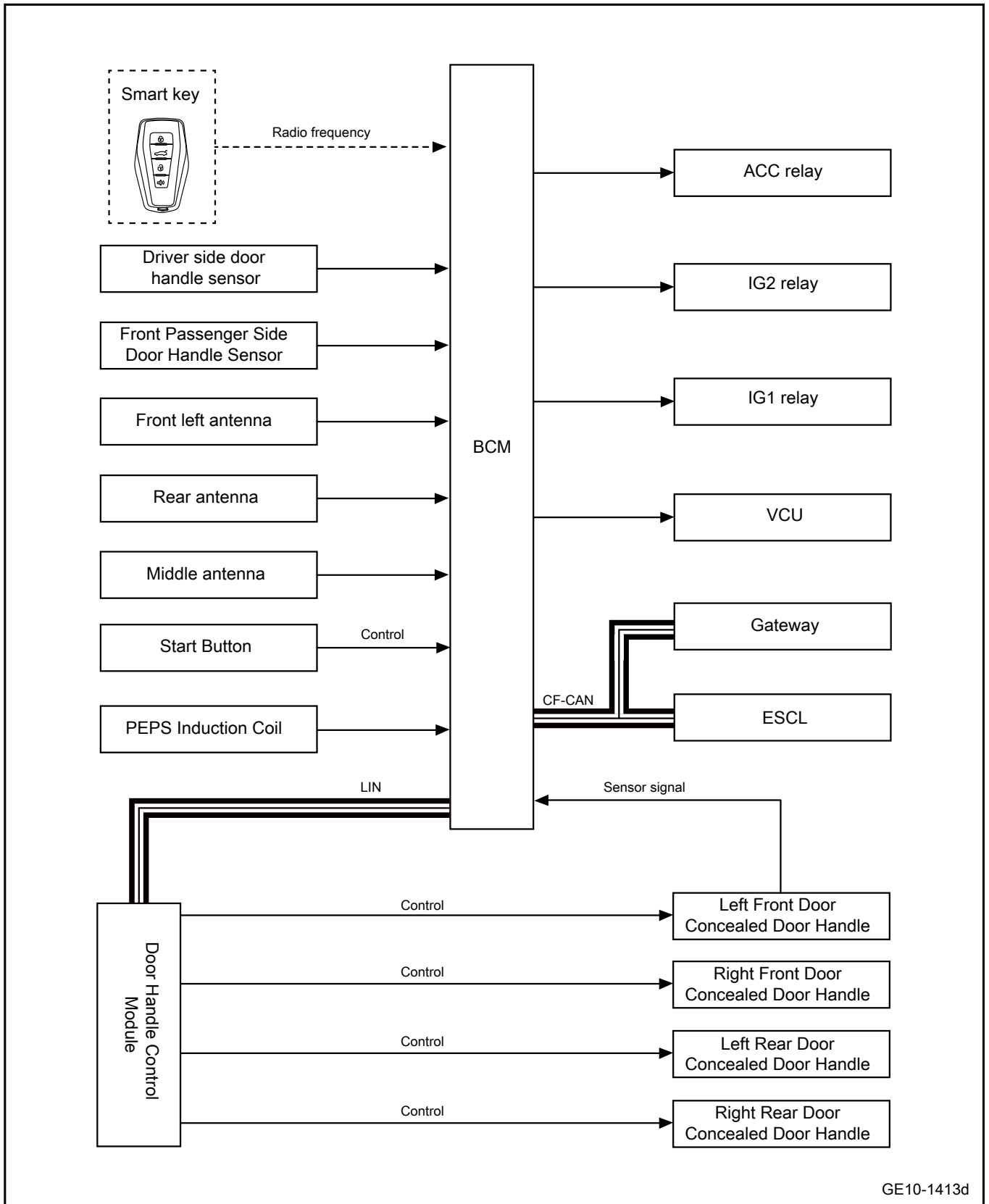


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- |  |  |
|--|--|
| 1. Front keyless entry receiving antenna | 3. Receiving antenna for the central keyless entry |
| 2. Push-button start switch              | 4. Rear keyless entry receiving antenna            |

10.9.5 Electrical block diagram

10.9.5.1 Electrical schematic diagram of the anti-theft system



## 10.9.6 Diagnostic information and steps

### 10.9.6.1 Diagnosis Description

Before diagnosing the fault of the remote anti-theft system, refer to [Description and Operations](#) and [System Working Principles](#). Understand and be familiar with the working principle of the remote anti-theft system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of the remote anti-theft system should start with visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.9.6.2 Routine inspection

- Check the after-sales installations which may affect the anti-theft system and ensure that these installations cannot affect the PEPS system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.9.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
ACC relay control circuit fault	1. harness and connectors	Refer to <a href="#">ACC relay control circuit failure</a>
	2. ACC relay	
	3. BCM	
IG1 control relay circuit failure	1. harness and connectors	Refer to <a href="#">IG1 relay control circuit failure</a>
	2. IG1 relay	
	3. BCM	
IG2 control relay circuit failure	1. harness and connectors	Refer to <a href="#">IG2 relay control circuit failure</a>
	2. IG2 relay	
	3. BCM	
Start and stop switch indicator lamp fault	1. harness and connectors	See <a href="#">Start-and-stop Switch Indicator Lamp Failure</a>
	2. Start and stop switch	
	3. BCM	
Start and stop button fault	1. harness and connectors	Refer to <a href="#">Start and stop switch fault</a>
	2. Start and stop switch	
	3. BCM	
Front left antenna fault	1. harness and connectors	Refer to <a href="#">Front left antenna fault</a>
	2. Front left antenna	
	3. BCM	
Middle antenna fault	1. harness and connectors	See <a href="#">Central Antenna Failure</a>
	2. Middle antenna	
	3. BCM	
Rear antenna is faulty	1. harness and connectors	Refer to <a href="#">Rear antenna fault</a>
	2. Rear antenna	
	3. BCM	
PEPS induction coil failure	1. harness and connectors	See <a href="#">PEPS Induction Coil Failure</a>
	2. PEPS induction coil	
	3. BCM	

Symptom	Possibility and cause	Measures
Fault of the handle sensor of the driver side door	1. harness and connectors	Refer to <a href="#">Driver side door handle sensor failure</a>
	2. Handle sensor of the driver side door	
	3.BCM	
Front passenger side door handle sensor failure	1. harness and connectors	Refer to <a href="#">Front passenger side door handle sensor failure</a>
	2. Front passenger side door handle sensor	
	3.BCM	
Front left hidden door handle failure	1. harness and connectors	See <a href="#">Left Front Hidden Door Handle Failure</a>
	2. Hidden handle of the left front door	
	3. Door handle control module	
Front left hidden door handle status sensor failure	1. harness and connectors	See <a href="#">Left Front Hidden Door Handle Status Sensor Failure</a>
	2. Hidden handle of the left front door	
	3.BCM	

#### 10.9.6.4 ACC relay control circuit fault

Refer to [ACC relay fault](#)

#### 10.9.6.5 IG1 control relay circuit failure

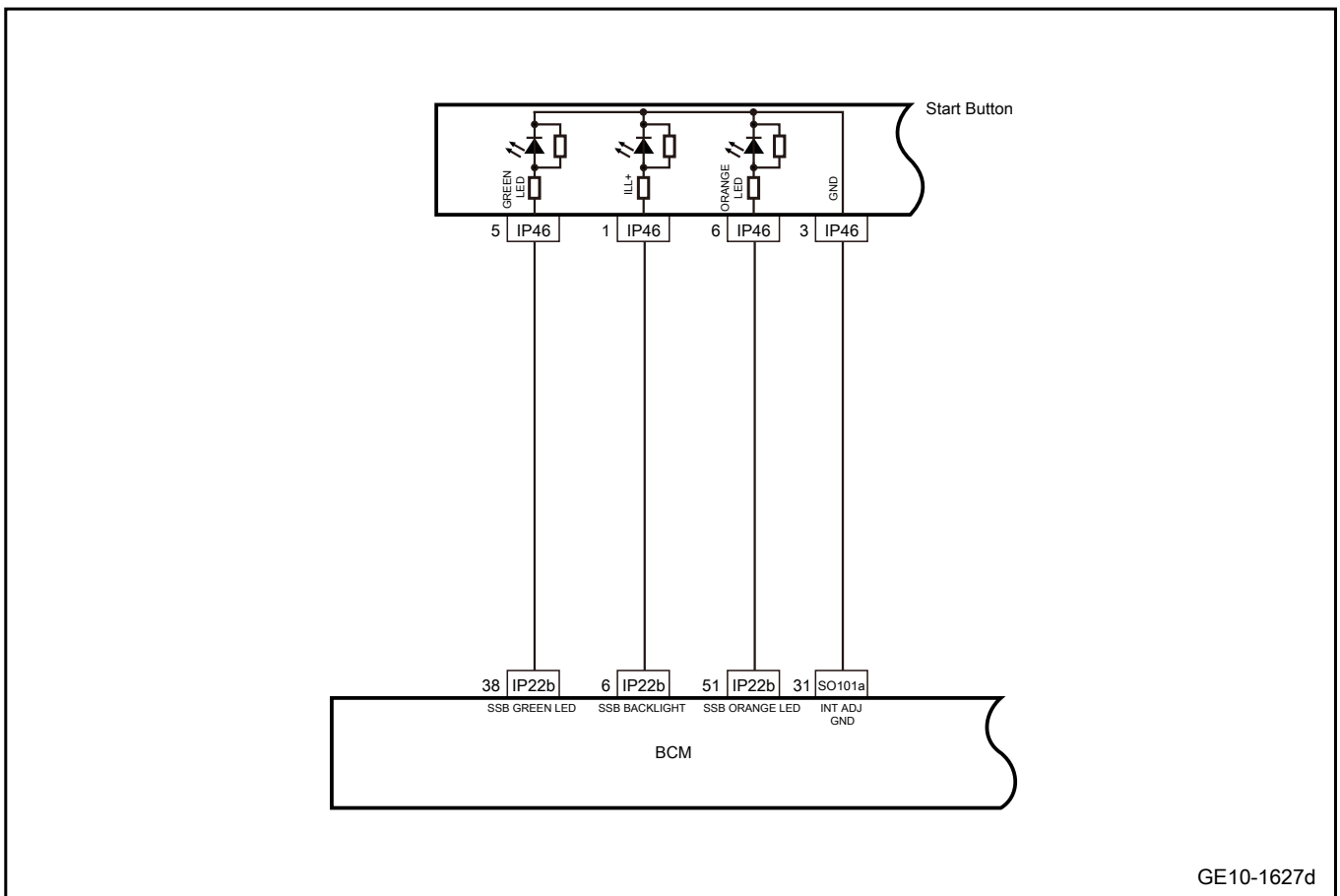
Refer to [IGN1 relay fault](#)

#### 10.9.6.6 IG2 control relay circuit failure

Refer to [IGN2 relay fault](#)

#### 10.9.6.7 Start and stop switch indicator lamp fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the start-and-stop switch, BCM harness and harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

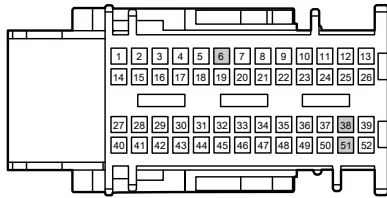
No

Repair or replace the faulty part.

Yes

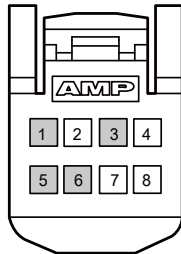
Step 2	Check whether the circuit between the start and stop switch indicator lamp and BCM is open.
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IP22b body control module harness connector 3



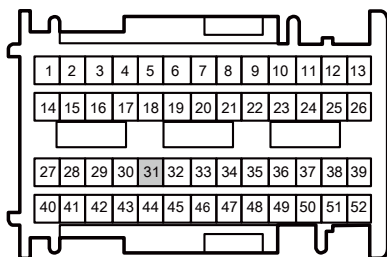
GE10-1675d

IP46 start-up switch harness connector



GE10-1676d

SO101a body control module harness connector 7



GE10-1677d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connectors IP22b and SO101a.
- C. Disconnect the starting switch harness connector IP46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(6)	IP46(1)	Standard resistance: less than 1Ω
SO101a(31)	IP46(3)	
IP22b(38)	IP46(5)	
IP22b(51)	IP46(6)	

- E. Confirm whether the measured value meets the standard.

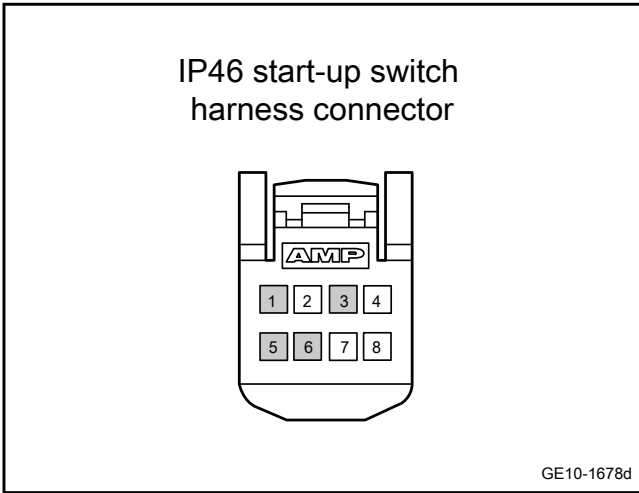
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the start and stop switch indicator lamp and BCM is short to GND.





- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connectors IP22b and SO101a.
- C. Disconnect the starting switch harness connector IP46.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP46(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP46(3)		
IP46(5)		
IP46(6)		

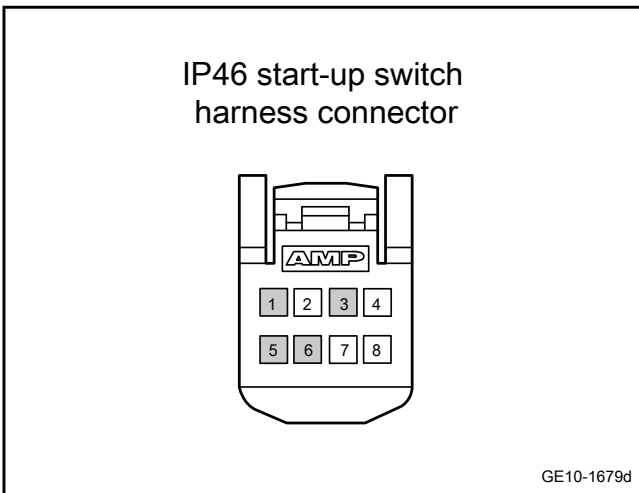
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the start and stop switch indicator lamp and BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect BCM harness connectors IP22b and SO101a.
- C. Disconnect the starting switch harness connector IP46.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP46(1)	Vehicle body is grounded.	Standard voltage: equal to 0V
IP46(3)		
IP46(5)		
IP46(6)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Replace the start and stop button.

- A. Replace the start and stop button. Refer to [Replacement of the start and stop switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 7 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 8 System is normal.

### 10.9.6.8 Start and stop button fault

Refer to [Start and stop switch fault](#)

### 10.9.6.9 Front left antenna fault

Refer to [Front left antenna fault](#)

### 10.9.6.10 Middle antenna fault

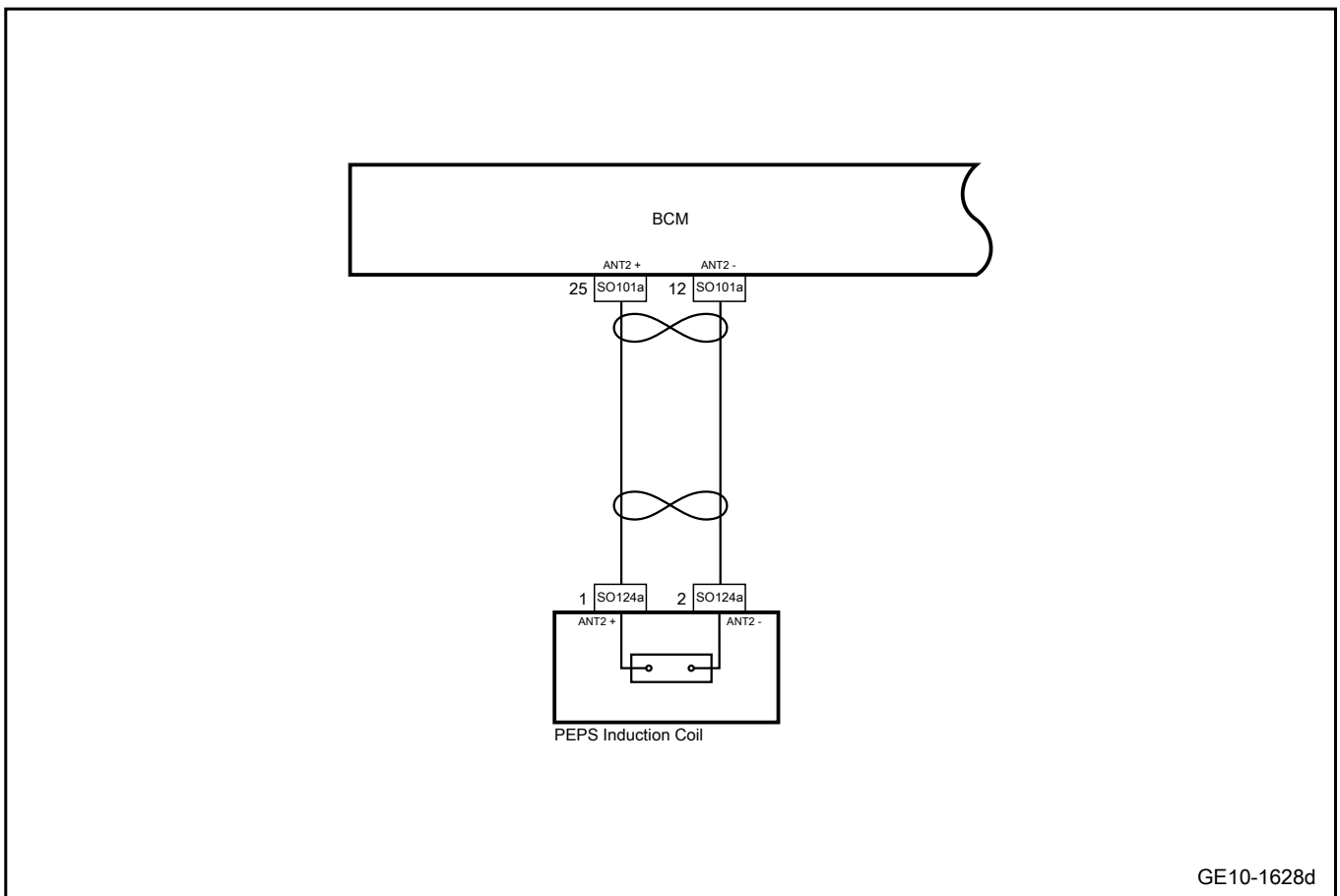
See [Central Antenna Failure](#)

### 10.9.6.11 Rear antenna is faulty

Refer to [Rear antenna fault](#)

### 10.9.6.12 PEPS induction coil failure

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the PEPS induction coil and BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

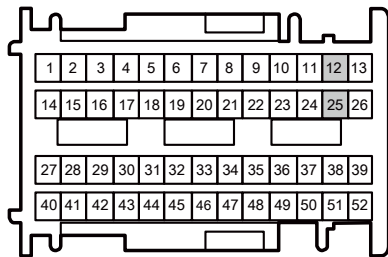
No

Repair or replace the faulty part.

Yes

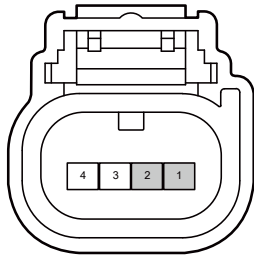
Step 2	Check the control harness between the PEPS induction coil and the BCM.
--------	--

SO101a body control module harness connector 7



GE10-1661d

SO124a PEPS Induction Coil Harness Connector



GE10-1662d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector SO101a.
- C. Unplug the PEPS induction coil harness connector SO124a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(12)	SO124a(2)	Standard resistance: less than 1Ω
SO101a(25)	SO124a(1)	
SO101a(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101a(25)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(12)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(25)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the PEPS induction coil.

- A. Replace the PEPS induction coil. See [Replacement of PEPS Induction Coil](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 5 | Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6 | System is normal.

### 10.9.6.13 Fault of the handle sensor of the driver side door

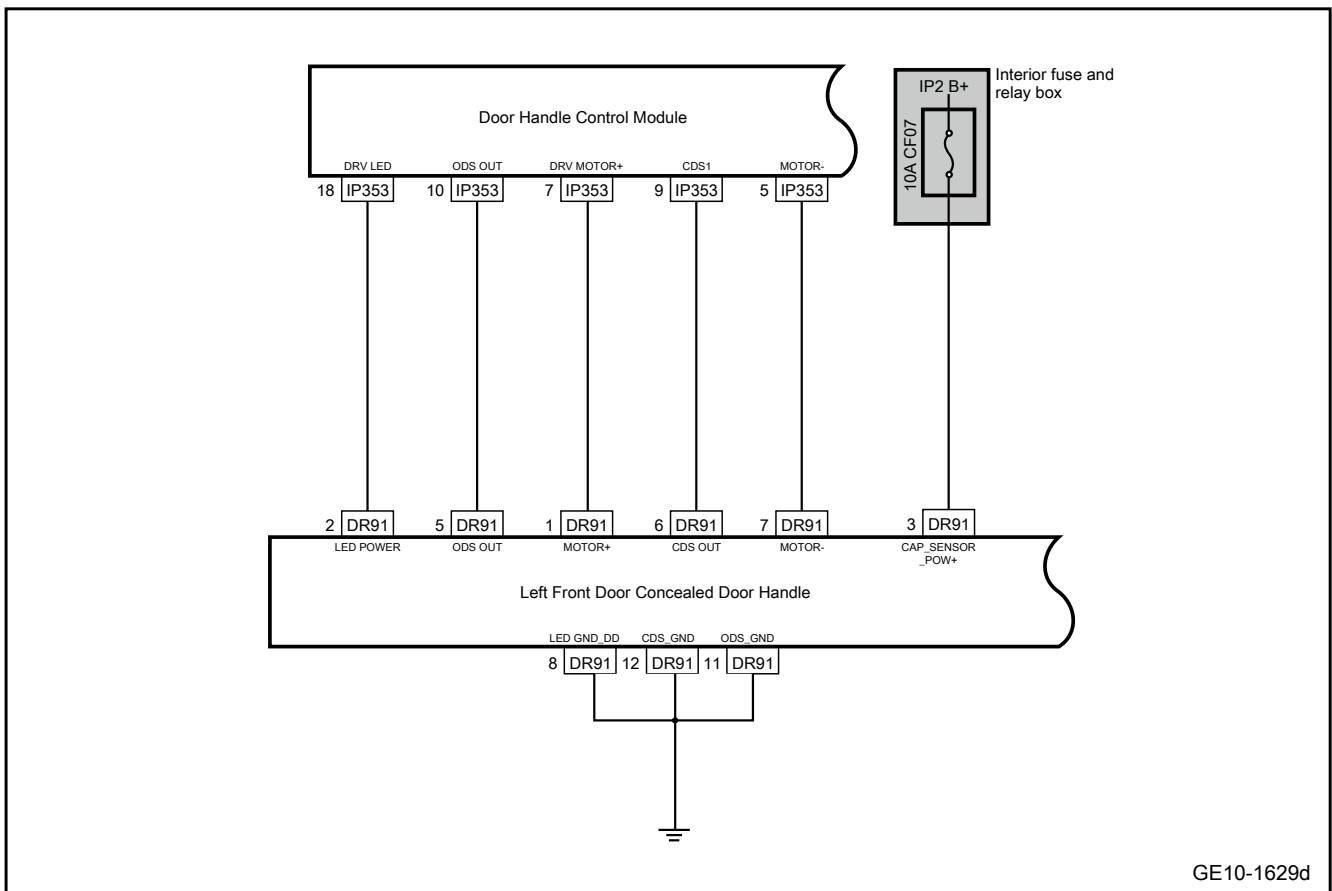
Refer to [Driver side door handle sensor failure](#)

### 10.9.6.14 Front passenger side door handle sensor failure

Refer to [Front passenger side door handle sensor failure](#)

### 10.9.6.15 Front left hidden door handle failure

1. Schematic circuit diagram:



This manual only diagnoses the fault of the left front hidden door handle. The faults of other hidden door handles should be diagnosed in the same way as the left front hidden door handle.

2. Diagnosis steps

Step 1 Primary check.

- A. Check the left front hidden door handle harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the indoor fuse relay box fuse CF07 and check whether the fuse is blown.

Rated fuse capacity: 10A

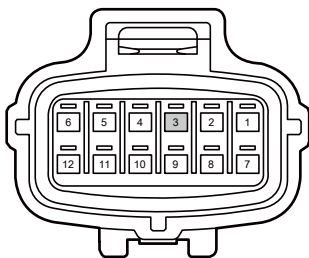
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the power circuit of the left front hidden door handle is normal.

DR91 Left Front Door Concealed Door Handle Harness Connector



GE10-1663d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(3)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding circuit of the hidden handle of the left front door is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω
DR91(11)		
DR91(12)		

- D. Confirm whether the measured value meets the standard.

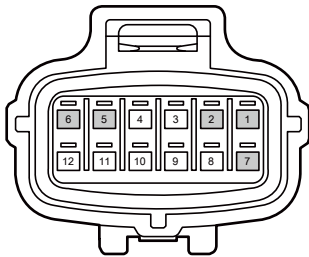
No

Repair or replace the harness.

Yes

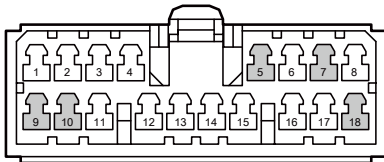
**Step 5** Check whether the circuit between the hidden handle of the left front door and the door handle control module is open.

DR91 Left Front Door Concealed Door Handle Harness Connector



GE10-1665d

IP353 door handle control module harness connector



GE10-1666d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	IP353(7)	Standard resistance: less than 1Ω
DR91(2)	IP353(18)	
DR91(5)	IP353(10)	
DR91(6)	IP353(9)	
DR91(7)	IP353(5)	

- E. Confirm whether the measured value meets the standard.

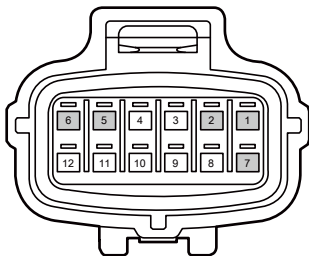
No

Repair or replace the harness.

Yes

**Step 6** Check whether the circuit between the left front hidden door handle and the door handle control module is short-circuited to the ground.

DR91 Left Front Door Concealed Door Handle Harness Connector



GE10-1667d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(2)		
DR91(5)		
DR91(6)		



Measure terminal 1	Measure terminal 2	Standard value
DR91(7)		

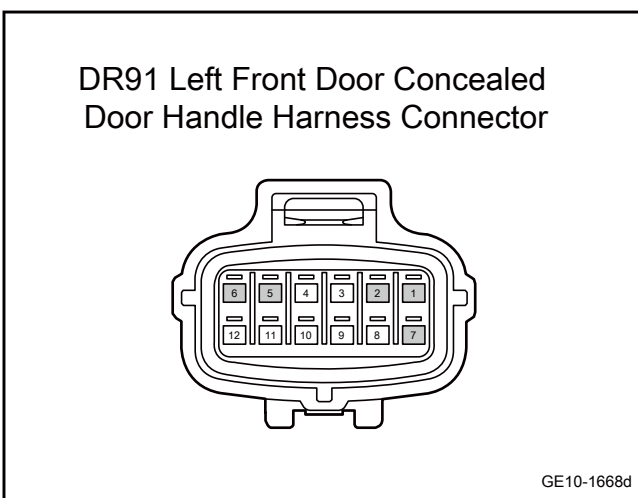
E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the left front hidden door handle and the door handle control module is short-circuited to the power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard voltage: 0V
DR91(2)		
DR91(5)		
DR91(6)		
DR91(7)		

F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the hidden handle of the left front door.

- A. To replace the hidden handle of the left front door, see [Replacement of the Hidden Handle of the Left Front Door](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the door handle control module.

- A. Check whether the door handle control module power supply and grounding harness are normal. See [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the door handle control module.

Next Step

Step 10 Reprogram and reset the door handle control module.

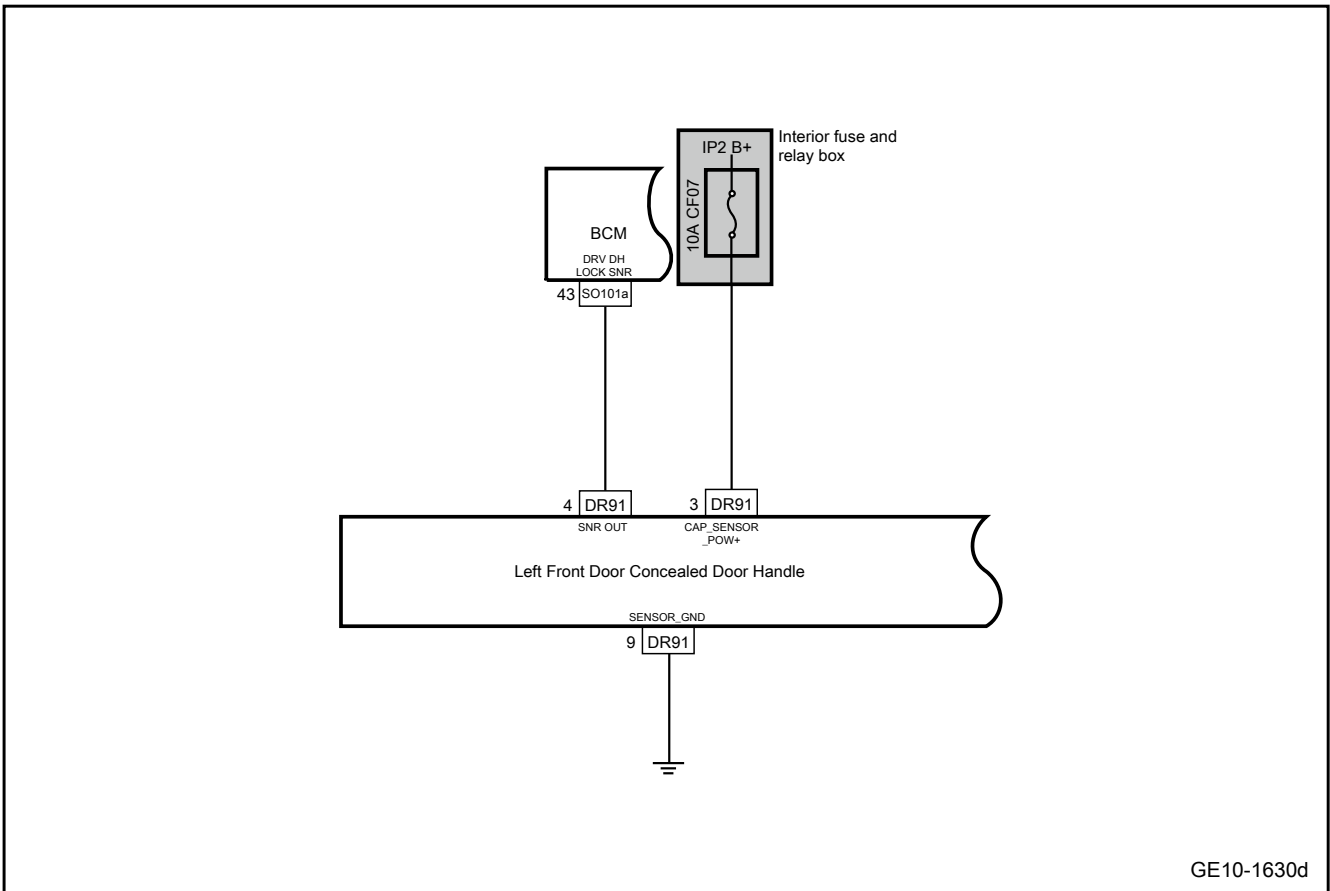
- A. Reprogram and reset the door handle control module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11 System is normal.

### 10.9.6.16 Front left hidden door handle status sensor failure

1. Schematic circuit diagram:



2. Diagnosis steps

**Step 1** Primary check.

- A. Check the left front hidden door handle harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 2** Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the indoor fuse relay box fuse CF07 and check whether the fuse is blown.

Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the power circuit of the left front hidden door handle is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(3)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

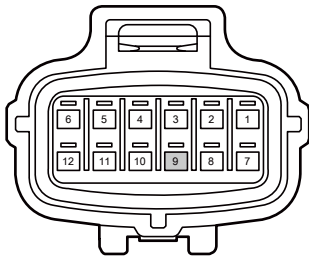
No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding circuit of the hidden handle of the left front door is normal.

DR91 Left Front Door Concealed Door Handle Harness Connector



GE10-1670d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(9)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

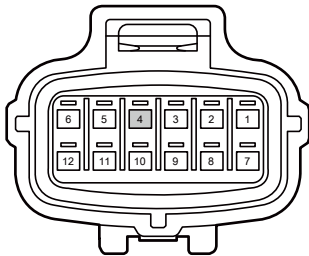
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the hidden door handle of the left front door and the BCM is open.

DR91 Left Front Door Concealed Door Handle Harness Connector



GE10-1671d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

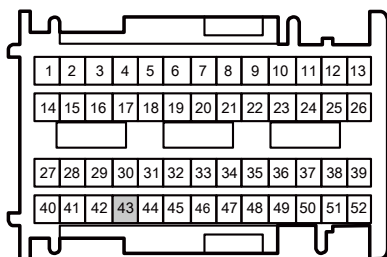
Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	SO101a(43)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

SO101a body control module harness connector 7



GE10-1672d

Yes

**Step 6** Check whether the circuit between the hidden door handle of the left front door and the BCM is short-circuited to ground.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

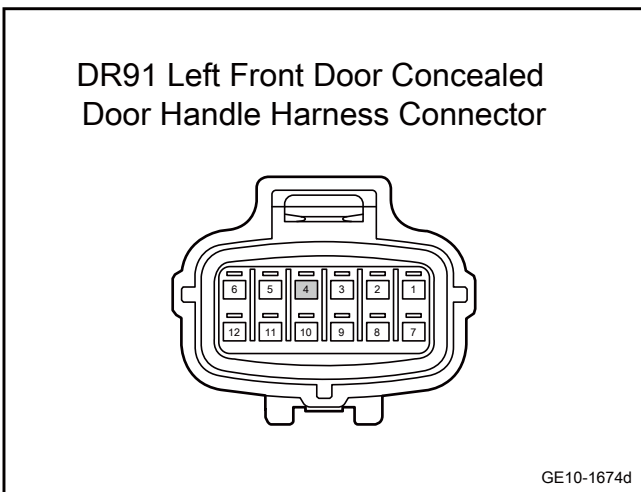
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the circuit between the hidden door handle of the left front door and the BCM is short-circuited to power supply.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the left front hidden door handle harness connector DR91.
- C. Disconnect the BCM harness connector SO101a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace the hidden handle of the left front door.

- A. To replace the hidden handle of the left front door, see [Replacement of the Hidden Handle of the Left Front Door](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 10 Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 11 System is normal.

### 10.9.6.17 Antenna self-check

#### 1. Diagnosis steps

Step 1 Brand selection, vehicle identification.

Next Step

Step 2 Enter the first-level menu 'system matching', and select the 'antenna self-test' function in the second-level menu.

Next Step

Step 3 Click 'OK' to enter the first prompt interface.

Next Step

Step 4 Self-check in progress.

Next Step

Step 5 According to XX and YY reply display.

Next Step

Step 6	Click Next to prompt the end of the antenna self-test.
--------	--

Next Step

Step 7	Exit the antenna self-test and return to the main interface.
--------	--

### 10.9.6.18 PEPS replacement (PEPS learning)

#### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the first level menu 'system matching', and select 'PEPS' in the second level menu 'replace controller'.
--------	--

Next Step

Step 3	Click 'OK' to enter the first prompt interface.
--------	---

Next Step

Step 4	Click 'Next' to start PEPS learning.
--------	--------------------------------------

Next Step

Step 5	A dialog box pops up to select whether the controller has successfully learned.
--------	---

Next Step

Step 6	A dialog box pops up to enter the vehicle ESK code.
--------	---

Next Step

Step 7	Write the ESK code.
--------	---------------------

Next Step

Step 8	Enter vehicle PEPS configuration in the pop-up box.
--------	---

Next Step

Step 9	Write the PEPS configuration.
--------	-------------------------------

Next Step

Step 10	PEPS soft restart.
------------	--------------------

Next Step

Step 11 Re-enter the extended mode and verify the security.

Next Step

Step 12 Participate the ESK code entered in step 3.6 in the secondary security access.

Next Step

Step 13 Enter EOL learning mode.

Next Step

Step 14 Antenna self-check.

Next Step

Step 15 Ask the user to learn a few keys.

Next Step

Step 16 Select '1' to learn a key.

Next Step

Step 17 Select '2' to learn two keys.

Next Step

Step 18 Write the VIN code.

Next Step

Step 19 Learning is successful.

Next Step

Step 20 Return to the main interface of special routine operation.



---

### 10.9.6.19 Delete old keys, add new keys

#### 1. Diagnosis steps

Step 1	Enter the first level menu 'system matching', and select 'delete old keys, add new keys' in the second level menu 'key matching'.
--------	---

Next Step

Step 2	Click 'OK' to enter the first prompt interface.
--------	---

Next Step

Step 3	Click 'Next' to start learning.
--------	---------------------------------

Next Step

Step 4	Click "Enter the ESK code".
--------	-----------------------------

Next Step

Step 5	Enter EOL learning mode.
--------	--------------------------

Next Step

Step 6	Antenna self-check.
--------	---------------------

Next Step

Step 7	Ask the user to learn a few keys.
--------	-----------------------------------

Next Step

Step 8	Select '1' to learn a key.
--------	----------------------------

Next Step

Step 9	Select '2' to learn two keys.
--------	-------------------------------

Next Step

Step 10	Successful matching.
------------	----------------------

Next Step

Step 11	Back to the main interface.
---------	-----------------------------

### 10.9.6.20 Key matching

#### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Keep the old keys and add new ones.
--------	-------------------------------------

Next Step

Step 3	Enter the first-level menu 'System Matching', and select 'Keep the old key and add new key' in the second-level menu 'Key Matching'.
--------	--

Next Step

Step 4	Click 'OK' to enter the first prompt interface.
--------	---

Next Step

Step 5	Click 'Next' to start learning.
--------	---------------------------------

Next Step

Step 6	Click "Enter the ESK code".
--------	-----------------------------

Next Step

Step 7	Enter the after-sales learning mode.
--------	--------------------------------------

Next Step

Step 8	Antenna self-check.
--------	---------------------

Next Step

Step 9	Ask the user to learn a few keys.
--------	-----------------------------------

Next Step

Step 10	Select '1' to learn a key.
------------	----------------------------

Next Step

Step 11	Select '2' to learn two keys.
---------	-------------------------------

Next Step

---

Step 12	Successful matching.
------------	----------------------

Next Step

Step 13	Back to the main interface.
------------	-----------------------------

### 10.9.6.21 Clear PEPS key

#### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the first level menu 'system matching', and select 'clear PEPS key' in the second level menu 'clear controller key'.
--------	--

Next Step

Step 3	Click 'OK' to enter the first prompt interface.
--------	---

Next Step

Step 4	Click 'Next' to start cleaning.
--------	---------------------------------

Next Step

Step 5	Enter the ESK code.
--------	---------------------

Next Step

Step 6	Erase the PEPS key.
--------	---------------------

Next Step

Step 7	The erasure was successful.
--------	-----------------------------

Next Step

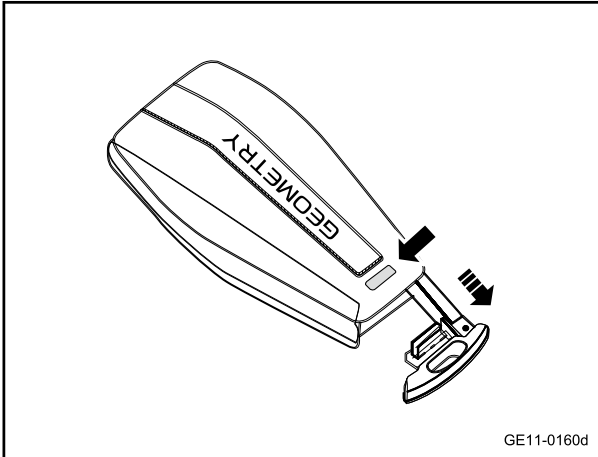
Step 8	Back to the main interface.
--------	-----------------------------

## 10.9.7 Removal and installation

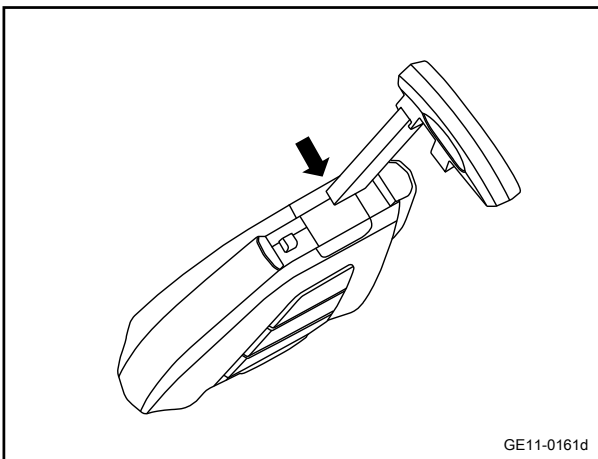
### 10.9.7.1 Replacement of remote control emitter battery

#### Removal procedure

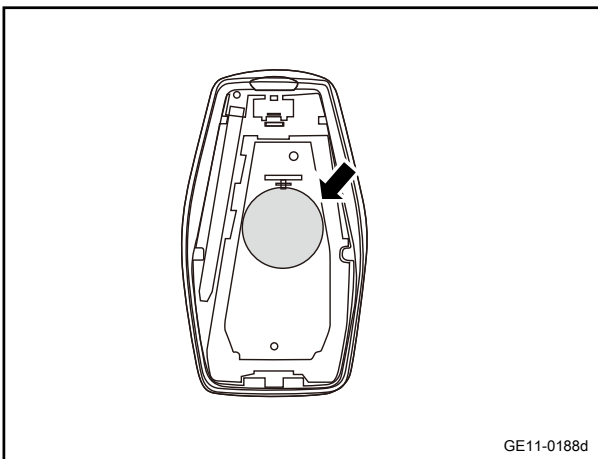
- 1 Press the release button on the back of the smart key and take out the mechanical key.



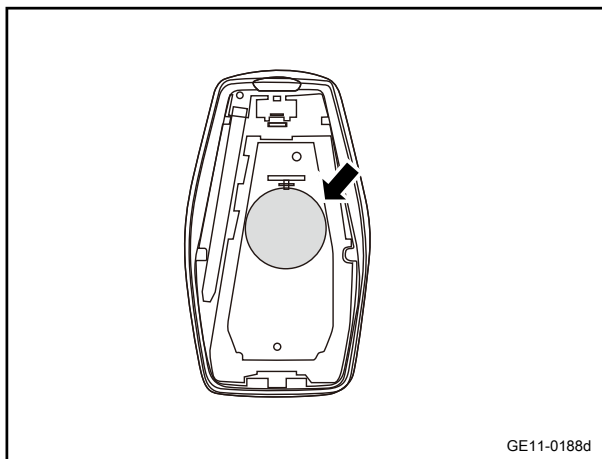
- 2 Use the mechanical key to prize up the back housing of the smart key.



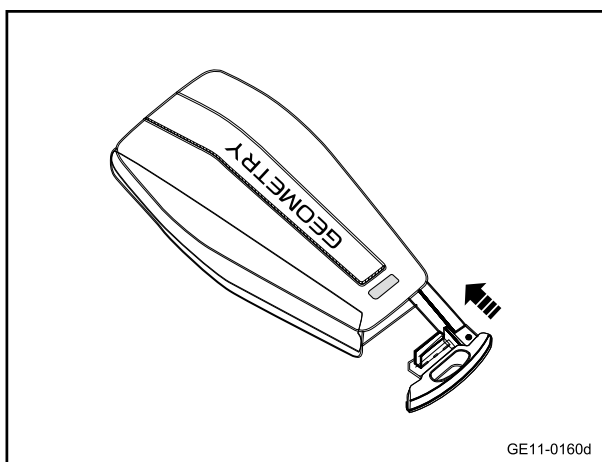
- 3 Take out the smart key battery.



#### Installation procedure



- 1 Install the smart key battery.
- 2 Close the rear cover of the smart key.



- 3 Insert the mechanical key.

### 10.9.7.2 Replacement the front keyless entry receiving antenna

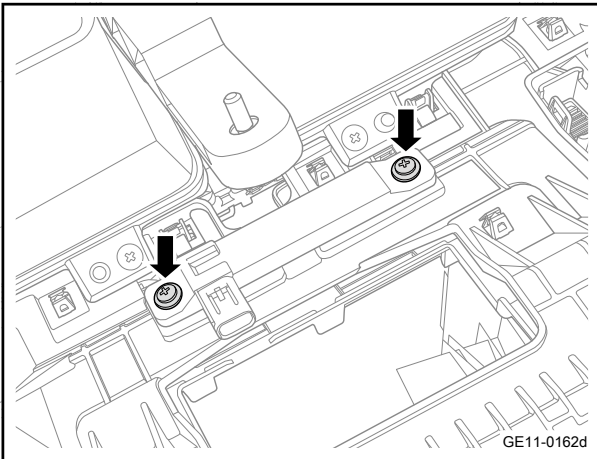
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

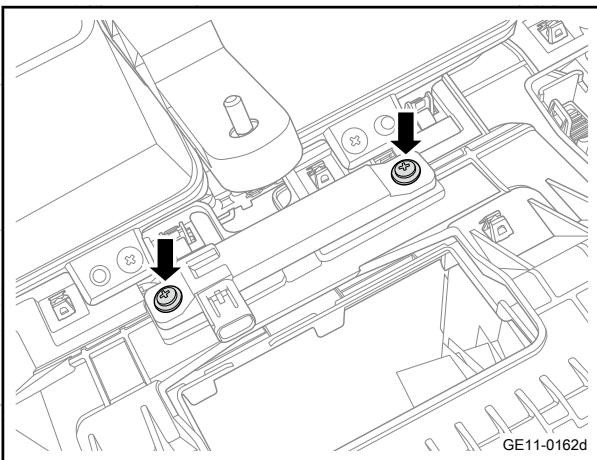
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)



- 3 Remove 2 fixing screws of the front keyless entry receiving antenna.
- 4 Remove the front keyless entry receiving antenna.



#### Installation procedure

- 1 Move the front keyless entry receiving antenna to the installation position.
- 2 Install 2 fixing screws of the front keyless entry receiving antenna.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 3 Install the dashboard body assembly.
- 4 Connect the negative cable of battery.

### 10.9.7.3 Replacement of the central keyless entry receiving antenna

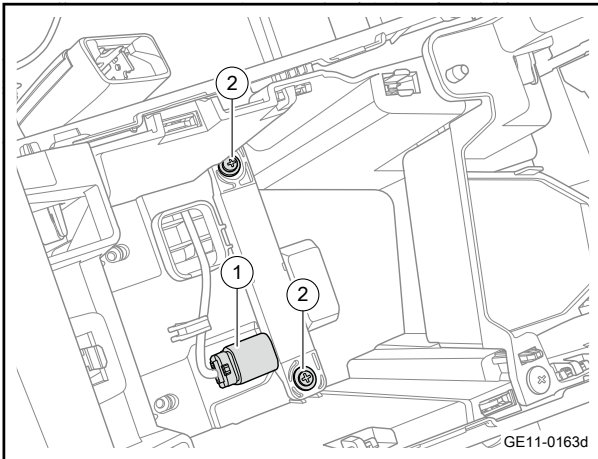
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

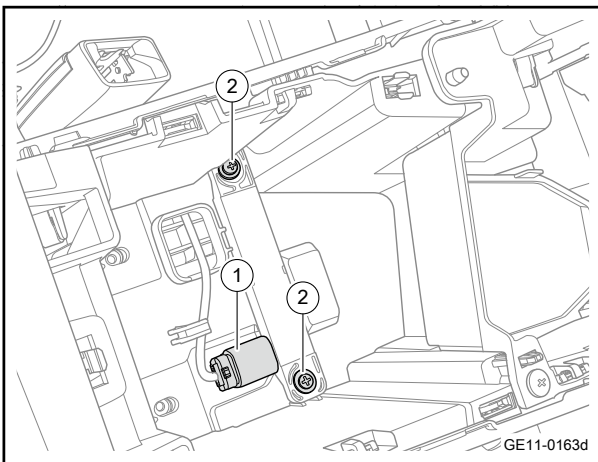
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the upper trim panel assembly of the auxiliary instrument. See [Replacement of upper trim panel assembly of auxiliary instrument](#)



- 3 Connect the central keyless entry receiving antenna harness connector 1.
- 4 Remove 2 fixing screws 2 of the central keyless entry receiving antenna.
- 5 Remove the central keyless entry receiving antenna.

#### Installation procedure



- 1 Move the central keyless entry receiving antenna to the installation position.
- 2 Install 2 of the central keyless entry receiving antenna.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Connect the central keyless entry receiving antenna harness connector 1.

- 4 Install the upper trim panel assembly of the auxiliary fascia console.
- 5 Connect the negative cable of battery.

### 10.9.7.4 Replacement of the rear keyless entry receiving antenna

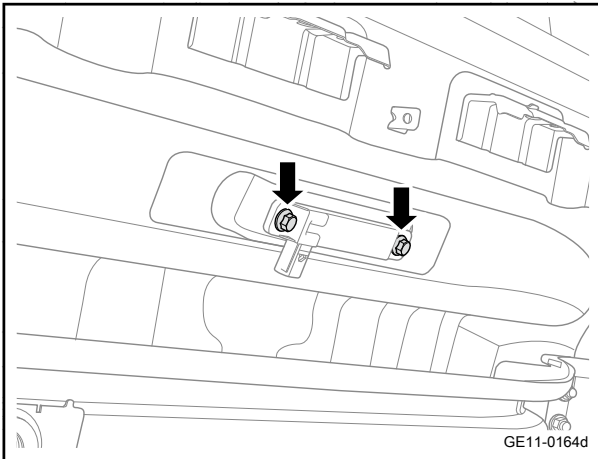
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

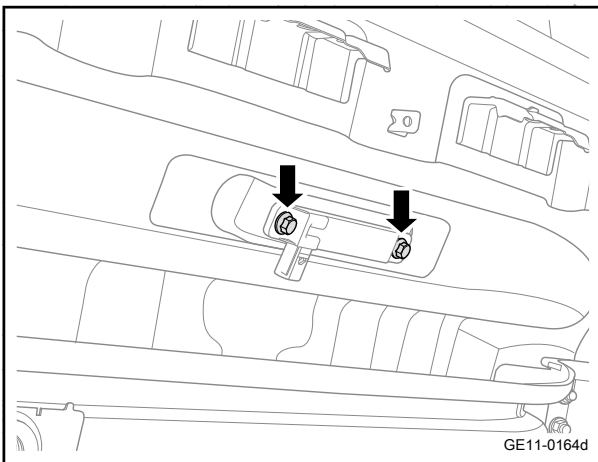
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)



- 3 Remove 2 fixing screws of the rear keyless entry receiving antenna.
- 4 Take off the rear keyless entry receiving antenna.

#### Installation procedure



- 1 Move the rear keyless entry receiving antenna to the installation position.
- 2 Install the 2 fixing screws of the rear keyless entry receiving antenna.  
Torque: 4N·m (metric) 3lb-ft (imperial system)

- 3 Install the rear bumper.
- 4 Connect the negative cable of battery.

### 10.9.7.5 Replacement of push-button start switch

#### Removal procedure

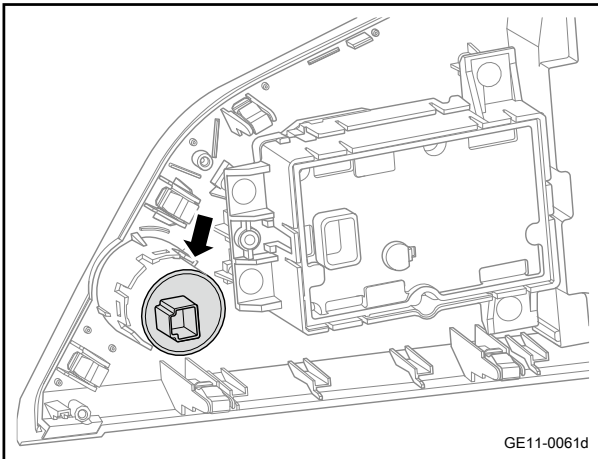


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

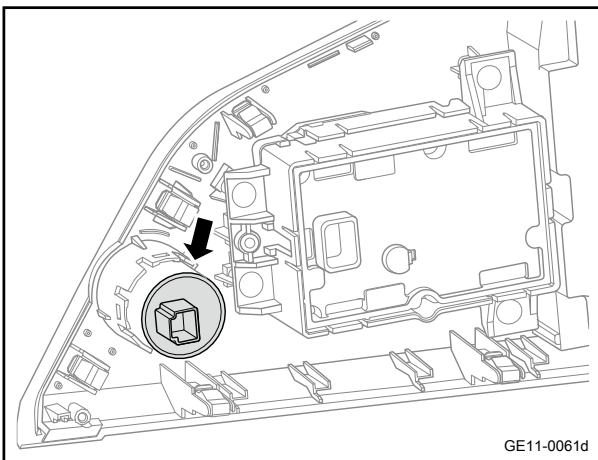
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 3 Pry down the push-to-start switch.



#### Installation procedure

- 1 Install the push-to-start switch.



- 2 Install the auxiliary instrument switch pack.
- 3 Connect the negative cable of battery.

### 10.9.7.6 Replacement of RF receiver module

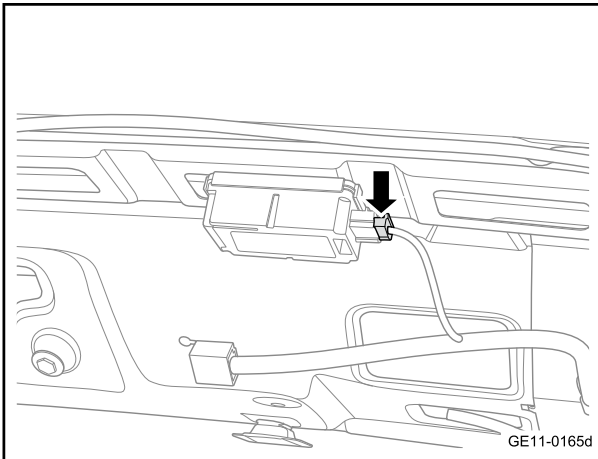
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

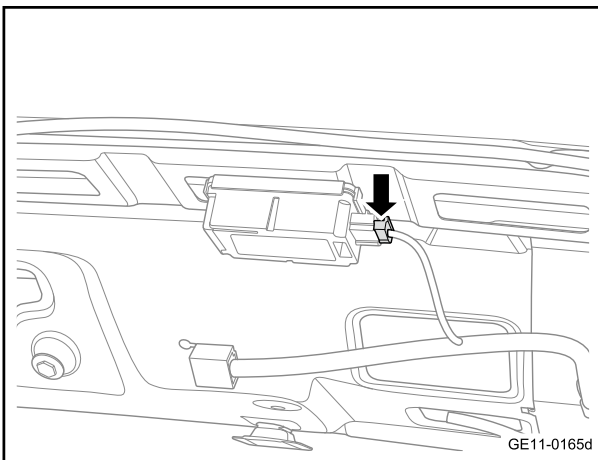
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the roof trim panel assembly. Refer to [Replacement of interior trim panel of roof](#)
- 3 Disconnect the radio frequency receiving module harness connector.
- 4 Pry down the RF receiver module.



#### Installation procedure

- 1 Install the RF receiver module.
- 2 Connect the wire harness connector of the RF receiver module.



- 3 Install assembly-headlining panel roof.
- 4 Connect the negative cable of battery.

### 10.9.7.7 Replacement of the start-and-stop switch

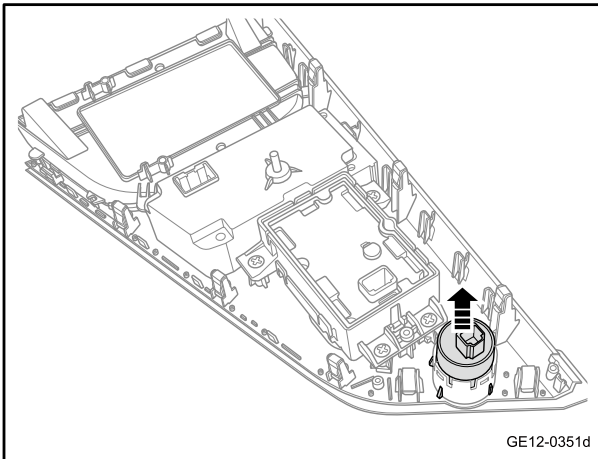
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

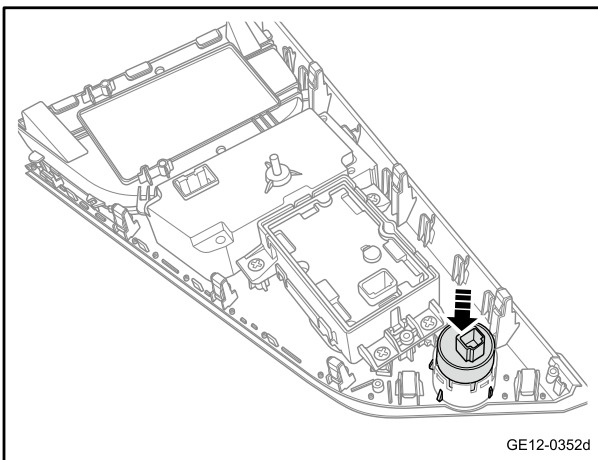
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary fascia console switch pack](#)
- 3 Pry off the start and stop switch.



Installation procedure

- 1 Install the start and stop switch.



- 2 Install the auxiliary fascia console switch pack.
- 3 Connect the negative cable of battery.

## 10.10 Electric seat

### 10.10.1 Specification

#### 10.10.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of front seat and front floor	M10×25	40 - 50	29.5 - 36.9
Fixing bolt of seat control module	M6×25	3 - 5	2.2 - 3.7
Air outlet fixing bolt	M6×20	5 - 7	3.7 - 5.2

## 10.10.2 Description and Operation

### 10.10.2.1 General

#### Power seat

##### System composition

- Power seat cushion
- Power seat backrest
- Power seat adjustment switch
- Power seat forward/backward adjustment motor
- Power seat height adjustment motor
- Power seat backrest adjusting motor

##### Features

- With the power seat adjusting switch, the seat can be electrically adjusted forward/backward, the caution upward/downward, and the backrest inclination forward/backward.

#### Memory seat

##### System composition

- Power seat cushion
- Power seat backrest
- Power seat adjustment switch
- Power seat forward/backward adjustment motor
- Power seat height adjustment motor
- Power seat backrest adjusting motor
- Seat heating

##### Features

- By identifying the signal from the seat adjustment switch, the seat module adjusts the seat forward/backward, the caution upward/downward, and the backrest inclination forward/backward.
- The seat heating switch is located in the air conditioning control panel of the multimedia display. After the vehicle is started, click the seat heating switch in the air conditioning control panel of the multimedia display screen to select the seat heating position. The seat heating function has 4 positions, namely OFF, 1, 2, and AUTO. The OFF position is turning off, the gear 1 has the lowest temperature, the gear 2 has the highest temperature, the AUTO gear is automatic.

If the seat heating function fails to heat the seat to a certain temperature after 20 minutes of continuous heating, the seat heating function will automatically turn off.

After turning on the air conditioning economic mode, the seat heating function will be turned off.

The seat heating AUTO gear can only be used once every time the vehicle is started, and cannot be used repeatedly.

- You can store and retrieve memory information in the memory setting interface in the multimedia settings. The operation method is as follows:
- Adjust the driver's seat and exterior mirrors to the desired position.
- Open the memory setting interface in the multimedia settings, click to save the current seat position, and a pop-up window for selecting a memory position will pop up.
- Select the saving position, the vehicle can memorize 6 groups of driver's seat and exterior mirror positions.
- After re-adjusting the driver's seat and exterior mirrors, click the corresponding position switch under the seat position adjustment of the memory setting interface to adjust the driver's seat and exterior mirrors to the memory position.

Do not adjust any seat during driving. Adjusting a seat while driving may cause loss of control of the vehicle, resulting in collision accident and major injury.

## 10.10.3 How the system works

### 10.10.3.1 System Working Principles

#### 1. Driver's seat control unit (DSCU)

The driver's seat assembly module (DSCU) has seat heating, adjustment, and memory ECU functions.

1. The adjustment of the front passenger's power seat does not require DSCU control and is controlled by the front passenger's seat;
2. The driver's seat controller is fixed above the floor under the seat carpet (separate bracket).
3. The output signals of the driver's seat assembly module are as follows:
  - a. Driver's seat heating: the front end of the heating wire is automatically controlled by DSCU;
  - b. Front passenger's seat heating: the front end of the heating wire is automatically controlled by DSCU;
  - c. 6-way adjustment of the driver's seat: both the forward and reverse rotation of the adjustment motor are controlled by the internal relay of the DSCU;
  - d. Left-side rear-view mirrors adjustment: DSCU internal drive chip controls left-side rear-view mirrors up and down;
  - e. Right-side rear-view mirrors adjustment: DSCU internal drive chip controls right-side rear-view mirrors up and down;

#### 4. Power seat adjuster switch

The seat adjuster switch provides the power supply and grounding circuit for the selected seat motor, which drives the motor to adjust.

#### 5. Seat adjustment motor

All seat motors work independently. Each motor includes an electronic circuit breaker (PTC). The circuit breaker is disconnected when the circuit is overloaded and will only reset after the circuit voltage is cut off. There are three seat motors. They are back and forth adjusting motor, height adjusting motor and backrest adjusting motor. Back and forth adjusting motor enables the entire seat move forward and backward. The height adjusting motor enables the entire seat move up or down. Backrest adjusting motor enables backrests tilt forward or backward.

#### 6. Forward/ backward position adjustment

When the seat adjustment switch is operated to move the entire seat forward, the positive voltage of the battery is

applied to the motor through the switch contacts and forward control circuit of the back and forth adjustment motor. The motor is grounded through backward switch contact of the back and forth adjustment motor and backward control circuit of the back and forth adjustment motor. The motor runs to drive the entire seat forward until the switch is released. The operation process of moving the whole seat backward is similar to that of moving the whole seat forward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

Slide way adjustment range: the total forth-and-back stroke of the sliding way is 220mm.

#### 7. Height adjustment

When the seat switch is operated to move the entire seat upward, the positive voltage of battery is applied to the height adjusting motor through the upward switch contact of height adjusting motor and the upward control circuit of height adjusting motor. The motor is grounded through the downward switch contact and the downward control circuit of height adjusting motor. The height adjusting motor drives the entire seat to move upward until the switch is released. The operation process of moving the whole seat downward is similar to that of moving the whole seat upward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

#### 8. Backrest adjustment

When the backrest adjusting switch is operated to enable the backrest tilt forward, the positive voltage of battery is applied to the motor through the switch contacts and the forward control circuit of backrest adjusting motor. The motor is grounded through the backward switch contact and the backward control circuit of backrest adjusting motor. The motor runs to move the backrest forward until the switch is released. The operation process of moving the backrest backward is similar to that of moving the backrest forward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

Backrest adjustment range: 36° forward from the design position, 52° backward from the design position.

#### 9. Seat heating

The seat heating process is divided into: rapid heating and standard heating.

Fast heating: start the level 2 heating, the control requirement is that the temperature of the seat surface can reach  $42\pm 2^{\circ}\text{C}$  (TBD) within 15 minutes at an ambient temperature of  $0^{\circ}\text{C}$ , and the NTC insulation control temperature is  $60^{\circ}\text{C}$  (TBD), with a  $2^{\circ}\text{C}$  hysteresis interval.

Standard heating: start level 1 heating, the control requirement is that the temperature of the seat surface can reach  $37\pm 2^{\circ}\text{C}$  within 15 minutes at an ambient temperature of 0 degrees, and the NTC insulation control temperature is  $50^{\circ}\text{C}$  (TBD), with a  $2^{\circ}\text{C}$  hysteresis interval.

In the heating process, after the temperature is higher than or equal to the preset temperature, the DSCU controls to stop heating; after the temperature is lower than the preset temperature, the DSCU restarts the heating process.

DSCU adopts a certain temperature adjustment strategy to ensure the heating effect.

#### 10. Memory initialization

a. Press the horizontal forward adjustment switch until the horizontal forward adjustment motor is blocked and stop; press the horizontal backward adjustment switch until the horizontal backward adjustment motor is blocked and stop;

b. Press the backrest forward adjustment switch until the backrest is adjusted forward and the motor is blocked and stop; press the backrest backward adjustment switch until the backrest is adjusted backward and the motor is blocked and stops;

c. Press the height-down adjustment switch until the motor stalls and stops when it is adjusted downward; press the height-up adjustment switch until the motor stalls and stops when it is adjusted upward;

d. After the 3 motors stalls, the initialization is successful;

When the seat state is not initialized, it will report the uninitialized DTC fault prompt system

During the initialization process, when any of the following situations occurs, the initialization fails and the system automatically exits the initialization process:

a. After the adjustment motor stops running, the switch is not pressed again within 5s to make the motor run to the locked-rotor position;

b. Detect that the seat motor fails and is unable to complete the running action;

After the initialization is completed, the calibration of the seat is completed, the calibration status of the corresponding direction will change from invalid to valid, and the failure to initialize is cleared.

After the calibration, the diagnostic instrument should be able to read the fault code information of the seat function part, seat adjustment distance and other information to determine whether the check calibration is correct.

#### 11. Seat motor failure

##### a. Motor running timeout

For all the driving motors of the seat, if any one of the motors continues to drive for more than the time shown in the following table, stop the drive of the motor, and set the fault flag of motor's continuous drive timeout. Unless the system re-issues the drive command, it will not drive the motor. When it is detected that the system has re-output the motor drive command, the motor drive timeout fault flag is cleared.

##### b. Motor stall

When driving the seat motor, the seat motor stall should be diagnosed at any time. If the motor is continuously driven, it is detected that the position of the motor has not changed in the driving direction within a period of time, and the motor is considered to stall.

When it detects that the seat motor stalls, set the seat motor stall fault flag and stop driving the motor. Unless the system outputs a driving command again, the motor will not be driven; when the drive command is detected to be cleared, the seat motor stall fault flag is cleared.

##### c. Seat motor sensor fault diagnosis

The power supply circuit of the Hall sensor, when the power supply circuit of the Hall sensor in the seat motor is shorted to the ground, the Hall power supply is turned off, and the position memory and position recall function of the seat is stopped at this time. Until the power cord returns to normal, the power output is enabled, and the position memory and position recall functions of the seat are enabled.

##### d. The seat motor fault of being uninitialized

Fault condition: after the seat is powered on, read the initialization flag corresponding to each adjustment direction of the seat from the storage position. If the initialization flag corresponding to the adjustment direction is not initialized, then the seat in this direction is not initialized with the fault DTC;

Recovery conditions: when it is detected that the initialization flag variable of the seat adjustment direction is initialized, the uninitialized fault of the adjustment direction is cleared (the seat initialization flag is recorded in the EEPROM);

Execution output: disable seat remote memory related functions, and record the uninitializing fault DTC at corresponding motor adjustment direction

#### e. Seat motor initialization stroke out of range

Fault condition: when the seat adjustment direction is initialized to determine the stroke in the corresponding direction, if the corresponding adjustment direction stroke exceeds 20% of the standard stroke (TBD), the seat stroke in this direction is set as the over-range fault DTC;

Recovery condition: when the calibrated stroke falls within the error range after re-initializing the seat adjustment direction, clear the stroke over-range fault in the adjustment direction, and update the seat stroke setting in this direction (the default is the default calibration stroke);

Execution output: the stroke is executed according to the default calibration stroke, and the uninitializing fault DTC at corresponding motor adjustment direction is recorded at the same time.

## 12. Seat heating diagnosis

### a. High-end diagnosis of seat heating output

Fault detection: The seat heating high-end MOS driver has a current feedback loop. When the feedback current threshold is greater than the short-circuit current threshold, the heating high-end output is considered to be short-circuited to the ground; when the feedback current threshold is less than the open-circuit current threshold, the heating high-end output is considered to be open;

Troubleshooting: when it is determined that there is a short circuit or open circuit fault in the heating high end, set the open circuit or short circuit fault flag and stop driving the heating pad. Unless the system outputs a driving command again, the heating pad will not be driven;

After the open-circuit and short-circuit fault flag is set, when the drive command is detected, the short-circuit fault flag is cleared, the heating pad is re-driven and the fault is detected;

### b. Seat heating NTC sensor diagnosis

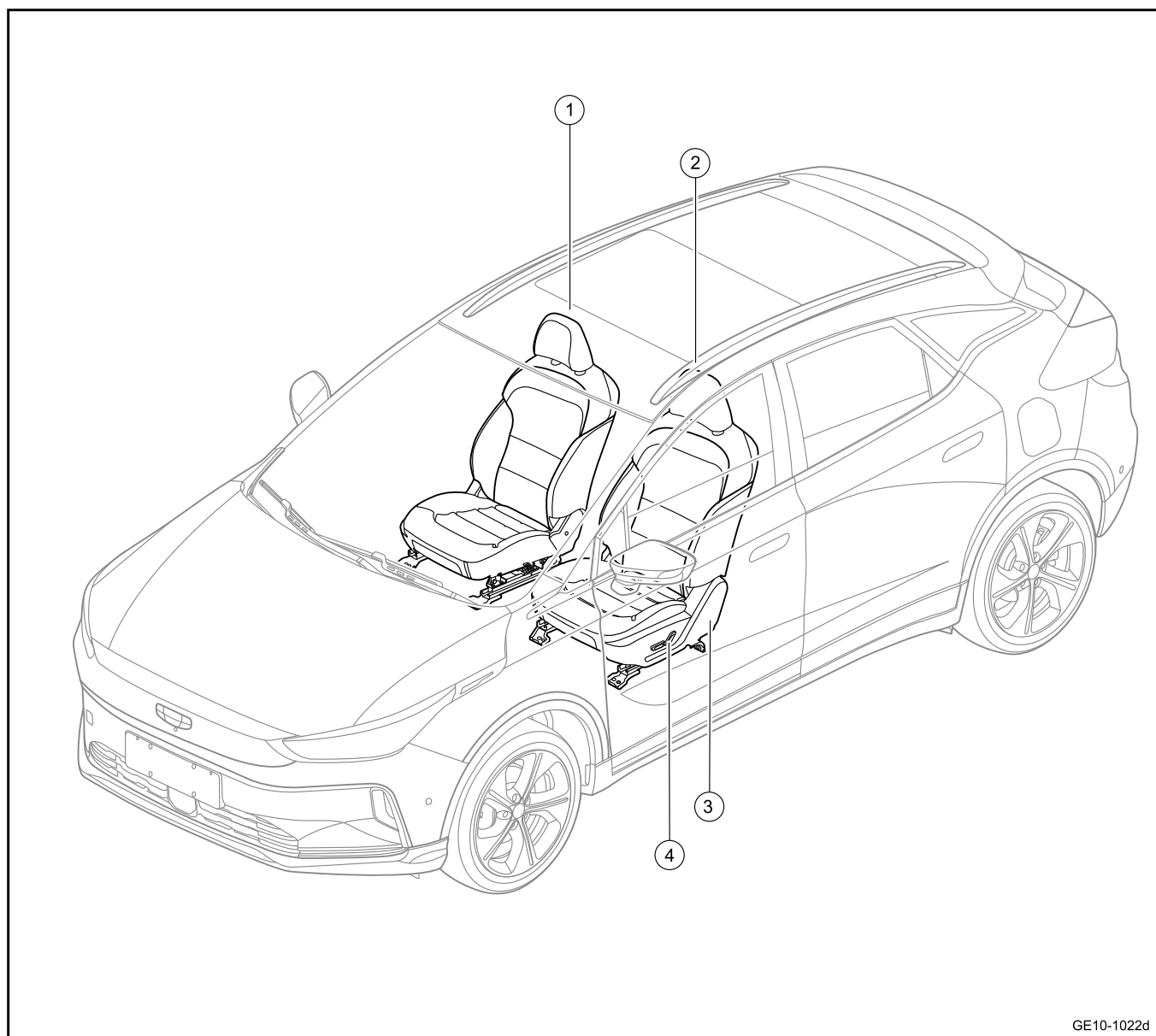
Fault detection: the seat heating NTC sensor is an AD acquisition circuit. When the AD feedback value is always 0 or full scale when it is short-circuited to the ground or power supply, it is considered that the NTC sensor is short-circuited to the ground or the power supply is faulty;

Troubleshooting: when it is determined that the NTC sensor has a short-circuit fault, set the fault flag and prohibit the heating drive. When the fault is removed, the fault flag is cleared.



## 10.10.4 Part location

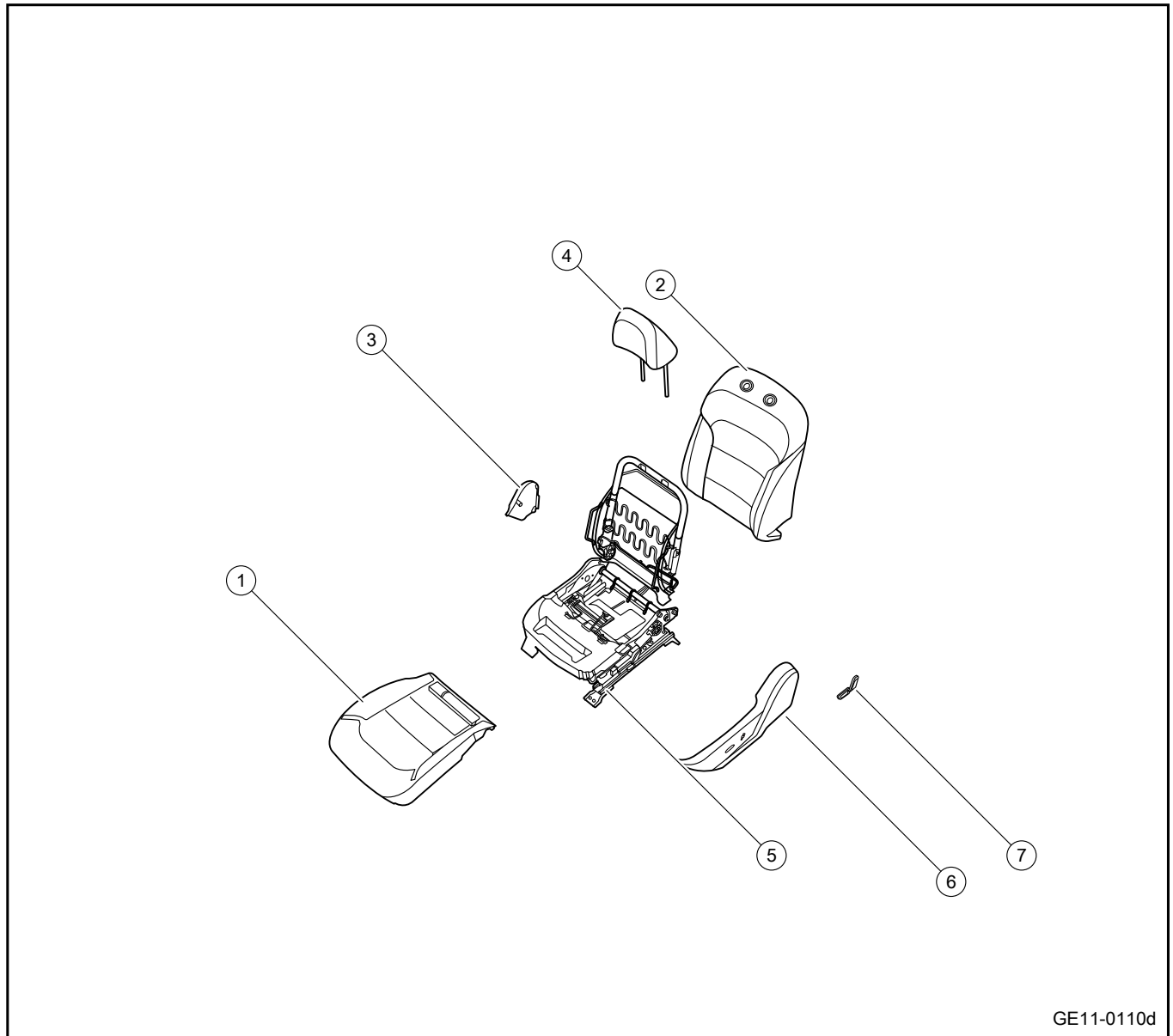
## 10.10.4.1 Part Position



- |                              |                                       |
|------------------------------|---------------------------------------|
| 1. Right front seat assembly | 3. Left trim panel of left front seat |
| 2. Left front seat assembly  | 4. Left front seat adjustment switch  |

## 10.10.5 Exploded view

## 10.10.5.1 Power seat disassemble view



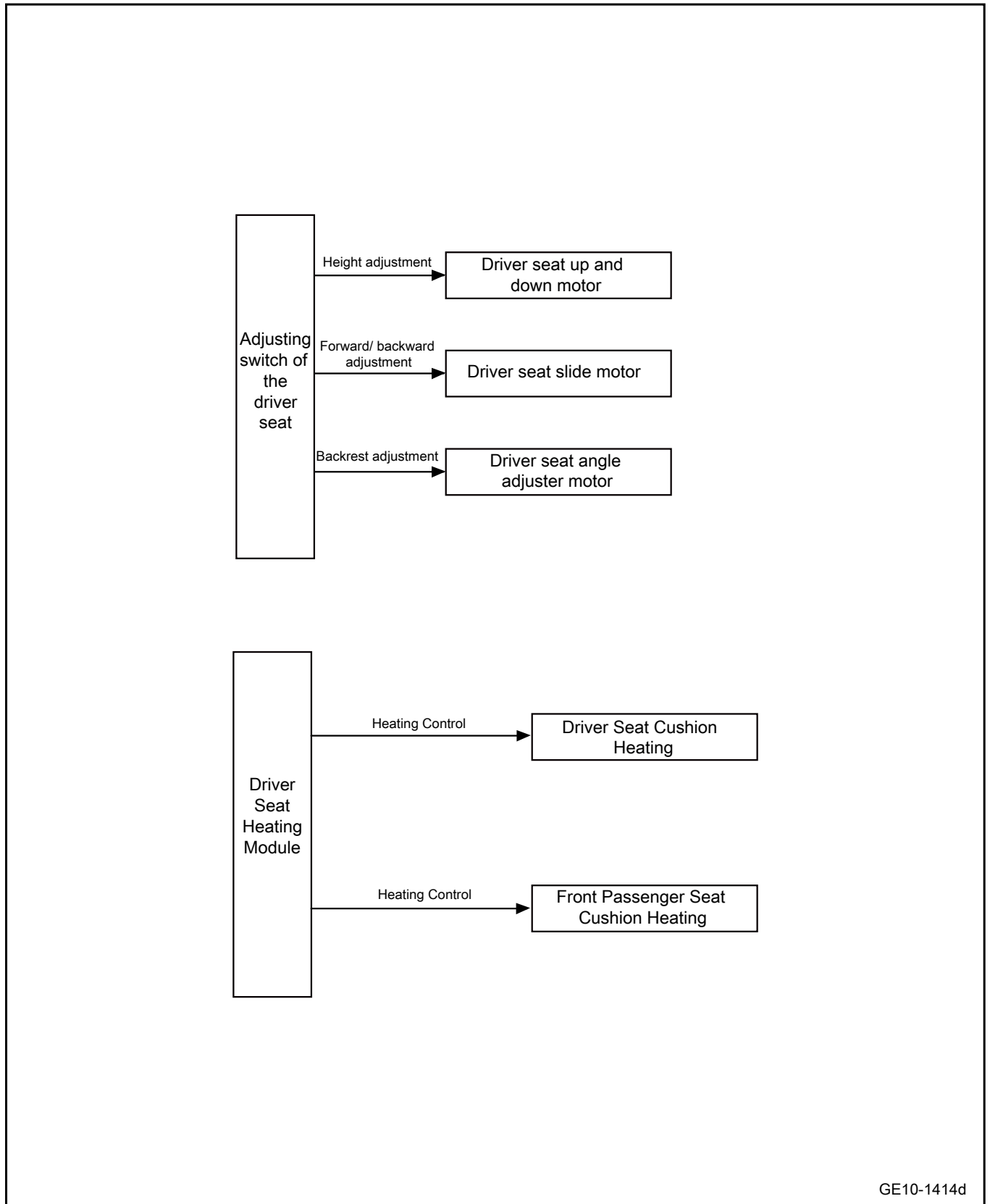
GE11-0110d

- |                                |                                |
|--------------------------------|--------------------------------|
| 1. Power seat cushion          | 5. Power seat bracket          |
| 2. Power seat backrest         | 6. Power seat right trim panel |
| 3. Power seat right trim panel | 7. Power seat adjusting button |
| 4. Head Restraints             |                                |

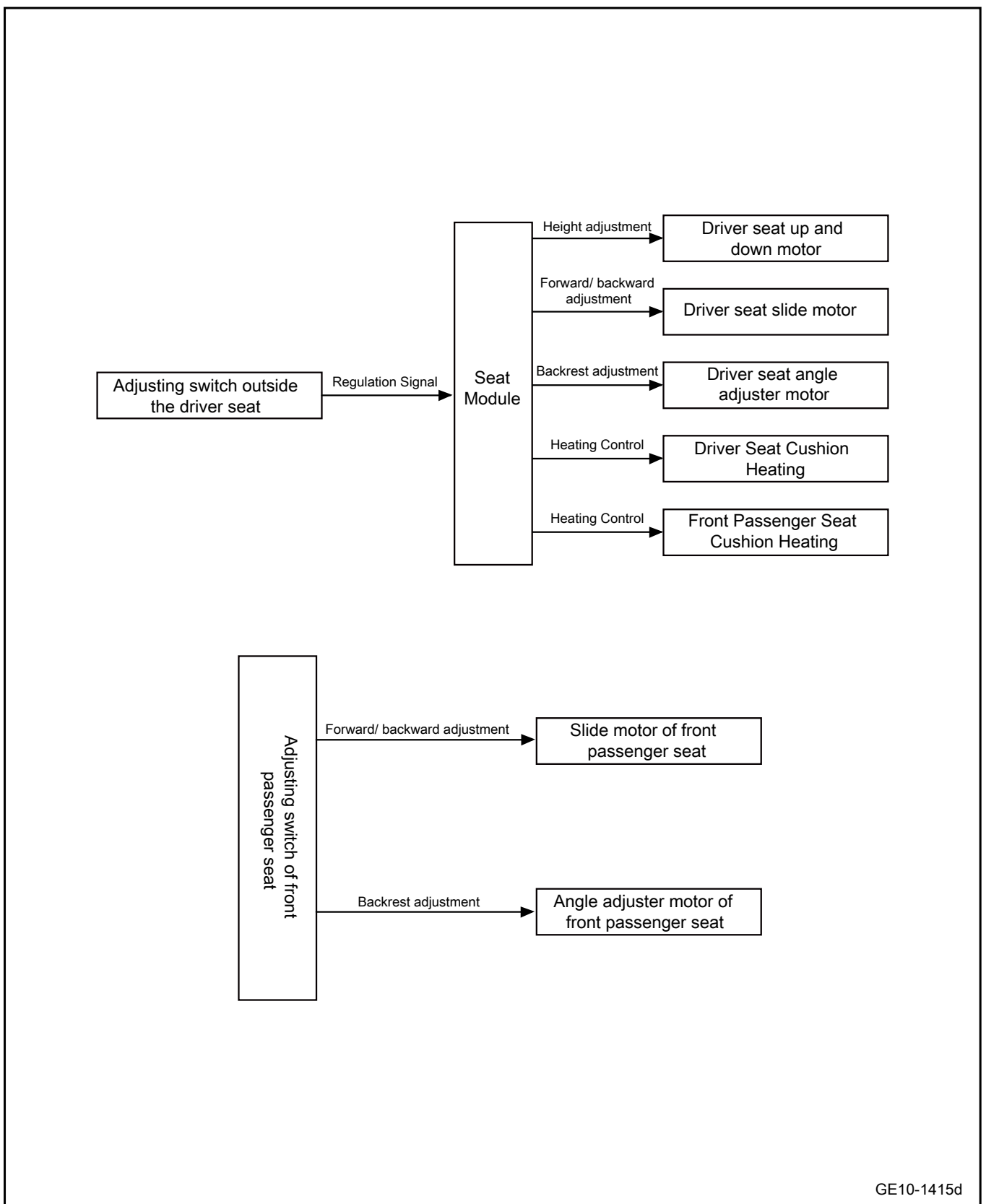
10.10.6 Electrical block diagram

10.10.6.1 Electrical schematic diagram of the power seat system

Power seat



Power seat (with memory function)



GE10-1415d

## 10.10.7 Diagnostic information and steps

### 10.10.7.1 Diagnosis Description

Prior to diagnosis of fault in power seat, refer to [Description and Operation](#) and [System Working Principle](#). Understand and get familiar with power seat working principle before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of the power seat should begin with a routine inspection, which directs the service technician to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

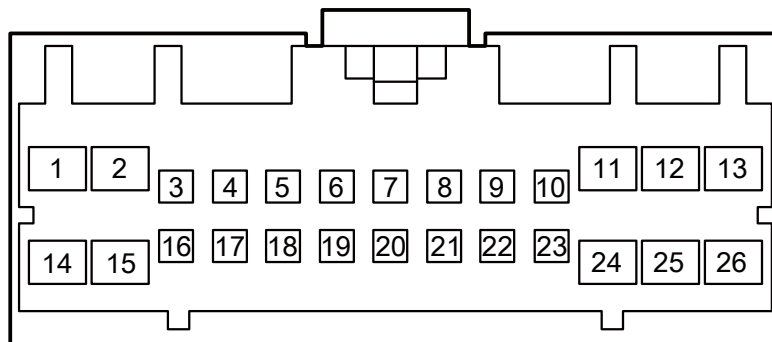
### 10.10.7.2 Routine inspection

- Check after-sales installations that may affect the power seat, to ensure that these devices cannot affect the power seat.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.10.7.3 List of the power seat terminals

#### SO92 seat module harness connector A

### SO92 Seat Module Harness Connector A



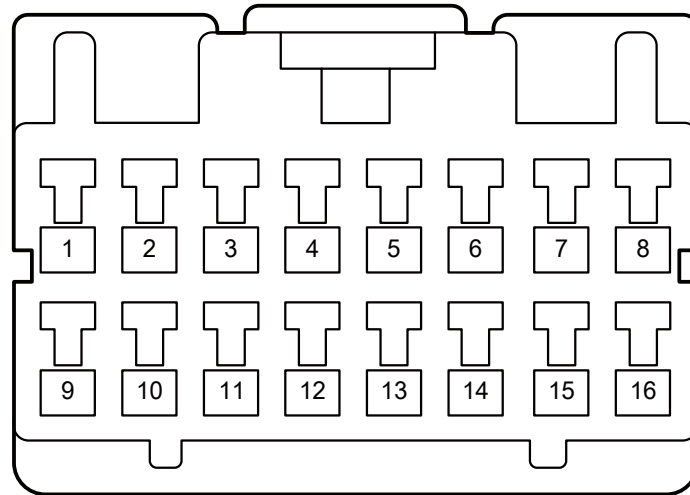
GE10-1460d

Terminal No.	Terminal name	Terminal description
1	Driver's seat lifting motor, recliner motor common terminal	Driver's seat lifting motor, recliner motor common terminal
2	Seat backrest adjusting power supply	Seat backrest adjustment battery power supply
3	-	-

Terminal No.	Terminal name	Terminal description
4	-	-
5	-	-
6	Driver's seat recliner motor Hall sensor signal	Driver's seat recliner motor Hall sensor signal input
7	-	-
8	Driver's seat lifting motor Hall sensor signal	Driver's seat lifting motor Hall sensor signal input
9	Driver's seat chute motor Hall sensor signal	Driver seat chute motor Hall sensor signal input
10	IG1 power supply	Seat module ACC\ON\START power supply
11	Driver's seat up-down adjustment signal	Driver's seat up-down adjustment signal output
12	Driver's seat level adjustment signal	Driver's seat level adjustment signal output
13	-	-
14	Driver's seat backrest adjustment signal	Driver's seat backrest adjustment signal output
15	Ground connection	Seat module grounding circuit
16	-	-
17	-	-
18	-	-
19	-	-
20	-	-
21	Hall sensor grounding	Hall sensor analog ground
22	-	-
23	-	-
24	Ground connection	Seat module grounding circuit
25	Seat level, up and down adjustment power supply	Seat level, up and down adjustment battery power supply
26	Common terminal of driver seat chute motor	Common terminal of driver seat chute motor

SO93 seat module harness connector B

SO93 Seat Module Harness Connector B

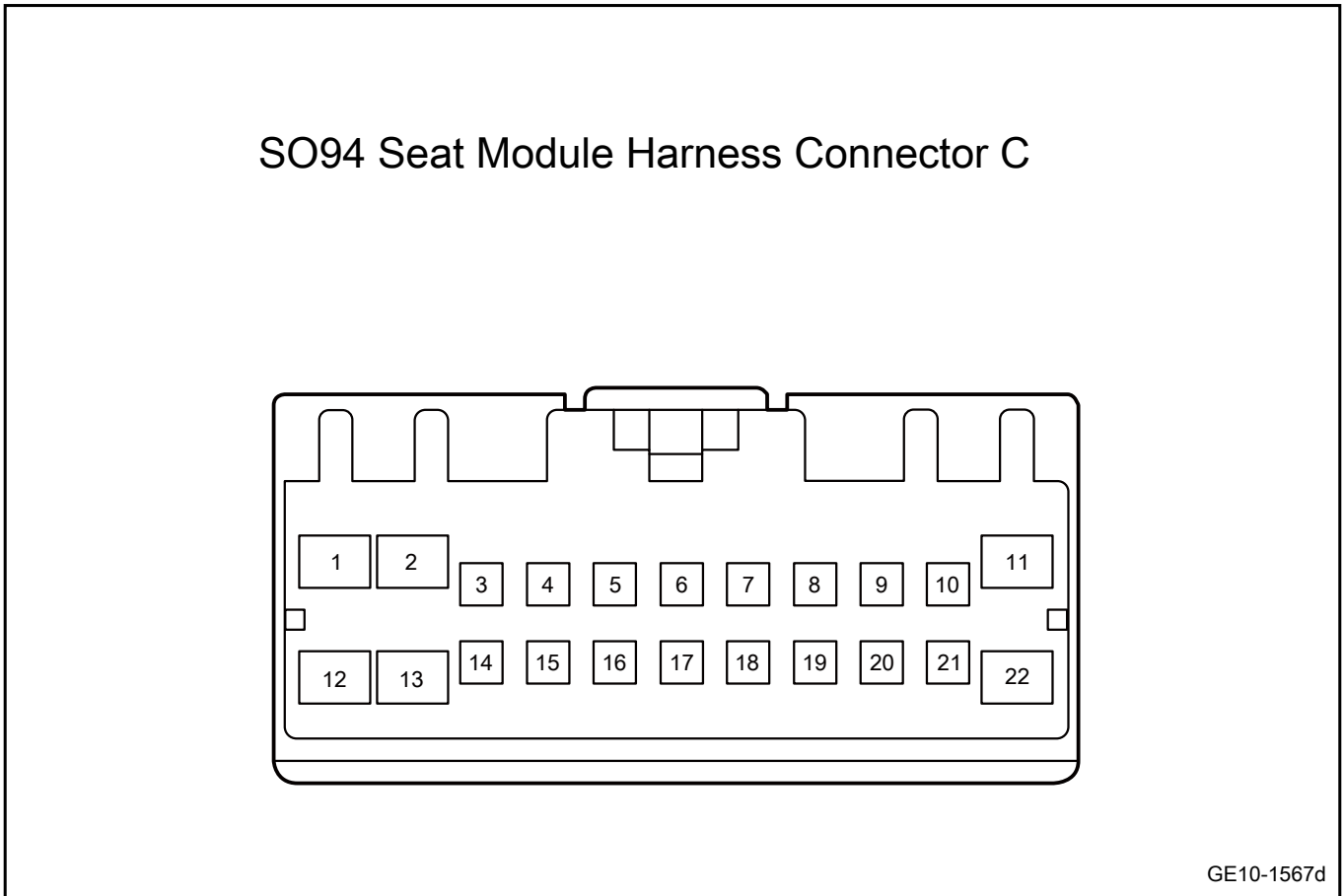


GE10-1566d

Terminal No.	Terminal name	Terminal description
1	CF CAN-L	Infotainment CAN low line
2	CF CAN-H	Infotainment CAN high line
3	Driver's side exterior mirror up and down position signal	Up and down position signal input of driver side exterior rearview mirror
4	Left and right position signal of front passenger side exterior mirror	Left and right position signal input of front passenger side exterior rearview mirror
5	Up and down adjustment motor of driver side exterior rearview mirrors	Up and down adjustment motor control signal output of driver side exterior rearview mirror
6	Up and down adjustment motor of front passenger side exterior rearview mirrors	Up and down adjustment motor control signal output of front passenger side exterior rearview mirror
7	Left and right adjustment motor for driver's side mirror	Left and right adjustment motor control signal output of driver side exterior rearview mirror
8	Exterior mirror sensor power supply	Exterior mirror sensor power supply

Terminal No.	Terminal name	Terminal description
9	-	-
10	-	-
11	Left and right position signal of driver's side mirror	Left and right position signal input of driver's side mirror
12	Front passenger side exterior rearview mirror up and down position signal	Front passenger side exterior rearview mirror up and down position signal input
13	Common terminal of driver side exterior rearview mirror motor	Common terminal of driver side exterior rearview mirror motor
14	Front passenger side exterior rearview mirror left and right adjustment motor	Left and right adjustment motor control signal output of front passenger side exterior rearview mirror
15	Common terminal of front passenger side exterior rearview mirror motor	Common terminal of front passenger side exterior rearview mirror motor
16	Exterior rearview mirror sensor grounding	Exterior mirror sensor analog grounding

**SO94 seat module harness connector C**

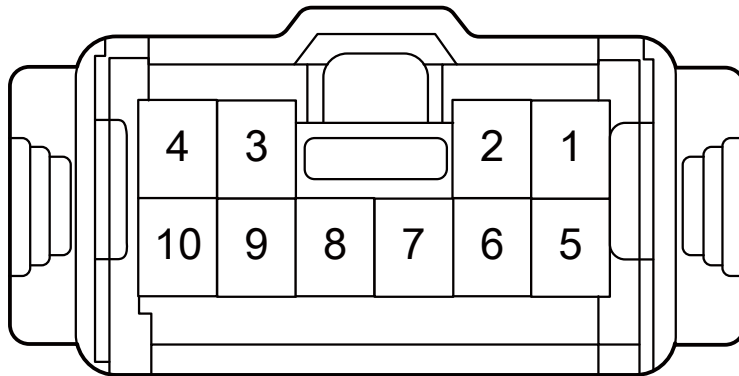




Terminal No.	Terminal name	Terminal description
1	Driver's seat heating power supply	Driver's seat heating power supply
2	Front passenger seat heating power supply	Front passenger seat heating power supply
3	-	-
4	Driver's seat heating sensor positive	Driver's seat heating sensor signal (positive signal)
5	Front passenger seat heating sensor positive	Front passenger seat heating sensor signal (negative signal)
6	Front passenger side exterior rearview mirror left and right adjustment signal	Front passenger side exterior rearview mirror left and right adjustment signal input
7	Driver's seat lifting motor adjustment switch signal	Driver's seat lifting motor adjustment switch signal input
8	Driver's seat chute motor adjustment switch signal	Driver's seat chute motor adjustment switch signal input
9	Driver's seat recliner motor adjustment switch signal	Driver's seat recliner motor adjustment switch signal input
10	-	-
11	Driver's seat adjustment switch, heating sensor ground	Driver's seat heating sensor signal (negative signal)
12	Seat heating power supply	Seat module battery power supply
13	-	-
14	Common terminal for exterior rearview mirror adjustment	Common terminal for exterior rearview mirror adjustment
15	Driver's side mirror left and right adjustment signal	Left and right adjustment signal input of the driver's side rearview mirror
16	-	-
17	-	-
18	-	-
19	-	-
20	Up and down adjustment signals of front passenger side exterior rearview mirrors	Up and down adjustment signals input of front passenger side exterior rearview mirrors
21	Up and down adjustment signals of driver side exterior rearview mirrors	Up and down adjustment signals input of driver side exterior rearview mirrors
22	Ground connection	Seat module grounding circuit

## SO63f driver seat adjusting switch harness connector

SO63f harness connector of adjusting  
switch of driver seat

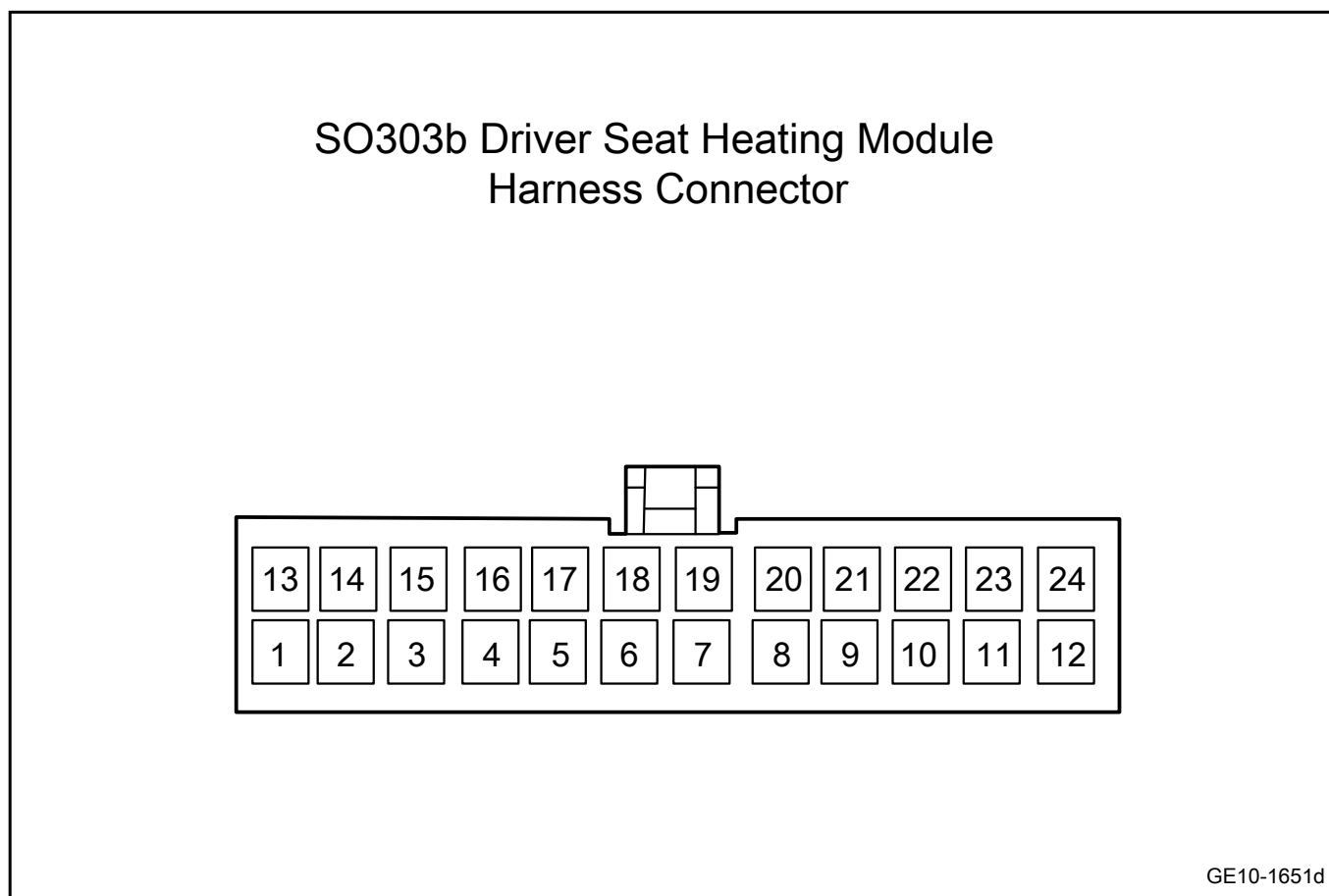


GE10-1575d

Terminal No.	Terminal name	Terminal description
1	-	-
2	Driver's seat lifting motor down	Driver's seat lifting motor down signal output
3	Ground connection	Driver's seat adjustment switch grounding circuit
4	ALT power supply	Driver's seat adjustment switch battery power supply
5	-	-
6	Driver's seat slide motor forward/switch ground (memory)	Driver's seat slide groove motor forward signal output/driver's seat adjustment switch analog grounding (memory)
7	Driver's seat recliner motor forward/level adjustment switch (memory)	Driver's seat recliner motor forward signal output/driver's seat front and rear adjustment signal output (memory)
8	Driver's seat recliner motor backward/up-down adjustment switch (memory)	Driver's seat recliner motor backward signal output/driver's seat height adjustment signal output (memory)

Terminal No.	Terminal name	Terminal description
9	Driver's seat lifting motor up/backrest adjustment switch (memory)	Driver's seat lifting motor up signal output/Driver's seat backrest adjustment signal output (memory)
10	Driver seat chute motor backward	Backward signal output of driver's seat chute motor

SO303b driver's seat heating module wiring harness connector



Terminal No.	Terminal name	Terminal description
1	ALT power supply	Driver's seat heating module battery power supply
2	-	-
3	Front passenger seat cushion heating sensor signal positive	Front passenger seat cushion heating sensor signal input
4	-	-
5	Driver's seat cushion heating sensor signal positive	Driver's seat cushion heating sensor signal input
6	-	-
7	-	-
8	-	-
9	-	-

Terminal No.	Terminal name	Terminal description
10	Front seat cushion heating sensor signal negative	Front seat cushion heating sensor signal input
11	Ground connection	Driver's seat heating module ground circuit
12	Ground connection	Driver's seat heating module ground circuit
13	ALT power supply	Driver's seat heating module battery power supply
14	-	-
15	Driver's seat cushion heating power supply	Driver's seat cushion heating control input
16	-	-
17	Front passenger seat cushion heating power supply	Front passenger seat cushion heating control input
18	-	-
19	-	-
20	-	-
21	-	-
22	CF CAN-H	Infotainment CAN high line
23	CF CAN-L	Infotainment CAN low line
24	-	-

#### 10.10.7.4 Fault symptom table

Symptom	Possibility and cause	Measures
Seat module power failure	1. harness and connectors	See <a href="#">Seat Module Power Failure</a>
	2. Fuse	
	3. Seat module	
Seat module communication failure	1. harness and connectors	See <a href="#">Seat Module Communication Failure</a>
	2. Gateway	
	3. Seat module	
The driver's power seat cannot be adjusted back and forth	1. harness and connectors	See <a href="#">Driver's Power Seat Cannot be Adjusted Back and Forth</a>
	2. Driver seat slide motor	
	3. Driver seat adjustment switch	
The driver's power seat height cannot be adjusted	1. harness and connectors	See <a href="#">Driver's Power Seat Height Cannot be Adjusted</a>
	2. Driver seat lifting motor	
	3. Driver seat adjustment switch	
The backrest of the driver's power seat cannot be adjusted	1. harness and connectors	See <a href="#">Backrest of the Driver's Power Seat Cannot Be Adjusted</a>
	2. Driver seat angle adjuster motor	
	3. Driver seat adjustment switch	
Driver's seat heating failure	1. harness and connectors	See <a href="#">Driver's Seat Heating Failure</a>
	2. The driver's seat cushion is heated	
	3. Driver's seat heating module	

Symptom	Possibility and cause	Measures
Front passenger seat heating failure	1. harness and connectors	See <a href="#">Front Passenger Seat Heating Failure</a>
	2. Front passenger seat cushion heating	
	3. Driver's seat heating module	
Driver side exterior rearview mirror cannot be adjusted (with memory module)	1. harness and connectors	Refer to <a href="#">Driver side exterior rearview mirror cannot be adjusted (with memory module)</a>
	2. Exterior rearview mirror at driver side	
	3. Seat module	
Front passenger side exterior rearview mirror cannot be adjusted (with memory module)	1. harness and connectors	Refer to <a href="#">Front passenger side exterior rearview mirror cannot be adjusted (with memory module)</a>
	2. Exterior rearview mirror at front passenger side	
	3. Seat module	
The driver's power seat cannot be adjusted back and forth (with memory function)	1. harness and connectors	See <a href="#">Driver's Power Seat Cannot Be Adjusted Back and Forth (with memory function)</a>
	2. Driver seat slide motor	
	3. Adjusting switch outside the driver seat	
	4. Seat module	
Driver's electric seat height cannot be adjusted (with memory function)	1. harness and connectors	See <a href="#">Driver's Electric Seat Height Cannot Be Adjusted (with memory function)</a>
	2. Driver seat lifting motor	
	3. Adjusting switch outside the driver seat	
	4. Seat module	
The backrest of the driver's power seat cannot be adjusted (with memory function)	1. harness and connectors	See <a href="#">Backrest of the Driver's Power Seat Cannot Be Adjusted (with memory function)</a>
	2. Driver seat angle adjuster motor	
	3. Adjusting switch outside the driver seat	
	4. Seat module	
The front passenger electric seat cannot be adjusted back and forth (with memory function)	1. harness and connectors	See <a href="#">Front Passenger Electric Seat Cannot Be Adjusted Back and Forth (with memory function)</a>
	2. Front passenger seat chute motor	
	3. Front passenger seat adjusting switch	
The backrest of the front passenger electric seat cannot be adjusted (with memory function)	1. harness and connectors	See <a href="#">Front Passenger Electric Seat Backrest Cannot be Adjusted (with memory function)</a>
	2. Angle adjuster motor of front passenger seat	
	3. Front passenger seat adjusting switch	
Driver's seat heating failure (with memory function)	1. harness and connectors	See <a href="#">Driver's Seat Heating Failure (with memory function)</a>
	2. The driver's seat cushion is heated	
	3. Seat module	
Front passenger seat heating failure (with memory function)	1. harness and connectors	See <a href="#">Front Passenger Seat Heating Failure (with memory function)</a>
	2. Front passenger seat cushion heating	
	3. Seat module	

### 10.10.7.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B130029	Hall signal failure of seat height motor	See <a href="#">Driver's Electric Seat Height Cannot Be Adjusted (with memory function)</a>
B130054	Seat height motor is not calibrated	
B130077	The calibration path of the seat height motor is wrong	
B130A29	Seat height switch signal is invalid	
B130B07	Seat height up switch stuck	
B130C07	Seat height down switch stuck	
B130129	Hall signal failure of the back-forth adjusting motor of the seat	See <a href="#">Driver's Power Seat Cannot Be Adjusted Back and Forth (with memory function)</a>
B130154	The back-forth adjusting motor of the seat is not calibrated	
B130177	The calibration path of the back-forth adjusting motor of the seat is wrong	
B130D29	The seat's back-forth switch signals are invalid	
B130E07	The seat's forth-adjusting switch is stuck	
B130F07	The seat's back-adjusting switch is stuck	
B130229	Hall signal failure of seat backrest motor	See <a href="#">Backrest of the Driver's Power Seat Cannot Be Adjusted (with memory function)</a>
B130254	The seat backrest motor is not calibrated	
B130277	The calibration path of the seat backrest motor is wrong	
B131029	Invalid seat backrest switch signal	
B131107	Front seat backrest forth-adjusting switch is stuck	
B131207	The seat back back-adjusting switch is stuck	
B130677	The driver's rearview mirror up and down position potentiometer signal is out of range	Refer to <a href="#">Driver side exterior rearview mirror cannot be adjusted (with memory module)</a>
B130777	Driver's rearview mirror left and right position potentiometer signal is out of range	
B133907	Left rearview mirror leftward adjustment switch stuck	
B133A07	Left rearview mirror rightward adjustment switch stuck	

Diagnostic Trouble Code	Description	Fault location/elimination method	
B133B07	Left rearview mirror upward adjustment switch stuck	Refer to <a href="#">Front passenger side exterior rearview mirror cannot be adjusted (with memory module)</a>	
B133C07	Left rearview mirror downward adjustment switch stuck		
B130877	The signal of the potentiometer of the up and down position of the passenger rearview mirror is out of range		
B130977	The signal of the left and right position potentiometer of passenger rearview mirror is out of range		
B133D07	Right rearview mirror leftward adjustment switch stuck		
B133E07	Right rearview mirror rightward adjustment switch stuck		
B133F07	Right rearview mirror upward adjustment switch stuck		
B134007	Right rearview mirror downward adjustment switch stuck		
U300116	Controller voltage is low.		See <a href="#">Seat Module Power Failure</a>
U300117	Controller voltage is high.		
U021487	Communication with PEPS is lost	See <a href="#">Seat Module Communication Failure</a>	
U014087	Communication with BCM is lost		
U015587	Communication with IPK is lost		
U111487	Communication with VCU is lost		
U012287	Communication with ESC is lost		
U019887	Communication with T_BOX is lost		
U016487	Communication with AC is lost		
U015687	MMI_DSCU_Command lost communication		
U007300	CAN Bus closed	See <a href="#">Driver's Seat Heating Failure (with memory function)</a>	
B180011	Driver's seat heating high-end output is shorted to ground		
B180013	Driver's seat heating high-end output open circuit		
B180411	Driver's seat heating temperature sensor is short-circuited to ground		
B180413	Driver's seat heating temperature sensor is short-circuited to power or open circuit		

Diagnostic Trouble Code	Description	Fault location/elimination method
B180111	The high-end output of the front passenger seat heating is short-circuited to ground	See <a href="#">Passenger Seat Heating Failure</a> See <a href="#">Front Passenger Seat Heating Failure (with memory function)</a>
B180113	Front passenger seat heating high-end output open circuit	
B180511	Front passenger seat heating temperature sensor is short-circuited to ground	
B180513	Front passenger seat heating temperature sensor is short-circuited to power or open circuit	

### 10.10.7.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.10.7.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.



### 10.10.7.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU voltage	0-25.4V	V
2	Vehicle speed	0-460.6875	km/h
3	Fault times	0-255	time
4	Mileage before the first fault	-	Km
5	Mileage before the last fault	-	Km
6	Seat forth-back switch status	Neutral/forward/backward	-
7	Seat height switch status	Neutral/up/down	-
8	Seat backrest switch status	Neutral/forward/backward	-
9	Driver's seat heating status	0-7	-
10	Passenger's seat heating status	0-7	-

### 10.10.7.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by DSCU can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- Operate the start-and-stop switch to place the power in mode "OFF".
- Connect the scan tool.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Select “DSCU”/“action test”.
- Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Driver's seat heating control	Driver's seat heater	ON/OFF
Front passenger seat heating control	Front passenger seat heater	ON/OFF
Seat forth-back adjustment output control	Driver's seat chute motor	Forward/backward
Seat height adjustment output control	Driver's seat lift motor	Upward/downward
Seat backrest adjustment output control	Driver's seat angle adjuster motor	Forward/backward
Left rearview mirror adjustment output control	Left exterior rearview mirror	Left/right/up/down
Right rearview mirror adjustment output control	Right exterior rearview mirror	Left/right/up/down

10.10.7.10 Seat module power failure

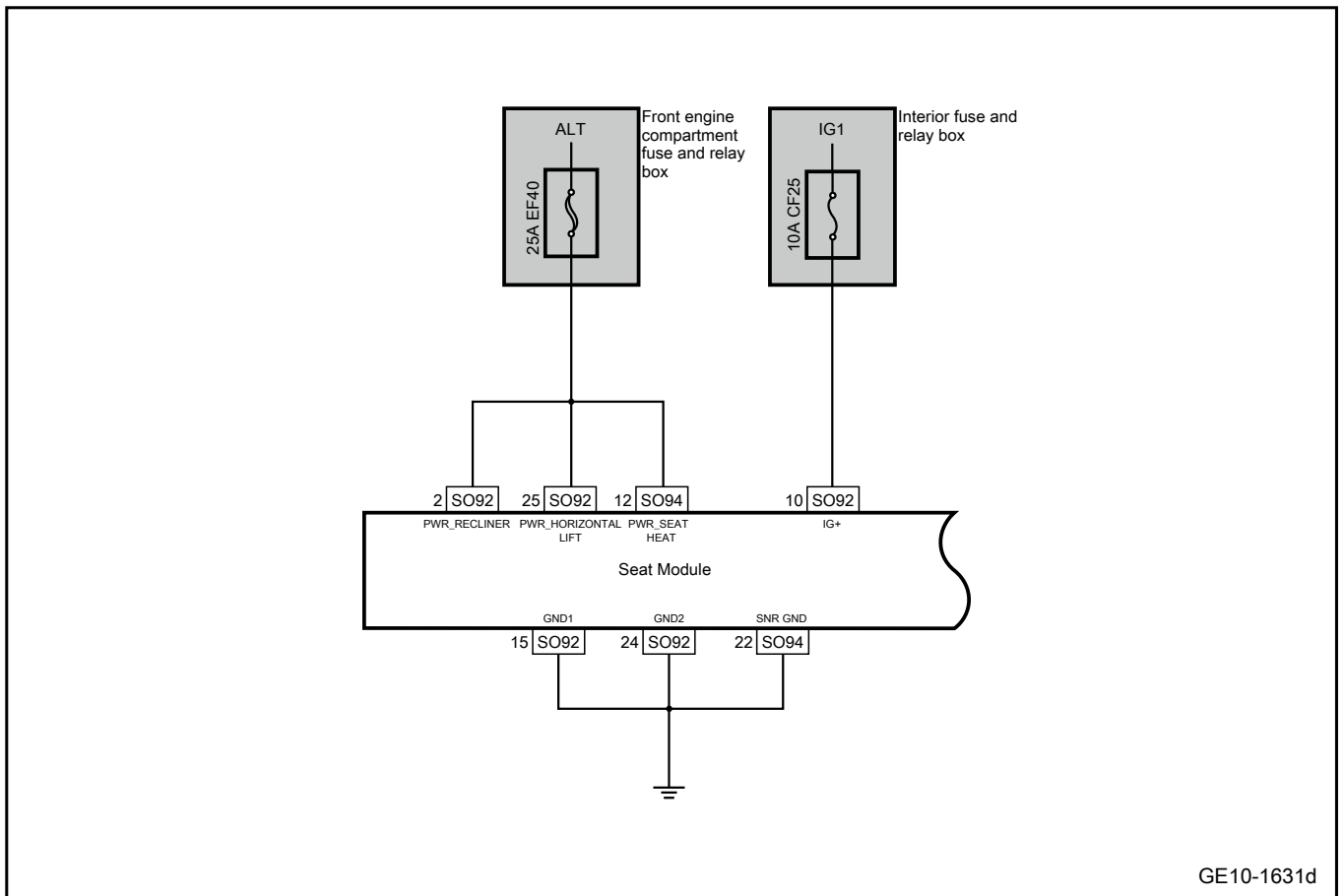
1. DTC description:

Diagnostic Trouble Code	Description
U300116	Controller voltage is low.
U300117	Controller voltage is high.

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300116	Input voltage <9V keeps above 1S	1. The ignition state is ignition on (3 seconds after ignition) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started	1. Battery 2. Harness 3. Seat module 4. Fuse
U300117	Input voltage >16V keeps above 1S		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the seat module for signs of damage, deformation, stain, loosening, etc.
- B. Check the seat module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Check the seat module fuse.
--------	-----------------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the interior fuse box fuse CF25, and check whether the fuse CF25 is blown out.  
Rated fuse capacity: 10A
- C. Pull out the fuse EF40 of the front engine bay. Check whether the fuse EF40 is blown.  
Rated fuse capacity: 25A

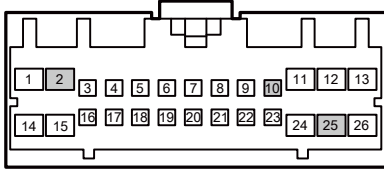
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

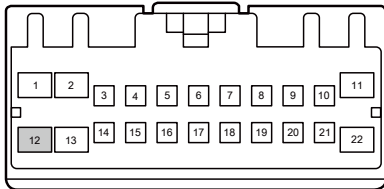
Step 4	Check whether the seat module's working voltage is normal.
--------	--

**SO92 Seat Module Harness Connector A**



GE10-1680d

**SO94 Seat Module Harness Connector C**



GE10-1681d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connectors SO92 and SO94.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO92(2)	Vehicle body is grounded.	Standard voltage: 11-14V
SO92(10)		
SO94(12)		
SO92(25)		

- E. Confirm whether the measured value meets the standard.

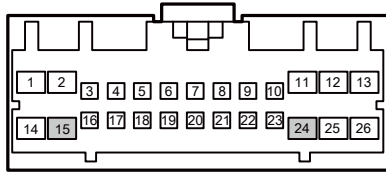
No

Repair or replace the harness.

Yes

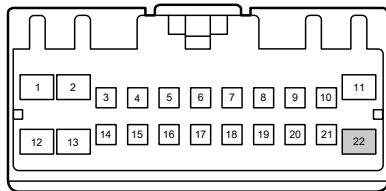
**Step 5** | Check whether the grounding harness of seat module is normal.

**SO92 Seat Module Harness Connector A**



GE10-1682d

**SO94 Seat Module Harness Connector C**



GE10-1683d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the seat module harness connectors SO92 and SO94.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO92(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO94(22)		
SO92(24)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the seat module.

- A. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

**Step 7** Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 10.10.7.11 Seat module communication failure

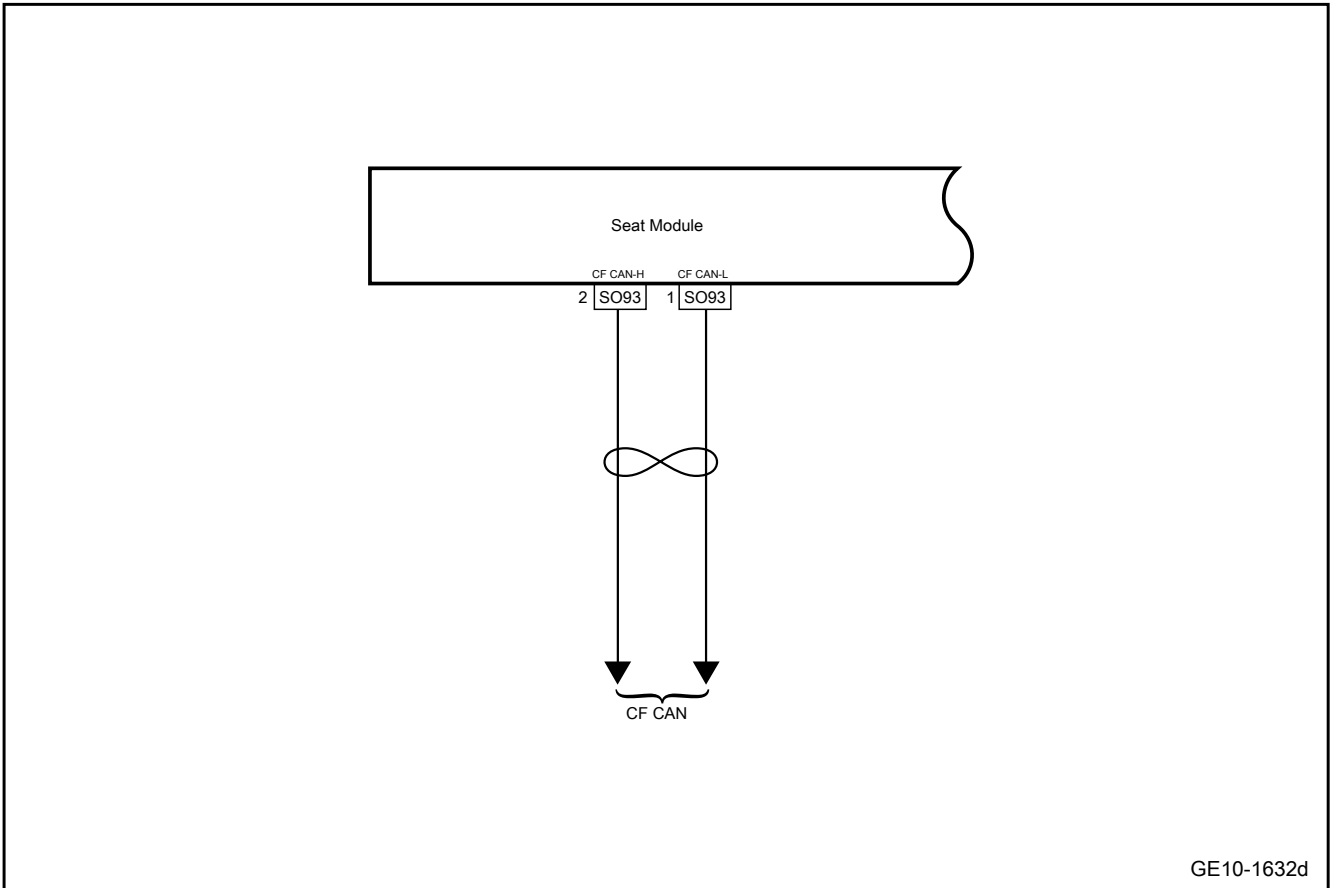
1. DTC description:

Diagnostic Trouble Code	Description
U021487	Communication with PEPS is lost
U014087	Communication with BCM is lost
U015587	Communication with IPK is lost
U111487	Communication with VCU is lost
U012287	Communication with ESC is lost
U019887	Communication with T_BOX is lost
U016487	Communication with AC is lost
U015687	MMI_DSCU_Command lost communication
U007300	CAN Bus closed

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U021487	Frame loss detected ID= 0x1E2 or 0x272) (defined in CMX)	1. There are currently no DTC for voltage levels (high level and low level) 2. No bus disconnection is detected 3. UDS\$85 control DTC settings (status diagnosis) 4. The ignition state is ignition on (3 seconds after ignition) 5. Communication Rx enabling status 6. Diagnostic offline configuration is valid (\$F110 PEPS enabled) 7. Not started	1. Circuit 2. Seat module 3. Diagnostic interface
U014087	Frame loss detected ID= 0x285) (see CMX for definition)		
U015587	Frame loss detected ID= 0x3F1) (see CMX for definition)		
U111487	Frame loss detected ID= 0x165 or 0x162 or 0x1A5) (see CMX for definition)		
U012287	Frame loss detected ID= 0x125) (see CMX for definition)		
U019887	Frame loss detected ID= 0x292) (defined in CMX)		
U016487	Frame loss detected ID= 0x2F1) (see CMX for definition)		
U015687	Frame loss detected (ID= 0x2A7 or 2A3 or 2A2) (defined in CMX)		
U007300	The bus off counter cL1 to L2 is equal to 10 (10 consecutive bus off)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the seat module for signs of damage, deformation, stain, loosening, etc.
- B. Check the seat module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.



Yes

Step 3 Check the CF-CAN network integrity.

- A. Perform CF CAN network integrity check, refer to [CF CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the seat module.

- A. Check the seat module power supply harness and grounding harness, see [Seat Module Power Supply Failure](#)
- B. To replace the seat module, see [Replacement of the Seat Module](#)

Next Step

Step 5 Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

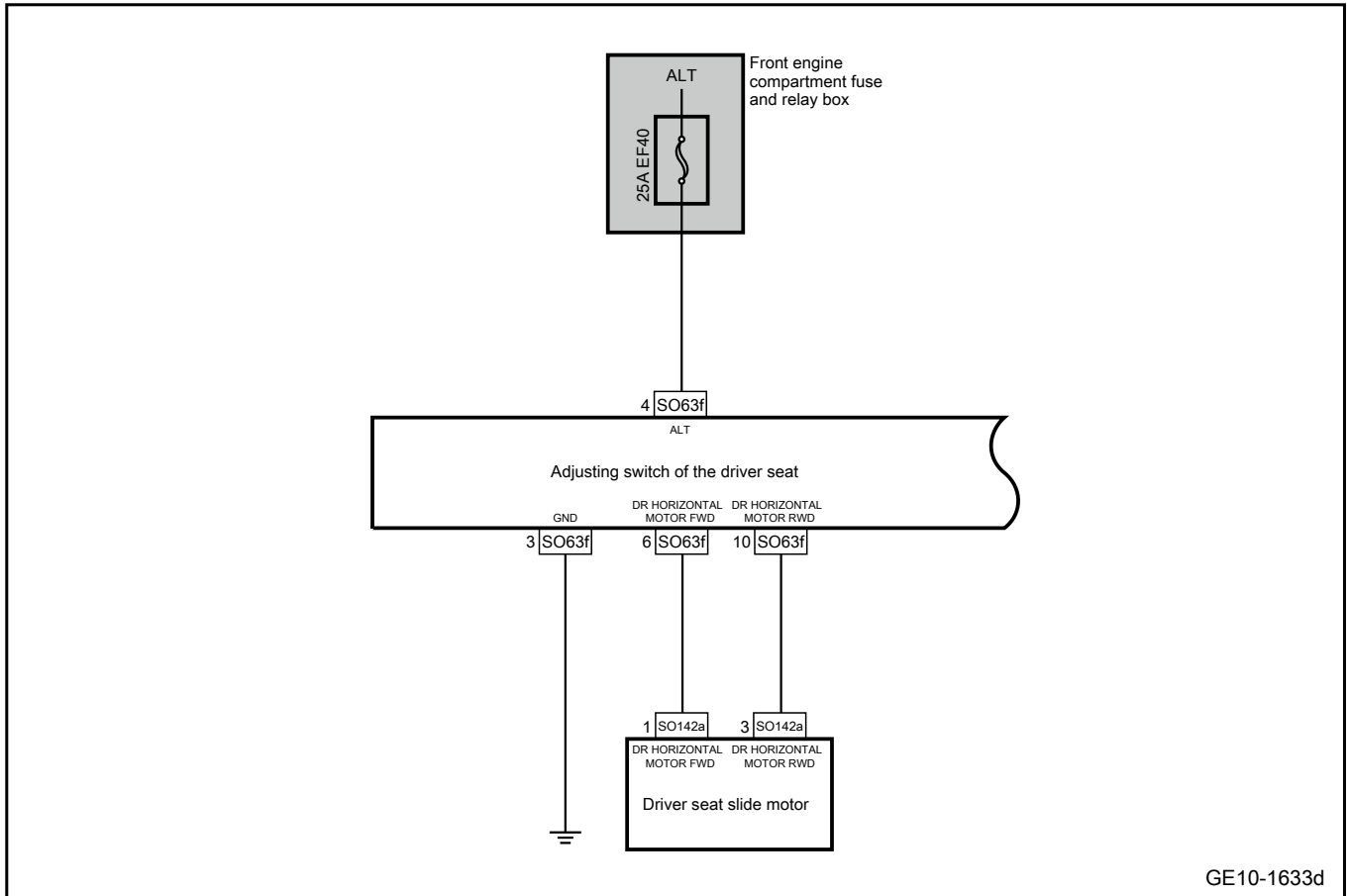
Diagnose according to the output trouble code.

No

Step 7 System is normal.

10.10.7.12 The driver’s power seat cannot be adjusted back and forth

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the driver's seat chute motor and driver's seat adjustment switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver's seat chute motor, and the driver's seat adjusting switch harness connector for signs of damage, deformation, stains, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF40 of the front engine bay. Check whether the fuse EF40 is blown.

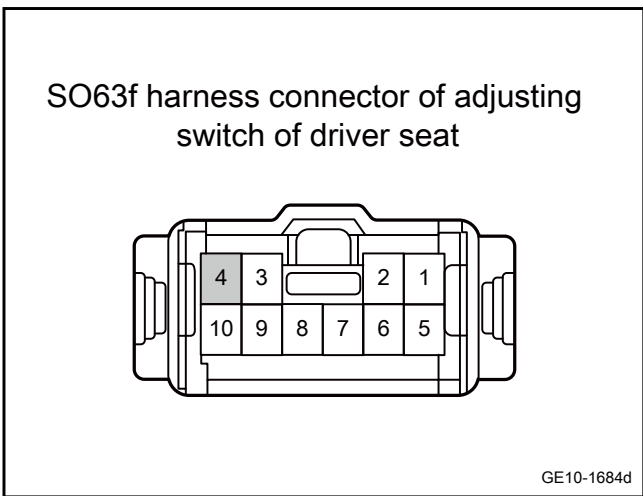
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the operating voltage of the driver's seat adjustment switch is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(4)	Vehicle body is grounded.	Standard voltage: 11-14V

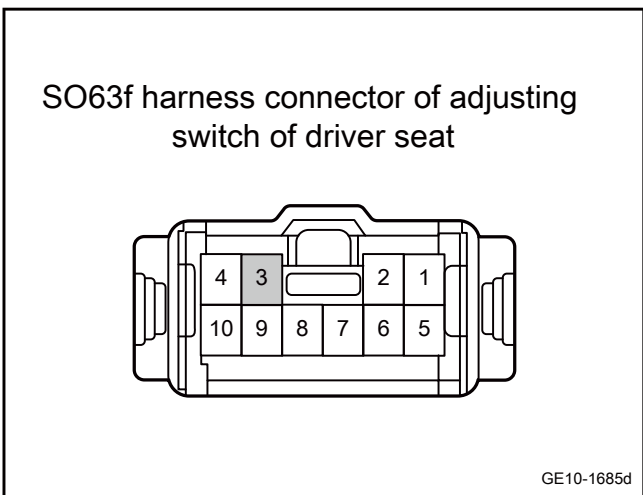
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the driver seat adjustment switch is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

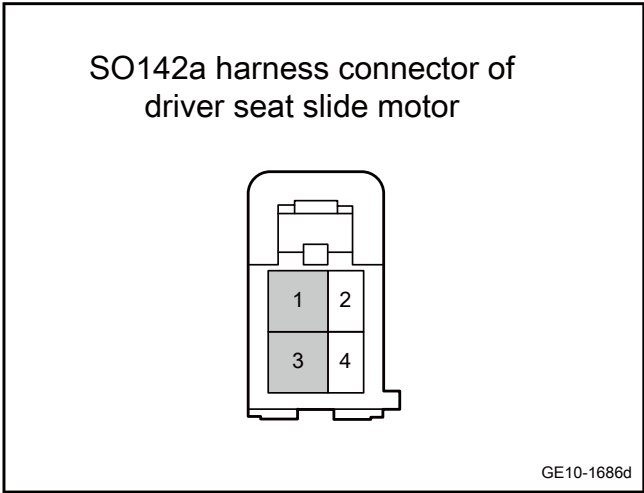
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

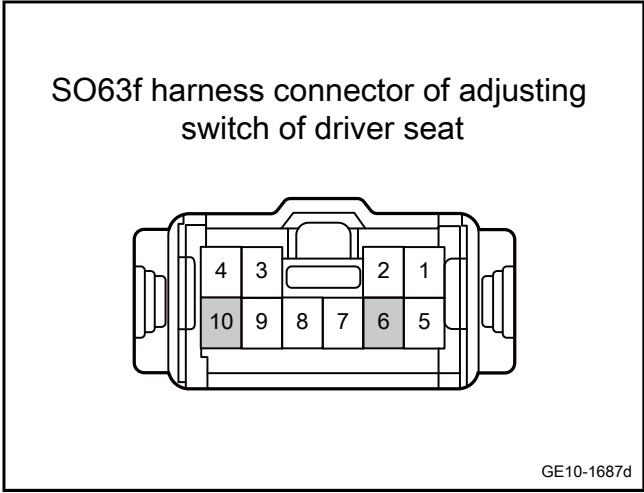
Yes

**Step 5** Check whether the circuit between driver seat chute motor and driver seat adjustment switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	SO63f(6)	Standard resistance: less than 1Ω
SO142a(3)	SO63f(10)	



- E. Confirm whether the measured value meets the standard.

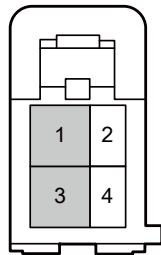
No

Repair or replace the harness.

Yes

**Step 6** Check whether the harness between driver seat chute motor and driver seat adjustment switch is short to power supply.

SO142a harness connector of driver seat slide motor



GE10-1688d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO142a(3)		

- F. Confirm whether the measured value meets the standard.

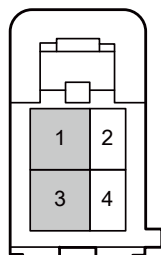
No

Repair or replace the harness.

Yes

Step 7 Check whether the harness between the driver seat chute motor and driver seat adjustment switch is short to GND.

SO142a harness connector of driver seat slide motor



GE10-1689d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO142a(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace chute motor of driver seat.

- A. Replace chute motor of driver seat. Refer to [Replacement of driver seat chute motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 9 Replace the driver seat adjustment switch.

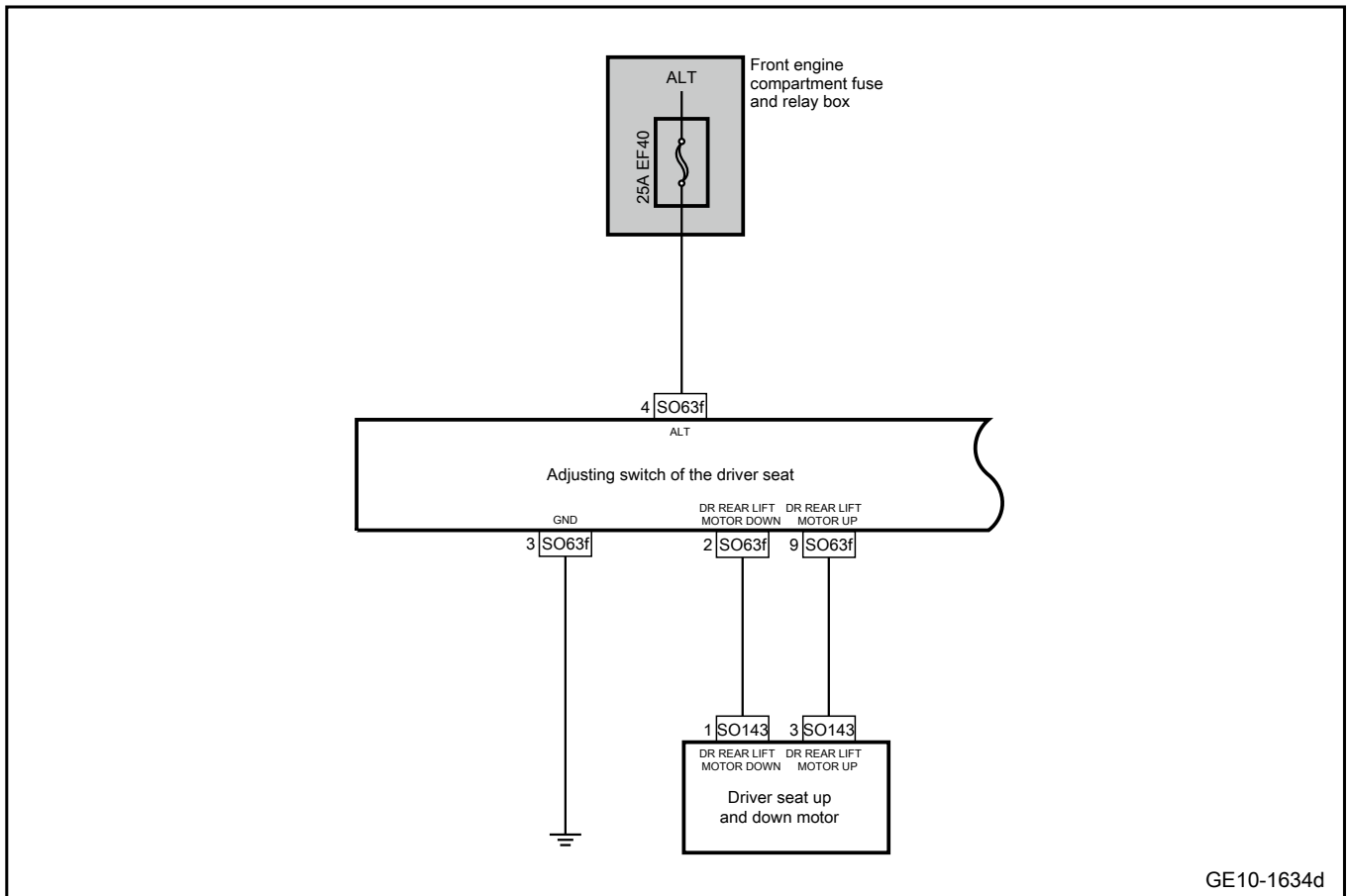
- A. Replace the driver seat adjustment switch. Refer to [Replacement of driver seat adjustment switch](#)

Next Step

Step 10 System is normal.

### 10.10.7.13 The driver's power seat height cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the driver's seat lifting motor and driver's seat adjustment switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver's seat lifting motor, and the driver's seat adjusting switch harness connector for signs of damage, deformation, stains, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF40 of the front engine bay. Check whether the fuse EF40 is blown.

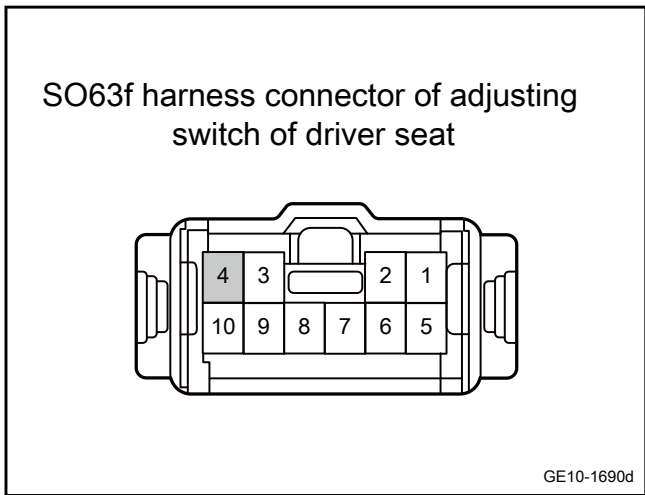
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3	Check whether the operating voltage of the driver's seat adjustment switch is normal.
--------	---



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(4)	Vehicle body is grounded.	Standard voltage: 11-14V

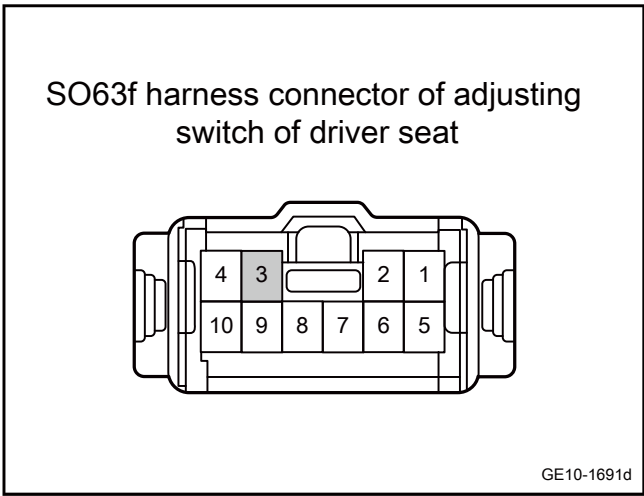
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the driver seat adjustment switch is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

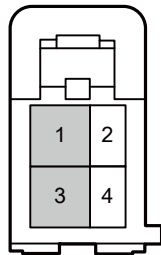
No → **Repair or replace the harness.**

Yes

**Step 5** Check whether the circuit between driver seat lifting motor and driver seat adjustment switch is open.

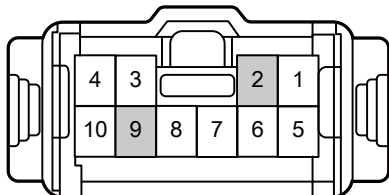


SO143 harness connector of driver seat slide lifting motor



GE10-1692d

SO63f harness connector of adjusting switch of driver seat



GE10-1693d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	SO63f(2)	Standard resistance: less than 1Ω
SO143(3)	SO63f(9)	

- E. Confirm whether the measured value meets the standard.

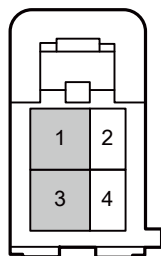
No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the driver seat lifting motor and the driver seat adjustment switch is short to power supply.

SO143 harness connector of driver seat slide lifting motor



GE10-1694d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard voltage: 0V
SO143(3)		

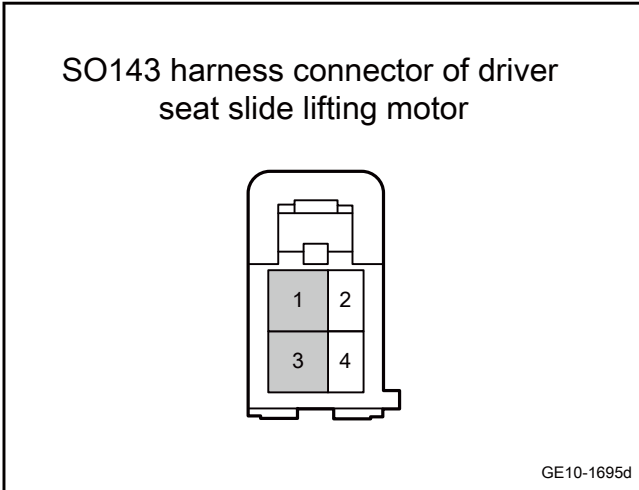
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Check whether the harness between the driver seat lifting motor and the driver seat adjustment switch is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO143(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Replace driver seat lifting motor.

- A. Replace driver seat lifting motor. Refer to [Replacement of driver seat lifting motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 9** Replace the driver seat adjustment switch.

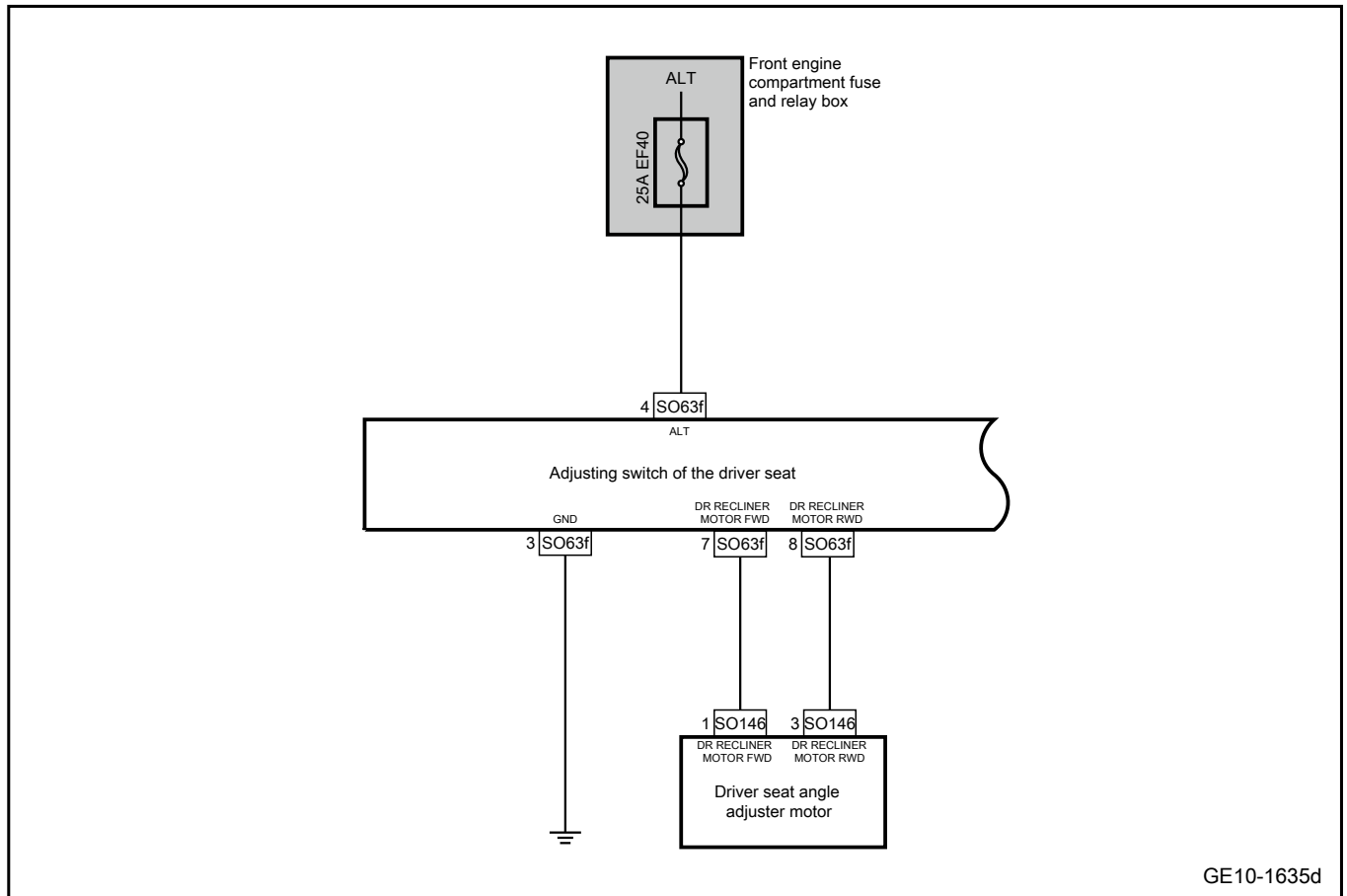
- A. Replace the driver seat adjustment switch. Refer to [Replacement of driver seat adjustment switch](#)

Next Step

**Step 10** System is normal.

10.10.7.14 The backrest of the driver's power seat cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the driver's seat recliner motor and driver's seat adjustment switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver's seat recliner motor and the driver's seat adjustment switch harness connectors for signs of damage, poor contact, aging, looseness and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF40 of the front engine bay. Check whether the fuse EF40 is blown.

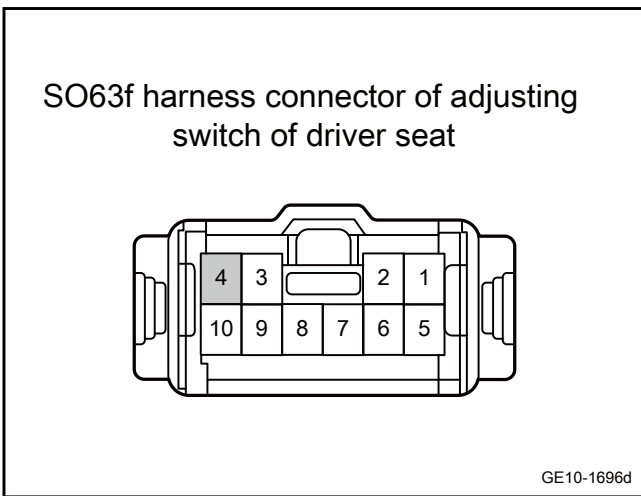
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 3** Check whether the operating voltage of the driver's seat adjustment switch is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(4)	Vehicle body is grounded.	Standard voltage: 11-14V

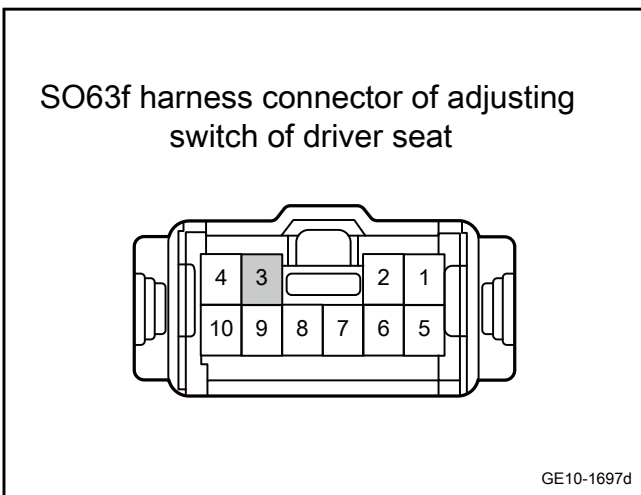
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the grounding harness of the driver seat adjustment switch is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat adjustment switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

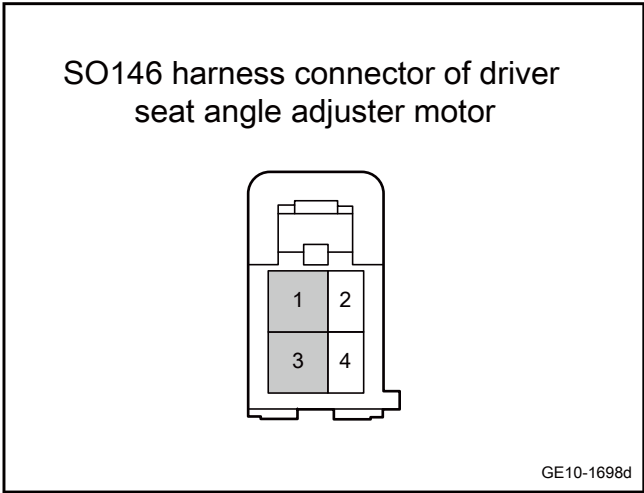
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

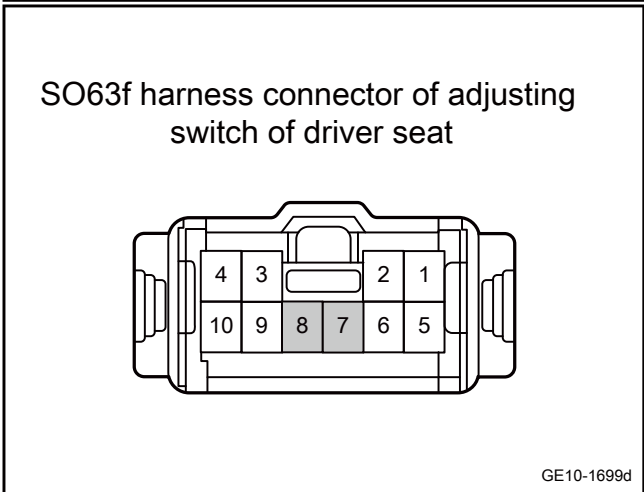
Yes

**Step 5** Check whether the circuit between driver seat angle adjuster motor and driver seat adjustment switch is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	SO63f(7)	Standard resistance: less than 1Ω
SO146(3)	SO63f(8)	



- E. Confirm whether the measured value meets the standard.

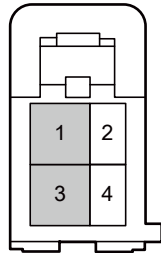
No

Repair or replace the harness.

Yes

**Step 6** Check whether the harness between driver seat angle adjuster motor and driver seat adjustment switch is short to power supply.

SO146 harness connector of driver seat angle adjuster motor



GE10-1700d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard voltage: 0V
SO146(3)		

- F. Confirm whether the measured value meets the standard.

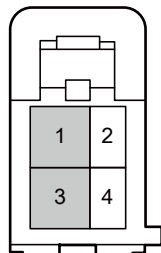
No

Repair or replace the harness.

Yes

Step 7 Check whether the harness between driver seat angle adjuster motor and driver seat adjustment switch is short to ground.

SO146 harness connector of driver seat angle adjuster motor



GE10-1701d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO146(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace the driver seat angle adjuster motor

- A. Replace the driver seat angle adjuster motor Refer to [Replacement of driver seat angle adjuster motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 9 Replace the driver seat adjustment switch.

- A. Replace the driver seat adjustment switch. Refer to [Replacement of driver seat adjustment switch](#)

Next Step

Step 10 System is normal.

### 10.10.7.15 Driver's seat heating failure

1. DTC description:

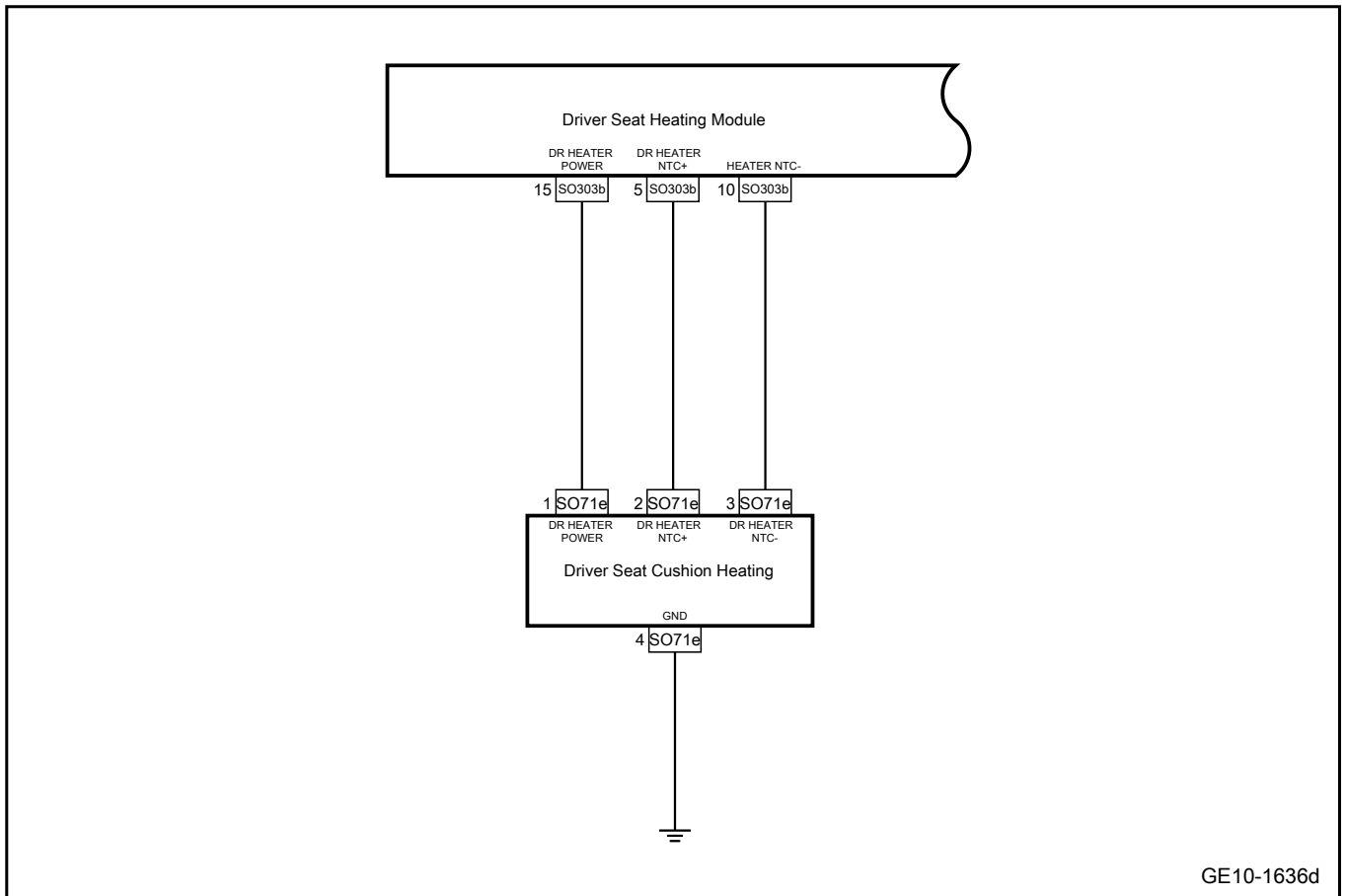
Diagnostic Trouble Code	Description
B180011	Driver's seat heating high-end output is shorted to ground
B180013	Driver's seat heating high-end output open circuit
B180411	Driver's seat heating temperature sensor is short-circuited to ground
B180413	Driver's seat heating temperature sensor is short-circuited to power or open circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180011	Keep the high-pressure side of the driver's seat cushion heater short-circuited to ground for more than 500 milliseconds	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Working status of passenger seat heater	1. The driver's seat cushion is heated 2. Harness 3. Driver's seat heating module
B180013	Keep the high-pressure side of the driver's seat cushion heater open and loaded for more than 2000 milliseconds		
B180411	Driver's seat cushion heater temperature sensor port is short-circuited to ground for more than 2000 milliseconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180413	1. The driver's seat cushion heater temperature sensor port is short-circuited to the power supply for more than 2000 milliseconds 2. The driver's seat cushion heater temperature sensor port is open and loaded for more than 2000 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.



No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the driver's seat heating module and the driver's seat cushion heater for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver's seat heating module and the driver's seat cushion heating harness connector for damage, poor contact, aging, looseness and other signs.
- C. Confirm whether the above items are normal.

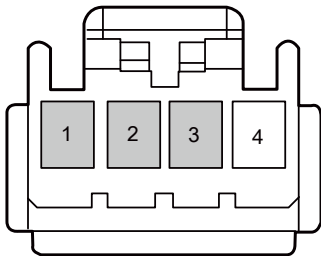
No

Repair or replace the faulty part.

Yes

Step 3 Check whether the wiring harness between the driver's seat cushion heater and the driver's seat heating module is open circuited.

SO71e Driver Seat Heating Harness Connector



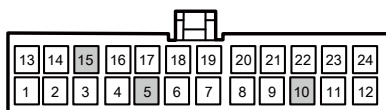
GE10-1702d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	SO303b(15)	Standard resistance: less than 1Ω
SO71e(2)	SO303b(5)	
SO71e(3)	SO303b(10)	

- E. Confirm whether the measured value meets the standard.

SO303b Driver Seat Heating Module Harness Connector



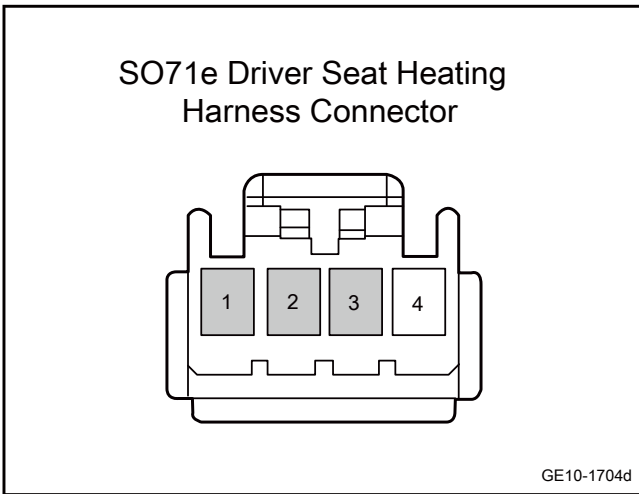
GE10-1703d

No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the driver's seat cushion heater and the driver's seat heating module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard voltage: 0V
SO71e(2)		
SO71e(3)		

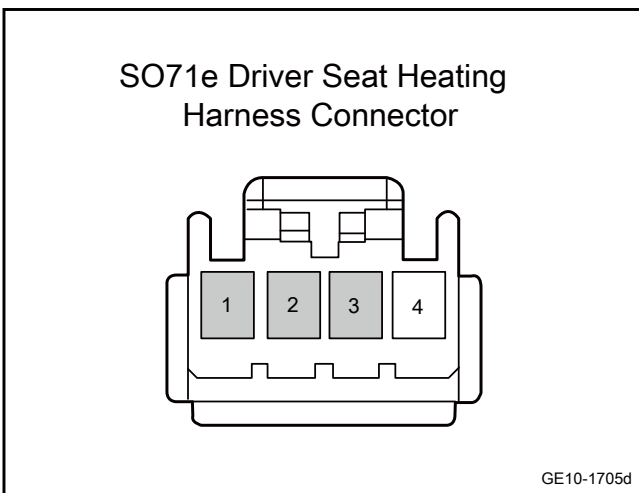
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the driver's seat cushion heater and the driver's seat heating module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO71e(2)		
SO71e(3)		

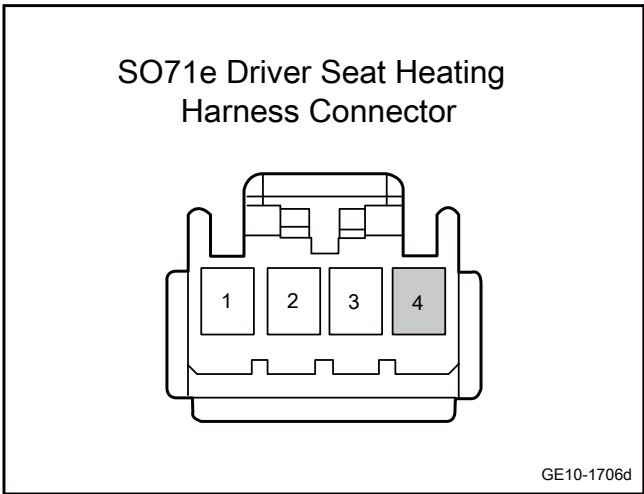
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the driver's seat cushion heater grounding harness is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the driver's seat cushion heater.

- A. Replace the driver's seat cushion heater. See [Replacement of Driver's Seat Cushion Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 8** Replace the driver's seat heating module.

- A. Replace the driver's seat heating module. See [Replacement of the Driver's Seat Heating Module](#)

Next Step

**Step 9** Reprogram and reset the driver's seat heating module.

- A. Reprogram and reset the driver's seat heating module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 10.10.7.16 Front passenger seat heating failure

#### 1. DTC description:

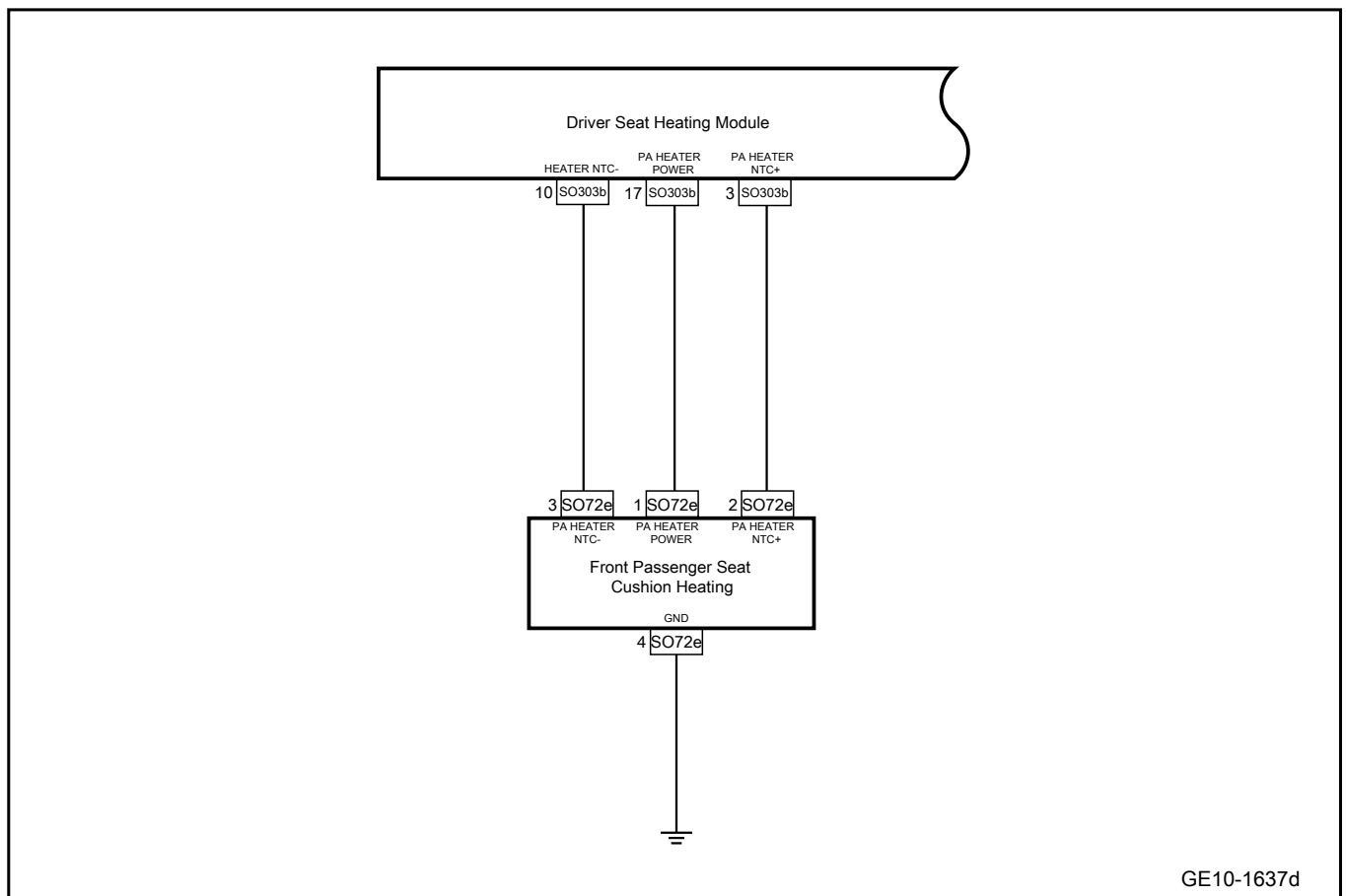
Diagnostic Trouble Code	Description
B180111	The high-end output of the front passenger seat heating is short-circuited to ground
B180113	Front passenger seat heating high-end output open circuit
B180511	Front passenger seat heating temperature sensor is short-circuited to ground
B180513	Front passenger seat heating temperature sensor is short-circuited to power or open circuit

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180111	Keep the high-pressure side of the front passenger seat heater short-circuited to ground for more than 500 milliseconds	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Working status of passenger seat heater	1. Front passenger seat cushion heating 2. Harness 3. Driver's seat heating module
B180113	Keep the front occupant seat heater high pressure side open and loaded for more than 2000 milliseconds		
B180511	The front passenger seat heater temperature sensor port is short-circuited to ground for more than 2000 milliseconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180513	1. The front passenger seat heater temperature sensor port is short-circuited to the power supply for more than 2000 milliseconds 2. The front passenger seat heater temperature sensor port is open and loaded for more than 2000 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the driver's seat heating module and the front passenger seat cushion heater for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver's seat heating module and the front passenger seat cushion heating harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

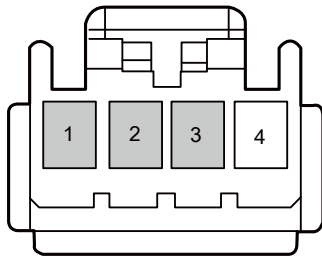
No

Repair or replace the faulty part.

Yes

Step 3 Check whether the wiring harness between the front passenger seat cushion heater and the driver seat heating module is open circuit.

**SO72e Front Passenger Seat Heating Harness Connector**



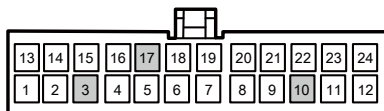
GE10-1707d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector SO72e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(1)	SO303b(17)	Standard resistance: less than 1Ω
SO72e(2)	SO303b(3)	
SO72e(3)	SO303b(10)	

- E. Confirm whether the measured value meets the standard.

**SO303b Driver Seat Heating Module Harness Connector**



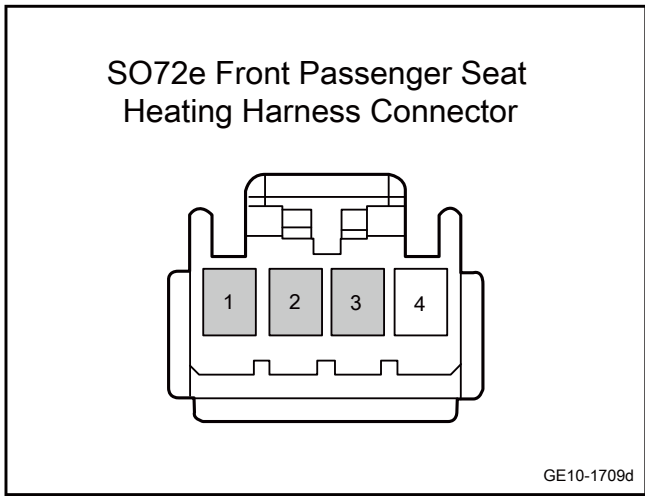
GE10-1708d

No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the front passenger seat cushion heater and the driver seat heating module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector S072e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

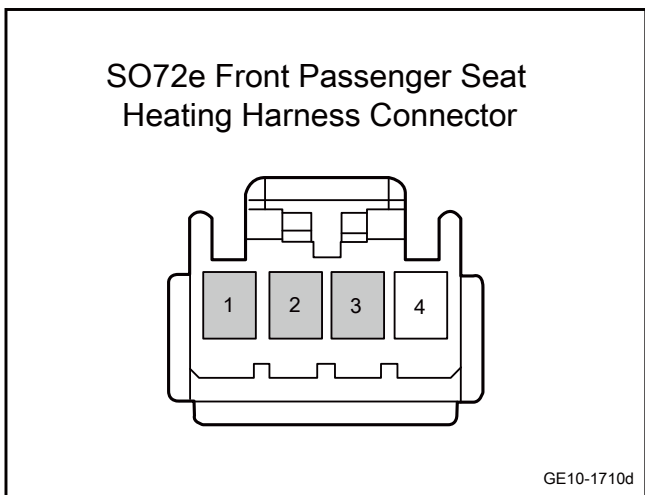
Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	Vehicle body is grounded.	Standard voltage: 0V
S072e(2)		
S072e(3)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the front passenger seat cushion heater and the driver seat heating module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector S072e.
- C. Disconnect driver's seat heating module wiring harness connector SO303b.
- D. Use a multimeter to measure each terminal according to the following table:

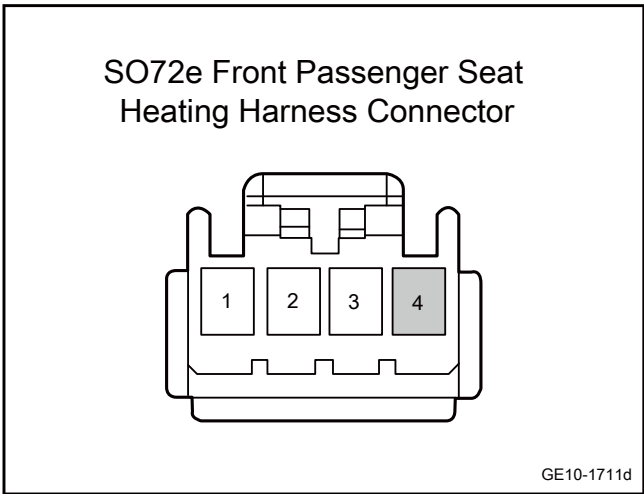
Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
S072e(2)		
S072e(3)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 6** Check whether the front passenger seat cushion heater grounding harness is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector SO72e.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the front passenger seat cushion heater.

- A. Replace the front passenger seat cushion heater. See [Replace the Front Passenger Seat Cushion Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 8** Replace the driver's seat heating module.

- A. Replace the driver's seat heating module. See [Replacement of the Driver's Seat Heating Module](#)

Next Step

**Step 9** Reprogram and reset the driver's seat heating module.

- A. Reprogram and reset the driver's seat heating module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.



No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

10.10.7.17 Driver side exterior rearview mirror cannot be adjusted (with memory module)

Refer to [Driver side exterior rearview mirror cannot be adjusted \(with memory module\)](#)

10.10.7.18 Front passenger side exterior rearview mirror cannot be adjusted (with memory module)

Refer to [Front passenger side exterior rearview mirror cannot be adjusted \(with memory module\)](#)

10.10.7.19 The driver's power seat cannot be adjusted back and forth (with memory function)

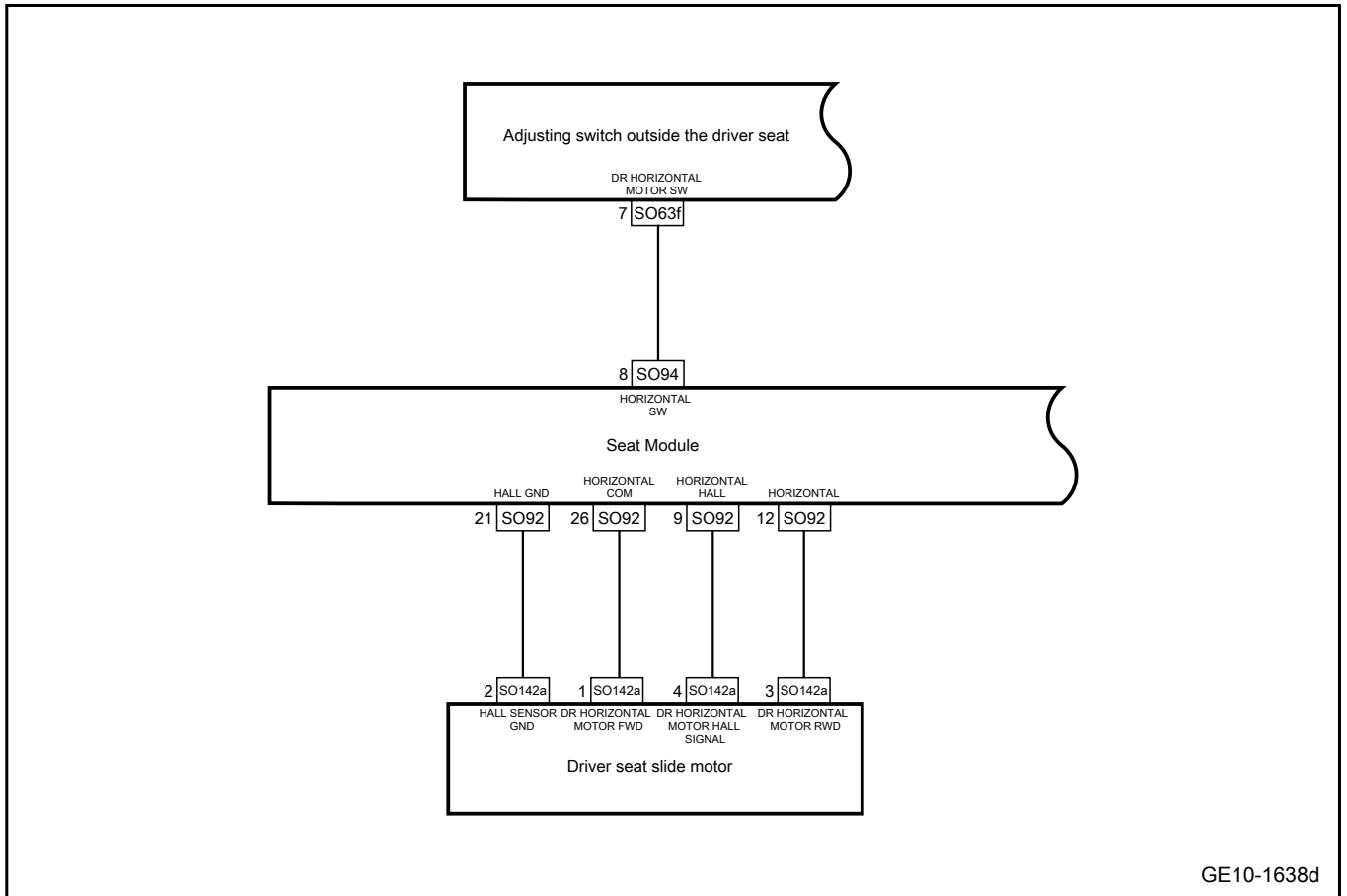
1. DTC description:

Diagnostic Trouble Code	Description
B130129	Hall signal failure of the back-forth adjusting motor of the seat
B130154	The back-forth adjusting motor of the seat is not calibrated
B130177	The calibration path of the back-forth adjusting motor of the seat is wrong
B130D29	The seat's back-forth switch signals are invalid
B130E07	The seat's forth-adjusting switch is stuck
B130F07	The seat's back-adjusting switch is stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130129	Without blocking, no valid Hall signal is detected for 300ms	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Motor running state	1. Driver seat slide motor 2. Harness 3. Seat module 4. Adjusting switch outside the driver seat
B130154	Motor is not calibrated		
B130177	After normal control, the current distance is lower than the specified distance		
B130D29	Switch to illegal state for more than 2 seconds		
B130E07	Th0		
B130F07	Th0		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the seat module, the driver's seat chute motor, and the driver's seat lateral adjusting switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the seat module, the driver's seat chute motor, and the driver's seat lateral adjusting switch harness connector for signs of damage, deformation, stains, looseness, etc.
- C. Confirm whether the above items are normal.

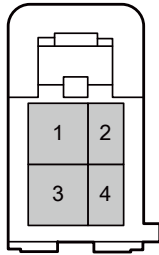
No

Repair or replace the faulty part.

Yes

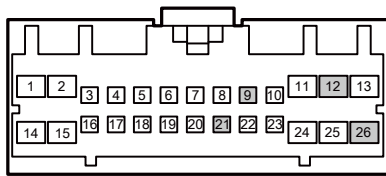
Step 3 Check whether the wiring harness between the driver's seat chute motor and the seat module is open circuited.

SO142a harness connector of driver seat slide motor



GE10-1712d

SO92 Seat Module Harness Connector A



GE10-1713d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	SO92(26)	Standard resistance: less than 1Ω
SO142a(2)	SO92(21)	
SO142a(3)	SO92(12)	
SO142a(4)	SO92(9)	

- E. Confirm whether the measured value meets the standard.

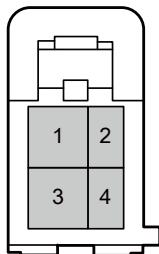
No

Repair or replace the harness.

Yes

Step 4 Check whether the wiring harness between the driver's seat chute motor and the seat module is short-circuited to the power supply.

SO142a harness connector of driver seat slide motor



GE10-1714d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the seat module harness connector SO92.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO142a(2)		
SO142a(3)		

Measure terminal 1	Measure terminal 2	Standard value
SO142a(4)		

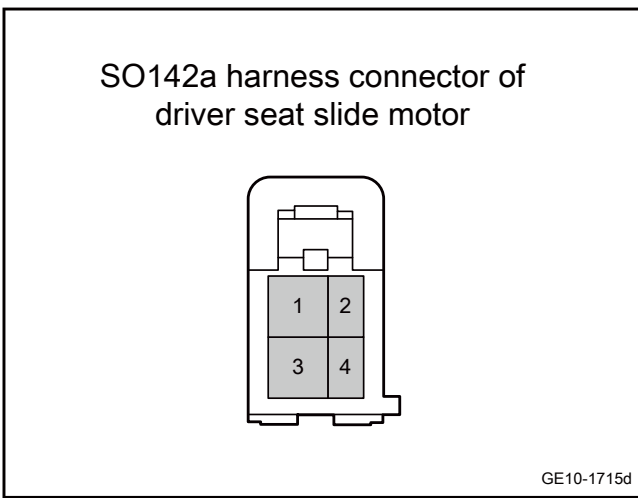
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the driver's seat chute motor and the seat module is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO142a of driver seat chute motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO142a(2)		
SO142a(3)		
SO142a(4)		

E. Confirm whether the measured value meets the standard.

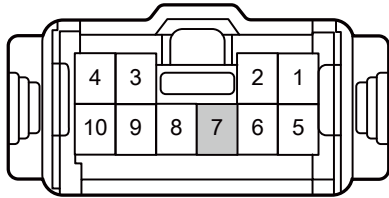
No

Repair or replace the harness.

Yes

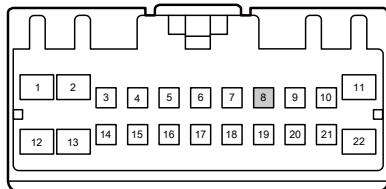
**Step 6** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is open circuited.

SO63f harness connector of adjusting switch of driver seat



GE10-1716d

SO94 Seat Module Harness Connector C



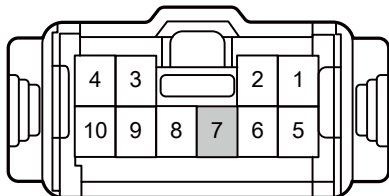
GE10-1717d

Yes

Step 7

Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to the power supply.

SO63f harness connector of adjusting switch of driver seat



GE10-1718d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	SO94(8)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	Vehicle body is grounded.	Standard voltage: 0V

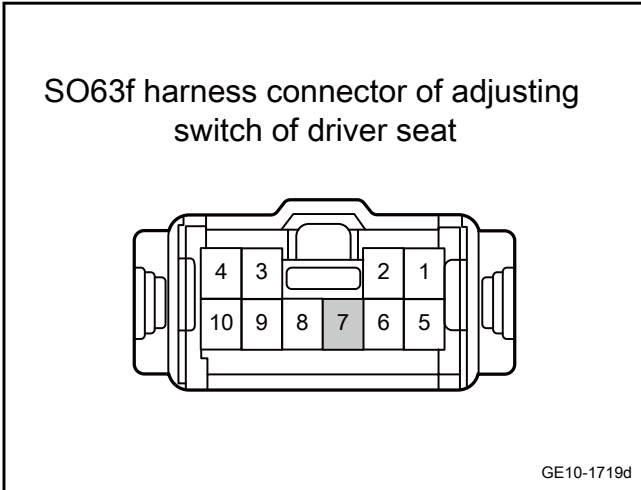
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 10** Replace chute motor of driver seat.

- A. Replace chute motor of driver seat. Refer to [Replacement of driver seat chute motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 11	Replace the seat module.
---------	--------------------------

- A. Check the seat module power supply and ground wiring harness. See [Seat Module Power Failure](#)
- B. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

Step 12	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 14	System is normal.
---------	-------------------

### 10.10.7.20 Driver's electric seat height cannot be adjusted (with memory function)

1. DTC description:

Diagnostic Trouble Code	Description
B130029	Hall signal failure of seat height motor
B130054	Seat height motor is not calibrated
B130077	The calibration path of the seat height motor is wrong

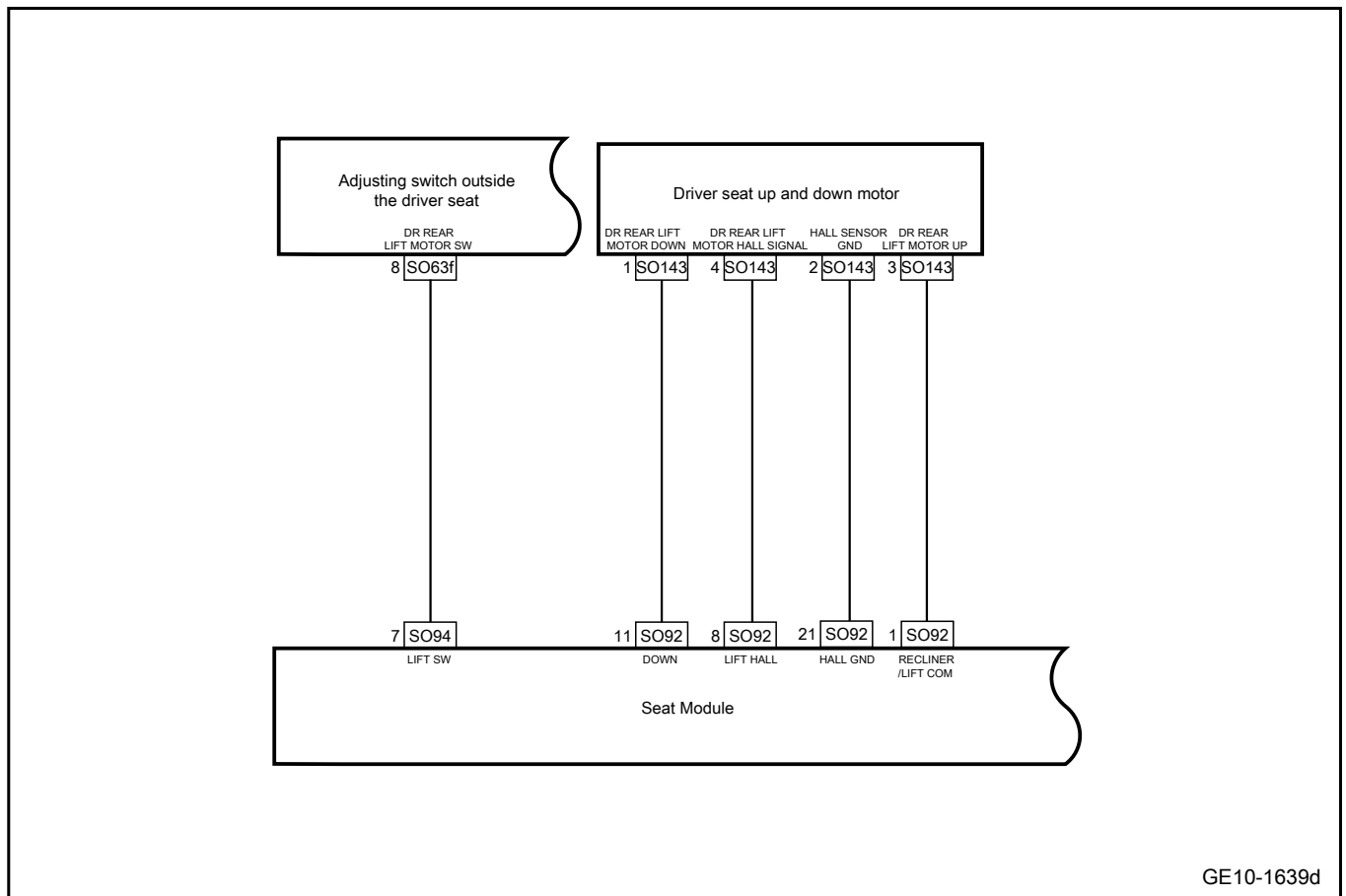


Diagnostic Trouble Code	Description
B130A29	Seat height switch signal is invalid
B130B07	Seat height up switch stuck
B130C07	Seat height down switch stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130029	Without blocking, no valid Hall signal is detected for 300ms	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Motor running state	1. Driver seat lifting motor 2. Harness 3. Seat module 4. Adjusting switch outside the driver seat
B130054	Motor is not calibrated		
B130077	After normal control, the current distance is lower than the specified distance		
B130A29	Switch to illegal state for more than 2 seconds		
B130B07	Th0		
B130C07	Th0		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the seat module, the driver's seat lifting motor, and the driver's seat lateral adjusting switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the seat module, the driver's seat lifting motor, and the driver's seat lateral adjusting switch harness connector for signs of damage, deformation, stains, looseness, etc.
- C. Confirm whether the above items are normal.

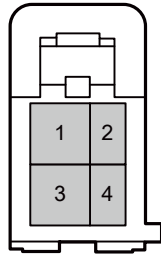
No

Repair or replace the faulty part.

Yes

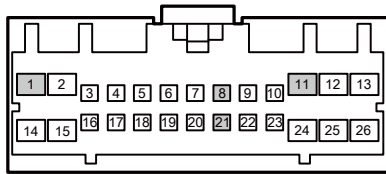
Step 3 Check whether the wiring harness between the driver's seat lifting motor and the seat module is open circuited.

SO143 harness connector of driver seat slide lifting motor



GE10-1720d

SO92 Seat Module Harness Connector A



GE10-1721d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	SO92(11)	Standard resistance: less than 1Ω
SO143(2)	SO92(21)	
SO143(3)	SO92(1)	
SO143(4)	SO92(8)	

- E. Confirm whether the measured value meets the standard.

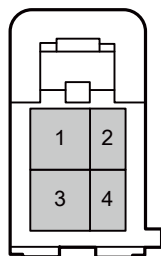
No

Repair or replace the harness.

Yes

Step 4 Check whether the wiring harness between the driver's seat lifting motor and the seat module is short-circuited to the power supply.

SO143 harness connector of driver seat slide lifting motor



GE10-1722d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard voltage: 0V
SO143(2)		
SO143(3)		

Measure terminal 1	Measure terminal 2	Standard value
SO143(4)		

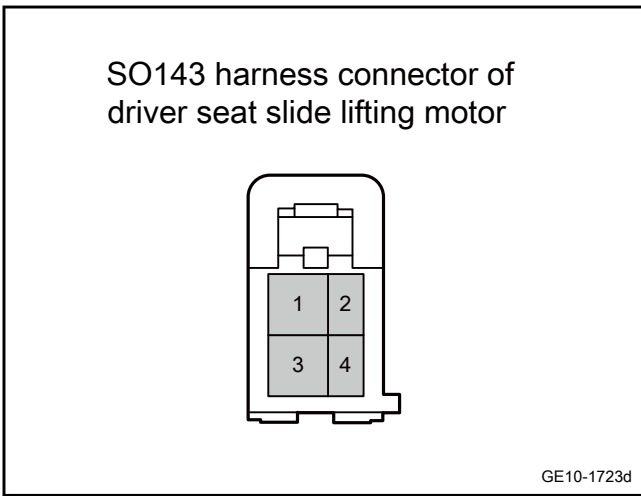
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the driver's seat lifting motor and the seat module is short-circuited to the ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver seat lifting motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO143(2)		
SO143(3)		
SO143(4)		

E. Confirm whether the measured value meets the standard.

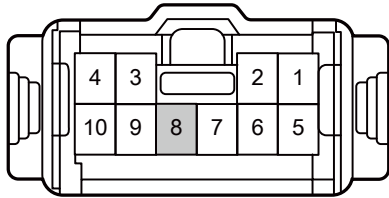
No

Repair or replace the harness.

Yes

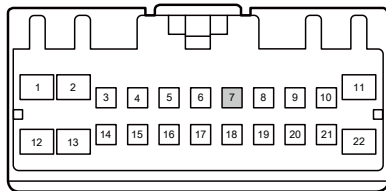
**Step 6** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is open circuited.

SO63f harness connector of adjusting switch of driver seat



GE10-1724d

SO94 Seat Module Harness Connector C



GE10-1725d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	SO94(7)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

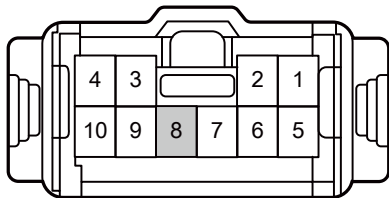
No

Repair or replace the harness.

Yes

**Step 7** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to the power supply.

SO63f harness connector of adjusting switch of driver seat



GE10-1726d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	Vehicle body is grounded.	Standard voltage: 0V

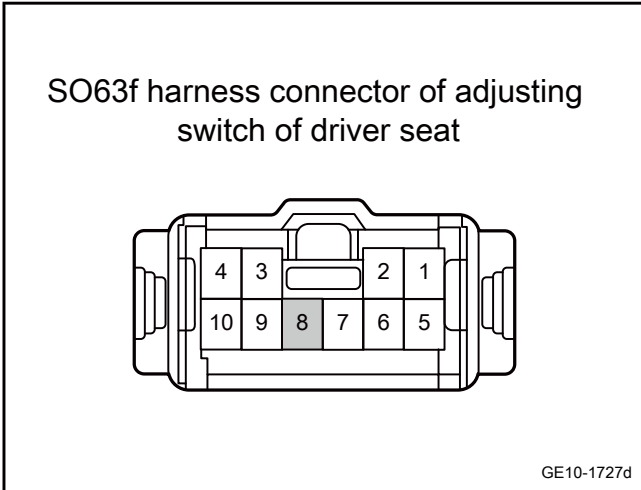
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 10** Replace driver seat lifting motor.

- A. Replace driver seat lifting motor. Refer to [Replacement of driver seat lifting motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 11	Replace the seat module.
---------	--------------------------

- A. Check the seat module power supply and ground wiring harness. See [Seat Module Power Failure](#)
- B. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

Step 12	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
---------	-------------------

### 10.10.7.21 The backrest of the driver's power seat cannot be adjusted (with memory function)

1. DTC description:

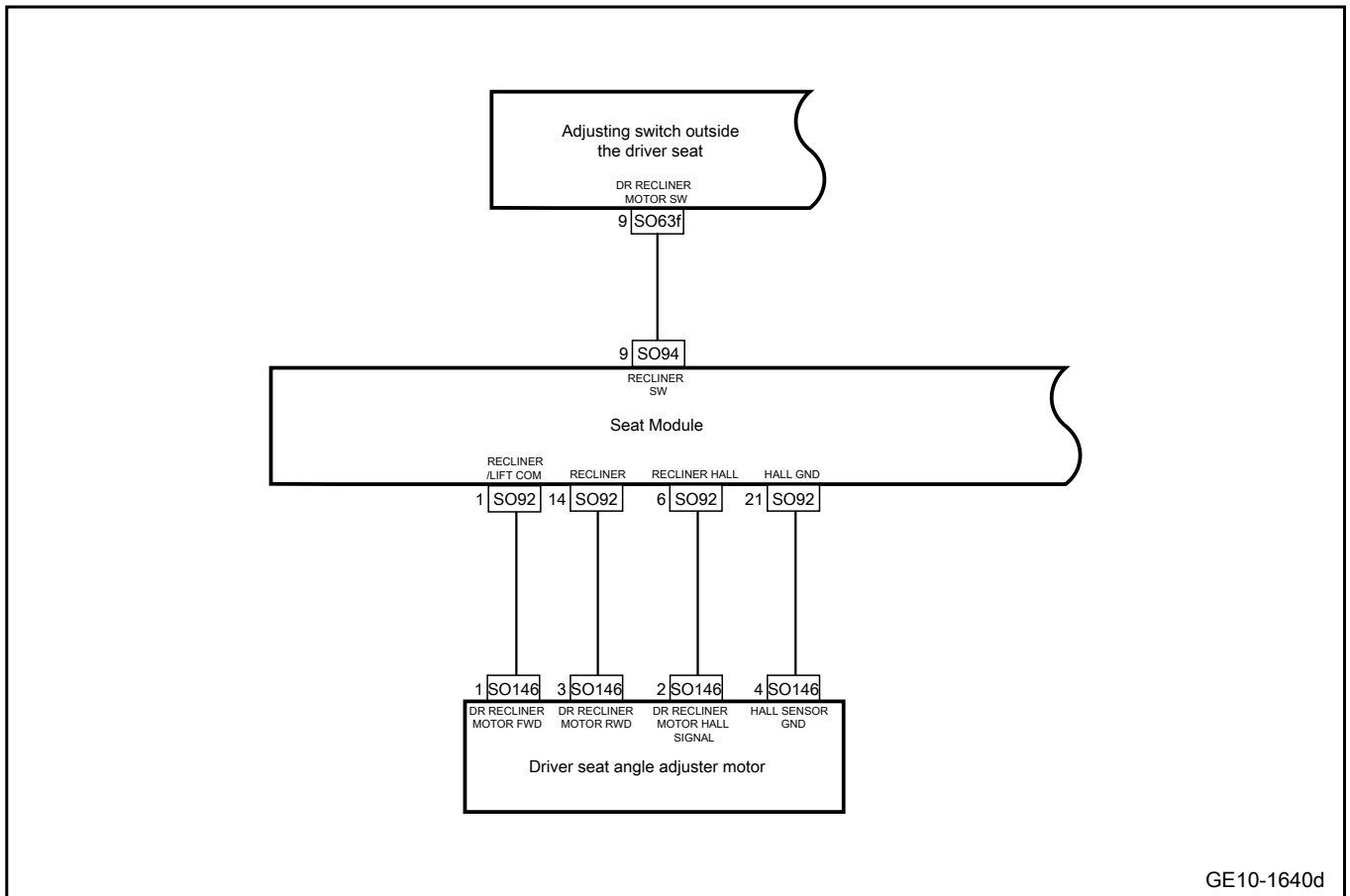
Diagnostic Trouble Code	Description
B130229	Hall signal failure of seat backrest motor
B130254	The seat backrest motor is not calibrated
B130277	The calibration path of the seat backrest motor is wrong

Diagnostic Trouble Code	Description
B131029	Invalid seat backrest switch signal
B131107	Front seat backrest forth-adjusting switch is stuck
B131207	The seat back back-adjusting switch is stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130229	Without blocking, no valid Hall signal is detected for 300ms	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Motor running state	1. Driver seat angle adjuster motor 2. Harness 3. Seat module 4. Adjusting switch outside the driver seat
B130254	Motor is not calibrated		
B130277	After normal control, the current distance is lower than the specified distance		
B131029	Th0		
B131107	Th0		
B131207	The bus off counters cL1 to L2 are equal to 10 (bus off occurs 10 times in succession).		

3. Schematic circuit diagram:



GE10-1640d



## 4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the seat module, the driver's seat recliner motor, and the driver's seat lateral adjusting switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the seat module, the driver's seat recliner motor, and the driver's seat lateral adjusting switch harness connector for signs of damage, deformation, stains, looseness, etc.
- C. Confirm whether the above items are normal.

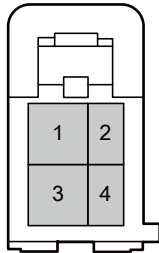
No

Repair or replace the faulty part.

Yes

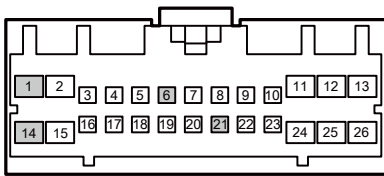
Step 3	Check whether the wiring harness between the driver's seat angle adjuster motor and the seat module is open circuited.
--------	--

SO146 harness connector of driver seat angle adjuster motor



GE10-1728d

SO92 Seat Module Harness Connector A



GE10-1729d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	SO92(1)	Standard resistance: less than 1Ω
SO146(2)	SO92(6)	
SO146(3)	SO92(14)	
SO146(4)	SO92(21)	

- E. Confirm whether the measured value meets the standard.

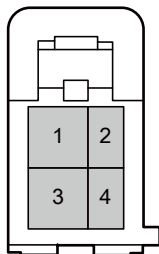
No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the driver's seat angle adjuster motor and the seat module is short-circuited to power supply.

SO146 harness connector of driver seat angle adjuster motor



GE10-1730d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard voltage: 0V
SO146(2)		
SO146(3)		

Measure terminal 1	Measure terminal 2	Standard value
SO146(4)		

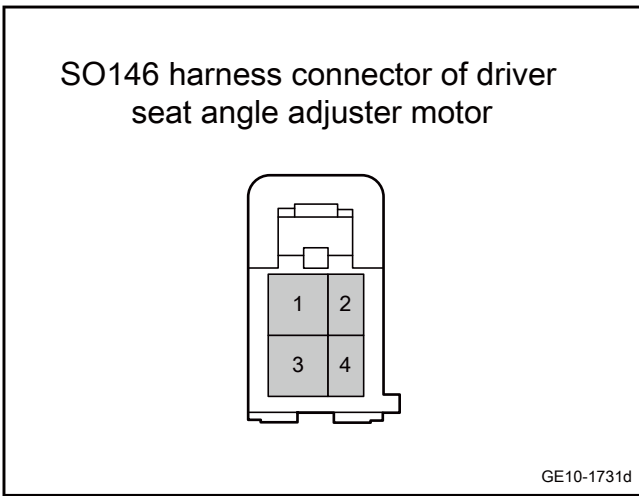
F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the driver's seat angle adjuster motor and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO146(2)		
SO146(3)		
SO146(4)		

E. Confirm whether the measured value meets the standard.

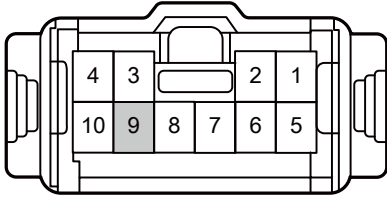
No

Repair or replace the harness.

Yes

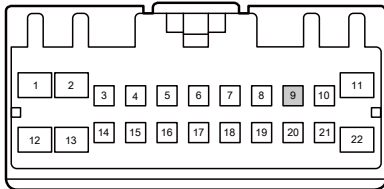
**Step 6** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is open circuited.

SO63f harness connector of adjusting switch of driver seat



GE10-1732d

SO94 Seat Module Harness Connector C



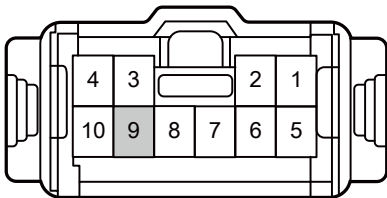
GE10-1733d

Yes

Step 7

Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to the power supply.

SO63f harness connector of adjusting switch of driver seat



GE10-1734d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	SO94(9)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	Vehicle body is grounded.	Standard voltage: 0V

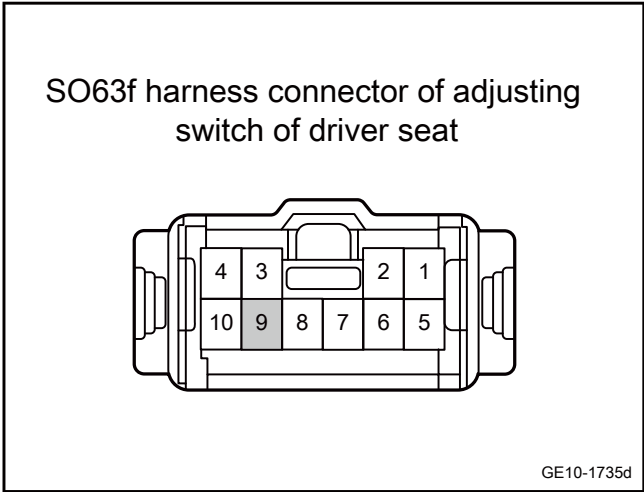
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the wiring harness between the driver's seat lateral adjusting switch and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 10** Replace the driver seat angle adjuster motor

- A. Replace the driver seat angle adjuster motor Refer to [Replacement of driver seat angle adjuster motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 11	Replace the seat module.
---------	--------------------------

- A. Check the seat module power supply and ground wiring harness. See [Seat Module Power Failure](#)
- B. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

Step 12	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.
-------------------

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 14	System is normal.
---------	-------------------

### 10.10.7.22 The front passenger electric seat cannot be adjusted back and forth (with memory function)

1. DTC description:

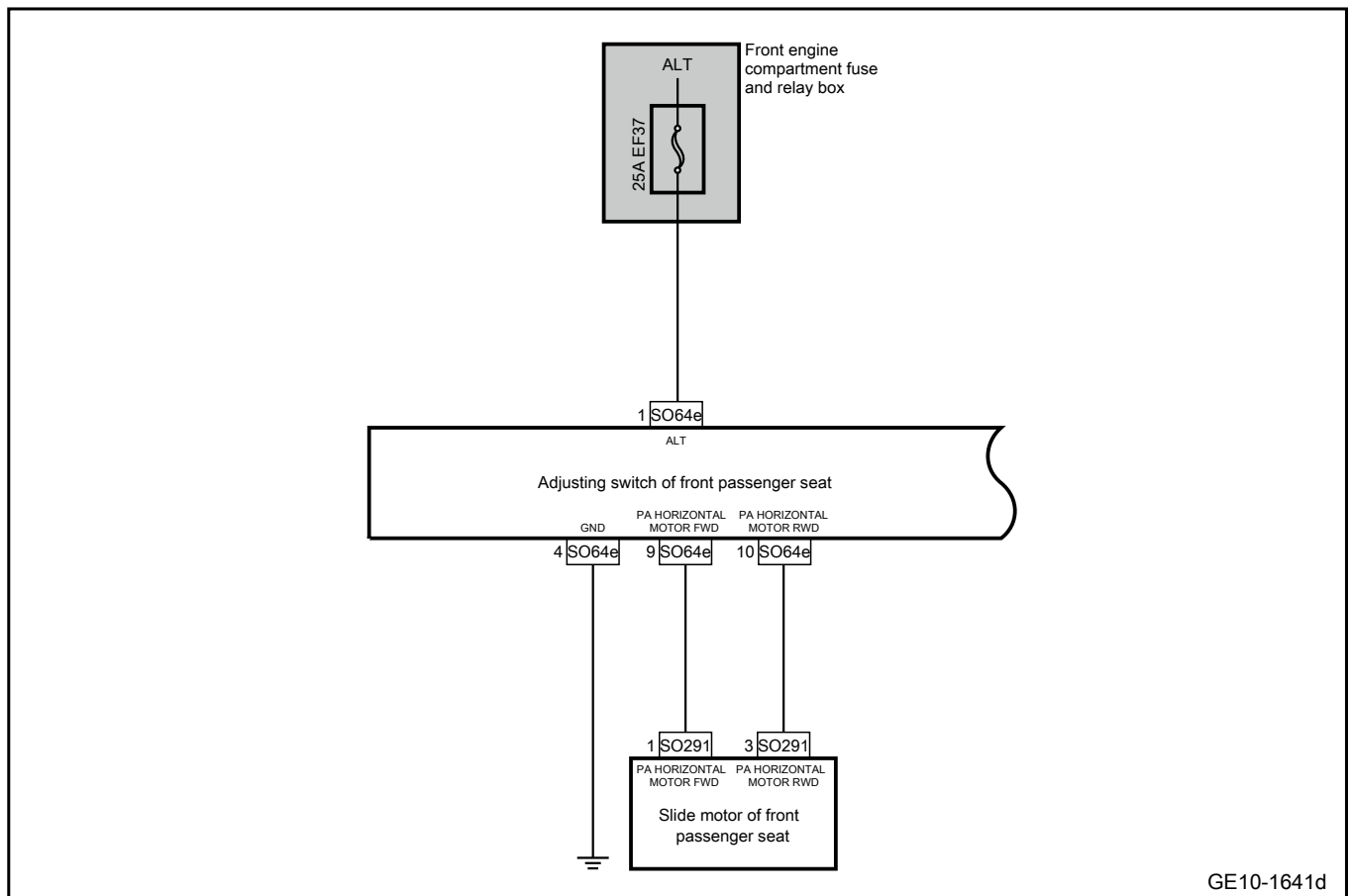
Diagnostic Trouble Code	Description
B130129	Hall signal failure of the back-forth adjusting motor of the seat
B130154	The back-forth adjusting motor of the seat is not calibrated

Diagnostic Trouble Code	Description
B130177	The calibration path of the back-forth adjusting motor of the seat is wrong
B130D29	The seat's back-forth switch signals are invalid
B130E07	The seat's forth-adjusting switch is stuck
B130F07	The seat's back-adjusting switch is stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130129	Without blocking, no valid Hall signal is detected for 300ms	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Motor running state	1. Fuse 2. Front passenger seat chute motor 3. Harness 4. Front passenger seat adjusting switch
B130154	Motor is not calibrated		
B130177	After normal control, the current distance is lower than the specified distance		
B130D29	Switch to illegal state for more than 2 seconds		
B130E07	Th0		
B130F07	Th0		

3. Schematic circuit diagram:



GE10-1641d

## 4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the front passenger seat chute motor and front passenger seat adjustment switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the front passenger seat chute motor and the front passenger seat adjustment switch harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF37 of the front engine bay. Check whether the fuse EF37 is blown.

Rated fuse capacity: 25A

Yes

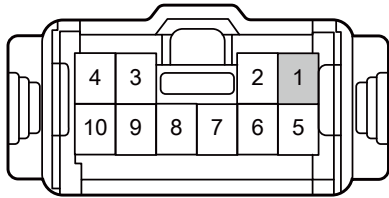
Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the working voltage of the front passenger seat adjustment switch is normal.
--------	--



SO64e harness connector of front passenger seat adjusting switch



GE10-1736d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO64e(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

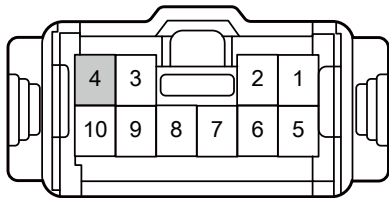
No

Repair or replace the harness.

Yes

Step 5 Check whether the front passenger seat adjusting switch grounding harness is normal.

SO64e harness connector of front passenger seat adjusting switch



GE10-1737d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO64e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

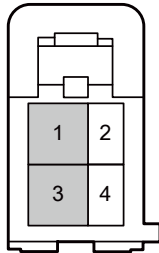
No

Repair or replace the harness.

Yes

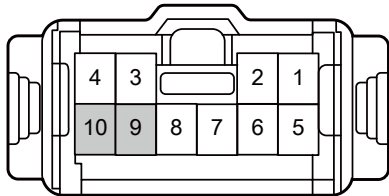
Step 6 Check whether the harness between the front passenger seat chute motor and front passenger seat adjusting switch is open-circuit.

SO291 harness connector of front passenger seat slide motor



GE10-1738d

SO64e harness connector of front passenger seat adjusting switch



GE10-1739d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO291 of front passenger seat chute motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	SO64e(9)	Standard resistance: less than 1Ω
SO291(3)	SO64e(10)	

- E. Confirm whether the measured value meets the standard.

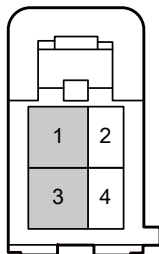
No

Repair or replace the harness.

Yes

**Step 7** Check whether the harness between the front passenger seat chute motor and front passenger seat adjusting switch is short to power supply.

SO291 harness connector of front passenger seat slide motor



GE10-1740d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO291 of front passenger seat chute motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	Vehicle body is grounded.	Standard voltage: 0V
SO291(3)		

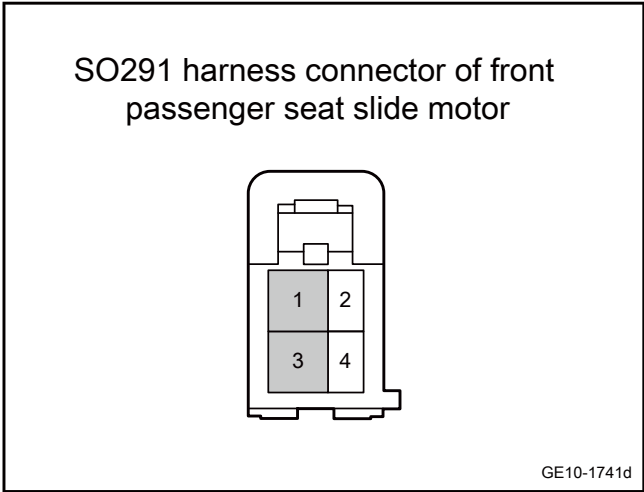
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the harness between the front passenger seat chute motor and front passenger seat adjusting switch is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO291 of front passenger seat chute motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO291(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the front passenger seat chute motor.

- A. Replace the front passenger seat chute motor. Refer to [Replacement of front passenger seat chute motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 10** Replace the front passenger seat adjusting switch.

- A. Replace the front passenger seat adjusting switch. Refer to [Replacement of front passenger seat adjusting switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 12	System is normal.
---------	-------------------

### 10.10.7.23 The backrest of the front passenger electric seat cannot be adjusted (with memory function)

#### 1. DTC description:

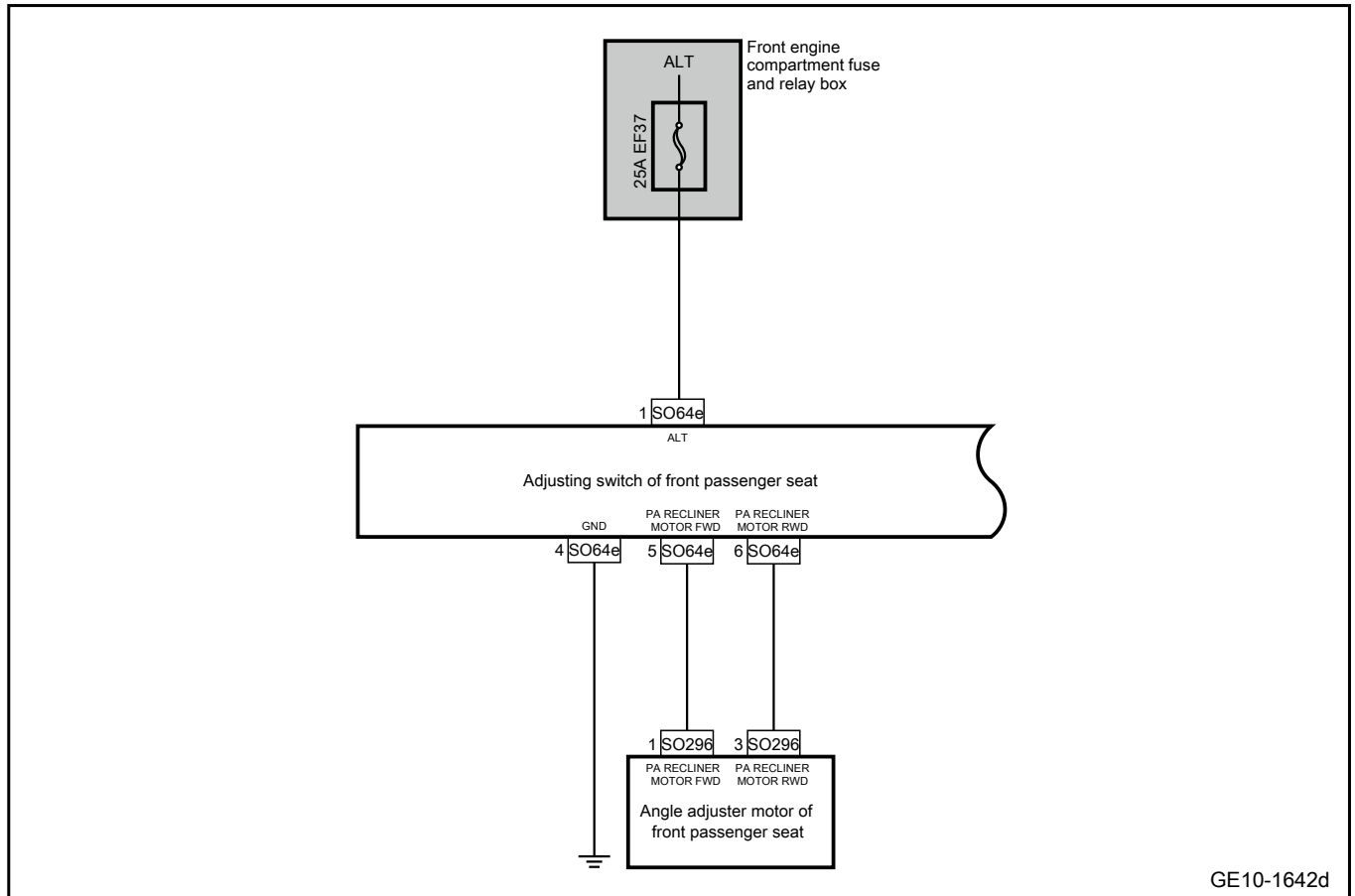
Diagnostic Trouble Code	Description
B130229	Hall signal failure of seat backrest motor
B130254	The seat backrest motor is not calibrated
B130277	The calibration path of the seat backrest motor is wrong
B131029	Invalid seat backrest switch signal
B131107	Front seat backrest forth-adjusting switch is stuck
B131207	The seat back back-adjusting switch is stuck

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130229	Without blocking, no valid Hall signal is detected for 300ms	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Motor running state	1. Angle adjuster motor of front passenger seat 2. Harness 3. Fuse 4. Front passenger seat adjusting switch
B130254	Motor is not calibrated		
B130277	After normal control, the current distance is lower than the specified distance		
B131029	Th0		
B131107	Th0		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B131207	The bus off counters cL1 to L2 are equal to 10 (bus off occurs 10 times in succession).		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the front passenger seat recliner motor and front passenger seat adjustment switch for signs of damage, deformation, stains, looseness, etc.
- B. Check the front passenger seat recliner motor and the front passenger seat adjustment switch harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out the fuse EF37 of the front engine bay. Check whether the fuse EF37 is blown.

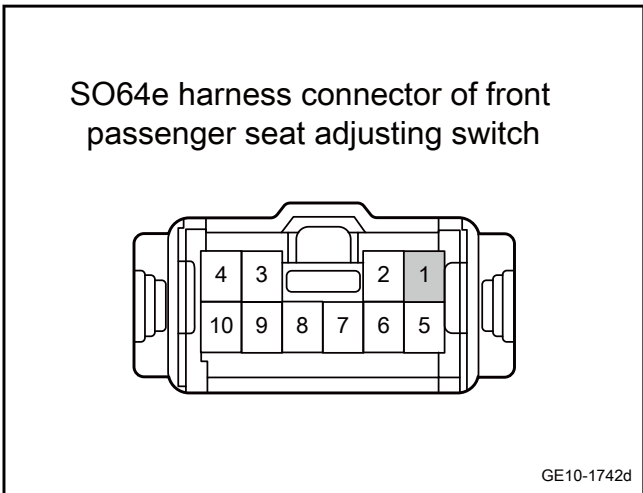
Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the working voltage of the front passenger seat adjustment switch is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO64e(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

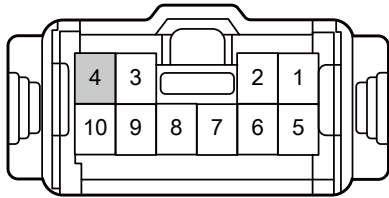
No

Repair or replace the harness.

Yes

**Step 5** | Check whether the front passenger seat adjusting switch grounding harness is normal.

SO64e harness connector of front passenger seat adjusting switch



GE10-1743d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO64e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

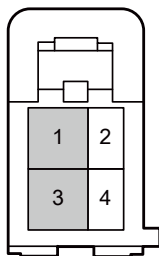
No

Repair or replace the harness.

Yes

**Step 6** Check the harness between the front passenger seat angle adjuster motor and the front passenger seat adjustment switch for an open circuit.

SO296 harness connector of front passenger seat angle adjuster motor



GE10-1744d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure each terminal according to the following table:

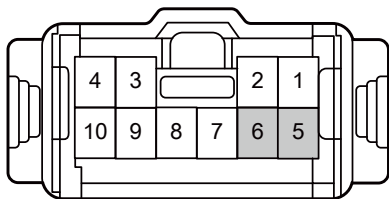
Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	SO64e(5)	Standard resistance: less than 1Ω
SO296(3)	SO64e(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

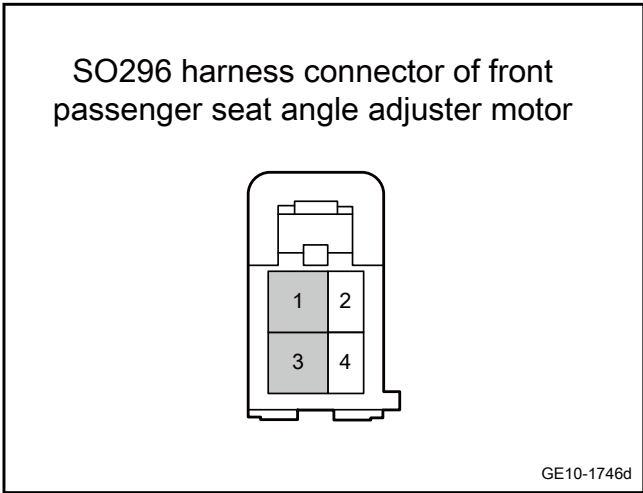
SO64e harness connector of front passenger seat adjusting switch



GE10-1745d

Yes

**Step 7** Check whether the harness between the front passenger seat angle adjuster motor and front passenger seat adjusting switch is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	Vehicle body is grounded.	Standard voltage: 0V
SO296(3)		

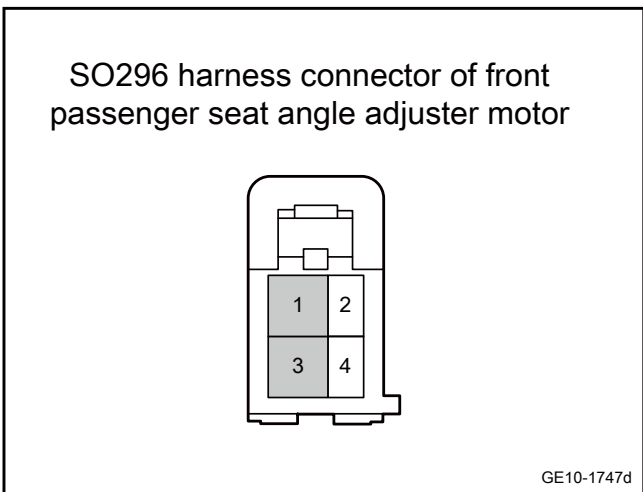
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 8** Check whether the harness between the front passenger seat angle adjuster motor and front passenger seat adjusting switch is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO296(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.



Yes

Step 9	Replace the angle adjuster motor of front passenger seat.
--------	---

- A. Replace the angle adjuster motor of front passenger seat. Refer to [Replacement of the front passenger seat angle adjuster motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 10	Replace the front passenger seat adjusting switch.
---------	--

- A. Replace the front passenger seat adjusting switch. Refer to [Replacement of front passenger seat adjusting switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

### 10.10.7.24 Driver's seat heating failure (with memory function)

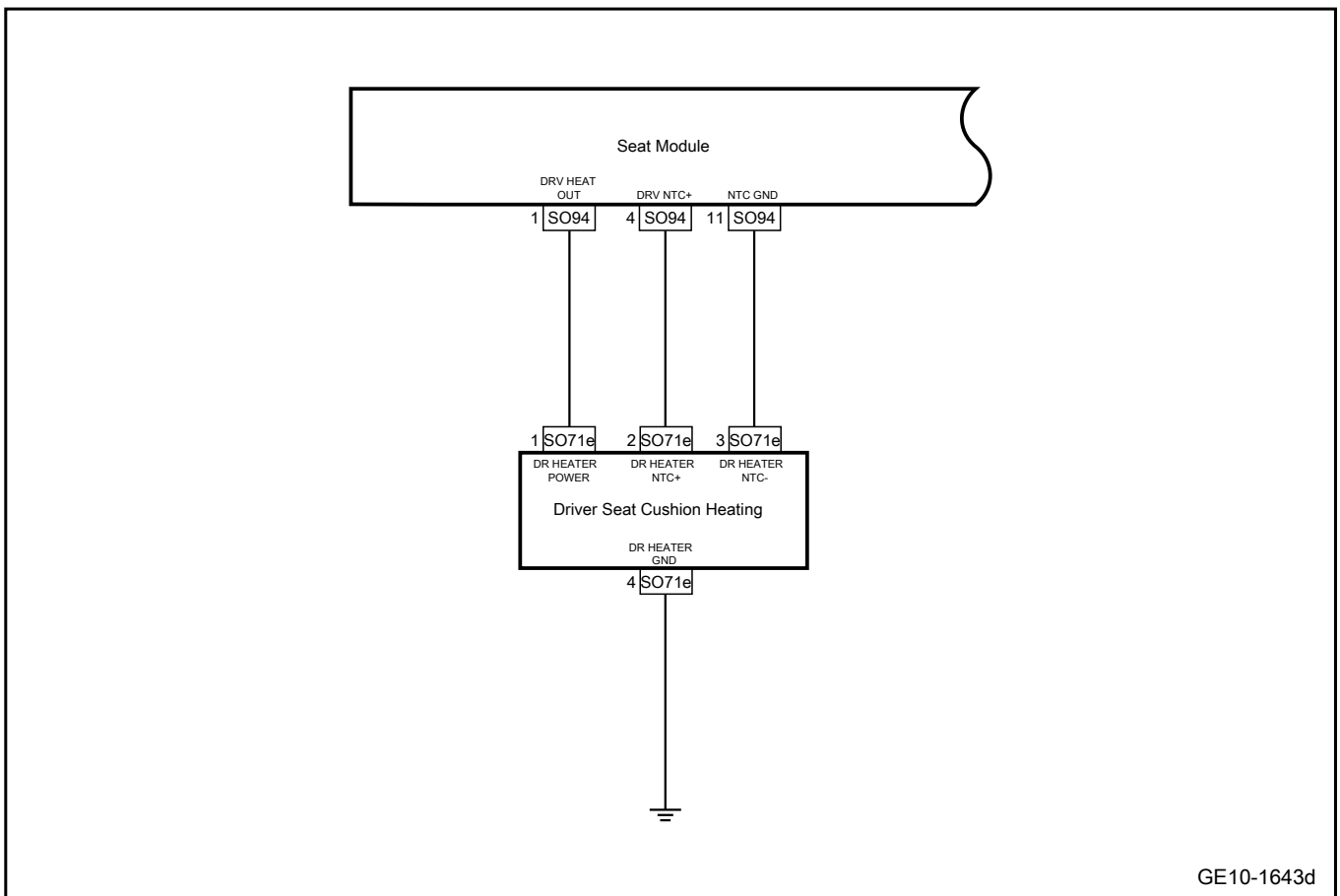
1. DTC description:

Diagnostic Trouble Code	Description
B180011	Driver's seat heating high-end output is shorted to ground
B180013	Driver's seat heating high-end output open circuit
B180411	Driver's seat heating temperature sensor is short-circuited to ground
B180413	Driver's seat heating temperature sensor is short-circuited to power or open circuit

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180011	Keep the high-pressure side of the driver's seat cushion heater short-circuited to ground for more than 500 milliseconds	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Working status of passenger seat heater	1. The driver's seat cushion is heated 2. Harness 3. Seat module
B180013	Keep the high-pressure side of the driver's seat cushion heater open and loaded for more than 2000 milliseconds		
B180411	Driver's seat cushion heater temperature sensor port is short-circuited to ground for more than 2000 milliseconds		
B180413	1. The driver's seat cushion heater temperature sensor port is short-circuited to the power supply for more than 2000 milliseconds 2. The driver's seat cushion heater temperature sensor port is open and loaded for more than 2000 milliseconds		

## 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

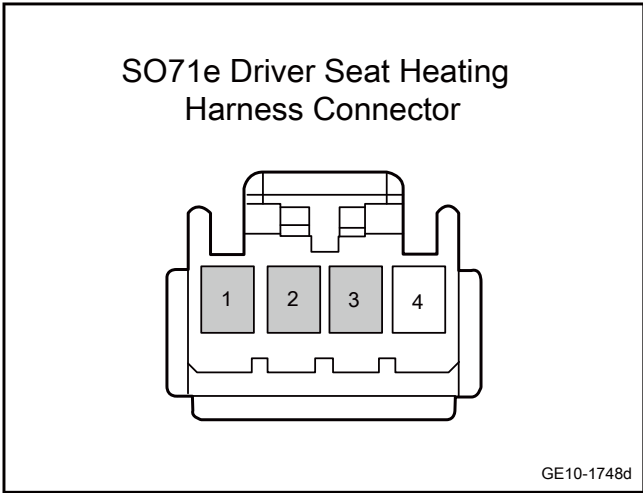
- A. Check the seat module and the driver's seat cushion heater for signs of damage, deformation, stains, looseness, etc.
- B. Check the seat module, the driver's seat cushion heating harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

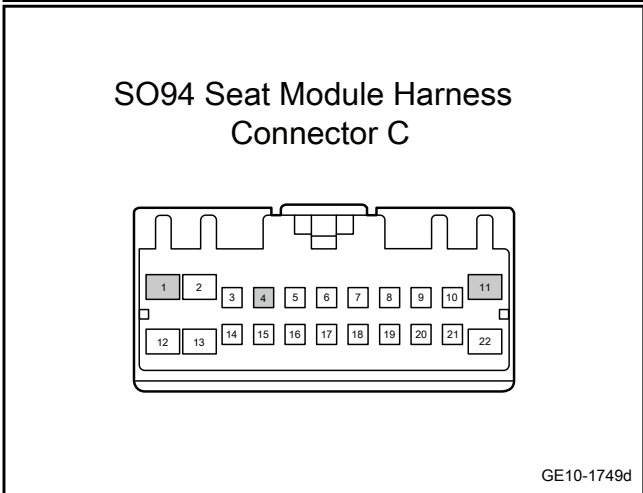
**Step 3** Check whether the wiring harness between the driver's seat cushion heater and the seat module is open circuited.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	SO94(1)	Standard resistance: less than 1Ω
SO71e(2)	SO94(4)	
SO71e(3)	SO94(11)	

- E. Confirm whether the measured value meets the standard.

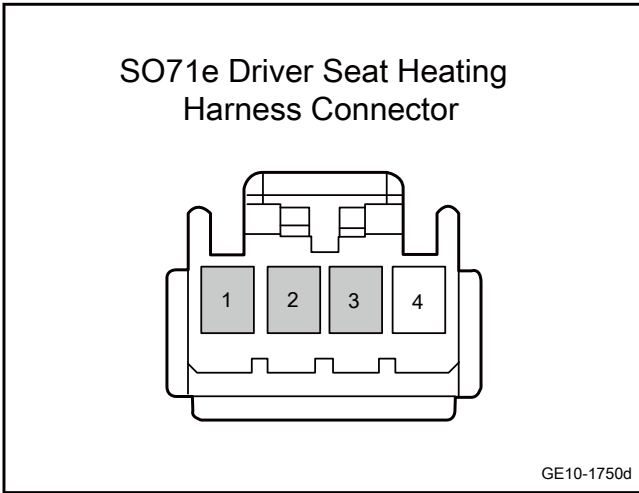


No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the driver's seat cushion heater and the seat module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard voltage: 0V
SO71e(2)		
SO71e(3)		

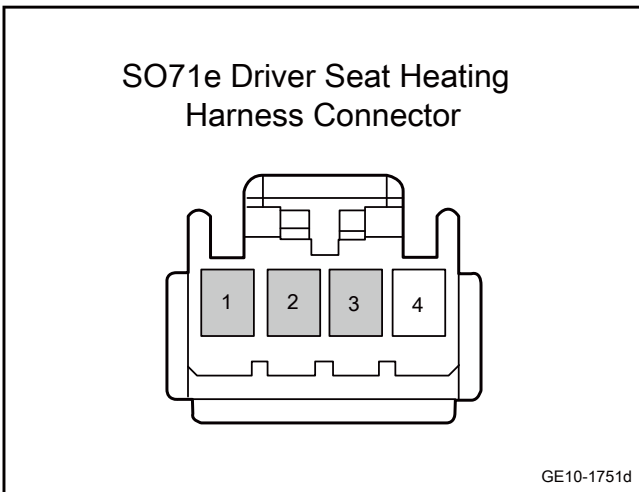
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the driver's seat cushion heater and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO71e(2)		
SO71e(3)		

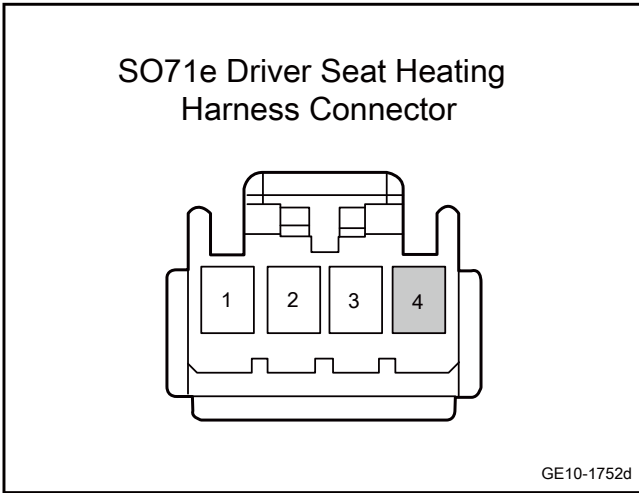
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the driver's seat cushion heater grounding harness is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver's seat cushion heating harness connector SO71e.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the driver's seat cushion heater.

- A. Replace the driver's seat cushion heater. See [Replacement of Driver's Seat Cushion Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 8** Replace the seat module.

- A. Check the seat module power supply and ground wiring harness. See [Seat Module Power Failure](#)
- B. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

**Step 9** Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 10.10.7.25 Front passenger seat heating failure (with memory function)

1. DTC description:

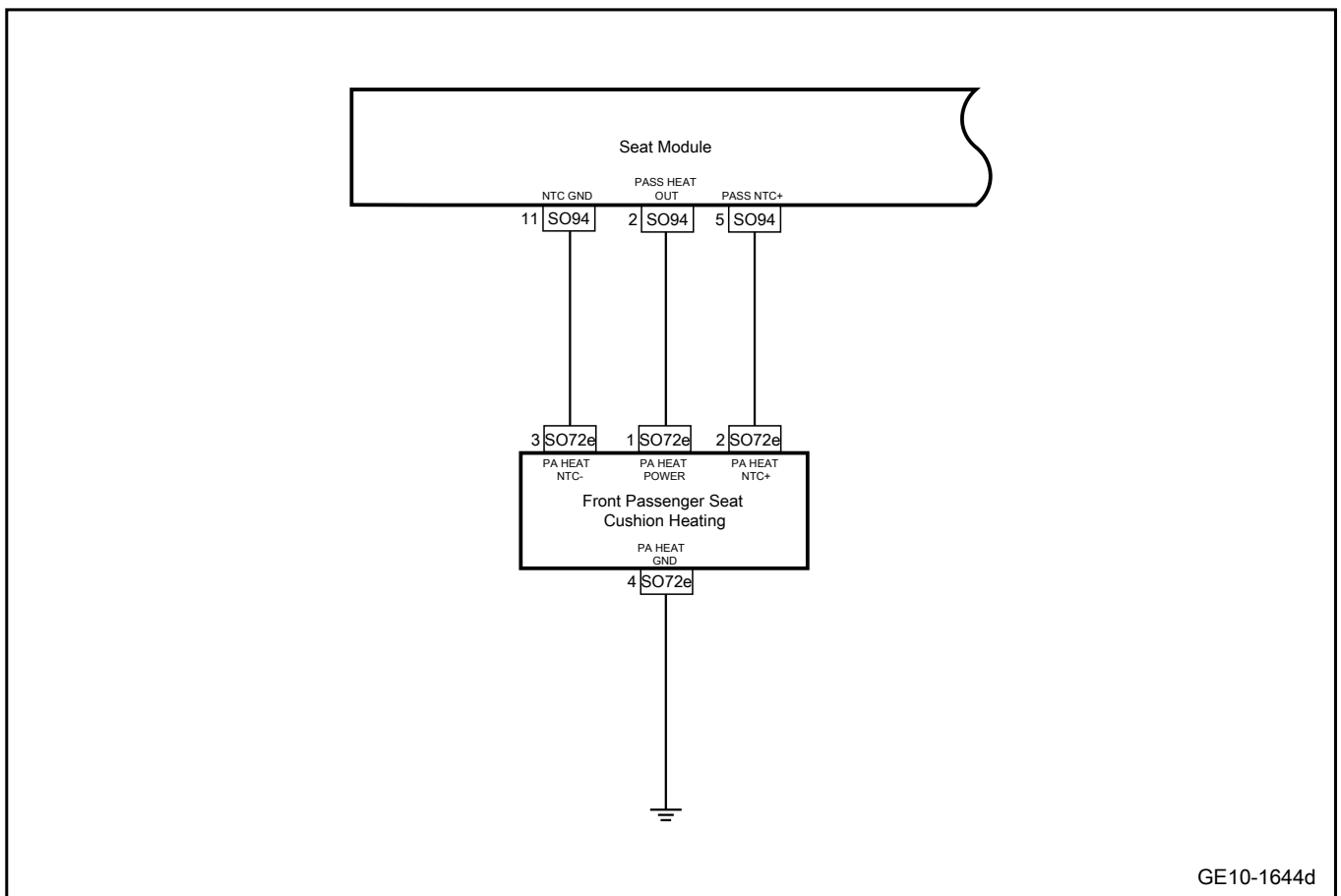
Diagnostic Trouble Code	Description
B180111	The high-end output of the front passenger seat heating is short-circuited to ground
B180113	Front passenger seat heating high-end output open circuit
B180511	Front passenger seat heating temperature sensor is short-circuited to ground
B180513	Front passenger seat heating temperature sensor is short-circuited to power or open circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180111	Keep the high-pressure side of the front passenger seat cushion heater short-circuited to ground for more than 500 milliseconds	1. There are currently no DTC for voltage levels (high level and low level) 2. UDS\$85 control DTC settings (status diagnosis) 3. Working status of passenger seat heater	1. Front passenger seat cushion heating 2. Harness 3. Seat module
B180113	Keep the front passenger seat cushion heater high pressure side open and loaded for more than 2000 milliseconds		
B180511	The front passenger seat cushion heater temperature sensor port is short-circuited to ground for more than 2000 milliseconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180513	1. The front passenger seat cushion heater temperature sensor port is short-circuited to the power supply for more than 2000 milliseconds 2. The front passenger seat cushion heater temperature sensor port is open and loaded for more than 2000 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.



No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the seat module and front passenger seat cushion heater for signs of damage, deformation, stains, looseness, etc.
- B. Check the seat module, the front passenger seat cushion heating harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

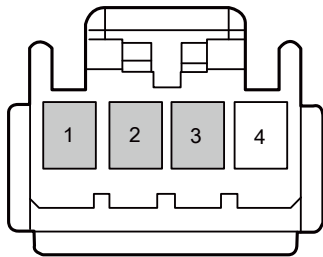
No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the wiring harness between the front passenger seat cushion heater and the seat module is open circuited.

**S072e Front Passenger Seat Heating Harness Connector**



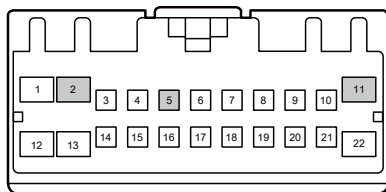
GE10-1753d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector S072e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	SO94(2)	Standard resistance: less than 1Ω
S072e(2)	SO94(5)	
S072e(3)	SO94(11)	

- E. Confirm whether the measured value meets the standard.

**SO94 Seat Module Harness Connector C**



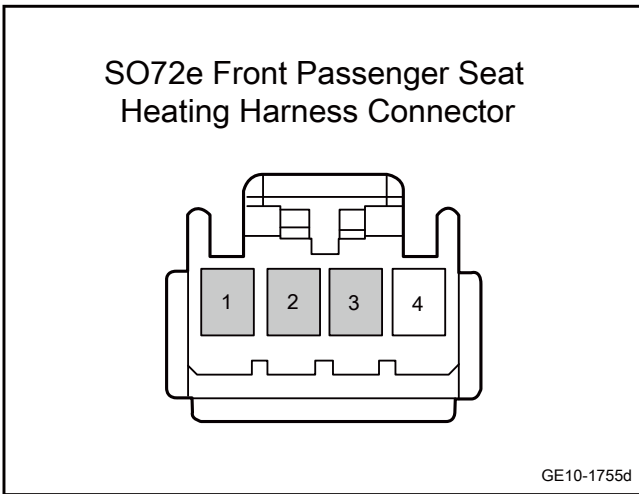
GE10-1754d

No

Repair or replace the harness.

Yes

**Step 4** Check whether the wiring harness between the front passenger seat cushion heater and the seat module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector SO72e.
- C. Disconnect the seat module harness connector SO94.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(1)	Vehicle body is grounded.	Standard voltage: 0V
SO72e(2)		
SO72e(3)		

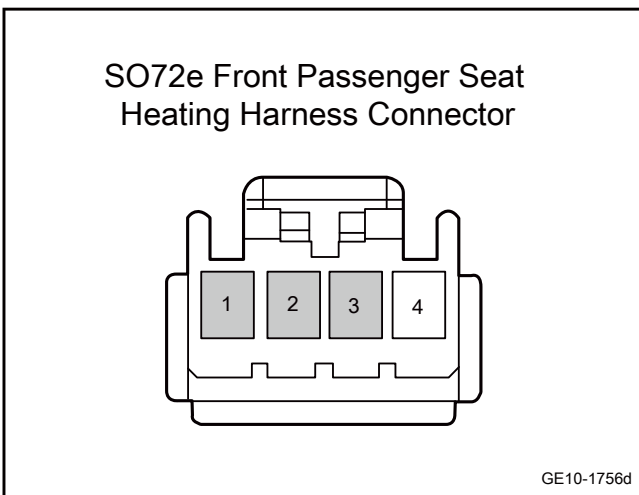
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the wiring harness between the front passenger seat cushion heater and the seat module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector SO72e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO72e(2)		
SO72e(3)		

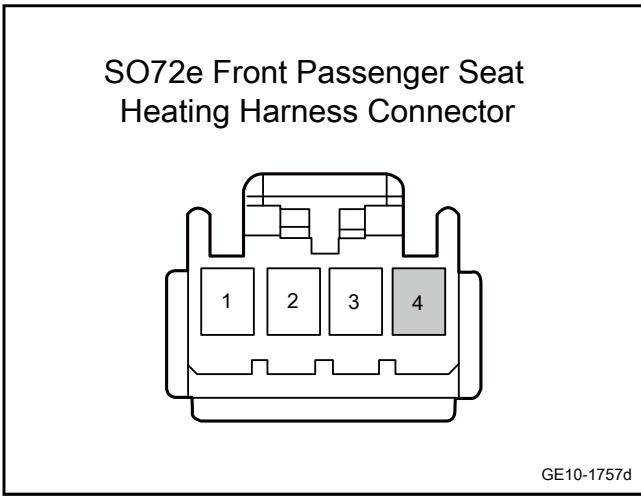
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check whether the front passenger seat cushion heater grounding harness is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front passenger seat cushion heating harness connector S072e.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
S072e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the front passenger seat cushion heater.

- A. Replace the front passenger seat cushion heater. See [Replace the Front Passenger Seat Cushion Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

**Step 8** Replace the seat module.

- A. Check the seat module power supply and ground wiring harness. See [Seat Module Power Failure](#)
- B. Replace the seat module. See [Replacement of Seat Module](#)

Next Step

**Step 9** Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

### 10.10.7.26 Special routine control-DSCU module

#### 1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next Step

Step 2	Enter the main interface of the relevant vehicle diagnostic instrument to scan the entire vehicle.
--------	--

Next Step

Step 3	Select the DSCU module.
--------	-------------------------

Next Step

Step 4	Enter the first-level menu 'Special Operations', select the 'seat calibration' function in the second-level menu; enter the first prompt interface; click 'OK'.
--------	---

Next Step

Step 5	Click 'Next' to start seat calibration.
--------	---

Next Step

Step 6	Start calibration.
--------	--------------------

Next Step

Step 7	Read the forth-back calibration status and calibration history of the seat.
--------	---

Next Step

Step 8	Read the calibration status and calibration history of the seat backrest.
--------	---

Next Step

Step 9	Check the front height calibration status and calibration history of the seat.
--------	--

Next Step

Step 10	Read the seat height calibration status and calibration history.
------------	--

Next Step

Step 11	The YY displayed in response to the four states.
---------	--

Next Step

Step 12	Clear the trouble code.
------------	-------------------------

Next Step

Step 13	Exit calibration and return to the main interface.
------------	--

Next Step

Step 14	Enter the first-level menu 'Special Operations' and select the 'steering wheel adjustment and calibration' function in the second-level menu.
------------	---

Next Step

Step 15	Click 'OK' to enter the first prompt interface.
------------	---

Next Step

Step 16	Click 'Next' to start steering wheel adjustment and calibration.
------------	--

Next Step

Step 17	Security authentication.
------------	--------------------------

Next Step

Step 18	Start calibration.
------------	--------------------

Next Step

Step 19	Read the forth-back calibration status and calibration history of the steering wheel.
------------	---

Next Step

Step 20	Read the telescopic calibration status and calibration history of the steering wheel.
------------	---

Next Step

Step 21	The YY displayed in response to the two states.
------------	---

Next Step

Step 22	Clear the trouble code.
------------	-------------------------

Next Step

Step 23	Exit calibration and return to the main interface.
------------	--

Next Step

Step 24	Enter the first-level menu 'Special Operations', and select the 'rear-view mirror test' function in the second-level menu.
------------	--

Next Step

Step 25	Click 'OK' to enter the first prompt interface.
------------	---

Next Step

Step 26	Click 'Next' to start the rearview mirror test.
------------	---

Next Step

---

Step 27	Start left/right rearview mirror calibration.
------------	---

Next Step

Step 28	The status of the rear-view mirror is displayed according to the reply YY.
------------	--

Next Step

Step 29	Read the fault code.
------------	----------------------

Next Step

Step 30	Clear the trouble code.
------------	-------------------------

Next Step

Step 31	Exit the test and return to the main interface.
------------	---

## 10.10.8 Removal and installation

### 10.10.8.1 Replacement of the front driver seat assembly

#### Removal procedure

##### Caution

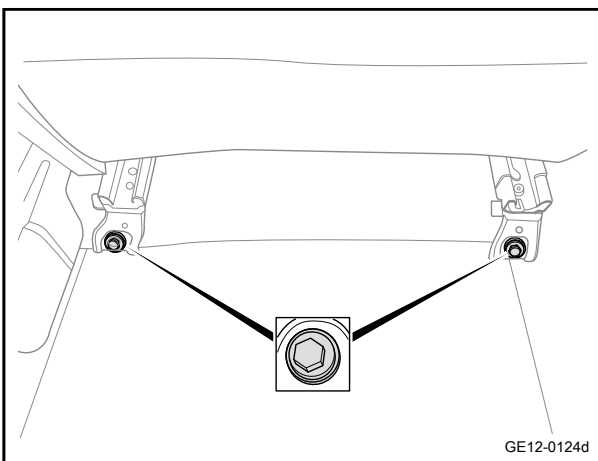
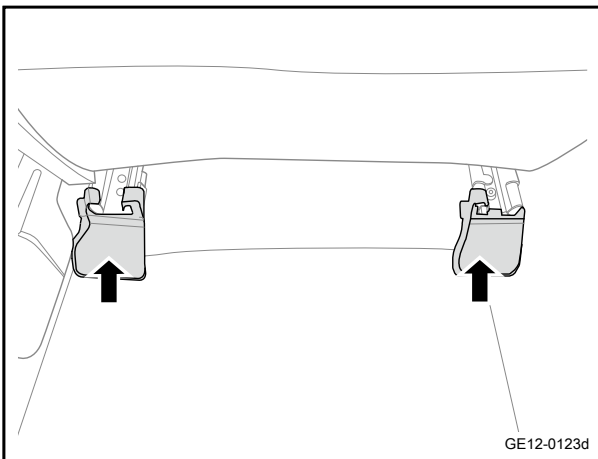
The left front seat and the right front seat share the same disassembly and assembly methods.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

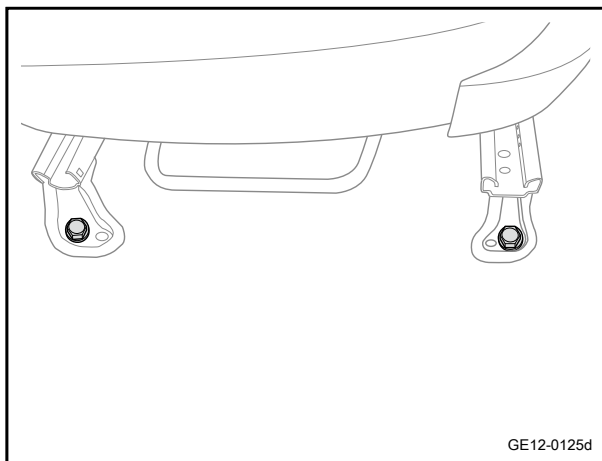
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Take off the outer slide rail trim cover at the rear end of the left front seat and the inner slide rail trim cover at the rear end of the left front seat.

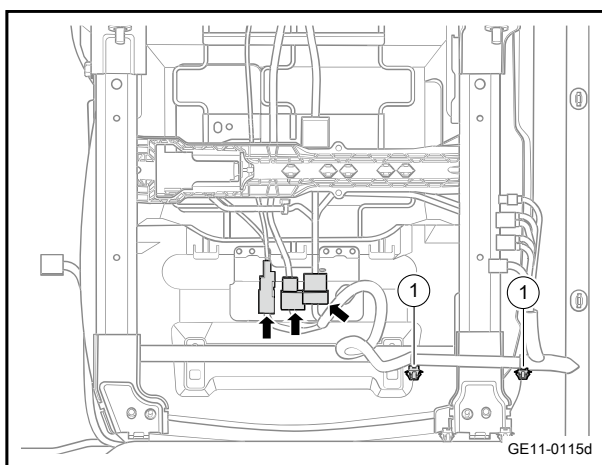


- 3 Adjust the driver's seat assembly to the front, and remove the 2 fixing bolts at the rear of the driver's seat assembly.



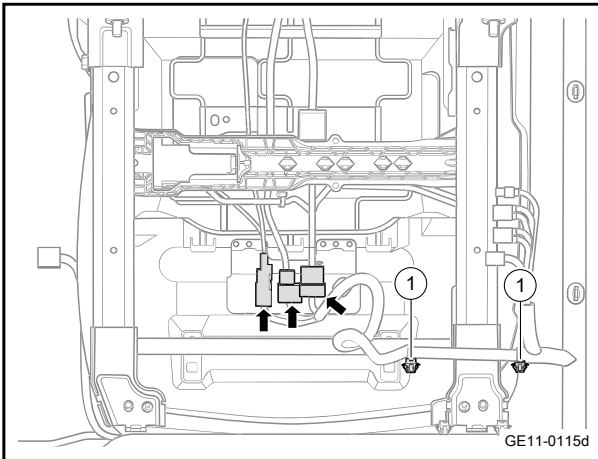


- 4 Adjust the driver's seat assembly to the back, and remove the 2 fixing bolts at the front of the driver's seat assembly.

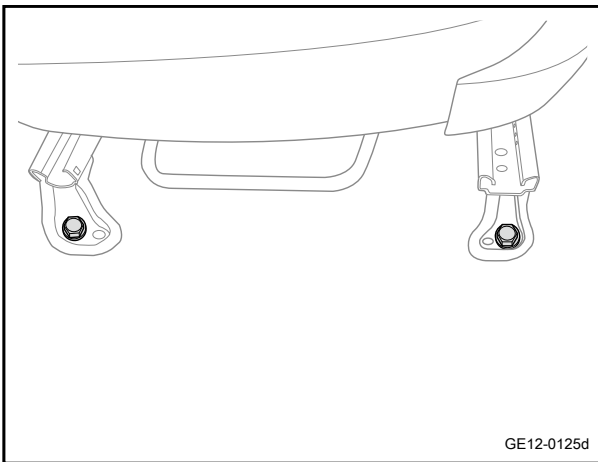


- 5 Turn the driver's seat assembly backwards, disconnect the harness buckle 1, disconnect the harness connector, and take out the driver's seat assembly.

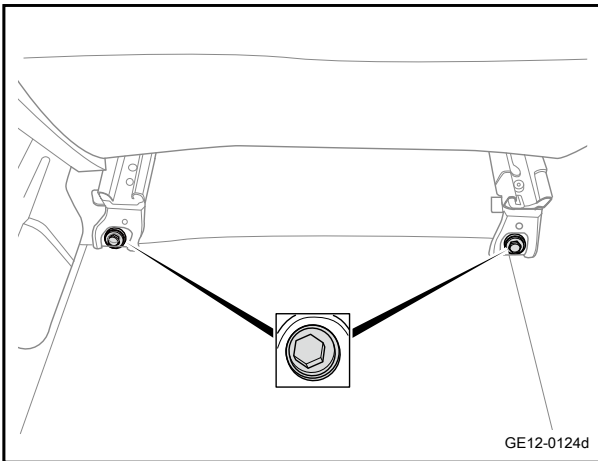
Installation procedure



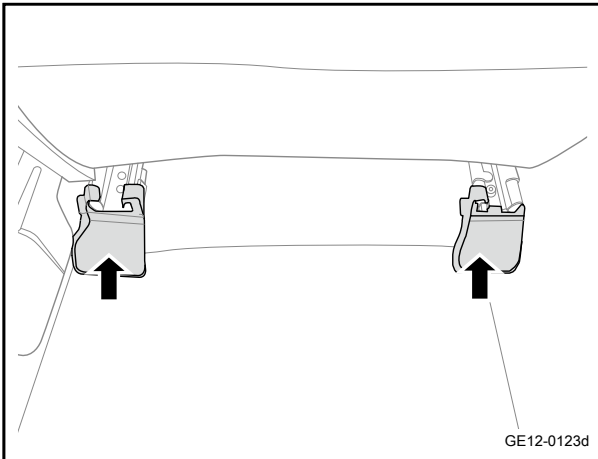
- 1 Put it in the driver's seat assembly, tilt the seat to the back, connect the harness connector under the seat, and clamp the harness buckle 1.



- 2 Adjust the driver's seat assembly to the rear, install and tighten the 2 fixing bolts at the front of the driver's seat assembly.  
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 3 Adjust the driver's seat assembly to the front, install and tighten the 2 fixing bolts at the rear of the driver's seat assembly.  
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 4 Install the rear outer slide rail trim cover of the left front seat and the inner slide rail trim cover of the rear left front seat.

- 5 Connect the negative cable of battery.

### 10.10.8.2 Replacement of the outer guard plate of the left front seat

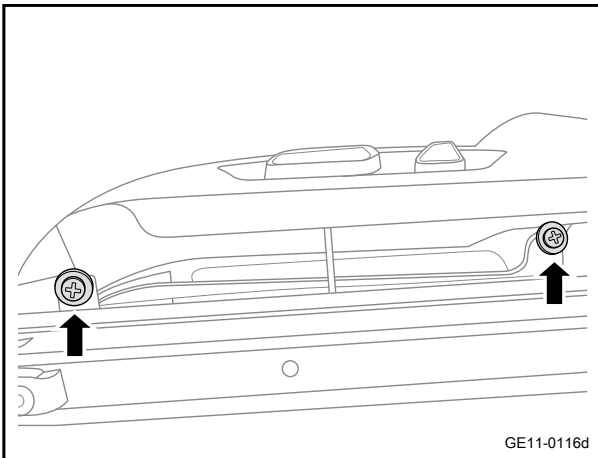
#### Removal procedure

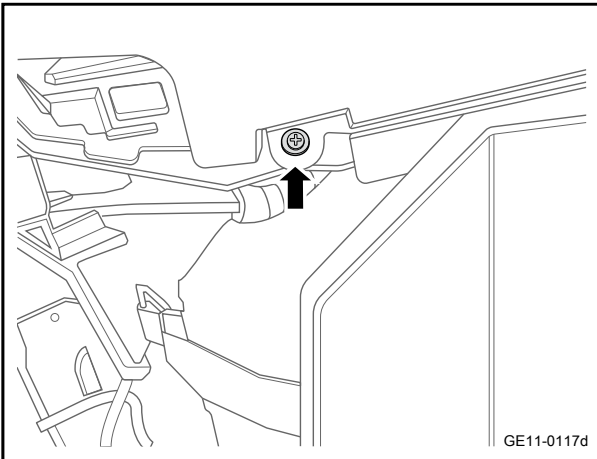
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

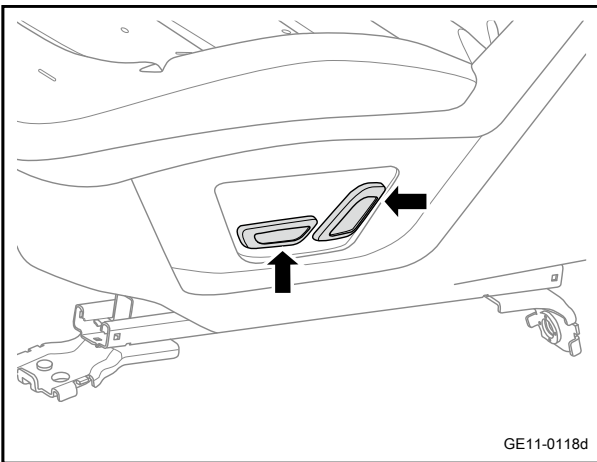
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the 2 fixing screws at the bottom of the left front seat outer guard plate.

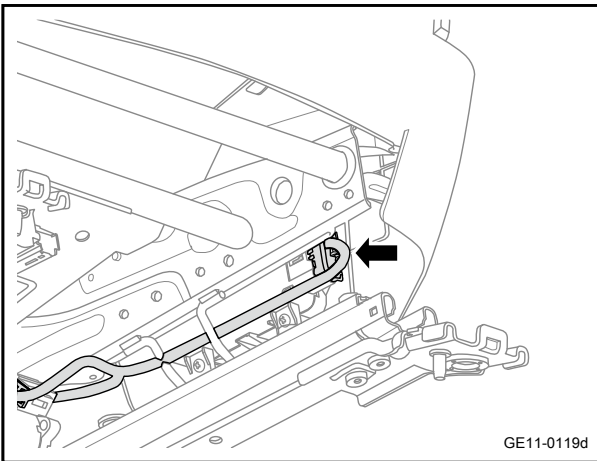




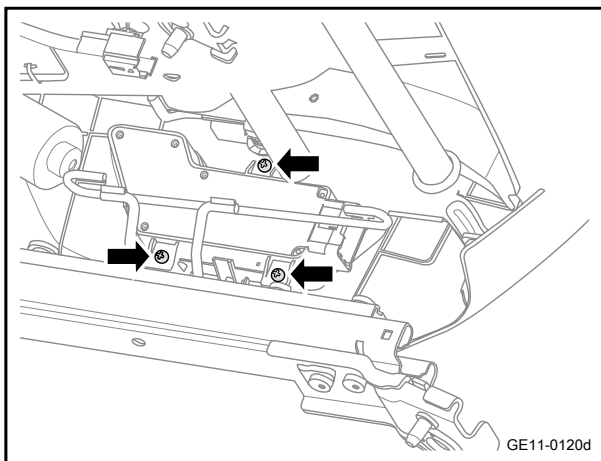
- 4 Remove the 1 fixing screw at the rear of the left front seat outer guard plate.



- 5 Remove the left front seat adjustment button.

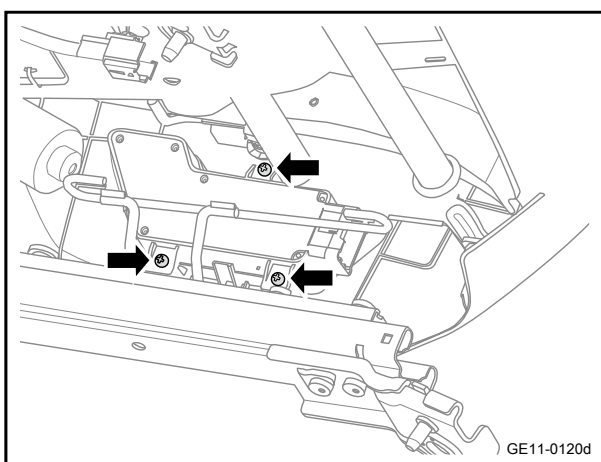


- 6 Disconnect the seat adjustment switch harness connector.

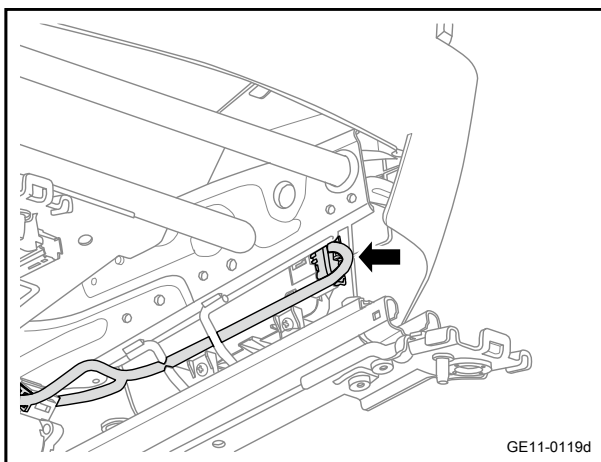


- 7 Remove the 3 fixing screws of the seat adjustment switch, and remove the seat adjustment switch.
- 8 Remove the outer guard plate of the left front seat.

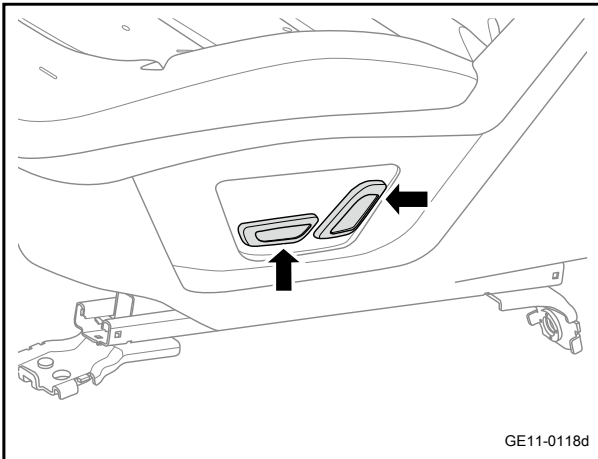
#### Installation procedure



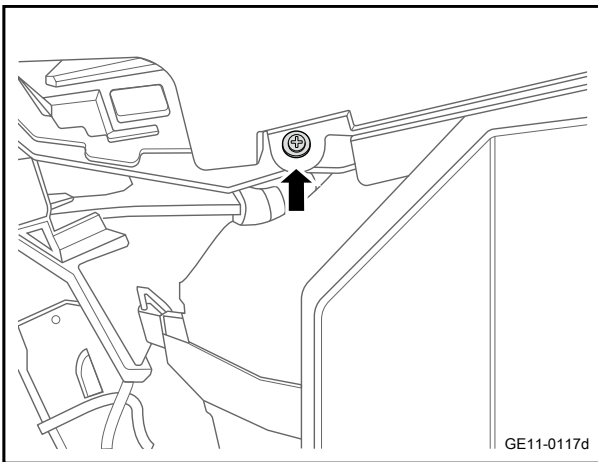
- 1 Install the seat adjustment switch, align the outer guard plate of the left front seat with the mounting holes, install and tighten the 3 fixing screws of the seat adjustment switch.



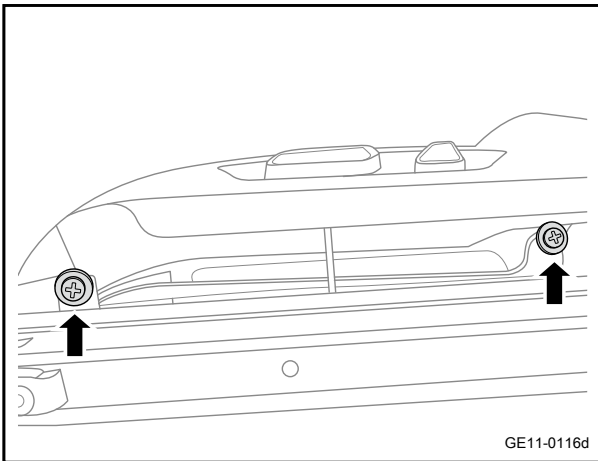
- 2 Connect the seat adjustment switch harness connector.



3 Install the left front seat adjustment button.



4 Install and tighten the 1 fixing screw at the rear of the left front seat outer guard plate.



5 Install and tighten the 2 fixing screws at the bottom of the left front seat outer guard plate.

6 Install front power seat assembly.

7 Connect the negative cable of battery.

### 10.10.8.3 Replacement of the inner guard plate of the left front seat

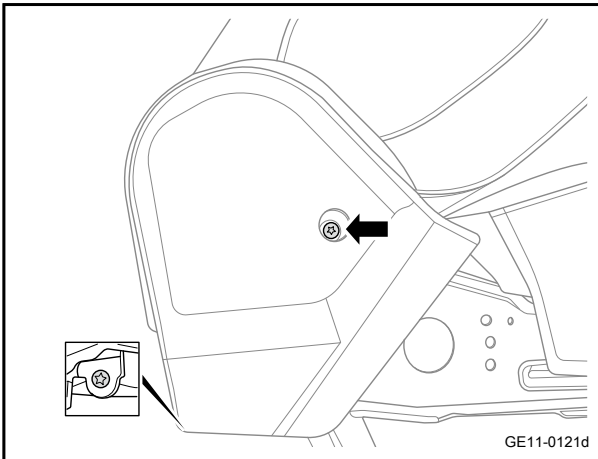
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

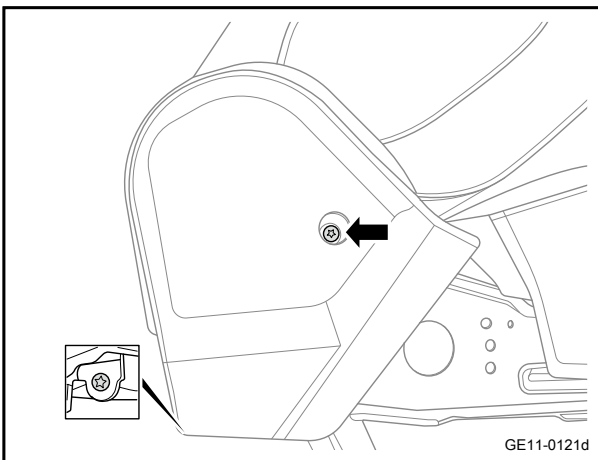
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the front fixing screw of the inner guard plate of the left front seat.
- 4 Remove the fixing screws at the bottom of the left front seat inner guard plate, and remove the left front seat inner guard plate.



#### Installation procedure

- 1 Align the inner guard plate of the left front seat with the installation space, install and tighten the fixing screws at the bottom of the inner guard plate of the left front seat.
- 2 Install and tighten the front fixing screw of the left front seat inner guard plate.



- 3 Install front power seat assembly.
- 4 Connect the negative cable of battery.

### 10.10.8.4 Replacement of left front seat backrest assembly

#### Removal procedure

**Caution**

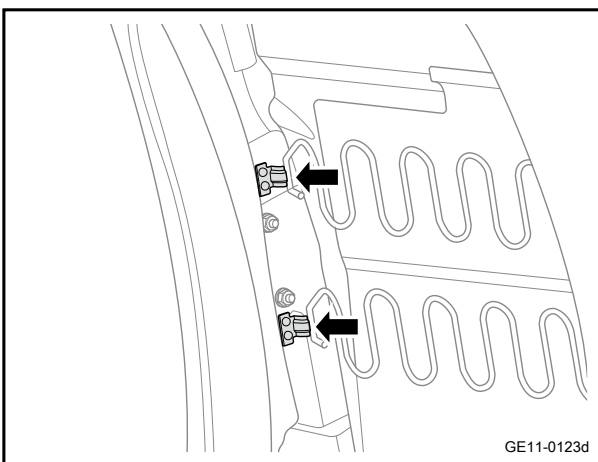
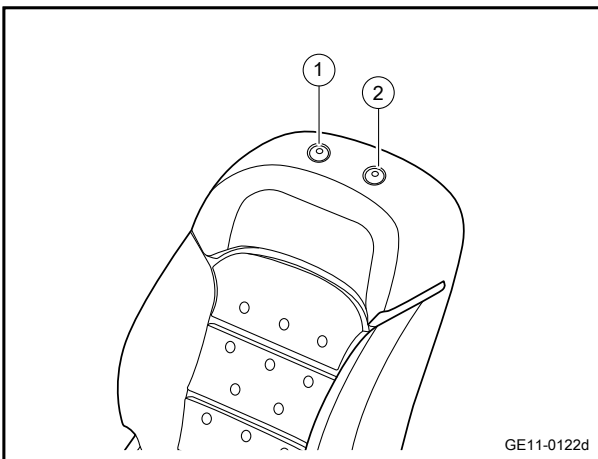
The method of disassembly and assembly of the left front seat back assembly is the same as that of the right front seat back assembly.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

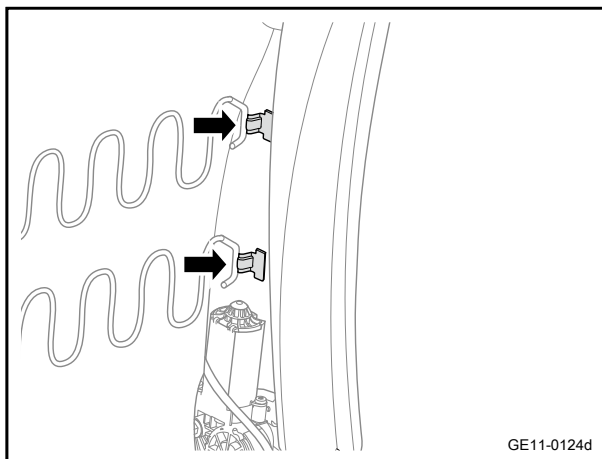
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the left front seat cushion assembly. See [Replacement of left front seat cushion assembly](#)
- 4 Remove the front headrest. See [Replacement of seat headrest assembly](#)
- 5 Remove headrest free guide bushing 1 and locking guide bushing 2.

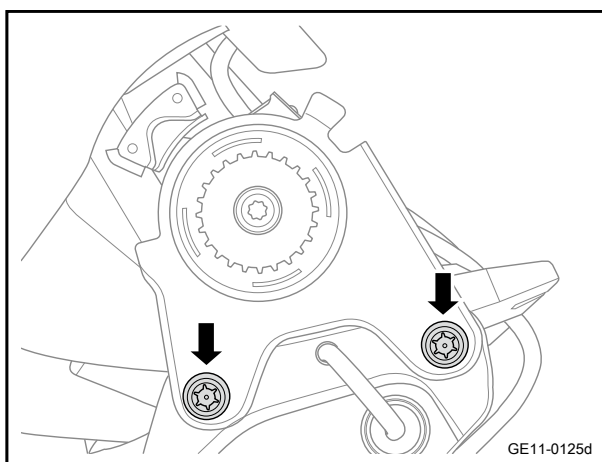


- 6 Remove the buckle on the left side of the left front seat backrest assembly.

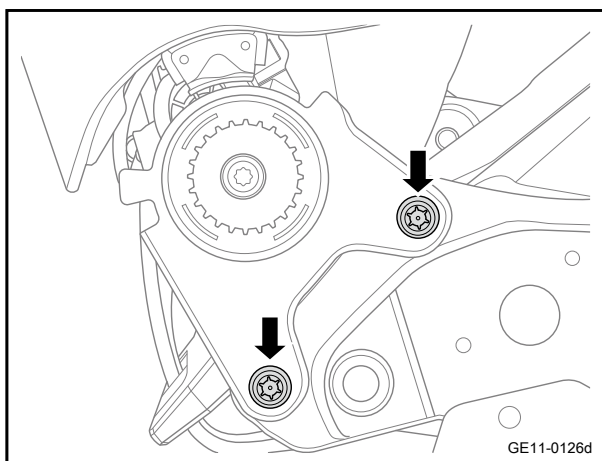




- 7 Remove the buckle on the right side of the left front seat backrest assembly.

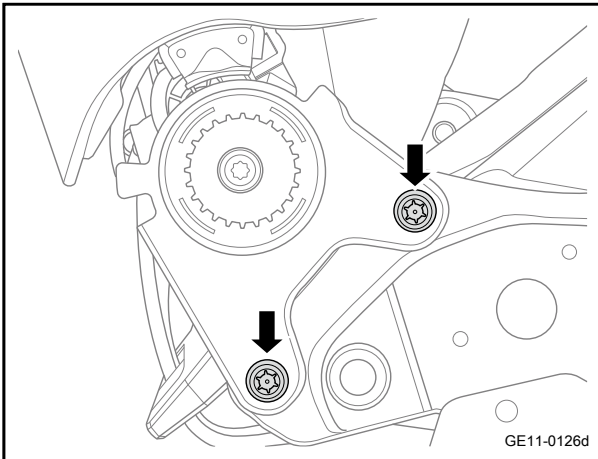


- 8 Remove the 2 fixing bolts on the left side of the left front seat backrest assembly.

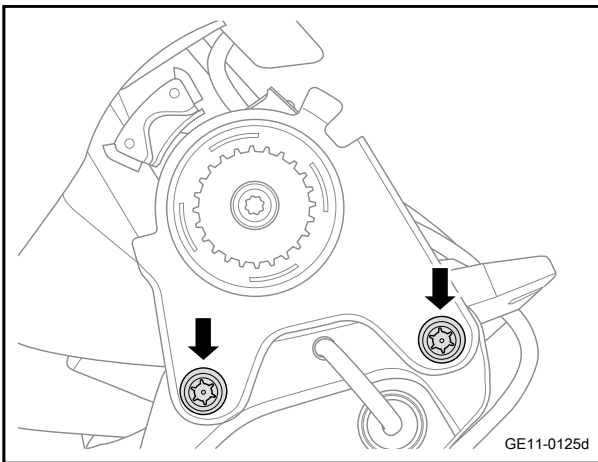


- 9 Remove the 2 fixing bolts on the right side of the left front seat backrest assembly.
- 10 Remove the left front seat backrest assembly.

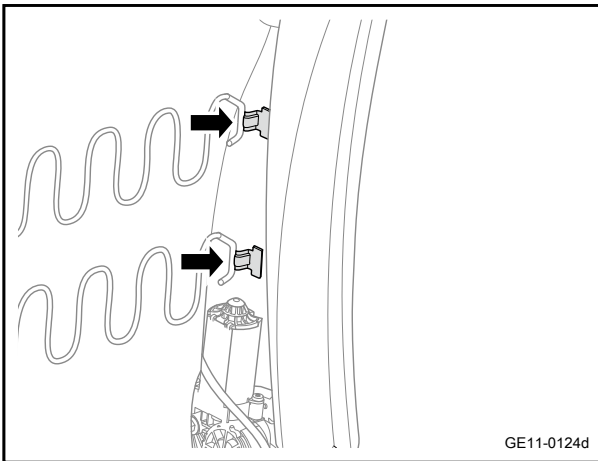
Installation procedure



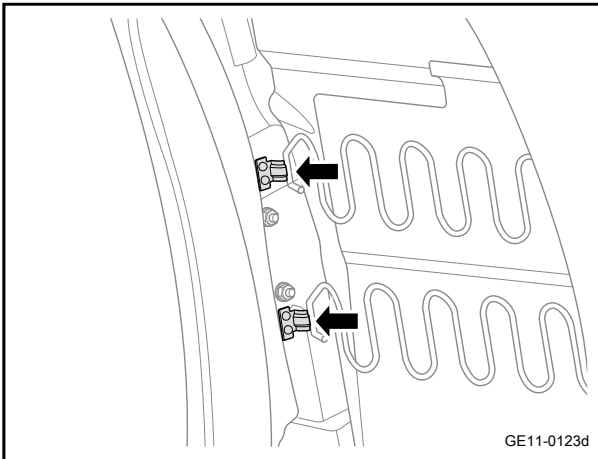
- 1 Install the left front seat backrest assembly.
- 2 Install the 2 fixing bolts on the right side of the left front seat backrest assembly.



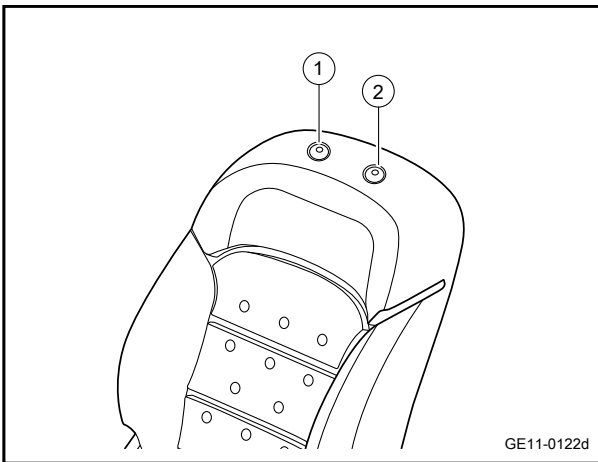
- 3 Install the 2 fixing bolts on the left side of the left front seat backrest assembly.



- 4 Install the right buckle of the left front seat backrest assembly.



- 5 Install the left buckle of the left front seat backrest assembly.



- 6 Install headrest free guide bushing 1 and locking guide bushing 2.

- 7 Install headrests of the front row.
- 8 Install the left front seat cushion assembly.
- 9 Install front power seat assembly.
- 10 Connect the negative cable of battery.

#### 10.10.8.5 Replacement of slide rail motor assembly

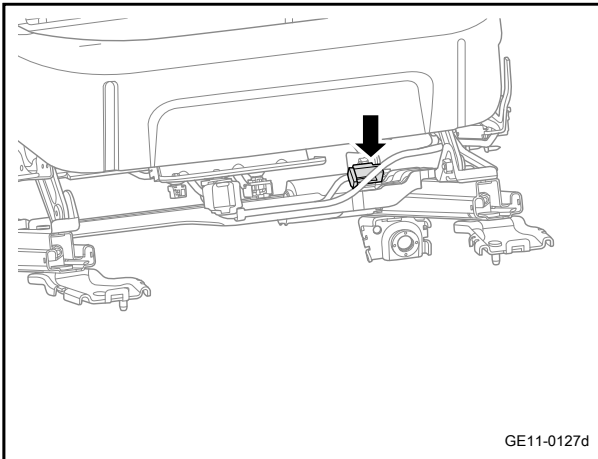
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

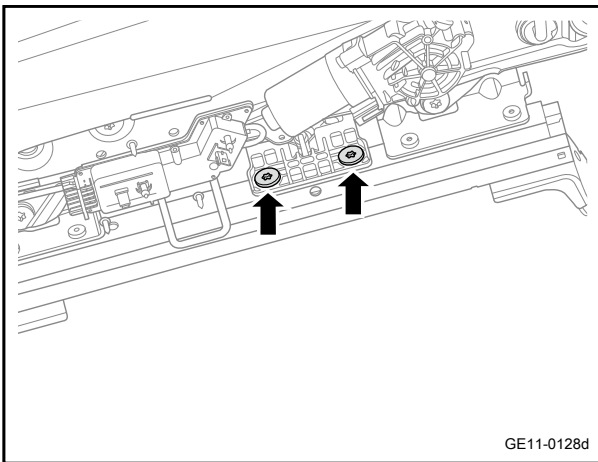
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

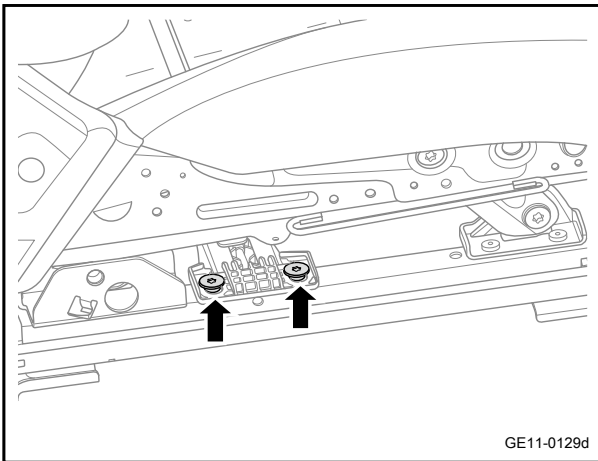
- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)



- 3 Disconnect the slide motor assembly harness connector.

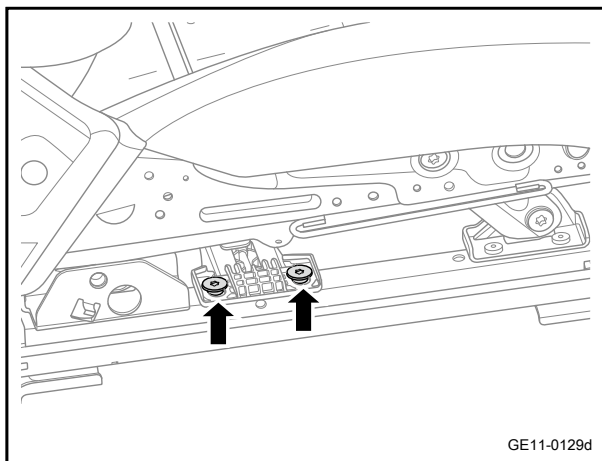


- 4 Remove the 2 fixing bolts on the left side of the slide rail motor assembly.

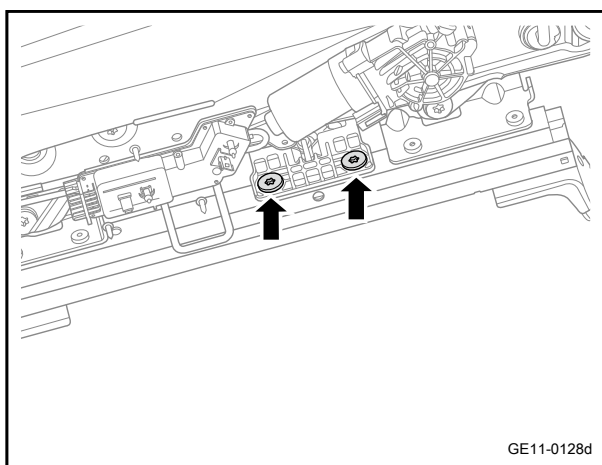


- 5 Remove the 2 fixing bolts on the right side of the slide rail motor assembly.

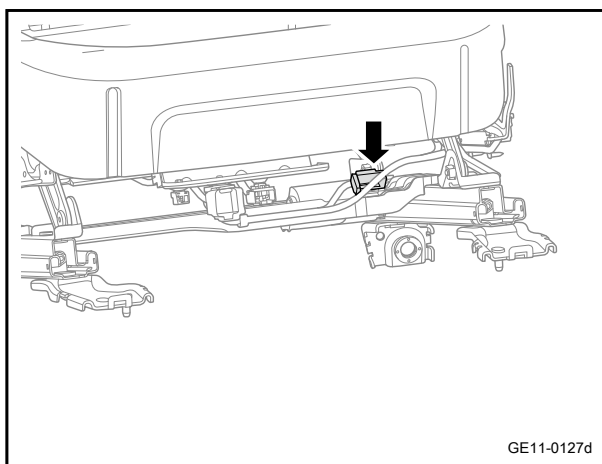
Installation procedure



- 1 Install the 2 fixing bolts on the right side of the slide rail motor assembly.



- 2 Install the 2 fixing bolts on the left side of the slide rail motor assembly.



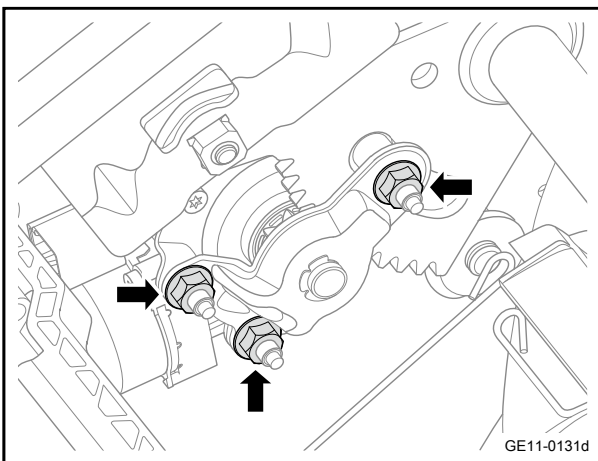
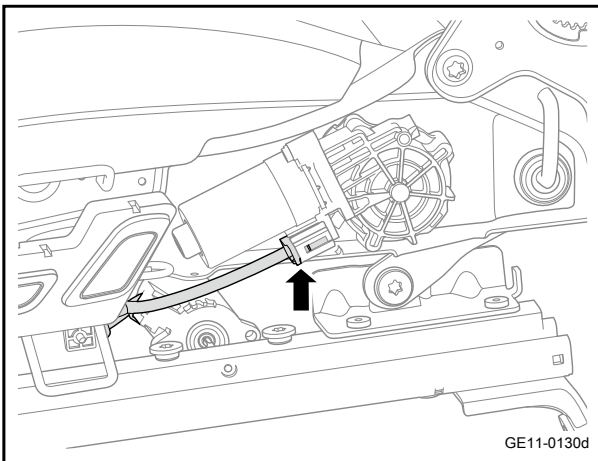
- 3 Connect the slide motor assembly harness connector.

- 4 Install front power seat assembly.
- 5 Connect the negative cable of battery.

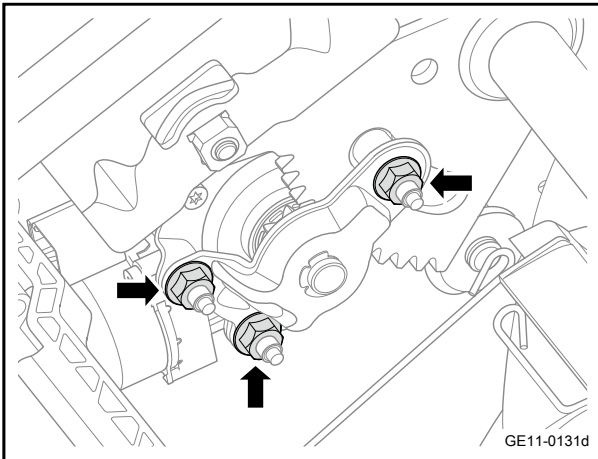
### 10.10.8.6 Replacement of lifting motor assembly

Removal procedure

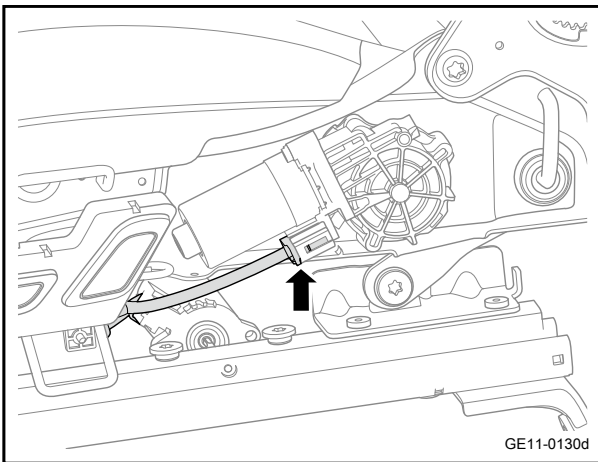
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)
- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the outer guard plate of the left front seat. See [Replacement of the outer guard plate of the left front seat](#)
- 4 Disconnect the regulator motor assembly harness connector.
- 5 Remove the 3 fixing bolts of the lifting motor assembly.



Installation procedure



- 1 Install 3 fixing bolts of the regulator motor assembly.



- 2 Connect the regulator motor harness connector.

- 3 Install the left front seat outer guard.
- 4 Install front power seat assembly.
- 5 Connect the negative cable of battery.

### 10.10.8.7 Replacement of the recliner motor assembly

#### Removal procedure

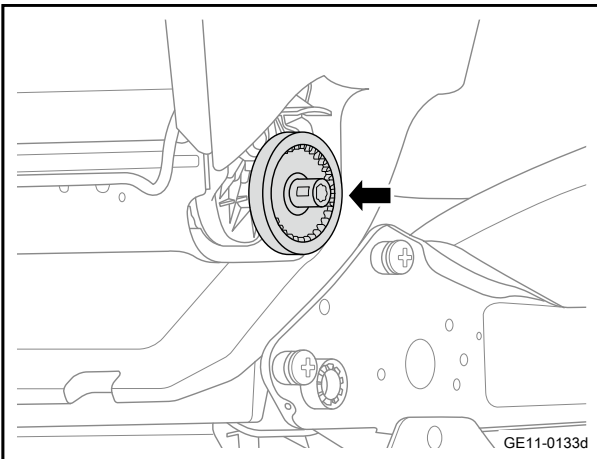
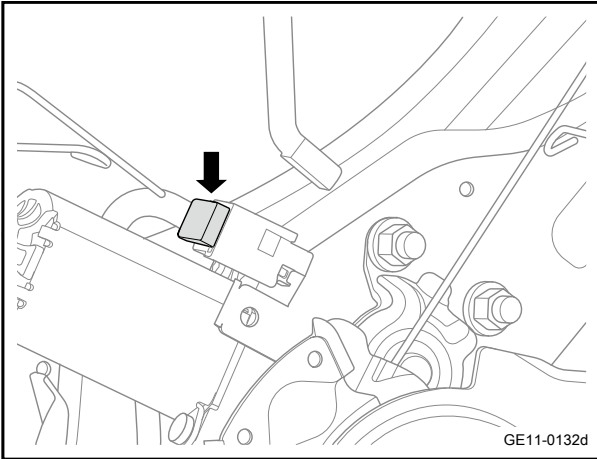
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

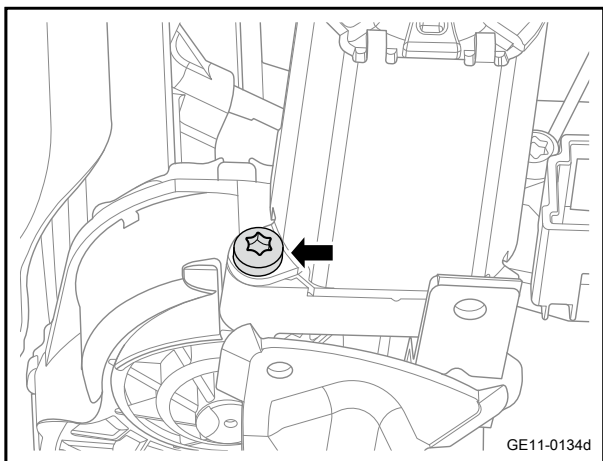
- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the left front seat cushion assembly. See [Replacement of left front seat cushion assembly](#)
- 4 Remove the outer guard plate of the left front seat. See [Replacement of the outer guard plate of the left front seat](#)

- 5 Remove the inner guard plate of the left front seat. See [Replacement of the inner guard plate of the left front seat](#)
- 6 Remove the left front seat backrest assembly. See [Replacement of left front seat backrest assembly](#)
- 7 Disconnect the wire harness connector of the recliner motor assembly.

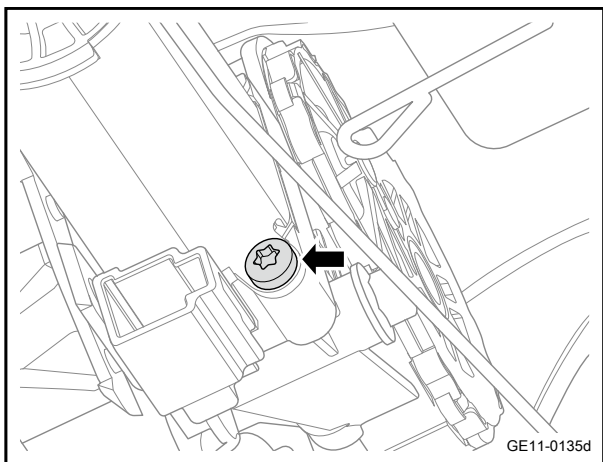


- 8 Take out the drive shaft of the recliner motor assembly.



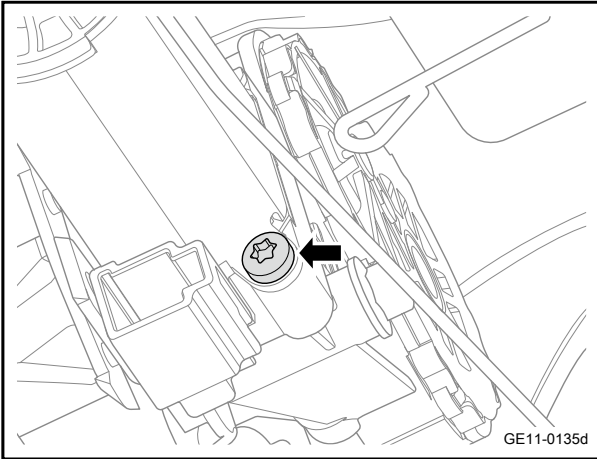


9 Remove the fixing bolts of the recliner motor assembly.

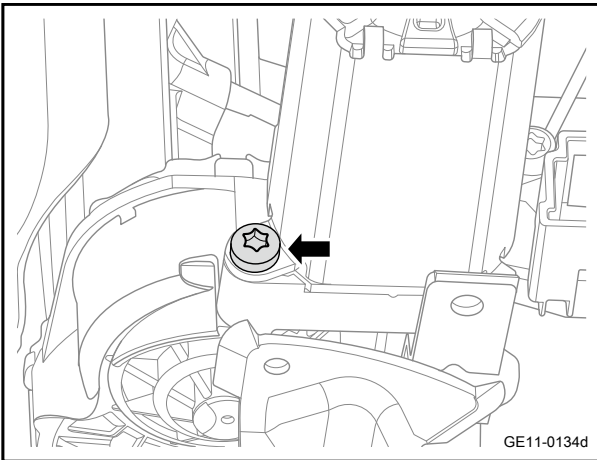


10 Remove the fixing bolts of the recliner motor assembly.

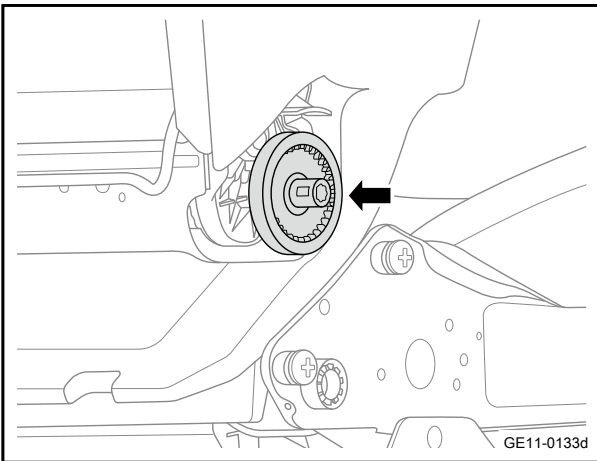
Installation procedure



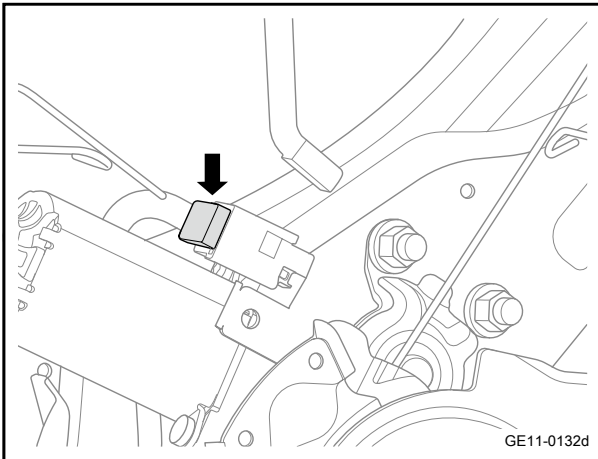
1 Install the fixing bolts of the recliner motor assembly.



2 Install the fixing bolts of the recliner motor assembly.



3 Install the drive shaft of the recliner motor assembly.



- 4 Connect the wire harness connector of the recliner motor assembly.

- 5 Install the left front seat backrest assembly.
- 6 Install the inner guard plate of the left front seat.
- 7 Install the left front seat outer guard.
- 8 Install the left front seat cushion assembly.
- 9 Install front power seat assembly.
- 10 Connect the negative cable of battery.

#### 10.10.8.8 Replacement of left front seat cushion assembly

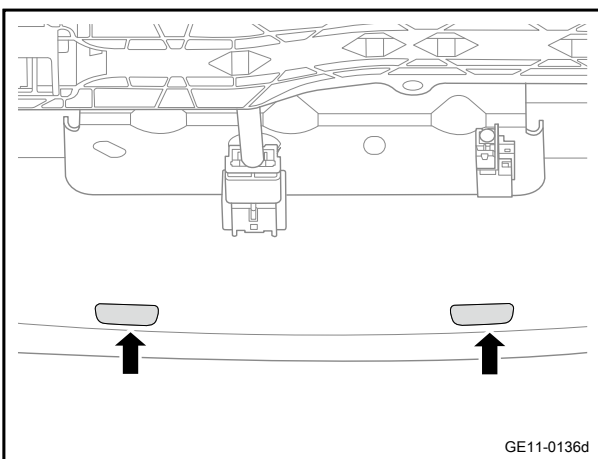
##### Removal procedure

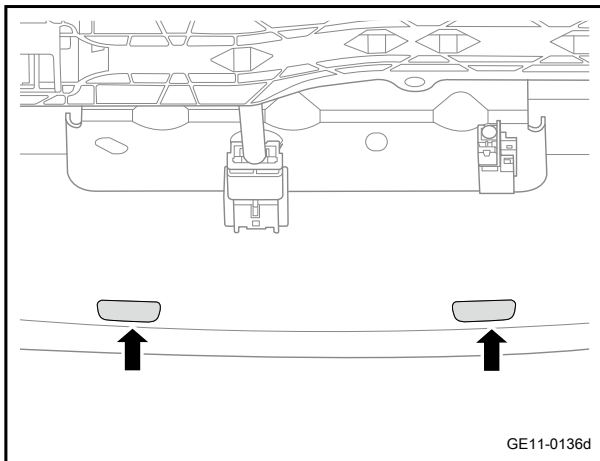
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front power seat assembly. Refer to [Replacement of Front Power Seat Assembly](#)
- 3 Remove the outer guard plate of the left front seat. See [Replacement of the outer guard plate of the left front seat](#)
- 4 Disengage the buckle of the left front seat cushion assembly.
- 5 Remove the left front seat cushion assembly.





## Installation procedure

- 1 Move the left front seat cushion assembly to the installation position.
- 2 Fasten the left front seat cushion assembly buckle.

- 3 Install the left front seat outer guard.
- 4 Install front power seat assembly.
- 5 Connect the negative cable of battery.

### 10.10.8.9 Replacement of the driver's seat assembly module

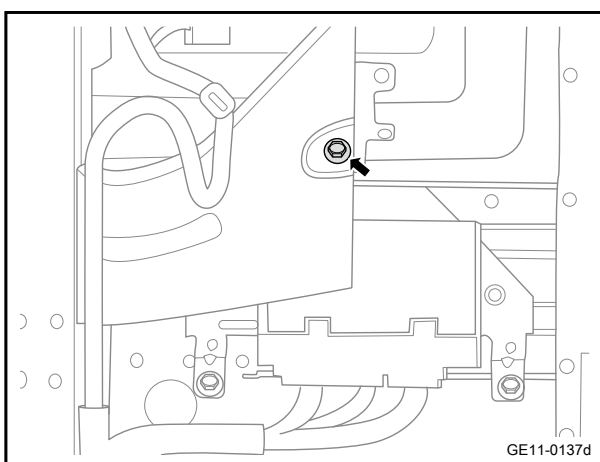
## Removal procedure

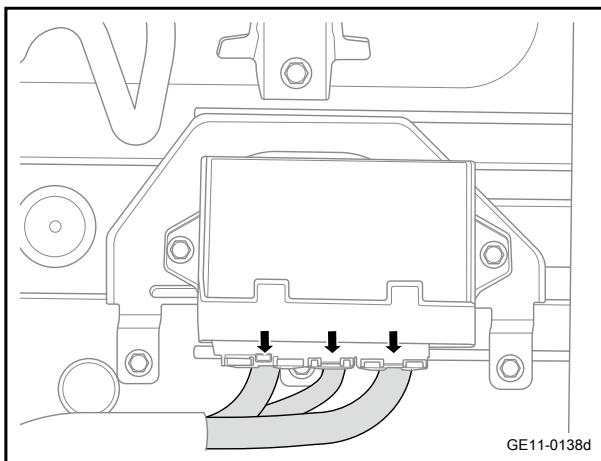
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

## Warning

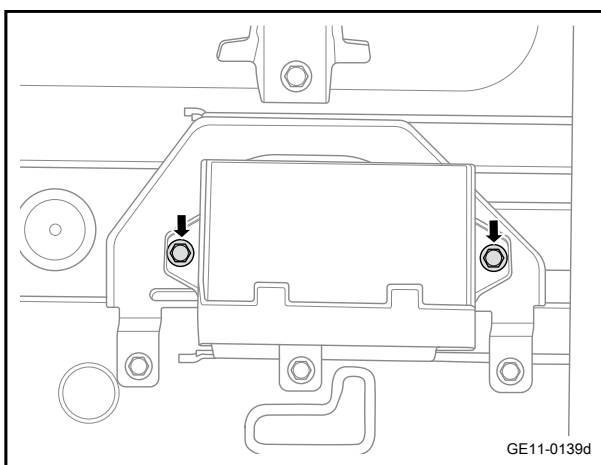
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the carpet in the vehicle. Refer to [Replacement of vehicle carpet](#)
- 3 Remove the air outlet fixing bolts and remove the air outlet.



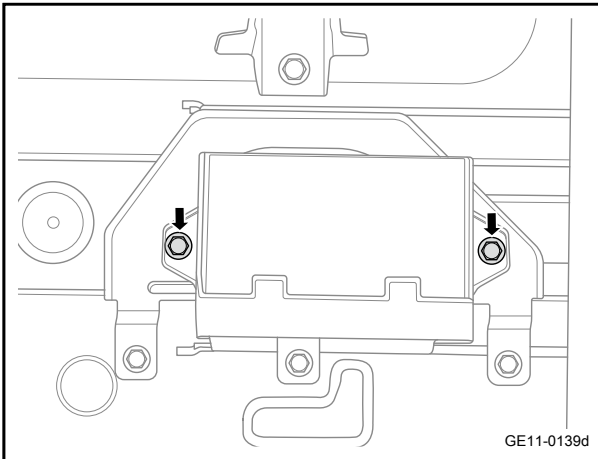


- 4 Disconnect the harness connector of the driver's seat assembly module.

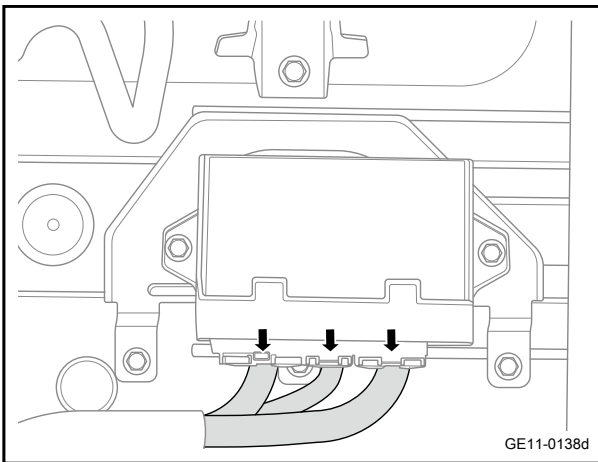


- 5 Remove the 2 fixing bolts of the driver's seat assembly module.

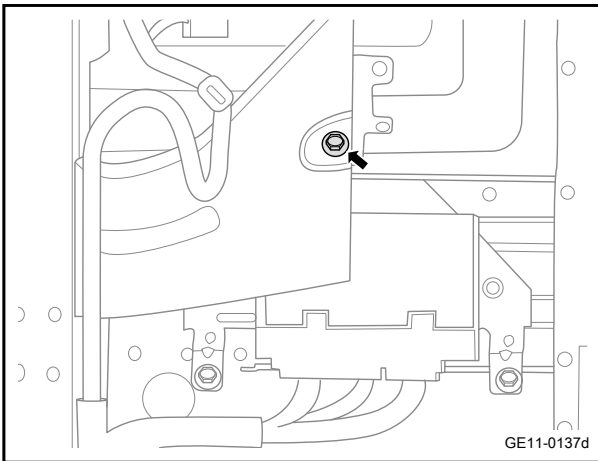
Installation procedure:



- 1 Install and tighten the 2 fixing bolts of the driver's seat assembly module.  
Torque: 4N·m (metric system) 3lb-ft (Imperial system)



- 2 Connect the harness connector of the driver's seat assembly module.



- 3 Install the air outlet and tighten the air outlet fixing bolts.  
Torque: 6N·m (metric system) 4.5lb-ft (Imperial system)

- 4 Install the front carpet in the vehicle.
- 5 Connect the negative cable of battery.

---

## 10.11 Defrost

### 10.11.1 Specification

#### 10.11.1.1 Defrosting working condition requirements

Place the starting switch in "ON" position	Battery voltage (V)	Defrosting working status
OFF	-	OFF
ACC/ON/START	>10.7V	Normal
ACC/ON/START	<10.3V	Stop working

## 10.11.2 Description and Operation

### 10.11.2.1 Instructions and Operations

The main components of the defrosting system are as follows:

- Defrosting switch
- Left and right exterior viewrear mirror heaters
- Rear fixed vehicle window heater

The defrosting switch is set at the central A/C control panel of the dashboard; the rear fixed window heaters are integrated with glasses; rearview mirror heaters are integrated in the left and right rearview mirrors.



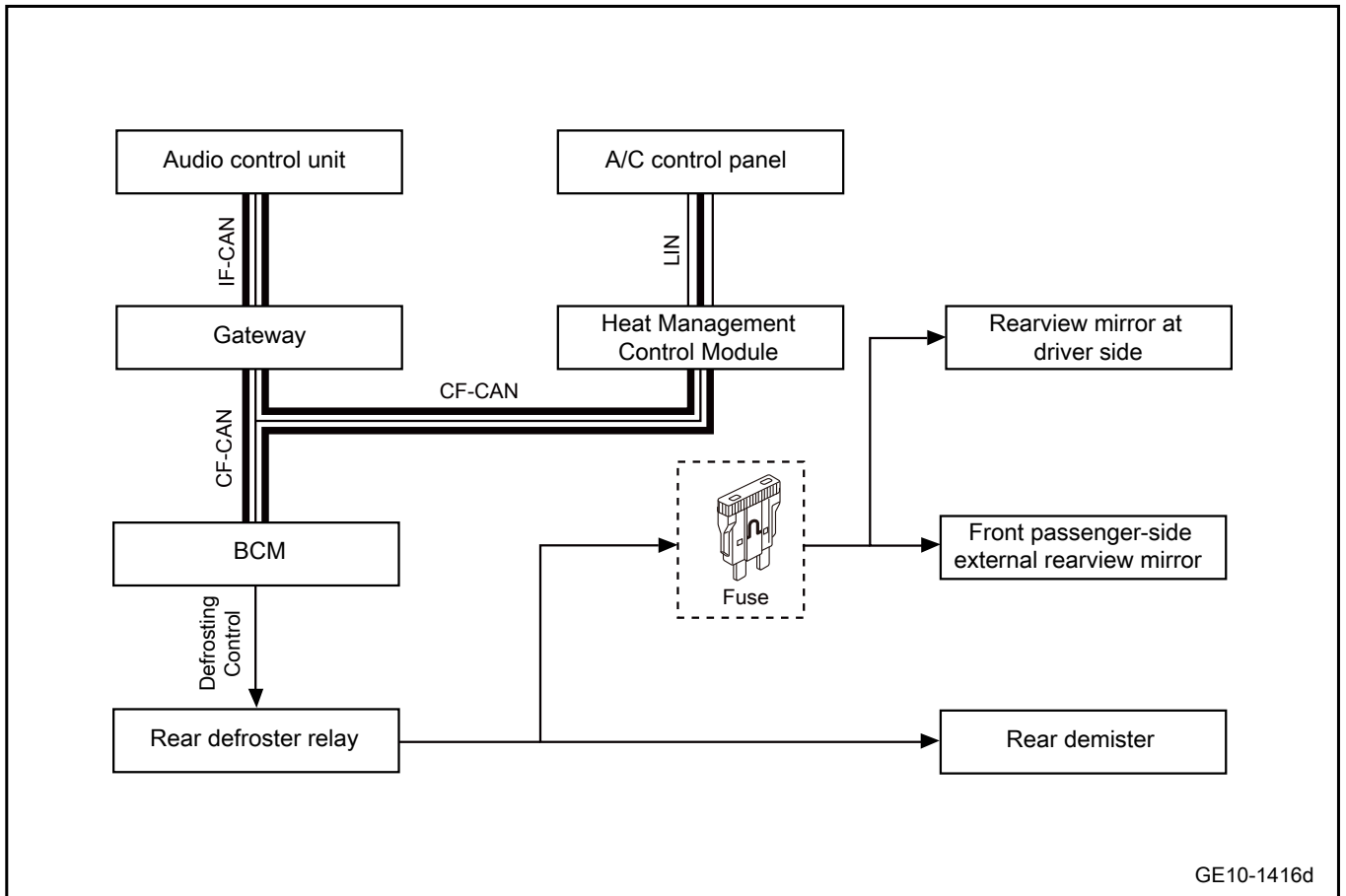
### 10.11.3 How the system works

#### 10.11.3.1 System Working Principles

Press the defroster switch on the air conditioner control panel or the defroster switch on the air conditioner control panel in the multimedia display to transmit the defrost request signal to the BCM. The BCM controls the defrost relay, and the body control module (BCM) outputs power to the rear fixed window and the exterior mirror heater. The defrosting/rearview mirrors heating switch is an inching button switch. Press the rear defrost/rear view mirror heating switch, and the rear defrost/rear view mirror heater will automatically turn off after heating for 12 minutes.

10.11.4 Electrical block diagram

10.11.4.1 Electrical schematic diagram of the defrosting system



## 10.11.5 Diagnostic information and steps

### 10.11.5.1 Diagnosis Description

Before the diagnosis of the defrost system fault, refer to [Description and Operation](#) and [System Working Principle](#). Understand and be familiar with the system working principle of the defrosting system before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of the defrosting system should start with visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.11.5.2 Routine inspection

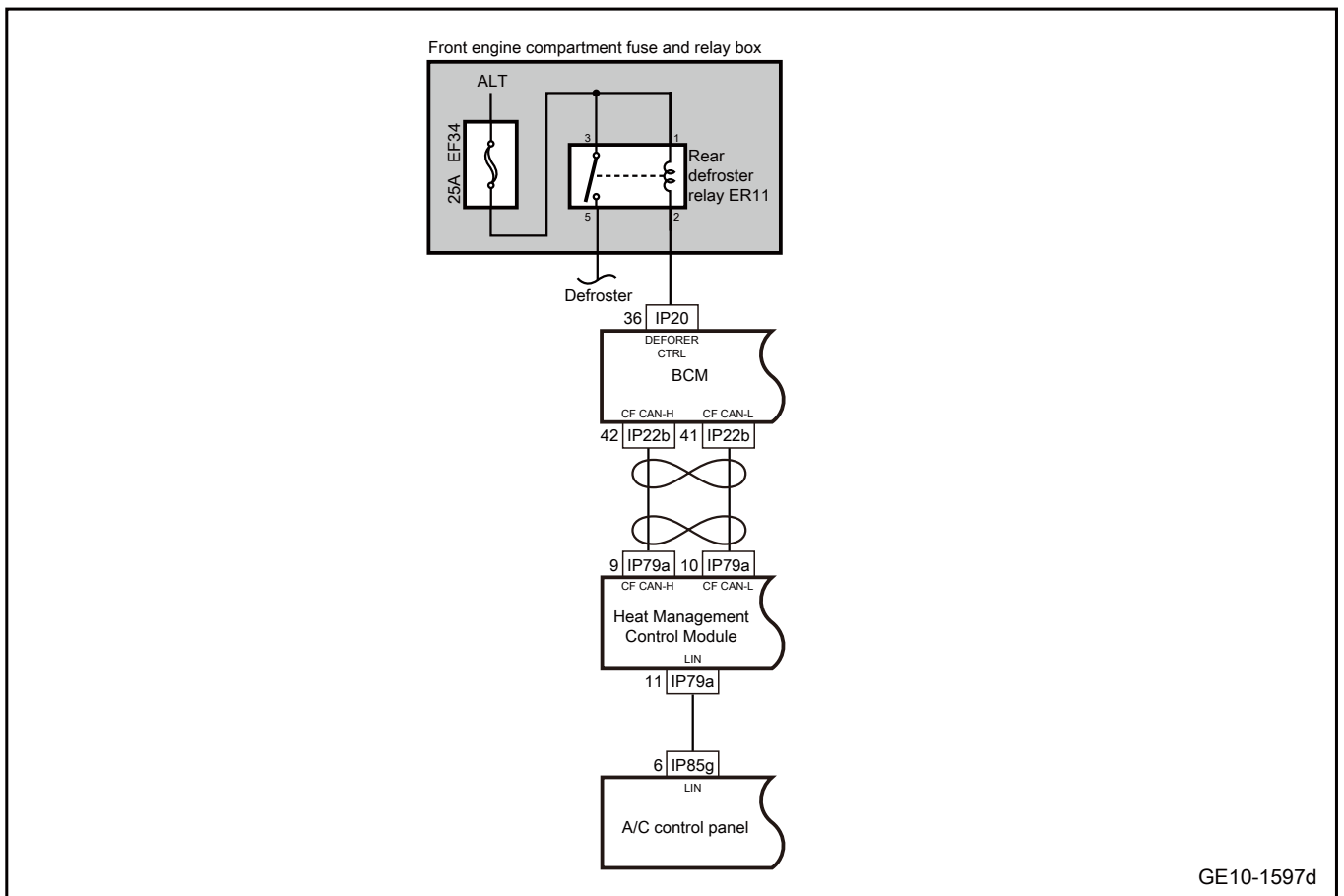
- Check after-sales installations that may affect a defroster to ensure that these devices are unable to affect the defroster.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.11.5.3 Fault symptom table

Symptom	Suspected parts	Maintenance method
All defrosters don't work	1. Fuse	See <a href="#">All Defrosters Don't Work</a>
	2. Harness and connector	
	3. Relay	
	4. Automatic air conditioning control panel	
	5. Thermal management control module	
	6. BCM	
Rear defroster is inoperative	1. Fuse	Refer to <a href="#">Rear defroster is inoperative</a>
	2. Harness and connector	
	3. Relay	
	4. Rear defogger	
The driver side mirror defrosting does not work	1. Fuse	See <a href="#">Drivers Side Mirror Defrosting Does Not Work</a>
	2. Harness and connector	
	3. Relay	
	4. Exterior rearview mirror at driver side	

### 10.11.5.4 All defrosters don't work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear defroster relay, BCM, thermal management control module, automatic air-conditioning control panel harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the fuse and check whether the fuse EF34 in the front engine compartment fuse relay box is blown.

Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check rear defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the rear defroster relay ER11 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Check the power supply circuit of the rear defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug rear defroster relay ER11.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
ER11(1)	Vehicle body is grounded.	Standard voltage: 11-14V
ER11(3)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

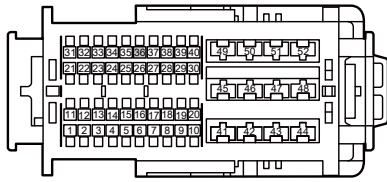
No

Repair or replace the harness.

Yes

Step 5 Check the control wiring harness between the rear defrost relay and BCM.

IP20 body control module harness connector 1



GE10-1758d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the BCM harness connector IP20.
- C. Unplug rear defroster relay ER11.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(36)	ER11(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP20(36)	Vehicle body is grounded.	Standard voltage: equal to 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Check the CF-CAN network integrity.

- A. Check the instrument communication network, refer to [CF-CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN bus network is normal.

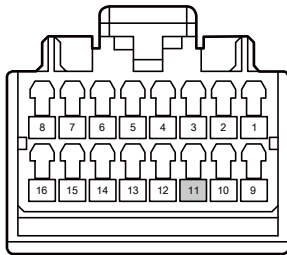
No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

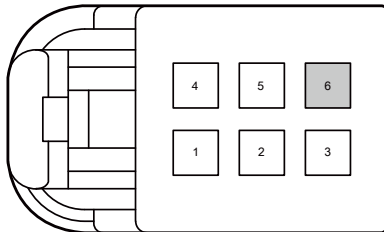
**Step 7** Check the control wiring harness between the thermal management control module and the automatic air conditioning control panel.

IP79a Heat Management Control Module Harness Connector 1



GE10-1759d

IP85g harness connector A of automatic air conditioning control panel



GE10-1760d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the thermal management control module harness connector IP79a.
- C. Disconnect the automatic air-conditioning control panel harness connector IP85g.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP79a(11)	IP85g(6)	Standard resistance: less than 1Ω

- E. Disconnect the relevant modules of the body LIN line.
- F. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- G. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP79a(11)	Vehicle body is grounded.	Standard voltage: equal to 0V

- H. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Replace automatic air-conditioning control panel.

- A. Replace the automatic air-conditioning control panel, see [Replacement of the Automatic Air-conditioning Control Panel](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Replace the thermal management control module.

- A. Replace the thermal management control module, see [Replacement of the Thermal Management Control Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace the BCM
------------	-----------------

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM, refer to [Replacement of CCU assembly](#)

Next Step

Step 11	Reprogram and reset the BCM.
---------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

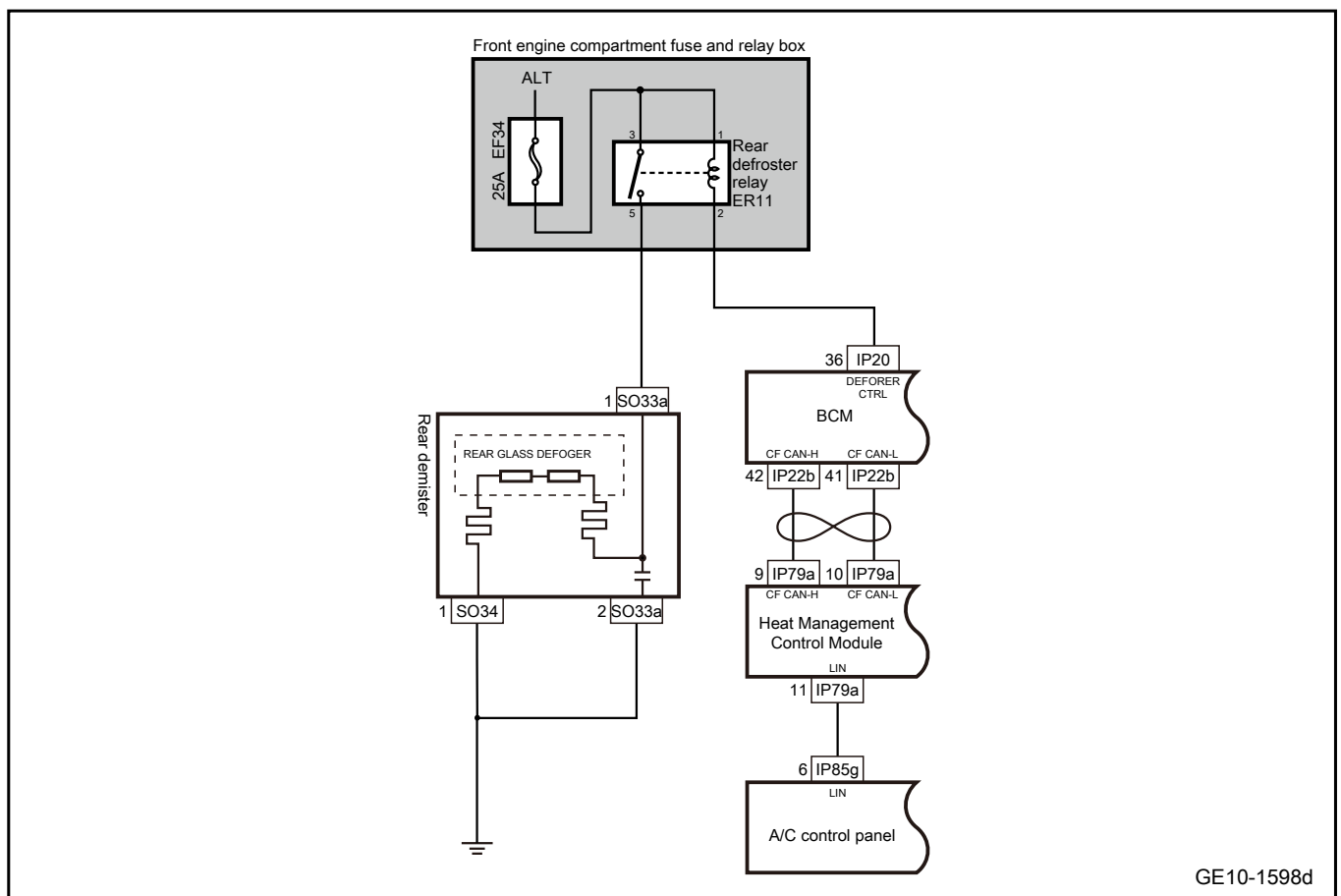
Next Step

Step 12	System is normal.
------------	-------------------

### 10.11.5.5 Rear defroster is inoperative

1. Schematic circuit diagram:





2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear defroster for signs of damage, distortion, stains, loosening, etc.
- B. Check the rear defogger harness connector for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage at both ends.  
  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** | Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the EF34 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check the power supply circuit of the rear defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug rear defroster relay ER11.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
ER11(1)	Vehicle body is grounded.	Standard voltage: 11-14V
ER11(3)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check the defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the defroster relay ER11 and replace it with a new relay of the same model.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Check whether the control circuit of the rear defroster relay is normal.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove the rear defroster relay ER11
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Operate the automatic air conditioner control panel to place the air conditioner in the defrosting position.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER11(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

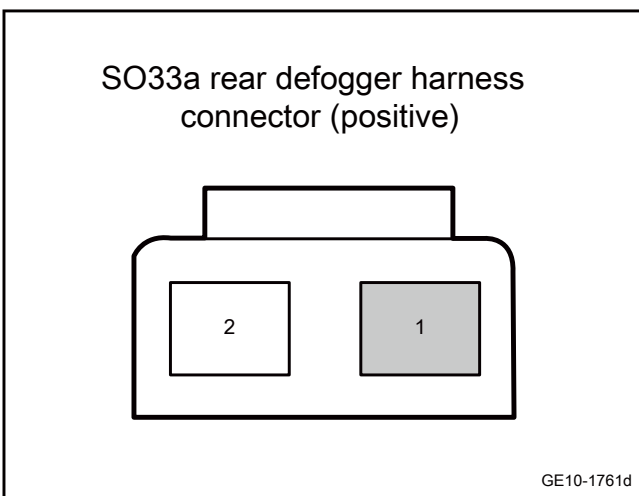
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the wiring harness, see [All Defrosters Don't Work](#)

Yes

**Step 7** Check whether the power supply voltage of the heating wire of the defogger is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear defogger harness connector SO33a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Operate the automatic air conditioner control panel to place the air conditioner in the defrosting position.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO33a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

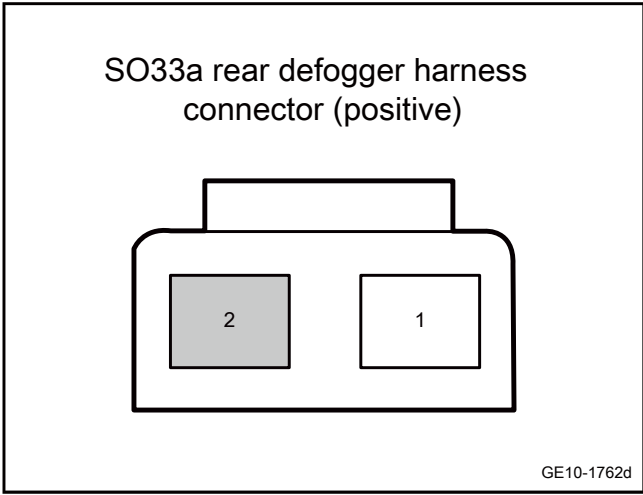
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

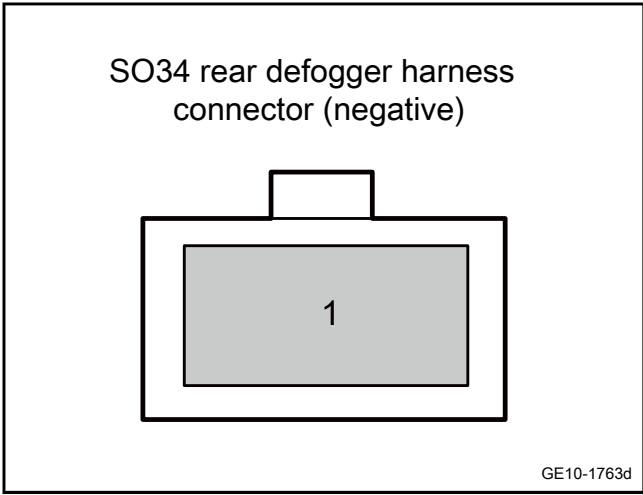
**Step 8** Check whether the rear defroster grounding harness is normal.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear defogger harness connector SO33a.
- C. Disconnect the rear defogger harness connector SO34.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO33a(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO34(1)		

- E. Confirm whether the measured value meets the standard.



No

Repair or replace the harness.

Yes

**Step 9** Replace the rear defroster.

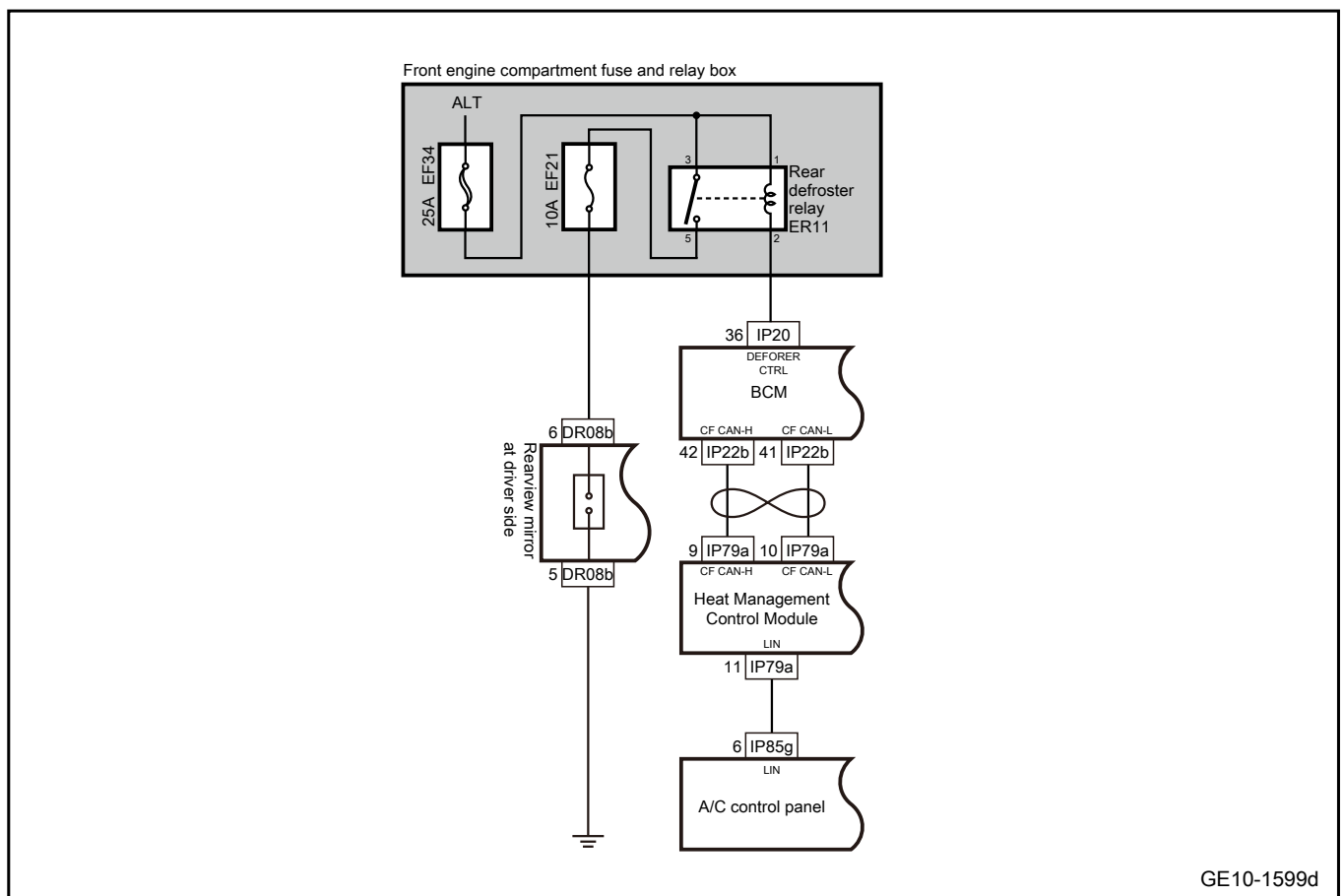
- A. Replace the rear defroster. See [Replacement of the Rear Defogger](#)

Next Step

**Step 10** System is normal.

### 10.11.5.6 The driver side mirror defrosting does not work

1. Schematic circuit diagram:



2. Diagnosis steps

This manual only diagnoses the driver's exterior mirror defrosting failure. The diagnosis of the passenger's exterior mirror defrosting failure is the same as the driver's exterior mirror defrosting.

Step 1	Primary check.
--------	----------------

- A. Check the driver's side rearview mirror for signs of damage, deformation, stains, looseness, etc.
- B. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage at both ends.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Inspect the fuse.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the EF21 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 10A

- C. Unplug the EF34 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the power supply circuit of the rear defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug rear defroster relay ER11.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
ER11(1)	Vehicle body is grounded.	Standard voltage: 11-14V
ER11(3)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the defroster relay.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Unplug the defroster relay ER11 and replace it with a new relay of the same model.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Check whether the control circuit of the rear defroster relay is normal.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Remove the rear defroster relay ER11
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Operate the automatic air conditioner control panel to place the air conditioner in the defrosting position.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER11(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

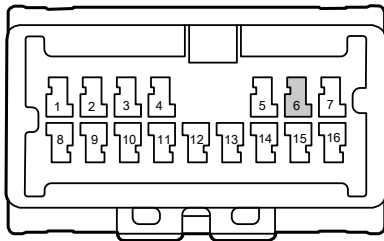
No

Repair or replace the wiring harness, see [All Defrosters Don't Work](#)

Yes

**Step 7** Check whether the voltage of the external rearview mirror defrosting power line is normal.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-1764d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Operate the automatic air conditioner control panel to place the air conditioner in the defrosting position.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(6)	Vehicle body is grounded.	Standard voltage: 11-14V

- F. Confirm whether the measured value meets the standard.

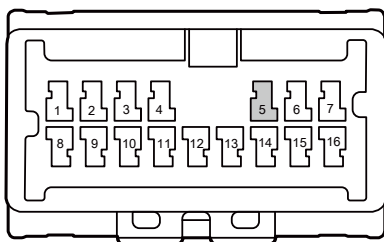
No

Repair or replace the harness.

Yes

**Step 8** Check whether the resistance of the defrosting grounding circuit of the exterior rearview mirror is normal.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-1765d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 9** Replace the driver side exterior rearview mirror

- A. Replace the driver side exterior rearview mirror Refer to [replacement of driver-side exterior rearview mirror adjustment switch](#)



Next Step

Step 10	System is normal.
------------	-------------------

## 10.11.6 Removal and installation

### 10.11.6.1 Replacement of defrosting grille of rear air window

Refer to [Replacement of rear windshield glass assembly](#)

### 10.11.6.2 Replacement of electric review mirror heater

Refer to [Replacement of left power rearview mirror lens](#)

### 10.11.6.3 Replacement of rear window defroster switch

Refer to [Replacement of A/C control panel assembly](#)

### 10.11.6.4 Repair of defrosting braid lead of rear window

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 3 Remove the upper left and right inner trim panel assembly of the back door. Refer to [Replacement of left upper interior trim panel assembly of the back door](#)
- 4 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)
- 5 Disconnect the defroster harness connector.
- 6 Use a brush to coat some rosin on the repair parts of conductors and bus leads.

#### Caution

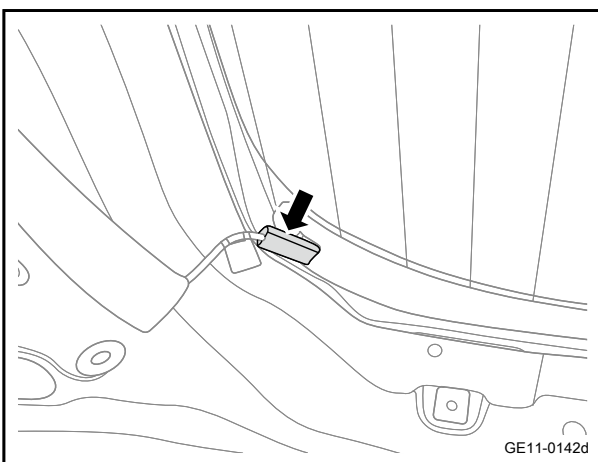
It is required to use the fine steel wool to polish the repair parts before repair of welding bus lead.

- 7 Dip the soldering iron with solders enough for repair.

#### Caution

Heat to melt the solder is applicable only. Do not overheat the conductors during re-wiring the bus leads.

- 8 Install the lower trim panel assembly of the backdoor.



- 9 Install the left and right upper interior trim panel assembly of the backdoor.
- 10 Install the middle upper interior trim panel assembly of the backdoor.
- 11 Connect the negative cable of battery.

## 10.12 Horn

### 10.12.1 Specification

#### 10.12.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Tweeter assembly fixing bolt	M8×25	13 - 17	9.6 - 12.5
Bass loudspeaker assembly fixing bolt	M8×25	13 - 17	9.6 - 12.5

#### 10.12.1.2 System specifications

Sound level dB (A)	105-118	
Fundamental frequency Hz	Tweet	390±20
	Bass	320±20

## 10.12.2 Description and Operation

### 10.12.2.1 Instructions and Operations

Horn can work when horn button on steering wheel is pressed.

#### Caution

Horn button area on steering wheel also is the cover plate of driver airbag. Due to special function requirement of driver's airbag, please try to operate horn by pressing horn button area shown in the figure (as shown by the arrow).

#### Warning

When using horn, be sure not to press heavily or knock cover plate to avoid accidents.

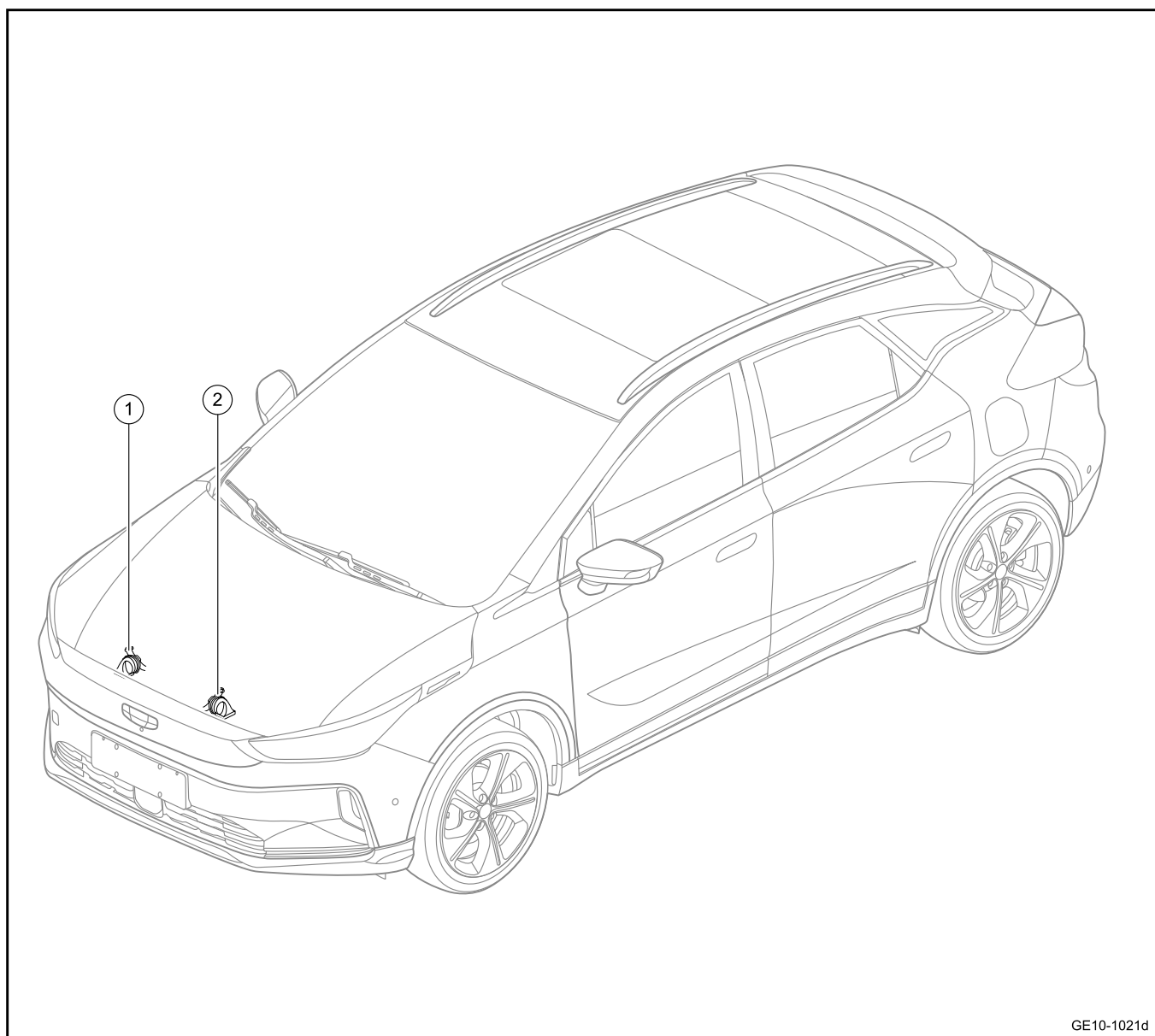
### 10.12.3 How the system works

#### 10.12.3.1 System Working Principles

The horn control method is to control the power supply terminal, that is, the horn switch controls the pull-in of the horn relay, and then the relay supplies power to the horn. The horn is often grounded.

10.12.4 Part location

10.12.4.1 Part Position



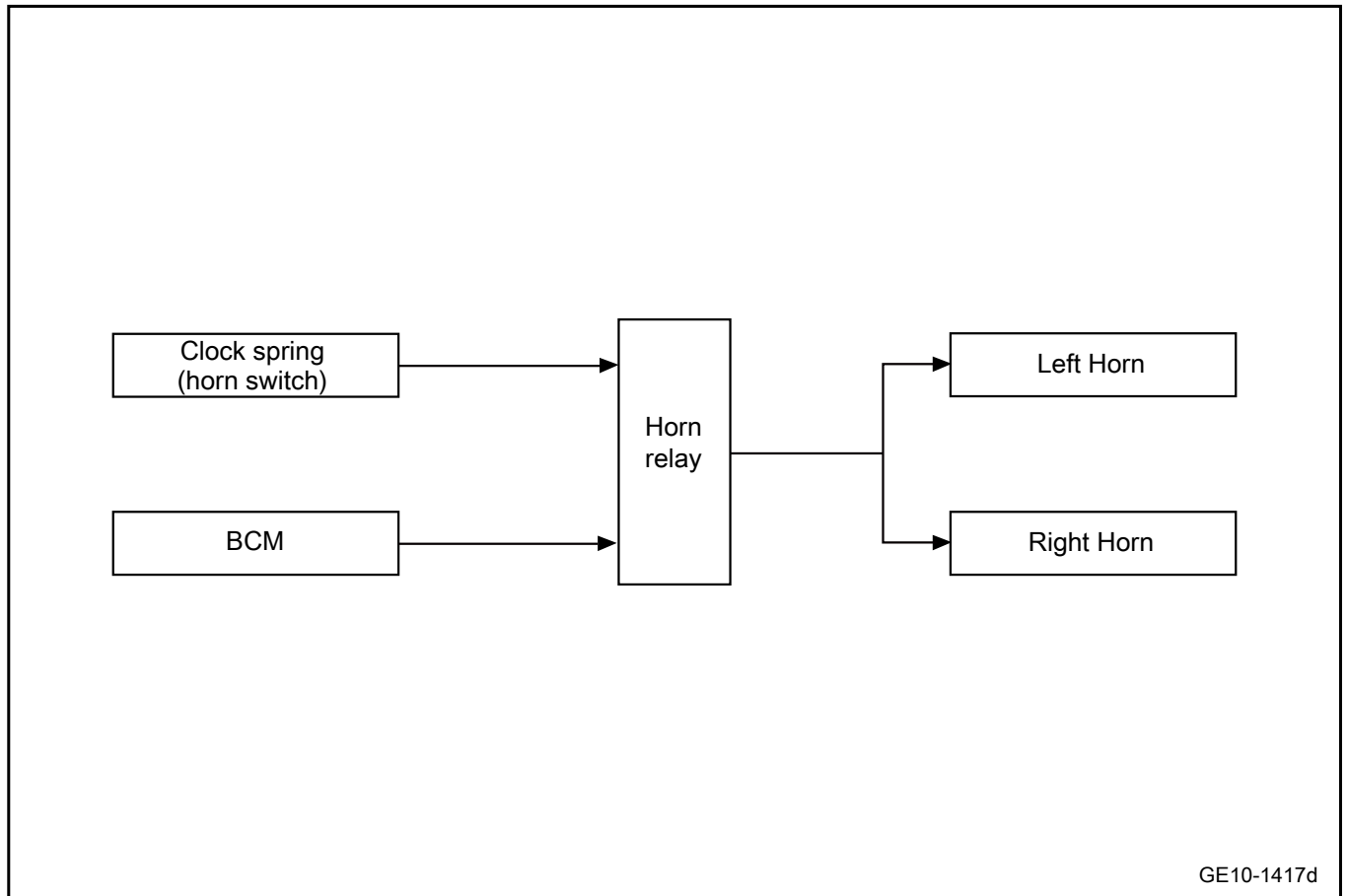
GE10-1021d

1. Tweeter assembly

2. Bass loudspeaker assembly

10.12.5 Electrical block diagram

10.12.5.1 Electrical schematic diagram of the horn system





## 10.12.6 Diagnostic information and steps

### 10.12.6.1 Diagnosis Description

Before fault diagnosis of the horn system is conducted, refer to [Description and Operation](#) and [System Working Principles](#). Understand and familiarize with the operating principle of the horn system and then carry out the system diagnosis so as to determine the fault diagnosis steps when there is a fault. More importantly, it helps to determine whether the situation described by the distributor is normal operation. Any fault diagnosis of the horn system should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.12.6.2 Routine inspection

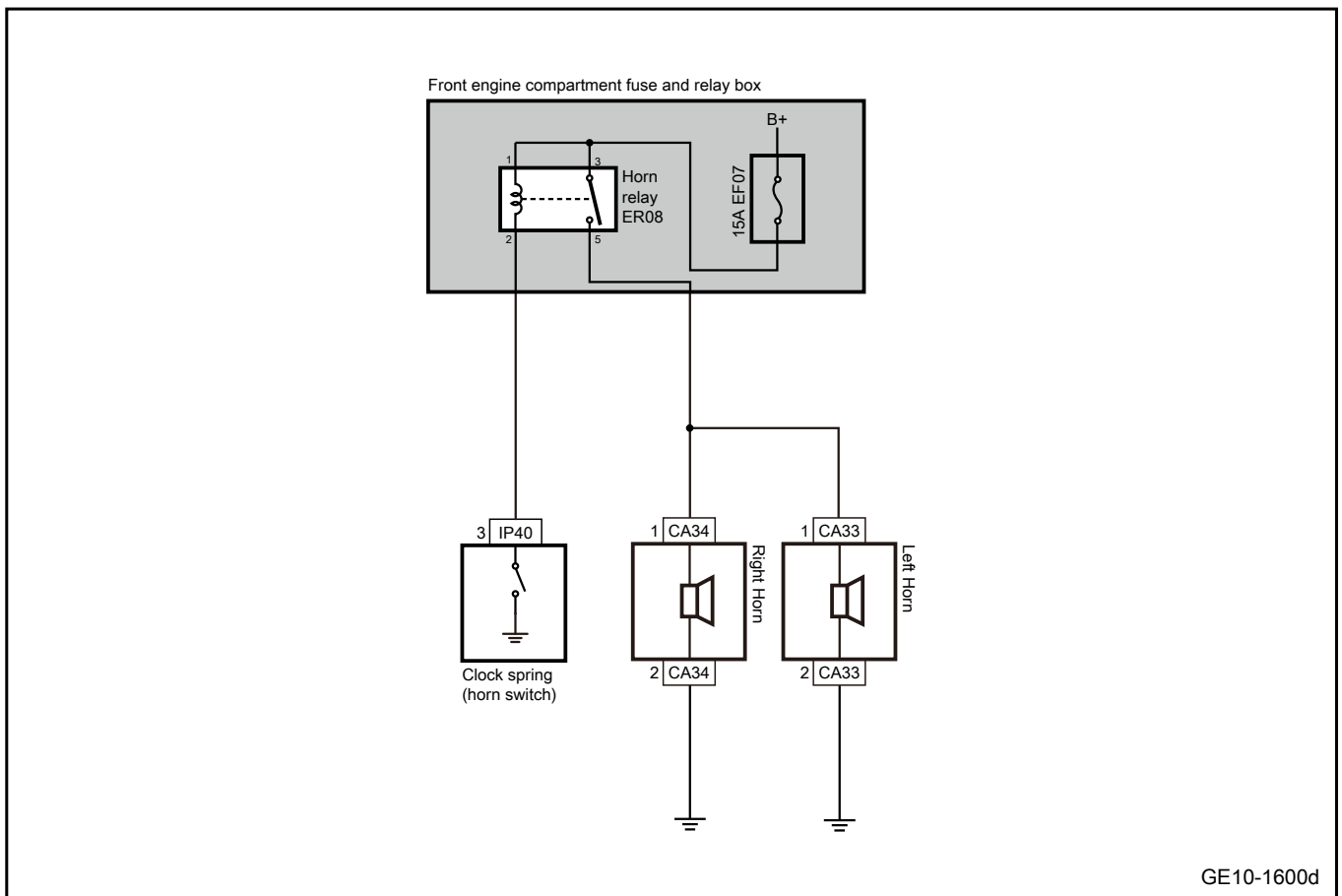
- Check the after-sales installations that may affect the horn to ensure that these devices cannot affect the horn.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.12.6.3 Fault symptom table

Symptom	Suspected parts	Maintenance method
Horn does not work	1. Fuse	Refer to <a href="#">Horn does not work</a>
	2. Harness and connector	
	3. Relay	
	4. Horn	
	5. Clock spring (horn switch)	

### 10.12.6.4 Horn does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the clock spring (horn switch), left horn, right horn for signs of damage, deformation, stains, loosening, etc.
- B. Check the clock spring (horn switch), left horn and right horn harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the horn fuse.
--------	----------------------

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Unplug the EF07 fuse in the front engine compartment and check whether the fuse is blown out.

Rated fuse capacity: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the horn relay.

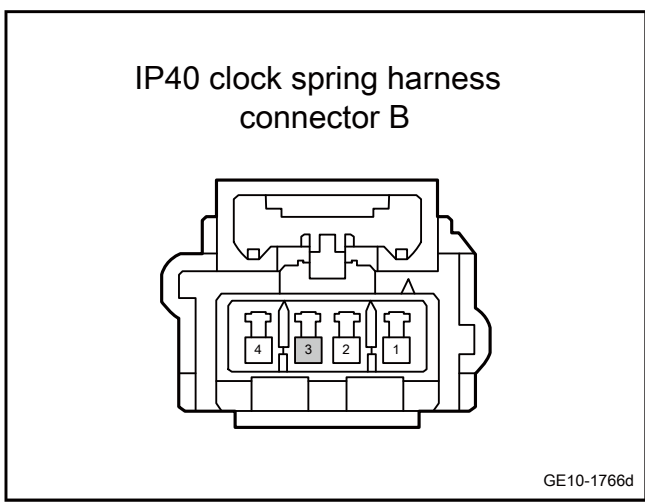
- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Pull out the horn relay ER08 and replace it with a new relay of the same specification.
- C. Confirm whether the horn works normally.

Yes

System is normal.

No

Step 4 Check whether the circuit between the clock spring (horn switch) and the relay is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector IP40 of the clock spring (horn switch).
- C. Pull out the horn relay ER08.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP40(3)	ER08(2)	Standard resistance: less than 1Ω

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP40(3)	Vehicle body is grounded.	Standard voltage: equal to 0V

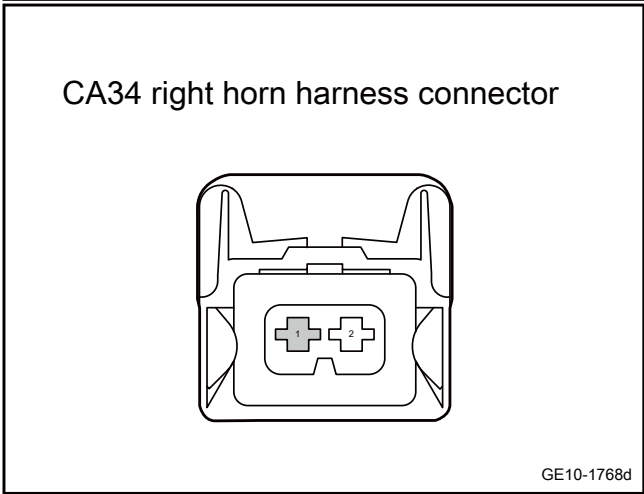
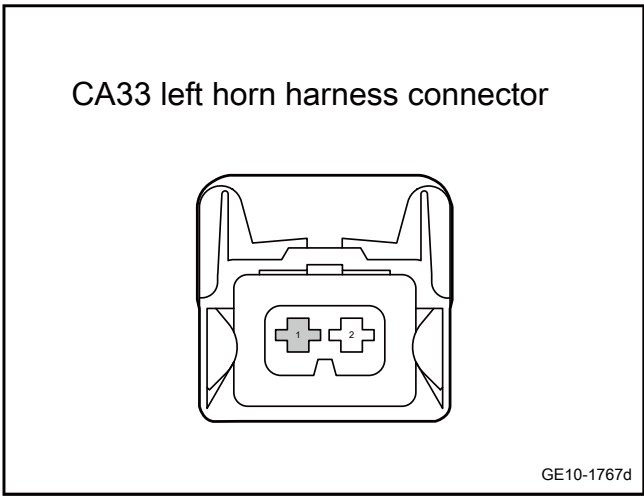
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the power circuit of the left and right horns is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of left horn CA33
- C. Disconnect the harness connector of right horn CA34
- D. Pull out the horn relay ER08.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA33(1)	ER08(5)	Standard resistance: less than 1Ω
CA34(1)	ER08(5)	
CA33(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA34(1)		

- F. Confirm whether the measured value meets the standard.

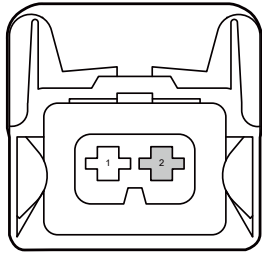
No

Repair or replace the harness.

Yes

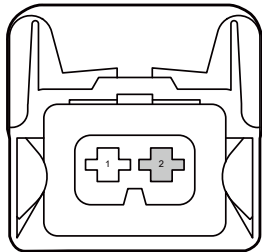
Step 6 Check whether the grounding circuit between the left and right horns is open.

CA33 left horn harness connector



GE10-1769d

CA34 right horn harness connector



GE10-1770d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector of left horn CA33
- C. Disconnect the harness connector of right horn CA34
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA33(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA34(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 7** Replace the horn.

- A. Replace the horn. Refer to [Horn Replacement](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Replace the clock spring (horn switch)

- A. Replace the clock spring (horn switch), see [Replacement of the Clock Spring \(horn switch\)](#)

Next Step

**Step 9** System is normal.

### 10.12.6.5 Contact adjustment of horn switch

When the horn is inoperative intermittently or the horn fails when the steering wheel side horn switch is pressed and the like, it is likely that the horn switch contact is poor. At this time, the horn switch contact under the driver side airbag should be adjusted.

## 10.12.7 Removal and installation

### 10.12.7.1 Replacement of tweeter assembly

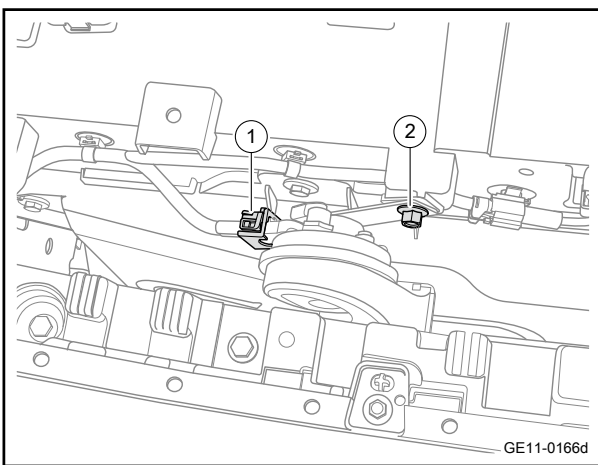
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

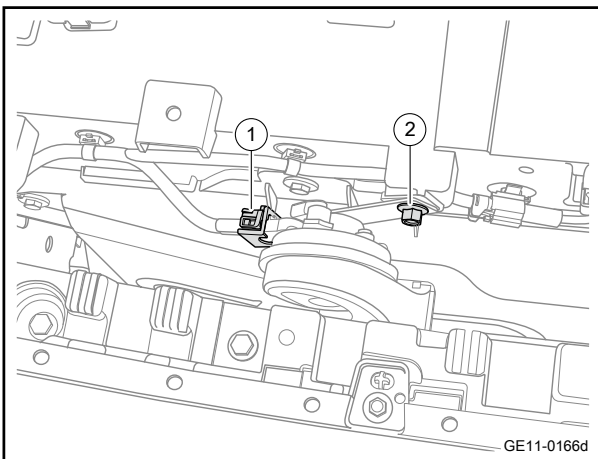
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Disconnect the harness connector 1 of tweeter assembly.
- 4 Install 1 fixing bolt 2 of the tweeter assembly.
- 5 Remove the tweeter assembly.



#### Installation procedure

- 1 Move the tweeter assembly to the installation position.
- 2 Install 1 fixing bolt 2 of the tweeter assembly.  
Torque: 15N·m (metric) 11.1lb-ft (imperial system)
- 3 Connect the harness connector 1 of tweeter assembly.



- 4 Install the front cabin trim cover assembly.
- 5 Connect the negative cable of battery.

### 10.12.7.2 Replacement of low tone loudspeaker assembly

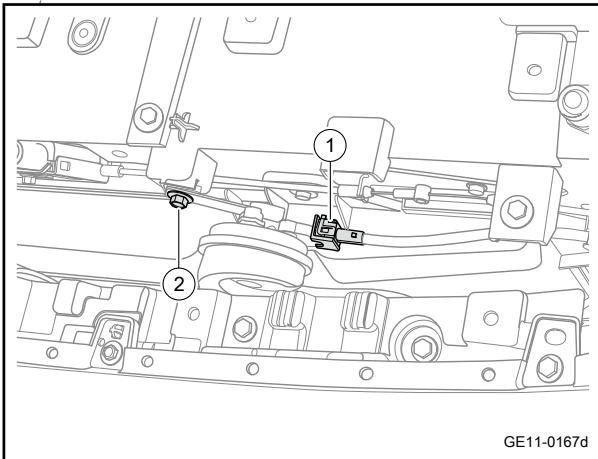
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

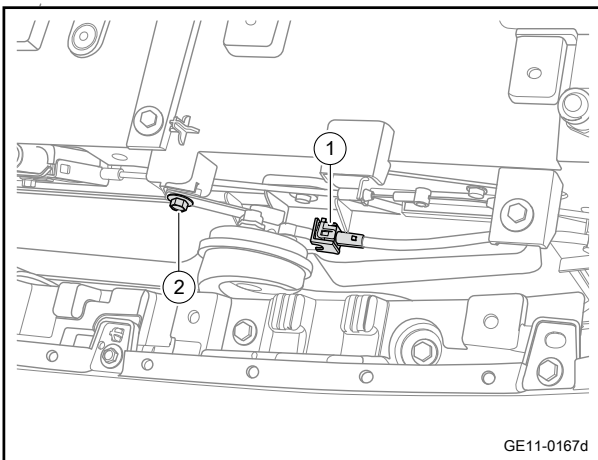
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Disconnect the harness connector 1 of bass loudspeaker assembly.
- 4 Install 1 fixing bolt 2 of the bass loudspeaker assembly.
- 5 Remove the bass horn assembly.



#### Installation procedure

- 1 Move the bass horn assembly to the installation position.
- 2 Install 1 fixing bolt 2 of the low tone loudspeaker assembly.  
Torque: 15N·m (metric) 11.1lb-ft (imperial system)
- 3 Connect the harness connector 1 of bass loudspeaker assembly.



- 4 Install the front cabin trim cover assembly.
- 5 Connect the negative cable of battery.



## 10.13 Parking assist system

### 10.13.1 Specification

#### 10.13.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
360-degree panoramic front parking auxiliary camera fixing screw	ST4.8×16	1.3 - 1.7	1 - 1.3
360-degree left parking auxiliary camera fixing screw	ST4.8×16	1.3 - 1.7	1 - 1.3
Fixing nut of 360-degree panoramic camera control module and bracket	M6	5 - 7	3.7 - 5.2
Fixing screw of front millimeter-wave radar	ST4.8×16	1.3 - 1.7	1 - 1.3

#### 10.13.1.2 System specifications

##### Automatic parking ultrasonic sensor specifications

Rated voltage	9V
Working voltage range	8V-10V DC
Rated current	10mA
Operating temperature	-40~85°C
Storage temperature	-40~95°C
Waterproofing and dustproofing grade	IP69K
Vertical sounding angle	60°
horizontal sounding angle	60°
Operating frequency	48±1.5kHz
Maximum detection distance	2.5m

##### Reversing radar probe specifications

Rated voltage	9V
Working voltage range	8V-10V DC
Rated current	10mA
Operating temperature	-40~85°C
Storage temperature	-40~95°C
Waterproofing and dustproofing grade	IP69K
Vertical sounding angle	60°
horizontal sounding angle	120°
Operating frequency	55.5±1.5kHz
Maximum detection distance	1.5m

### 10.13.2 Description and Operation

#### 10.13.2.1 General

According to different configurations on this vehicle model, the parking assist system is divided into reversing radar system (low configuration), reversing radar + reversing imaging system (medium configuration), reversing radar + 360-degree panoramic imaging system (high configuration)

- The reversing radar + reversing image system (low configuration) gives an alarm through the sound and the rear image display of the vehicle,
- The reversing radar + 360 panoramic image system (high configuration) alarms by sound, and can display a bird's-eye image of the surrounding environment of the vehicle, which can clearly and intuitively understand the surrounding environment of the vehicle
- The parking assist system can detect obstacles behind the vehicle and send a distance signal to the vehicle and the

closest object to the driver through acoustic or optical means.

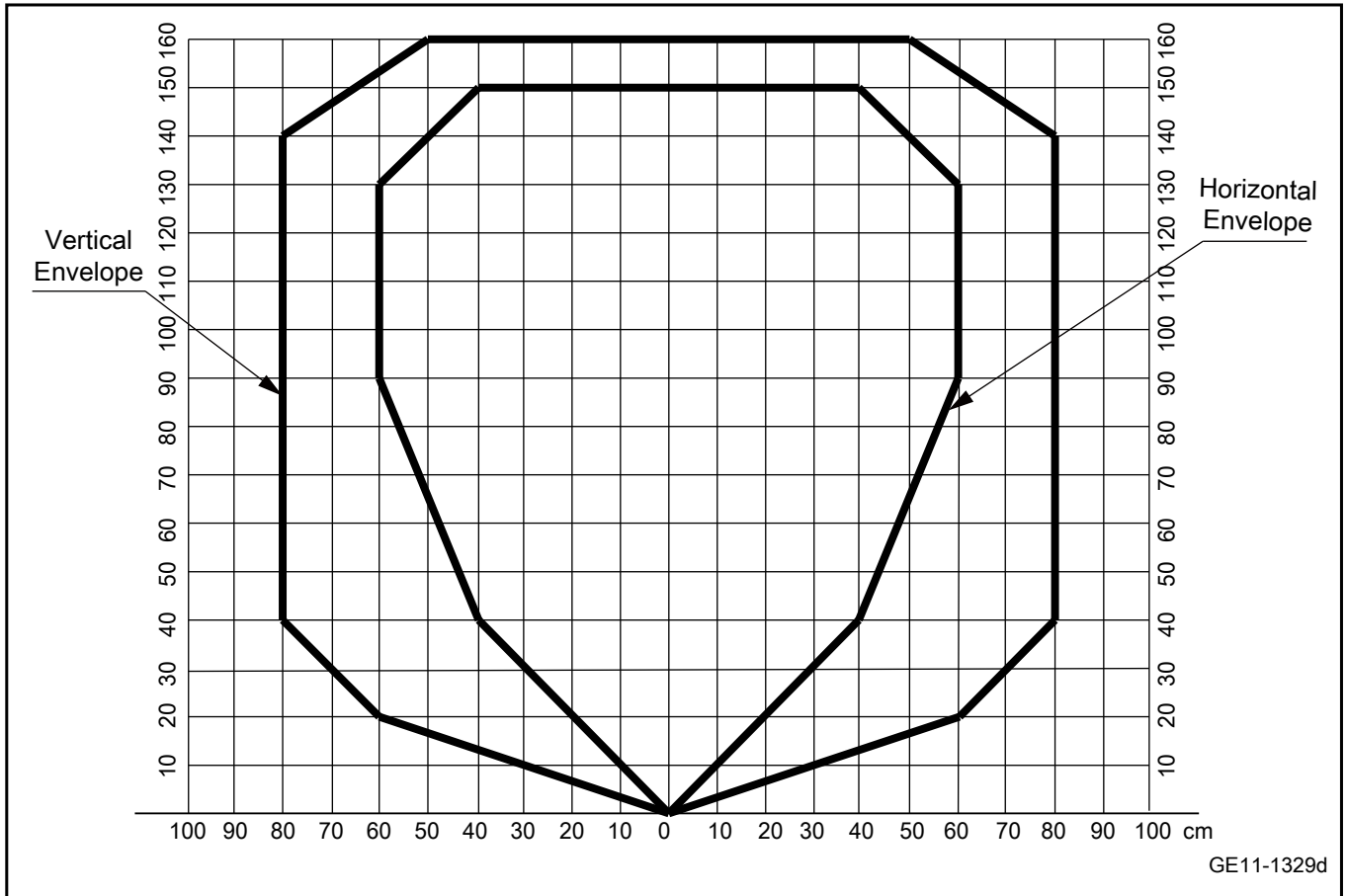
- While reversing, the parking radar system ensures safe parking by sending corresponding alarming signals through detecting the distances between barriers and the vehicle, but the barriers within the 30cm (11.8in) range of the rear bumper cannot be fully detected for sure.
- The reversing radar + reversing imaging system (low configuration) consists of 4 radar probes on the rear bumper, rear camera, car infotainment host and loudspeakers.
- The reversing radar + 360 panoramic imaging system (high configuration) consists of 4 radar probes on the rear bumper, 2 blind spot probes on the sides of the front and rear bumpers, and four high-definition wide-angle cameras installed on the front, rear, and left and right exterior mirrors , 360-degree panoramic camera control module, infotainment host and loudspeakers.

#### 10.13.2.2 Alarm tone level

Alarm Class	Barrier Distance	Alarm Time Curve	Note
1	0 ~ 30cm	<p>Continuous ringing</p>	Long Buzzer
2	30 ~ 70cm		Buzzer alarms with 4Hz switch time, accounting for 50%
3	70 ~ 150cm		Buzzer alarms with 2Hz switch time, accounting for 50%

GE11-1330d

10.13.2.3 Sensing area



10.13.2.4 Description and operation of reversing radar

Parking assist-rear 4+ reversing image

Parking Assist-Rear 4+ reversing image consists of four radar probes and a rear camera. When the gear is in reverse gear, the signal is sent to the vehicle gateway module via HB CAN, and the vehicle gateway module CF CAN sends the reverse gear signal to BCM. After the BCM receives the reverse gear signal, the output signal voltage provides power to the radar probe to drive its work. When the radar probe detects an obstacle in the monitoring range, it sends the signal to the infotainment host through the LIN line, the infotainment host displays the information on the display screen, and the infotainment host displays the rear image on the display through the rear camera.

Parking Assist-2 at front and 6 at rear

Parking Assist-Front 2 and Rear 6 are composed of four radar probes, four blind spot probes and a 360° panoramic camera control module. There are rear four radar probes, and there are two blind spot probes at the front and rear. When the parking assist switch is turned on, the parking assist system is

activated. Or when the reverse gear is engaged, the signal is sent to the vehicle gateway module through HB CAN, and the vehicle gateway module, CS CAN sends the reverse gear signal to the panoramic camera control module. After the panoramic camera control module receives the signal, the output signal voltage provides power to the radar probe, and thereby drives its work.

Caution

1. According to the distance of the obstacle, the system can give the driver a corresponding alarm signal (buzzer) to provide information for the driver to park safely, but this process does not mean that the driver can ignore the parking effect and exempt his/her responsibility for parking failure.
2. This system has limited effect in detecting distances and obstacles, so the driver must be careful about the undetectable obstacles behind the vehicle. Especially when crossing the barrier, the driver cannot simply rely on the system.

### 10.13.2.5 Description and operation of panoramic images

#### Around View Monitor (AVM) system description

The panoramic imaging system collects images of the surrounding environment of the vehicle through four high-definition wide-angle cameras installed in the front, left/right exterior mirrors and rear of the vehicle, and maps the original image to the ground plane or space surface to obtain an aerial view and 3D partial view of the surrounding environment of the vehicle, and outputs the panoramic combined picture information to the multimedia display device according to the predetermined CAN communication protocol time sequence, so as to assist the driver in observing the real-time picture around the vehicle body and avoid the danger of low-speed driving.

In addition to providing the driver with real-time image information about the surrounding environment of the vehicle and reducing blind spots, the panoramic image system can also predict the trajectory of the vehicle in combination with parameters such as steering wheel angle and vehicle size, and superimpose it on the image, allowing the driver to fully understand the direction of the vehicle and judge whether it is safe to reverse. Meanwhile, by acquiring vehicle gear, steering wheel angle, touch screen buttons and other information, the system can also switch between different functional screens through man-machine interaction to assist the driver in viewing the image information on the side of the blind spot.

- a. 2D panoramic principle: the system collects data from 4 cameras, and displays the surrounding environment of the vehicle body on the ground plane after image processing such as software projection transformation and adjacent image fusion within the controller. The 2D panorama adopts a seamless splicing method, and the transition area is processed in a smooth transition method, which is convenient for the driver to observe the surrounding environment of the vehicle body.
- b. 3D panoramic principle: the system collects data from 4 cameras, and after image processing such as software projection transformation and adjacent image fusion within the controller, the images from the 4 cameras are projected onto the spatial surface, and stitched into a three-dimensional stitching image around or part of the vehicle body, which is convenient for the driver to observe the image of the user's attention area.
- c. Single-side imaging principle: after collecting data from 4 cameras, the system can switch the input according to the driver's touch screen, and display the data of a certain camera in a window on the screen. This image is not the

original fisheye image of the camera, but has undergone a certain degree of distortion processing. This angle of view is convenient for the driver to observe the single angle of view image of one of the front, rear, left, and right sides of the vehicle.

The 360° panoramic image will also provide driving assistance lines to help you better predict the trajectory of the vehicle, provide a ruler reference for your distance judgment, and make your judgment of the distance more accurate.

#### Caution

**In case of a low obstacle, the vehicle may not be able to recognize it, resulting in a collision.**

#### Around View Monitor (AVM) system operation

The panoramic image system is to understand the blind spots around the vehicle by displaying the images around the vehicle, helping the driver to park the vehicle more intuitively and safely. When the electronic shifter is turned to reverse (R), a 360-degree top view of the vehicle body will be displayed on the multimedia display. The vehicle is switched from other gears to the parking gear (P). If there is no operation, it will automatically exit the panoramic image interface after 5 seconds.

The panoramic image cameras are respectively located under the front logo, on the lower edge of the left and right exterior rearview mirrors, and on the trim strip of the rear license plate lamp.

#### Enter the panoramic image interface

- a. Click the 360panorama APP icon on the multimedia display.
- b. When the panoramic image system sets 'low-speed steering linkage' function enabling: when the vehicle speed is less than 30 km/h, turn on the left/right turn signals.
- c. When the electronic shifter is turned to reverse (R), it automatically enters the panoramic image interface.
- d. When the custom button function in the multimedia settings is set to 360, press the custom button on the steering wheel.
- e. Panoramic imaging system requires speed range: 0-30 km/h.

#### Exit the panoramic image interface

- a. Click the return button on the panoramic image interface on the multimedia display screen.

- b. When the panoramic image system is activated by the turn signal and the gear is not engaged in reverse (R), turn off the turn signals and automatically exit the panoramic image interface.
- c. When the electronic gear shifter turns to reverse gear (R), it automatically enters the panoramic image system. When shifting to forward gear (D), it will automatically exit when the vehicle speed exceeds 15 km/h.
- d. When the vehicle speed exceeds 30 km/h, it will automatically exit the panoramic image.

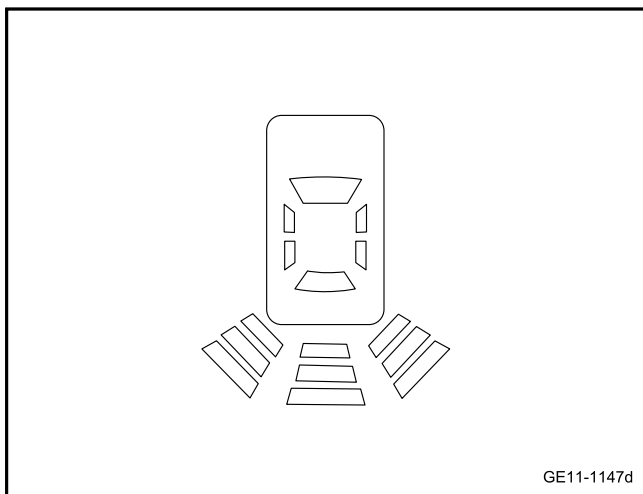
### 10.13.3 How the system works

#### 10.13.3.1 Parking radar control unit

1. Generate TX signal that drives the sensor to work.
2. Receive RX signal from the barrier.
3. Comparison between RX signal and reference electrical level.
4. Alarm according to the distance of the barrier within the detection scope.
5. Sensor fault diagnosis.
6. Provide the sensor with drive voltage.

#### 10.13.3.2 Parking radar display

When the vehicle is in Reverse, the parking radar interface will be displayed; the parking radar interface will not be displayed at other gears. When the system fails during the working process, the reversing radar system should send out radar system failure information within 3s, and the audio host will prompt the failure.



The corresponding relationship between the instrument warning tone and the barrier position:

Intermediate alarm area	Side alarm area	Alarming
> 150cm	> 70cm	No alarming
70cm-150cm		3-segment arc display 2HZ alarm

Intermediate alarm area	Side alarm area	Alarming
30cm-70cm	30cm-70cm	2-segment arc display 4HZ alarm
≤ 30cm	≤ 30cm	1-segment arc display constant sound

The audio host controls different speakers to give an audible alarm according to the nearest area.

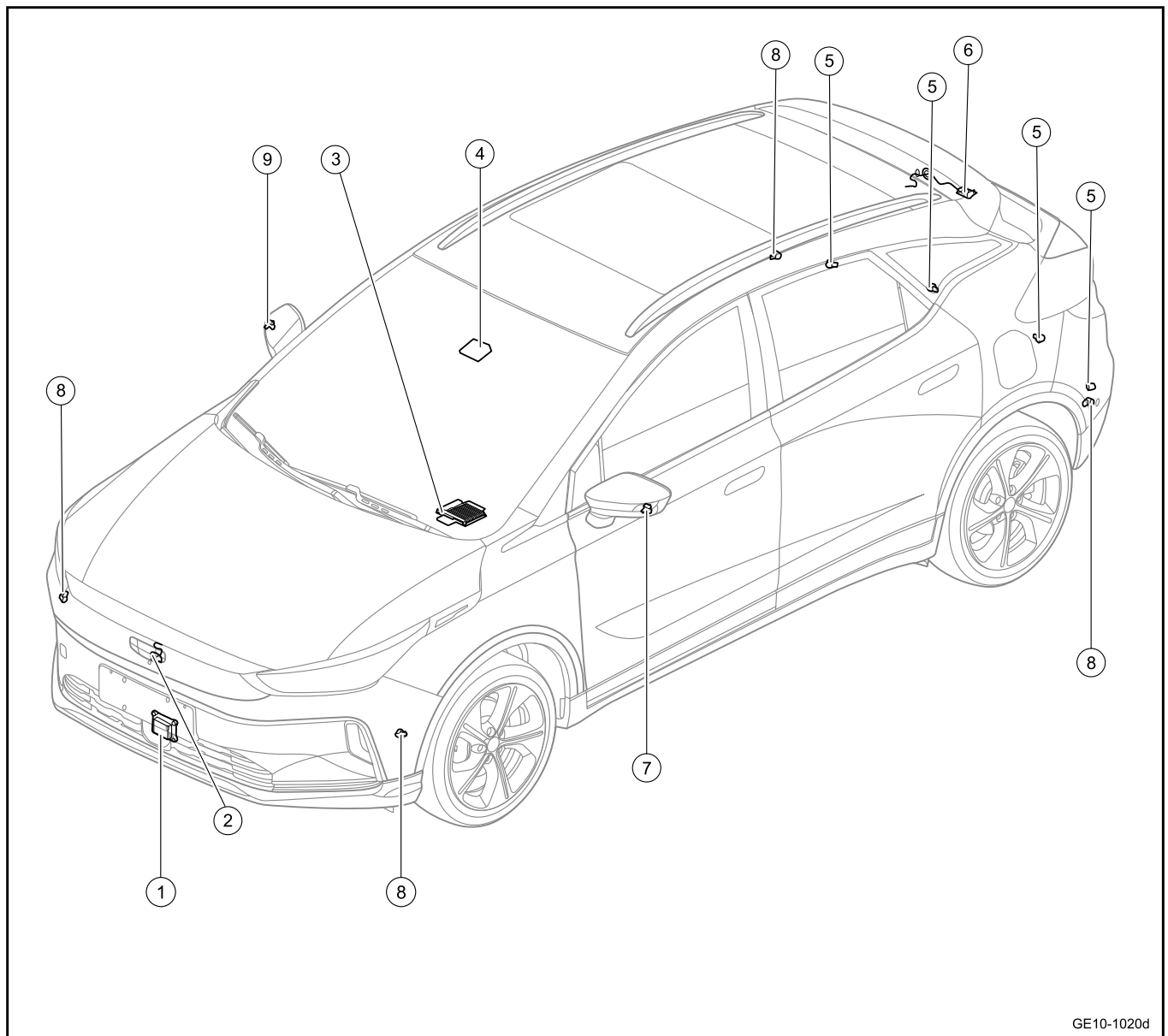
#### 10.13.3.3 Buzzer driving

The radar alarm sound is controlled by the audio host to give an alarm prompt.

Among them, the radar active defense alarm sound needs to make the alarm sound from different azimuth speakers according to the front radar or the rear radar.

10.13.4 Part location

10.13.4.1 Part Position



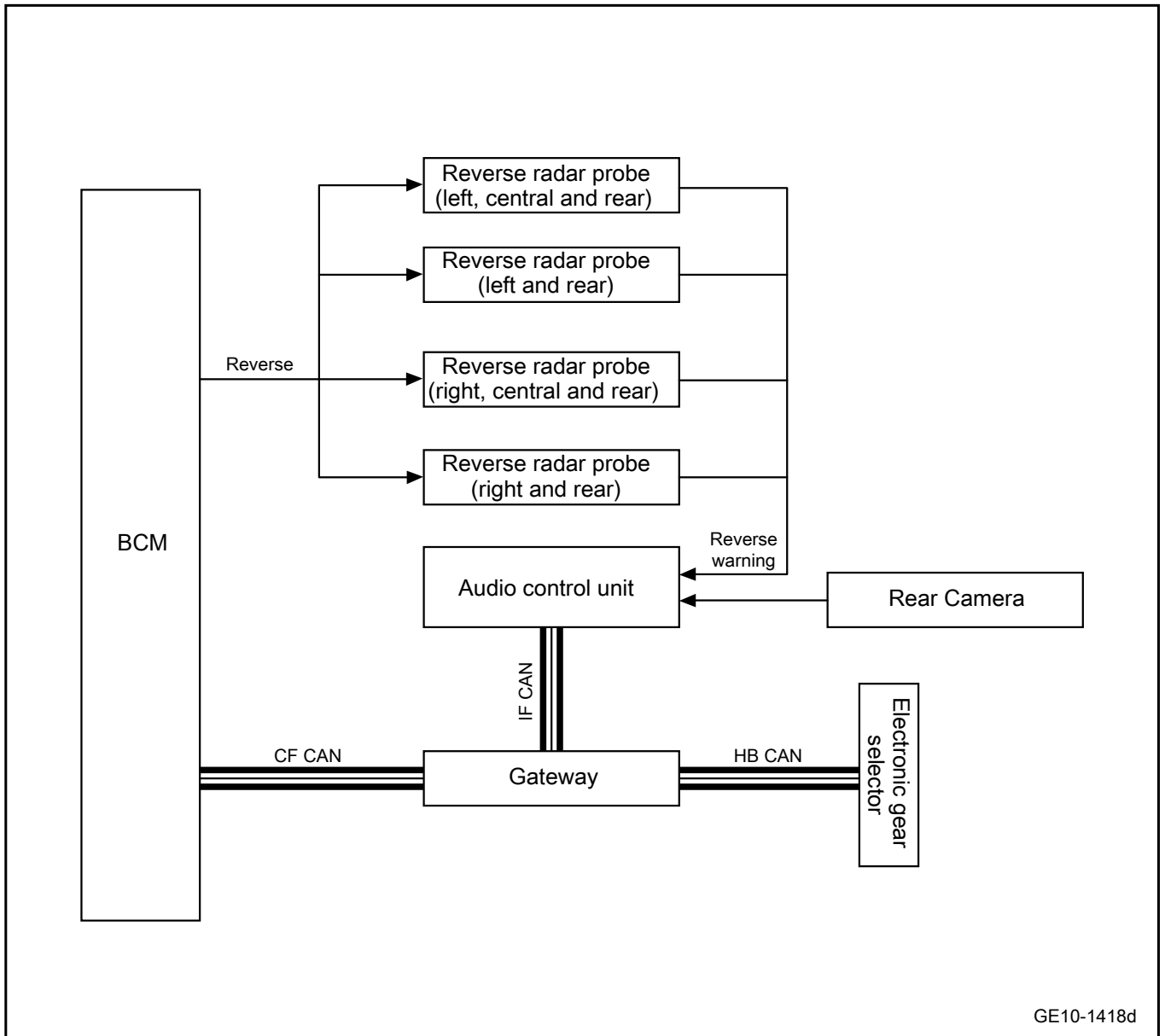
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- |   |   |
|---|---|
| 1. Front millimeter wave radar body               | 6. 360 panoramic view rear parking assist camera  |
| 2. 360 panoramic view front parking assist camera | 7. 360 panoramic view left parking assist camera  |
| 3. 360° panoramic camera control module           | 8. Automatic parking ultrasonic sensor            |
| 4. Front monocular camera                         | 9. 360 panoramic view right parking assist camera |
| 5. Reversing radar probe                          |   |

10.13.5 Electrical block diagram

10.13.5.1 Electrical Schematic Diagram of the Parking Assist System

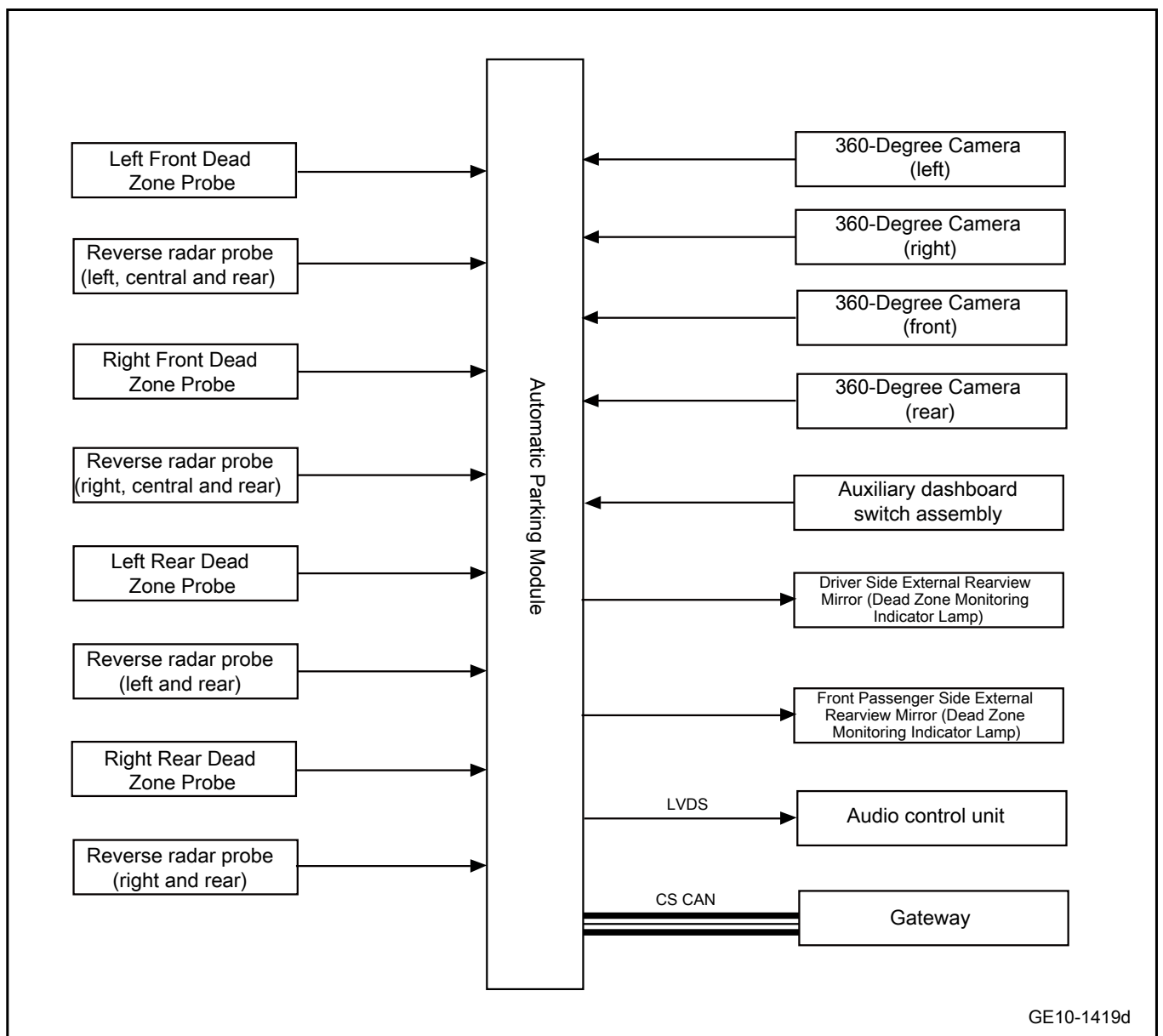
Reversing radar + reversing visibility



GE10-1418d

Automatic parking + panoramic image





## 10.13.6 Diagnostic information and steps

### 10.13.6.1 Diagnosis Description

Before carrying out the diagnosis of the fault of the park assist system, please refer to [Description and Operation](#) and [System Working Principles](#). Understand and familiarize yourself with the working principle of park assist system before starting system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it also helps to confirm whether the operation situation described by the customer is normal. Any fault diagnosis of the park assist system should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

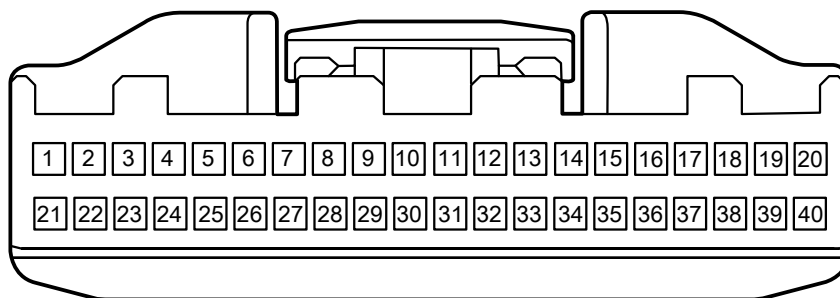
### 10.13.6.2 Routine inspection

- Check after-sales installations that may affect the parking assist to ensure that these devices cannot affect parking assist.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.13.6.3 List of Parking Assist System Terminals

#### SO237a automatic parking module wiring harness connector 1

### SO237a Automatic Parking Module Harness Connector 1



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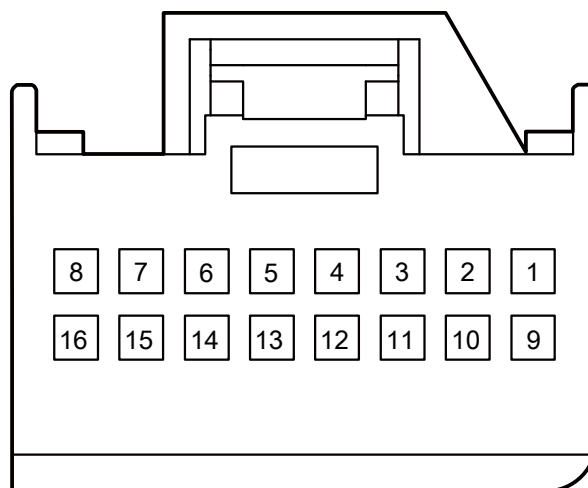
Terminal No.	Terminal name	Terminal description
1	-	-
2	-	-
3	-	-
4	-	-

Terminal No.	Terminal name	Terminal description
5	Driver's side blind blind spot monitoring indicator lamp positive	Driver's side blind spot monitoring indicator lamp control output
6	-	-
7	Rear reverse radar probe grounding	Rear reverse radar probe public ground
8	Right rear blind zone probe signal	Right rear blind zone probe signal input
9	Left rear reverse radar probe signal	Left rear reverse radar probe signal input
10	Right middle rear reverse radar probe signal	Right middle rear reverse radar probe signal input
11	Front reversing radar probe grounding	Front reversing radar probe common ground
12	Right front blind zone probe signal	Right front blind zone probe signal input
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	CS CAN-L	Chassis CAN low line
19	ACC power supply	Automatic parking module ACC power supply
20	Ground connection	Automatic parking module ground circuit
21	-	-
22	-	-
23	-	-
24	-	-
25	Front passenger side blind spot monitoring indicator lamp positive	Front passenger side blind spot monitoring indicator lamp control power output
26	Blind spot monitoring indicator lamp negative	Blind spot monitoring indicator lamp grounding circuit
27	Rear reversing radar probe power supply	Rear blind zone probe power supply
28	Left rear blind zone probe signal	Left rear blind zone probe signal input
29	Left middle rear reverse radar probe signal	Left center rear reversing radar sensor signal input

Terminal No.	Terminal name	Terminal description
30	Right rear reverse radar probe signal	Right rear reverse radar probe signal input
31	Front reversing radar probe power supply	Front reversing radar probe power supply
32	Left front blind zone probe signal	Left front blind zone probe signal
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	CS CAN-H	Chassis CAN high line
39	-	-
40	B+ Power supply	Automatic parking module battery power supply

#### IP164b auxiliary fascia console switch pack harness connector

### IP164b Harness connector of auxiliary dashboard switch assembly



GE10-1569d

Terminal No.	Terminal name	Terminal description
1	IG1 power supply	Auxiliary fascia console switch pack ACC\ON\START power supply
2	-	-
3	-	-

Terminal No.	Terminal name	Terminal description
4	HDC switch indicator lamp	HDC switch indicator lamp control signal input
5	ESC OFF switch indicator	ESC OFF switch indicator lamp control signal input
6	Backlight lamp power supply	Backlight power supply input
7	-	-
8	LIN	LIN data communication bus
9	B+ Power supply	B+ Power supply
10	-	-
11	-	-
12	HDC switch signal	HDC switch signal output
13	ESC OFF switch signal	ESC OFF switch signal output
14	-	-
15	Ground connection	Grounding circuit of auxiliary fascia console switch pack
16	B+ Power supply	Battery power supply for auxiliary instrument switch pack

#### 10.13.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Power failure of the automatic parking module	1. Battery	See <a href="#">Automatic parking module power failure</a>
	2. Fuse	
	3. Harness and connector	
	4. Automatic parking module	
Automatic parking module communication failure	1. Harness connector	See <a href="#">Automatic parking module communication failure</a>
	2. Automatic parking module	
Internal failure of the automatic parking module	1. Automatic parking module	See <a href="#">Internal failure of the automatic parking module</a>
The left front blind zone probe does not work	1. Harness connector	See <a href="#">Left front blind zone probe does not work</a>
	2. Left front blind zone probe	
	3. Automatic parking module	
The right front blind zone probe does not work	1. Harness connector	See <a href="#">Right front blind zone probe does not work</a>
	2. Right front blind zone probe	
	3. Automatic parking module	
The left rear blind zone probe does not work	1. Harness connector	See <a href="#">Left rear blind zone probe does not work</a>
	2. Left rear blind zone probe	
	3. Automatic parking module	
The right rear blind zone probe does not work	1. Harness connector	See <a href="#">Right rear blind zone probe does not work</a>
	2. Right rear blind zone probe	
	3. Automatic parking module	
Left blind zone indicator lamp failure	1. Harness connector	See <a href="#">Left blind zone indicator lamp failure</a>
	2. Left blind zone indicator lamp	
	3. Automatic parking module	

Symptom	Suspected parts	Measures / Reference
Right blind zone indicator lamp failure	1. Harness connector	See <a href="#">Right blind zone indicator failure</a>
	2. Right blind zone indicator lamp	
	3. Automatic parking module	
Rear left reversing radar sensor does not work	1. Harness connector	See <a href="#">Rear left reversing radar sensor does not work</a>
	2. Rear left reverse radar probe	
	3. Automatic parking module	
Left middle reverse radar sensor does not work	1. Harness connector	See <a href="#">Left center rear reversing radar sensor does not work</a>
	2. Left middle reverse radar probe	
	3. Automatic parking module	
Rear right reversing radar sensor does not work	1. Harness connector	See <a href="#">Rear right reversing radar sensor does not work</a>
	2. Rear right reverse radar probe	
	3. Automatic parking module	
Right middle rear reversing radar sensor does not work	1. Harness connector	See <a href="#">Right center rear reversing radar sensor does not work</a>
	2. Right middle rear reverse radar probe	
	3. Automatic parking module	
360 front camera failure	1. Harness connector	See <a href="#">360front camera failure</a>
	2.360 front camera	
	3. Automatic parking module	
360 left camera failure	1. Harness connector	See <a href="#">360left camera failure</a>
	2.360 left camera	
	3. Automatic parking module	
360 right camera failure	1. Harness connector	See <a href="#">360 right camera failure</a>
	2.360 right camera	
	3. Automatic parking module	
360 rear camera failure	1. Harness connector	Refer to <a href="#">360 rear camera failure</a>
	2.360 rear camera	
	3. Automatic parking module	

### 10.13.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300617	Controller module input voltage is too high	See <a href="#">Automatic parking module power failure</a>
U300616	Controller module input voltage is too low	
U015687	MMI node is lost	See <a href="#">Automatic parking module communication failure</a>
U015587	IPK node is lost	
U012287	ESC node is lost	
U012687	TCM(SAS) node is lost	
U014087	BCM node is lost	
U111487	VCU node is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U015187	ACU node is lost	
U021487	PEPS node is lost	
U013187	EPS node is lost	
U023587	FRS node is lost	
U150082	CAN communication message DLC error	
U130055	F110 configuration words are not written in	
U007300	CAN bus off	
U016487	AC node is lost	
B1D121C	AVM system fault	See <a href="#">Internal failure of the automatic parking module</a>
B1D0C54	AVM not calibrated	
B1D1492	SD card formatting failed	
B1D0B71	AVM hardware key adhesion fault	
B1D0E71	APS hardware key adhesion fault	
B1D1D09	The left front outermost ultrasonic sensor probe of is faulty	See <a href="#">Left front blind zone probe does not work</a>
B1D1D4A	The type of the left front outermost ultrasonic sensor does not match	
B1D1D96	The left front outermost ultrasonic sensor probe is invalid	
B1D1A09	The right front outermost ultrasonic sensor probe is faulty	See <a href="#">Right front blind zone probe does not work</a>
B1D1A4A	The type of the right front outermost ultrasonic sensor does not match	
B1D1A96	The right front outermost ultrasonic sensor probe is invalid	
B1D1709	The left rear outermost ultrasonic sensor probe is faulty	See <a href="#">Left rear blind zone probe does not work</a>
B1D174A	The type of the left rear outermost ultrasonic sensor does not match	
B1D1796	The left rear outermost ultrasonic sensor probe fails	
B1D1409	The right rear outermost ultrasonic sensor probe is faulty	See <a href="#">Right rear blind zone probe does not work</a>
B1D144A	The type of the right rear outermost ultrasonic sensor does not match	
B1D1496	The right rear outermost ultrasonic sensor probe fails	
B1D101C	Circuit fault of BSD left indicator lamp	See <a href="#">Left blind zone indicator lamp failure</a>

Diagnostic Trouble Code	Description	Fault location/elimination method
B1D111C	Circuit fault of BSD right indicator lamp	See <a href="#">Right blind zone indicator failure</a>
B1D1609	The left rear ultrasonic sensor probe is faulty	See <a href="#">Rear left reversing radar sensor does not work</a>
B1D164A	Type of ultrasonic sensor on left rear does not match	
B1D2596	The left rear ultrasonic sensor probe fails	
B1D1809	The left rear long-distance ultrasonic sensor probe is faulty	See <a href="#">Left center rear reversing radar sensor does not work</a>
B1D184A	The type of the left rear long-distance ultrasonic sensor does not match	
B1D2696	The left rear long-distance ultrasonic sensor probe is invalid	
B1D1509	The rear right ultrasonic sensor probe is faulty	See <a href="#">Rear right reversing radar sensor does not work</a>
B1D154A	The type of the rear right ultrasonic sensor does not match	
B1D2496	The rear right ultrasonic sensor probe fails	
B1D1309	The right rear long-distance ultrasonic sensor probe is faulty	See <a href="#">Right center rear reversing radar sensor does not work</a>
B1D134A	The type of the right rear long-distance ultrasonic sensor does not match	
B1D2396	The right rear long-distance ultrasonic sensor probe fails	
B1D0013	AVM front camera harness open circuit	See <a href="#">360front camera failure</a>
B1D0411	AVM front camera power supply is short to GND.	
B1D1597	AVM front camera video stream stuck	
B1D0412	AVM front camera power supply short circuit to the positive pole of power supply	
B1D0113	AVM left camera harness open circuit	See <a href="#">360left camera failure</a>
B1D0611	AVM left camera power supply is short to GND	
B1D1797	AVM left camera video stream stuck	
B1D0612	AVM left camera power supply short circuit to the positive pole of power supply	
B1D0213	AVM right camera harness open circuit	See <a href="#">360 right camera failure</a>



Diagnostic Trouble Code	Description	Fault location/elimination method
B1D0711	AVM right camera power supply is short to GND	
B1D1897	AVM right camera video stream stuck	
B1D0712	AVM right camera power supply short circuit to the positive pole of power supply	
B1D0313	AVM rear camera harness open circuit	Refer to <a href="#">360 rear camera failure</a>
B1D0511	AVM rear camera power supply is short to GND.	
B1D1697	AVM rear camera video stream stuck	
B1D0512	AVM rear camera power supply short circuit to the positive pole of power supply	

### 10.13.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.13.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 10.13.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km

### 10.13.6.9 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by PAS can be checked with no need to remove any part and component. Before performing a relevant fault diagnosis of the control system, the execution of an action test is the precondition for removing the fault. This helps to shorten the diagnostic completed time.

#### Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- Operate the start-and-stop switch to place the power in mode "OFF".
- Connect the scan tool.
- Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- Select “PAS”/“action test”.
- Refer to the following table and conduct active test.

Diagnostic apparatus display item	Test components	Control range
Turn on the camera	360 camera	Turn off the display output/turn on the front camera/turn on the rear camera/turn on the left camera/turn on the right camera
Four-way wide-angle viewing angle rotation	360 camera	Front wide-angle view/Rear wide-angle view/Front side view/Rear side view

### 10.13.6.10 Sensor fault diagnosis

- Check the after-sales installation that may affect the power seat, to ensure that these devices cannot affect the power seat.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
- Check the installation of the reverse radar control unit. Check whether the harness connector is correctly installed.

### 10.13.6.11 Possible reasons that system cannot operate normally

- The external fittings of sensor are frozen.
- There is snow, water drop and the like on the sensor surface.

### 10.13.6.12 The probable cause of the decrease of sensor’s detection ability

- When snow or water falls on the probe of the sensor.

2. On hot days or very cold days.
3. The obstacle is less than 14 cm (5.5 in) in diameter and less than 1 m (39 in) in length.

#### 10.13.6.13 Possible cause of system false alarm

1. On uneven roads, cobblestone roads and grassland.
2. The system is close to other ultrasonic sources, such as vehicle horn, motorcycle engine noise, commercial vehicle air brake interference when braking, etc.
3. Heavy rain and splashing water.
4. Get close to radio equipment such as walkman.
5. When the sensor is covered by snow etc.

#### 10.13.6.14 The system cannot detect:

1. Objects with sharp corners and ropes, etc.
2. Objects that absorb ultrasonic waves such as cotton, snow and sponges.

#### 10.13.6.15 Situations that might happen

1. The alarm level may not be continuous according to the vehicle speed and the shape of obstacles.
2. False alarms may occur when the sensor height and rear bumper change or when the vehicle's load is located in the detected area.
3. Be careful. The system may not be able to detect objects within 30cm(11.8 in) of the sensor.
4. When sensor error is detected, check whether the sensor surface is covered with dust, snow, water, etc. Wipe off dust, snow, water, etc. from the surface if any.
5. Avoid the extrusion, impact, scratch, etc. of the sensor surface.
6. Inform the user of these precautions if the vehicle is loaned to others.

#### 10.13.6.16 Power failure of the automatic parking module

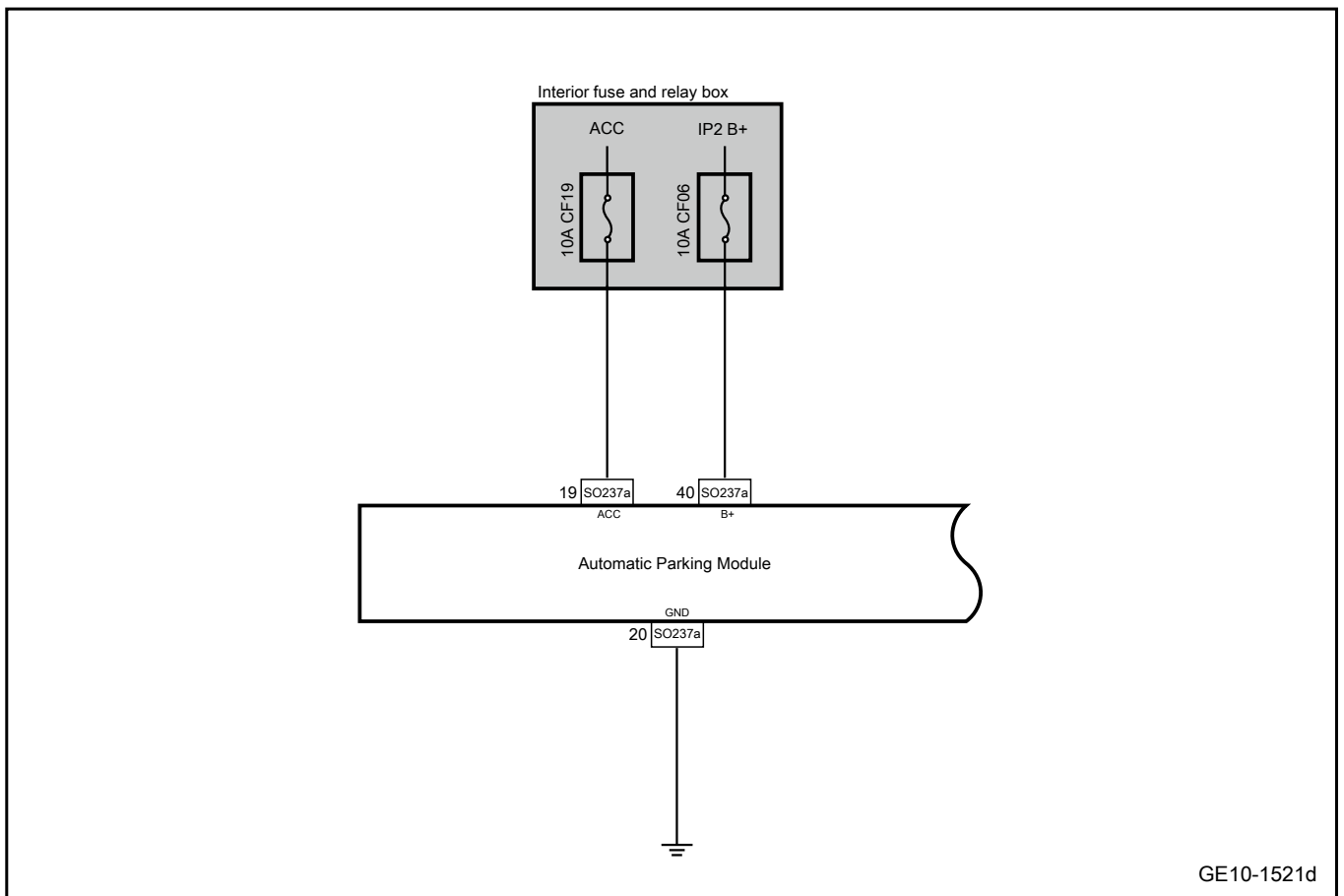
1. DTC description:

Diagnostic Trouble Code	Description
U300617	Controller module input voltage is too high
U300616	Controller module input voltage is too low

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	Power supply voltage is higher than 18V	1. ACC open status 2. Diagnosis service \$85 is not activated	1. Battery 2. Harness 3. Automatic parking module 4. Fuse
U300616	Power supply voltage is higher than 7V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the automatic parking module for signs of damage, deformation, stain, loosening, etc.
- B. Check the automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Check the automatic parking module fuse.

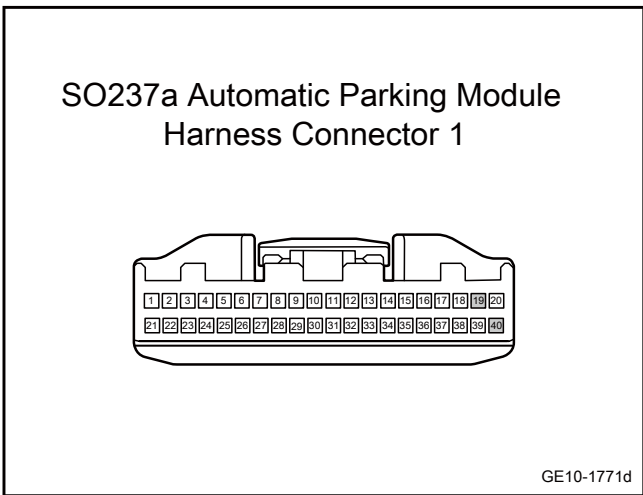
- A. Operate the starting switch to place the power in mode "OFF".
- B. Remove the interior fuse box fuse CF06, and check whether the fuse CF06 is blown out.  
  
Rated fuse capacity: 10A
- C. Remove the interior fuse box fuse CF19, and check whether the fuse CF19 is blown out.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check whether the automatic parking module voltage is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the automatic parking module harness connector SO237a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO237a(19)	Vehicle body is grounded.	Standard voltage: 11-14V
SO237a(40)		

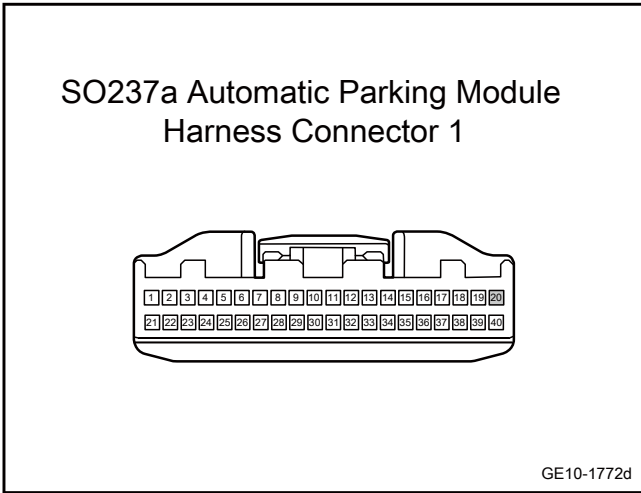
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the grounding harness of automatic parking module is normal.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the automatic parking module harness connector SO237a.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO237a(20)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the automatic parking module.

- A. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

**Step 7** Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 10.13.6.17 Automatic parking module communication failure

#### 1. DTC description:

Diagnostic Trouble Code	Description
U015687	MMI node is lost
U015587	IPK node is lost
U012287	ESC node is lost
U012687	TCM(SAS) node is lost
U014087	BCM node is lost
U111487	VCU node is lost
U015187	ACU node is lost
U021487	PEPS node is lost
U013187	EPS node is lost
U023587	FRS node is lost
U150082	CAN communication message DLC error
U130055	F110 configuration words are not written in
U007300	CAN bus off
U016487	AC node is lost

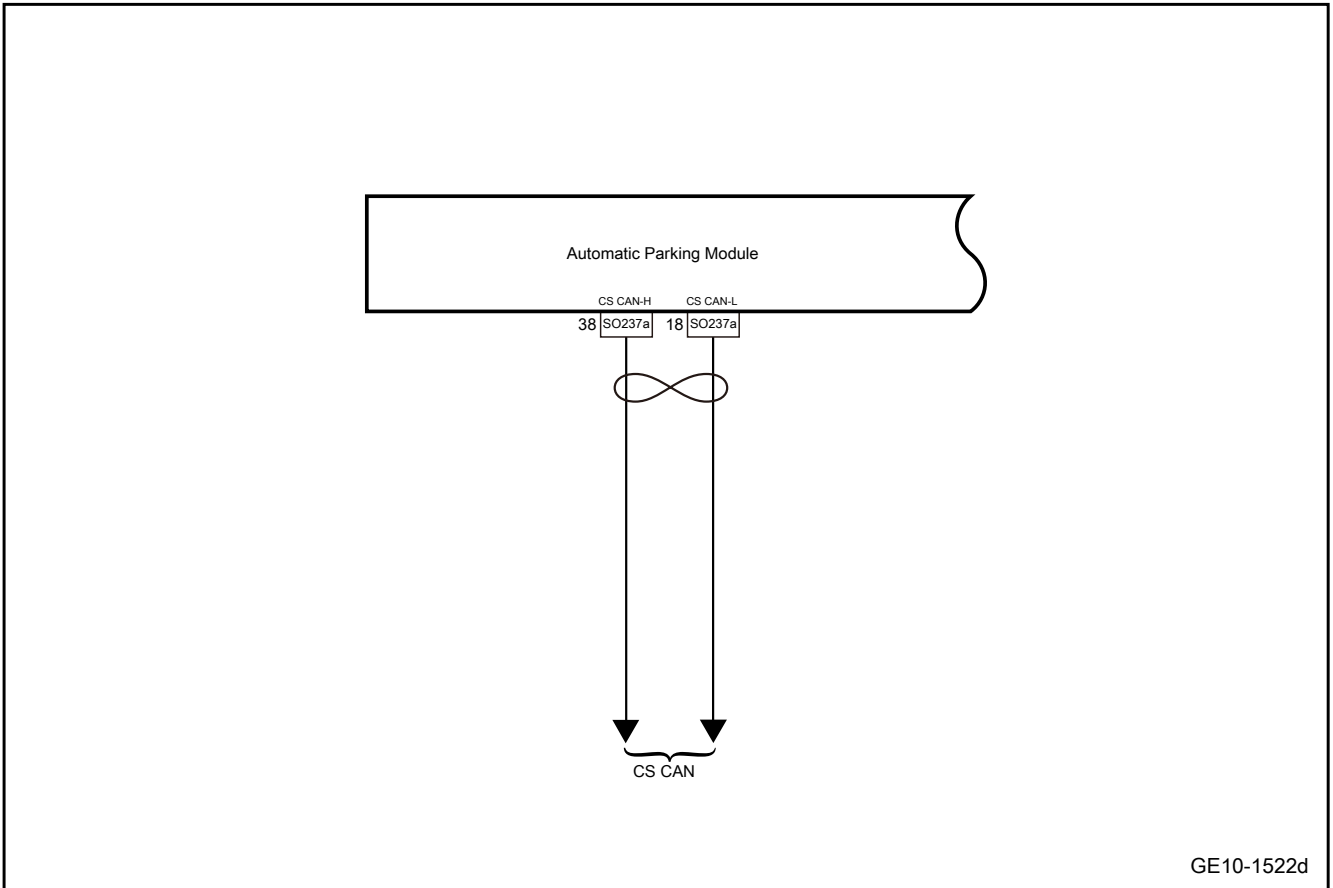
#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	Message loss was detected. (ID=0x2AE)	1. Power supply voltage of CAN bus node is between 9V and 16V 2. The TDiagenable condition is met 3. No bus disconnection is detected 4. Ignition status is "Ignition ON". 5. Diagnosis service \$85 is not activated 6. Logoff configuration is diagnosed to be effective	1. Circuit 2. Automatic parking module 3. Diagnostic interface
U015587	Message loss was detected. (ID=0x26D) 0x3F0 KC-2A IPK message loss detected		
U012287	Message loss was detected. (ID=0x125)		
U012687	Message loss was detected. (ID=0x0E0) 0x281 BX11 SAS (TCM) message loss detected		
U014087	Message loss was detected. (ID=0x1F0)		
U111487	Message loss was detected. (ID=0x165)		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	Message loss was detected. (ID=0x380)		
U021487	Message loss was detected. (ID=0x1E2)		
U013187	Message loss was detected. (ID=0x150)		
U023587	Message loss was detected. (ID=0x1A3) 0x1A1 KC-2A FRS message loss detected	1. Diagnosis service \$85 is not activated 2. Power supply voltage of CAN bus node is between 9V and 16V	
U150082	The same message detected DLC<8 error equals to 10	3. Meet TDiagEnable conditions (3s)	
U130055	Unable to find eeprom F110 configuration word	4. No bus disconnection is detected	
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. Power supply voltage of CAN bus node is between 9V and 16V 2. The TDiagenable condition is met 3. No bus disconnection is detected 4. Ignition status is "Ignition ON". 5. Diagnosis service \$85 is not activated 6. Logoff configuration is diagnosed to be effective	
U016487	Message loss was detected. (ID=0x2F1)	1. Diagnosis service \$85 is not activated 2. Power supply voltage of CAN bus node is between 9V and 16V 3. Meet TDiagEnable conditions (3s) 4. No bus disconnection is detected	

3. Schematic circuit diagram:





4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the automatic parking module for signs of damage, deformation, stain, loosening, etc.
- B. Check the automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. Check the instrument communication network, refer to [CS-CAN bus network integrity check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 5 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

### 10.13.6.18 Internal failure of the automatic parking module

1. DTC description:

DTC	Trouble description
B1D121C	AVM system fault
B1D0C54	AVM not calibrated
B1D1492	SD card formatting failed
B1D0B71	AVM hardware key adhesion fault
B1D0E71	APS hardware key adhesion fault

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D121C	Internal error of AVM system	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Automatic parking module
B1D0C54	Never calibrated	1. Normal working voltage 2.IGN ON status	
B1D1492	SD card formatting failed	1. Diagnosis service \$85 is not activated 2. Power supply voltage of CAN bus node is between 9V and 16V 3. The TDiagenable condition is met (3s) 4. No bus disconnection is detected	
B1D0B71	The button voltage is less than 0.5V for 15s	1. ACC is on 2. The power supply voltage is 6V-16V	
B1D0E71	The button voltage is less than 0.5V for 15s	3. Diagnosis service \$85 is not activated	

3. Diagnosis steps

#### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the automatic parking module for signs of damage, deformation, stain, loosening, etc.
- B. Check the automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the automatic parking module.
--------	---------------------------------------

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

### 10.13.6.19 The left front blind zone probe does not work

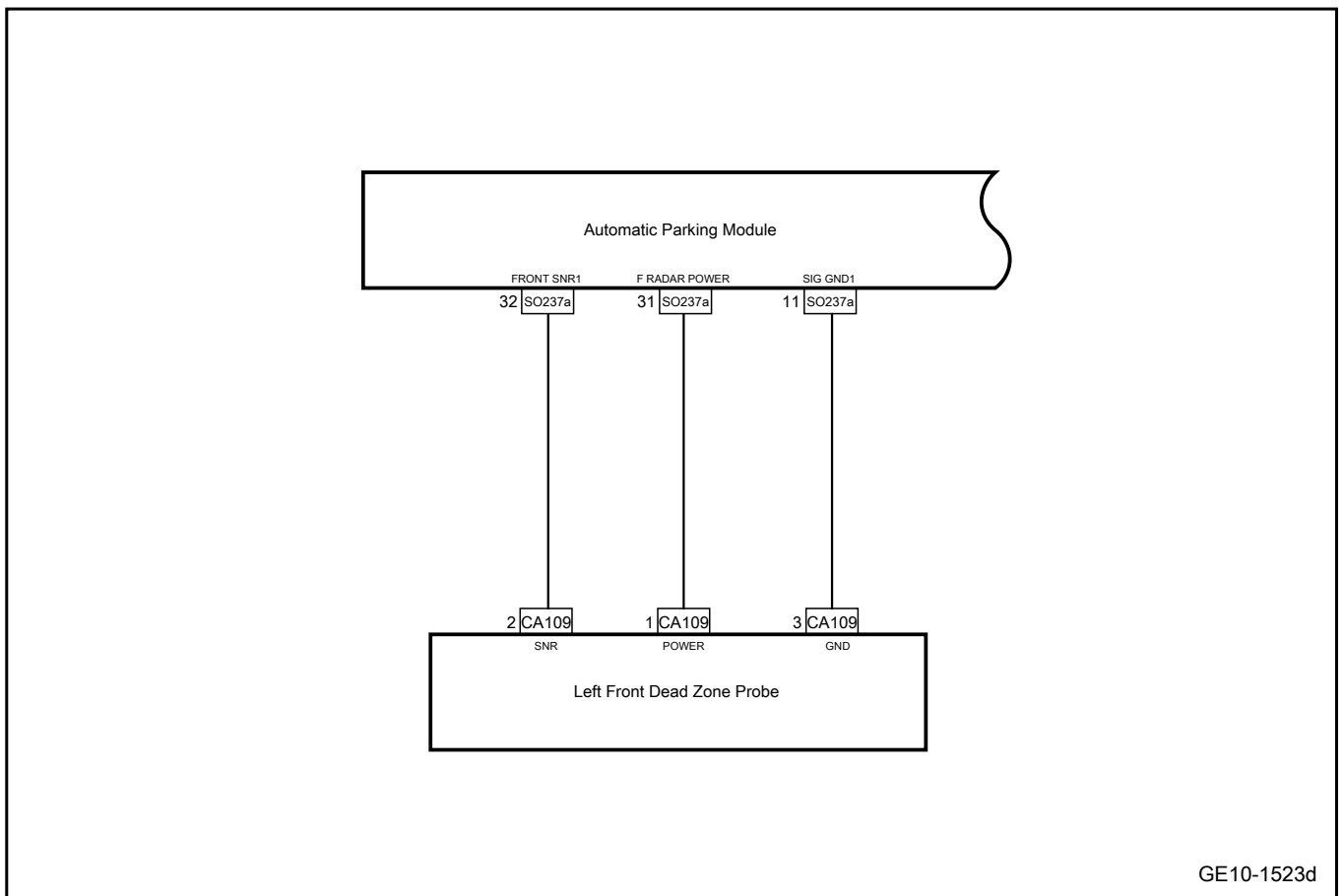
1. DTC description:

Diagnostic Trouble Code	Description
B1D1D09	The left front outermost ultrasonic sensor probe of is faulty
B1D1D4A	The type of the left front outermost ultrasonic sensor does not match
B1D1D96	The left front outermost ultrasonic sensor probe is invalid

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1D09	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Left front blind zone probe
B1D1D4A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D1D96	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Trouble Check](#)

Yes

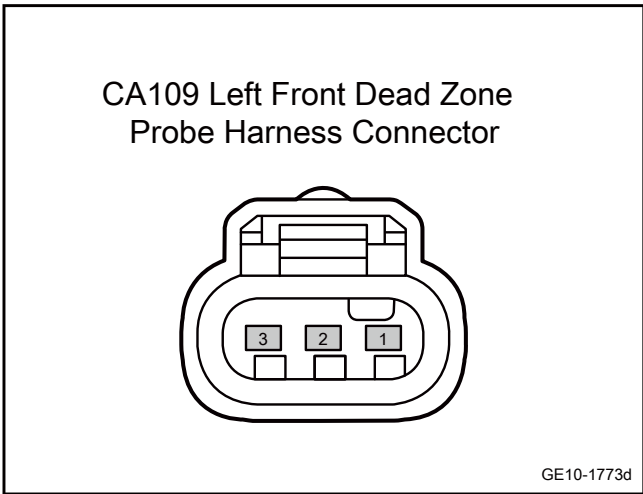
Step 2	Primary check.
--------	----------------

- A. Check the front left blind spot probe for signs of looseness, wear, and cracking.
- B. Check the front left blind spot probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

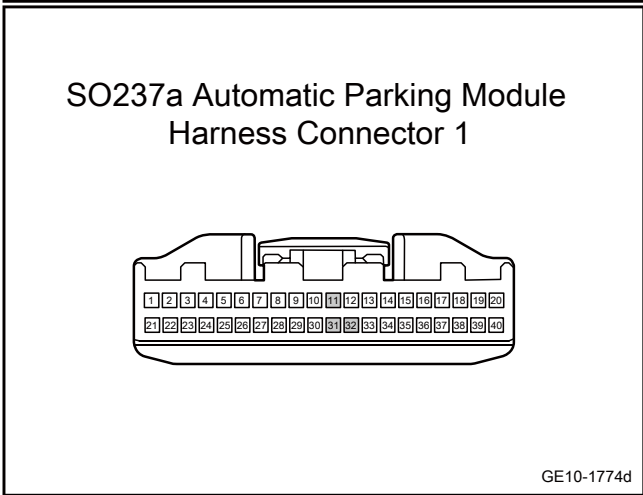
Yes

**Step 3** Check whether the circuit between the left front blind spot probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front blind spot probe harness connector CA109.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	SO237a(31)	Standard resistance: less than 1Ω
CA109(2)	SO237a(32)	
CA109(3)	SO237a(11)	



- E. Confirm whether the measured value meets the standard.

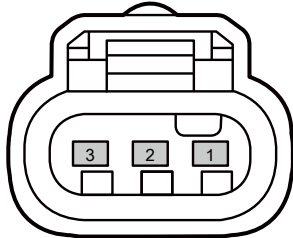
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left front blind spot probe and the automatic parking module is short-circuited to ground.

CA109 Left Front Dead Zone Probe Harness Connector



GE10-1775d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front blind spot probe harness connector CA109.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA109(2)		
CA109(3)		

- E. Confirm whether the measured value meets the standard.

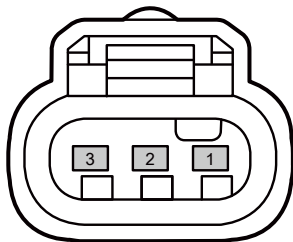
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left front blind spot probe and the automatic parking module is short-circuited to the power supply.

CA109 Left Front Dead Zone Probe Harness Connector



GE10-1776d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the left front blind spot probe harness connector CA109.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	Vehicle body is grounded.	Standard voltage: 0V
CA109(2)		
CA109(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left front blind zone probe.



- A. Replace the left front blind zone probe, see [Replacement of the Left Front Blind Zone Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

**Step 8** Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.13.6.20 The right front blind zone probe does not work

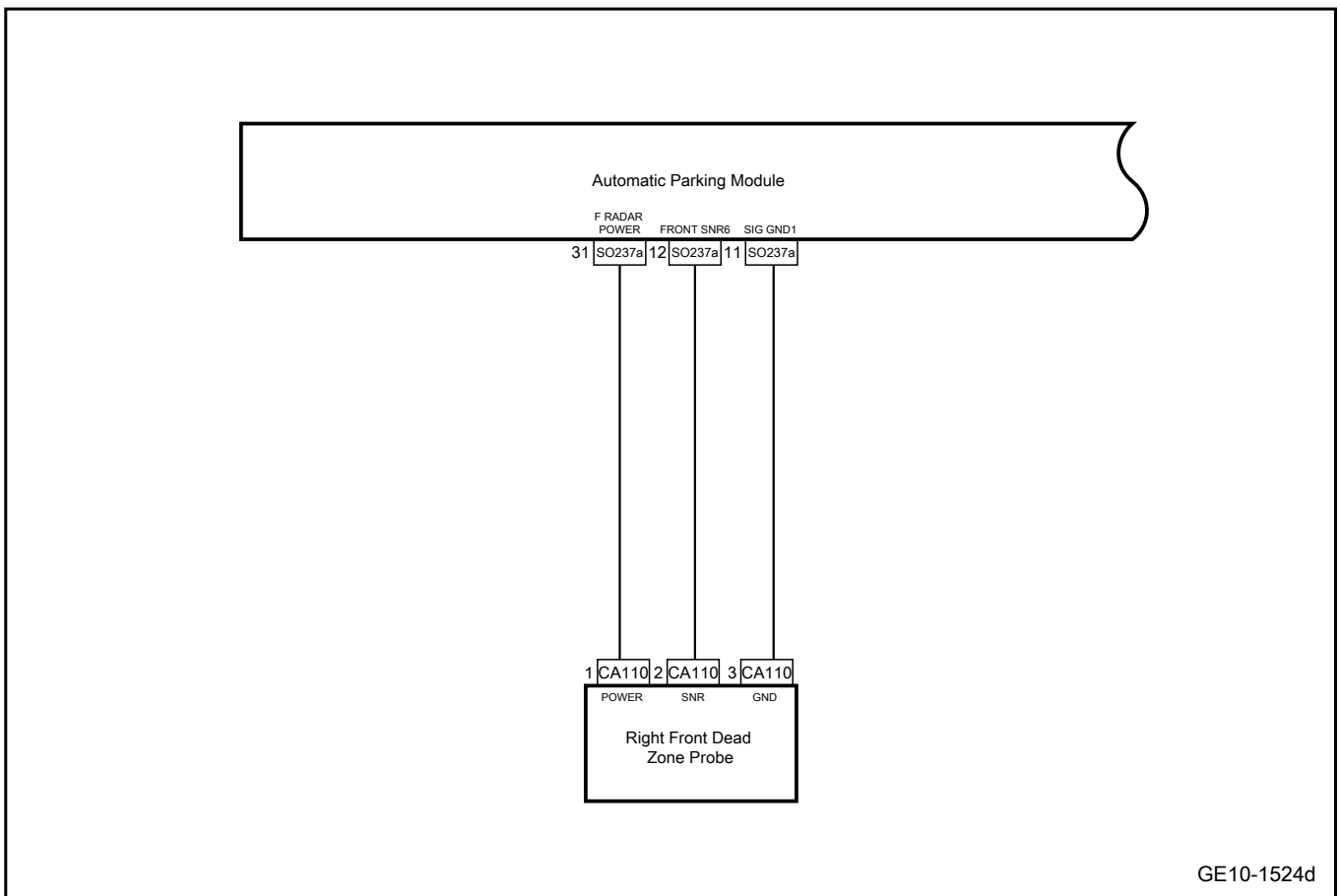
1. DTC description:

Diagnostic Trouble Code	Description
B1D1A09	The right front outermost ultrasonic sensor probe is faulty
B1D1A4A	The type of the right front outermost ultrasonic sensor does not match
B1D1A96	The right front outermost ultrasonic sensor probe is invalid

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1A09	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Right front blind zone probe
B1D1A4A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D1A96	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

## 3. Schematic circuit diagram:



GE10-1524d

4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

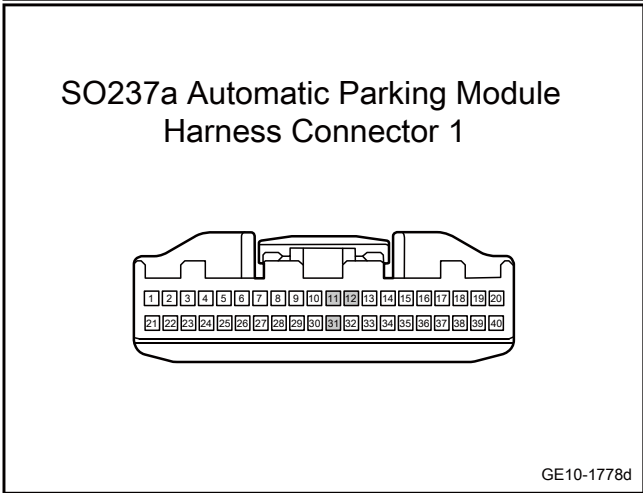
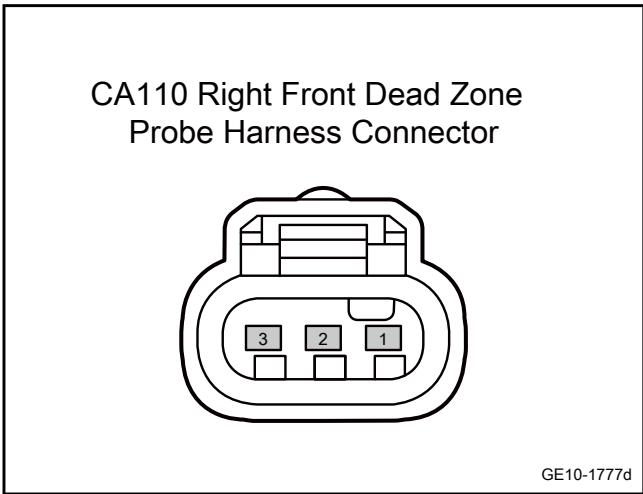
- A. Check the front right blind spot probe for signs of looseness, wear, and cracking.
- B. Check the front right blind spot probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the front right blind spot probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front right blind spot probe harness connector CA110.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	SO237a(31)	Standard resistance: less than 1Ω
CA110(2)	SO237a(12)	
CA110(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.

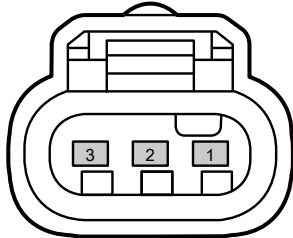
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the front right blind spot probe and the automatic parking module is short-circuited to ground.

CA110 Right Front Dead Zone Probe Harness Connector



GE10-1779d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front right blind spot probe harness connector CA110.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA110(2)		
CA110(3)		

- E. Confirm whether the measured value meets the standard.

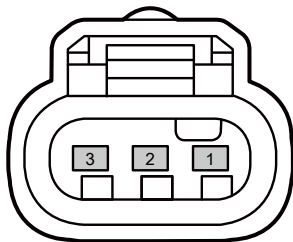
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the front right blind spot probe and the automatic parking module is short-circuited to the power supply.

CA110 Right Front Dead Zone Probe Harness Connector



GE10-1780d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front right blind spot probe harness connector CA110.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	Vehicle body is grounded.	Standard voltage: 0V
CA110(2)		
CA110(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right front blind zone probe.

- A. Replace the right front blind zone probe, see [Replacement of the right front blind zone probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.21 The left rear blind zone probe does not work

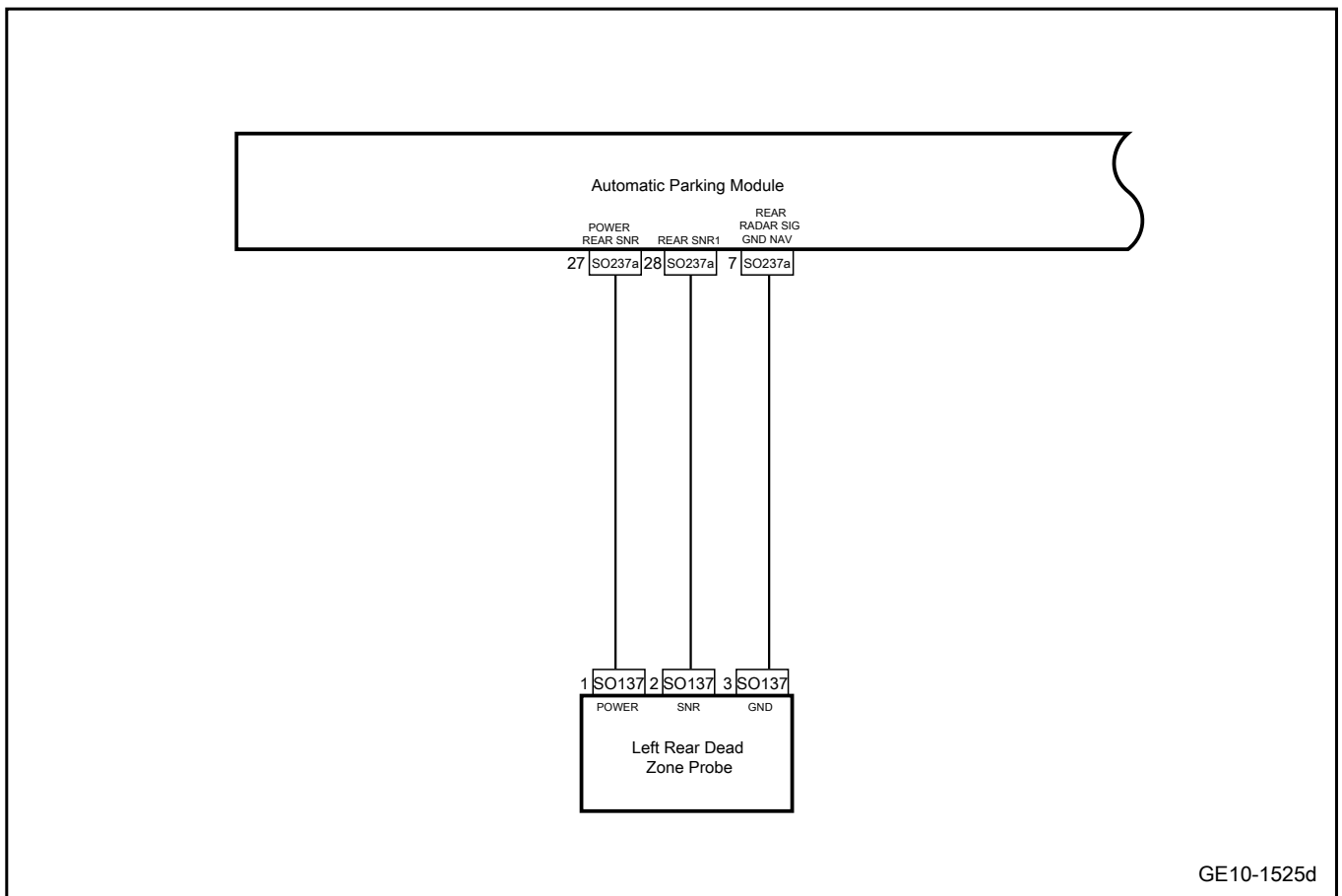
1. DTC description:

Diagnostic Trouble Code	Description
B1D1709	The left rear outermost ultrasonic sensor probe is faulty
B1D174A	The type of the left rear outermost ultrasonic sensor does not match
B1D1796	The left rear outermost ultrasonic sensor probe fails

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1709	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Left rear blind zone probe
B1D174A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D1796	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

## 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

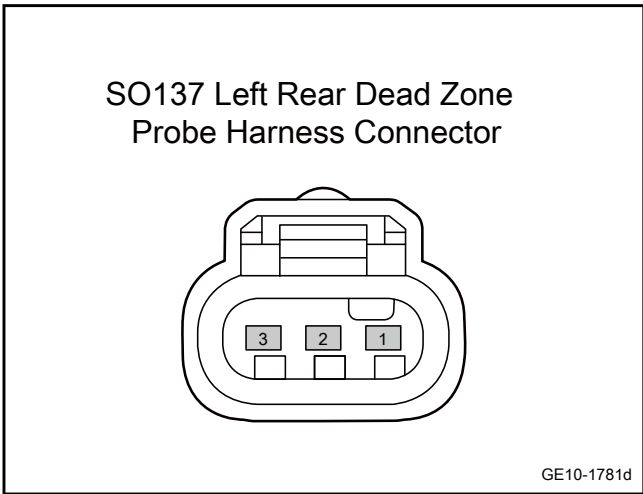
- A. Check the rear left blind spot probe for signs of looseness, wear, and cracking.
- B. Check the rear left blind spot probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.



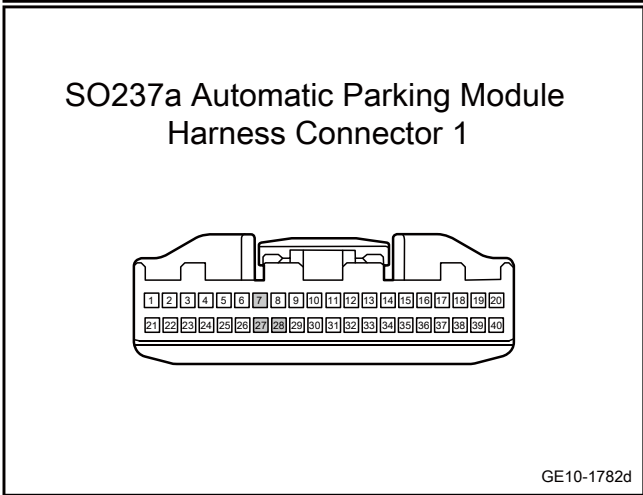
Yes

**Step 3** Check whether the circuit between the left rear blind spot probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left blind spot probe harness connector SO137.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	SO237a(27)	Standard resistance: less than 1Ω
SO137(2)	SO237a(28)	
SO137(3)	SO237a(7)	



- E. Confirm whether the measured value meets the standard.

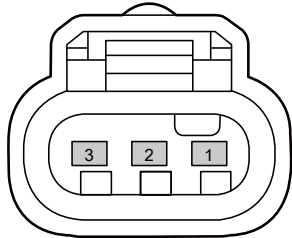
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left rear blind spot probe and the automatic parking module is short-circuited to ground.

SO137 Left Rear Dead Zone Probe Harness Connector



GE10-1783d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left blind spot probe harness connector SO137.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO137(2)		
SO137(3)		

- E. Confirm whether the measured value meets the standard.

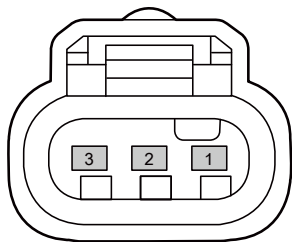
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left rear blind spot probe and the automatic parking module is short-circuited to the power supply.

SO137 Left Rear Dead Zone Probe Harness Connector



GE10-1784d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear left blind spot probe harness connector SO137.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	Vehicle body is grounded.	Standard voltage: 0V
SO137(2)		
SO137(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left rear blind zone probe.

- A. Replace the left rear blind zone probe, see [Replacement of the Left Rear Blind Zone Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

**Step 8** Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.13.6.22 The right rear blind zone probe does not work

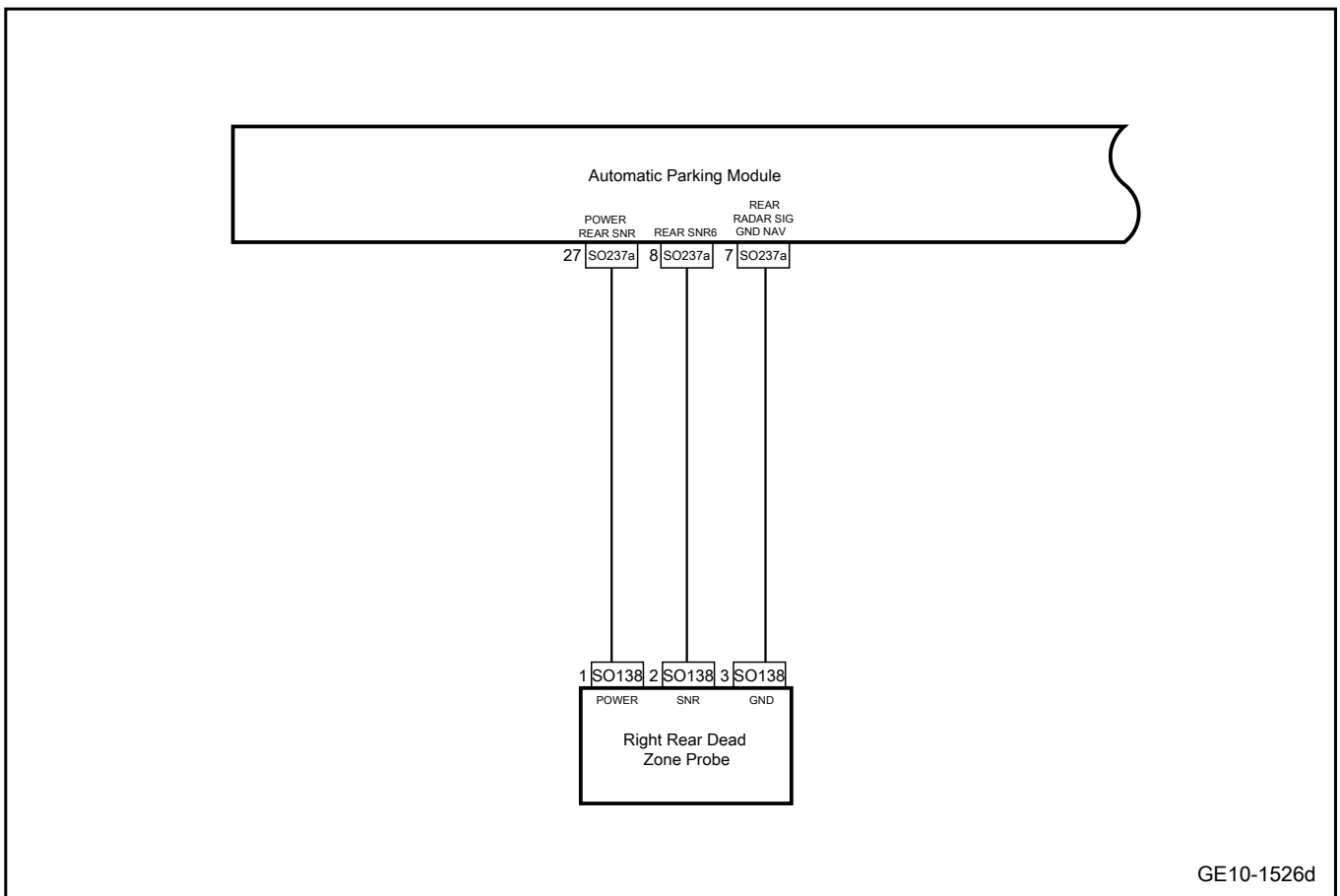
1. DTC description:

Diagnostic Trouble Code	Description
B1D1409	The right rear outermost ultrasonic sensor probe is faulty
B1D144A	The type of the right rear outermost ultrasonic sensor does not match
B1D1496	The right rear outermost ultrasonic sensor probe fails

## 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1409	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Right rear blind zone probe
B1D144A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D1496	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

## 3. Schematic circuit diagram:



GE10-1526d

4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

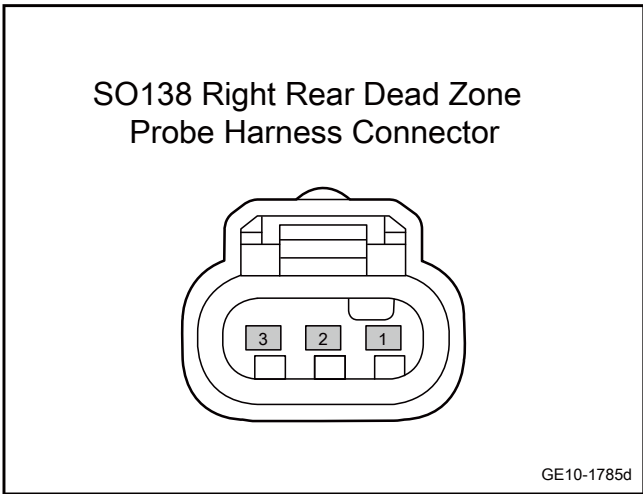
- A. Check the rear right blind spot probe for signs of looseness, wear, and cracking.
- B. Check the rear right blind spot probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

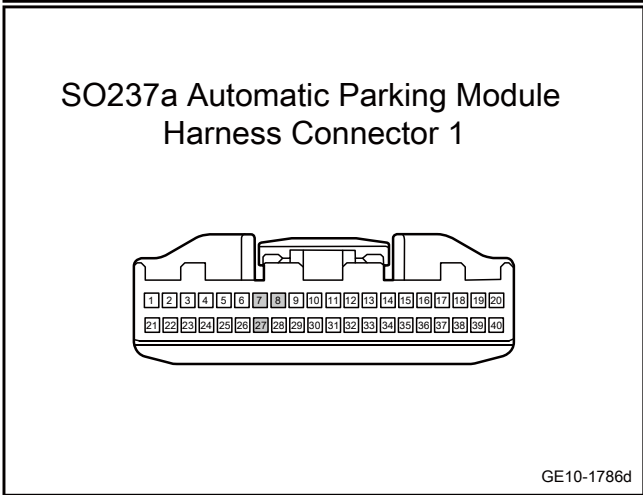
Yes

**Step 3** Check whether the circuit between the right rear blind spot probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear right blind spot probe harness connector SO138.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	SO237a(27)	Standard resistance: less than 1Ω
SO138(2)	SO237a(8)	
SO138(3)	SO237a(7)	



- E. Confirm whether the measured value meets the standard.

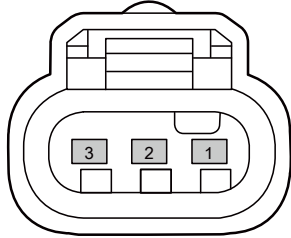
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the right rear blind spot probe and the automatic parking module is short-circuited to ground.

SO138 Right Rear Dead Zone Probe Harness Connector



GE10-1787d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear right blind spot probe harness connector SO138.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO138(2)		
SO138(3)		

- E. Confirm whether the measured value meets the standard.

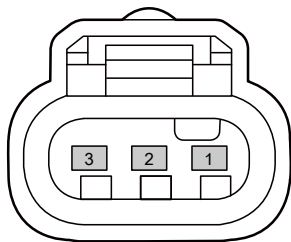
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the right rear blind spot probe and the automatic parking module is short-circuited to the power supply.

SO138 Right Rear Dead Zone Probe Harness Connector



GE10-1788d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the rear right blind spot probe harness connector SO138.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	Vehicle body is grounded.	Standard voltage: 0V
SO138(2)		
SO138(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right rear blind zone probe.

- A. Replace the right rear blind zone probe, see [Replacement of the Right Rear Blind Zone Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.23 Left blind zone indicator lamp failure

1. DTC description:

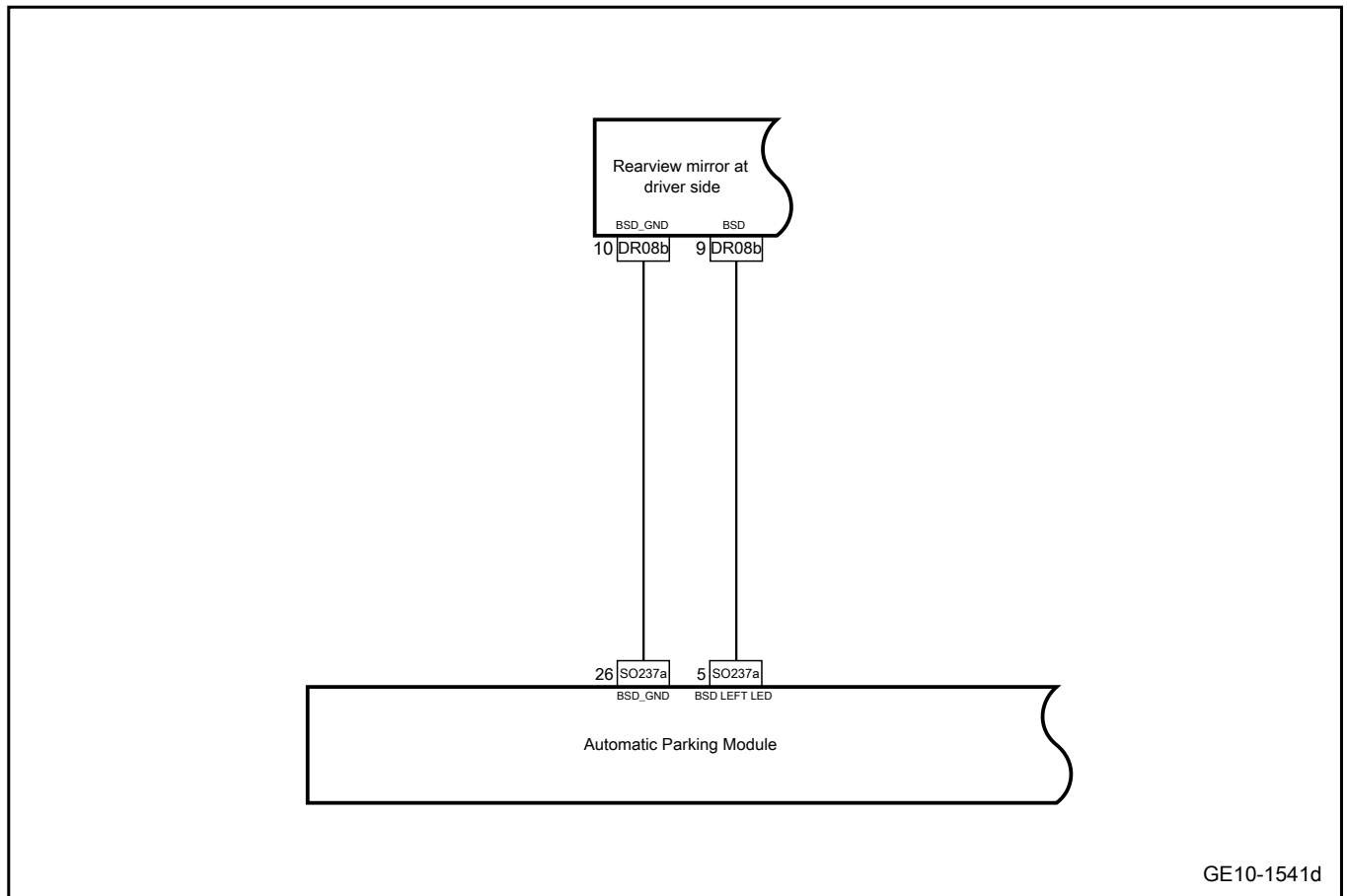


Diagnostic Trouble Code	Description
B1D101C	Circuit fault of BSD left indicator lamp

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D101C	Voltage > 8.0 V, or voltage < 0.8 V	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking module 3. Exterior rearview mirror at driver side

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the driver's side rearview mirror for signs of damage, falling off, etc.
- B. Check the driver side exterior rearview mirrors and automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

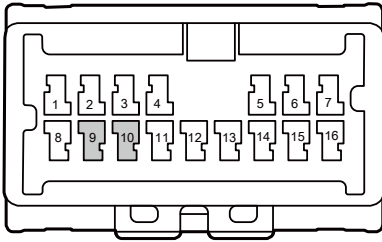
No

Repair or replace the faulty part.

Yes

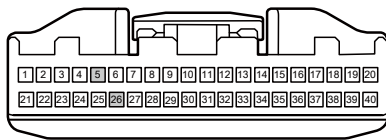
Step 3 Check whether the circuit between the driver's side mirror and the automatic parking module is open.

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-1789d

SO237a Automatic Parking Module Harness Connector 1



GE10-1790d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	SO237a(5)	Standard resistance: less than 1Ω
DR08b(10)	SO237a(26)	

- E. Confirm whether the measured value meets the standard.

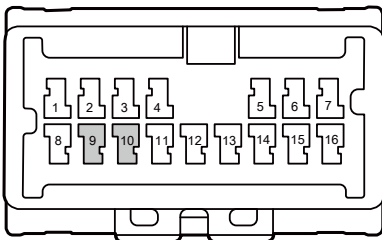
No

Repair or replace the harness.

Yes

Step 4	Check whether the circuit between the driver's side mirror and the automatic parking module is short-circuited to ground.
--------	---

DR08b Harness connector for exterior rearview mirrors at driver side



GE10-1791d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR08b(10)		

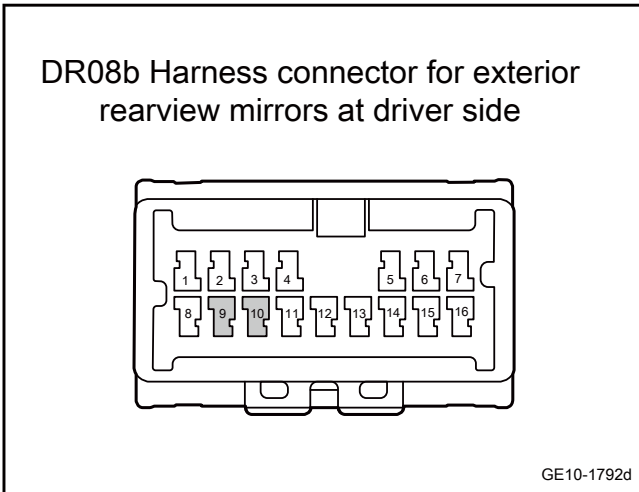
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the driver's side mirror and the automatic parking module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the driver side exterior rearview mirror

- A. Replace the driver side exterior rearview mirror Refer to [replacement of driver-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module.  
Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes
System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 10.13.6.24 Right blind zone indicator lamp failure

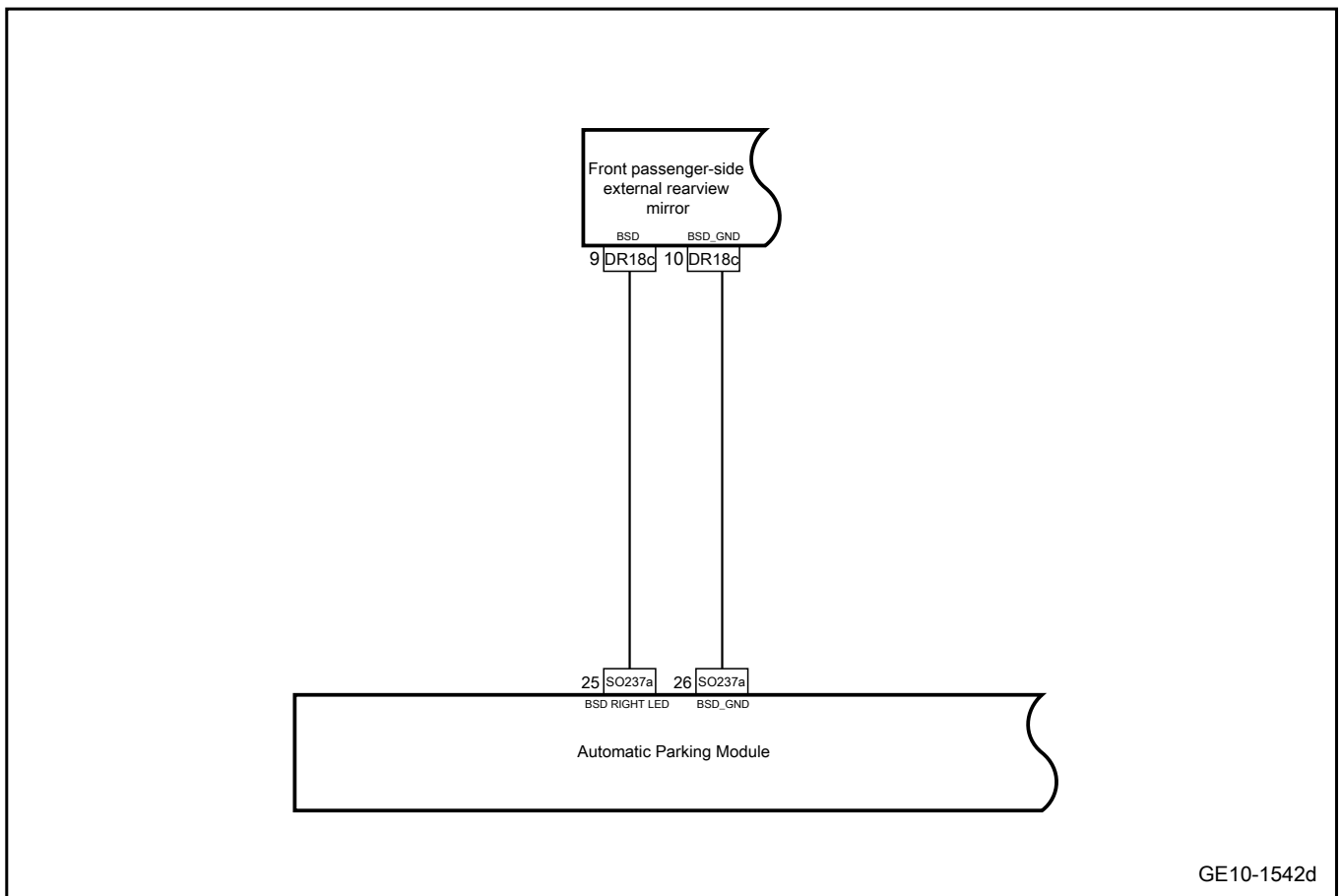
1. DTC description:

Diagnostic Trouble Code	Description
B1D111C	Circuit fault of BSD right indicator lamp

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D111C	Voltage>8.0 V, or voltage<0.8V	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking control module 3. Exterior rearview mirror at front passenger side

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

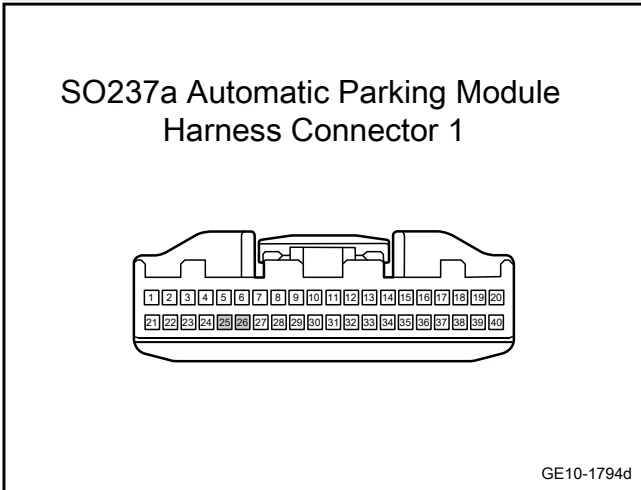
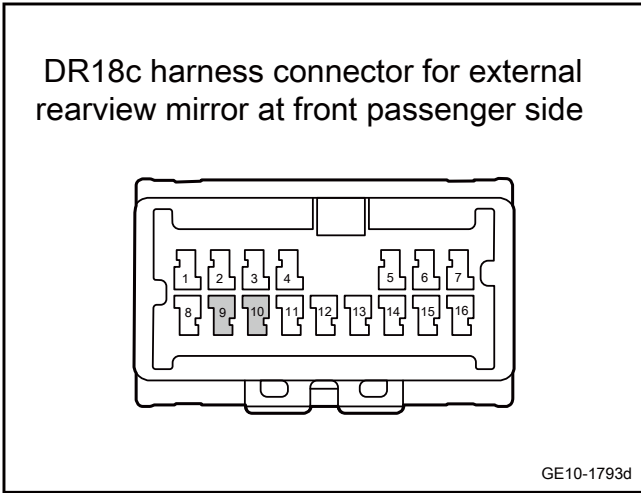
- A. Check the front passenger side exterior rearview mirror for signs of damage, falling off, etc.
- B. Check the front passenger side exterior rearview mirrors and automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the front passenger side exterior rearview mirror and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	SO237a(25)	Standard resistance: less than 1Ω
DR18c(10)	SO237a(26)	

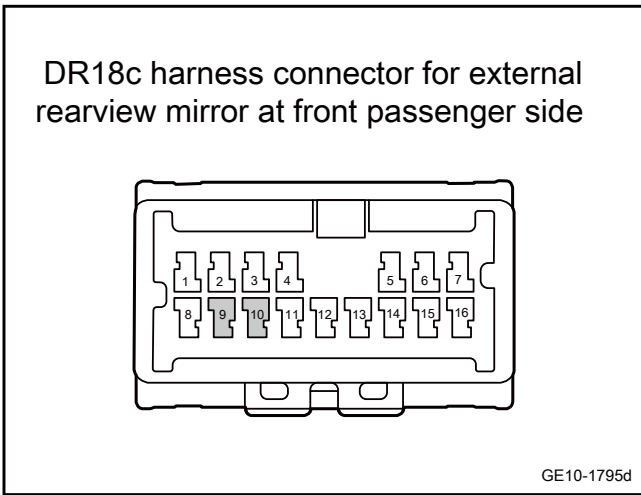
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the front passenger side exterior rearview mirror and the automatic parking module is short-circuited to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR18c(10)		

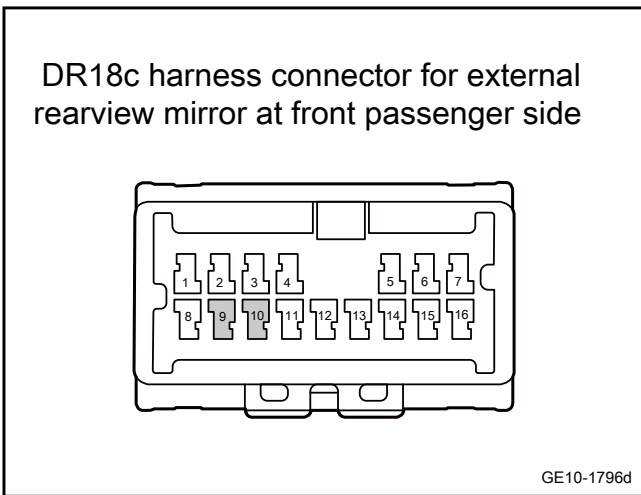
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the front passenger side exterior rearview mirror and the automatic parking module is short-circuited to the power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	Vehicle body is grounded.	Standard voltage: 0V
DR18c(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace front passenger side exterior rearview mirror.



- A. Replace front passenger side exterior rearview mirror. Refer to [replacement of front passenger-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the automatic parking module.
--------	---------------------------------------

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

### 10.13.6.25 Rear left reversing radar sensor does not work

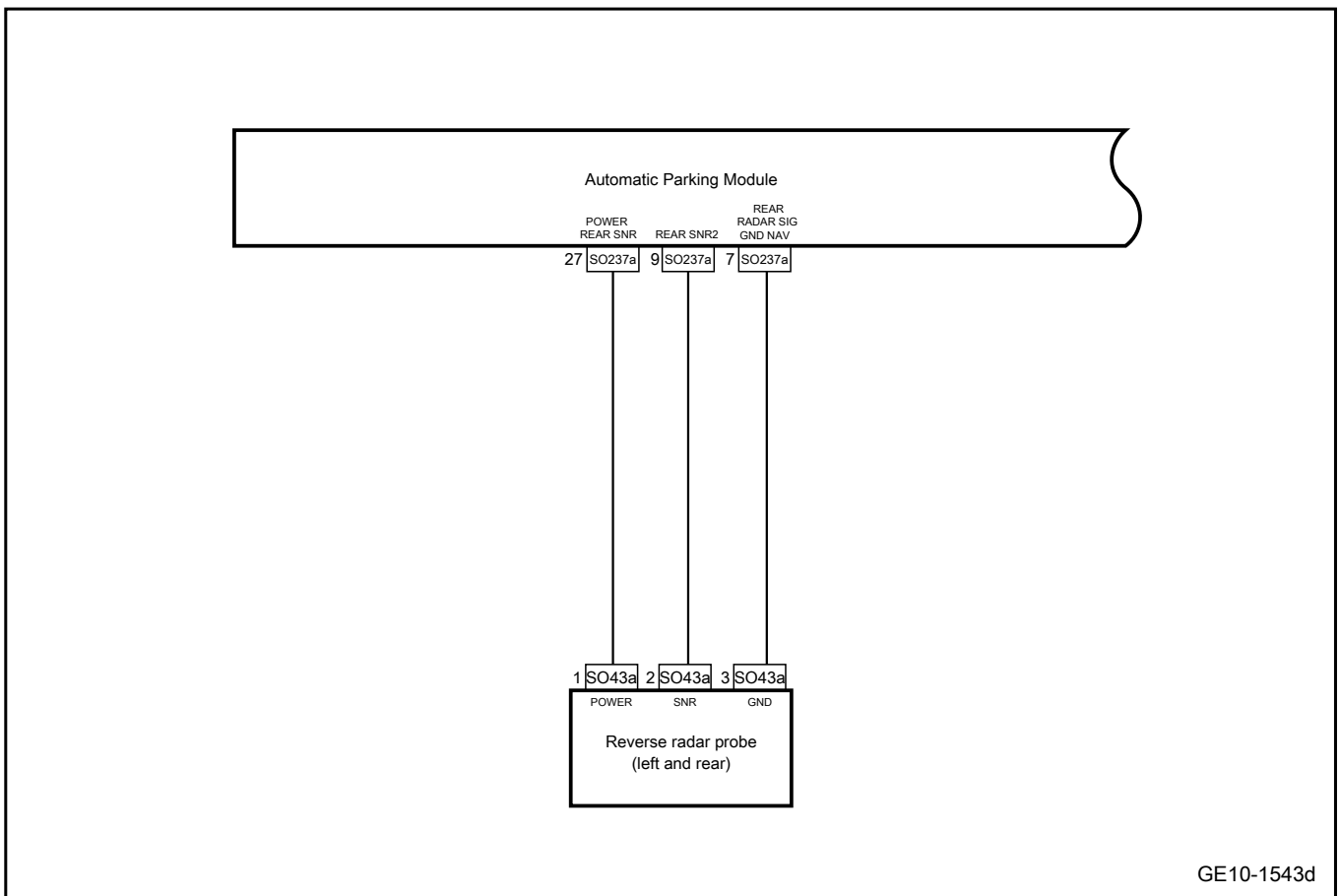
#### 1. DTC description:

Diagnostic Trouble Code	Description
B1D1609	The left rear ultrasonic sensor probe is faulty
B1D164A	Type of ultrasonic sensor on left rear does not match
B1D2596	The left rear ultrasonic sensor probe fails

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1609	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Rear left reverse radar probe
B1D164A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D2596	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

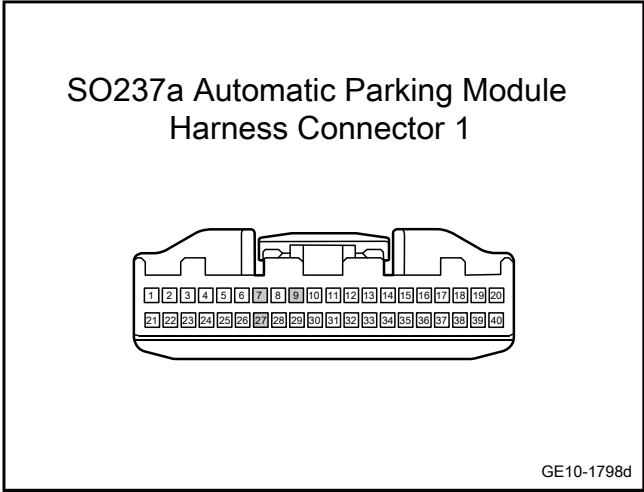
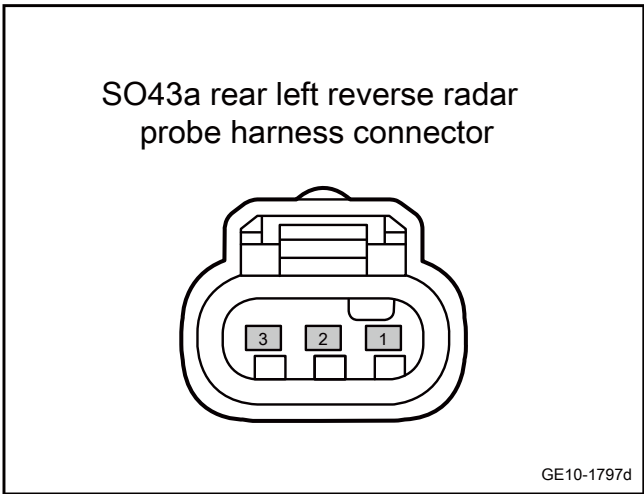
- A. Check the rear left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the left rear reversing radar probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO43a(2)	SO237a(9)	
SO43a(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

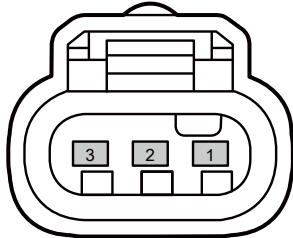
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left rear reversing radar probe and the automatic parking module is short to ground.

SO43a rear left reverse radar probe harness connector



GE10-1799d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO43a(2)		
SO43a(3)		

- E. Confirm whether the measured value meets the standard.

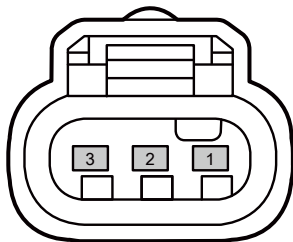
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left rear reversing radar probe and the automatic parking module is short to power supply.

SO43a rear left reverse radar probe harness connector



GE10-1800d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO43a(2)		
SO43a(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the rear left reverse radar probe.

- A. Replace the rear left reversing radar probe, refer to [Replacement of rear left reversing radar probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.26 Left middle reverse radar sensor does not work

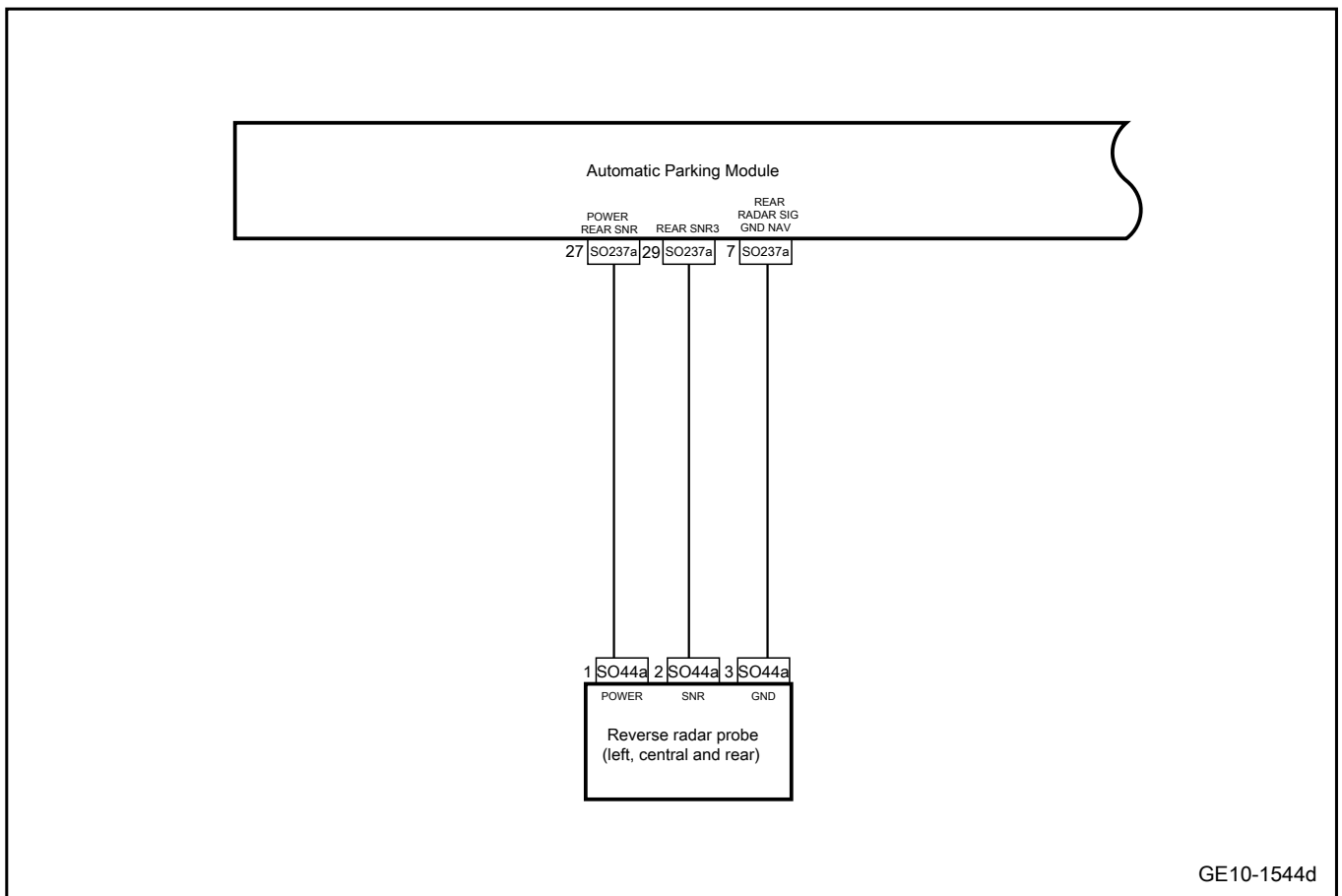
1. DTC description:

Diagnostic Trouble Code	Description
B1D1809	The left rear long-distance ultrasonic sensor probe is faulty
B1D184A	The type of the left rear long-distance ultrasonic sensor does not match
B1D2696	The left rear long-distance ultrasonic sensor probe is invalid

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1809	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Left middle reverse radar probe
B1D184A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D2696	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the left middle reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of left middle reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

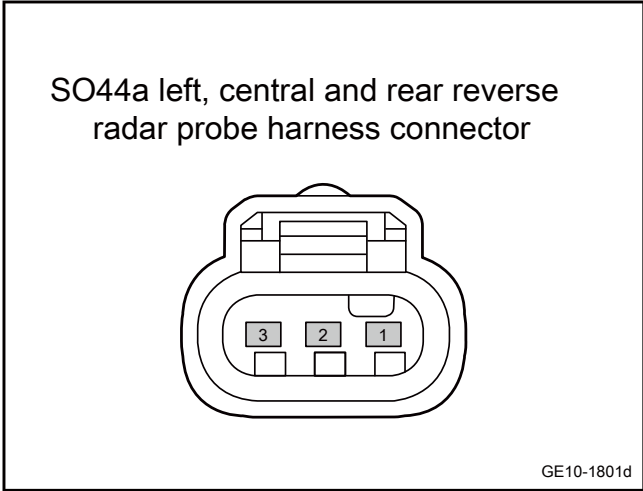
No

Repair or replace the faulty part.



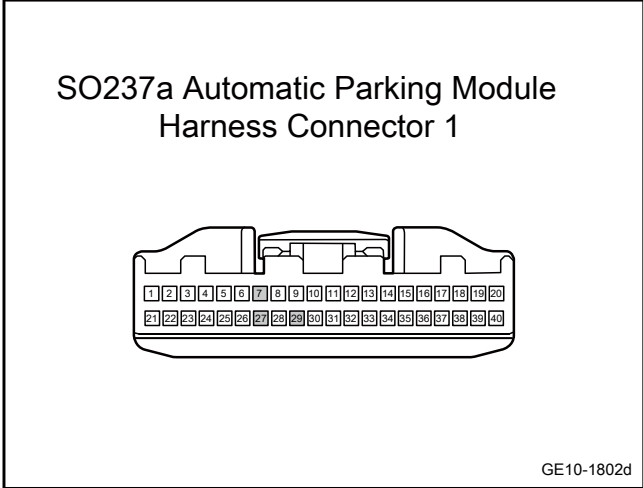
Yes

**Step 3** Check whether the circuit between the left middle reversing radar probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO44a(2)	SO237a(29)	
SO44a(3)	SO237a(7)	



- E. Confirm whether the measured value meets the standard.

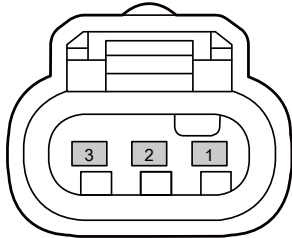
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the left middle reverse radar probe and the automatic parking module is short to ground.

SO44a left, central and rear reverse radar probe harness connector



GE10-1803d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO44a(2)		
SO44a(3)		

- E. Confirm whether the measured value meets the standard.

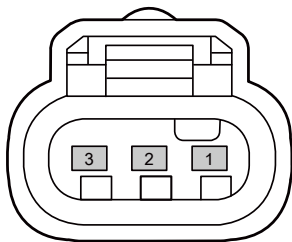
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the left middle reverse radar probe and the automatic parking module is short to power supply.

SO44a left, central and rear reverse radar probe harness connector



GE10-1804d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO44a(2)		
SO44a(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the left middle reverse radar probe.

- A. Replace the left middle rear probe of parking sensor, refer to [Replacement of left middle rear probe of parking sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.27 Rear right reversing radar sensor does not work

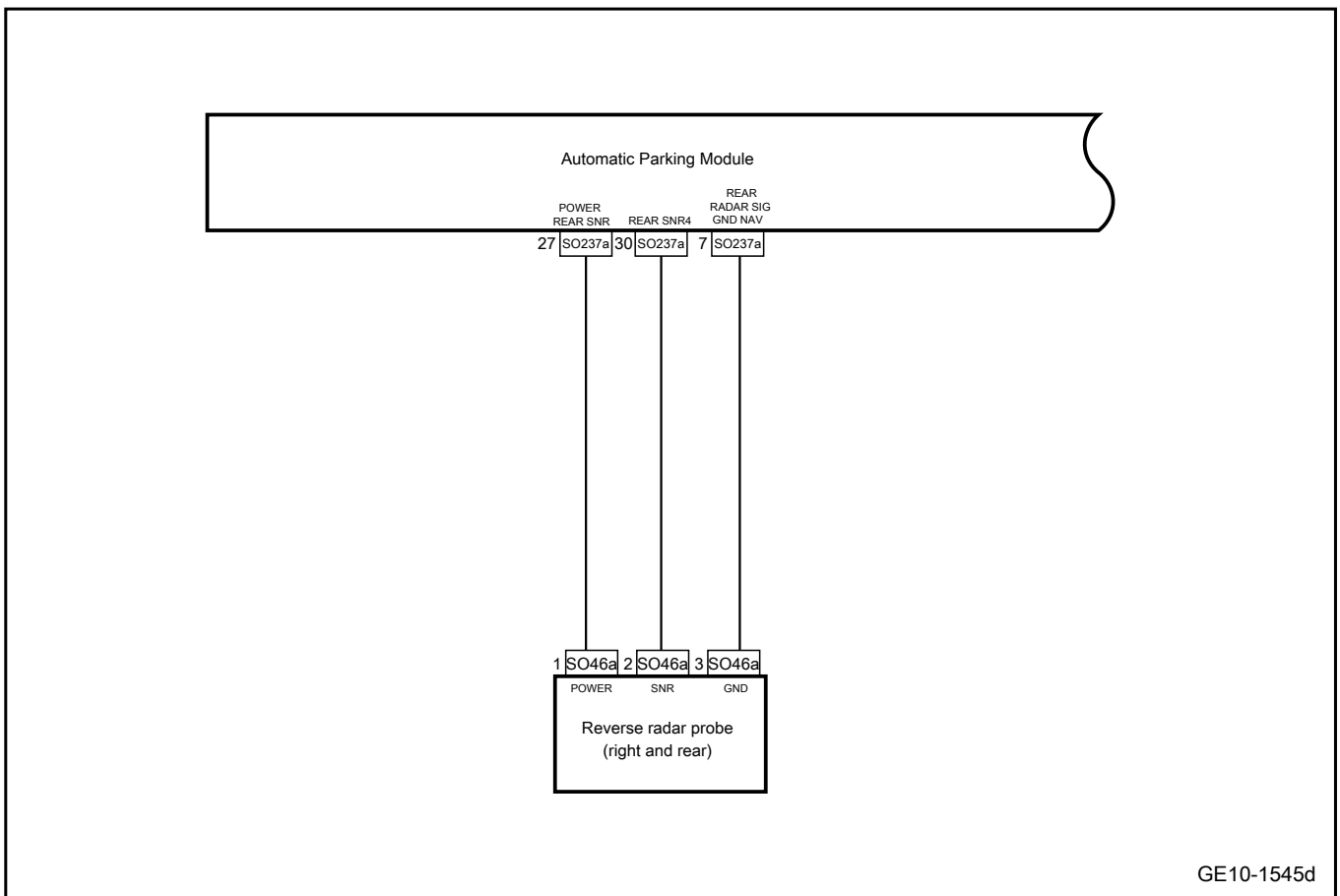
#### 1. DTC description:

Diagnostic Trouble Code	Description
B1D1509	The rear right ultrasonic sensor probe is faulty
B1D154A	The type of the rear right ultrasonic sensor does not match
B1D2496	The rear right ultrasonic sensor probe fails

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1509	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Rear right reverse radar probe
B1D154A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D2496	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Trouble Check](#)

Yes

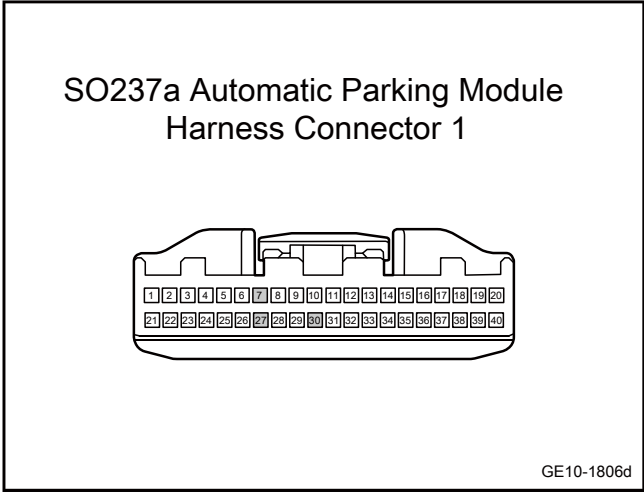
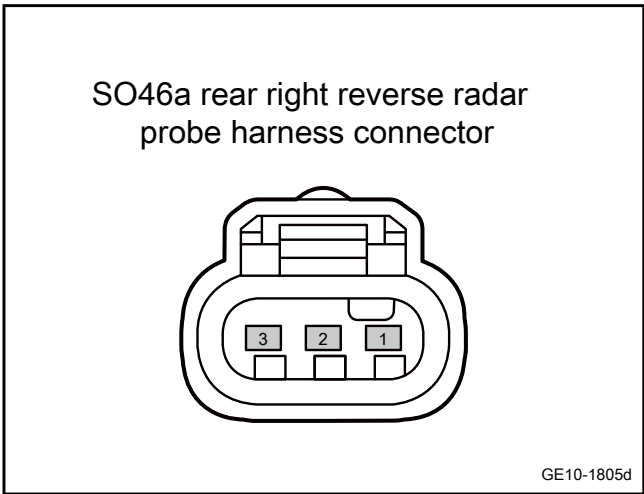
Step 2	Primary check.
--------	----------------

- A. Check the probe of the rear parking sensor for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the rear parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the right rear reversing radar probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO46a(2)	SO237a(30)	
SO46a(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

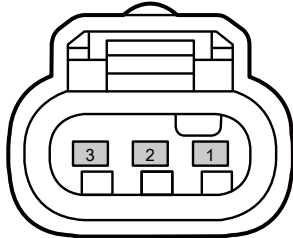
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the right rear reversing radar probe and the automatic parking module is short to ground.

SO46a rear right reverse radar probe harness connector



GE10-1807d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO46a(2)		
SO46a(3)		

- E. Confirm whether the measured value meets the standard.

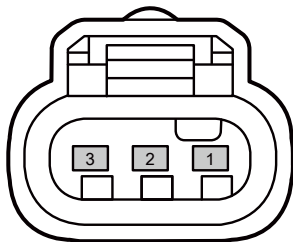
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the right rear reversing radar probe and the automatic parking module is short to power supply.

SO46a rear right reverse radar probe harness connector



GE10-1808d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO46a(2)		
SO46a(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the probe of the rear parking sensor.

- A. Replace the probe of the right rear reversing probe, refer to [Replacement of the right rear reversing radar probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.



### 10.13.6.28 Right middle rear reversing radar sensor does not work

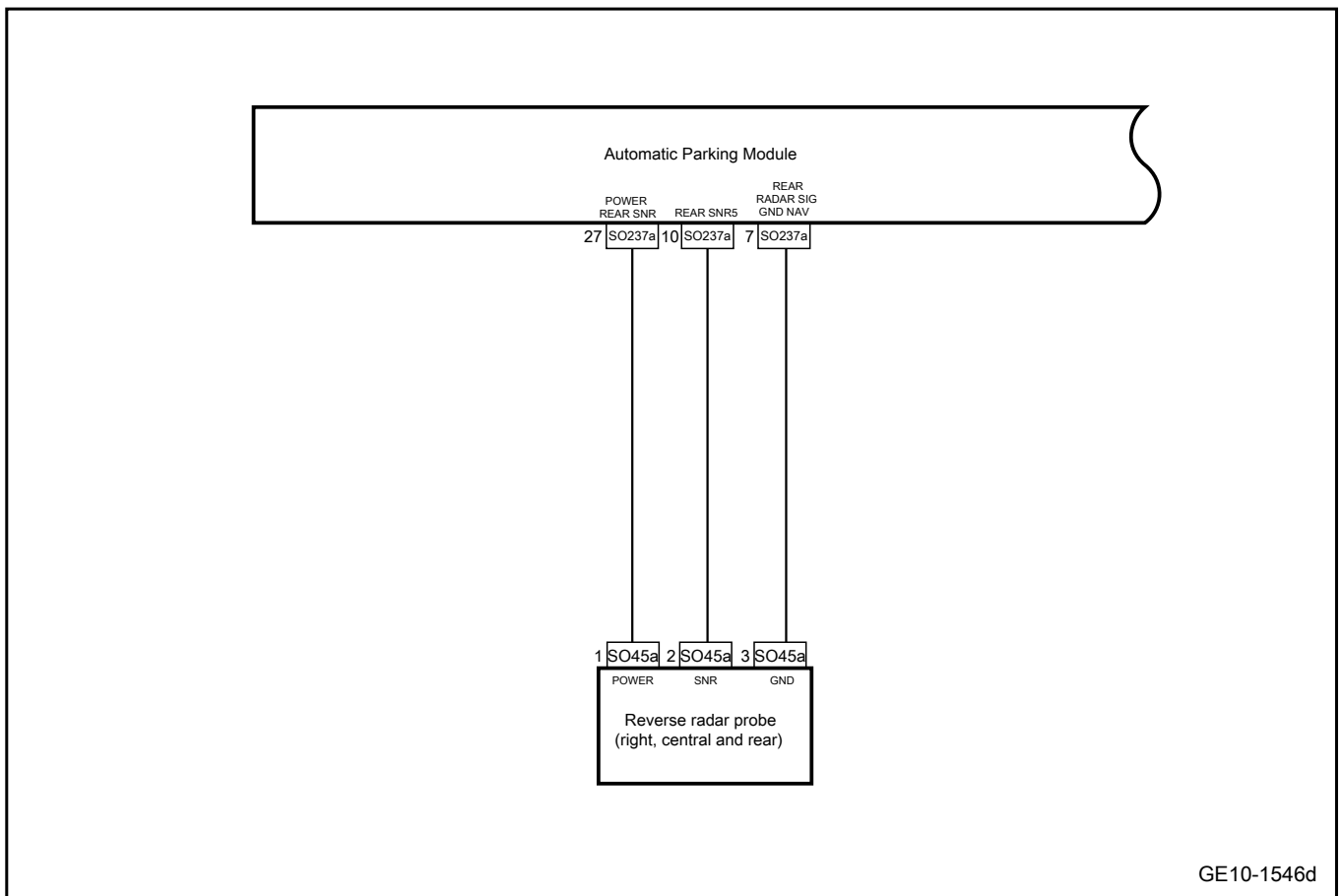
#### 1. DTC description:

Diagnostic Trouble Code	Description
B1D1309	The right rear long-distance ultrasonic sensor probe is faulty
B1D134A	The type of the right rear long-distance ultrasonic sensor does not match
B1D2396	The right rear long-distance ultrasonic sensor probe fails

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D1309	ECU input interruption is not triggered, and the signal wire is always high level. ECU input interruption is not triggered and the signal wire is always low level.	1. Supply voltage 9 to 16 volts	1. Circuit 2. Automatic parking module 3. Right middle rear reverse radar probe
B1D134A	Failure to write Threshold or Measurement or calibration data in the initialization phase	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	
B1D2396	The detected first rising edge time is less than 500us (aftershock is too short); the first detected rising edge time is greater than 2000us (aftershock is too long)	1. Supply voltage 9 to 16 volts 2. No hardware failure of the sensor	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

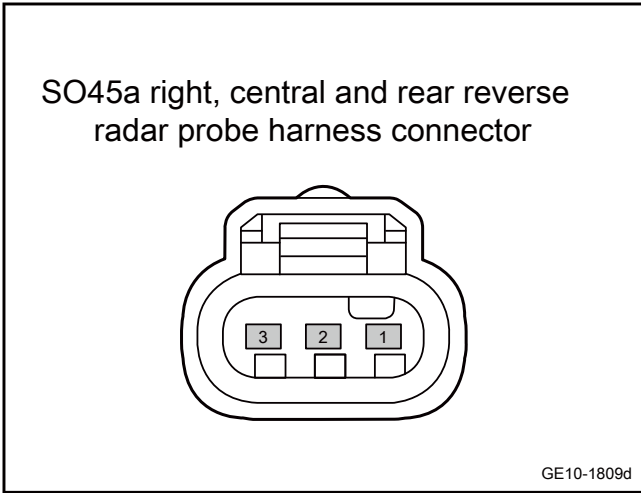
- A. Check the right middle rear reverse radar probe for signs of loosening, wear, break, etc.
- B. Check the harness connector of right middle rear probe of parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

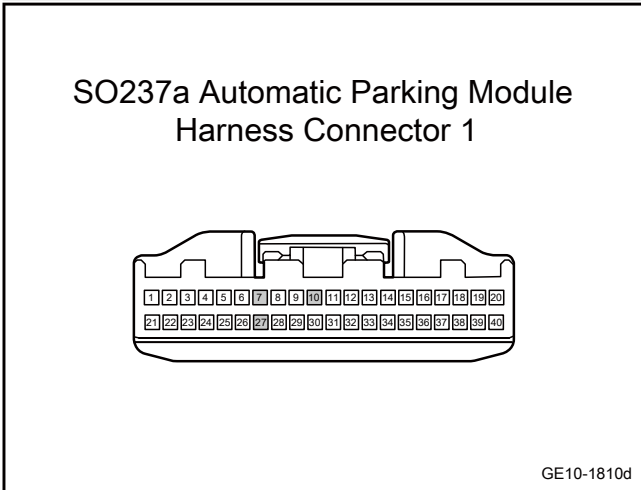
Yes

**Step 3** Check whether the circuit between the right middle rear reversing radar probe and the automatic parking module is open.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO45a(2)	SO237a(10)	
SO45a(3)	SO237a(7)	



- E. Confirm whether the measured value meets the standard.

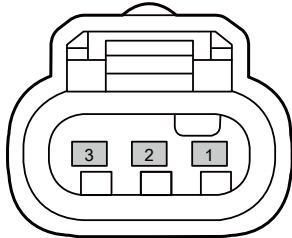
No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the right middle rear reversing radar probe and the automatic parking module is short to ground.

SO45a right, central and rear reverse radar probe harness connector



GE10-1811d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO45a(2)		
SO45a(3)		

- E. Confirm whether the measured value meets the standard.

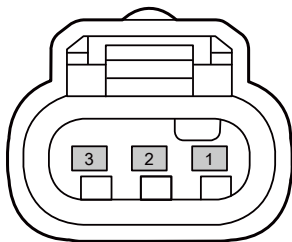
No

Repair or replace the harness.

Yes

**Step 5** Check whether the circuit between the right middle rear reversing radar probe and the automatic parking module is short to power supply.

SO45a right, central and rear reverse radar probe harness connector



GE10-1812d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO45a(2)		
SO45a(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the right middle rear probe of parking sensor.

- A. Replace the right middle rear probe of parking sensor, refer to [Replacement of right middle rear reserve radar probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking control module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking control module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.29 360 front camera failure

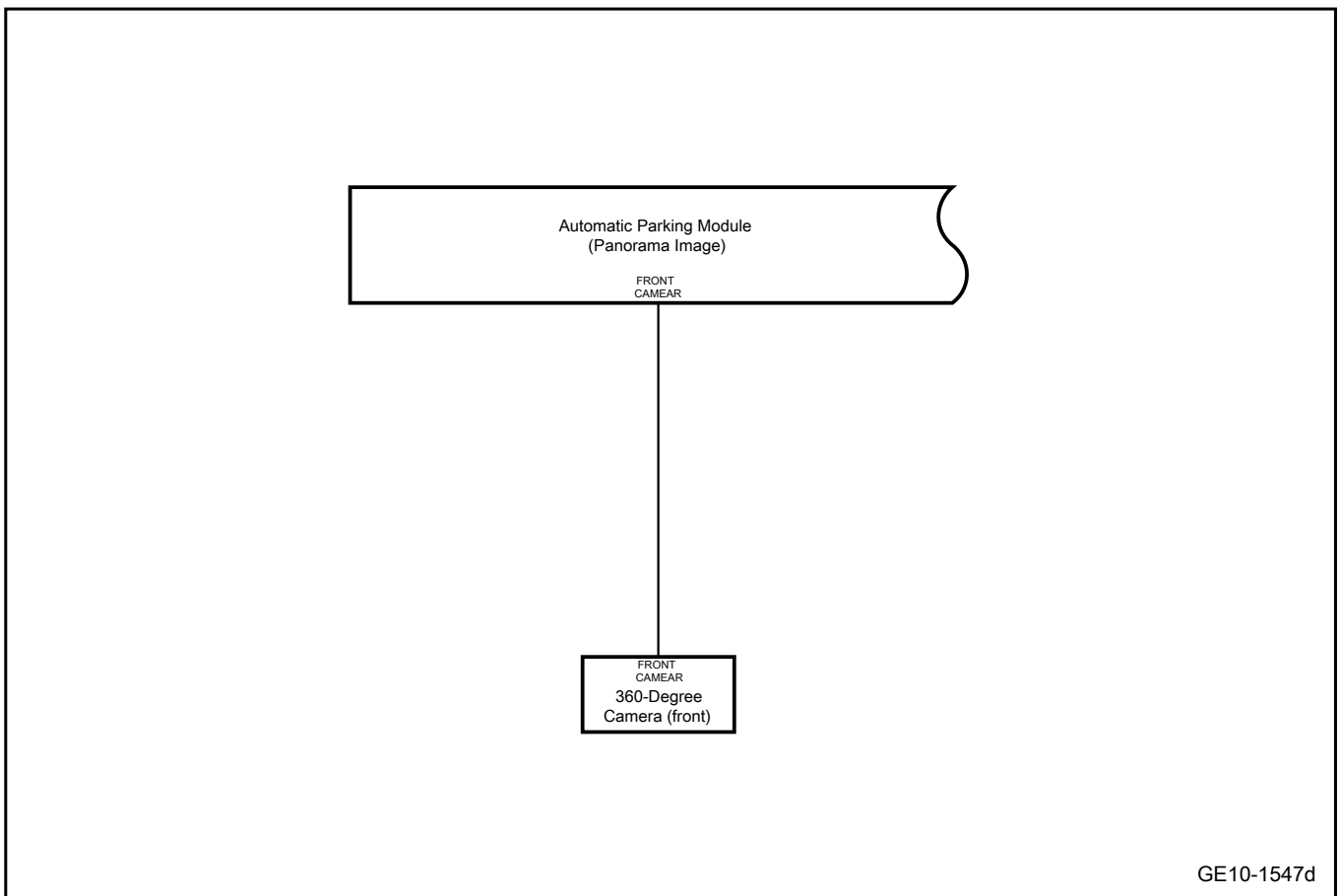
#### 1. DTC description:

Diagnostic Trouble Code	Description
B1D0013	AVM front camera harness open circuit
B1D0411	AVM front camera power supply is short to GND.
B1D1597	AVM front camera video stream stuck
B1D0412	AVM front camera power supply short circuit to the positive pole of power supply

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0013	The deserializer does not send Fsync (status indicates 'Unlock')	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking module 3. 360 front camera
B1D0411	After the camera is powered on, the camera voltage is lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 6V-16V	
B1D1597	Camera video stream error	3. Turn on the power of the camera	
B1D0412	The voltage is higher than Vs-0.5V within 100 milliseconds after the camera is powered off	4. Diagnosis service \$85 is not activated	

#### 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the 360 front camera for signs of damage or falling off.
- B. Check the 360 front camera, automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the 360 front camera and the automatic parking module is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 front camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 front camera terminal	Automatic parking module terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the 360 front camera and the automatic parking module is short-circuited to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 front camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 front camera terminal	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes



Step 5	Check whether the circuit between the 360 front camera and the automatic parking module is short-circuited to the power supply.
--------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 front camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 front camera terminal	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6	Replace the 360 front camera.
--------	-------------------------------

- A. Replace the 360 front camera. See [Replacement of 360 Front Camera](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7	Replace the automatic parking module.
--------	---------------------------------------

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.30 360 left camera failure

1. DTC description:

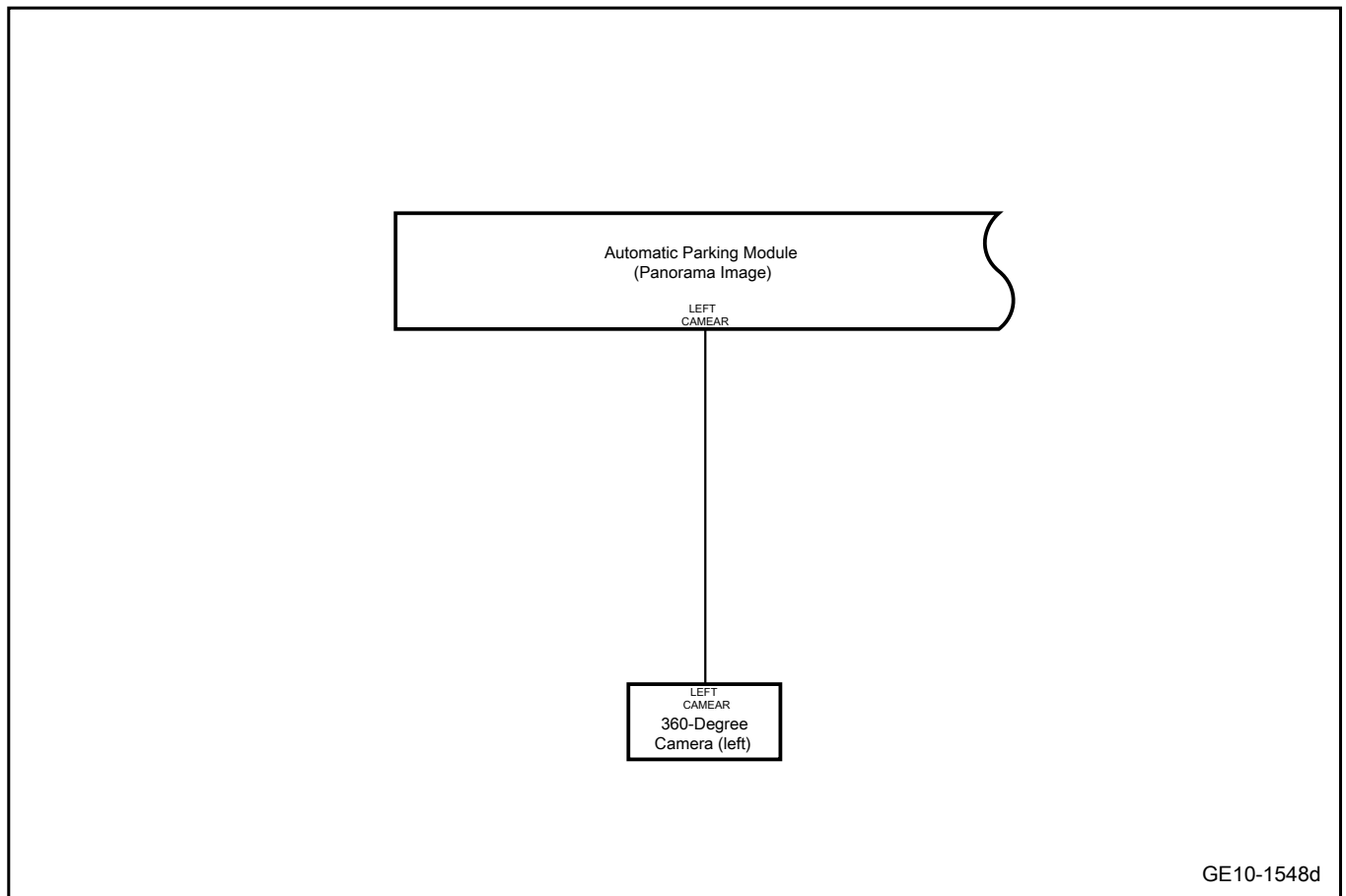
Diagnostic Trouble Code	Description
B1D0113	AVM left camera harness open circuit
B1D0611	AVM left camera power supply is short to GND
B1D1797	AVM left camera video stream stuck
B1D0612	AVM left camera power supply short circuit to the positive pole of power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0113	The deserializer does not send Fsync (status indicates 'Unlock')	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking module 3.360 left camera

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0611	After the camera is powered on, the camera voltage is lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 6V-16V 3. Turn on the power of the camera 4. Diagnosis service \$85 is not activated	
B1D1797	Camera video stream error		
B1D0612	The voltage is higher than Vs-0.5V within 100 milliseconds after the camera is powered off		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the 360left camera for signs of damage or falling off.
- B. Check the 360 left camera, automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the 360left camera and the automatic parking module is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 left camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 left camera	Automatic parking module terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the 360left camera and the automatic parking module is short-circuited to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 left camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 left camera	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the 360left camera and the automatic parking module is short-circuited to the power supply.
--------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 left camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 left camera	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the 360left camera.
--------	-----------------------------

- A. Replace the 360left camera. Refer to [Replacement of 360 left camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

### 10.13.6.31 360 right camera failure

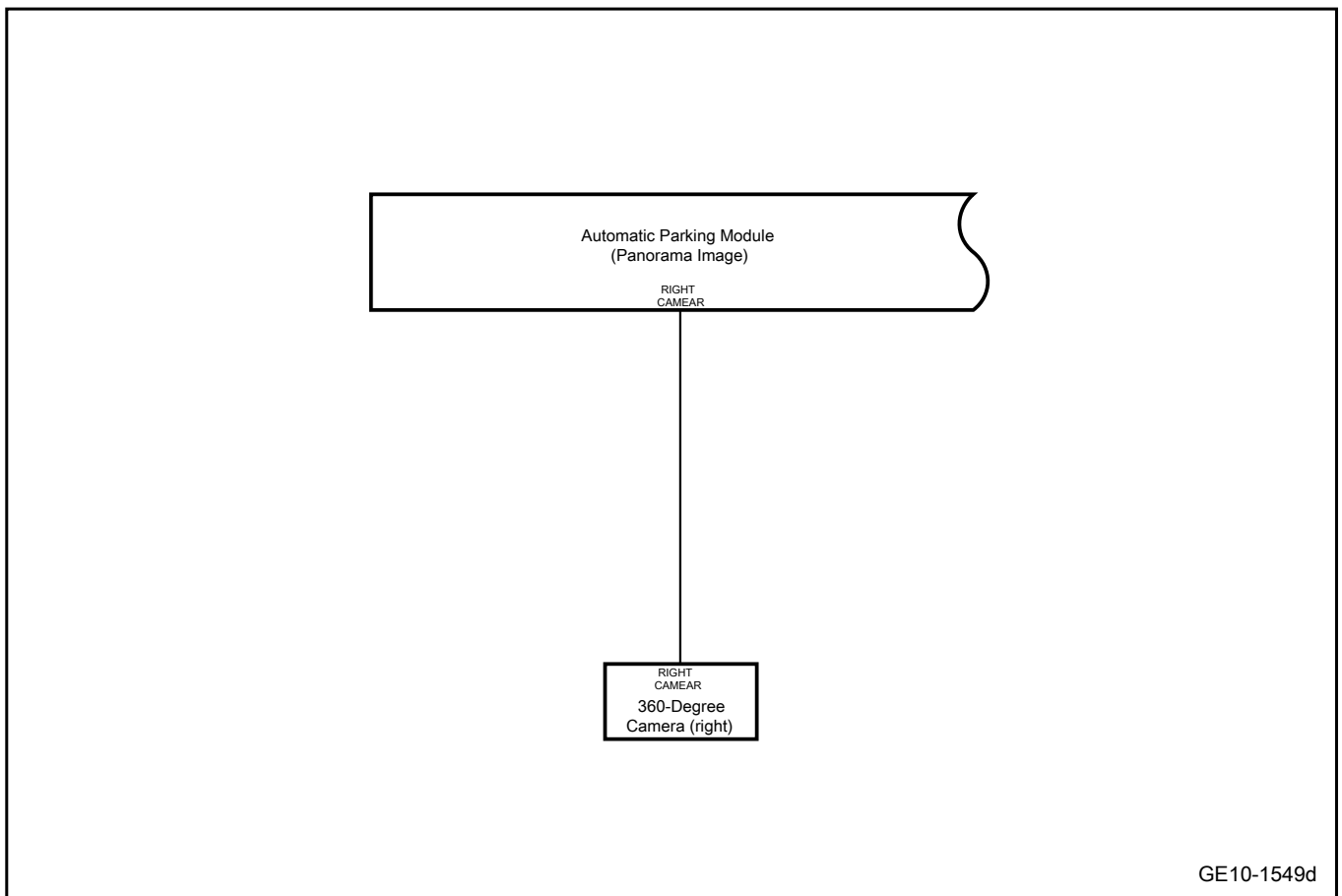
1. DTC description:

Diagnostic Trouble Code	Description
B1D0213	AVM right camera harness open circuit
B1D0711	AVM right camera power supply is short to GND
B1D1897	AVM right camera video stream stuck
B1D0712	AVM right camera power supply short circuit to the positive pole of power supply

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0213	The deserializer does not send Fsync (status indicates 'Unlock')	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking module 3.360 right camera
B1D0711	After the camera is powered on, the camera voltage is lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 6V-16V	
B1D1897	Camera video stream error	3. Turn on the power of the camera	
B1D0712	The voltage is higher than Vs-0.5V within 100 milliseconds after the camera is powered off	4. Diagnosis service \$85 is not activated	

## 3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Trouble Check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the 360right camera for signs of damage or falling off.
- B. Check the 360-degree right camera, automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.



Yes

**Step 3** Check whether the circuit between the 360right camera and the automatic parking module is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 right camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 right camera	Automatic parking module terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the 360right camera and the automatic parking module is short-circuited to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 right camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 right camera	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the 360right camera and the automatic parking module is short-circuited to the power supply.
--------	--

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the 360 right camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 right camera	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the 360right camera.
--------	------------------------------

- A. Replace the 360right camera. See [Replacement of 360 Right Camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the automatic parking module.
--------	---------------------------------------

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

Step 8	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.13.6.32 360 rear camera failure

1. DTC description:

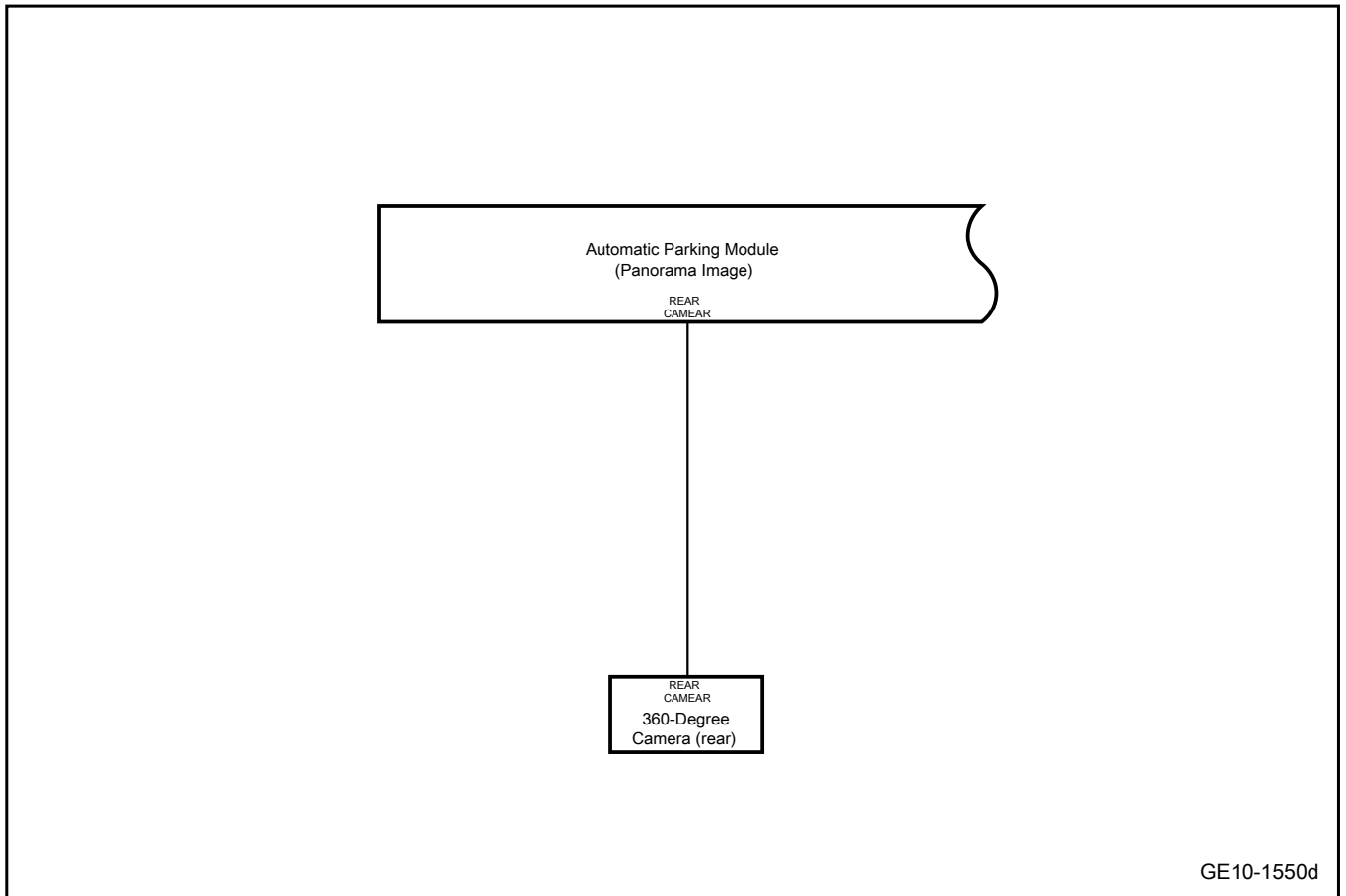
Diagnostic Trouble Code	Description
B1D0313	AVM rear camera harness open circuit
B1D0511	AVM rear camera power supply is short to GND.
B1D1697	AVM rear camera video stream stuck
B1D0512	AVM rear camera power supply short circuit to the positive pole of power supply

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0313	The deserializer does not send Fsync (status indicates 'Unlock')	1. ACC open status 2. The power supply voltage is 6V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking module 3.360 rear camera

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0511	After the camera is powered on, the camera voltage is lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 6V-16V 3. Turn on the power of the camera 4. Diagnosis service \$85 is not activated	
B1D1697	Camera video stream error		
B1D0512	The voltage is higher than Vs-0.5V within 100 milliseconds after the camera is powered off		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the 360rear camera for signs of damage or falling off.
- B. Check the 360 rear camera, automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Check whether the circuit between the 360rear camera and the automatic parking module is open.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 rear camera	Automatic parking module terminal	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 4** Check whether the circuit between the 360rear camera and the automatic parking module is short-circuited to ground.

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 rear camera	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the 360rear camera and the automatic parking module is short-circuited to the power supply.
--------	---

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking module harness connector.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
360 rear camera	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the 360 rear camera.
--------	------------------------------

- A. Replace the 360 rear camera. Refer to [Replacement of the 360 rear camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the automatic parking module.

- A. Check the power supply and grounding harness of the automatic parking module, see [Automatic Parking Module Power failure](#)
- B. Replace the automatic parking module. See [Replacement of Automatic Parking Module](#)

Next Step

**Step 8** Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 9** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 10** System is normal.

### 10.13.7 Removal and installation

#### 10.13.7.1 Replacement of reversing radar probe

##### Removal procedure

##### Warning

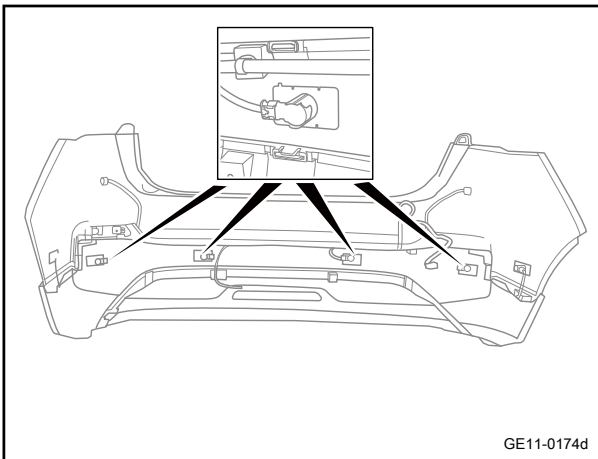
The disassembly method of the front and rear reversing radar probes is the same.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

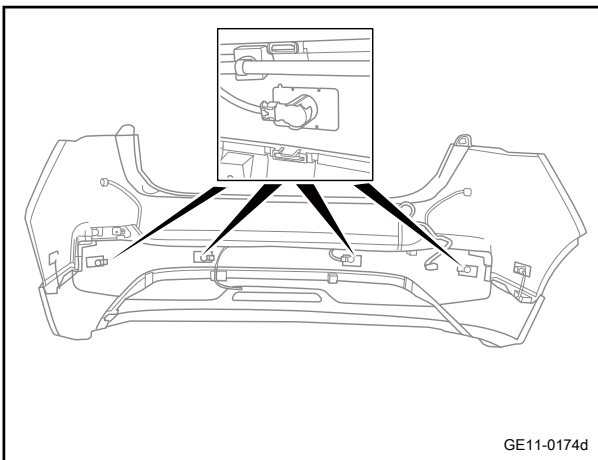
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the reversing radar probe harness connector
- 4 Pry down 4 reversing radar sensors.



##### Installation procedure

- 1 Install 4 upper reversing radar sensors.
- 2 Connect the reversing radar probe harness connector



- 3 Install the rear bumper.
- 4 Connect the negative cable of battery.



### 10.13.7.2 Replacement of automatic parking ultrasonic sensor

#### Removal procedure

##### Warning

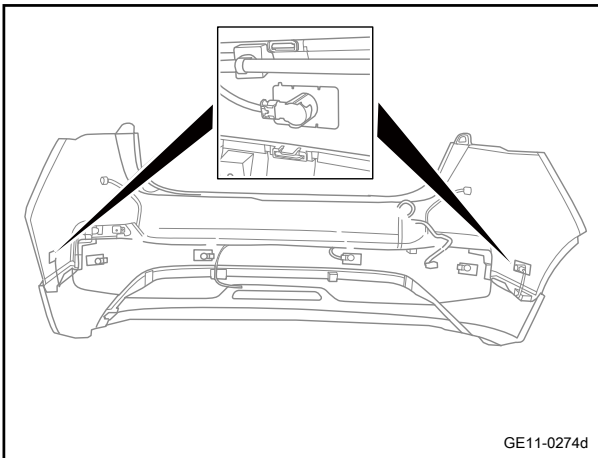
The disassembly method of the front and rear automatic parking ultrasonic sensors is the same.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

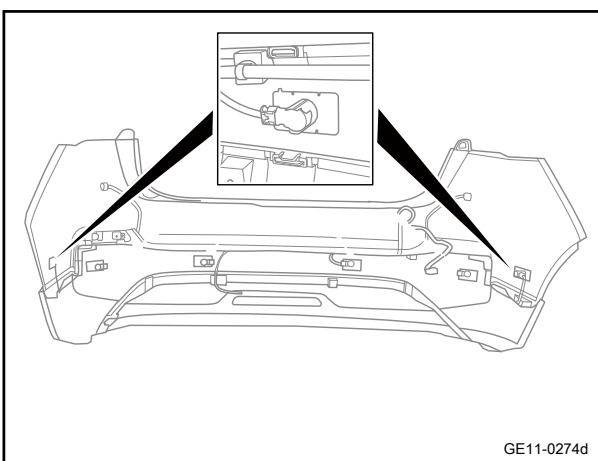
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the automatic parking ultrasonic sensor harness connector.
- 4 Pry off 2 automatic parking ultrasonic sensors.



#### Installation procedure

- 1 Install 2 upper automatic parking ultrasonic sensors.
- 2 Connect the wiring harness connector of the automatic parking ultrasonic sensor.



- 3 Install the rear bumper.
- 4 Connect the negative cable of battery.

### 10.13.7.3 Replacement of 360 panoramic view rear parking assist camera

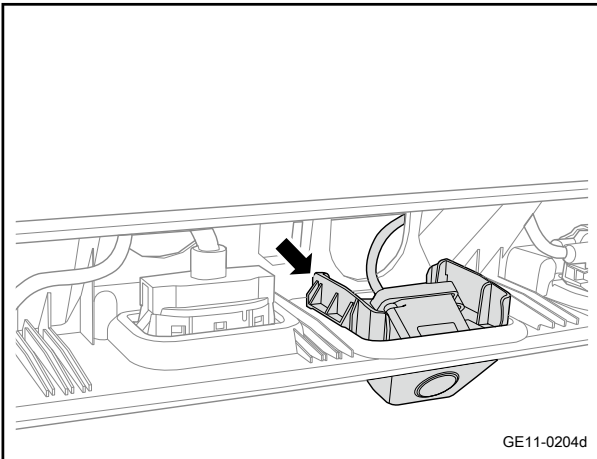
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

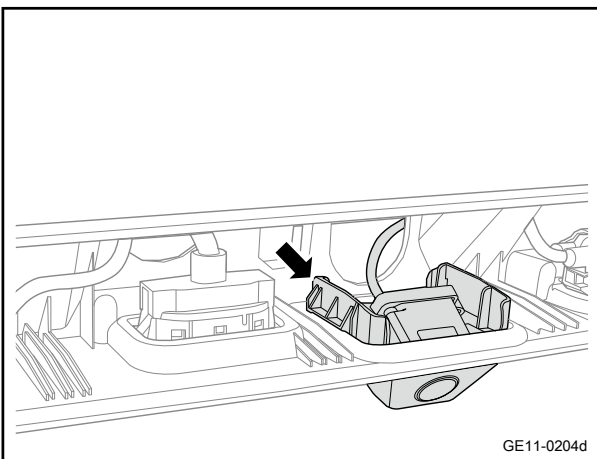
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the outer trim panel assembly of the back door. See [Replacement of the outer trim panel assembly of the back door](#)
- 3 Remove the full-width lamp of the back door. See [Replacement of full-width lamp of the back door](#)
- 4 Pry down the 360 panoramic view rear parking assist camera.



#### Installation procedure

- 1 Install the 360 panoramic view rear parking assist camera.



- 2 Install the full-width lamp of the back door.
- 3 Install the backdoor exterior trim panel assembly.
- 4 Connect the negative cable of battery.

### 10.13.7.4 Replacement of 360 panoramic front parking assist camera

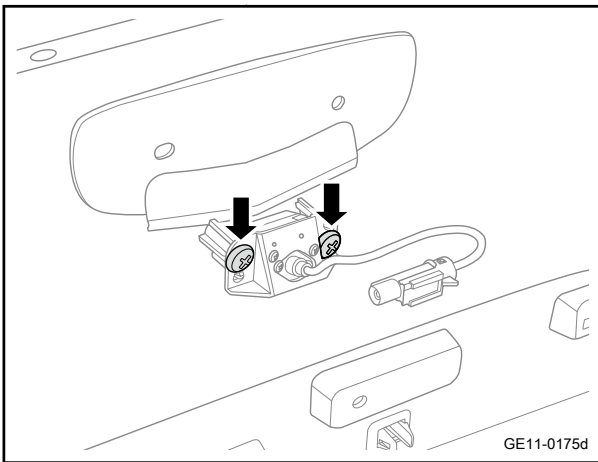
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

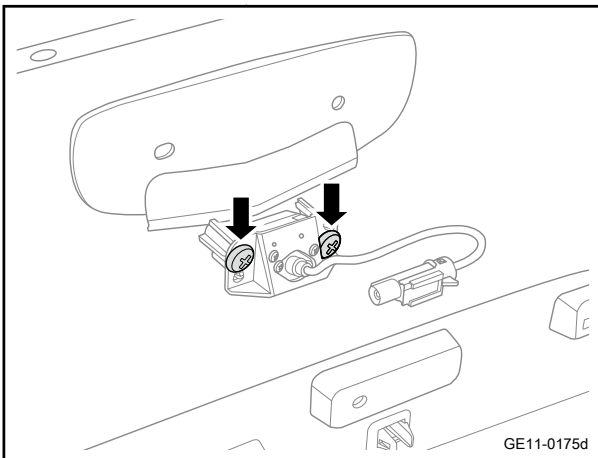
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Remove the 2 fixing screws of the 360 panoramic front parking assist camera.
- 4 Remove the 360 panoramic front parking assist camera.



#### Installation procedure

- 1 Move the 360 panoramic front parking assist camera to the installation position.
- 2 Install 2 fixing screws of 360 panoramic front parking assist camera.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

### 10.13.7.5 Replacement of 360 panoramic left parking assist camera

#### Removal procedure

**Caution**

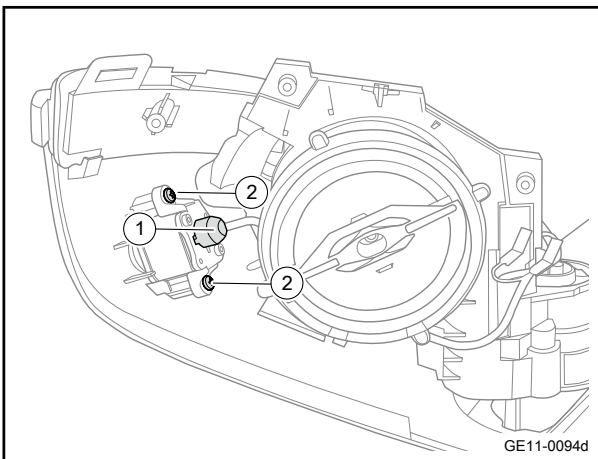
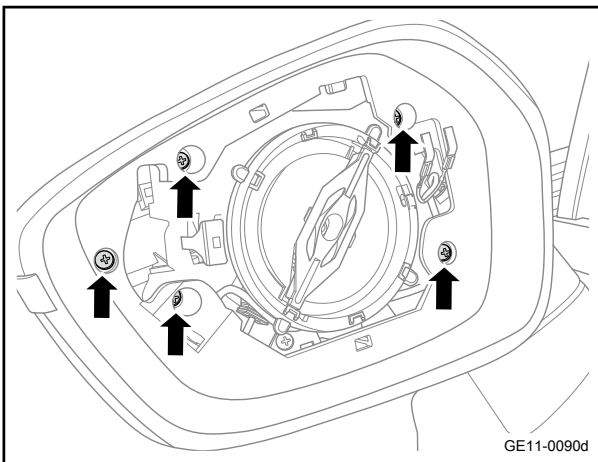
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

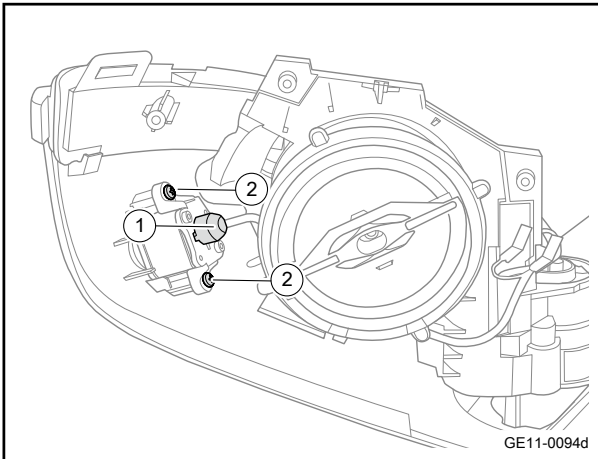
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the power rearview mirror lens. Refer to [Replacement of power rearview mirror lens](#)
- 3 Remove the 5 fixing screws of the exterior mirror fixing frame, and remove the exterior mirror fixing frame.

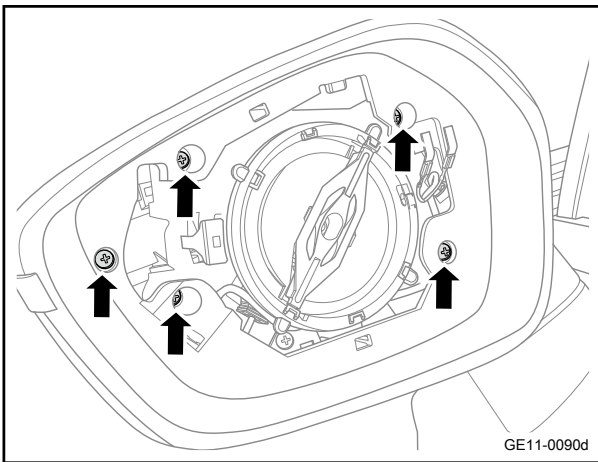


- 4 Disconnect the harness connector 1 of the 360 panoramic left parking assist camera.
- 5 Remove the 2 fixing screws 2 of the 360 panoramic left parking assist camera.
- 6 Remove the 360 panoramic left parking assist camera.

**Installation procedure**



- 1 Move the 360 panoramic left parking assist camera to the installation position.
- 2 Install 2 fixing screws 2 of the 360 panoramic left parking assist camera.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Connect the harness connector 1 of the 360 panoramic left parking assist camera.



- 4 Install the 5 fixing screws of the rearview mirror fixing frame.

- 5 Install power rearview mirror lenses.
- 6 Connect the negative cable of battery.

#### 10.13.7.6 Replacement of 360° panoramic camera control module

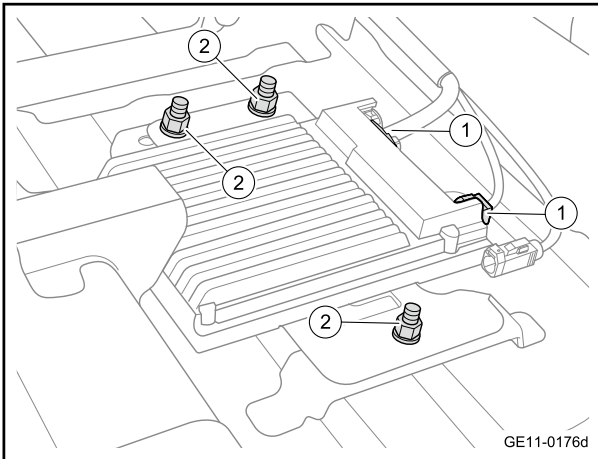
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

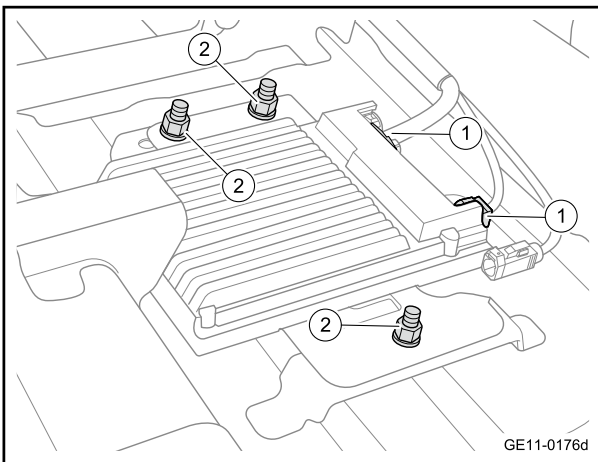
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the right front seat assembly. See [Replacement of left front seat assembly](#)
- 3 Lift up the carpet access cover.



- 4 Disconnect harness connector 1 of 360° panoramic camera control module.
- 5 Remove 3 fixing nuts 2 of the 360-degree panoramic camera control module.
- 6 Take off the 360° panoramic camera control module.

#### Installation procedure



- 1 Move the 360-degree panoramic camera control module to the installation position.
- 2 Install 3 fixing nuts 2 of the 360-degree panoramic camera control module.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Connect the harness connector 1 of 360° panoramic camera control module.

- 4 Install the carpet access cover.
- 5 Install the right front seat assembly.
- 6 Connect the negative cable of battery.

## 10.14 backup power

### 10.14.1 Description and Operation

#### 10.14.1.1 Instructions and Operations

This vehicle is equipped with two multimedia ports, a front backup power supply and a second row of USB sockets.

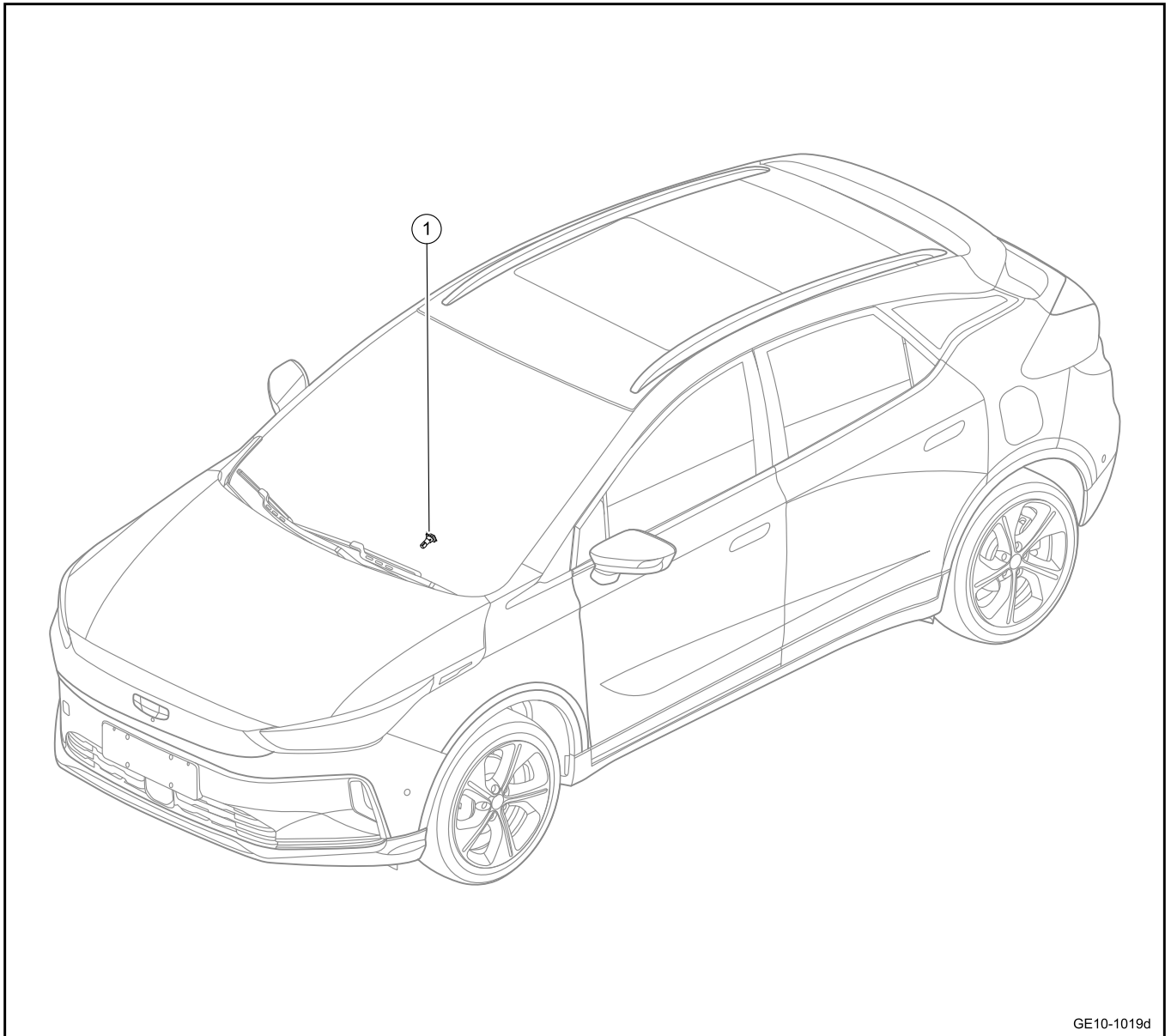
The front backup power supply is located above the glove box in the lower part of the auxiliary fascia console and is powered by a CF18 20A fuse. It can be used to plug in electrical equipment with a maximum limit of 120W.

The multimedia interface is located above the glove box in the lower part of the auxiliary fascia console, and is connected to the audio host through a USB data cable. It can charge USB devices and supports multimedia playback.

The second row of USB sockets is located at the rear of the auxiliary fascia console and is powered by a CF19 10A fuse. Can charge USB devices.

## 10.14.2 Part location

### 10.14.2.1 Part Position



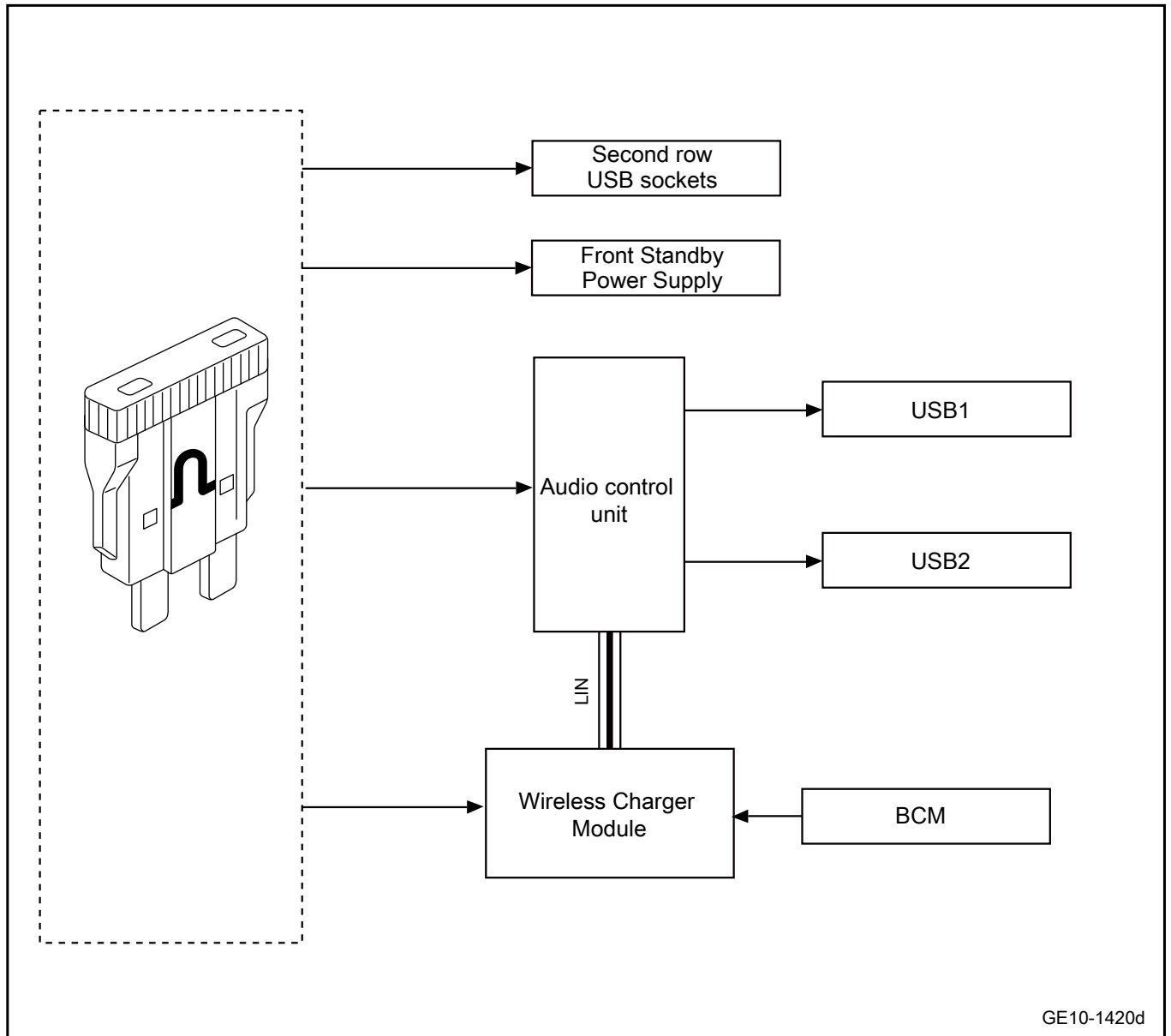
GE10-1019d

1. Backup power interface



10.14.3 Electrical block diagram

10.14.3.1 Electrical Schematic Diagram of the Backup Power System



## 10.14.4 Diagnostic information and steps

### 10.14.4.1 Diagnosis Description

Before diagnosing the standby power supply faults, refer to [Description and Operation](#). Understand and be familiar with the working principle of back-up power supply, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to determine whether the situation described by the customer belongs to normal operation. Any fault diagnosis of the standby power supply should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.14.4.2 Routine inspection

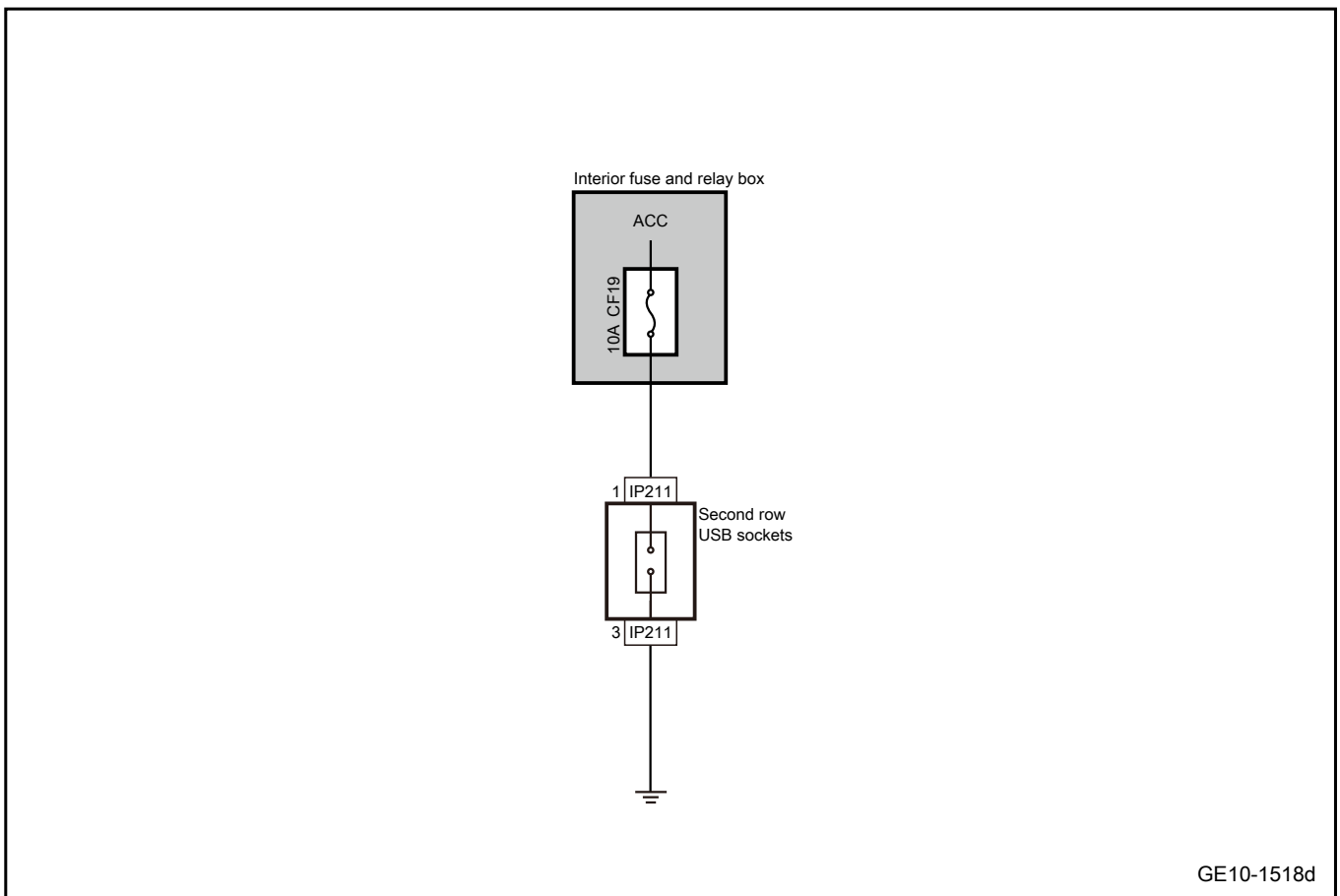
- Check after-sales installations that may affect the back-up power supply, to ensure that these devices cannot affect the back-up power supply.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.14.4.3 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Second-row USB sockets do not work	1. Fuse	See <a href="#">Second row USB sockets does not work</a>
	2. Harness and connector	
	3. Second-row USB sockets	
The front backup power supply does not work	1. Fuse	See <a href="#">Front backup power supply does not work</a>
	2. Harness and connector	
	3. Front backup power	
Wireless charging is not working	1. Fuse	See <a href="#">Wireless charging does not work</a>
	2. Harness and connector	
	3. Wireless charging module	
	4. Audio control unit	
	5. BCM	

### 10.14.4.4 Second-row USB sockets do not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the USB socket interface of the second row indicates the signs of damage , dirty, corrosion, etc.
- B. Check whether the harness connector of the USB socket of the second row indicates the signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Check the USB socket fuse in the second row.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF19 and check whether the fuse CF19 is blown.

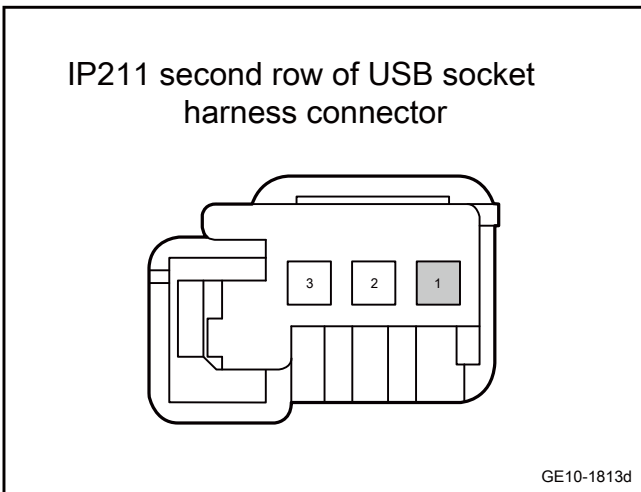
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the power circuit of the USB socket of the second row.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the harness connector IP211 of the USB socket of the second row.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP211(1)	Vehicle body is grounded.	Standard voltage: 11-14V

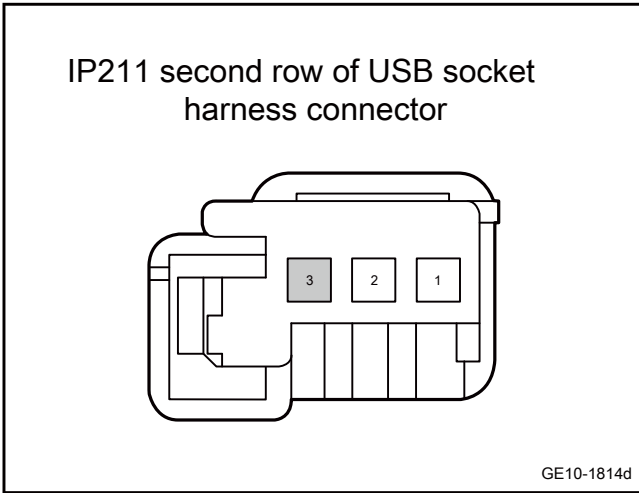
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** Check the grounding circuit of the USB socket of the second row.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the harness connector IP211 of the USB socket of the second row.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP211(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 6** Replace the USB socket of the second row.

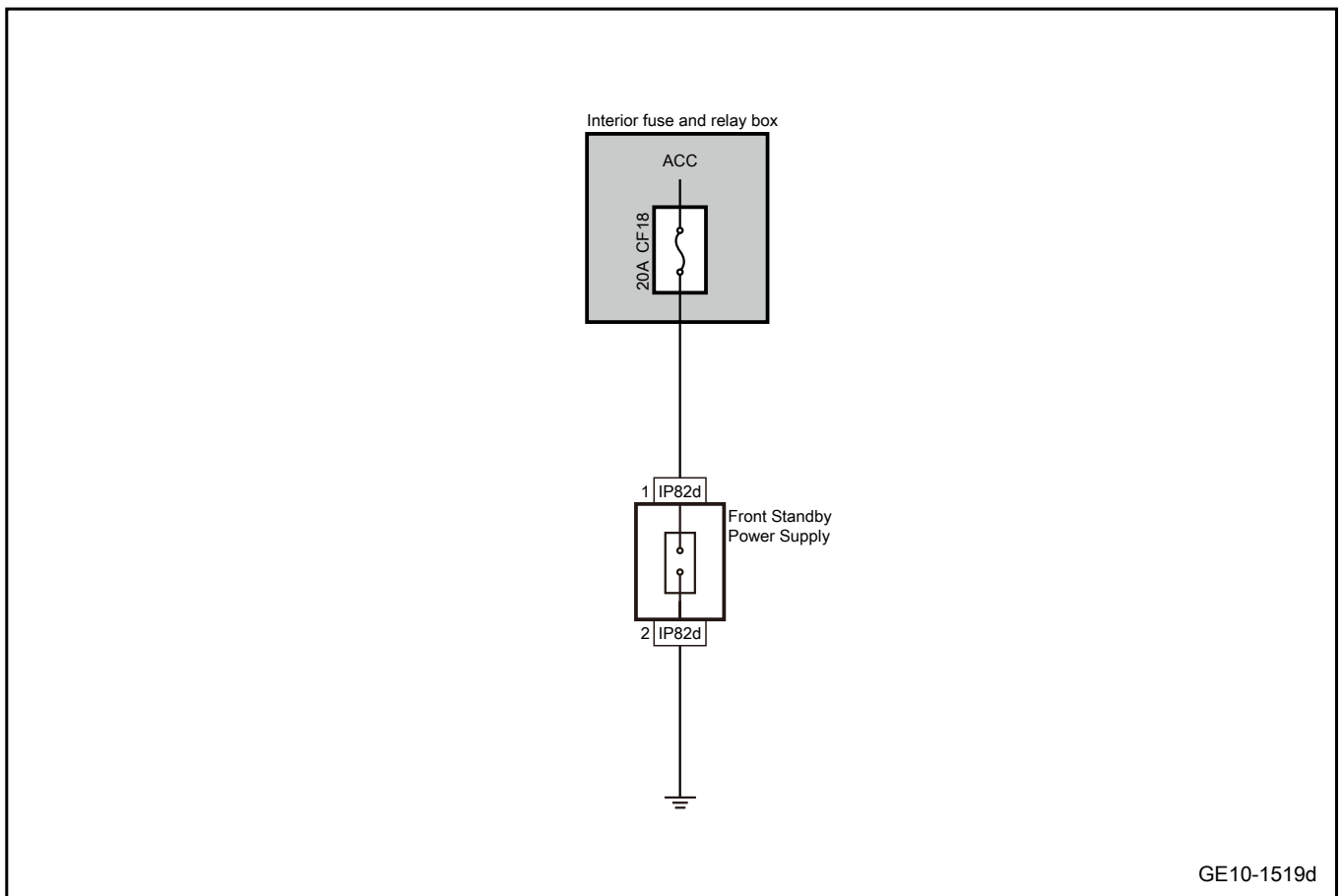
- A. Replace the USB socket in the second row, refer to [Replacement of the USB socket in the second row](#)

Next Step

**Step 7** System is normal.

### 10.14.4.5 The front backup power supply does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front backup power supply interface for signs of damage, dirt, rust, etc.
- B. Check the front standby power supply harness connector for damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Check the front backup power supply fuse.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF18 and check whether the fuse CF18 is blown.

Rated fuse capacity: 20A

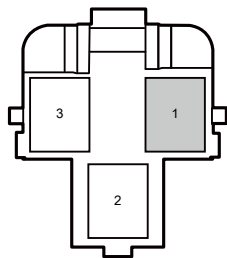
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the front backup power supply circuit.

IP82d Front emergency power supply harness connector



GE10-1815d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the front backup power supply harness connector IP82d.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP82d(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

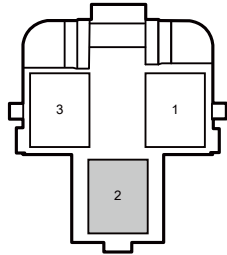
No

Repair or replace the harness.

Yes

**Step 5** Check the grounding circuit of the front backup power supply.

IP82d Front emergency power supply harness connector



GE10-1816d

- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the front backup power supply harness connector IP82d.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP82d(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the front backup power supply

- A. Replace the front backup power supply, see [Replacement of the front backup power supply](#)

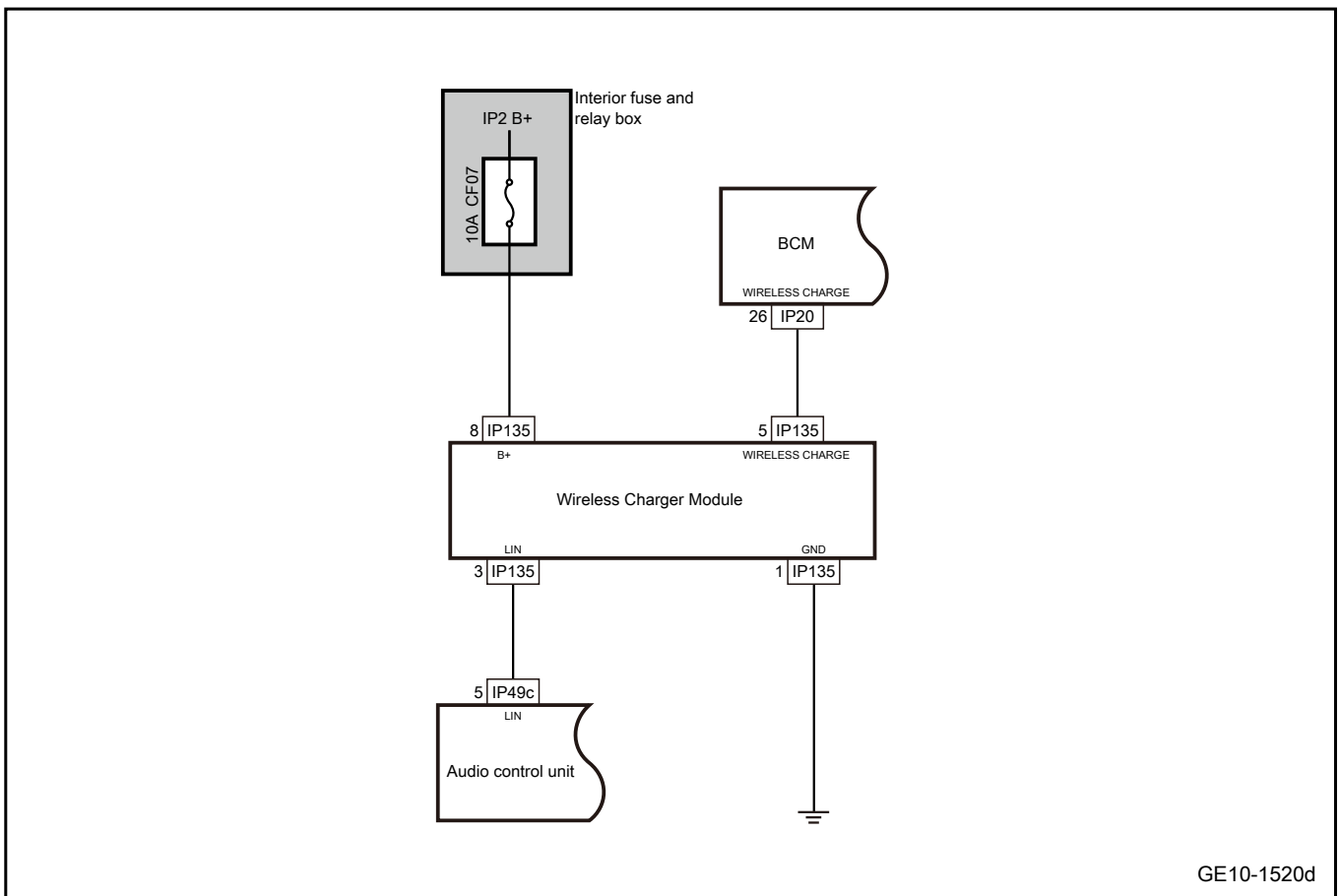
Next Step

Step 7 System is normal.

10.14.4.6 Wireless charging is not working

1. Schematic circuit diagram:





2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the wireless charging module for signs of damage, dirt, rust, etc.
- B. Check the wireless charging module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- B. Use a multimeter to measure the battery voltage.  
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

**Step 3** Check the power fuse of the wireless charging module.

- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull off the interior fuse CF07 and check whether the fuse CF07 is blown.

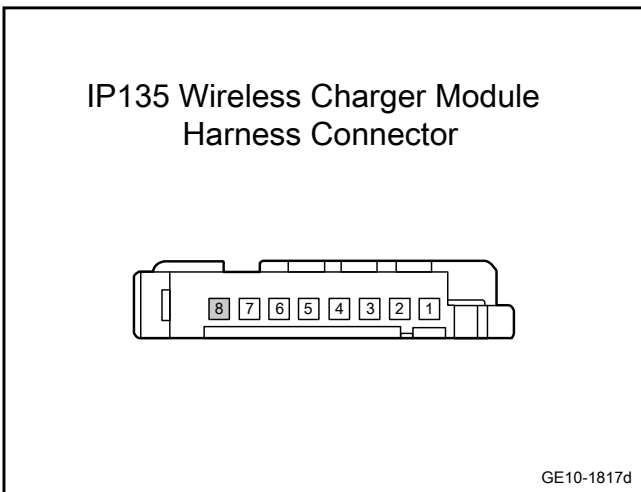
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** Check the power circuit of the wireless charging module.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(8)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

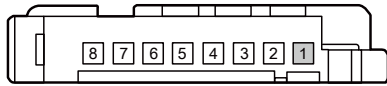
No

Repair or replace the harness.

Yes

**Step 5** Detect the grounding circuit of the wireless charging module.

IP135 Wireless Charger Module  
Harness Connector



GE10-1818d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

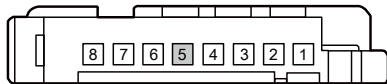
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the wireless charging module and the BCM is open.

IP135 Wireless Charger Module  
Harness Connector



GE10-1819d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

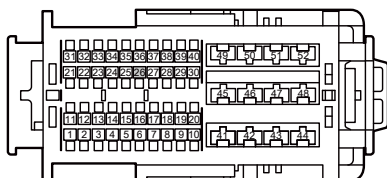
Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	IP20(26)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

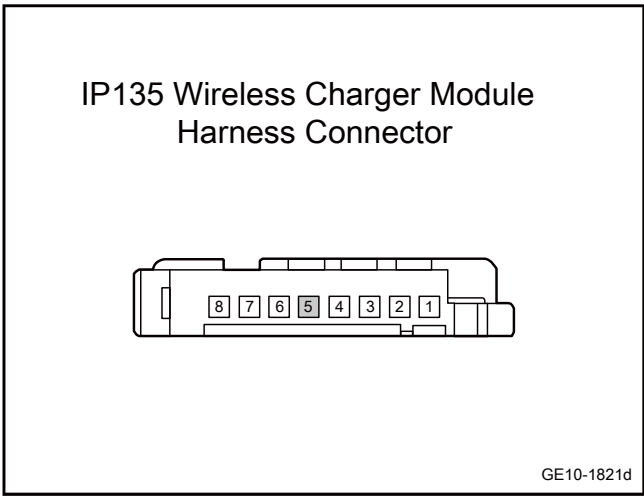
IP20 body control module  
harness connector 1



GE10-1820d

Yes

**Step 7** | Check whether the circuit between the wireless charging module and the BCM is short to ground.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the BCM harness connector IP20.
- D. Use a multimeter to measure each terminal according to the following table:

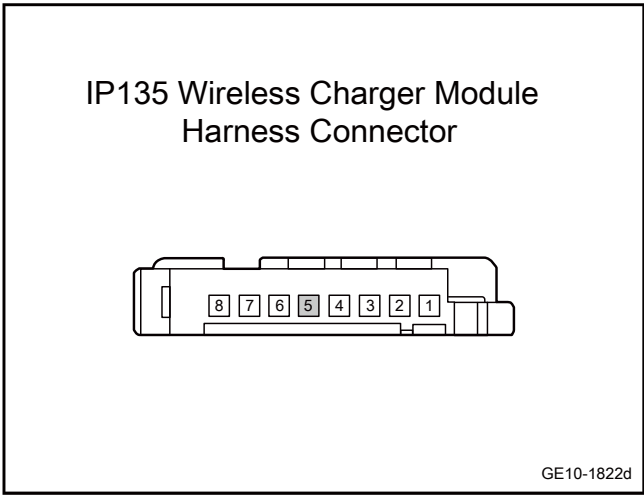
Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 8** | Check whether the circuit between the wireless charging module and the BCM is short to power supply.



- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the BCM harness connector IP20.
- D. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	Vehicle body is grounded.	Standard voltage: equal to 0V

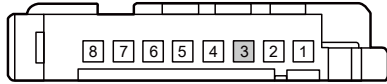
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

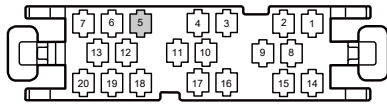
**Step 9** | Check whether the circuit between the wireless charging module and the audio host is normal.

IP135 Wireless Charger Module  
Harness Connector



GE10-1823d

IP49c audio control unit  
harness connector C



GE10-1824d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the audio host harness connector IP49c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(3)	IP49c(5)	Standard resistance: less than 1Ω
IP135(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP135(3)	Vehicle body is grounded.	Standard voltage: equal to 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10	Replace the wireless charging module.
---------	---------------------------------------

- A. Replace the wireless charging module, see [Replacement of the wireless charging module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Change the radio control unit.
---------	--------------------------------

- A. Change the radio control unit. Refer to [Replacement of audio host](#)

Next Step

Step 12	Reprogram and reset the radio control unit.
------------	---

- A. Reprogram and reset the radio control unit. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Replace the BCM
------------	-----------------

- A. Replace the BCM Refer to [Replacement of BCM](#)

Next Step

Step 14	Reprogram and reset the BCM.
------------	------------------------------

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 15	System is normal.
------------	-------------------

## 10.14.5 Removal and installation

### 10.14.5.1 Replacement of backup power interface

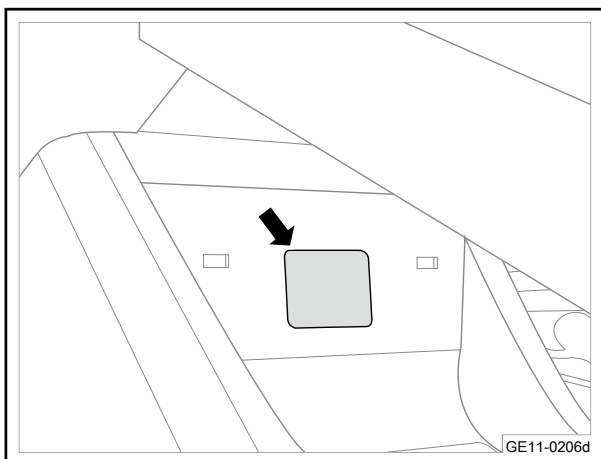
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

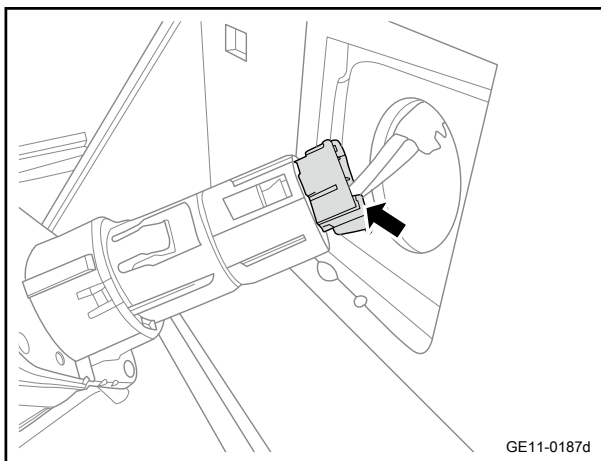
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

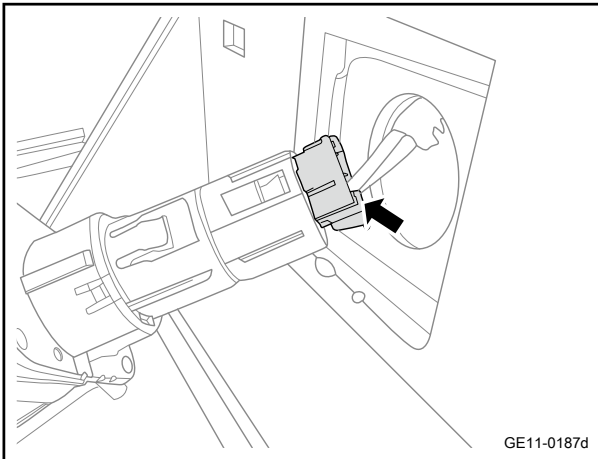
- 2 Pry off the backup power connector.



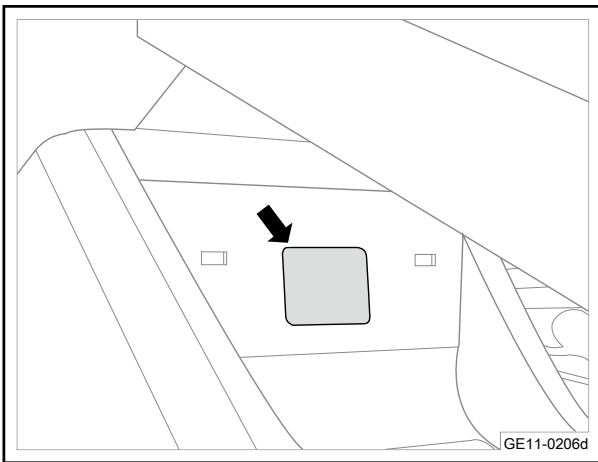
- 3 Disconnect the standby power supply interface harness connector.
- 4 Remove the backup power connector.



#### Installation procedure



- 1 Move the backup power connector to the installation location.
- 2 Connect the standby power supply interface harness connector 2.



- 3 Install the backup power connector.

- 4 Connect the negative cable of battery.



---

## 10.15 Data communication system

### 10.15.1 Specification

#### 10.15.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Gateway fixing nut	M6	5 - 7	3.7 - 5.2

## 10.15.2 Description and Operation

### 10.15.2.1 General

#### System composition

vehicle can communicate with each other and with fault diagnosis testers through serial data circuits.

The main functions of GW are:

- Two-way data transmission from/to the bus
- Manage the nodes of the entire network
- Diagnosis of the operating status of the entire network
- Meet ISO 14229 and support multiple diagnostic services

#### System advantages

- Reduce the number of control circuit wires.
- Greatly reduce the weight of the wire harness.
- Reduce the number of plug core pins of the control device.
- Improved reliability and durability.

#### Function Overview

CAN is short for Controller Area Network, and its full name is Controller Area Network Bus. In other words, it controls the mutual connection of equipment for data exchange. It is one of the most widely used site buses all around the world. It is designed as a microcontroller communication bus in the vehicle environment to exchange information between electronic control unit ECUs and to form a vehicle electronic control network.

Lin is a new type of low-cost serial communication system for distributed electronic control system of automobile, mainly used for serial communication between intelligent sensors and actuators. Characteristics of LIN bus include:

- Data format based on UART
- Single master multi slave structure
- Single-master multi-slave structure single wire transmission: 0-12V
- Communication rate: 19.2kbps

Data Link Control (DLC) is the result of negotiation and adjustment among all automobile manufacturers in the world. When using fault diagnosis tester to communicate with vehicle or program the communication system of the vehicle, this connector must surely be used. This connector must meet the following conditions:

- be able to connect 16-pin connector of all fault diagnosis testers.
- Always supply battery power to fault diagnosis tester through Pin No.16.
- Always supply grounding connection for fault diagnosis tester through Pin No.4.
- The other pins are used for serial data communication with vehicle systems. The module controlled by microprocessor in

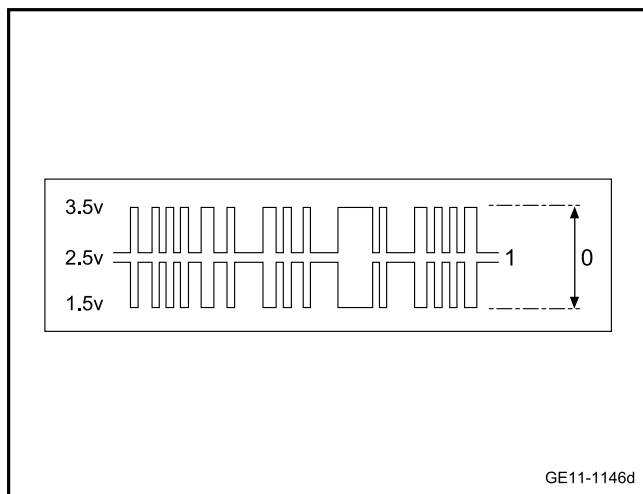
### 10.15.3 How the system works

#### 10.15.3.1 System Working Principles

##### Description of the CAN bus

The communication media of CAN bus is the twisted pair with the communication speed of high-speed CAN bus of 500kbps. Terminals of the twisted pair are 2 120Ω resistances.

High-speed CAN bus is differential bus. Serial data bus (H) of high-speed CAN bus and serial data bus (L) of high-speed CAN bus are driven from the still or unused level to the opposite limits. About 2.5V unused level is regarded as implicit data transmission and explained as logic 1. When the line is driven to the limit, the serial data bus (H) of high-speed CAN bus will rise by 1V and serial data bus (L) of high-speed CAN bus will decrease by 1V. Limit voltage difference 2V is regarded as explicit transmission data and explained as logic 0 (as shown in the following figure).



When a CAN signal is sent, the current flows from the sending end of controller to CAN-H line, then to CAN-L line through the terminal resistance and returns back to the receiving end of controller. Where communication signals are lost, the program will set communication loss fault diagnosis code for all control modules. This fault diagnosis code can be read by the fault diagnostic apparatus.

##### Caution

**Fault diagnosis code of serial data loss doesn't present a fault of module of this fault diagnosis code.**

##### CAN bus application

The vehicle has 4 CAN communication buses:

CF-CAN: gateway, diagnostic interface, low-speed alarm controller, thermal management control module, electronic steering column lock, BCM, seat module

CS-CAN: gateway, steering wheel angle sensor, front monocular camera, VCU, millimeter wave radar probe, EPS, smart booster, ESC, airbag control module, automatic parking module

HB-CAN: gateway, electronic shifter, VCU, T-BOX, BMS, high and low voltage charging system, integrated power controller

IF-CAN: gateway, diagnostic interface, combined instrument controller, head-up display, audio host, T-BOX

External testing equipment is available to access the gateway and diagnostic data of all modules through the CAN bus between the vehicle-mounted diagnostic interfaces.

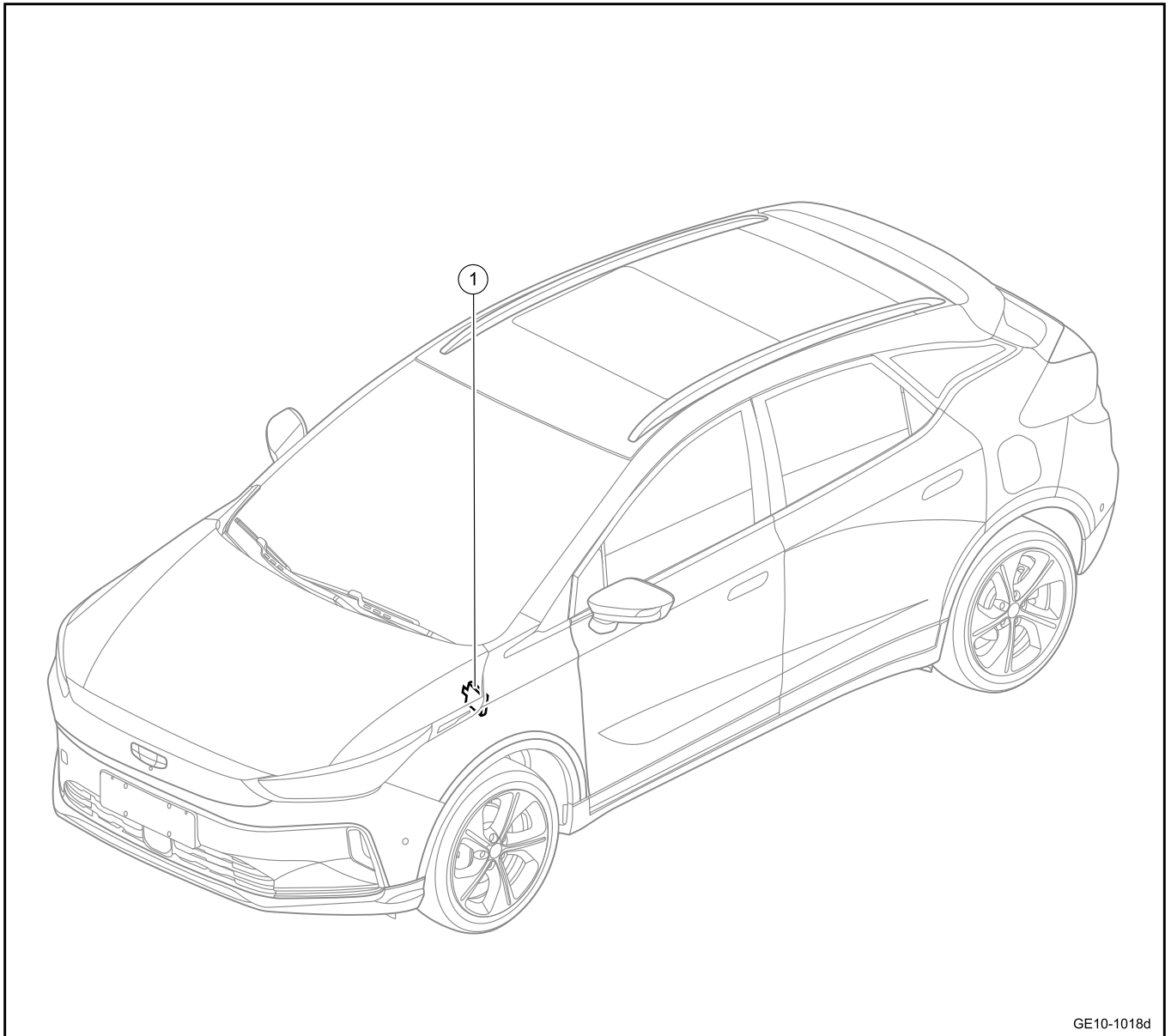
##### LIN bus application

BCM uses the LIN bus to communicate with the electric window lifting motor, door handle control module, radio frequency receiving module, and sunroof module.

The thermal management control module uses the LIN bus to communicate with the automatic air conditioning panel, air conditioning compressor, electric heater (PTC), refrigeration pipe solenoid valve, three-way solenoid valve, four-way valve, electronic expansion valve, and solenoid water valve.

## 10.15.4 Part location

### 10.15.4.1 Part Position



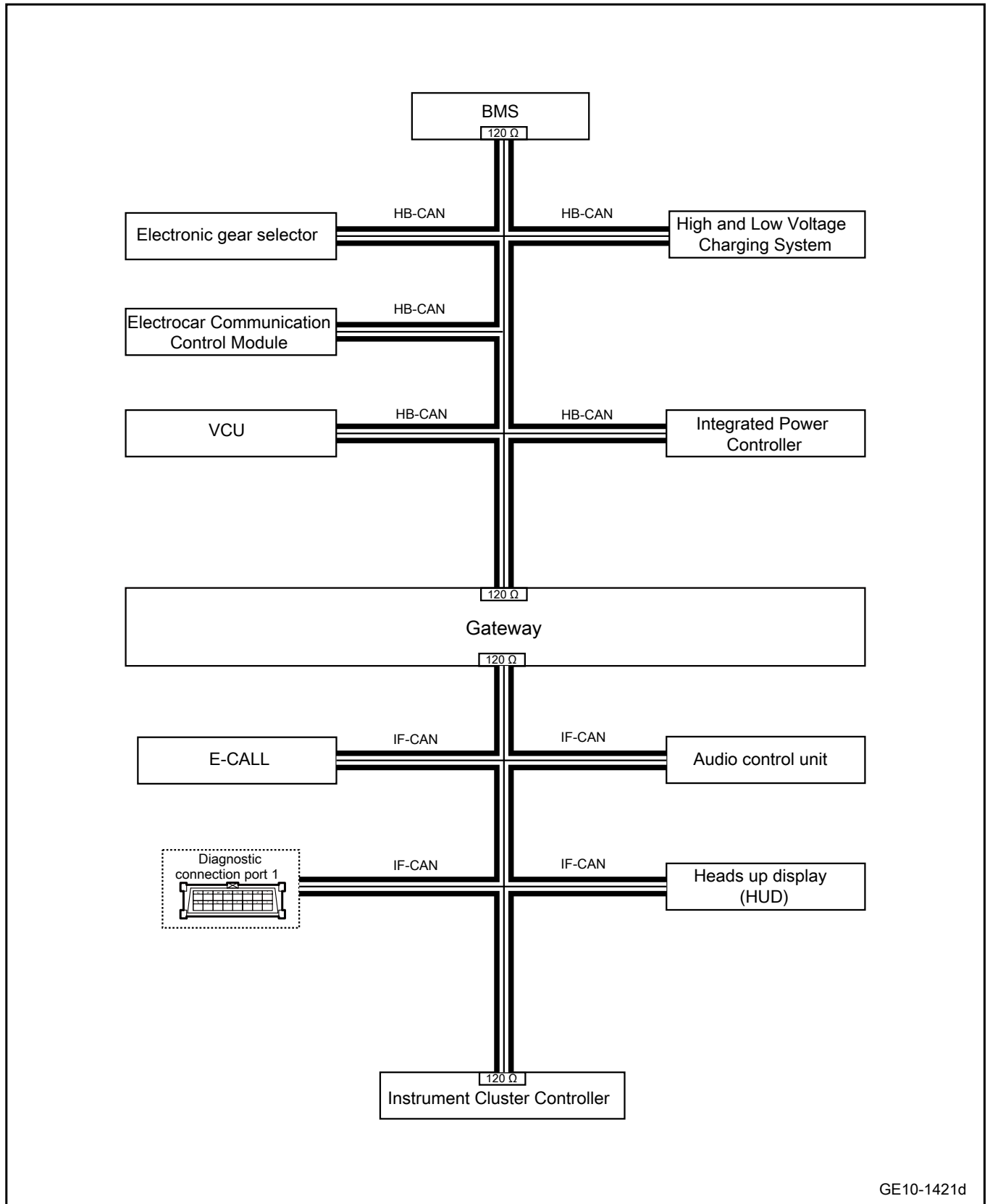
GE10-1018d

1. Gateway

10.15.5 Electrical block diagram

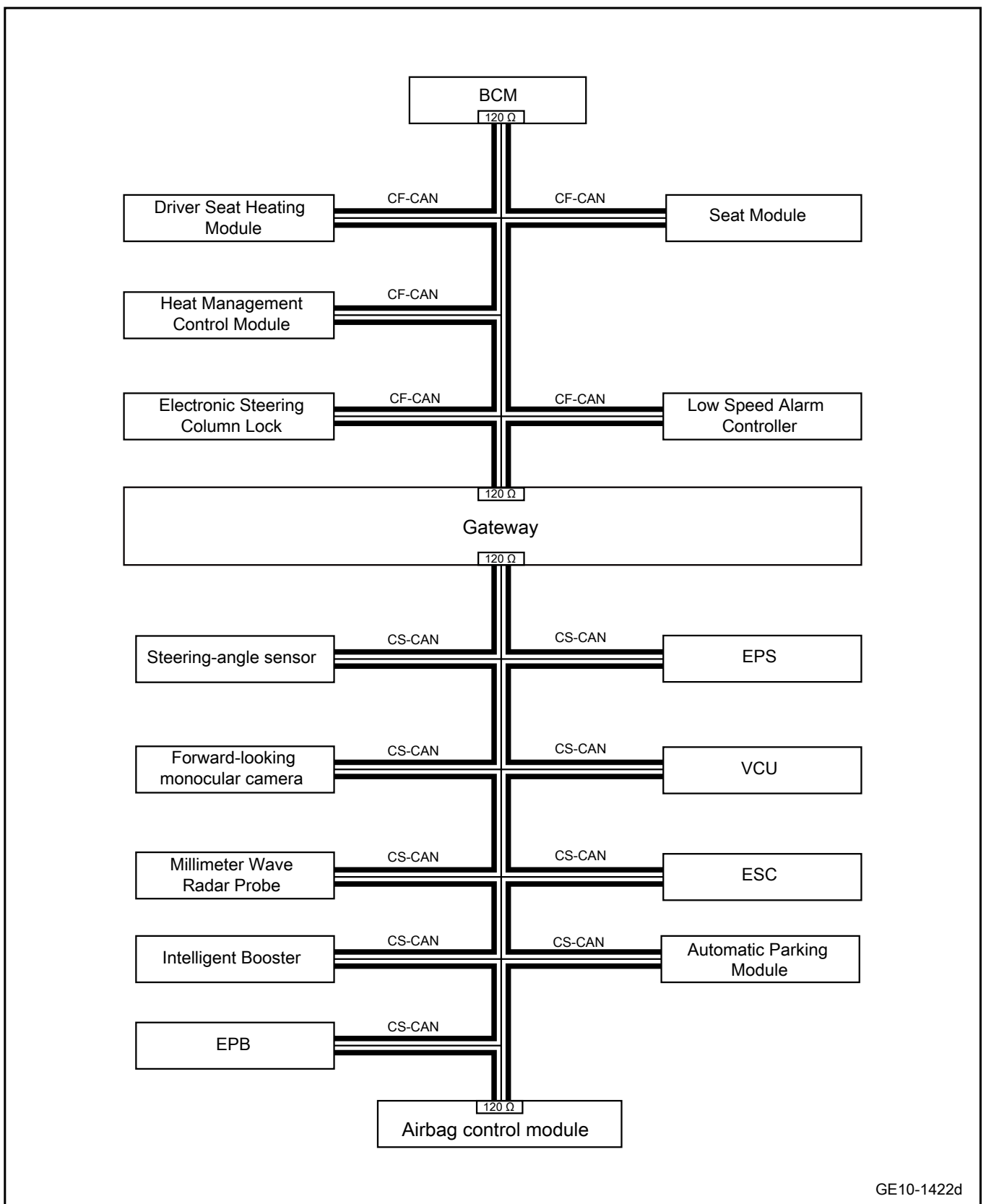
10.15.5.1 Electrical Schematic Diagram of the Data Communication System

Data communication 1



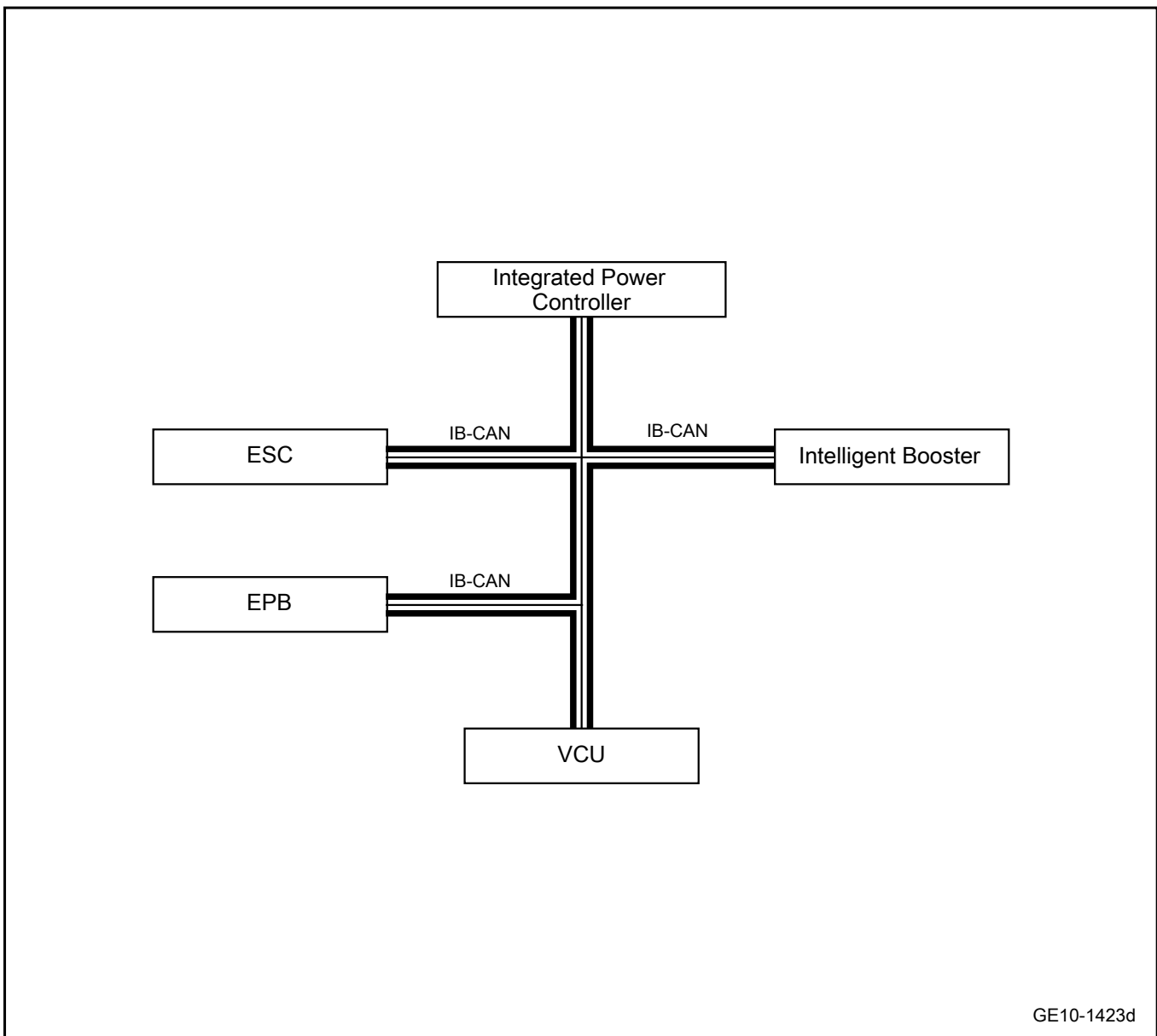
GE10-1421d

Data communication 2



GE10-1422d

Data communication 3



GE10-1423d

## 10.15.6 Diagnostic information and steps

### 10.15.6.1 Diagnosis Description

Before diagnosing the trouble of the data communication system, Refer to [Description and Operation](#). Understand and be familiar with system working principle of the data communication system, and then restart system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of the data communication system should start with routine inspection. The routine inspection will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

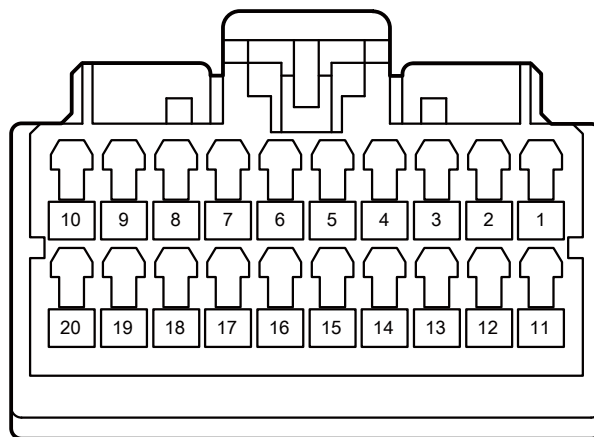
### 10.15.6.2 Routine inspection

1. Check the after-sales installations that may affect the normal operation of the data communication system to ensure that such installations do not affect the normal operation of the data communication system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
3. Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.15.6.3 List of data communication system terminals

#### IP112 gateway harness connector

#### IP112 gateway harness connector



GE10-1570d

Terminal No.	Terminal name	Terminal description
1	CF CAN-H	Comfort CAN high line
2	-	-
3	CS CAN-H	Chassis CAN high line
4	HB CAN-H	Hybrid CAN high line



Terminal No.	Terminal name	Terminal description
5	-	-
6	IF CAN-H	Infotainment CAN high line
7	-	-
8	-	-
9	-	-
10	-	-
11	CF CAN-L	Comfort CAN low line
12	-	-
13	CS CAN-L	Chassis CAN low line
14	HB CAN-L	Hybrid CAN low line
15	-	-
16	IF CAN-L	Infotainment CAN low line
17	-	-
18	IG1 power supply	Gateway ACC\ON\START power supply
19	B+ Power supply	Gateway battery power supply
20	Ground connection	Gateway grounding circuit

#### 10.15.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Gateway power supply failure	1. Battery	Refer to <a href="#">Gateway power supply fault</a>
	2. Harness and connector	
	3. Gateway controller	
Gateway communication failure	1. Harness connector	See <a href="#">Gateway communication failure</a>
	2. Diagnostic interface	
	3. Gateway controller	
Internal fault of gateway	1. Gateway controller	Refer to <a href="#">Internal fault of gateway</a>

#### 10.15.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	KL30 undervoltage	Refer to <a href="#">Gateway power supply fault</a>
U300617	KL30 overvoltage	
U100445	Gateway ROM error	Refer to <a href="#">Internal fault of gateway</a>
U100446	Close EEPROM error	
U100444	Gateway RAM error	
U003788	Bus off	See <a href="#">Gateway communication failure</a>
U005588	Bus off	
U002888	Bus off	
U006488	Bus off	
U003887	Bus global loss	
U002987	Bus global loss	

Diagnostic Trouble Code	Description	Fault location/elimination method
U010387	EGSM node is lost	
U015687	MMI node is lost	
U019887	T-BOX node is lost	
U015587	IPK node is lost	
U015987	PAS node is lost	
U120387	FCS node is lost	
U023587	FRS node is lost	
U012687	TCM(SAS) node is lost	
U013187	EPS node is lost	
U012287	ESC node is lost	
U015187	ACU(YRS) node is lost	
U020887	DSCU node is lost	
U021487	PEPS node is lost	
U023687	ESCL node is lost	
U014087	BCM(TPMS) node is lost	
U016487	AC node is lost	
U012187	BMSH node is lost	
U111487	VCU node is lost	
U112287	VCU node is lost	
U011087	IPU node is lost	
U111587	OBC node is lost	
U016087	AVAS node is lost	
U111A87	IB node is lost	
U111B87	RSRS node is lost	
U005687	Bus global loss	
U006587	Bus global loss	
U02A887	RML node is lost	

### 10.15.6.6 Diagnosis system

#### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

#### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.15.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

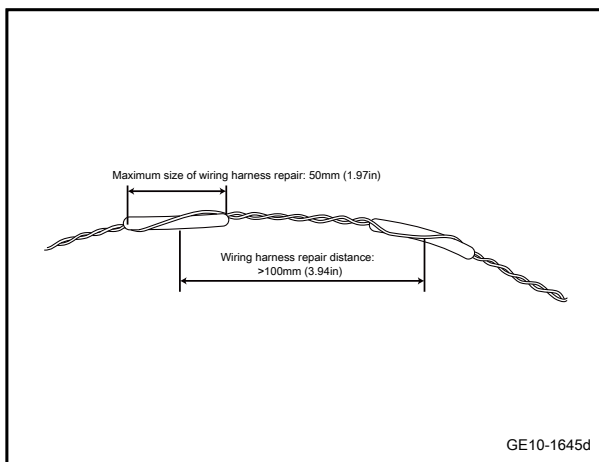
#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 10.15.6.8 CAN bus fault precaution

- The CAN bus harness should not be stretched.
- The CAN bus harness should not be opened more than 4cm (1.6in).
- The CAN bus harness should not be connected with other wires.
- The fault diagnosis should be conducted with the diagnostic apparatus recommended by manufacturers.

### 10.15.6.9 CAN bus harness repair norms



- 1 Wrap the repaired parts with PVC tape after welding the bus.
- 2 Interwine the two buses during installing. If the buses are not wound, the CAN bus will be vulnerable to noise interference.
- 3 The length difference between CANL bus and CANH bus should be within 100mm.
- 4 Don't place bypass wires between connectors. If bypass wires are used, the protective effect of the wound harnesses will not be exerted.
- 5 Insert the tester probe from the rear side of the connector (harness side) when checking the resistance with the tester. Check the connector with a service wire if conductivity cannot be checked from the rear of the connector.
- 6 In case of open circuit failure of CAN bus, the length of wire connection shall not exceed L1: 50mm (1.97in).
- 7 If there are more than two open circuit points, repair is allowed only when the distance between the two open circuit points is above L2: 100mm (3.94in), otherwise the CAN bus conductor should be replaced.

### 10.15.6.10 Signal diagnosis of CAN field-bus

An oscilloscope and its double channel input can be applied to monitor signals transmitted at the CAN field-bus. These signals shall have the following properties:

- The voltage signal at CANH bus is 2.5-3.5V, and that at CANL bus is 1.5-2.5V.
- These two signals are mirror images of each other.
- Signal transmission starts with the opening of the start and stop button, but ends when the start and stop button is closed for 2s.

### 10.15.6.11 Gateway power supply failure

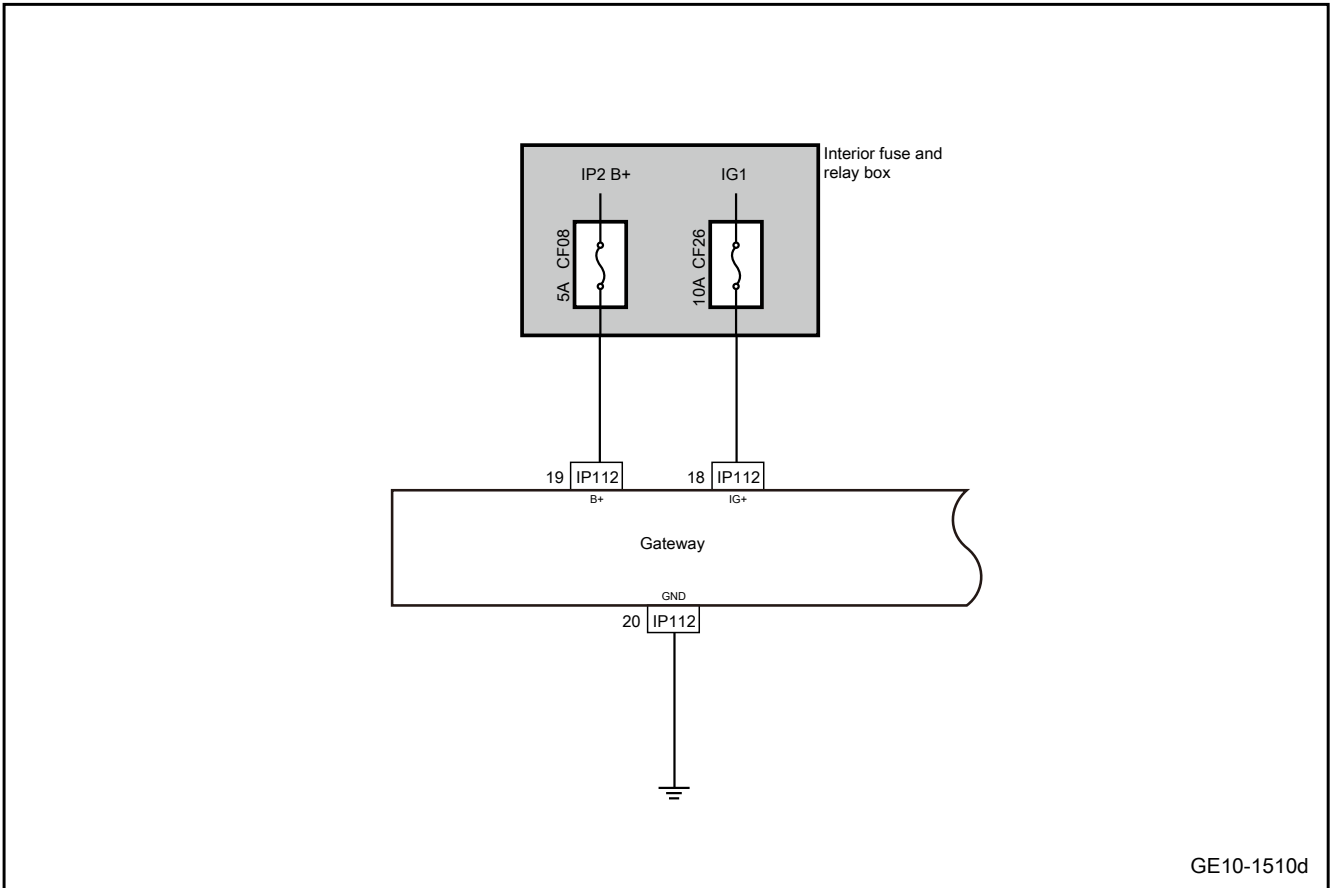
1. DTC description:

Diagnostic Trouble Code	Description
U300616	KL30 undervoltage
U300617	KL30 overvoltage

2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Internal local voltage <9V, KL15 open	1. Diagnosis service \$85 is not activated	1. Battery 2. Circuit
U300617	Internal local voltage >16V, KL15 open	2. IG15 off -> on delay 3000ms	3. Fuse 4. Gateway controller

3. Schematic circuit diagram:



4. Diagnosis steps

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to eliminating faults indicated by other trouble codes

Yes

**Step 2** Primary check.

- A. Check the gateway control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** | Inspect the gateway fuse.

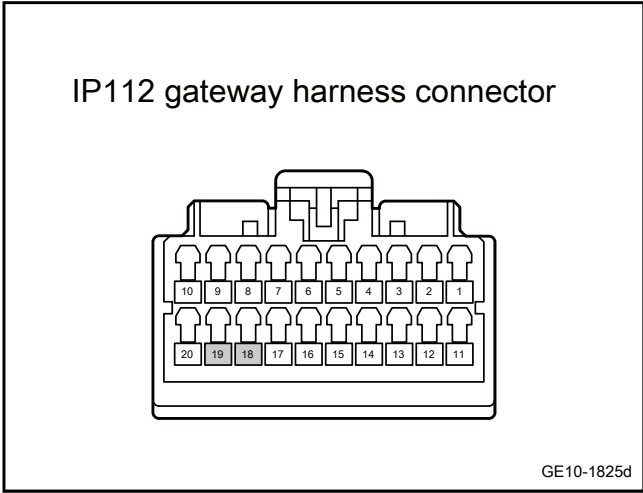
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out fuse CF08 of the indoor fuse relay box. Check whether fuse CF08 is blown.  
  
Rated fuse capacity: 5A
- C. Pull out fuse CF26 of the indoor fuse relay box. Check whether fuse CF26 is blown.  
  
Rated fuse capacity: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

**Step 4** | Check whether the gateway control unit power supply circuit is an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the gateway control unit harness connector IP112.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP112(18)	Vehicle body is grounded.	Standard voltage: 11-14V
IP112(19)	Vehicle body is grounded.	

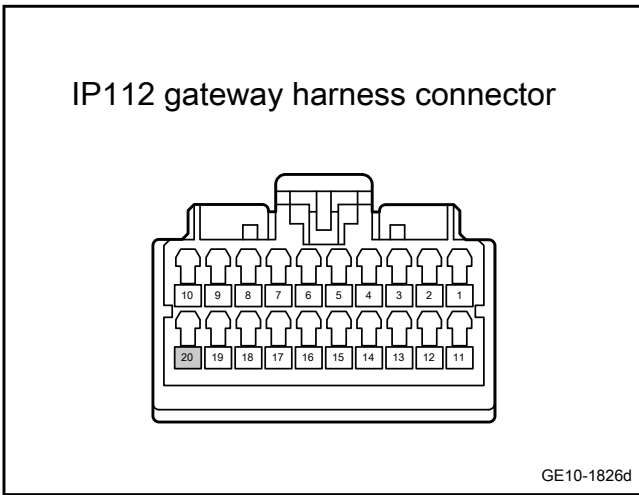
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

**Step 5** | Check whether the gateway control unit grounding circuit is an open circuit.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the gateway control unit harness connector IP112.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP112(20)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

**Step 6** Replace the gateway.

- A. Replace the gateway, refer to [Replacement of gateway](#)

Yes System is normal.

No

**Step 7** Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

### 10.15.6.12 Internal fault of gateway

#### 1. DTC description:

DTC	Trouble description
U100444	Gateway RAM error
U100445	Gateway ROM error
U100446	Close EEPROM error

#### 2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	Gateway RAM is provided with the flaw	3. Voltage source is 9V-16V.	Gateway
U100145	Gateway RAM is provided with the flaw		
U100246	In F110, fault occurs in the gateway EEPROM or the vehicle configuration type is invalid		

#### 3. Diagnosis steps

##### Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to <a href="#">Intermittent Trouble Check</a>
---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of gateway for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.



No

Repair or replace the faulty part.

Yes

**Step 3** Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 4** Replace the gateway.

- A. Check whether the gateway power and grounding wire are normal. Refer to [Gateway control unit power supply failure](#)
- B. Replace the gateway. Refer to [Replacement of gateway](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 5** Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 10.15.6.13 Gateway communication failure

#### 1. DTC description:

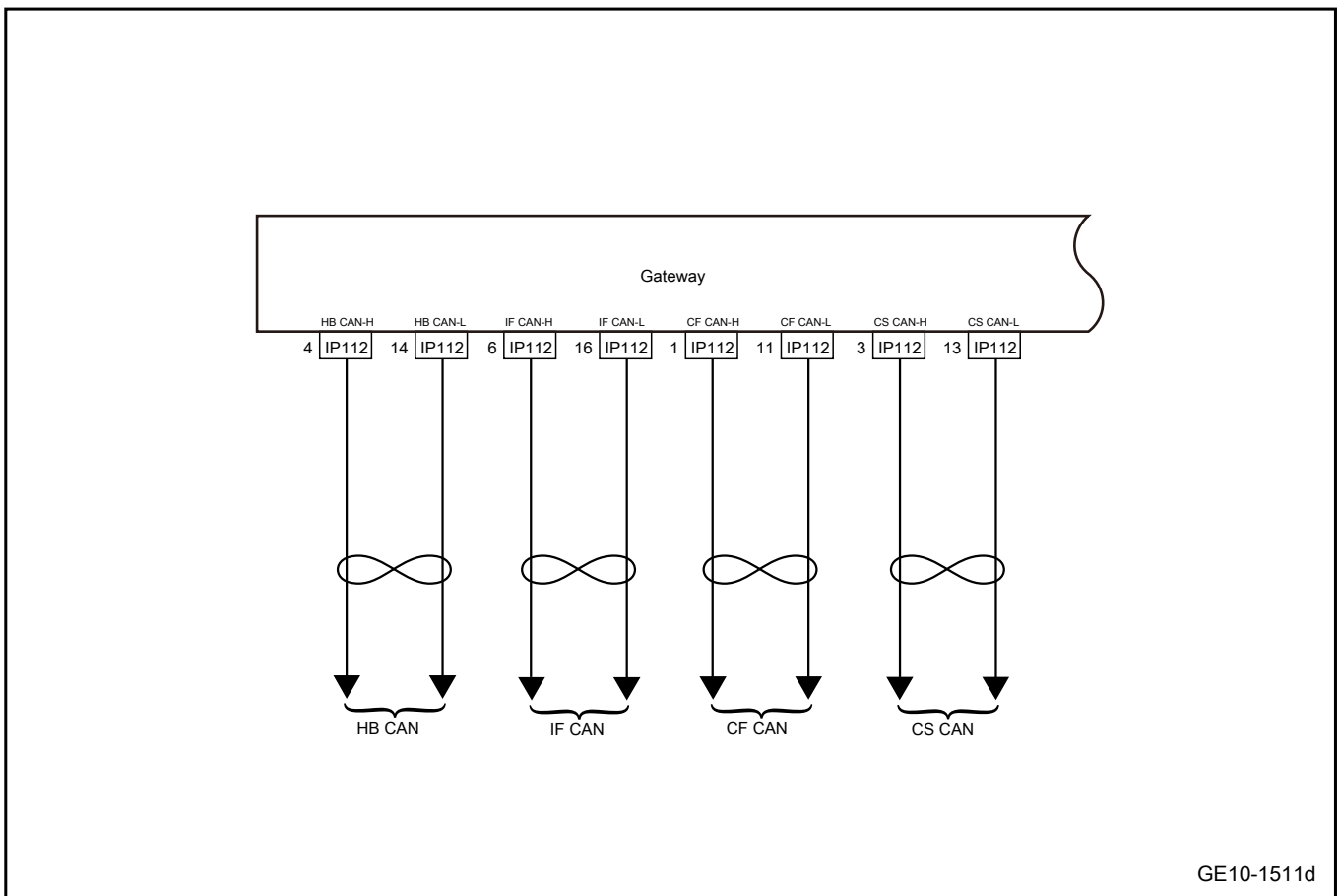
Diagnostic Trouble Code	Description
U003788	Bus off
U005588	Bus off
U002888	Bus off
U006488	Bus off
U003887	Bus global loss
U002987	Bus global loss
U010387	EGSM node is lost
U015687	MMI node is lost
U019887	T-BOX node is lost
U015587	IPK node is lost
U015987	PAS node is lost
U120387	FCS node is lost
U023587	FRS node is lost
U012687	TCM(SAS) node is lost
U013187	EPS node is lost
U012287	ESC node is lost
U015187	ACU(YRS) node is lost
U020887	DSCU node is lost
U021487	PEPS node is lost
U023687	ESCL node is lost
U014087	BCM(TPMS) node is lost
U016487	AC node is lost
U012187	BMSH node is lost
U111487	VCU node is lost
U112287	VCU node is lost
U011087	IPU node is lost
U111587	OBC node is lost
U016087	AVAS node is lost
U111A87	IB node is lost
U111B87	RSRS node is lost
U005687	Bus global loss
U006587	Bus global loss
U02A887	RML node is lost

## 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003788	Bus off error	1. Diagnosis service \$85 is not activated 2.IG15 off -> on delay 3000ms 3. Normal diagnostic voltage range	1. Circuit 2. Gateway 3. Diagnostic interface
U005588	Bus off error		
U002888	Bus off error		
U006488	Bus off error	1. Diagnosis service \$85 is not activated 2.IG15 off -> on delay 3000ms 3. Normal diagnostic voltage range 4.Dynamic-CAN has no bus disconnection error	
U003887	All nodes are lost		
U002987	All nodes are lost	1. Diagnosis service \$85 is not activated 2.IG15 off -> on delay 3000ms 3. Normal diagnostic voltage range 4. Advance-no bus disconnection error	
U010387	EGSM (ID=0x145) message loss for 250 ms		
U015687	5T lost MMI (ID=0x2A1) message		
U019887	5T lost T-BOX (ID=0x292) message		
U015587	5T lost IPK (ID=0x3F1) message		
U015987	5T lost PAS (ID=0x390) message		
U120387	FCS loss within 250 milliseconds (ID=0x1B0) message		
U023587	FRS loss (ID=0x1A2) information for 250 milliseconds		
U012687	TCM (SAS) loss (ID=0x0E0) information for 250 milliseconds		
U013187	EPS lost (ID=0x150) information 250 milliseconds		
U012287	ESC loss (ID=0x125) message for 250 milliseconds		

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	5T lost ACU/YRS (ID=0x380) message		
U020887	5T DSCU (ID=0x2D2) message is lost		
U021487	PEPS lost (ID=0x1E2) information for 250 milliseconds		
U023687	5T lost ESCL (ID=0x279) message		
U014087	BCM lost (ID=0x1F0) information for 250 milliseconds		
U016487	5T lost AC (ID=0x2F1) message		
U012187	BMSH loss (ID=0x17B) message 250 milliseconds		
U111487	VCU_HBCAN (ID=0x162) message loss for 250 milliseconds		
U112287	VCU-CSCAN (ID=0x165) message loss for 250 milliseconds		
U011087	IPU lost (ID=0x0A8) information for 250 milliseconds		
U111587	5T lost OBC (ID=0x220) message		
U016087	5T lost AVAS (ID=0x2B2) message		
U111A87	5T lost IB (ID=0x225) message		
U111B87	5T lost RSRS (ID=0x2E4) message		
U005687	All nodes are lost		
U006587			
U02A887	5T RML (ID=0x381) message is lost		

3. Schematic circuit diagram:



4. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No → Give priority to eliminating faults indicated by other trouble codes

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of gateway for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN bus integrity.

- A. Refer to [CF-CAN bus integrity check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4 Check the HB-CAN bus integrity.

- A. Refer to [HB-CAN bus integrity check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 5 Check the CS-CAN bus integrity.

- A. Refer to [CS-CAN bus integrity check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 6 Check the IF-CAN bus integrity.

- A. Refer to [IF-CAN bus integrity check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 7 Replace the gateway.

- A. Check whether the gateway power and grounding wire are normal. Refer to [Gateway control unit power supply failure](#)
- B. Replace the gateway. Refer to [Replacement of gateway](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Reprogram and reset the gateway.
--------	----------------------------------

- A. Reprogram and reset the gateway. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

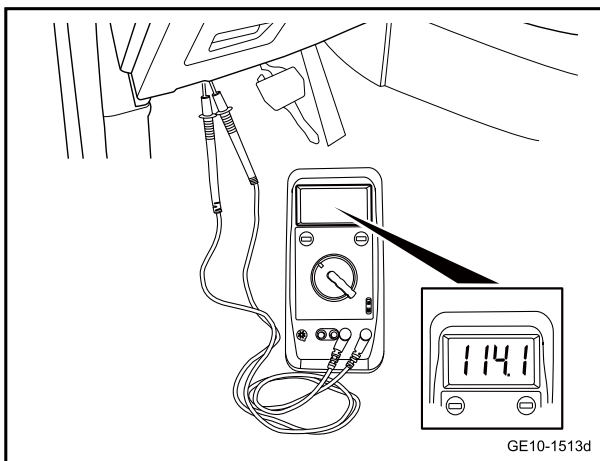
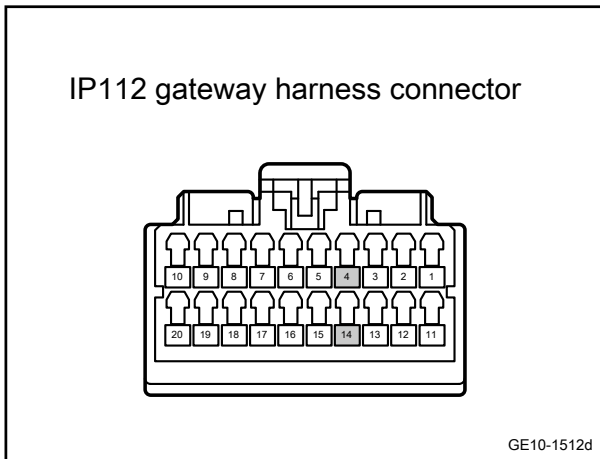
## 10.15.7 Removal and installation

### 10.15.7.1 HB-CAN bus network integrity check

#### Removal procedure

#### Warning

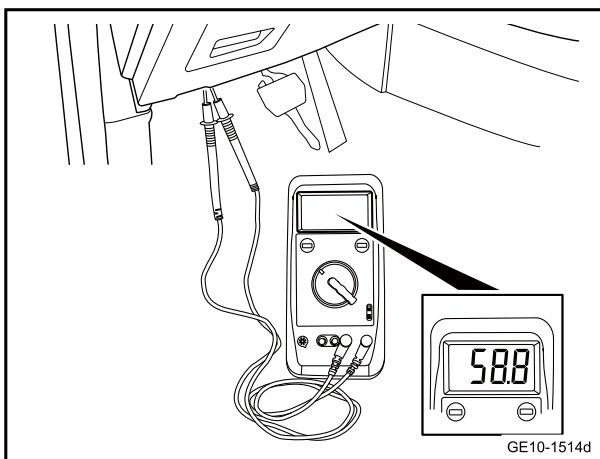
See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".



- 1 Operate the start-and-stop switch to the OFF position of the status power supply mode, and use a multimeter to measure the resistance between gateway connector port 4 and port 14.
- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the electronic gear shifter (EGSM), the vehicle control unit (VCU), the integrated power control unit (IPU), the high and low voltage charging system, the battery management system (BMS), the wiring harness connector of the electric vehicle communication control module in turn, and confirm that the CAN bus connection is normal. If there is a disconnection or poor connection, repair it.

#### Caution

The repair of CAN bus must abide by repair norms. Refer to [Bus Repair](#)



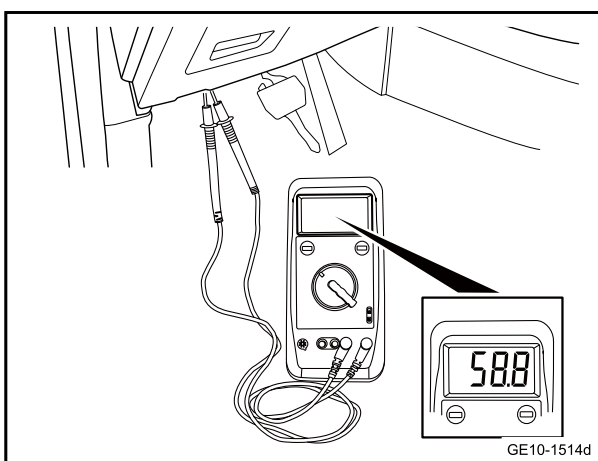
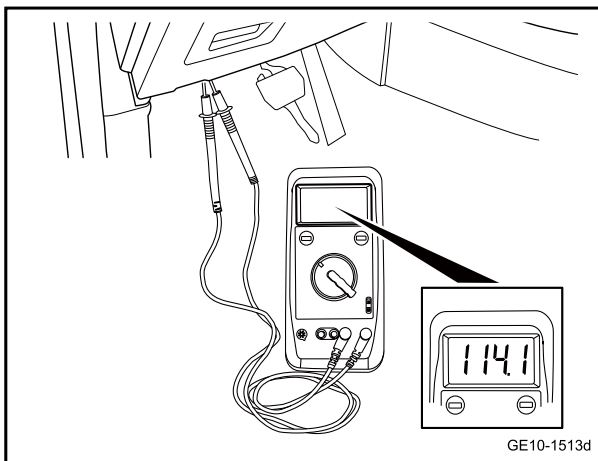
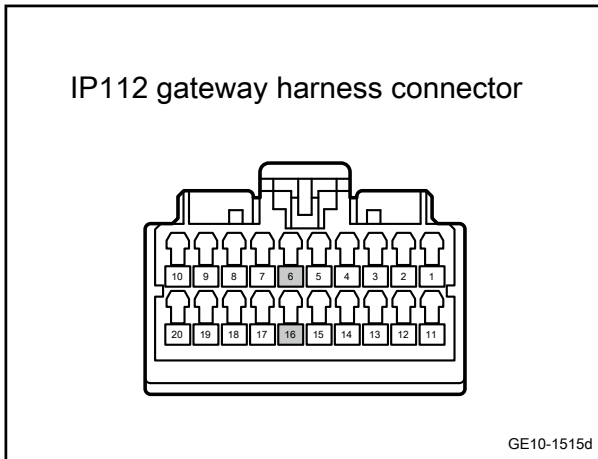
- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the HB-CAN bus network is complete.



### 10.15.7.2 IF-CAN bus network integrity check

#### Warning

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

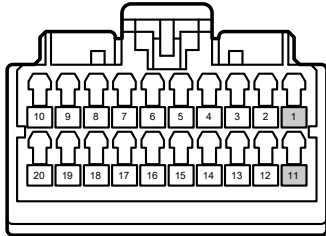


- 1 Operate the start-and-stop switch to the OFF position of the status power supply mode, and use a multimeter to measure the resistance between gateway connector port 6 and port 16.
  - 2 If the resistance shown by the multimeter is about 110-125 $\Omega$  or conduction fails, it is indicated that the CAN bus is incomplete.
  - 3 Check the wiring harness connectors of the audio host (MMI), E-CALL, combined instrument controller (IPK), and head-up display (HUD) in turn, to confirm that the CAN bus connection is normal. If there is an open circuit or poor connection, repair it.
- Caution**
- The repair of CAN bus must abide by repair norms. Refer to [Bus Repair](#)
- 4 If the multimeter shows that the resistance value is about 55-63 $\Omega$ , it means that the IF-CAN bus network is complete.

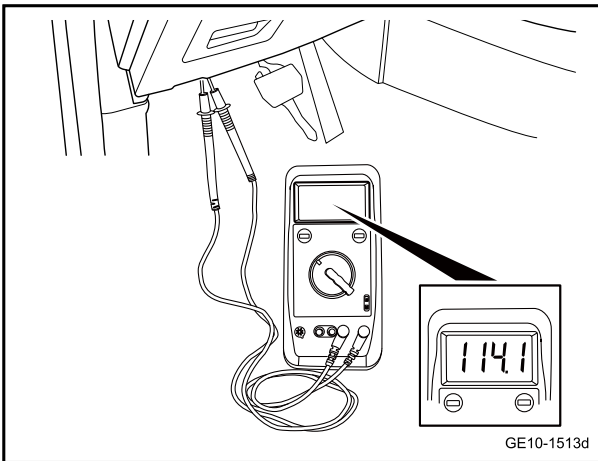
### 10.15.7.3 CF-CAN bus network integrity check

Removal procedure

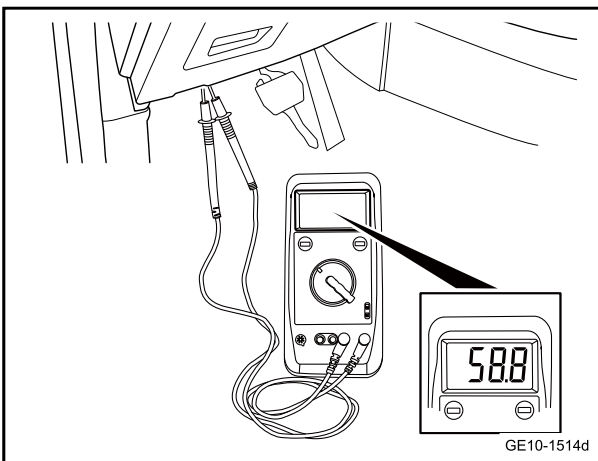
IP112 gateway harness connector



GE10-1516d



GE10-1513d



GE10-1514d

**Warning**

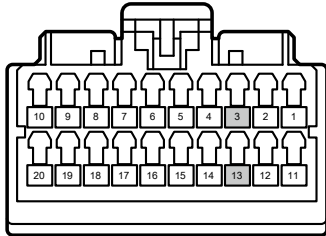
See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Operate the start-and-stop switch to the OFF position of the status power supply mode, and use a multimeter to measure the resistance between gateway connector port 1 and port 11.
  - 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
  - 3 Check the wiring harness connectors of the electronic steering column lock, thermal management control module, driver seat heating module, seat module, low speed alarm controller (AVAS), body control module (BCM) in turn, and confirm that the CAN bus connection is normal. If there is an open circuit or poor connection, repair it.
- Caution**
- The repair of CAN bus must abide by repair norms. Refer to [Bus Repair](#)
- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the CF-CAN bus network is complete.

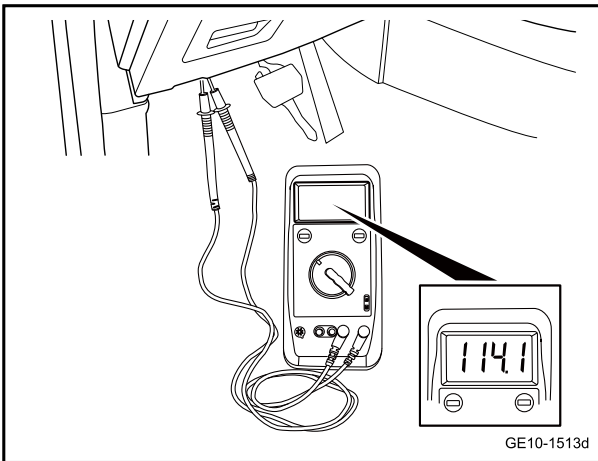
**10.15.7.4 CS-CAN bus network integrity check**

Removal procedure

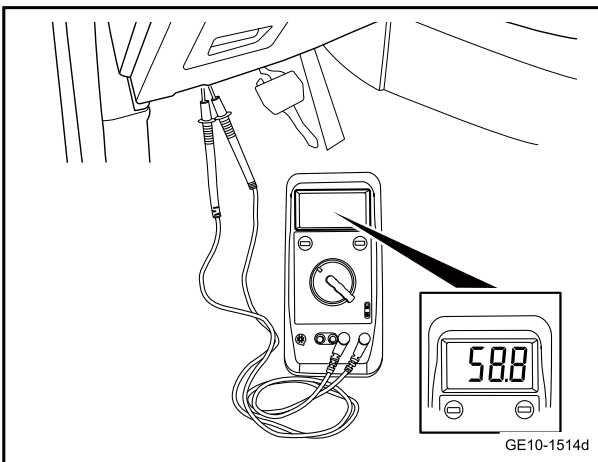
IP112 gateway harness connector



GE10-1517d



GE10-1513d



GE10-1514d

**Warning**

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Operate the start-and-stop switch to the OFF position of the status power supply mode, and use a multimeter to measure the resistance between gateway connector port 3 and port 13.
- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the steering wheel angle sensor, electronic power steering system (EPS), front monocular camera, millimeter wave radar, smart booster, body stability system (ESC), vehicle control module (VCU), EPB, automatic parking module, and the harness connector of the airbag control module (ACU) in turn, to confirm that the CAN bus connection is normal. If there is an open circuit or poor connection, repair it.

**Caution**

The repair of CAN bus must abide by repair norms. Refer to [Bus Repair](#)

- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the CS-CAN bus network is complete.

**10.15.7.5 Replacement of gateway**

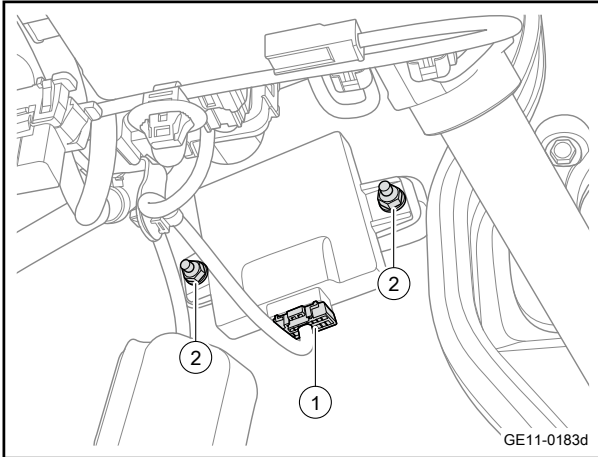
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

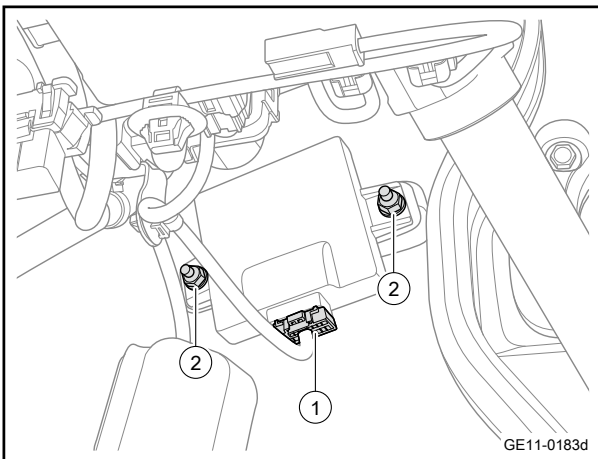
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 3 Disconnect the gateway harness connector 1.
- 4 Remove 2 fixing screws 2 of the gateway.
- 5 Remove the gateway.



#### Installation procedure

- 1 Move the gateway to the installation location.
- 2 Install two fixing nuts 2 of the gateway.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Connect the gateway harness connector 1.



- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Connect the negative cable of battery.

## 10.16 Cruise control system

### 10.16.1 Description and Operation

#### 10.16.1.1 Description and operation

##### Intelligent Navigation System

The intelligent navigation system can simultaneously perform cruise control and direction assistance control on the vehicle within the speed range of 0 to 150 km/h. The system can control the speed of the vehicle according to the set speed and the time and distance between following vehicles, and control the vehicle to drive in the middle of the lane or follow the vehicle ahead for tracking control according to the lane lines on the left and right sides.

The intelligent navigation system is mainly to provide driving assistance for the driver on highways or roads in good conditions. The driver needs to maintain control over the vehicle at all times.

The intelligent navigation system uses the front millimeter wave radar and the front monocular camera to detect the vehicle ahead and lane lines on both sides, automatically adjusts the vehicle speed to maintain the driver's set speed or distance between it and the following vehicle, and at the same time keeps the vehicle in the lane through direction assistance control.

The premise for the intelligent navigation system to provide lane keeping control is that the system recognizes the lane lines on both sides at the same time. If the lane line is lost or unclear, the intelligent navigation system will be downgraded to enter cruise control only, and direction assistance control will no longer be enabled. When the system re-identifies the lane lines on both sides, it will automatically restore the direction assistance control.

To activate the intelligent navigation system, the following conditions must be met:

- Press the intelligent navigation button to turn on the intelligent navigation control system.
- The drive gear (D) is engaged.
- The ready-to-run indicator on the instrument cluster lights up.
- The four doors, the tailgate and the front engine compartment lid are all closed.
- When the vehicle is in motion, the brake pedal is not depressed.
- The brake disc is fault-free.
- The front millimeter-wave radar is free from problems such as high temperature, contamination or malfunction.
- The ESC system is turned on.

- The EPB electronic parking brake has been released.
- The driver has fastened his seat belt.

##### Adaptive cruise control system

The adaptive cruise control system can control the vehicle speed within the range of 0~150km/h according to the set speed and the time and distance between the vehicle and the following vehicle.

The adaptive cruise control system is mainly to provide driving assistance for the driver on highways or roads in good conditions. The driver needs to maintain control over the vehicle at all times.

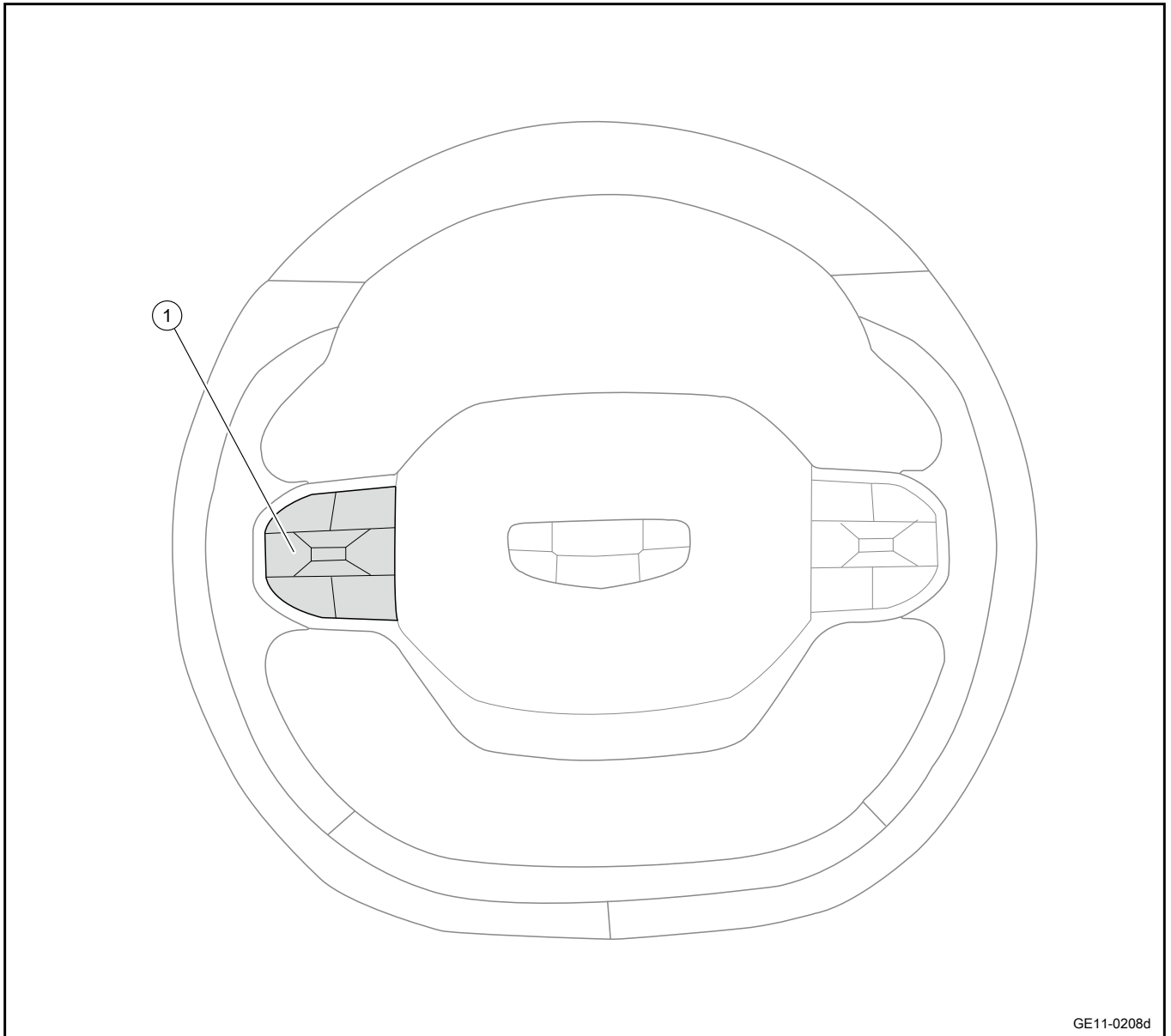
The adaptive cruise control system uses mid-range radar to detect the vehicle ahead, and automatically adjusts the vehicle speed to maintain the time and distance set by the driver. The driver can control the vehicle at any time according to the driving conditions.

To activate the adaptive cruise control system, the following conditions must be met:

- Press the adaptive cruise button to turn on the adaptive cruise control system.
- The drive gear (D) is engaged.
- The ready-to-run indicator on the instrument cluster lights up.
- The four doors, the tailgate and the front engine compartment lid are all closed.
- When the vehicle is in motion, the brake pedal is not depressed.
- The brake disc is fault-free.
- The front millimeter-wave radar is free from problems such as high temperature, contamination or malfunction.
- The ESC system is turned on.
- The EPB electronic parking brake has been released.
- The driver has fastened his seat belt.

## 10.16.2 Part location

## 10.16.2.1 Part Position

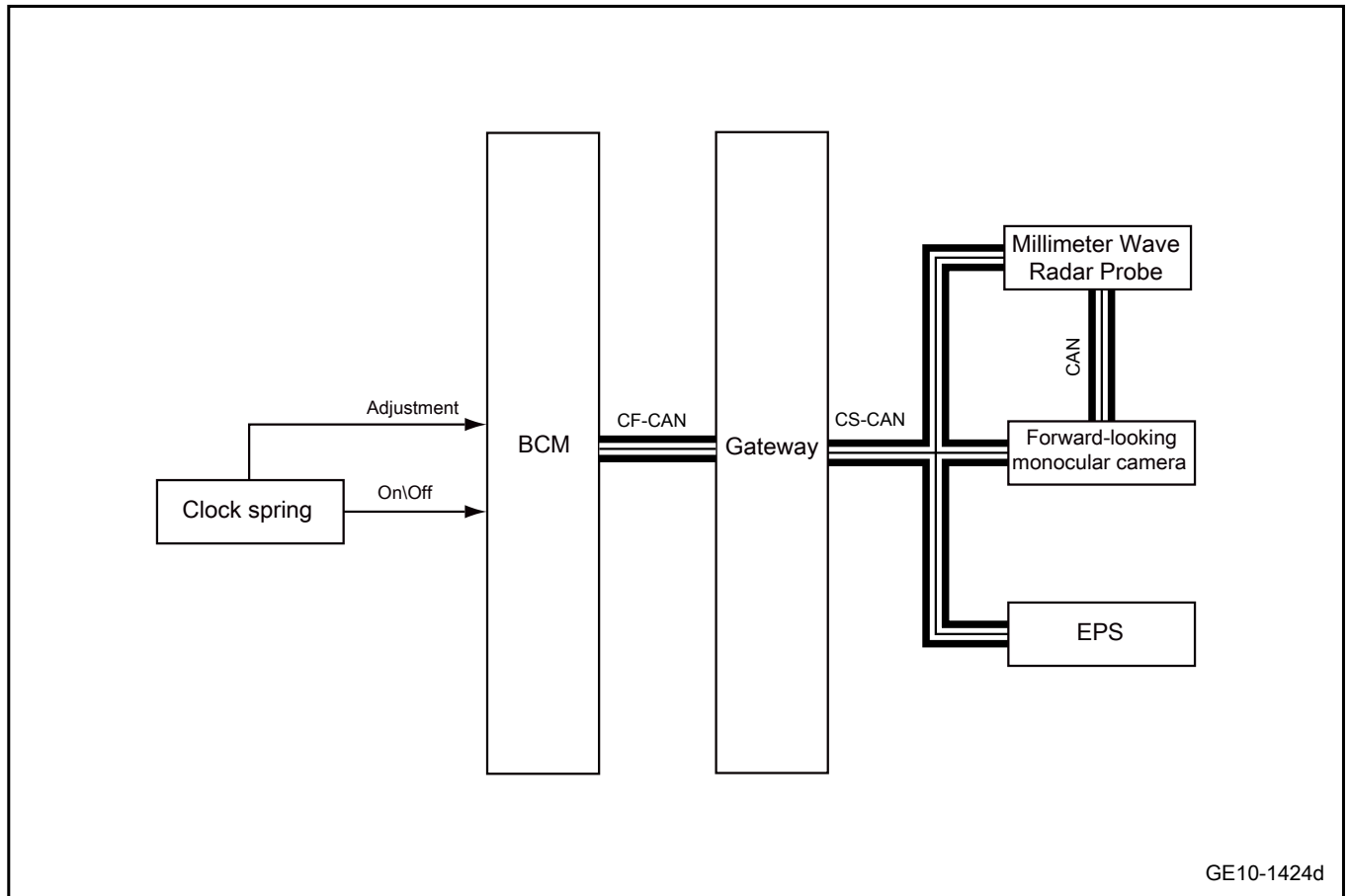


GE11-0208d

1. Cruise control switch

10.16.3 Electrical block diagram

10.16.3.1 SElectrical Schematic Diagram of the Cruise Control System



## 10.16.4 Diagnostic information and steps

### 10.16.4.1 Diagnosis Description

Before diagnosing the fault of the cruise control system. Refer to [Description and Operation](#). Understand and familiarize yourself with the working principle of the cruise control system, and then start system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

### 10.16.4.2 Routine inspection

- Check the after-sales installations which may affect cruise control system and ensure that these installations cannot affect the cruise control system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

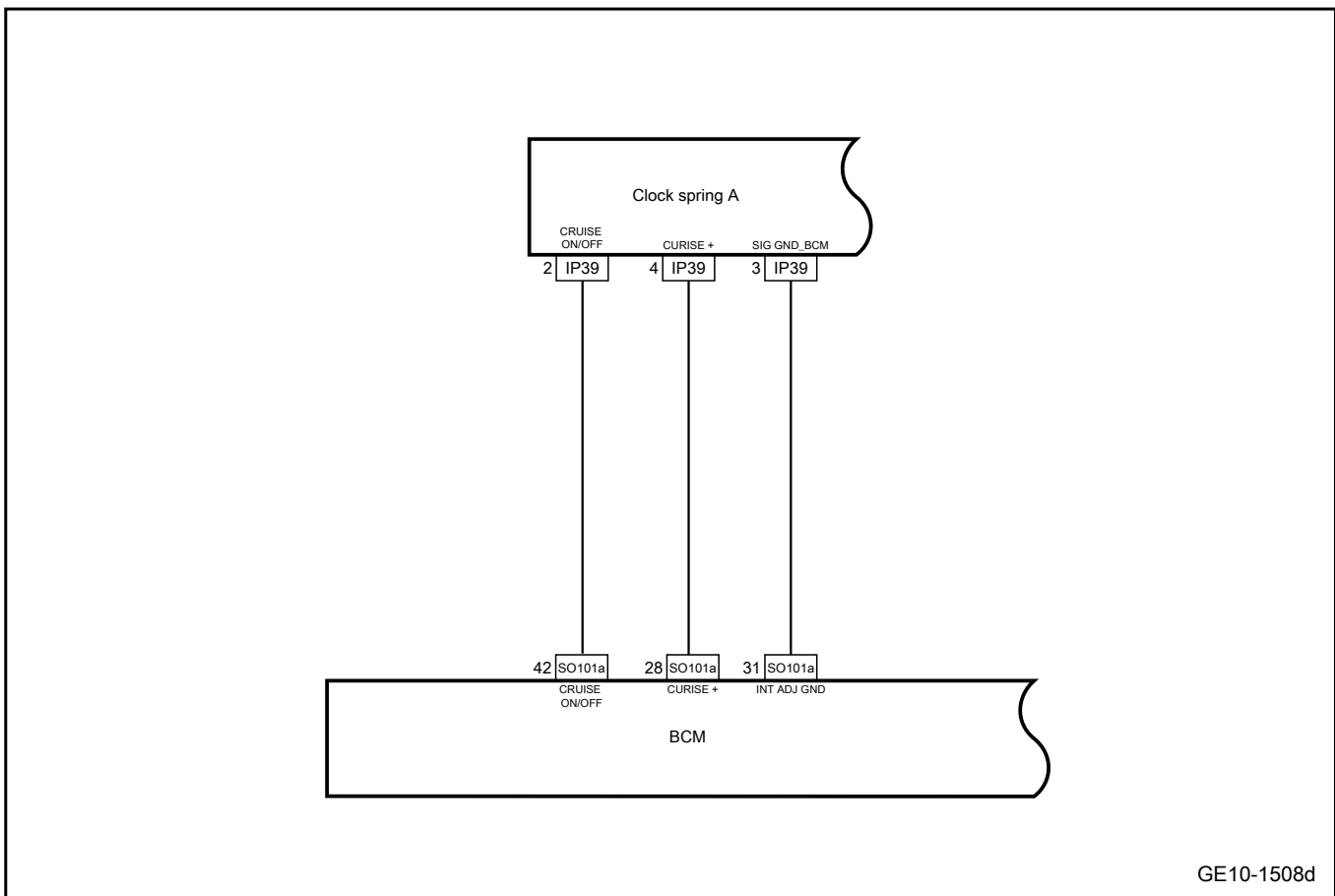
### 10.16.4.3 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Cruise control system is inoperative	1. Clock spring	Refer to <a href="#">Cruise control system is inoperative</a>
	2. Harness and connector	
	3.BCM	
Inoperative cruise control system indicator light	1. Combination instrument	Refer to <a href="#">Cruise control system indicator lamp is inoperative</a>
	2. Harness and connector	
	3.BCM	

### 10.16.4.4 Cruise control system is inoperative

1. Schematic circuit diagram:





2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the BCM harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

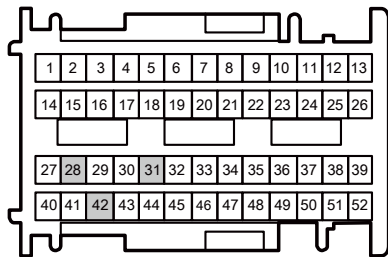
No

Repair or replace the faulty part.

Yes

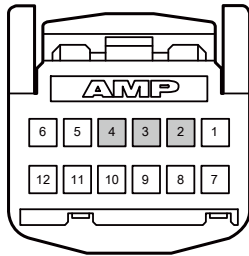
Step 2	Check whether the circuit between the cruise switch and BCM is normal.
--------	--

SO101a body control module harness connector 7



GE10-1827d

IP39 clock spring harness connector A



GE10-1828d

- A. Operate the start-and-stop switch to place the power in mode "OFF".
- B. Disconnect the clock spring harness connector IP39.
- C. Disconnect the BCM harness connector SO101a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(42)	IP39(2)	Standard resistance: less than 1Ω
SO101a(31)	IP39(3)	
SO101a(28)	IP39(4)	
SO101a(42)	Vehicle body is grounded.	Standard resistance: 10 KΩ or higher
SO101a(31)		
SO101a(28)		

- E. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO101a(42)	Vehicle body is grounded.	Standard voltage: 0V
SO101a(31)		
SO101a(28)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the cruise switch.

- A. Replace the cruise switch. Refer to [Replacement of clock spring](#)

Yes

System is normal.

No

Step 4 Replace the BCM

- A. Confirm whether the BCM power supply and the grounding harness are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of BCM](#)
- C. Confirm whether the system is normal.

Next Step

Step 5 | Reprogram and reset the BCM.

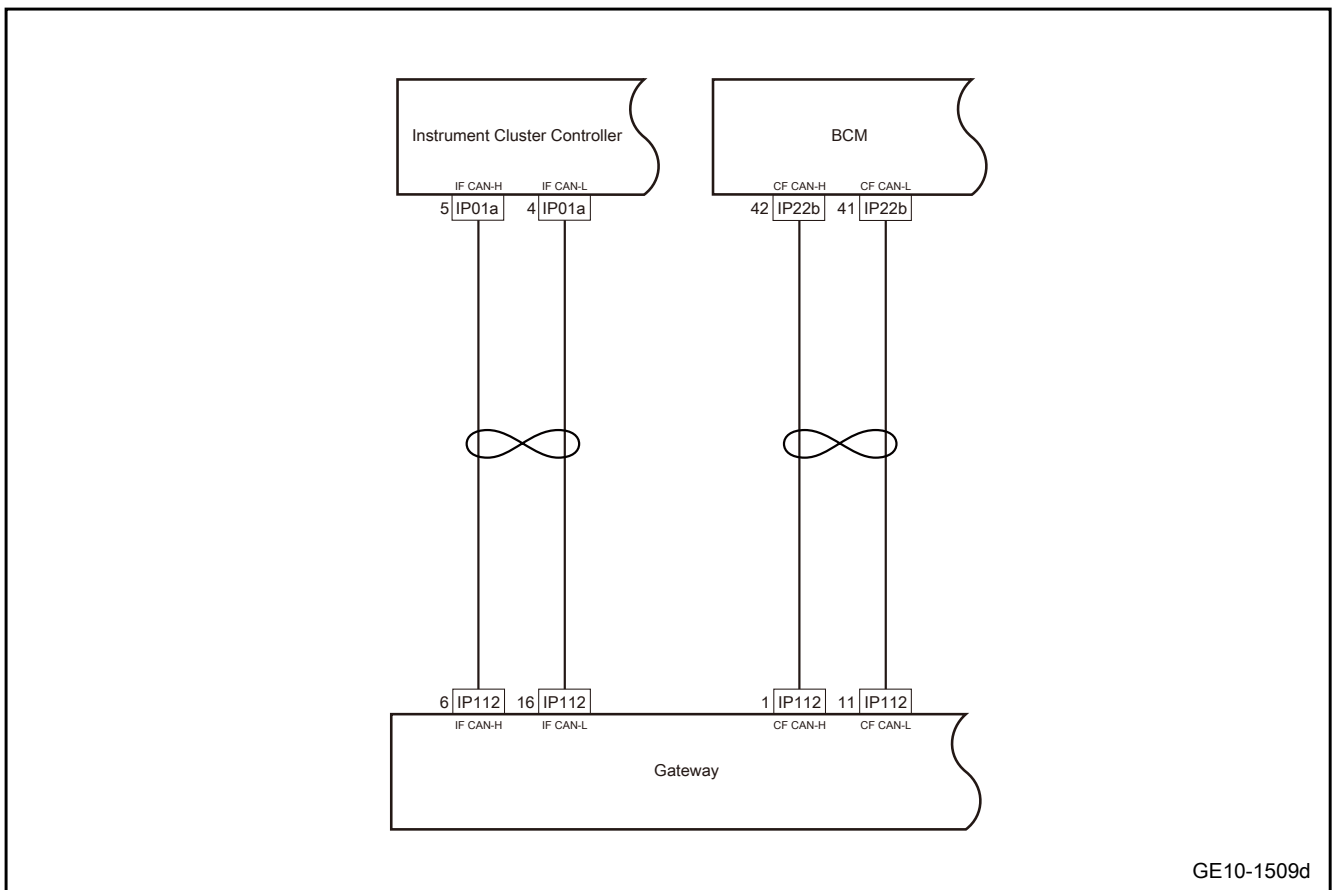
- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6 | System is normal.

### 10.16.4.5 Inoperative cruise control system indicator light

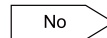
1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the combination instrument harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

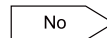
No 

Repair or replace the faulty part.

Yes 

Step 2	Check whether the cruise control system working is normal.
--------	--

- A. Check whether the cruise control system working is normal.

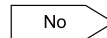
No 

Repair or replace the faulty part. Refer to [Cruise control system is inoperative](#)

Yes 

Step 3	Check whether CF-CAN communication network is normal.
--------	---

- A. Check whether the CF-CAN communication network is normal, refer to CF-CAN bus network integrity check.
- B. Confirm whether the CF-CAN communication network is normal.

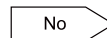
No 

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes 

Step 4	Check whether IF-CAN communication network is normal.
--------	---

- A. Check whether the IF-CAN communication network is normal, refer to [IF-CAN bus network integrity check](#)
- B. Check whether the IF-CAN communication network is normal.

No 

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes 

Step 5	Replace the IP cluster.
--------	-------------------------

- A. Check whether combination instrument power supply, grounding harness is normal. Refer to [combination instrument power failure](#)
- B. Replace the instrument cluster, refer to [Replacement of the instrument cluster assembly](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Reprogram and reset the combination instrument.

- A. Reprogram and reset the combination instrument. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 7** Replace the BCM

- A. Check whether the power supply and grounding harness of BCM are normal. Refer to [BCM power failure](#)
- B. Replace the BCM Refer to [Replacement of central control unit](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 8** Reprogram and reset the BCM.

- A. Reprogram and reset the BCM. Refer to [the Programming and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 9** System is normal.

## 10.16.5 Removal and installation

### 10.16.5.1 Replacement of cruise control switch

Removal procedure

See [Replacement of steering wheel assembly](#)

## 10.17 Low-speed beep system

### 10.17.1 Specification

#### 10.17.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of low speed alarm controller	M10×20	8 - 10	5.9 - 7.4

## 10.17.2 Description and Operation

### 10.17.2.1 General

#### Features

When an electric vehicle is running in a pure electric state, the noise of the vehicle is relatively small. Pedestrians with impaired eyesight or careless observation may be dangerous when passing the direction of the new energy vehicle.

Therefore, electric vehicles often have a low-speed beep system, which automatically emits a beep when the vehicle speed is lower than 30km/h to remind pedestrians, so as to reduce the injury pedestrians.

#### System composition

The low-speed beep system is mainly composed of a low-speed beep controller, a low-speed beep speaker and related wiring harnesses. The low-speed beep controller is internally composed of a power supply module, a power amplifier module, a voice module, an MCU module, and a CAN communication module.



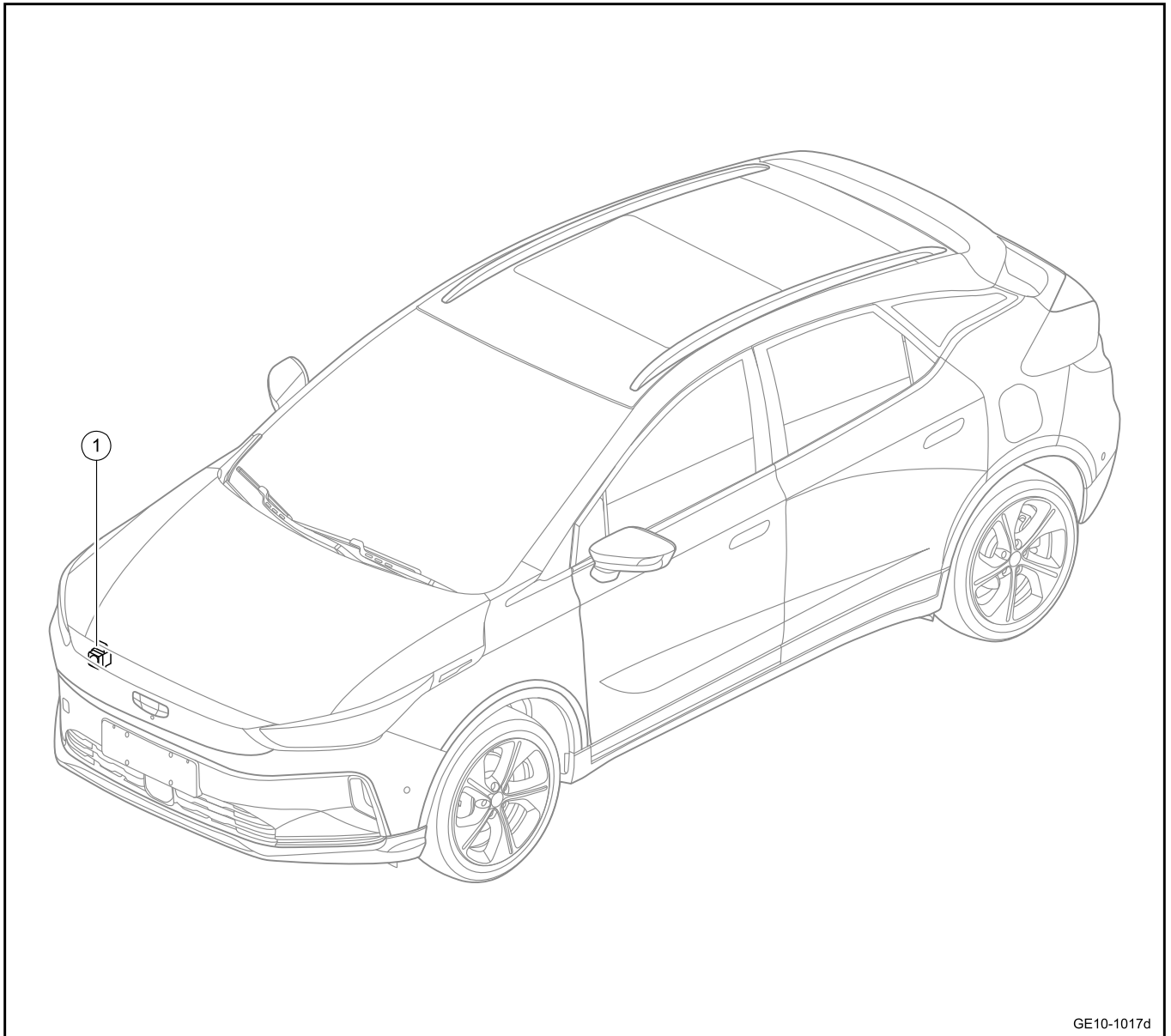
### 10.17.3 How the system works

#### 10.17.3.1 System Working Principles

Functions	Overview
Low-speed beeping function	When the power supply is engaged in ON gear, not P or R gear, and the vehicle speed meets $1 \pm 0.5 \text{ km/h} \leq \text{vehicle speed} \leq 30 \pm 1 \text{ km/h}$ , the low-speed beep will start.
	When the vehicle speed is between 1km/h and 20km/h, the beep volume increases as the vehicle speed increases.
	When the vehicle speed is between 20km/h and 30km/h, the beep volume decreases as the vehicle speed increases.
	When the vehicle speed is less than or equal to 1km/h, stop making sounds.
	When the vehicle speed is greater than or equal to 30km/h, stop making sounds.
	When the power supply gear is ON and the R gear is engaged, the low-speed beep controller drives the low-speed beep speaker to warn pedestrians of the existence of the running vehicle.
Overvoltage and undervoltage detection	When the voltage is higher than 16V, the system raises an overvoltage alarm.
	When the voltage drops to 15V, the overvoltage alarm is cancelled.
	When the voltage is lower than 10V, the system raises an undervoltage alarm.
	When the voltage rises to 11V, the undervoltage alarm is cancelled.
Open circuit detection	When a short circuit of the loudspeaker is detected, pull down the power amplifier chip enabling pin, so that the power amplifier module enters the sleep mode and stops output until the short circuit is eliminated to prevent the loudspeaker from spontaneous combustion due to the short circuit.
Sleep, wake up	In sleep mode, the power consumption is less than 500mW, the system stops all activities and only waits for the wake-up command; after the system wakes up, it resumes all functions and works normally.

## 10.17.4 Part location

### 10.17.4.1 Part Position

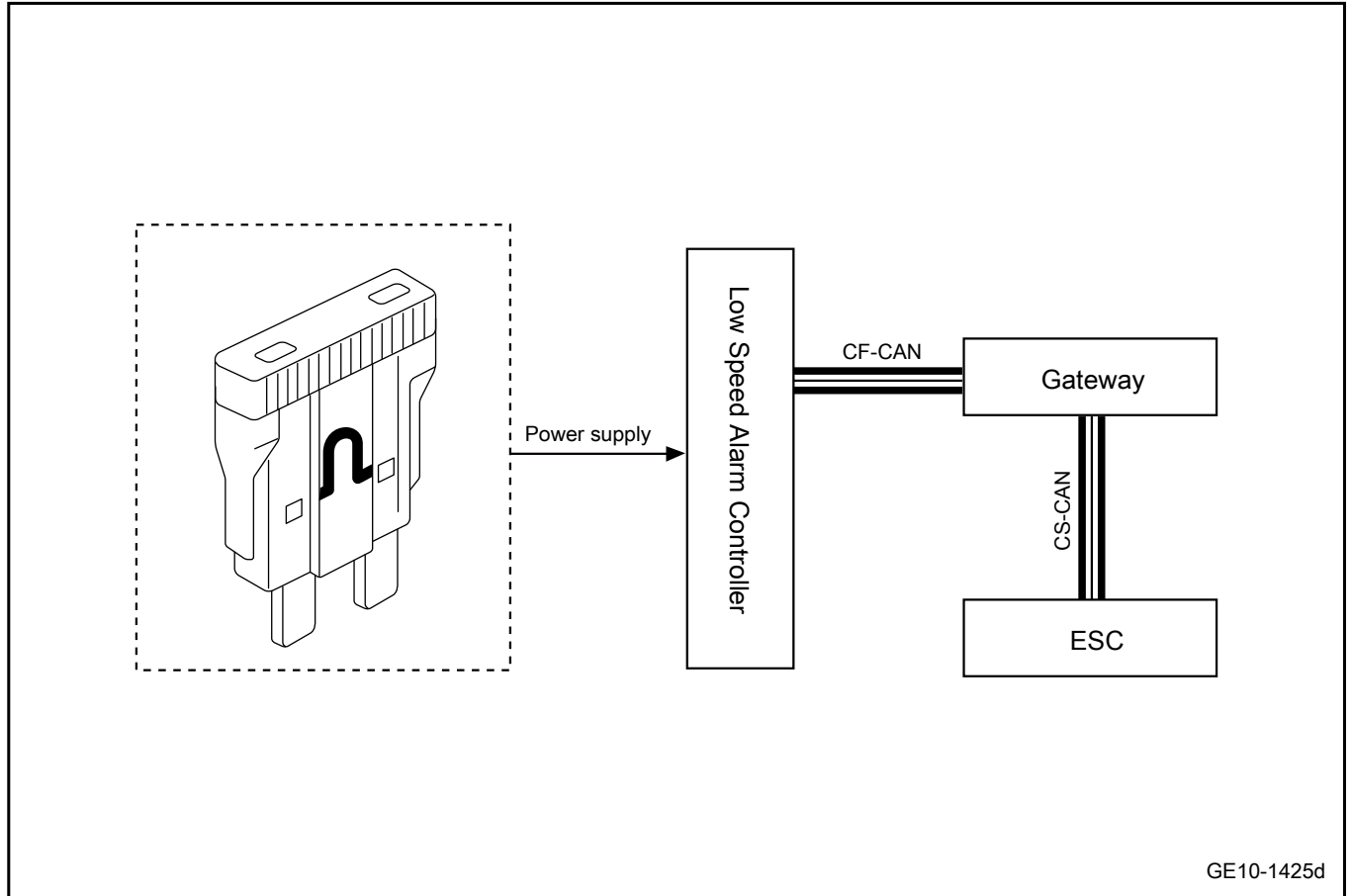


GE10-1017d

1. Low speed alarm controller

10.17.5 Electrical block diagram

10.17.5.1 Electrical Schematic Diagram of Low-speed Alarm System



## 10.17.6 Diagnostic information and steps

### 10.17.6.1 Diagnosis Description

Before diagnosing the faults of the low-speed alarm system. Refer to [Description and Operation](#) and [System Working Principles](#). Understand and be familiar with working principles of low-speed alarm system before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it also helps to determine whether the situation described by the customer is normal operation. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

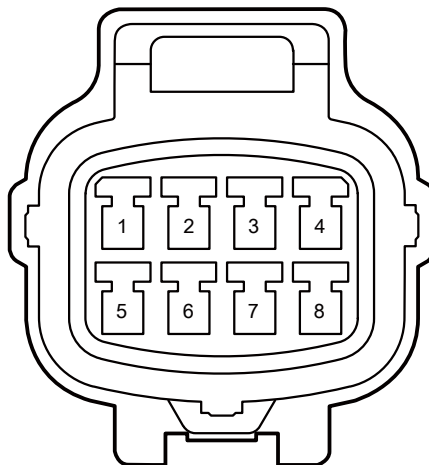
### 10.17.6.2 Routine inspection

- Check the after-sales installations which may affect low-speed alarm system and ensure that these installations cannot affect the low-speed alarm system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

### 10.17.6.3 List of low-speed alarm controller terminals

#### CA73a Low-speed alarm controller wiring harness connector

### CA73a Low Speed Alarm Controller Harness Connector



GE10-1571d

Terminal No.	Terminal name	Terminal description
1	CF CAN-H	Comfort CAN high line
2	CF CAN-L	Comfort CAN low line
3	Ground connection	Low-speed alarm controller grounding circuit
4	IG1 power supply	Low-speed alarm controller ACC\ON\START power supply
5	-	-
6	-	-

Terminal No.	Terminal name	Terminal description
7	-	-
8	-	-

#### 10.17.6.4 Fault symptom table

Symptom	Suspected parts	Measures / Reference
Low-speed alarm controller power failure	1. Battery	See <a href="#">Low-speed alarm controller power failure</a>
	2. Harness and connector	
	3. Low speed alarm controller	
Low-speed alarm controller communication failure	1. Harness connector	See <a href="#">Low-speed alarm controller communication failure</a>
	2. Diagnostic interface	
	3. Low speed alarm controller	
Internal failure of low-speed alarm controller	1. Low speed alarm controller	See <a href="#">Internal failure of low-speed alarm controller</a>

#### 10.17.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	CAN Bus closed	See <a href="#">Low-speed alarm controller communication failure</a>
U012187	Communication with ABS_ESC is lost	
U111487	Communication with VCU is lost	
U021487	Communication with PEPS is lost	
U041681	ABS_ESC signal prompts VehicleSpeed is invalid	
U300616	Control module input voltage is low	See <a href="#">Low-speed alarm controller power failure</a>
U300617	Control module input voltage is high	
B210012	Warning module output failure	See <a href="#">Low-speed alarm control module hardware failure</a>

#### 10.17.6.6 Diagnosis system

##### 1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. Operate the start and stop switch to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

##### Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

### 10.17.6.7 Read and clear of fault diagnosis code

#### 1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

#### 2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- c. Clear DTC according to the prompts on the diagnostic apparatus screen.

### 10.17.6.8 Data stream list

Serial No.	DID description	Physical value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Occurrence counter	0-255	time
4	Mileage before the first fault	0-999999	Km
5	Odometer of the last failure	0-999999	Km

### 10.17.6.9 Low-speed alarm controller power failure

#### 1. DTC description:

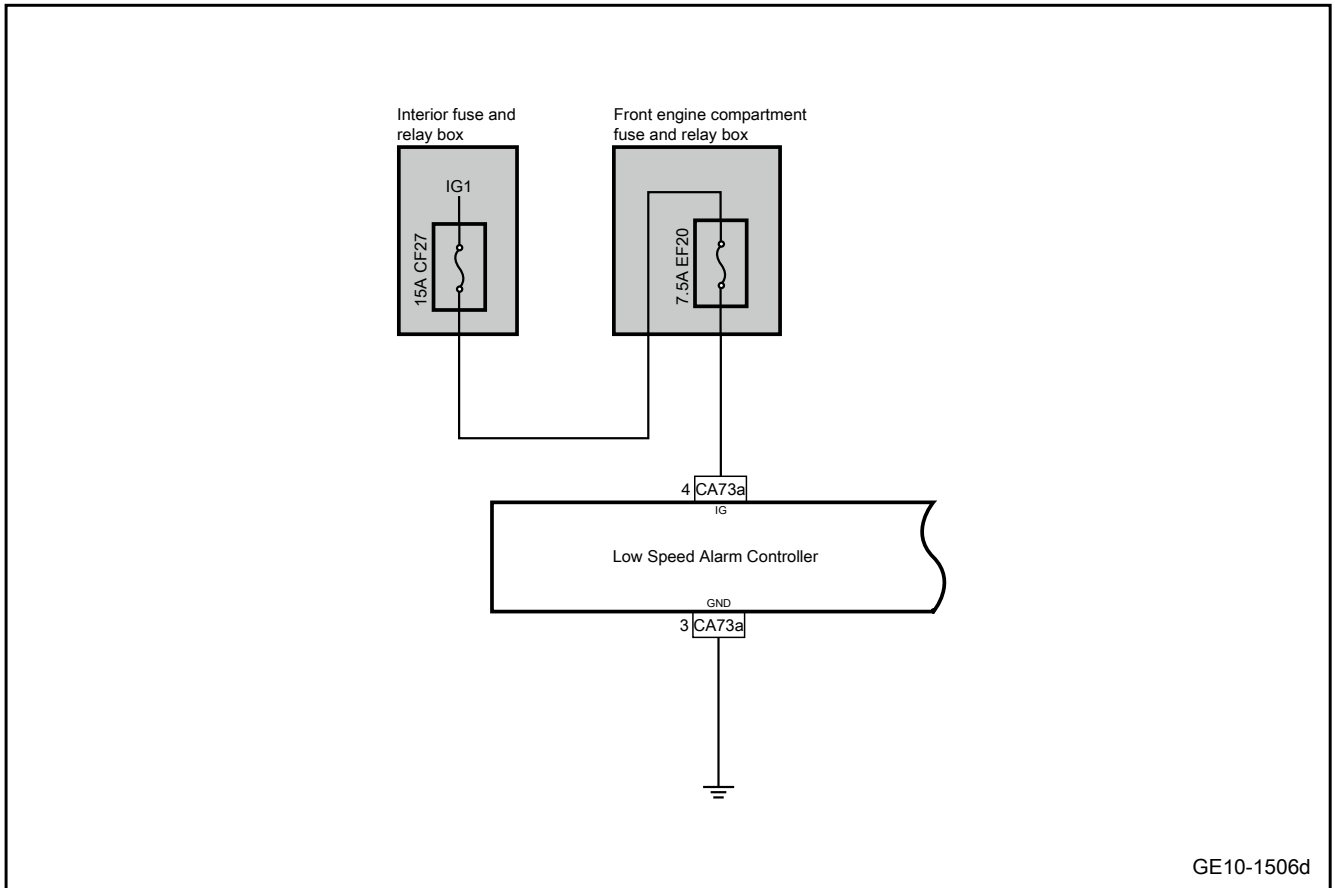
Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Internal local voltage <9V	1. Power on 2. Diagnosis service \$85 is not activated Stability above 6 volts after 3.3s 4. PEPS power mode ACC or ON	1. Battery 2. Circuit 3. Fuse 4. Low speed alarm controller

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	Internal local voltage>16V	1. Power on 2. Diagnosis service \$85 is not activated 3. PEPS power mode ACC or ON	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the low-speed alarm control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the fuse of the low-speed alarm controller.

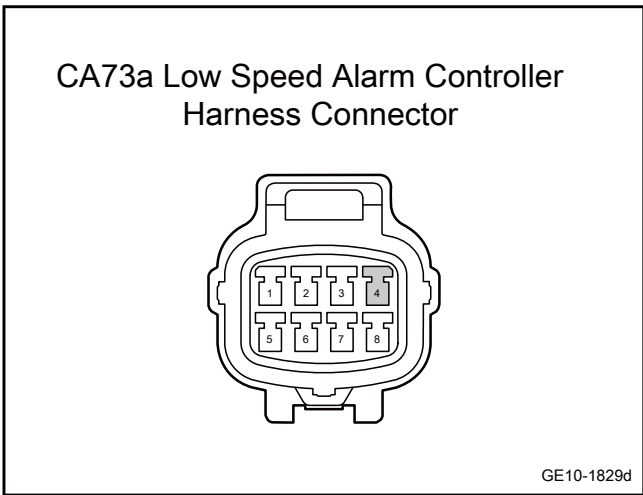
- A. Operate the starting switch to place the power in mode "OFF".
- B. Pull out fuse CF27 of the indoor fuse relay box. Check whether fuse CF27 is blown.  
  
Rated fuse capacity: 15A
- C. Unplug front engine compartment fuse relay box fuse EF20, and check whether the fuse is blown.  
  
Rated fuse capacity: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the power circuit of the low-speed alarm controller is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the low-speed alarm controller harness connector CA73a.
- C. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA73a(4)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

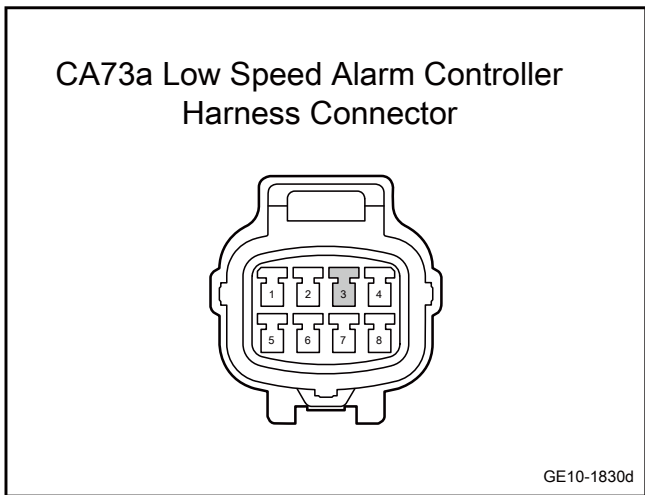
No

Repair or replace the harness.

Yes



**Step 5** Check whether the grounding circuit of the low-speed alarm controller is open.



- A. Operate the starting switch to place the power in mode "OFF".
- B. Disconnect the low-speed alarm controller harness connector CA73a.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA73a(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

**Step 6** Replace the low-speed alarm controller.

- A. Replace the low-speed alarm controller, see [Replacement of the low-speed alarm controller](#)

Yes → System is normal.

No

**Step 7** Reprogram and reset the low-speed alarm controller.

- A. Reprogram and reset the low-speed alarm controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

**Step 8** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

### 10.17.6.10 Low-speed alarm controller communication failure

#### 1. DTC description:

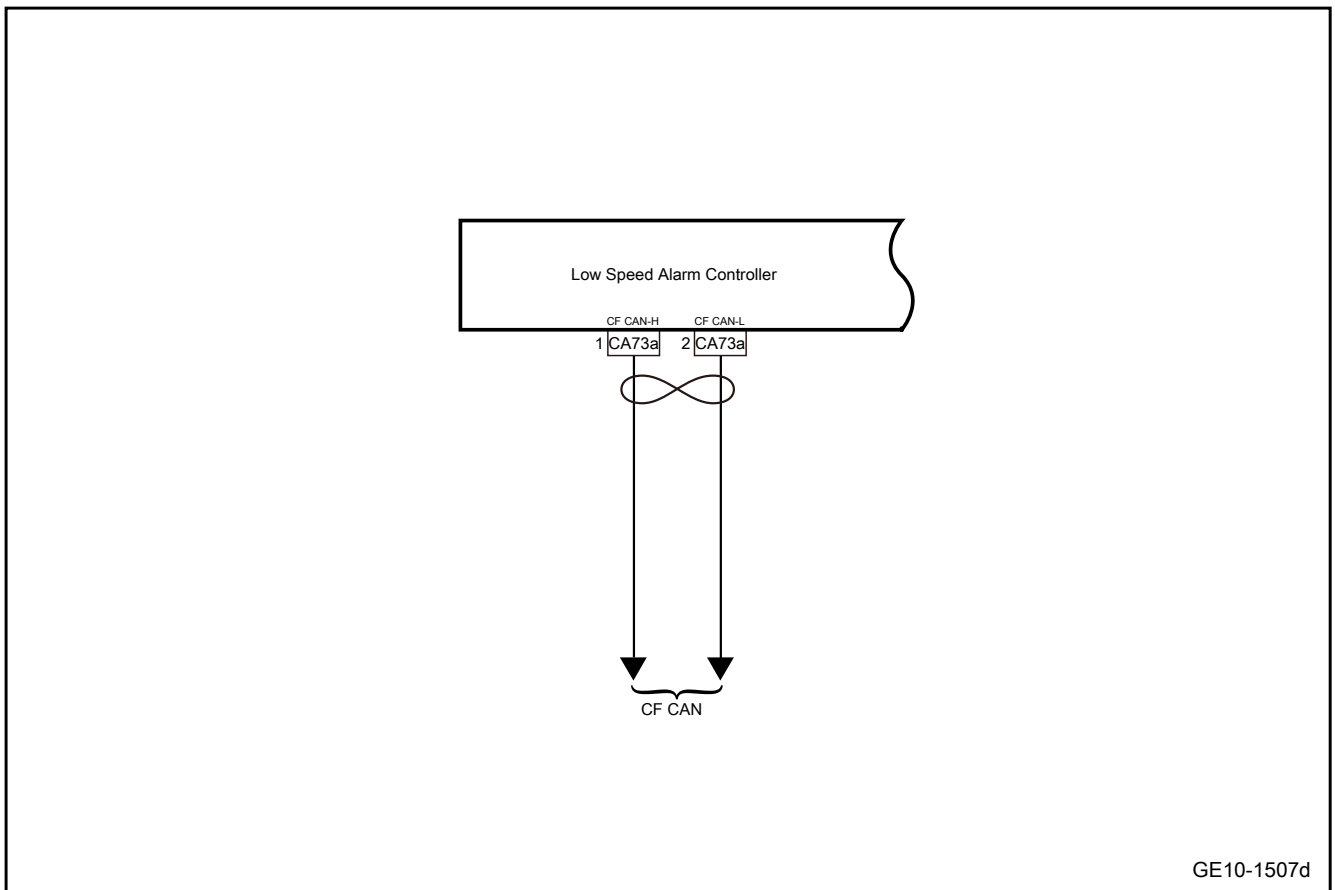
Diagnostic Trouble Code	Description
U007300	CAN Bus closed
U012187	Communication with ABS_ESC is lost
U111487	Communication with VCU is lost
U021487	Communication with PEPS is lost
U041681	ABS_ESC signal prompts VehicleSpeedis invalid

#### 2. Trouble code setting and fault location:

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus off fault	<ol style="list-style-type: none"> <li>The communication of the electronic control unit of the tester is normal</li> <li>Normal working voltage</li> <li>Be able to communicate</li> <li>No overvoltage or undervoltage</li> <li>PEPS U power mode ACC or ON</li> </ol>	<ol style="list-style-type: none"> <li>Circuit</li> <li>Low speed alarm controller</li> <li>Diagnostic interface</li> </ol>
U012187	Frame loss is tested. Loss of speed signal KC-2HB/FE-5HA/GE12A: 0x125 FE-3ZA: 0x068 FE-3HP-AC: 0x068 FE-3HP-AB: 0x068	<ol style="list-style-type: none"> <li>The supply voltage of the CAN bus node is in the range of 9-16V.</li> <li>The TDiagenable condition is met</li> </ol>	
U111487	Frame loss is tested. Loss of gear signals KC-2HB/FE-5HA/GE12A: 0x165 or 0x162 Iron-3ZA: 0x115 FE-3HP-AC: 0x115 or 0x28A FE-3HP-AB: 0x115 or 0x28A	<ol style="list-style-type: none"> <li>No bus disconnection is detected</li> <li>Ignition status is "Ignition ON".</li> <li>Diagnosis service of 85 dollars is not activated</li> <li>PEPS U power mode ACC or ON</li> </ol>	

DTC number	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U021487	Frame loss is tested. PEPS power mode KC-2HB/FE-5HA/GE12A:0x1E2 Iron-3ZA:0x0E2 Iron-3HP-AC:0x0E2 Iron-3HP-AB:0x0E2		
U041681	Vehicle speed signal is invalid KC-2HB/FE-5HA/GE12A:0x125 FE-3ZA:0x068 FE-3HP-AC:0x068 FE-3HP-AB:0x068		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

Step 2 Primary check.

- A. Check the low-speed alarm control unit for signs of damage, distortion, stains, loosening, etc.
- B. Check the low-speed alarm control unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN network integrity.

- A. Check the instrument communication network, refer to [CF-CAN bus network integrity check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the low-speed alarm controller.

- A. Check the power supply and grounding harness of the low-speed alarm controller, see [Low-speed alarm controller power failure](#)
- B. Replace the low-speed alarm controller, see [Replacement of the low-speed alarm controller](#)

Next Step

Step 5 Reprogram and reset the low-speed alarm controller.

- A. Reprogram and reset the low-speed alarm controller. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 6** Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

**Step 7** System is normal.

### 10.17.6.11 Internal failure of low-speed alarm controller

1. DTC description:

DTC	Trouble description
B210012	Warning module output failure

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B210012	When the output is valid, the output is equal to 'low', and the output is short-circuited	1. Ignition switch is turned on 2. The TDiagenable condition is met 3. Diagnosis service \$85 is not activated 4. PEPS power mode ACC or ON	Low speed alarm control module

3. Diagnosis steps

**Caution**

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

**Step 1** Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Trouble Check](#)

Yes

**Step 2** Primary check.

- A. Check the low-speed alarm control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

**Step 3** Reprogram and reset the low-speed alarm control module.

- A. Reprogram and reset the low-speed alarm control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

**Step 4** Replace the low-speed alarm control module.

- A. Check whether the power supply and the grounding circuits of low-speed alarm control module are normal. See [Low-speed alarm controller power failure](#)
- B. Replace the low-speed alarm control module. See [Replacement of low-speed alarm control module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the low-speed alarm control module.

- A. Reprogram and reset the low-speed alarm control module. Refer to [the Programing and Setting of Each Module of the Complete Vehicle](#)

Next Step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start-and-stop switch to engage the READY gear of the complete vehicle.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

### 10.17.7 Removal and installation

#### 10.17.7.1 Replacement of low-speed alarm speaker

See [Replacement of low-speed alarm control](#)

#### 10.17.7.2 Replacement of low-speed alarm controller

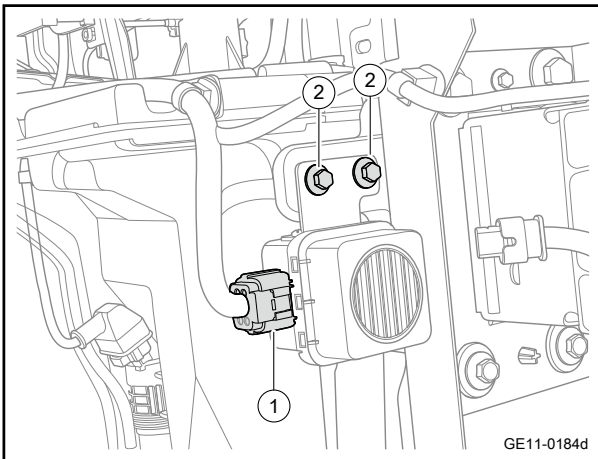
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

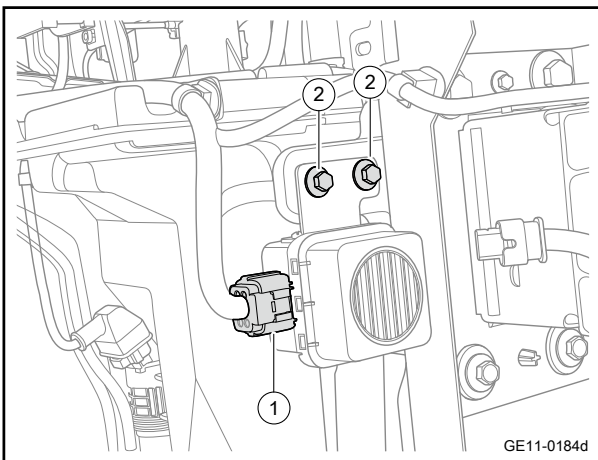
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Disconnect low-speed alarm controller harness connector 1.
- 4 Remove the 2 fixing bolts 2 of the low-speed alarm controller.
- 5 Remove the low-speed alarm controller.



##### Installation procedure

- 1 Move the low-speed alarm controller to the installation location.
- 2 Install the 2 fixing bolts 2 of the low-speed alarm controller.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Connect the low-speed alarm controller harness connector 1.



- 4 Install the front bumper assembly.
- 5 Connect the negative cable of battery.



## Body, sheet metal and spray paint

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## 11.1 Warnings and Precautions

### 11.1.1 Warnings and Precautions

#### 11.1.1.1 Warnings and Precautions

##### Warning regarding collision and cutting

###### Warning

Only cut at recommended locations. Otherwise, the integrity of the vehicle structure will be damaged, and personal injury may be caused in the event of a vehicle collision.

##### Warning regarding cracked windows

###### Warning

If a window glass is cracked but remains intact, the protective tape should be cross-pasted to the window glass to prevent further damage to the window glass and personal injury.

##### Warning regarding glass and metal plates treatment

###### Warning

When any type of glass or metal plate with sharp edges or burrs is handled, it is needed to wear approved goggles and gloves to reduce the risk of personal injury.

##### Warnings about goggles and compressed air

###### Warning

When using compressed air, wear goggles to avoid eye damage. Important notes for exterior trim logo removal

###### Caution

When removing badges/nameplates, use a plastic flat-blade tool to avoid damage to the paint.

##### Notice of machining surface damage

###### Caution

Do not cut, scratch or damage the sealing surface. The sealing surface is machined. Damage to the machined surface can cause leakage.

##### Notice of sealant

###### Caution

Do not let room temperature hardening sealant enter the blind threaded hole. If room temperature hardening sealant enters the threaded blind hole, a hydraulic lock nut effect will be produced when fasteners are tightened. The hydraulic lock nut of fastener tightening can cause damage to fastener tightening and/or other components. In addition, the correct clamp force will not be obtained when fasteners are tightened. Incorrect clamping force can prevent components from getting the correct seal, which can lead to leakage. If the fastener cannot be tightened properly, components will become loose or separated, causing serious damage to the vehicle.

##### Notice of damage to window edges

###### Caution

Avoid damaging vehicle windows due to the impact caused by exposed edges. Vehicle windows must be 1 mm (0.025 in) below sheet metal surface to avoid damage to vehicle windows.

## 11.2 Front end of the body

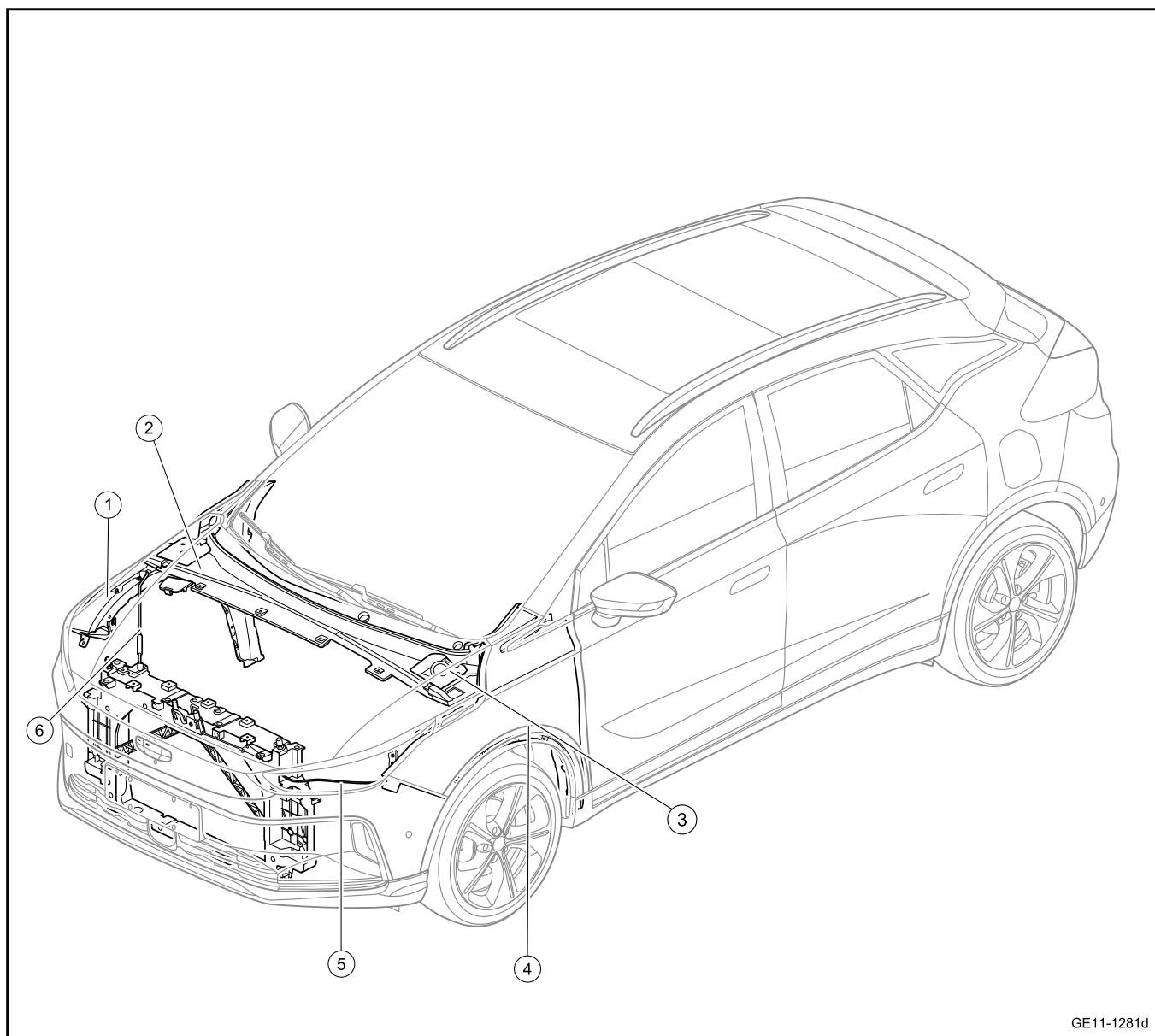
### 11.2.1 Specification

#### 11.2.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolt of the assembly of front engine compartment hood lock	M8	20 - 26	14.7 - 19.1
Fixing screw for opening cable of front engine compartment hood lock	ST4.8×20	3 - 5	2.2 - 3.7
Fixing bolt for support rod of front engine compartment hood	M6×12	8 - 10	5.9 - 7.4
Fixing nut for connecting left front fender to rear mounting bracket	M6	9 - 11	6.6 - 8.1
Fixing screws for connecting the left front fender to the left outer sill lower trim panel	ST4.8×14	1 - 2	0.7 - 1.5
Fixing screw for body connection above left front fender	ST5.5×13	1 - 2	0.7 - 1.5
Fixing bolts above the left front fender to connect with the body	M6×12	9 - 11	6.6 - 8.1
	M6×16	9 - 11	6.6 - 8.1
Fixing bolt for connecting left front fender to front bumper	M6×20	5 - 7	3.7 - 5.2
Retaining nut for connecting the front engine compartment hood assembly to the hinge assembly	M8	21 - 25	15.5 - 18.5
Fixing bolts for connecting left hinge assembly of front engine compartment hood with body	M8×20	20 - 26	14.8 - 19.2

11.2.2 Part location

11.2.2.1 Front end of the body



GE11-1281d

- |  |   |
|--|---|
| 1. Right fender                        | 4. Left fender                              |
| 2. Vent cover plate                    | 5. Front engine compartment hood lock cable |
| 3. Front engine compartment hood hinge | 6. Front engine compartment hood brace rod  |

### 11.2.3 Removal and installation

#### 11.2.3.1 Inward-opening cable with connecting wire assembly of front engine compartment

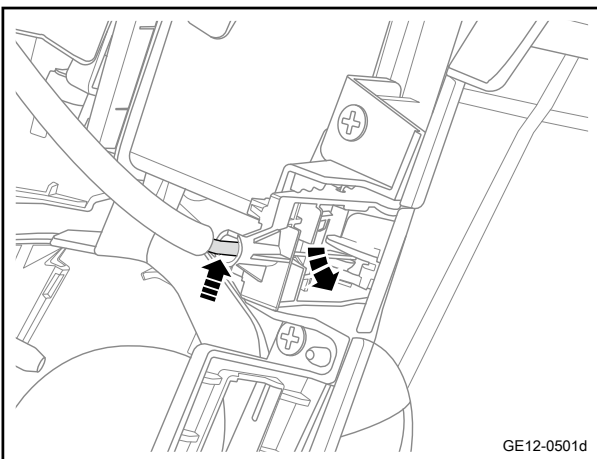
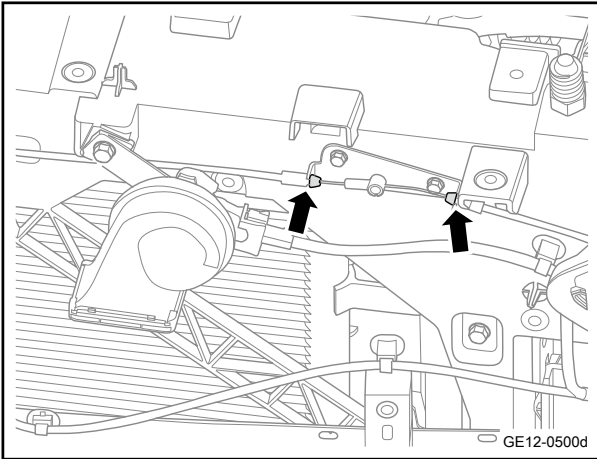
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

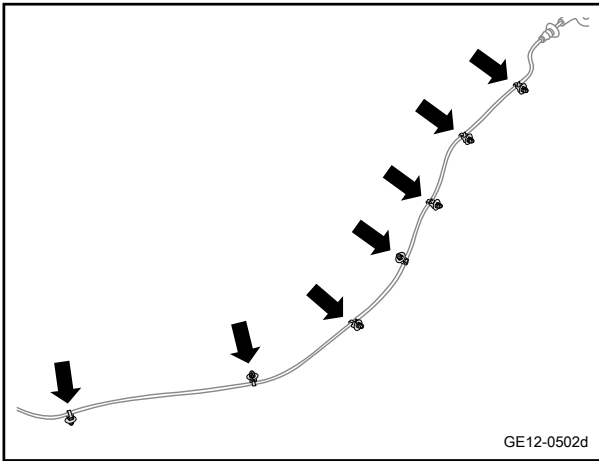
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front engine compartment hood lock assembly. See [Replacement of the front engine compartment hood lock assembly](#)
- 3 Remove the left front fender liner. Refer to [Replacement of front right fender liner](#)
- 4 Break the connection between the inward-opening cable with connecting wire assembly of front engine compartment and the fixing bracket.



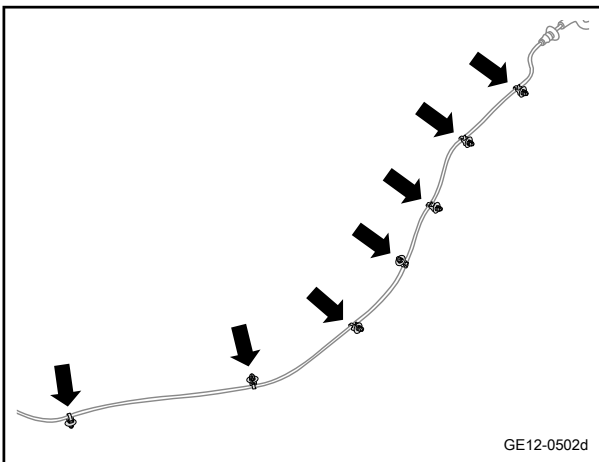
- 5 Break the connection between the inward-opening cable with connecting wire assembly of front engine compartment and the front engine compartment hood opening handle.



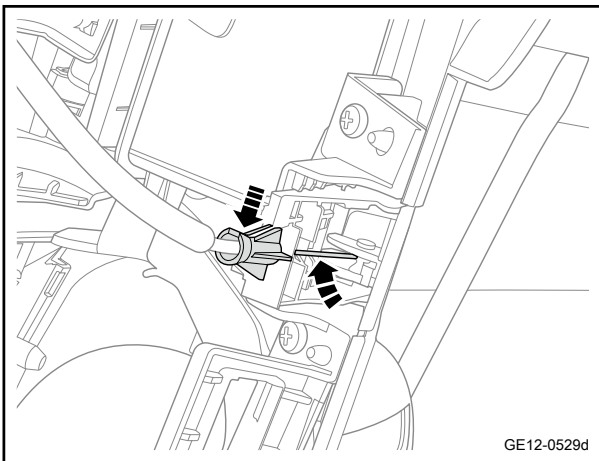


- 6 Disengage the fixing buckle of the cable assembly of the inward-opening cable with connecting wire assembly of front engine compartment.
- 7 Remove the inward-opening cable with connecting wire assembly of front engine compartment.

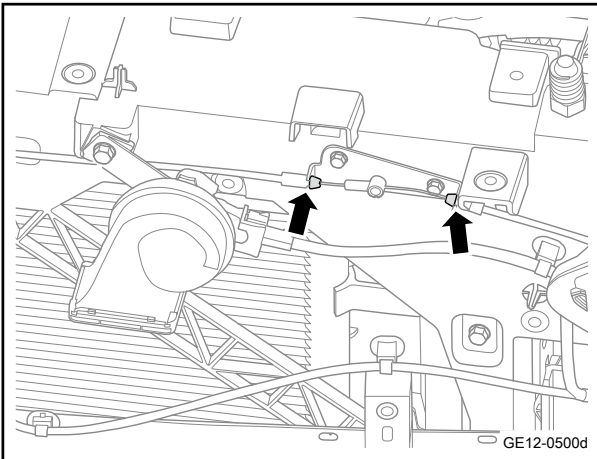
Installation procedure



- 1 Move the inward-opening cable with connecting wire assembly of front engine compartment to the installation position.
- 2 Install the fixing buckle of the inward-opening cable with connecting wire assembly of front engine compartment.



- 3 Connect the inward-opening cable with connecting wire assembly of front engine compartment with the front engine compartment hood opening handle.



- 4 Connect the inward-opening cable with connecting wire assembly of front engine compartment and the fixing bracket.

- 5 Install the left front fender liner.
- 6 Install the front cabin trim cover assembly.
- 7 Connect the negative cable of battery.

### 11.2.3.2 Replacement of front engine compartment hood lock assembly

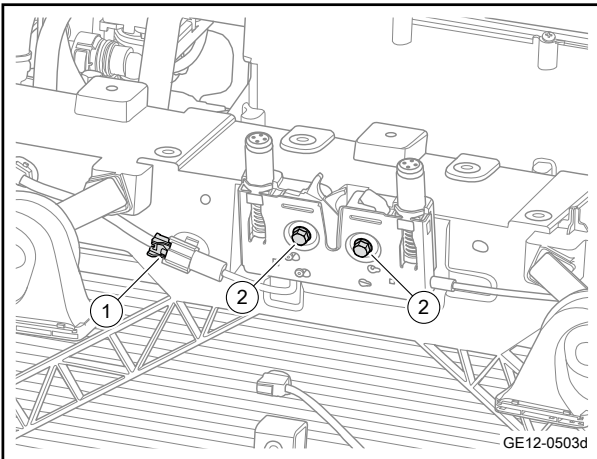
#### Removal procedure

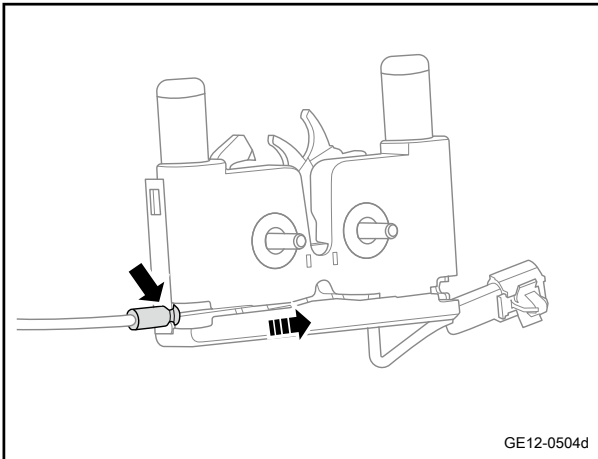
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

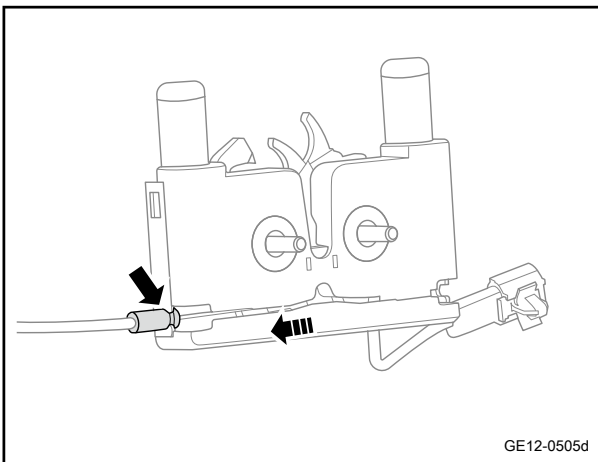
- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 3 Disconnect the harness connector 1 of front engine compartment lock assembly.
- 4 Remove the two fixing bolts 2 of the front engine compartment hood lock assembly.



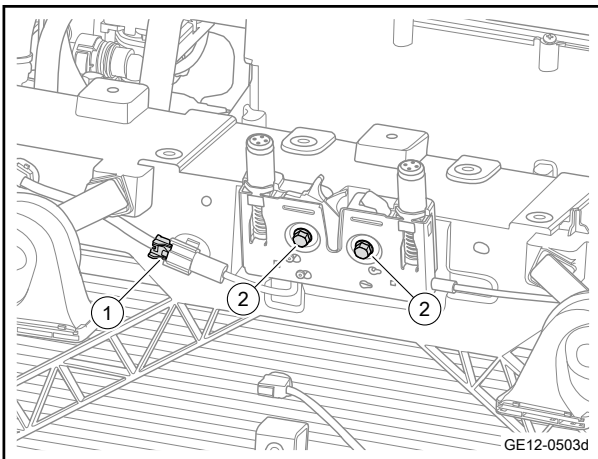


- 5 Disengage the front engine compartment hood lock opening cable connection wire.
- 6 Remove the front engine compartment hood lock assembly.

Installation procedure



- 1 Move the front engine compartment hood lock assembly to the installation position.
- 2 Connect the front engine compartment hood lock opening cable connection wire.

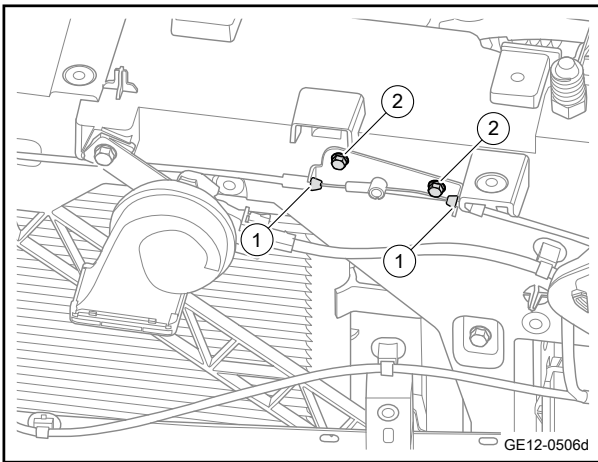


- 3 Install the 2 fixing bolts 2 of the front engine compartment hood lock assembly.  
Torque: 23N·m (metric) 16.9lb-ft (imperial system)
- 4 Connect the harness connector 1 of front engine compartment lock assembly.

- 5 Install the front cabin trim cover assembly.
- 6 Connect the negative cable of battery.

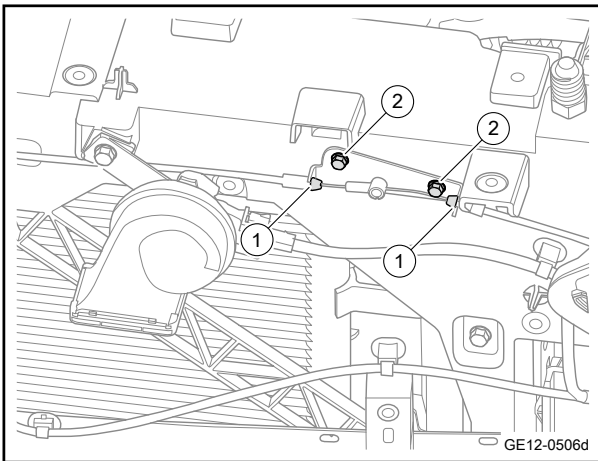
**11.2.3.3 Replacement of the fixing bracket of the front engine compartment hood lock opening cable**

Removal procedure



- 1 Open the front engine compartment hood.
- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Disengage the front engine compartment hood lock opening cable 1.
- 4 Remove the 2 fixing screws 2 of the fixing bracket of the front engine compartment hood lock opening cable.
- 5 Remove the fixing bracket of the front engine compartment hood lock opening cable.

#### Installation procedure



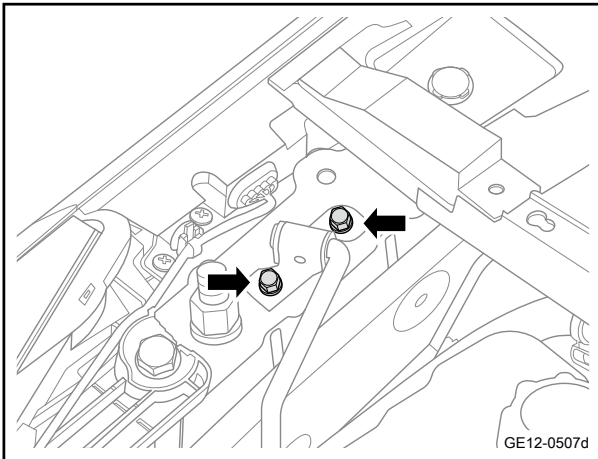
- 1 Move the fixing bracket of the front engine compartment hood lock opening cable to the installation position.
- 2 Install the 2 fixing screws 2 of the fixing bracket of the front engine compartment hood lock opening cable.  
Torque: 4N·m (metric) 3lb-ft (imperial system)
- 3 Connect the front engine compartment hood lock opening cable 1.

- 4 Install the front bumper assembly.
- 5 Close the front engine compartment hood.

#### 11.2.3.4 Replacement of front engine compartment hood support rod assembly

##### Removal procedure

- 1 Open the front engine compartment hood.
- 2 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)



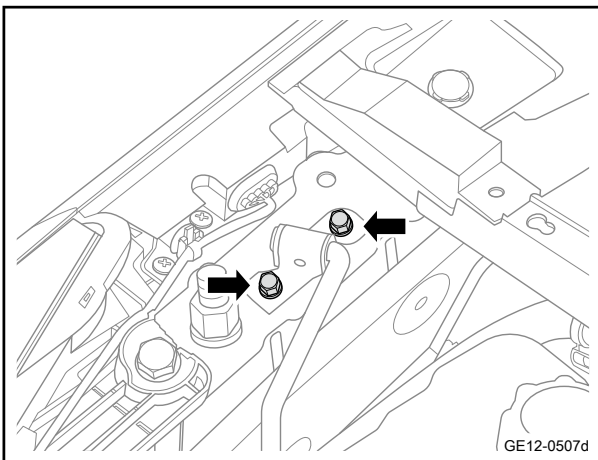
- 3 Remove the 2 fixing bolts of the front engine compartment hood support rod assembly.

#### Caution

Let the assistant support the front engine compartment hood before disassembly.

- 4 Remove the front engine compartment hood support rod assembly.

#### Installation procedure



- 1 Move the front engine compartment hood support rod assembly to the installation position.
- 2 Install the 2 fixing bolts of the front engine compartment hood support rod assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the front cabin trim cover assembly.
- 4 Close the front engine compartment hood.

### 11.2.3.5 Replacement of the left front fender

#### Removal procedure

#### Note

The replacement method is the same for the left and right sides.

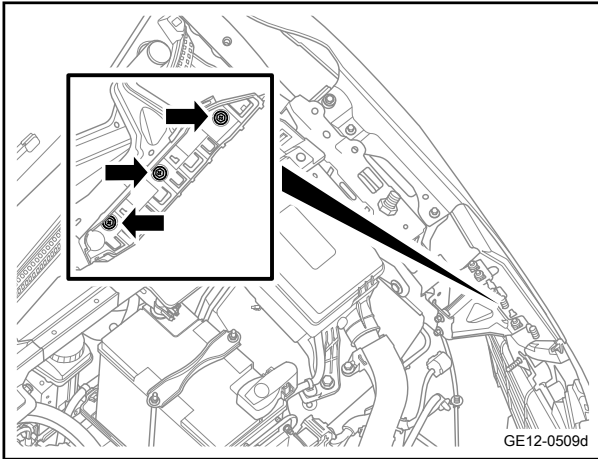
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

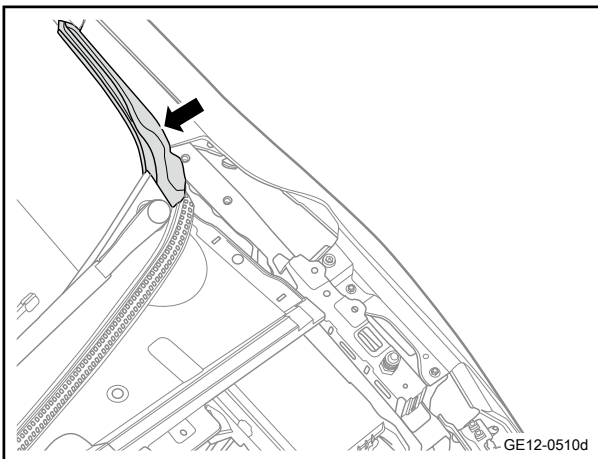
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the left front wheel fender flare assembly. See [Replacement of left front wheel fender flare assembly](#)

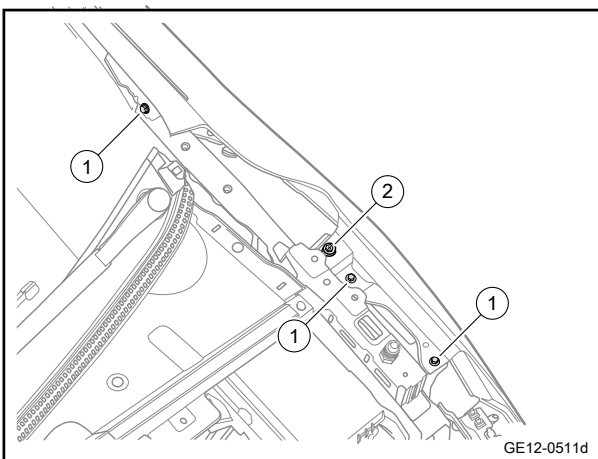
- 4 Remove the left front fender liner. Refer to [Replacement of front right fender liner](#)
- 5 Remove the left front combination lamps assembly. Refer to [Replacement of the left front combination lamps assembly](#)
- 6 Remove the 3 fixing bolts connecting the left front fender and the front bumper.

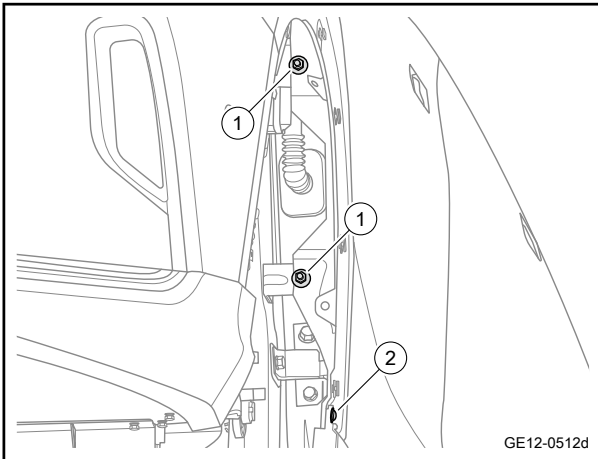


- 7 Remove the left corner trim of the ventilation cover plate.



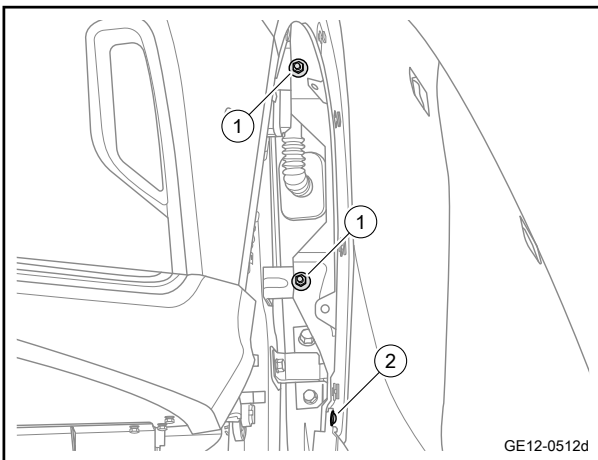
- 8 Remove the 3 fixing bolts 1 connecting the left front fender and the body.
- 9 Remove the 1 fixing screw 2 connecting the left front fender and the body.



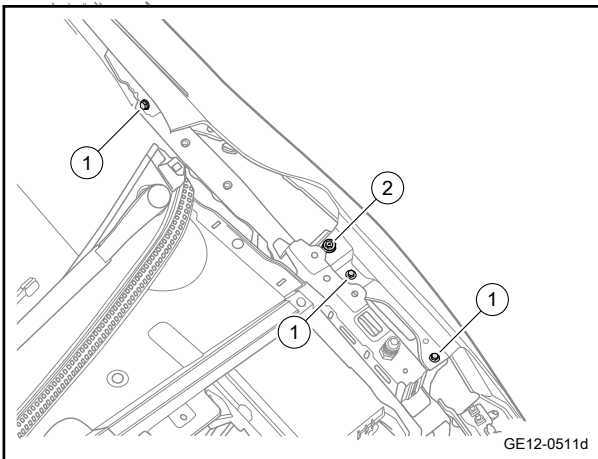


- 10 Remove the two fixing nuts 1 connecting the left front fender and the rear mounting bracket.
- 11 Remove the 1 fixing screw 2 connecting the left front fender and the lower trim panel of the left outer door sill.
- 12 Take off the front left fender.

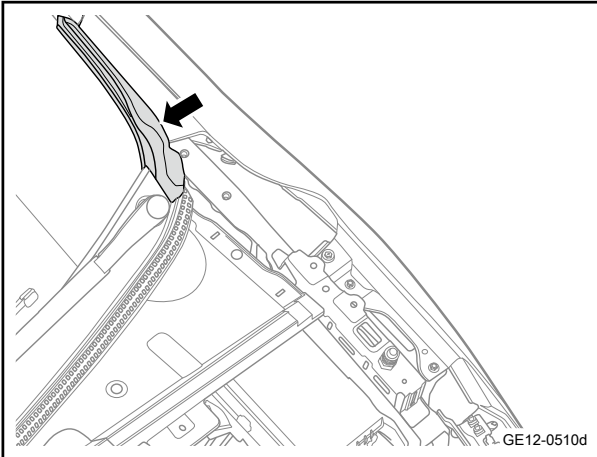
Installation procedure



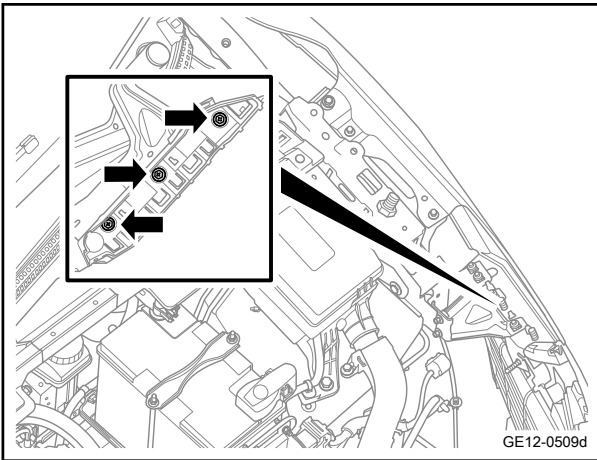
- 1 Move the left front fender to the installation position.
- 2 Install a fixing screw 2 connecting the left front fender and the lower trim panel of the left outer door sill.  
Torque: 1.5N.m (metric) 1.1lb-ft (imperial system)
- 3 Install the two fixing nuts 1 connecting the left front fender and the rear mounting bracket.  
Torque: 10N.m (metric) 7.4lb-ft (imperial system)



- 4 Install a fixing screw 2 connecting the left front fender and the body.  
Torque: 1.5N.m (metric) 1.1lb-ft (imperial system)
- 5 Install the three fixing bolts 1 connecting the left front fender and the body.  
Torque: 10N.m (metric) 7.4lb-ft (imperial system)



- 6 Install the left corner trim of the ventilation cover plate.



- 7 Install the 3 fixing bolts connecting the left front fender and the front bumper.

Torque: 6N.m (metric) 4.4lb-ft (imperial system)

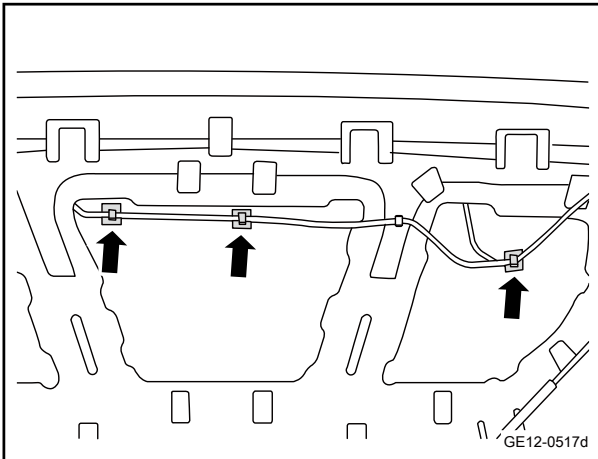
- 8 Install the left front combination lamp assembly.
- 9 Install the left front fender liner.
- 10 Install the front left wheel fender flare assembly.
- 11 Lower the vehicle.
- 12 Connect the negative cable of battery.

### 11.2.3.6 Replacement of front engine compartment hood assembly

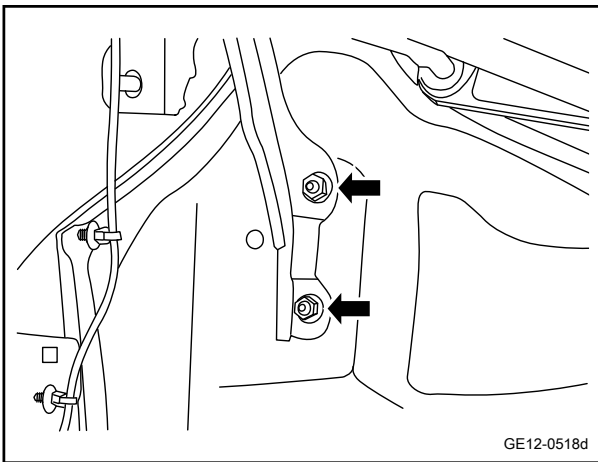
#### Removal procedure

- 1 Open the front engine compartment hood.
- 2 Remove the front washer nozzle assembly. Refer to [Replacement of front washer nozzle assembly](#)





- 3 Disconnect the washer hose on the front engine compartment hood assembly.



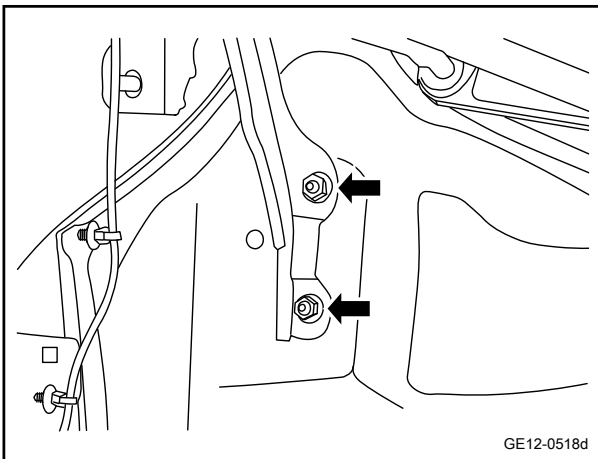
- 4 Remove the 2 fixing nuts connecting the front engine compartment hood assembly and the left and right hinge assemblies.

**Caution**

An assistant is required to support the front engine compartment hood.

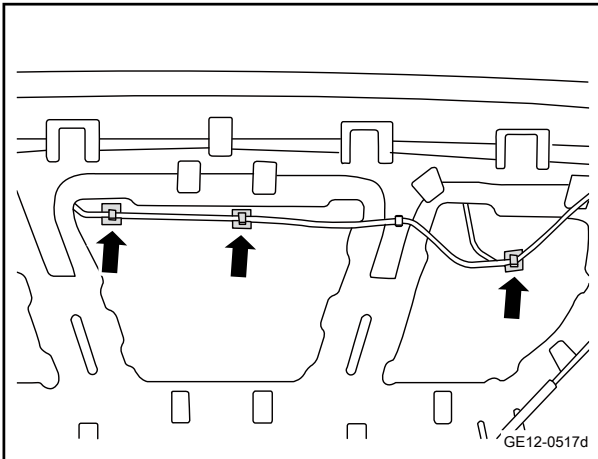
- 5 Remove the front engine compartment hood assembly.

Installation procedure



- 1 Move the front engine compartment hood to the installation position.
- 2 Install the 2 fixing nuts connecting the front engine compartment hood assembly and the left and right hinge assemblies.

Torque: 23N·m (metric) 17lb·ft (imperial system)



- 3 Install the washer hose on the front engine compartment hood assembly.

- 4 Install the front washer nozzle assembly.
- 5 Close the front engine compartment hood.

### 11.2.3.7 Replacement of the left hinge assembly of the front engine compartment hood

#### Removal procedure

##### Note

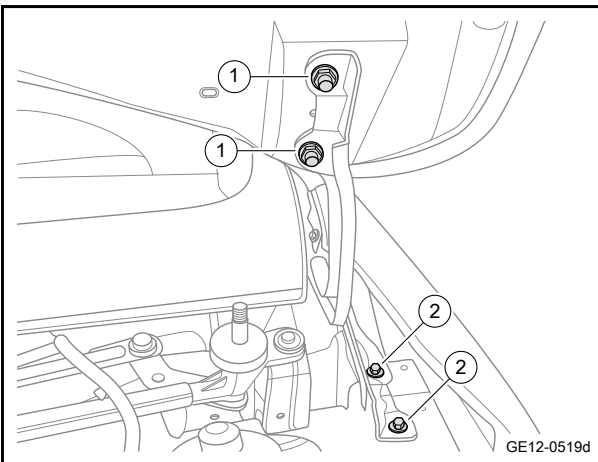
The replacement method is the same for the left and right sides.

- 1 Open the front engine compartment hood.
- 2 Remove the trim plate on the left fender. See [Replacement of the decorative plate on the left fender](#)
- 3 Remove the 2 fixing nuts connecting the front engine compartment hood left hinge assembly and the front engine compartment hood.

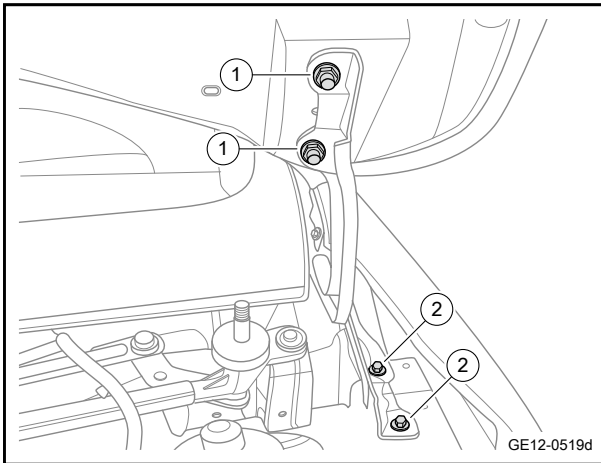
##### Caution

An assistant is required to support the front engine compartment hood.

- 4 Remove the 2 fixing bolts 2 connecting the left hinge assembly of the front engine compartment hood with the vehicle body.
- 5 Remove the left hinge assembly of the front engine compartment hood.



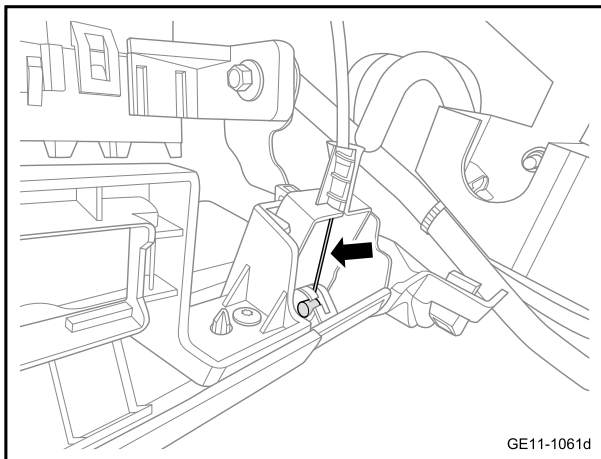
#### Installation procedure



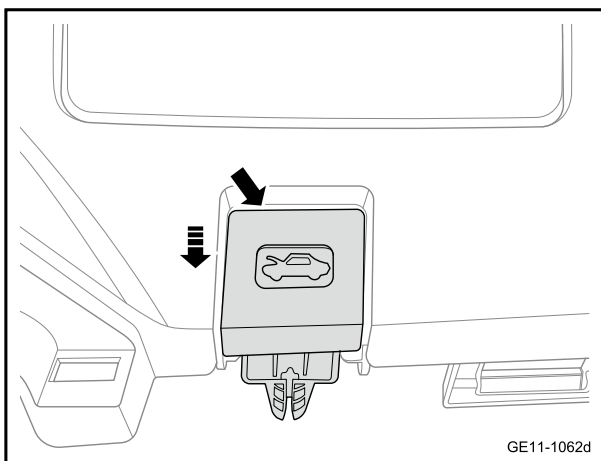
- 1 Move the left hinge assembly of the front engine compartment hood to the installation position.
- 2 Install the 2 fixing bolts 2 connecting the left hinge assembly of the front engine compartment hood with the vehicle body.  
Torque: 23N·m (metric) 17lb-ft (imperial system)
- 3 Install the 2 fixing nuts connecting the front engine compartment hood left hinge assembly and the front engine compartment hood.  
Torque: 23N·m (metric) 17lb-ft (imperial system)
- 4 Install the trim panel on the left fender.
- 5 Close the front engine compartment hood.

### 11.2.3.8 Replacement of the front engine compartment hood opening handle

#### Removal procedure

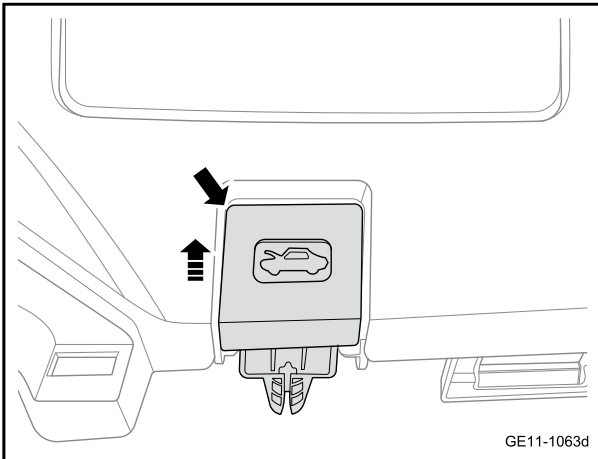


- 1 Disconnect the front engine compartment hood lock cable from the front engine compartment hood opening handle.

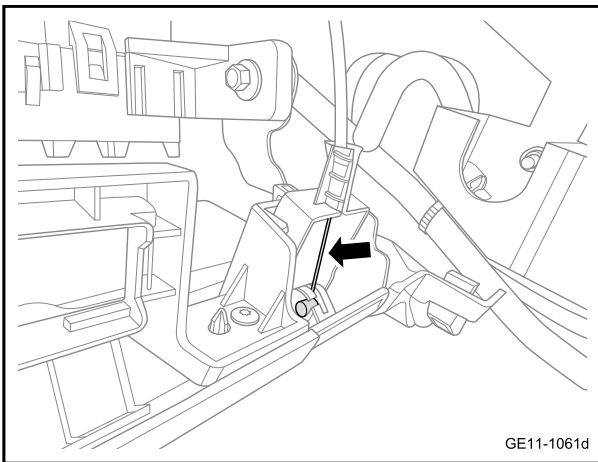


- 2 Pry down the front engine compartment hood opening handle.

#### Installation procedure



- 1 Install the front engine compartment hood opening handle to the lower left guard plate of the instrument panel.



- 2 Connect the front engine compartment hood lock cable with the front engine compartment hood opening handle.

## 11.3 Rear end of body

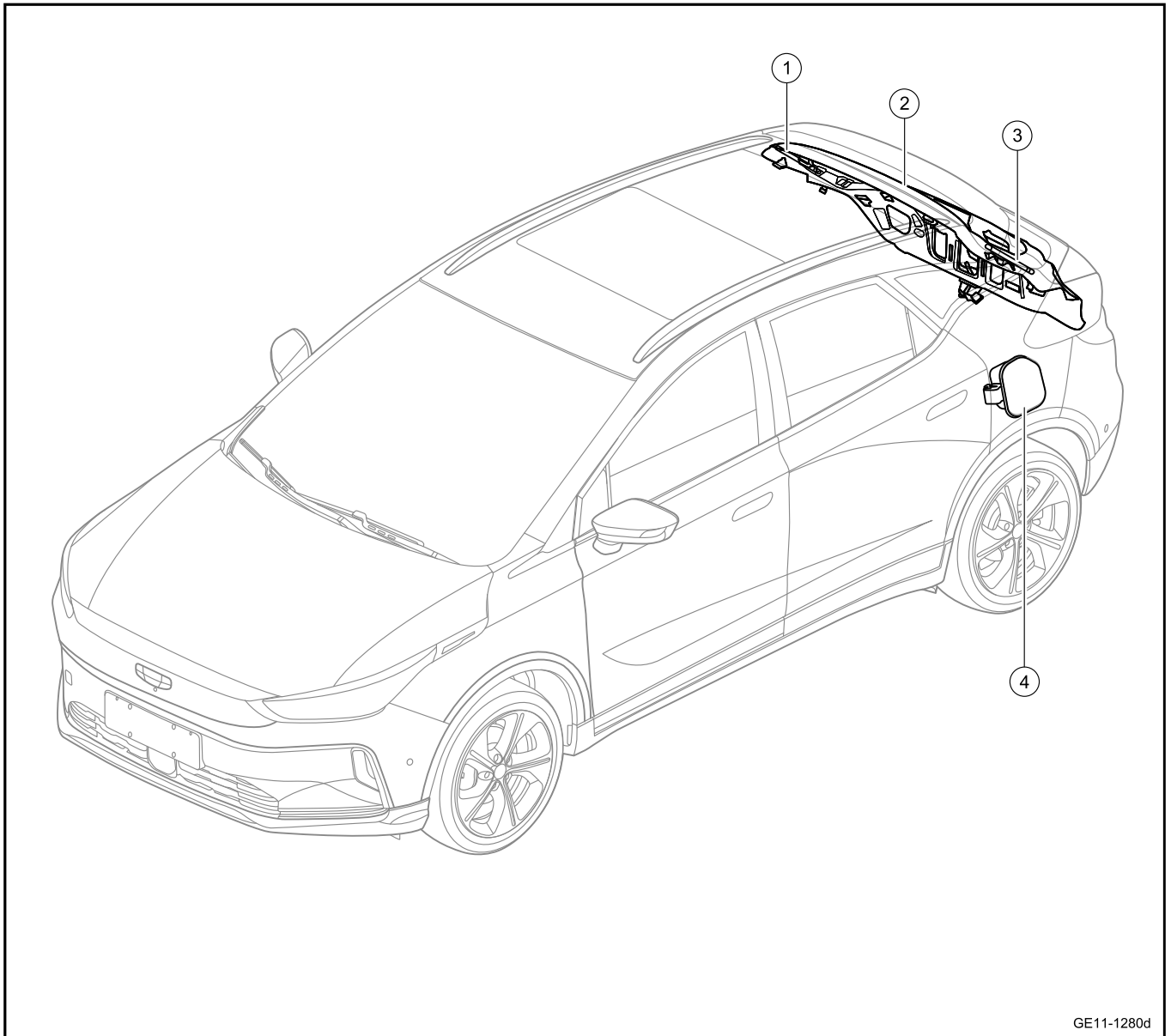
### 11.3.1 Specification

#### 11.3.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts for hinge connection between back door assembly and back door	M8×20	20 - 26	14.8 - 19.2

### 11.3.2 Part location

#### 11.3.2.1 Rear end of body



1. Back door right air spring assembly

2. Back door assembly

3. Back door left air spring assembly

4. Charging port cover assembly

### 11.3.3 Removal and installation

#### 11.3.3.1 Replacement of back door assembly

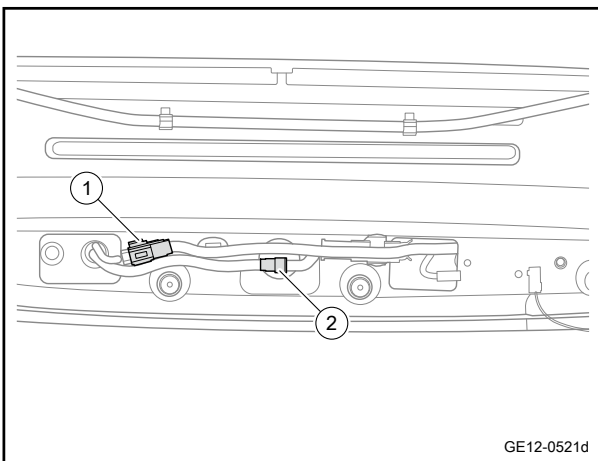
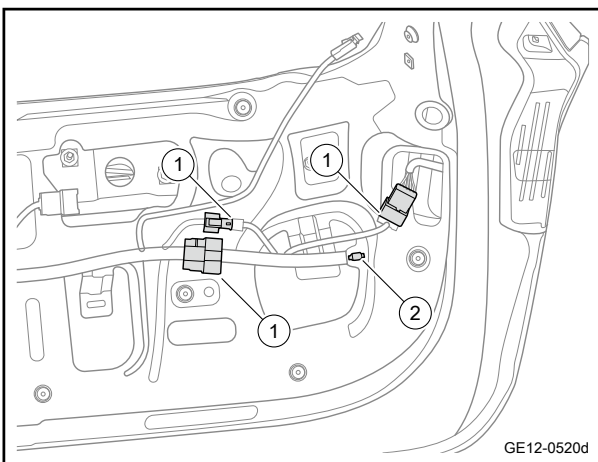
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

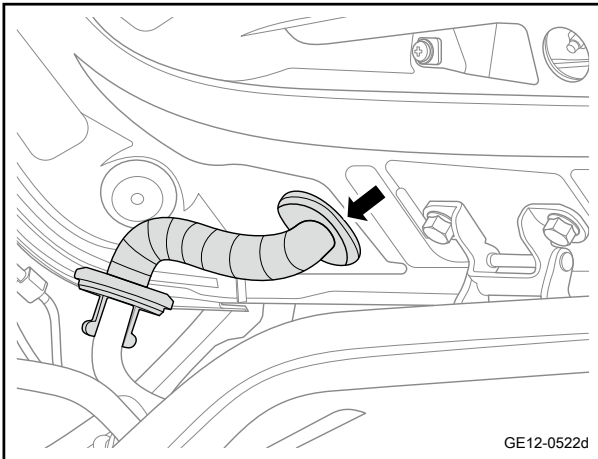
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

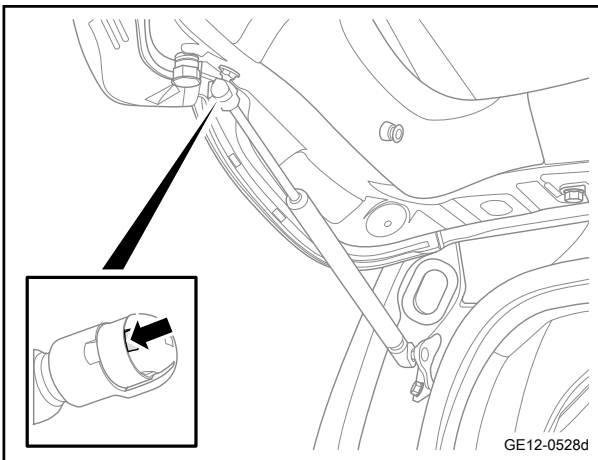
- 2 Remove the inner lower trim panel assembly of the back door. See [Replacement of the inner lower trim panel assembly of the back door](#)
- 3 Disconnect the harness connector 1 of the tail gate.
- 4 Disengage the retaining clip 2 of tail gate harness connector.



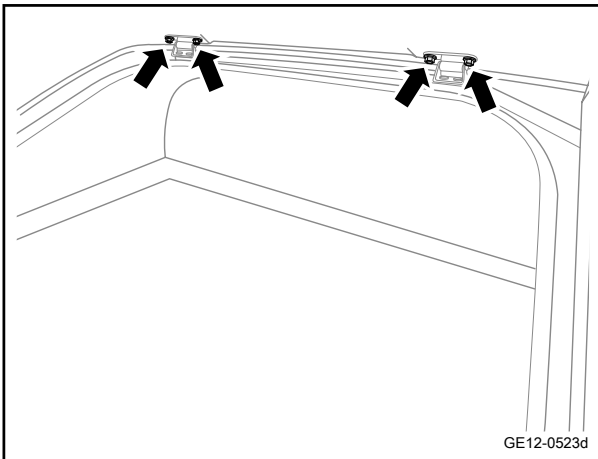
- 5 Disconnect the high mounted brake lamp harness connector 1.
- 6 Break the connection between the rear washer nozzle assembly and the rear washer hose 2.



- 7 Pull the back door harness out of the back door.



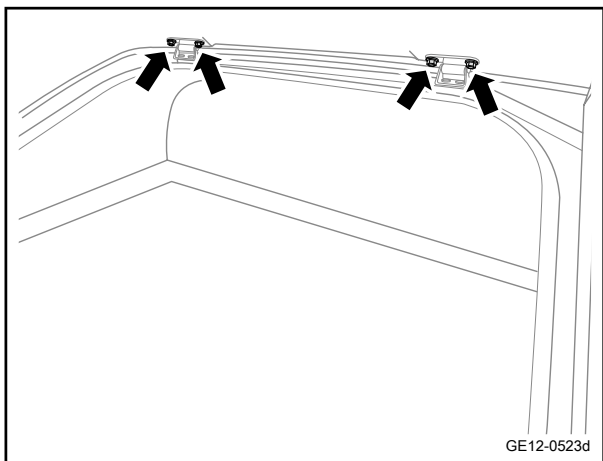
- 8 Use a straight screwdriver to remove the upper jump spring of the left and right air spring assemblies of the back door, and disconnect the left and right air spring assemblies from the back door assembly.



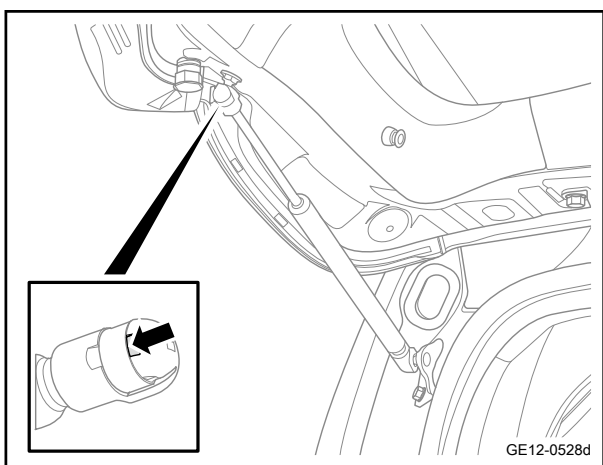
- 9 Remove the 4 fixing bolts connecting the back door assembly and the back door hinge.
- 10 Remove the backdoor assembly.

Installation procedure

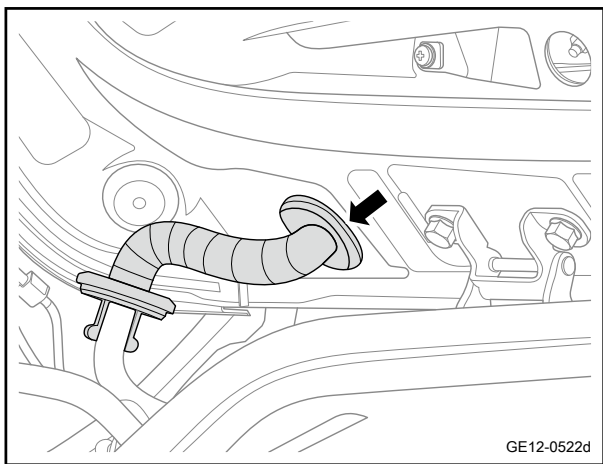




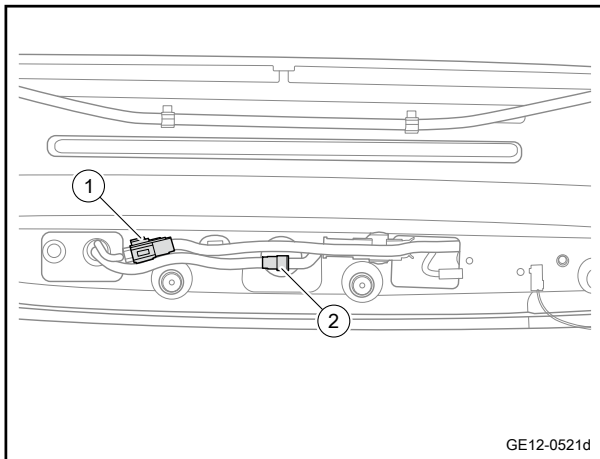
- 1 Move the rear door assembly to the installation position.
- 2 Install the 4 fixing bolts connecting the back door assembly and the back door hinge.  
Torque: 23N·m (metric) 17lb·ft (imperial system)



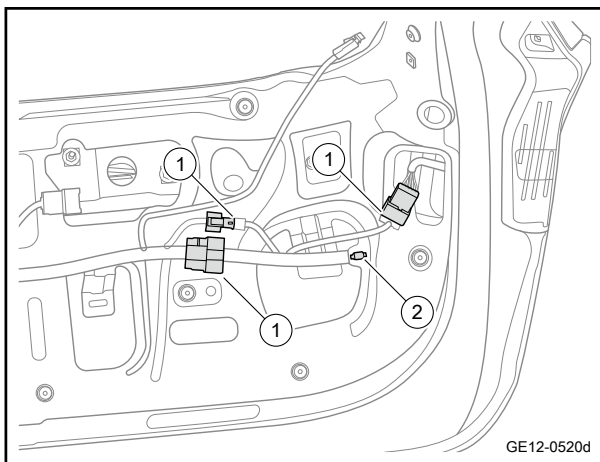
- 3 Connect the left and right air spring assembly and the back door assembly, and install the upper jump spring of the left and right gas spring assemblies of the back door.



- 4 Move the rear door harness to the installation position.



- 5 Connect the rear washer nozzle assembly to the rear washer hose 2.
- 6 Connect high mount brake lamp harness connector 1.



- 7 Install the tailgate harness to connect the fixed buckle 2.
- 8 Connect the harness connector 1 of tail gate.

- 9 Install the lower trim panel assembly of the backdoor.
- 10 Connect the negative cable of battery.

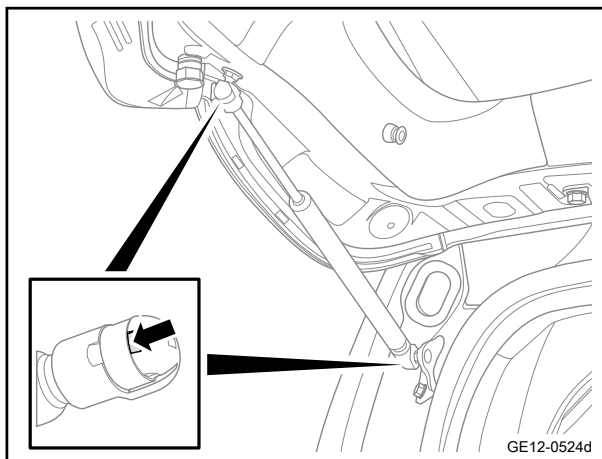
### 11.3.3.2 Replacement of the left air spring assembly of the back door

#### Removal procedure

##### Note

The replacement method is the same for the left and right sides.

- 1 Open the backdoor.



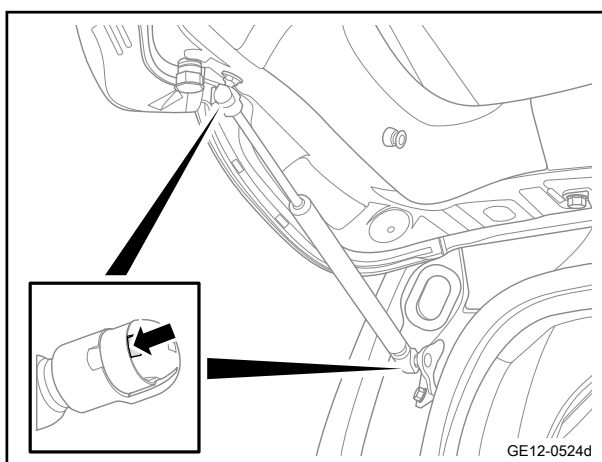
- 2 Use a straight screwdriver to remove the jump springs at both ends of the left air spring assembly of the back door.

**Caution**

An assistant is required to support the back door.

- 3 Remove the left air spring assembly of the back door.

Installation procedure

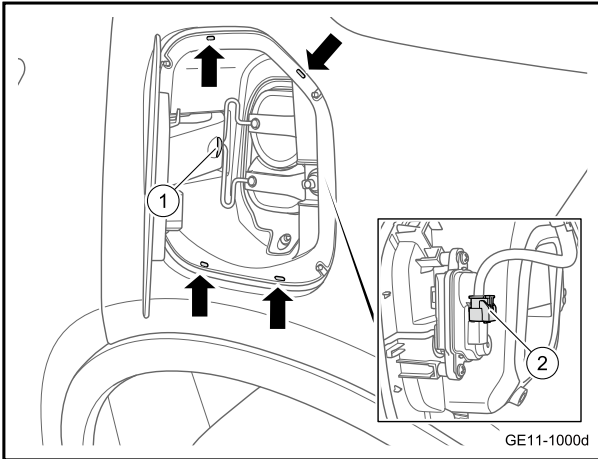


- 1 Move the left air spring assembly of the back door to the installation position.
- 2 Install the jump springs at both ends of the left air spring assembly of the back door.

- 3 Close the backdoor.

**11.3.3.3 Replacement of charging port cover assembly**

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Open the charging port cover.
- 3 Remove the charging port cover assembly and the fixing buckle 1 of the inner plug cap of the charging port.
- 4 Use a flat screwdriver to pry off the charging port cover assembly.

#### Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.

- 5 Disconnect 1 harness connector 2 of the charging port cover assembly.
- 6 Remove the charging port cover assembly.

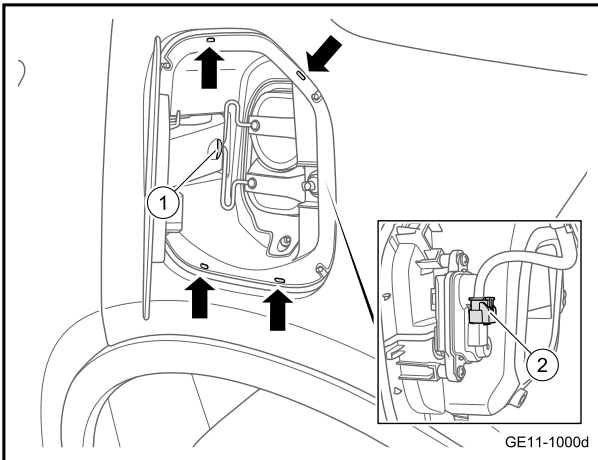
#### Installation procedure

- 1 Move the charging port cover assembly to the installation position.
- 2 Connect 1 harness connector 2 of the charging port cover assembly.

#### Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

- 3 Install the charging port cover assembly.
- 4 Install the charging port cover assembly and a fixing buckle 1 of the inner plug cap of the charging port.
- 5 Close the charging port cover.
- 6 Connect the negative cable of battery.



## 11.4 bumper

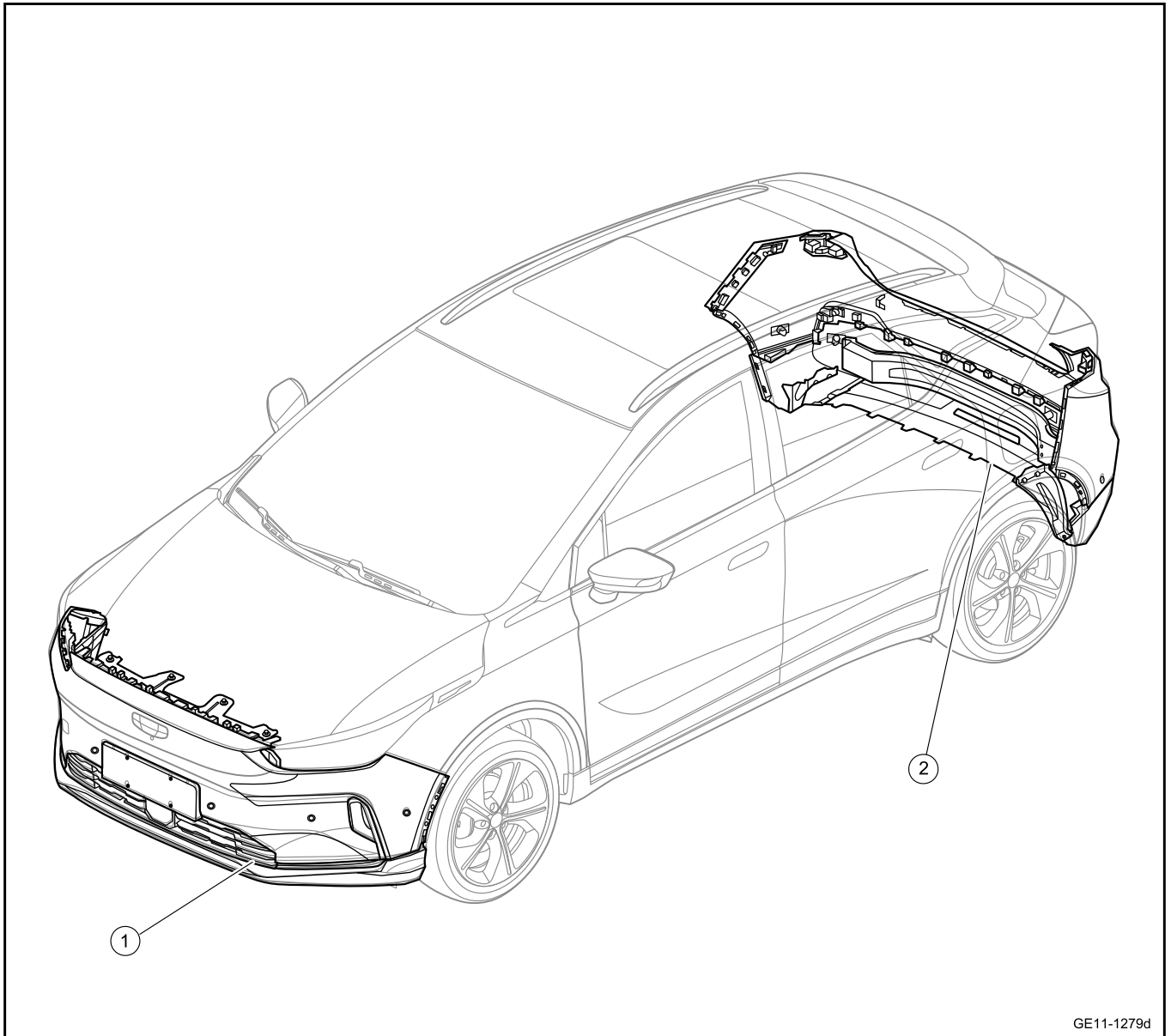
### 11.4.1 Specification

#### 11.4.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Upper fixing bolt of the front bumper assembly	M6×20	8 - 10	5.9 - 7.4
Upper fixing screw of front bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Left and right fixing screws of Front bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Fixing screw at the bottom of rear bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Fixing bolt of leg protection bracket for pedestrian	M6×35	8 - 10	5.9 - 7.4
Front bumper left mounting bracket fixing bolt	M6×35	5 - 7	3.7 - 5.2
Upper left and right fixing screws of rear bumper assembly	ST4.8×11	1 - 2	0.7 - 1.5
Fixing screw of the bottom of rear bumper	ST4.8×11	1 - 2	0.7 - 1.5
Fixing screws for rear bumper and left and right side mounting bracket	ST4.8×11	1 - 2	0.7 - 1.5
Fixing bolt connecting the rear bumper and body mounting bracket	M6×20	5 - 7	3.7 - 5.2
Left and right fixing bolts for front collision beam assembly	M10×40	55 - 75	40.6 - 55.4
Left and right fixing nuts for rear impact beam assembly	M10	20 - 26	14.8 - 19.2
Front bumper supporting bracket fixing bolt	M8×16	1 - 2	0.7 - 1.5

11.4.2 Part location

11.4.2.1 Part Position



GE11-1279d

1. Front bumper assembly

2. Rear bumper assembly.

### 11.4.3 Removal and installation

#### 11.4.3.1 Replacement of front bumper assembly

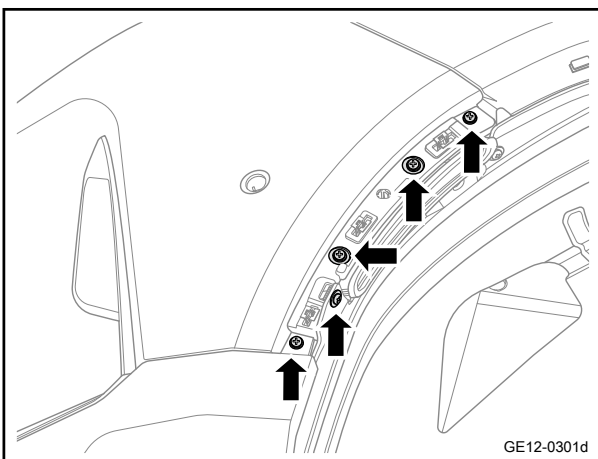
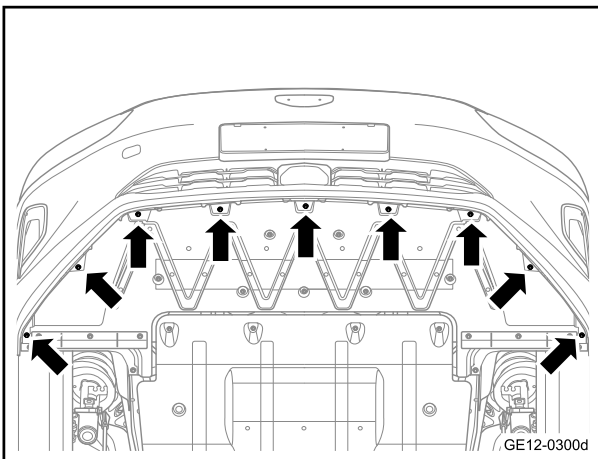
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

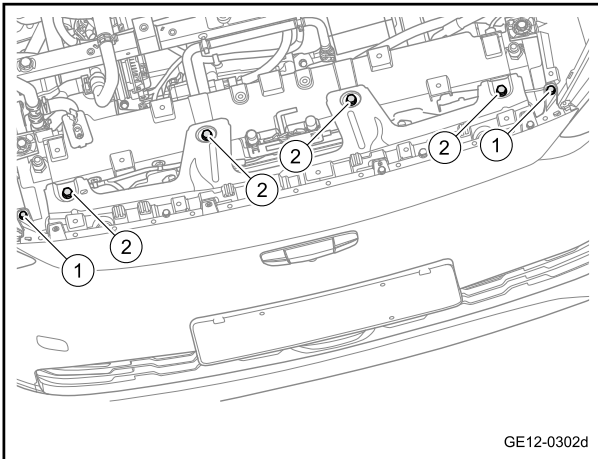
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

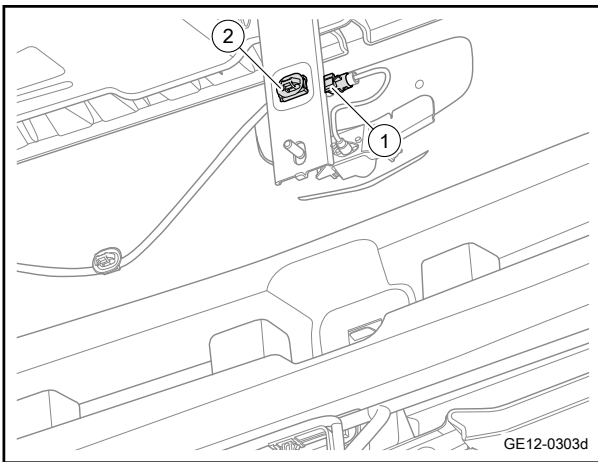
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the front cabin trim cover assembly. See [Replacement of the Front Cabin Trim Cover Assembly](#)
- 4 Remove the left and right front wheel fender flare assemblies. See [Removal of left front wheel fender flare assembly](#)
- 5 Remove the 9 fixing screws at the bottom of the front bumper assembly.



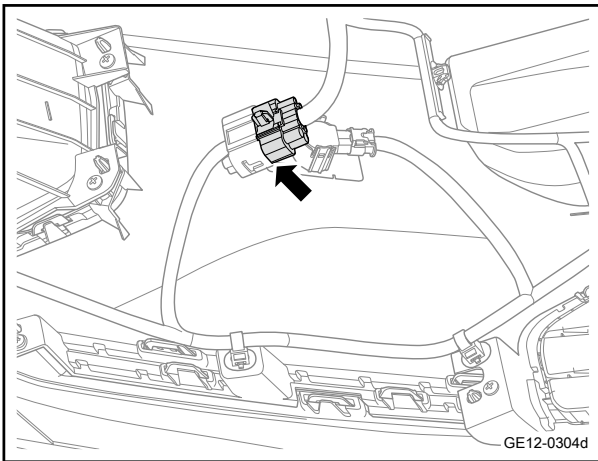
- 6 Remove the 5 fixing screws on the left and right sides of the front bumper assembly.



- 7 Remove the 2 fixing screws 1 on the upper part of the front bumper assembly.
- 8 Remove the 4 fixing screws 2 on the upper part of the front bumper assembly.



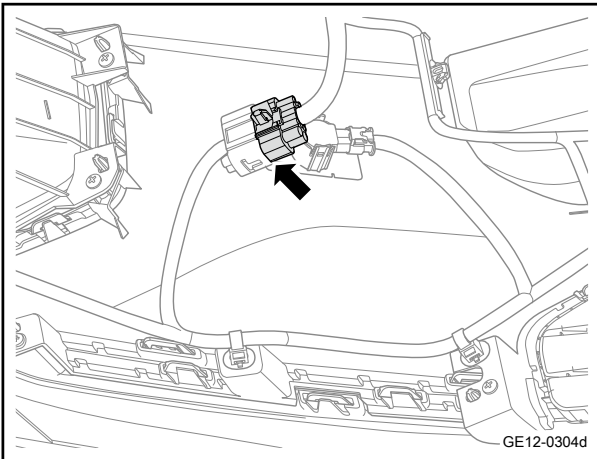
- 9 Disconnect the front camera harness connector 1
- 10 Disengage the 1 harness buckle 2 of the front camera.



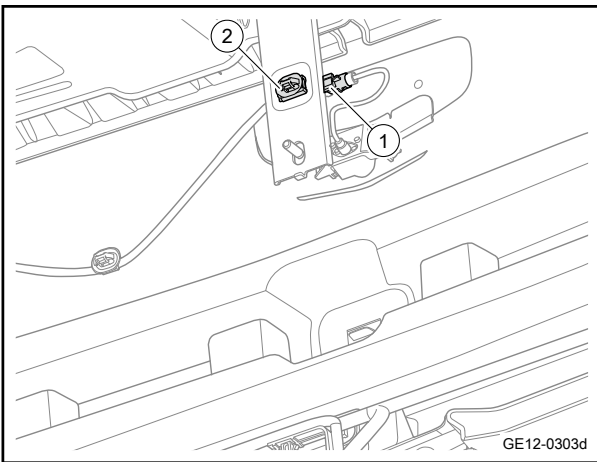
- 11 Disconnect the front bumper assembly wire harness connector.
- 12 Remove the front bumper assembly.

Installation procedure

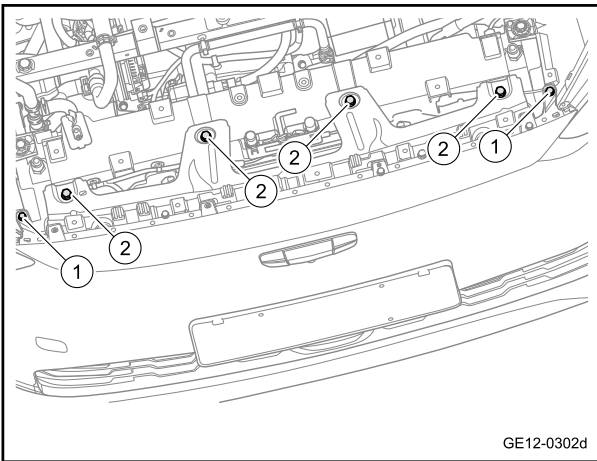




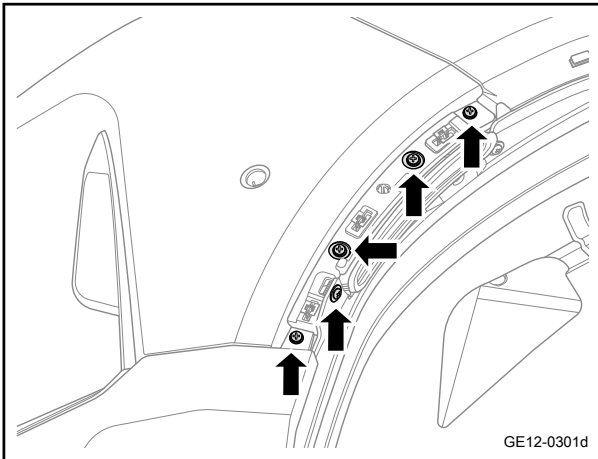
- 1 Move the front bumper assembly to the installation position.
- 2 Connect the wiring harness connector of the front bumper assembly.



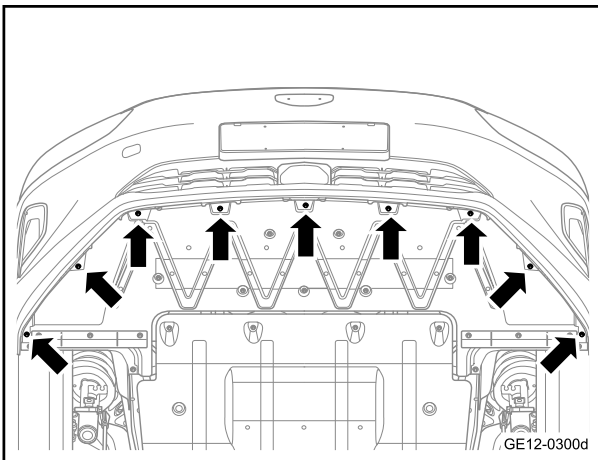
- 3 Install the 1 harness buckle 2 of the front camera.
- 4 Connect the front camera harness connector 1.



- 5 Install the 4 fixing bolts 2 on the upper part of the front bumper assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 6 Install the 2 fixing screws 1 on the upper part of the front bumper assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 7 Install 5 fixing screws on each of the left and right sides of the front bumper assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 8 Install the 9 fixing screws at the bottom of the front bumper assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 9 Install the left and right front wheel fender flare assembly.
- 10 Install the front cabin trim cover assembly.
- 11 Lower the vehicle.
- 12 Connect the negative cable of battery.

### 11.4.3.2 Replacement of the leg protection bracket for pedestrians

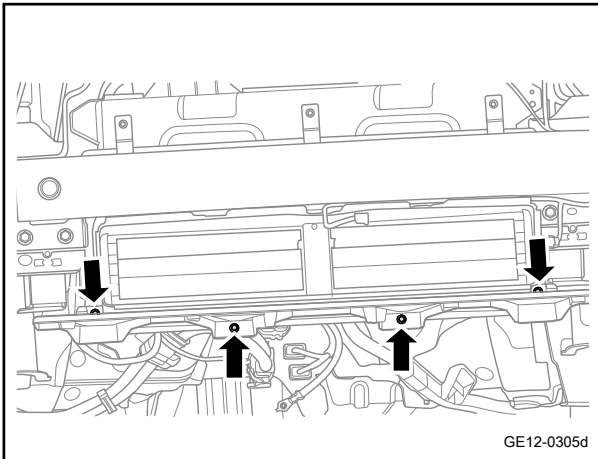
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

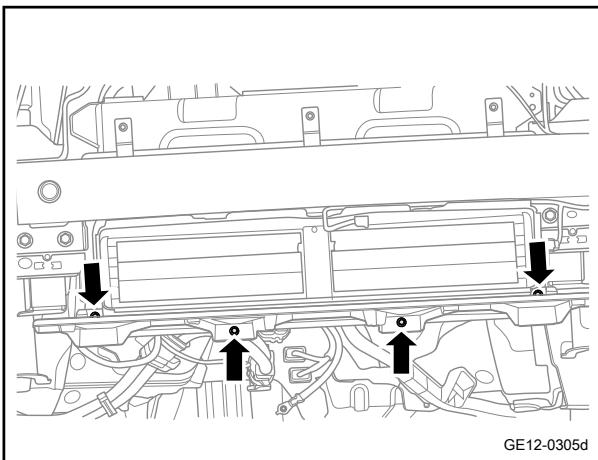
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 4 Remove the front engine compartment bottom guard plate assembly. See [Replacement of front engine compartment bottom guard plate assembly](#)



- 5 Remove the 4 fixing bolts for leg protection bracket for pedestrians.
- 6 Remove the pedestrian leg protection bracket.

#### Installation procedure



- 1 Move the pedestrian shin protection bracket to the installation position.
- 2 Install 4 fixing bolts of the leg protection bracket for pedestrians.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the front engine compartment bottom guard plate assembly.
- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

#### 11.4.3.3 Replacement of front bumper buffer block

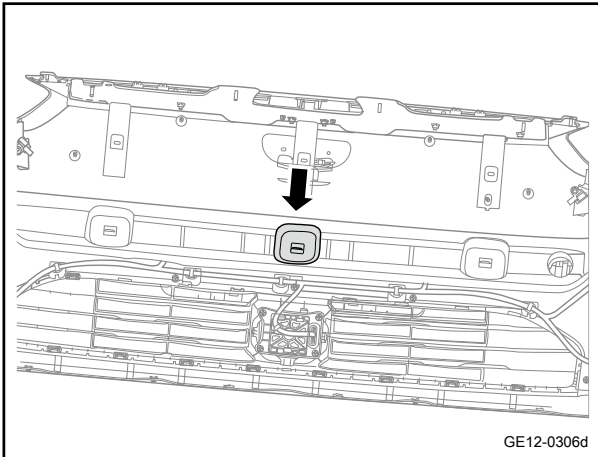
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

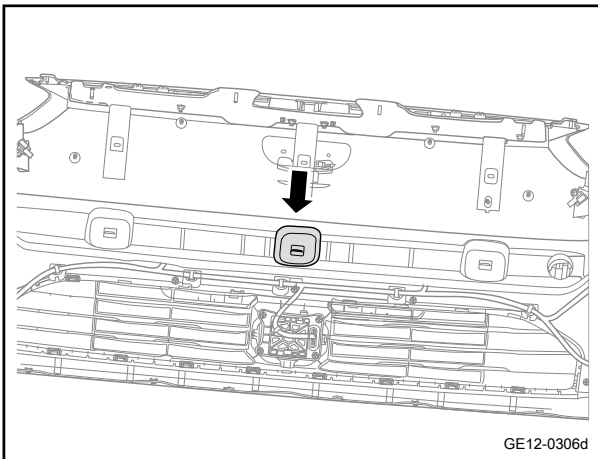
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)



- 3 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 4 Pry off the buffer block of the front bumper.



#### Installation procedure

- 1 Move the front bumper buffer block to the installation position.
- 2 Install the buffer block of the front bumper.

- 3 Install the front bumper assembly.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

#### 11.4.3.4 Replacement of the left mounting bracket of the front bumper

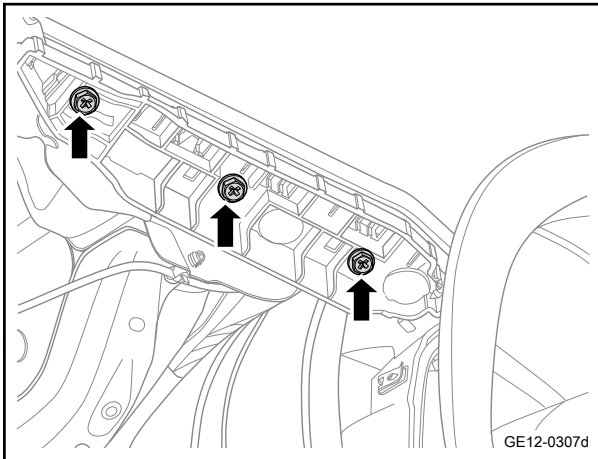
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

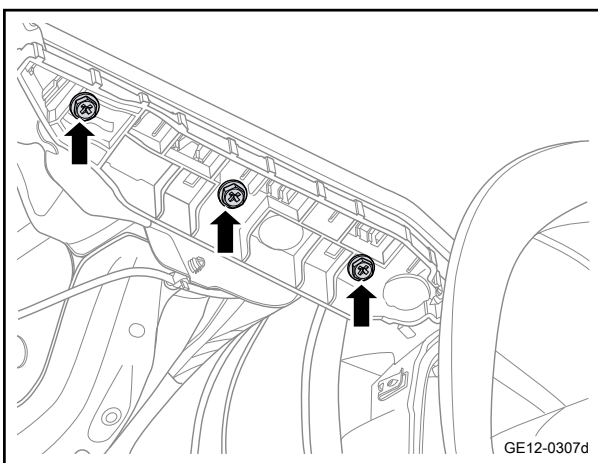
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)



- 4 Remove the 3 fixing bolts of the left mounting bracket of the front bumper.
- 5 Remove the left mounting bracket of front bumper.



#### Installation procedure

- 1 Move the left mounting bracket of the front bumper to the mounting position.
- 2 Install 3 fixing bolts of the left mounting bracket of the front bumper.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 3 Install the front bumper assembly.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

### 11.4.3.5 Replacement of Rear Bumper

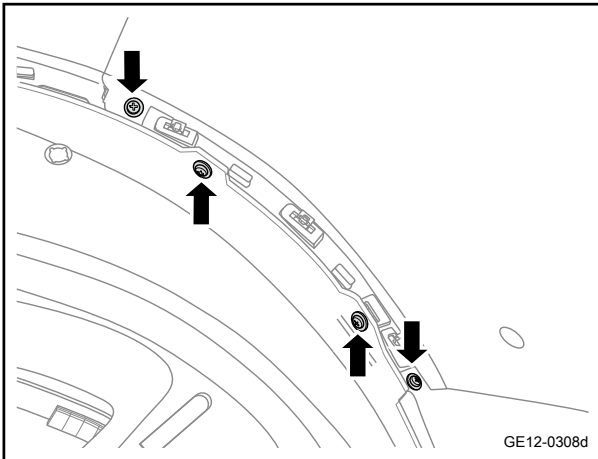
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

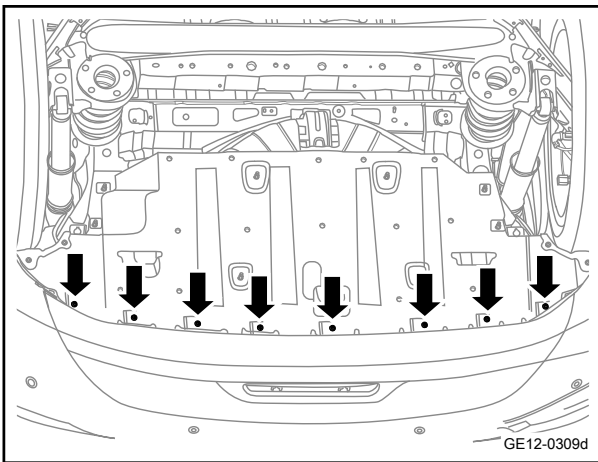
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

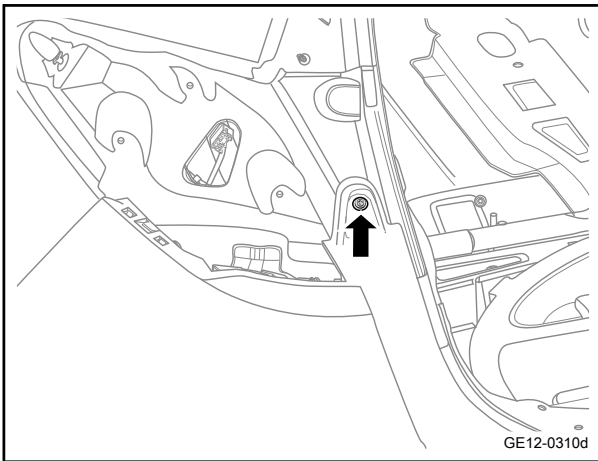
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Disassemble the left and right rear wheel fender flare assembly. Refer to [Replacement of the left rear wheel fender flare assembly](#)
- 4 Remove the left and right rear wall body combination lamps. Refer to [Replacement of rear left wall combination lamp](#)



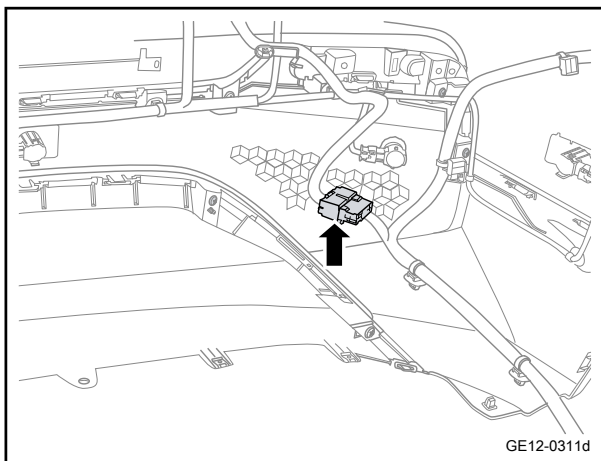
- 5 Remove the 4 fixing screws on each of the left and right sides of the rear bumper



- 6 Remove 8 fixing screws on the bottom of the rear bumper.

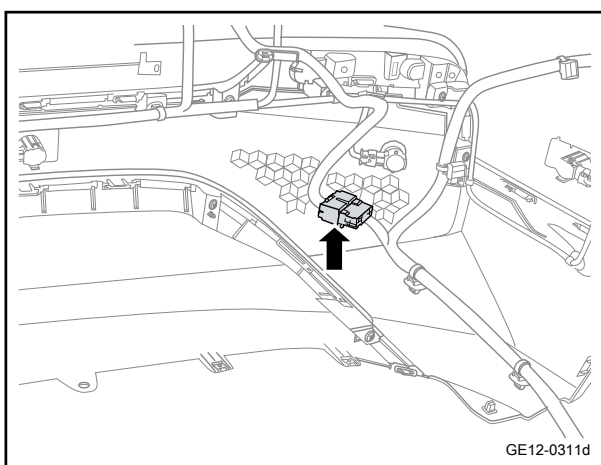


- 7 Remove 1 fixing screw on each of the left and right of the upper part of the rear bumper assembly.

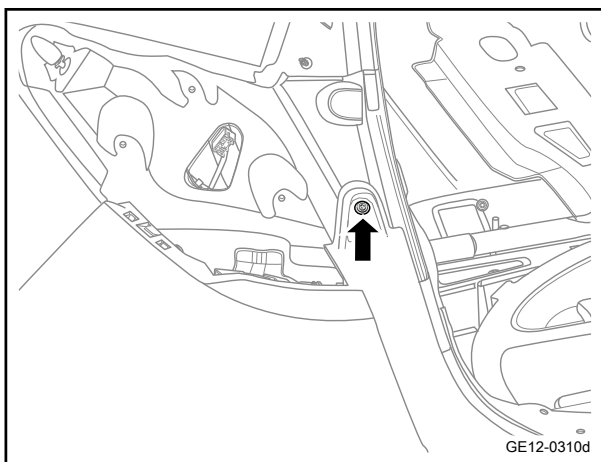


- 8 Disconnect the rear bumper harness connector.
- 9 Remove the rear bumper.

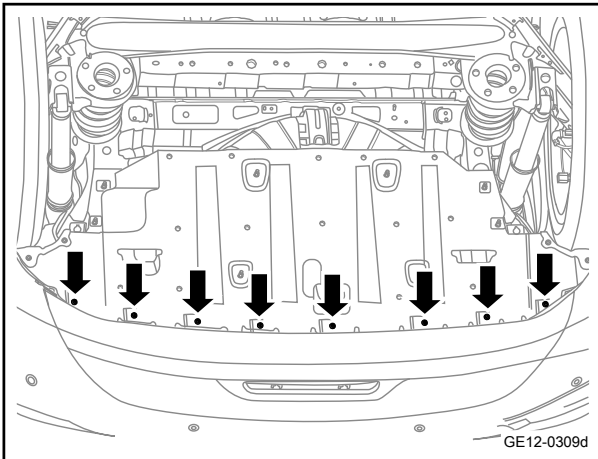
Installation procedure



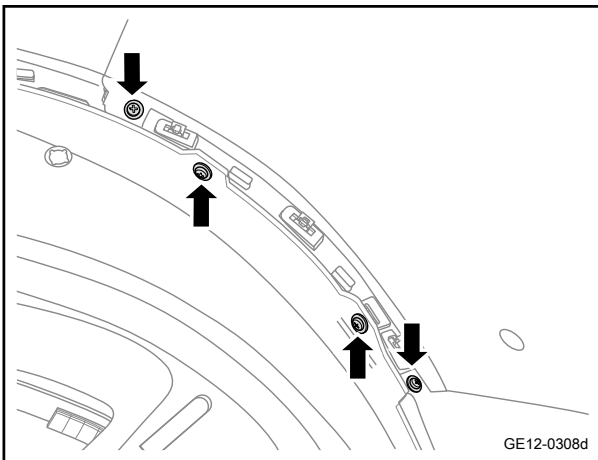
- 1 Move the rear bumper to the installation position.
- 2 Connect the rear bumper harness connector.



- 3 Install 1 fixing screw on each of left and right of the upper part of the rear bumper assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 4 Install 8 fixing bolt on the bottom of the rear bumper.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 5 Install 4 fixing screws on each of left and right sides of the rear bumper.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 6 Install the left and right side wall combination lamp.
- 7 Install the left and right rear wheel fender flare assembly.
- 8 Lower the vehicle.
- 9 Connect the negative cable of battery.

#### 11.4.3.6 Replacement of rear bumper mounting bracket

##### Removal procedure

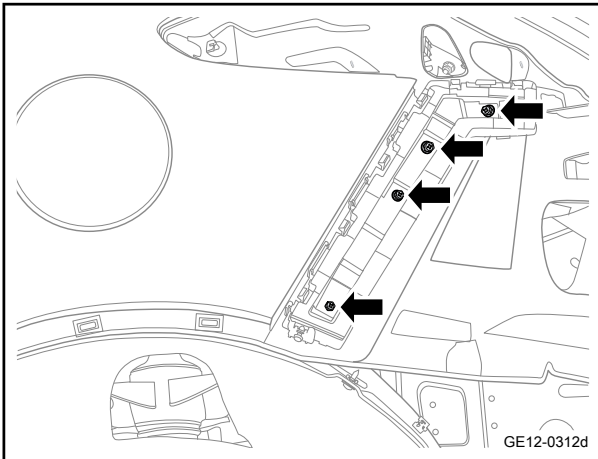
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

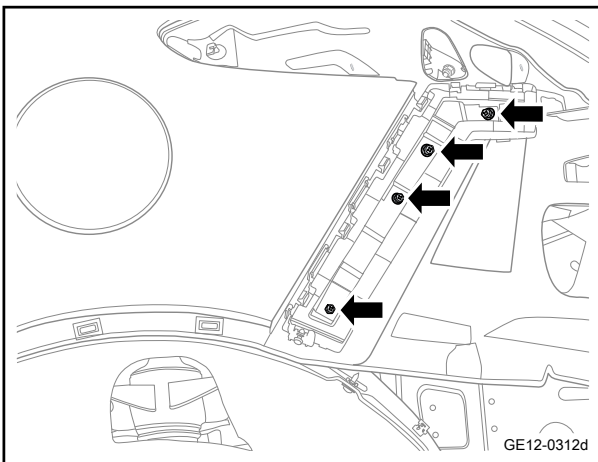
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)





- 4 Remove the 4 fixing screws of the rear bumper mounting bracket assembly.
- 5 Remove the rear bumper mounting bracket assembly.

#### Installation procedure



- 1 Move the rear bumper mounting bracket assembly to the installation position.
- 2 Install the 4 fixing screws of the rear bumper mounting bracket assembly.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 3 Install the rear bumper.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

### 11.4.3.7 Replacement of front anti-collision beam assembly

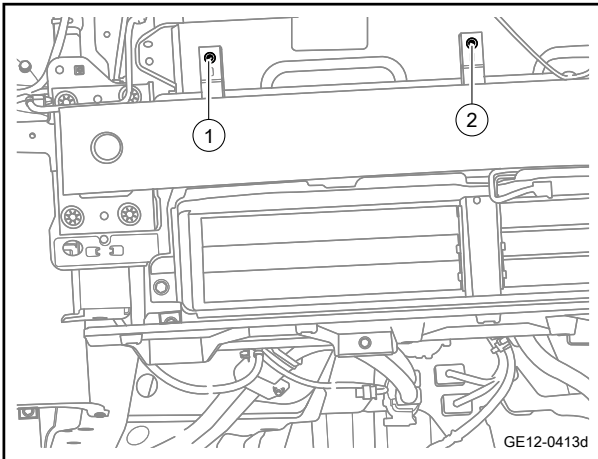
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

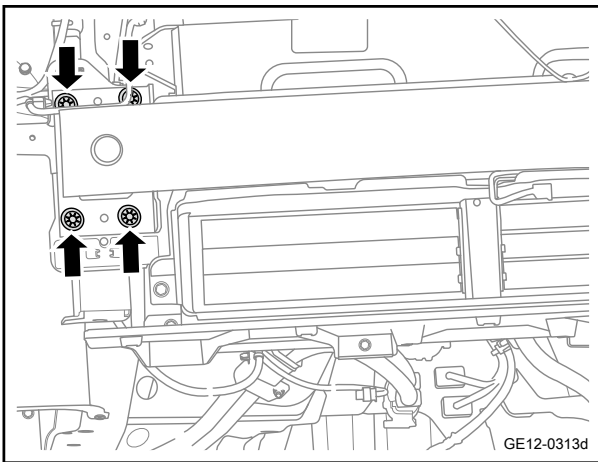
#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

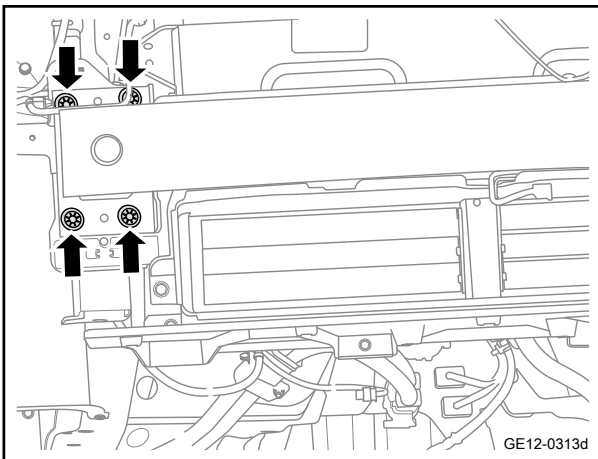
- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)



- 4 Remove 1 fixing bolt 1 of each of support brackets on the left and right sides of the front bumper, remove 1 fixing bolt 2 of the middle support bracket of the front bumper, and remove the 3 support brackets.

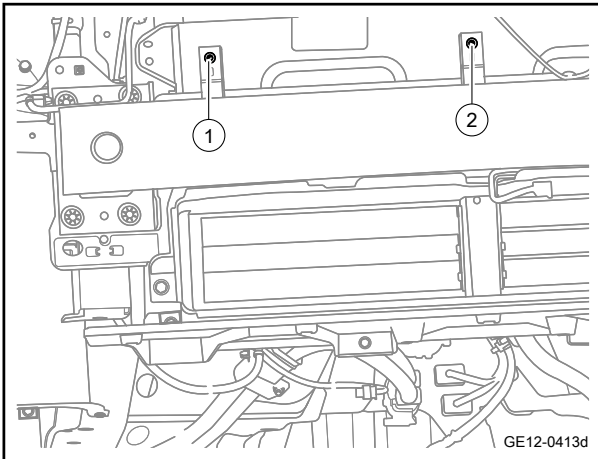


- 5 Remove the 4 fixing bolts on each of left and right sides of the front anti-collision beam assembly.
- 6 Front anti-collision beam assembly



#### Installation procedure

- 1 Move the front anti-collision beam assembly to the installation position.
  - 2 Install 4 fixing bolts for each of the left and right anti-collision beam assemblies.
- Torque: 65N·m (metric) 48lb·ft (imperial system)



- 3 Install 1 fixing bolt 1 of each of the support brackets on the left and right sides of the front bumper, and install 1 fixing bolt 2 on the middle support bracket of the front bumper.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

#### 11.4.3.8 Replacement of rear anti-collision beam assembly

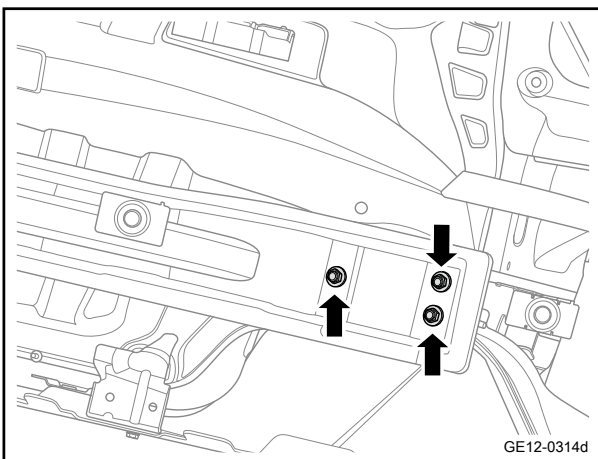
##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

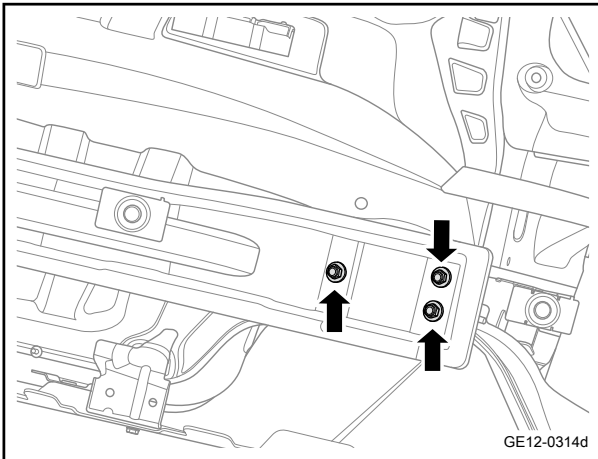
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Dismount the rear bumper assembly. Refer to [Replacement of rear bumper assembly](#)
- 4 Remove the 3 fixing nuts on each of left and right sides of the anti-collision beam assembly.
- 5 Remove the rear anti-collision beam assembly.



##### Installation procedure



- 1 Move the rear anti-collision beam assembly to the installation position.
- 2 Install the 3 fixing nuts on each of left and right sides of the anti-collision beam assembly.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)

- 3 Install the rear bumper assembly.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

## 11.5 Car door

### 11.5.1 Specification

#### 11.5.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts connecting the upper and lower hinges of the door with the vehicle body	M8×20	29 - 35	21.4 - 25.8
Fixing bolts connecting the upper and lower hinges of the door with the vehicle door	M8×30	40	29.5
Fixing bolt for connecting front door stopper assembly and door	M6×12	8 - 10	5.9 - 7.4
Bolt & nut assembly of left front door opening handle	—	3.5 - 4.5	2.6 - 3.3
Bolt & nut assembly of left front door opening handle	—	3.5 - 4.5	2.6 - 3.3
Fixing screw of left front door inner opening handle	—	2 - 3	1.5 - 2.2
Fixing bolt of front left door trim panel bracket	—	8 - 10	5.9 - 7.4
Fixing screw connecting the mechanical lock core and the left front door outward-opening handle	ST4.8×13	1.7 - 2.3	1.3 - 1.7

## 11.5.2 Removal and installation

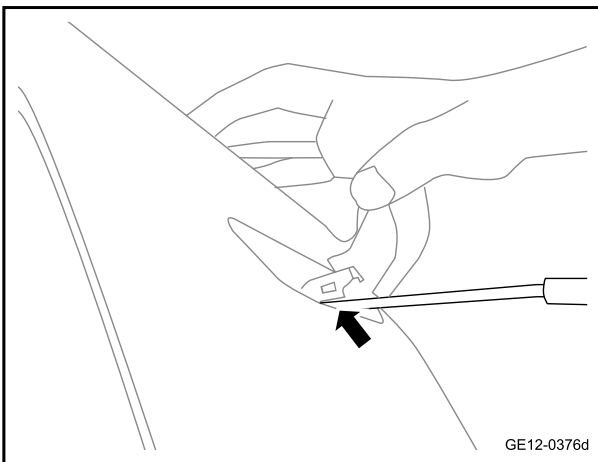
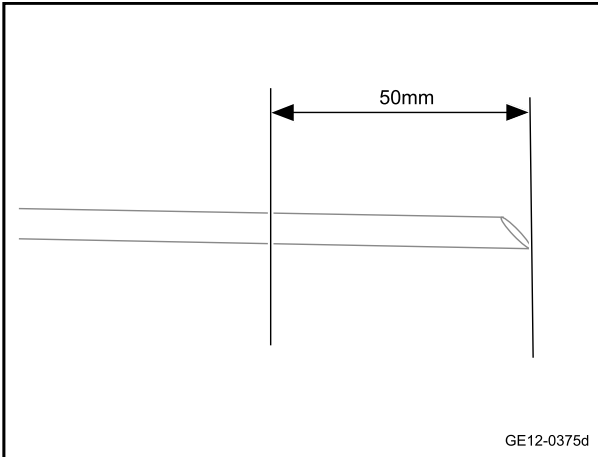
### 11.5.2.1 Maintenance of door handles

#### Maintenance program

#### Warning

Tools to be used for this operation: syringe, plastic tube (pipette)

Model of grease for door handle maintenance:  
Lithium-based grease NPC DK-619



- 1 Inject lubricating grease into the syringe, insert the plastic hard tube into the syringe, and mark the other end of the plastic tube 50mm away from the end.
- 2 Lock the vehicle key and place the door handle in the folded state.
- 3 Manually pull the door handle to the maximum position, and insert the hard tube from the lower hole of the handle (as shown in the picture). After the hard tube mark is flush with the handle, push the syringe to inject 2~3ml.
- 4 Pull out the syringe and repeat the electric opening and closing of the handle 10 times.

### 11.5.2.2 Replacement of the left front door and upper and lower hinges

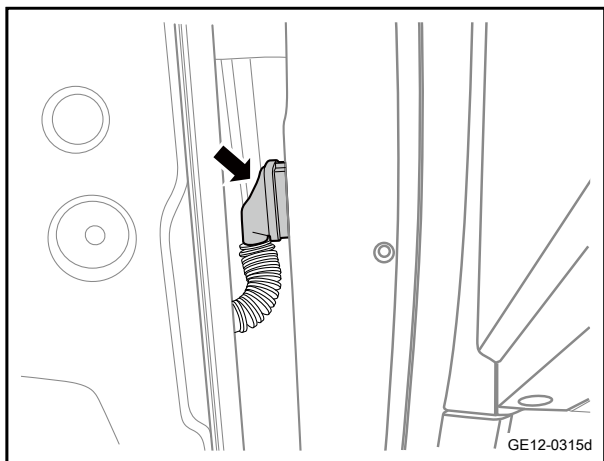
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

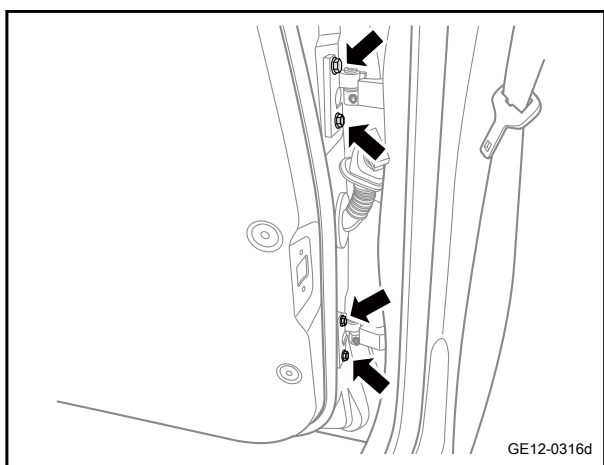
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

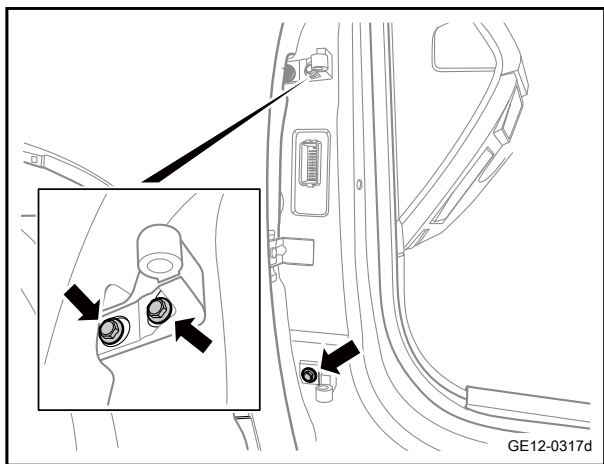
- 2 Remove the door stopper. Refer to [Replacement of the door check](#)



- 3 Take off the dust cover of the door harness and disconnect the front door harness connector.

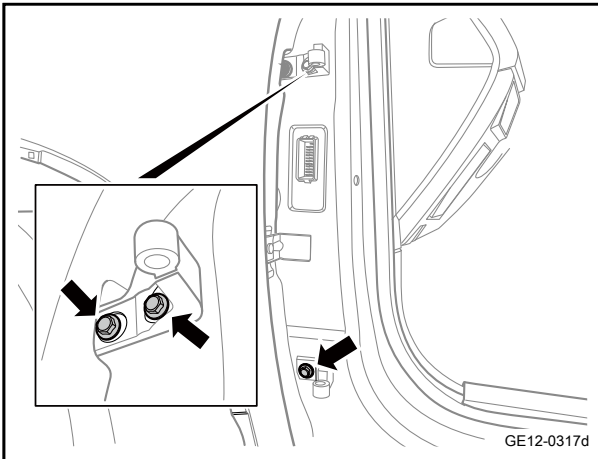


- 4 Remove the 4 fixing bolts connecting the upper and lower hinges of the door with the door.

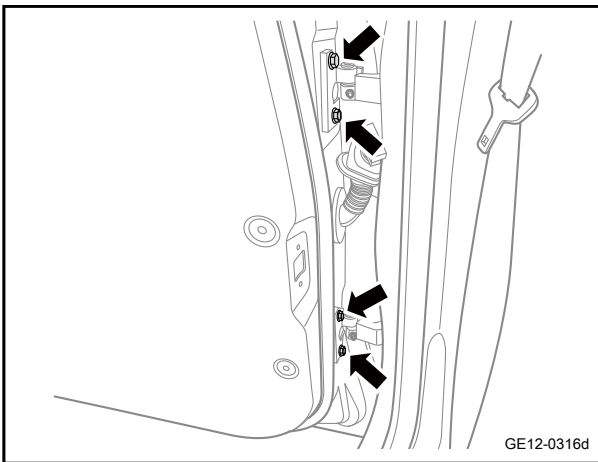


- 5 Remove the 3 fixing bolts connecting the upper and lower hinges of the door with the body.
- 6 Remove the upper and lower hinges of the left front door and the left front door respectively.

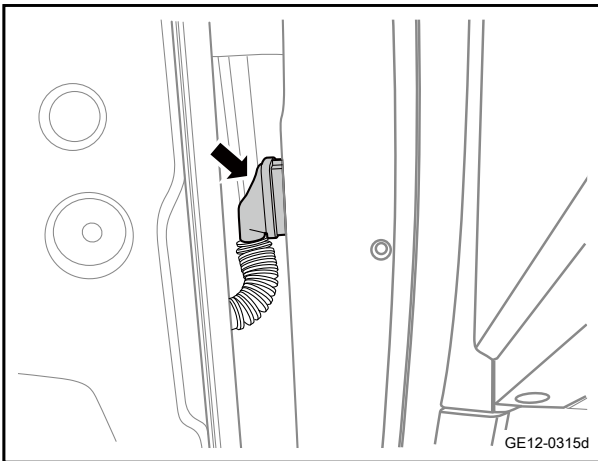
Installation procedure



- 1 Move the upper and lower hinges of the left front door and the left front door to the installation position.
- 2 Install the 3 fixing bolts connecting the upper and lower hinges of the door with the body.  
Torque: 32N·m (metric) 23.6lb-ft (imperial system)



- 3 Install the 4 fixing bolts connecting the upper and lower hinges of the door with the door.  
Torque: 40N·m (metric) 29.5lb-ft (imperial system)



- 4 Connect the front door harness connector and install the door harness dust cover.

- 5 Install the door stopper.
- 6 Connect the negative cable of battery.

### 11.5.2.3 Replacement of the left rear door and upper and lower hinges

Removal procedure

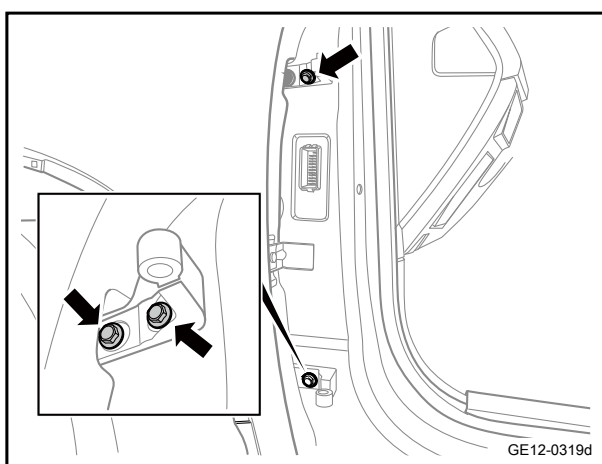
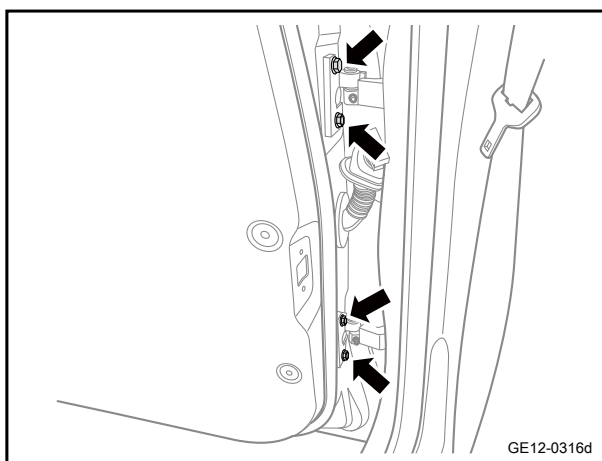
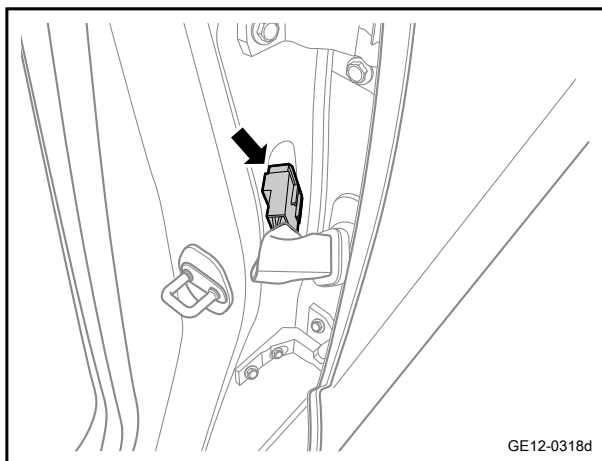


- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

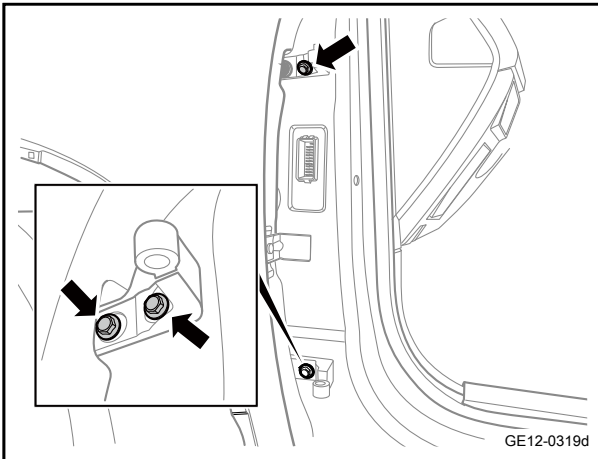
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the door stopper. Refer to [Replacement of the door check](#)
- 3 Take off the dust cover of the door harness and disconnect the connector of the rear door harness.

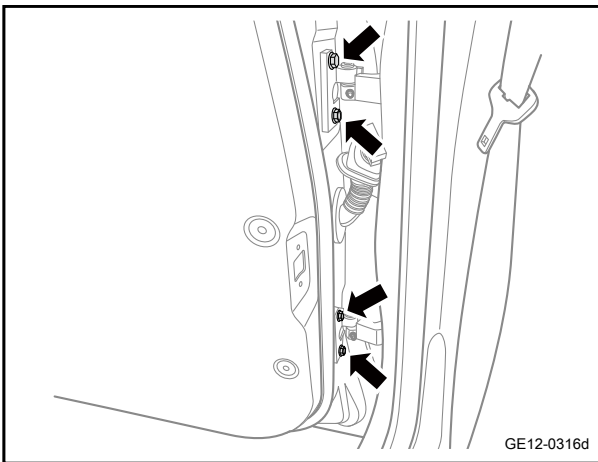


- 4 Remove the 4 fixing bolts connecting the upper and lower hinges of the door with the door.
- 5 Remove the 3 fixing bolts connecting the upper and lower hinges of the door with the body.
- 6 Remove the upper and lower hinges of the left front door and the left front door respectively.

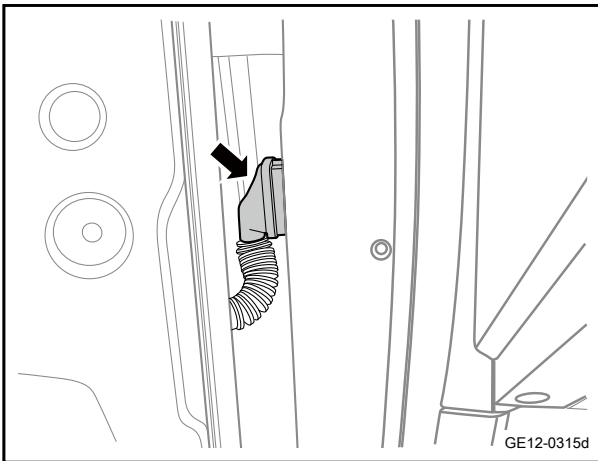
Installation procedure



- 1 Move the upper and lower hinges of the left front door and the left front door to the installation position.
- 2 Install the 3 fixing bolts connecting the upper and lower hinges of the door with the body.  
Torque: Nm ( metric system ) lb-ft ( imperial system )



- 3 Install the 4 fixing bolts connecting the upper and lower hinges of the door with the door.



- 4 Connect the rear door harness connector and install the door harness dust cover.

- 5 Install the door stopper.
- 6 Connect the negative cable of battery.

#### 11.5.2.4 Replacement of the front door check assembly

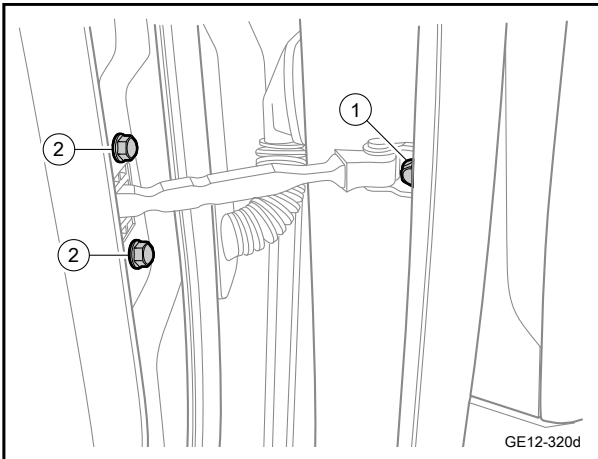
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

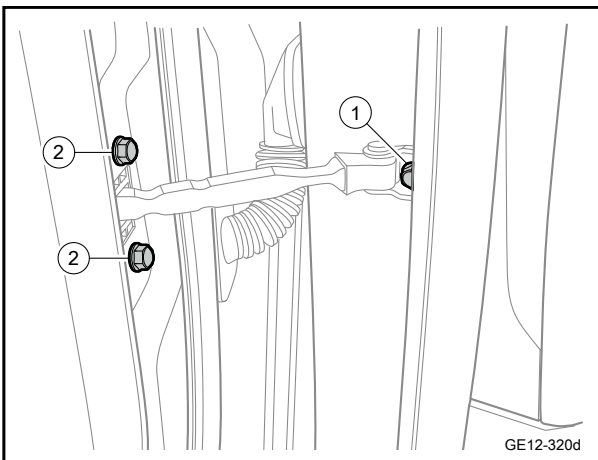
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front waterproof membrane. See [Replacement of the left front door waterproof membrane](#)
- 3 Remove the fixing bolt 1 connecting the front door stopper assembly and the body.
- 4 Remove the two fixing bolts 2 connecting the front door stopper assembly and the door.
- 5 Remove the front door stopper assembly.



#### Installation procedure

- 1 Move the front door stopper assembly to the installation position.
- 2 Install the 2 fixing bolts 2 connecting the front door stopper assembly and the door.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 3 Install the fixing bolt 1 connecting the front door stopper assembly to the body.  
Torque: 23N·m (metric) 17.0lb-ft (imperial system)



- 4 Install the left front door waterproof membrane.
- 5 Connect the negative cable of battery.

### 11.5.2.5 Replacement of outward-opening handle of front left door

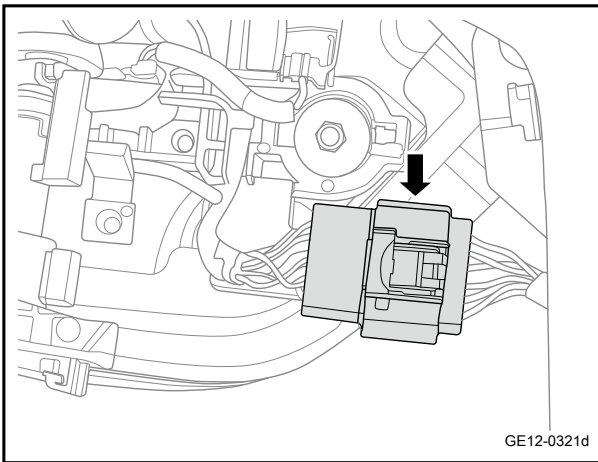
#### Disassembly procedure

- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)

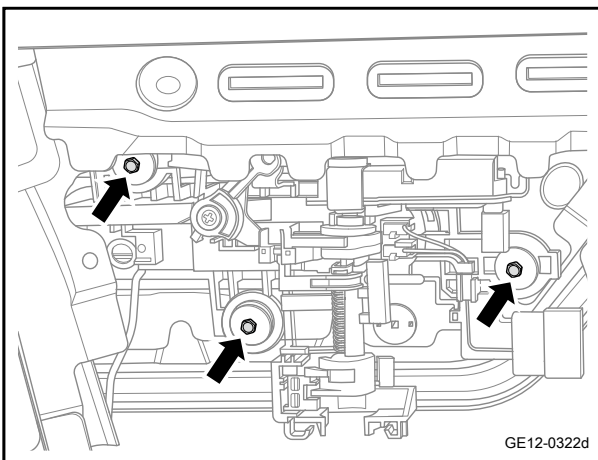
**Warning**

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

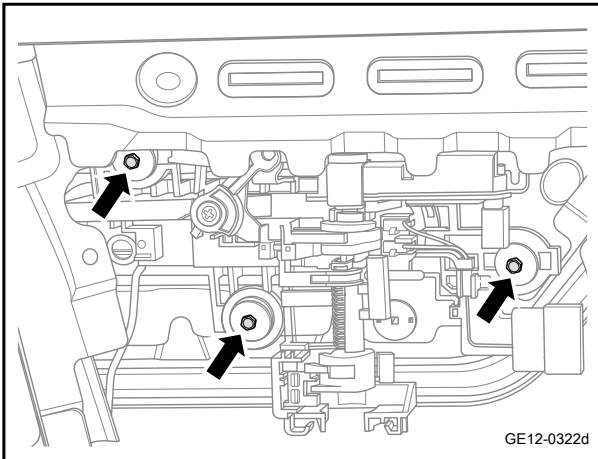
- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 3 Remove the waterproof membrane of the left front door. See [Replacement of the left front door waterproof membrane](#)
- 4 Disconnect the harness connector of the outward-opening handle of the left front door.



- 5 Remove the 2 fixing screws 1 connecting the mechanical lock core and the outward-opening handle of the left front door.
- 6 Disconnect the mechanical lock core and the left front door lock core tie bar 2.
- 7 Remove the mechanical lock core.
- 8 Remove the 3 bolt and nut components of the outward-opening handle of the left front door.
- 9 Disconnect the outward-opening cable 2 of the left front door.
- 10 Remove the outward-opening handle of the left front door.

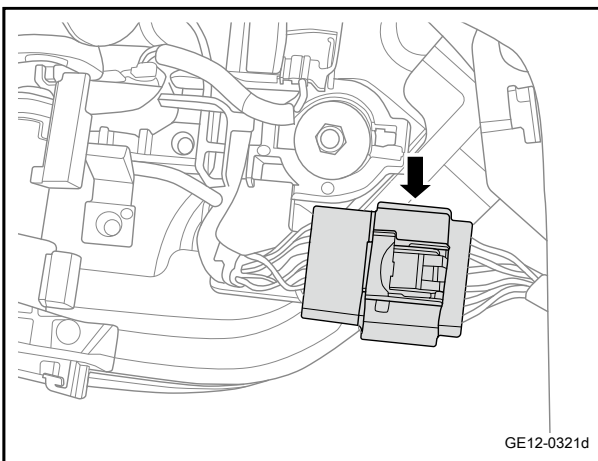


**Installation procedure**



- 1 Move the outward-opening handle of the left front door to the installation position.
- 2 Connect the outward-opening cable 2 of the left front door.
- 3 Install the 3 bolt and nut components of the outward-opening handle of the left front door.  
Torque: 4N·m (metric) 3lb-ft (imperial system)

- 4 Move the mechanical lock core to the installation position.
- 5 Connect the mechanical lock core and the left front door lock core tie bar 2.
- 6 Install the 2 fixing screws 1 connecting the mechanical lock core and the outward-opening handle of the left front door.  
Torque: 2N·m (metric) 1.5lb-ft (imperial system)
- 7 Connect the harness connector of the outward-opening handle of the left front door.

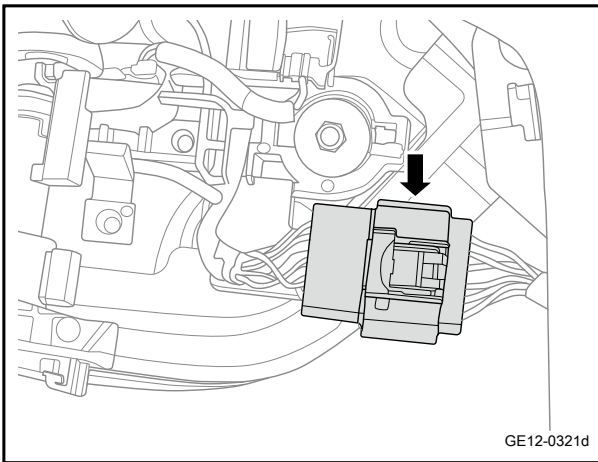


- 8 Install the left front door waterproof membrane.
- 9 Install the FL door interior trim panel assembly.
- 10 Connect the battery negative cable.

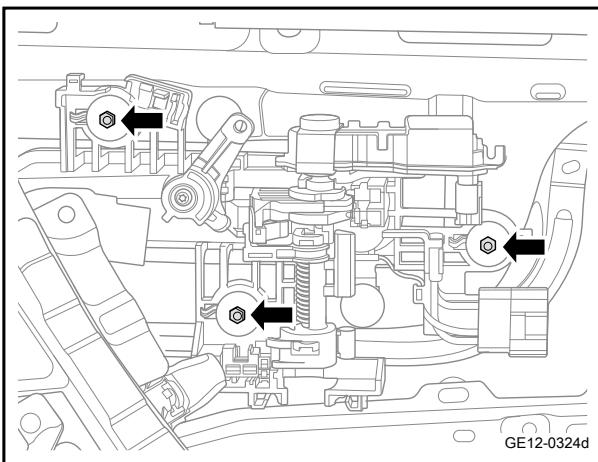
### 11.5.2.6 Replacement of outward-opening handle of left rear door

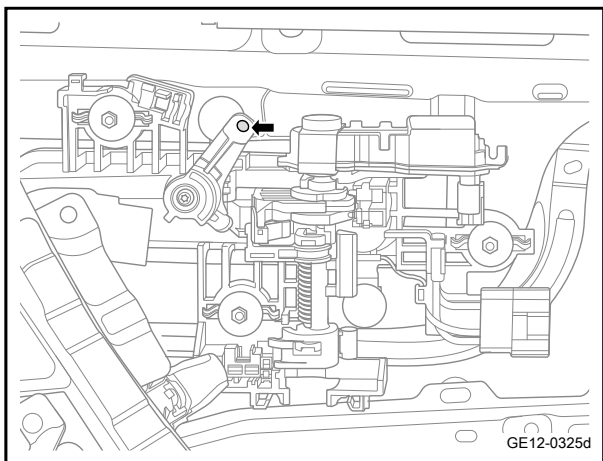
Disassembly procedure

- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Remove the waterproof membrane of the left rear door. See [Replacement of the left rear door waterproof membrane](#)
- 4 Disconnect the harness connector of the outward-opening handle of the left rear door.



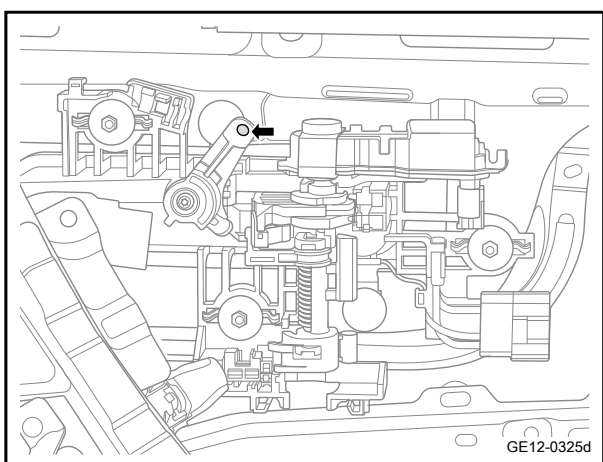
- 5 Remove the 3 bolt and nut components of the outward-opening handle of the left front door.



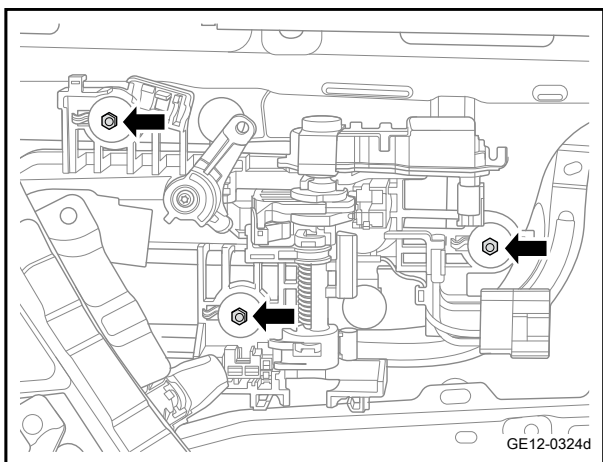


- 6 Disconnect the outward-opening handle of the left rear door.
- 7 Remove the outward-opening handle of the left rear door.

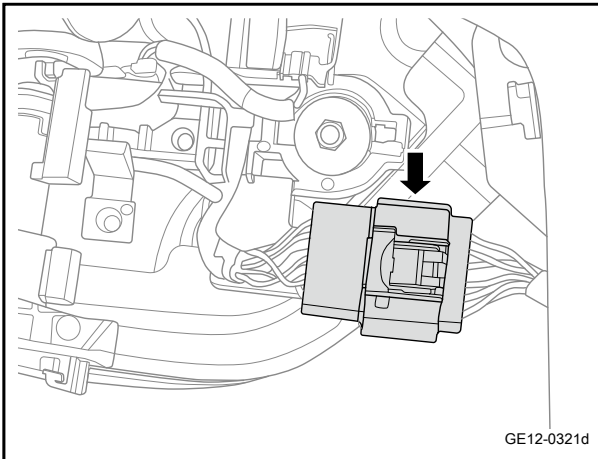
Installation procedure



- 1 Move the outward-opening handle of the left rear door to the installation position.
- 2 Connect the outward-opening cable of the rear door.



- 3 Install the 3 bolt and nut components of the outward-opening handle of the left front door.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 4 Connect the harness connector of the outward-opening handle of the left rear door.

- 5 Install the left rear door waterproof membrane.
- 6 Install the RL door interior trim panel assembly.
- 7 Connect the battery negative cable.

### 11.5.2.7 Replacement of inward-opening handle of front left door

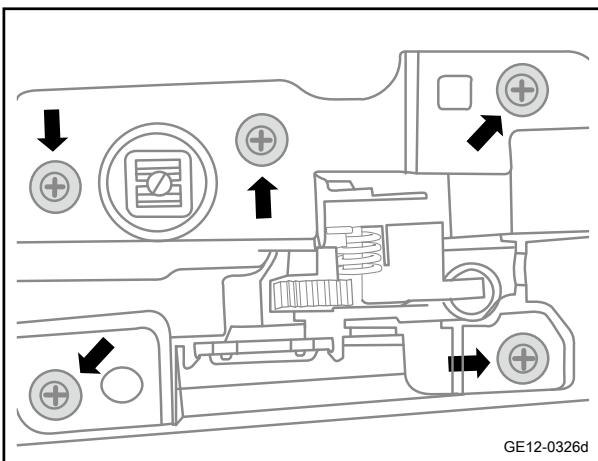
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

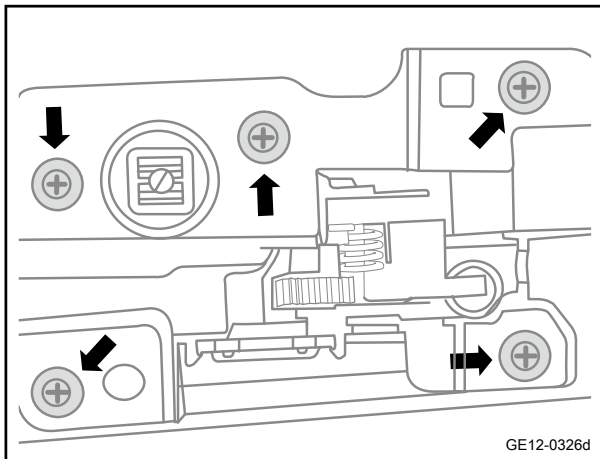
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 3 Remove the 5 fixing screws of the inward-opening handle of the left front door.
- 4 Remove the inward-opening handle of the left front door.



#### Installation procedure





- 1 Move the inward-opening handle of the left front door to the installation position.
- 2 Install the 5 fixing screws of the inward-opening handle of the left front door.  
Torque: 2.5N·m (metric) 1.8lb-ft (imperial system)

- 3 Install the interior trim guard panel assembly of the front door.
- 4 Connect the negative cable of battery.

### 11.5.2.8 Replacement of the waterproof membrane of the left front door

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

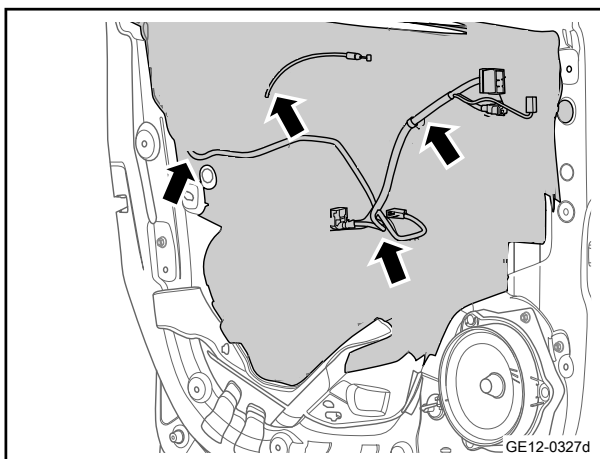
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)
- 4 Disconnect the wiring harness 2 connected to the 4 openings of the left front door waterproof membrane.
- 5 Remove the waterproof membrane of the left front door.

#### Installation procedure

- 1 Move the waterproof membrane of the left front door to the installation position.
- 2 Pull out the wiring harness 2 connected to the 4 openings of the left front door waterproof membrane.



- 4 Install the FL door interior trim panel assembly.
- 5 Connect the negative cable of battery.

### 11.5.2.9 Replacement of the waterproof membrane of the left rear door

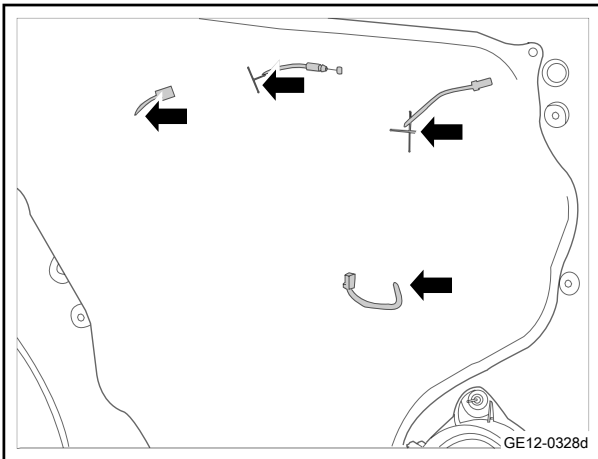
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

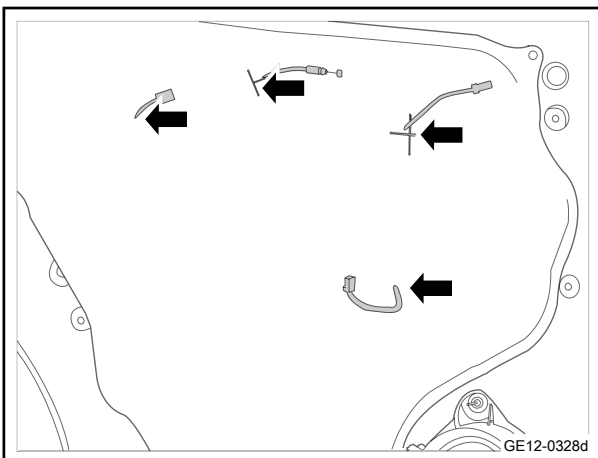
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left rear door trim panel assembly. See [Replacement of the left rear door trim panel assembly](#)
- 3 Disconnect the wiring harness connected to the 4 openings of the left rear door waterproof membrane.
- 4 Remove the waterproof membrane of the left rear door.



#### Installation procedure

- 1 Move the waterproof membrane of the left rear door to the installation position.
- 2 Pull out the wiring harness connected to the 4 openings of the left rear door waterproof membrane.



- 3 Install the RL door interior trim panel assembly.
- 4 Connect the negative cable of battery.

## 11.6 Frame and underbody

### 11.6.1 Description and operation

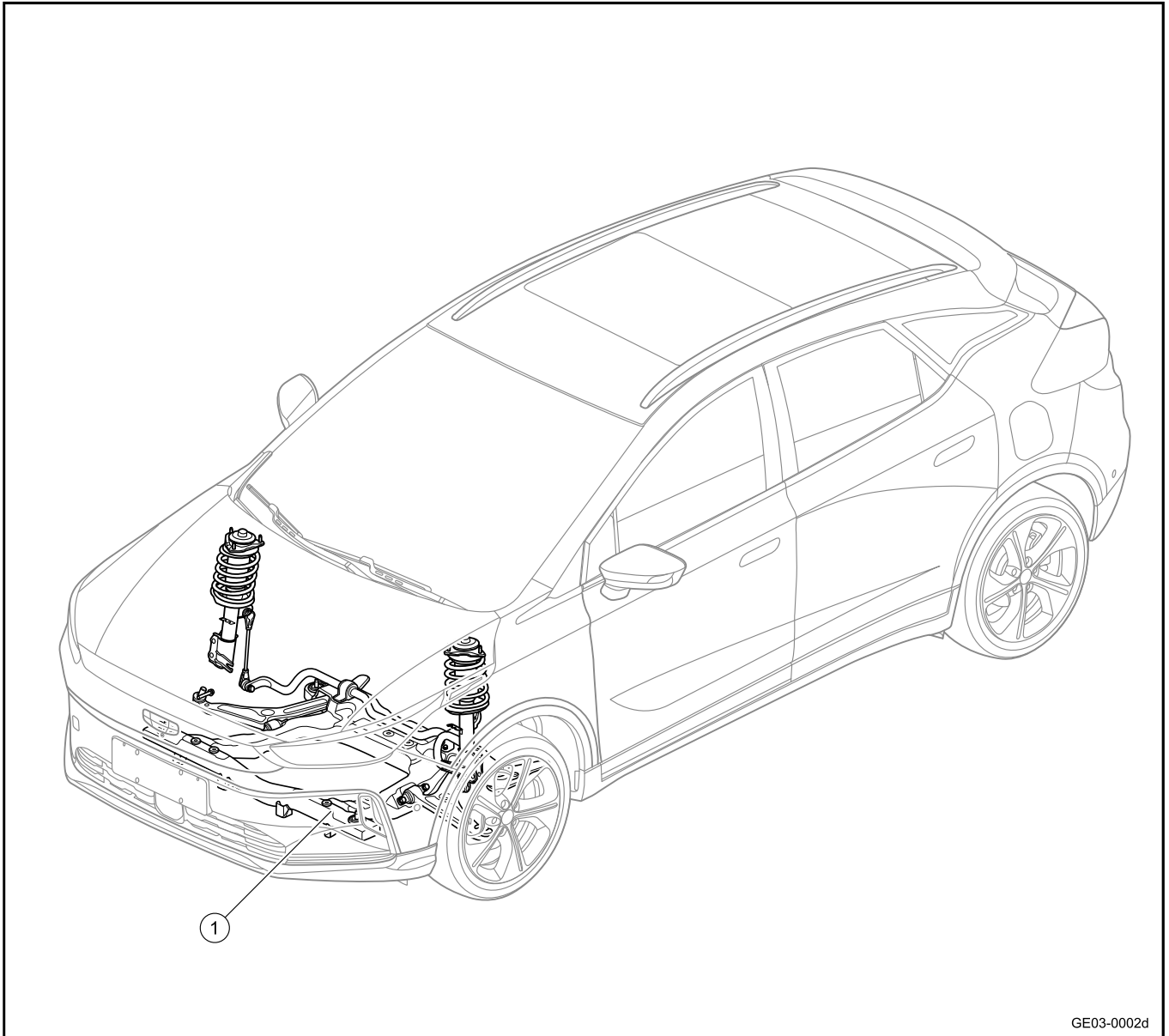
#### 11.6.1.1 Frame and underbody descriptions

The frame is a sub-frame located at the front of the vehicle and separated from the body by rubber bushing, which provides location for the drive train, the lower control arm of front suspension, and the power steering tie rod assembly. Any misplace of the frame will result in the misplacing of the front wheels. The frame is bolted to the body through rubber bushing. The underbody must be correctly positioned to ensure the correct suspension and the correct wheel alignment. All underbody parts directly affect the overall strength of the entire body, and appropriate welding techniques should be used in repair operations.

Parts must be protected against corrosion as long as the body repair operations damage or break the original surface. Refer to [Corrosion treatment in "Collision Repair" description and operation.](#)

## 11.6.2 Part location

### 11.6.2.1 Frame and underbody



1. Front subframe

### 11.6.3 Removal and installation

#### 11.6.3.1 Replacement of front subframe assembly

See [Replacement of the electric drive system](#).

## 11.7 Seat

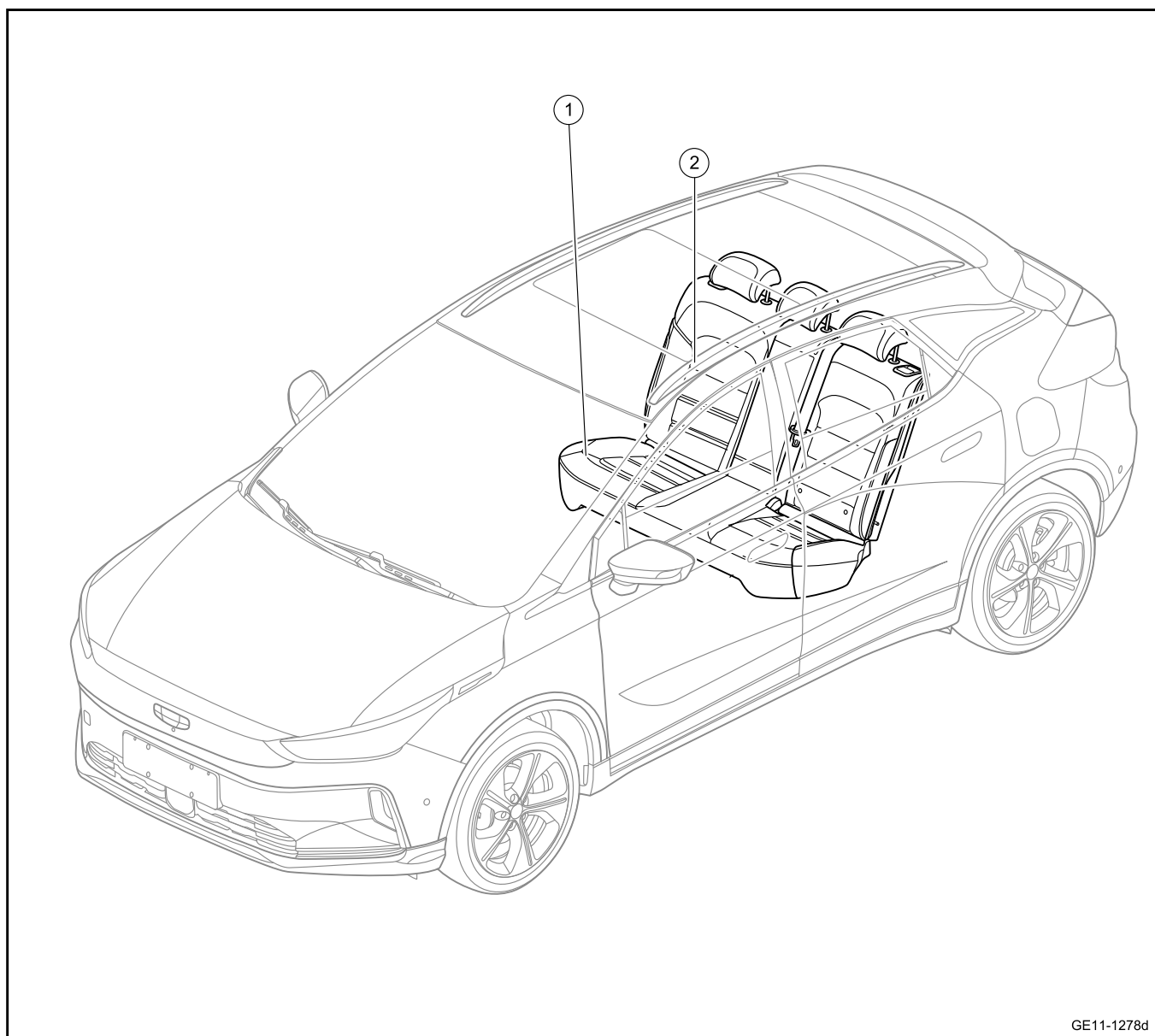
### 11.7.1 Specification

#### 11.7.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (N·m)	British system (lb-ft)
Fixing bolt of front seat and front floor	M10×25	40 - 50	29.5 - 36.9
Central armrest fixing bolt	M6×16	8 - 12	5.9 - 8.9
Fixing screw of driver's seat outer guard (manual)	ST4.8×9.5	5 - 9	3.7 - 6.6
Fixing bolt for driver's seat back front and rear adjustment crank cover	M6×10	8 - 12	5.9 - 8.9
Fixing screw of driver's seat inner small guard	ST4.8×9.5	5 - 9	3.7 - 6.6
Fixing nut of front seat slide rail	M8	20 - 26	14.8 - 19.2
Fixing bolt for connecting rear hinge and rear backrest	/	40 - 50	29.5 - 36.9
Fixing bolt of central seat belt buckle	/	40 - 50	29.5 - 36.9

11.7.2 Part location

11.7.2.1 Part Position



GE11-1278d

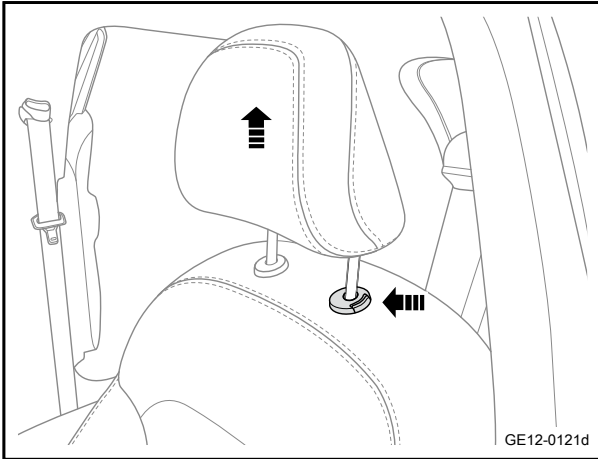
1. Rear seat cushion

2. Rear seat backrest

### 11.7.3 Removal and installation

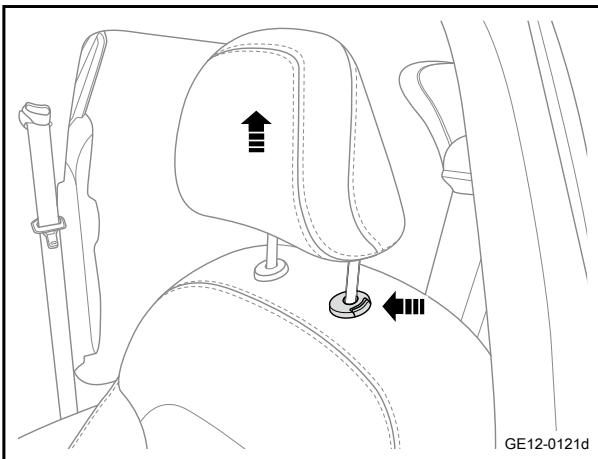
#### 11.7.3.1 Replacement of seat headrest assembly

##### Removal procedure



- 1 Press the seat headrest assembly adjustment button to lift the headrest upward.

##### Installation procedure



- 1 Press the seat headrest assembly adjustment button to insert the headrest into the guide sleeve.

#### 11.7.3.2 Replacement of the front driver seat assembly

##### Removal procedure

###### Caution

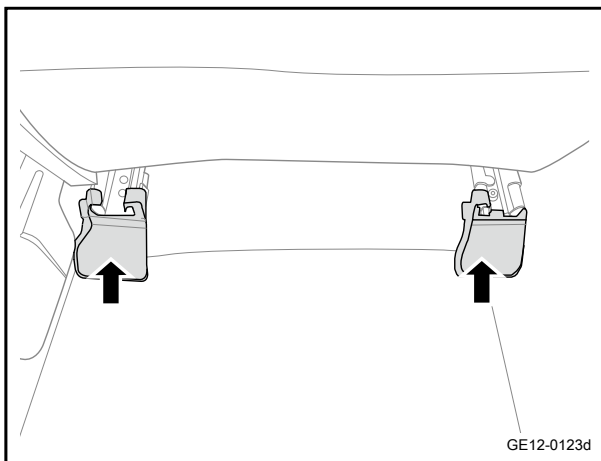
The left front seat and the right front seat share the same disassembly and assembly methods.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

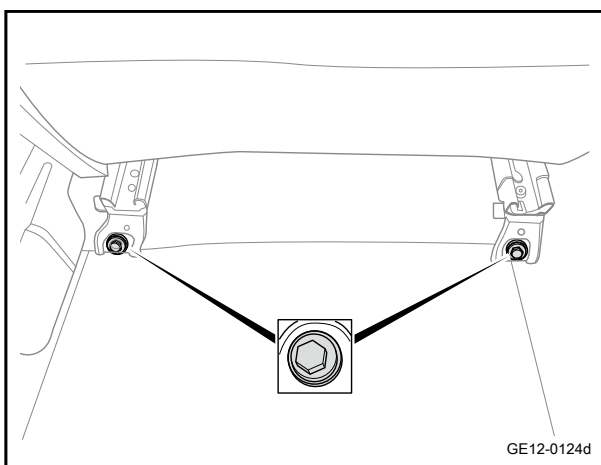
###### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

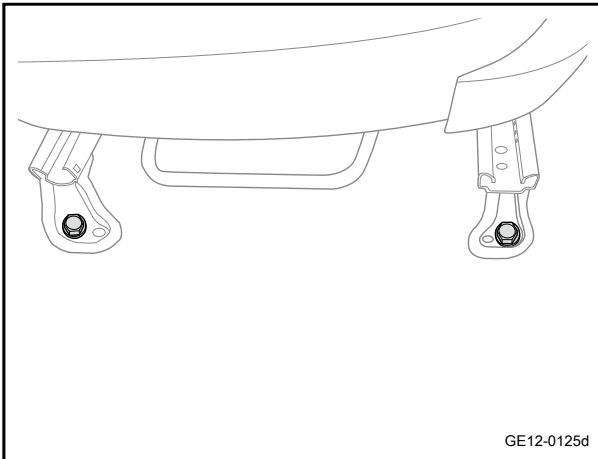




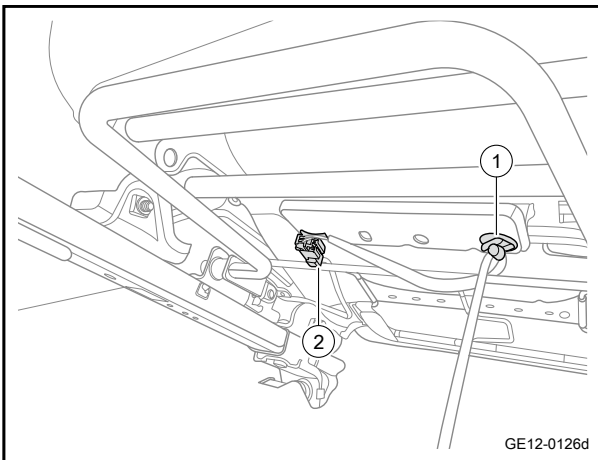
- 2 Take off the outer slide rail trim cover at the rear end of the left front seat and the inner slide rail trim cover at the rear end of the left front seat.



- 3 Adjust the driver's seat assembly to the front, and remove the 2 fixing bolts at the rear of the driver's seat assembly.

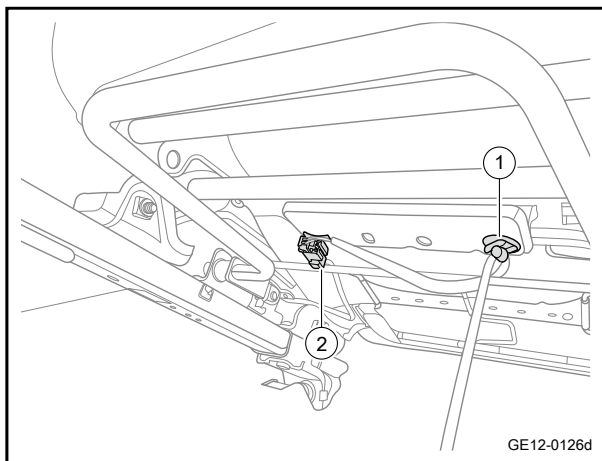


- 4 Adjust the driver's seat assembly to the back, and remove the 2 fixing bolts at the front of the driver's seat assembly.

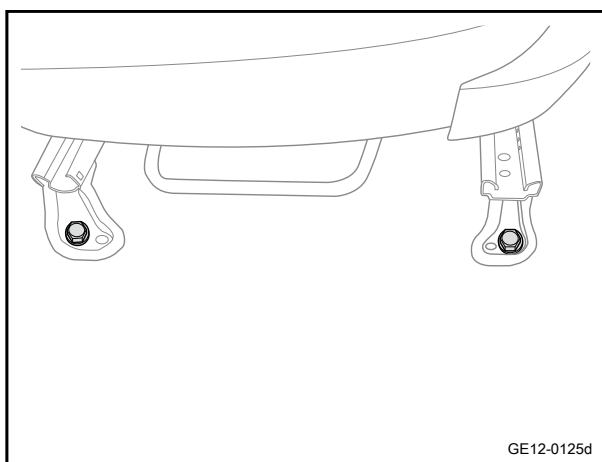


- 5 Turn the driver's seat assembly backwards, disconnect the harness buckle 1, disconnect the harness connector, and take out the driver's seat assembly.

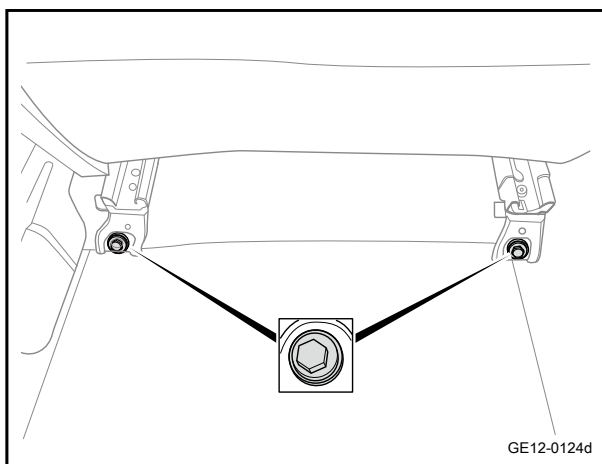
Installation procedure



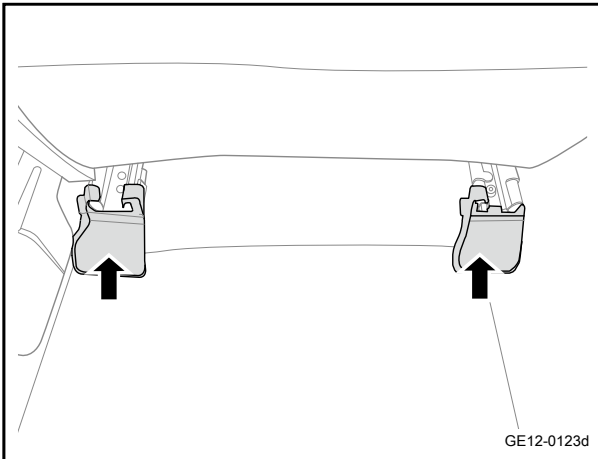
- 1 Put in the driver's seat assembly, tilt the seat to the rear, and connect the harness connector under the seat.



- 2 Adjust the driver's seat assembly to the rear, install and tighten the 2 fixing bolts at the front of the driver's seat assembly.  
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 3 Adjust the driver's seat assembly to the front, install and tighten the 2 fixing bolts at the rear of the driver's seat assembly.  
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



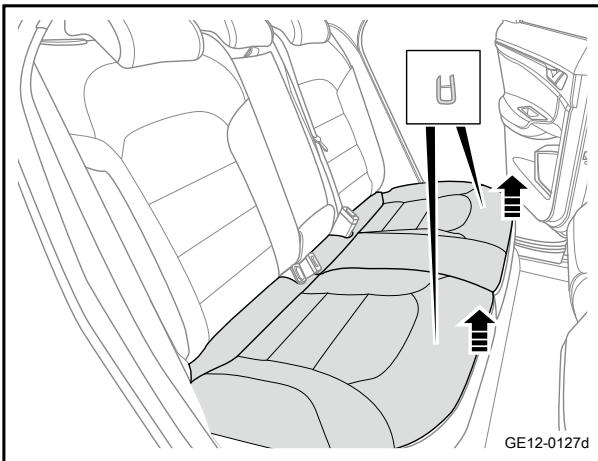
- 4 Install the rear outer slide rail trim cover of the left front seat and the inner slide rail trim cover of the rear left front seat.

- 5 Connect the negative cable of battery.

### 11.7.3.3 Replacement of rear seat cushions

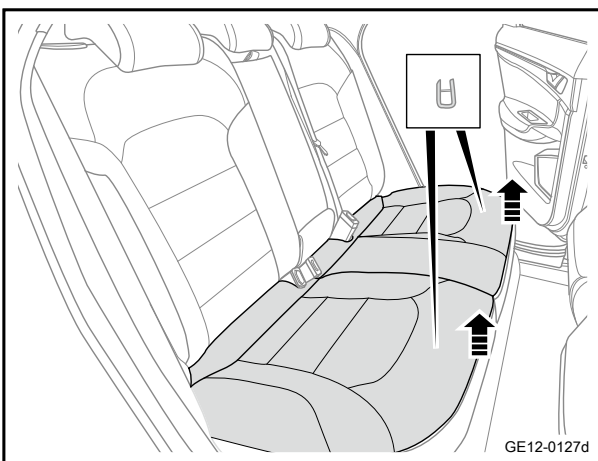
#### Removal procedure

- 1 Lift the rear seat cushion according to the buckle position as shown in the figure and take it out of the vehicle.



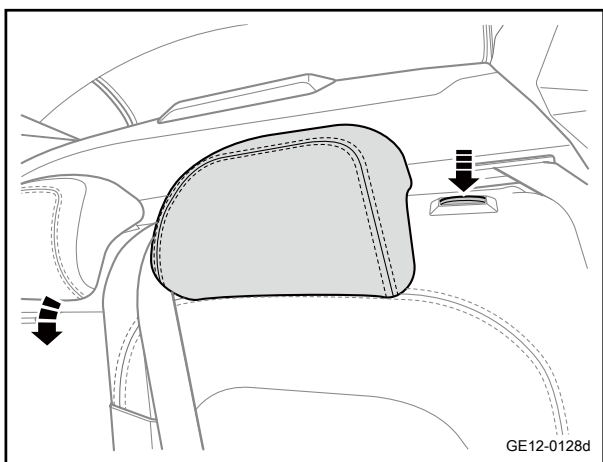
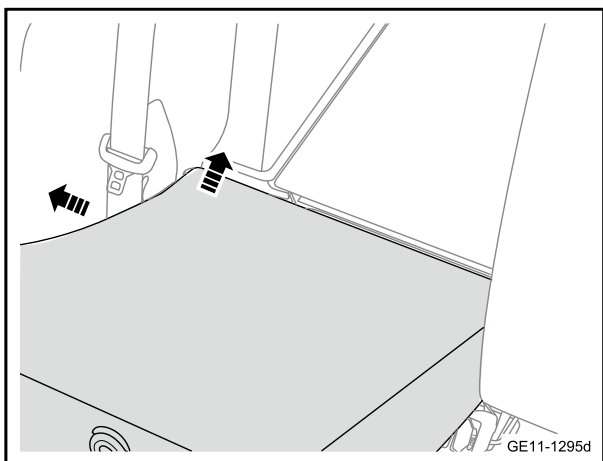
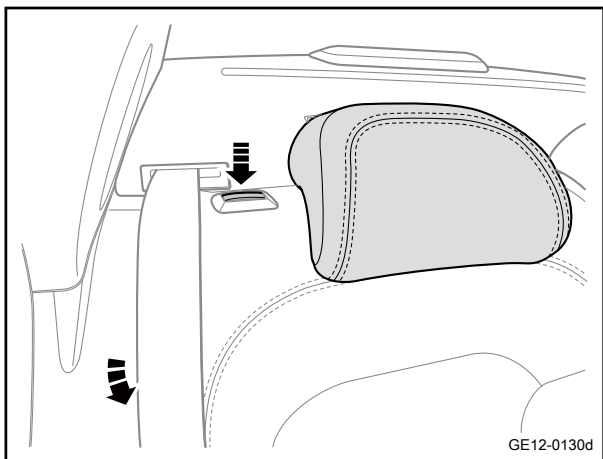
#### Installation procedure

- 1 Install the rear seat cushion, press the buckle position as shown in the figure to place the rear seat cushion.

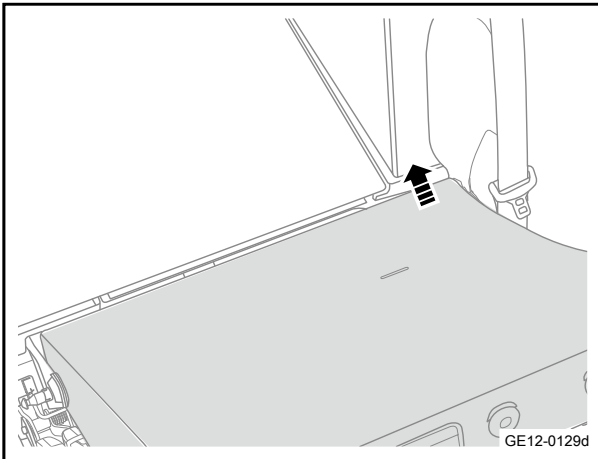


### 11.7.3.4 Replacement of rear seat backrests

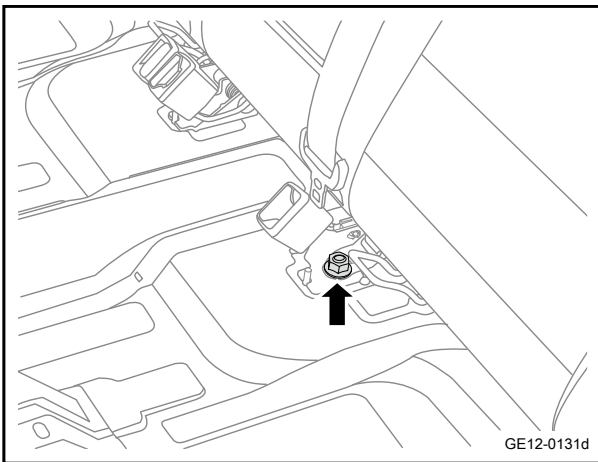
#### Removal procedure



- 1 Remove the rear seat cushions. See [Replacement of rear seat cushions](#)
- 2 Pull up the rear seat unlocking handle and flip the right backrest of the rear seat.
- 3 Slide and lift the fixed shaft at the lower end of the rear right seat backrest around the body fixing groove.
- 4 Pull the rear-row right backrest towards the right rear door.
- 5 Pull up the rear-row seat unlocking handle and flip the rear-row left backrest.

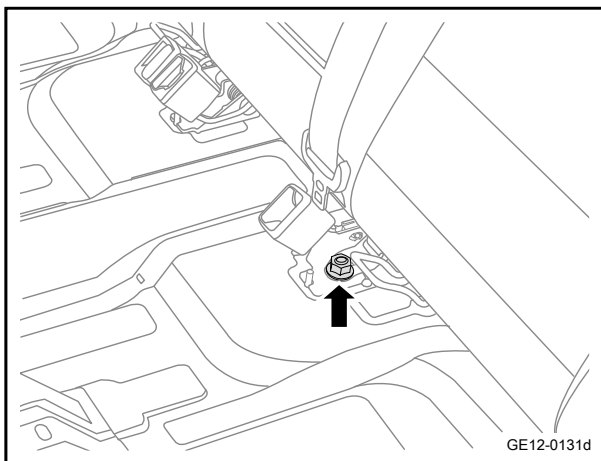


- 6 Slide the fixing shaft at the lower end of the rear left seat backrest around the body fixing groove and lift it up.



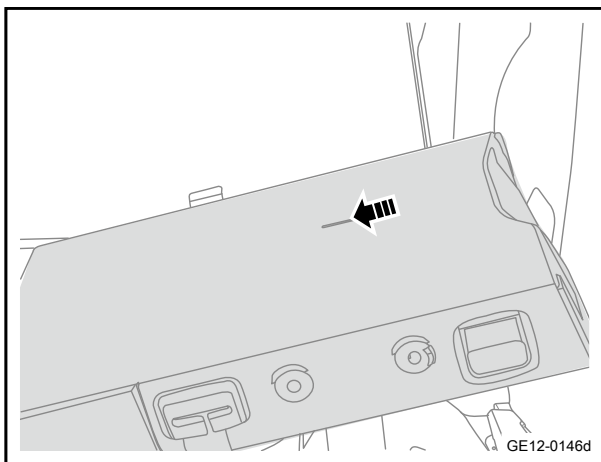
- 7 Remove the fixing bolts of the seat belt buckle in the middle of the rear row, and take out the left backrest of the rear row.

Installation procedure

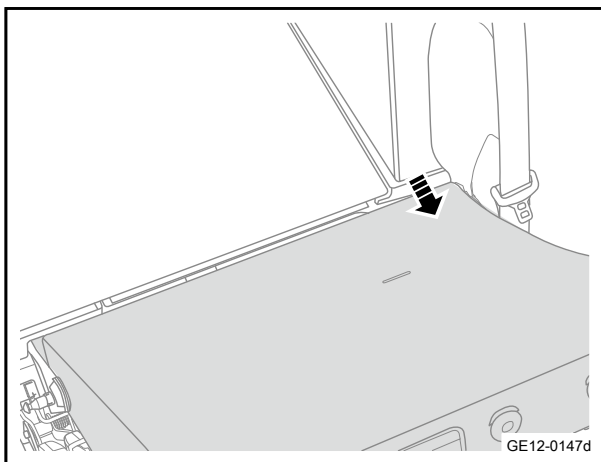


- 1 Move the rear-row left backrest to the installation position, and install 1 fixing bolt of the middle seat belt of the rear-row left backrest.

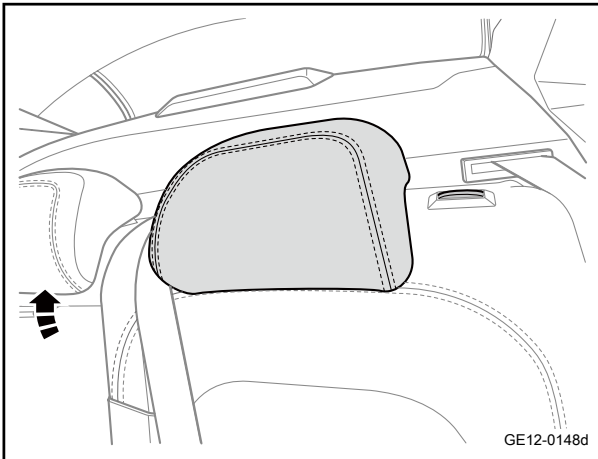
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



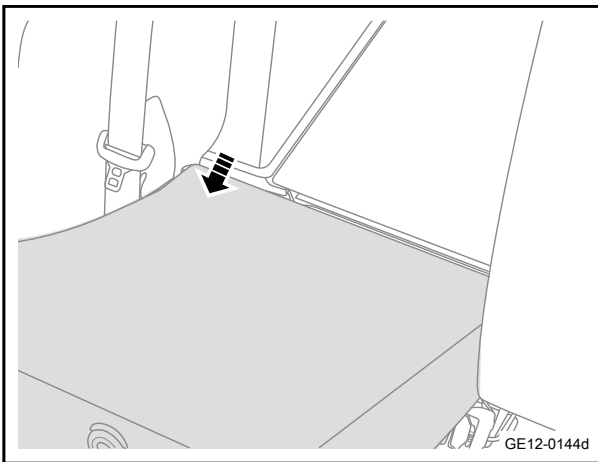
- 2 Insert the pin in the middle of the rear left backrest into the middle mounting bracket of the rear seat.



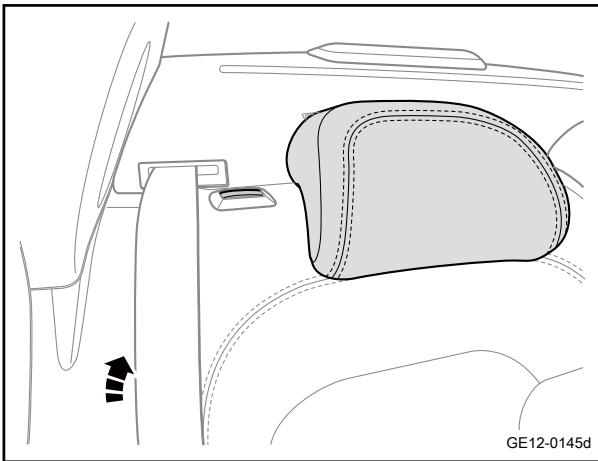
- 3 Clamp the fixing shaft at the lower end of the rear left seat backrest and the body slot properly.



- 4 Flip up the rear-row left backrest.



- 5 Move the rear-row right backrest to the installation position, and clamp the fixing shaft at the lower end of the rear left seat backrest and the body slot properly.



- 6 Turn the backrest upside down.

- 7 Install the rear seat cushions.

### 11.7.3.5 Replacement of the outer guard plate of the left front seat

Removal procedure



Caution

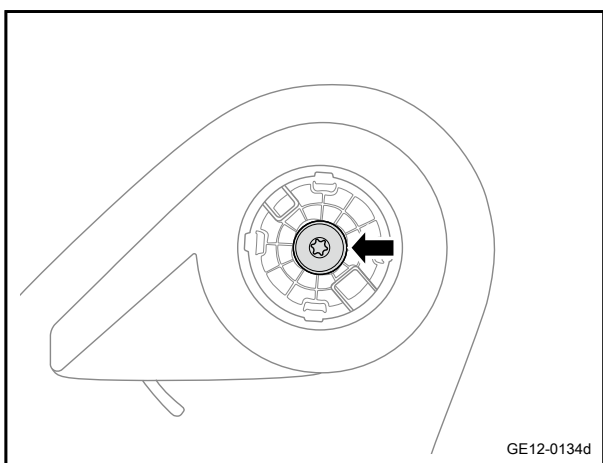
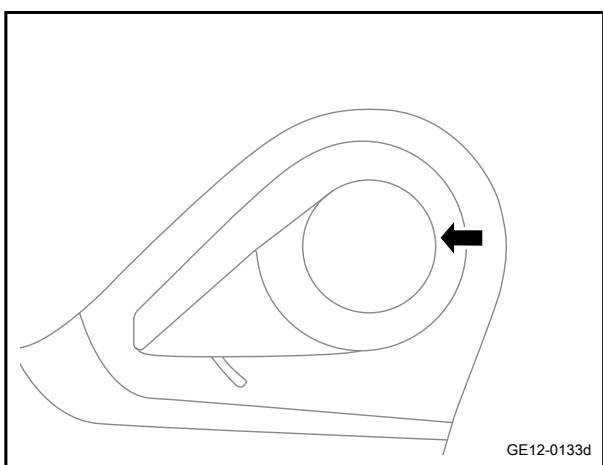
The driver's seat and the right front seat share the same disassembly and assembly methods.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

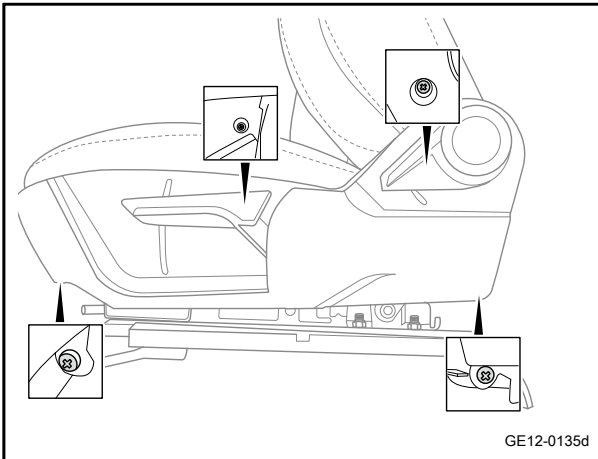
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

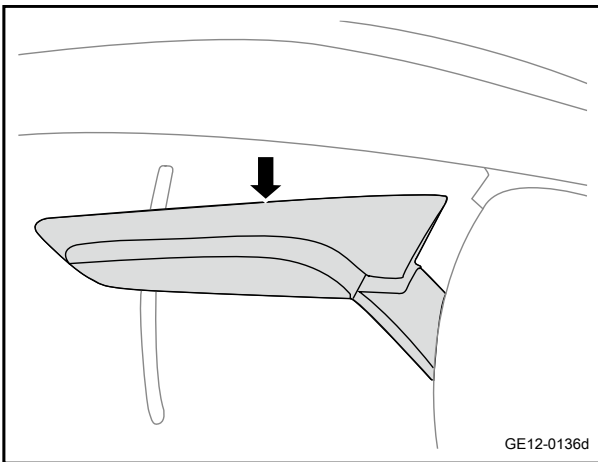
- 2 Remove the front manual seat. See [Replacement of driver's seat assembly](#)
- 3 Remove the left front seat angle adjuster handle cover.



- 4 Remove the 1 fixing bolt of the left front seat angle adjuster handle, and remove the left front seat angle adjuster handle cover.

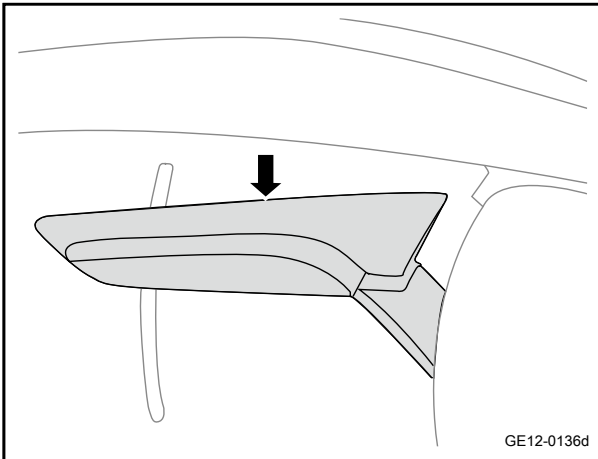


- 5 Remove the 4 fixing bolts of the left front seat outer guard plate.



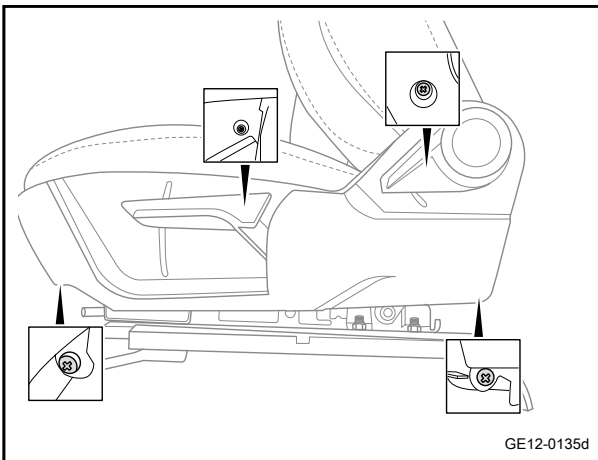
- 6 Remove the left front seat height adjuster handle, and remove the left front seat outer guard.

Installation procedure

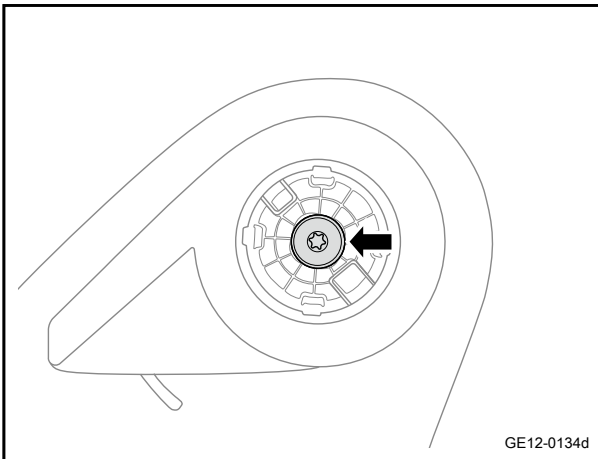


- 1 Align the outer guard plate of the left front seat with the mounting holes, install and tighten the 4 fixing bolts of the outer guard plate of the left front seat.

Torque: 7N·m (metric system) 5.2lb-ft (Imperial system)

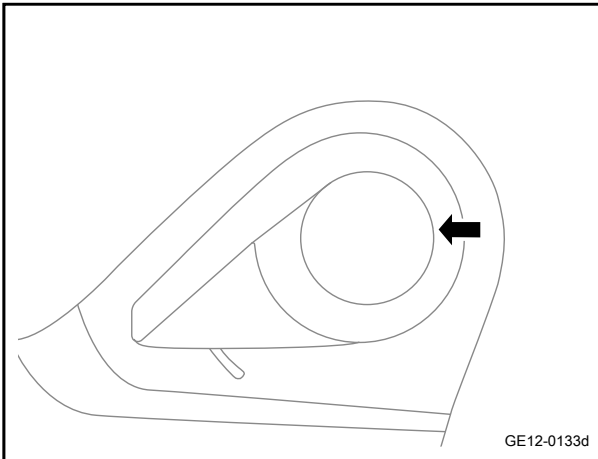


- 2 Install the left front seat height adjuster handle.



- 3 Align the left front seat angle adjuster handle with the installation hole, install and tighten 1 fixing bolt of the left front seat angle adjuster handle.

Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 4 Install the left front seat angle adjuster handle cover.

- 5 Install the front manual seats.
- 6 Connect the negative cable of battery.

### 11.7.3.6 Replacement of the inner guard plate of the left front seat

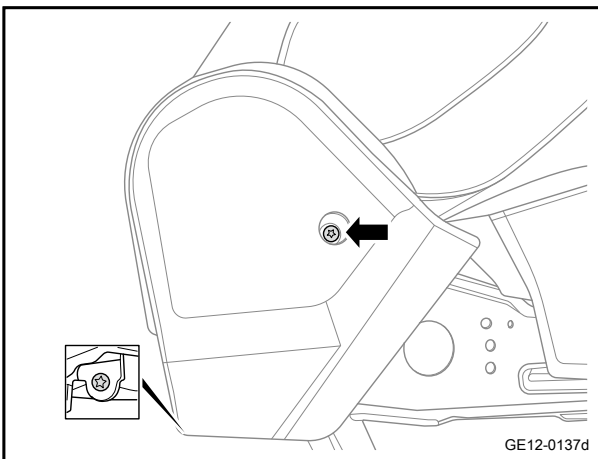
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

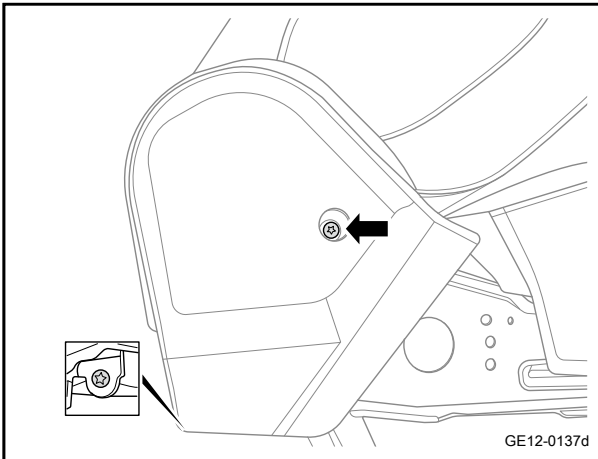
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front manual seat. See [Replacement of driver's seat assembly](#)
- 3 Remove the two fixing bolts of the inner guard plate of the left front seat, and remove the inner guard plate of the left front seat.



#### Installation procedure



- 1 Align the inner guard plate of the left front seat with the mounting holes, install and tighten the 2 fixing bolts of the inner guard plate of the left front seat.  
Torque: 7N·m (metric system) 5.3lb-ft (Imperial system)

- 2 Install the front manual seats.
- 3 Connect the negative cable of battery.

### 11.7.3.7 Replacement of the left front seat slide rail

#### Removal procedure

##### Caution

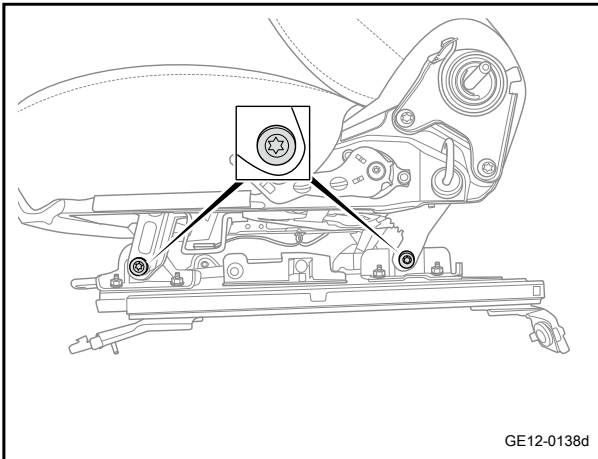
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

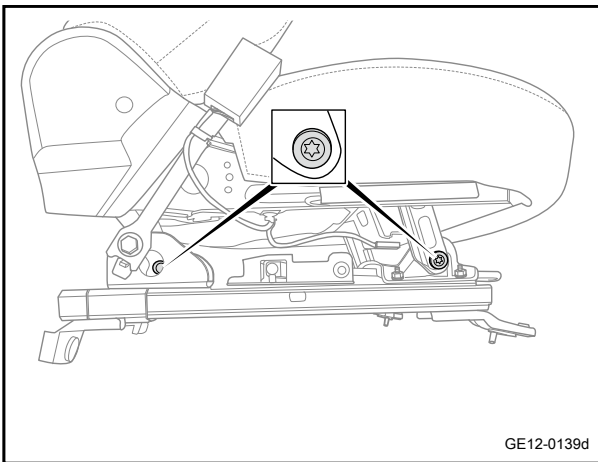
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front manual seat. See [Replacement of driver's seat assembly](#)

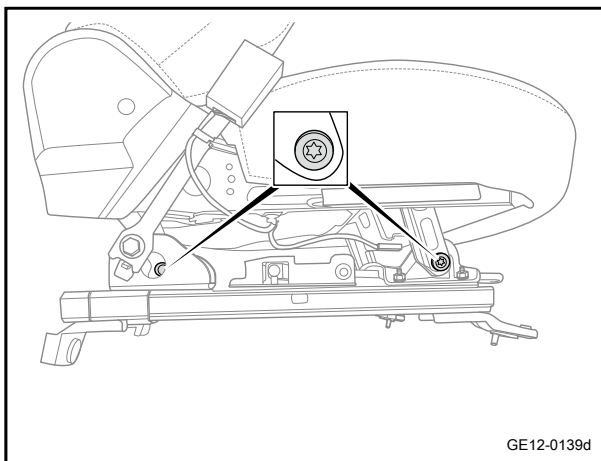


- 3 Remove the 2 fixing bolts on the outer side of the left front seat slide rail.



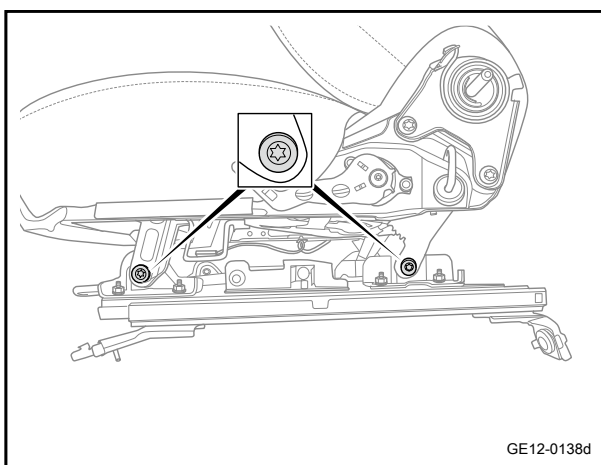
- 4 Remove the 2 fixing bolts on the inner side of the left front seat slide rail, and remove the left front seat slide rail.

Installation procedure



- 1 Align the left front seat slide rail with the mounting holes, install and tighten the two fixing bolts on the inner side of the left front seat slide rail.

Torque: 23N·m (metric system) 17lb-ft (Imperial system)



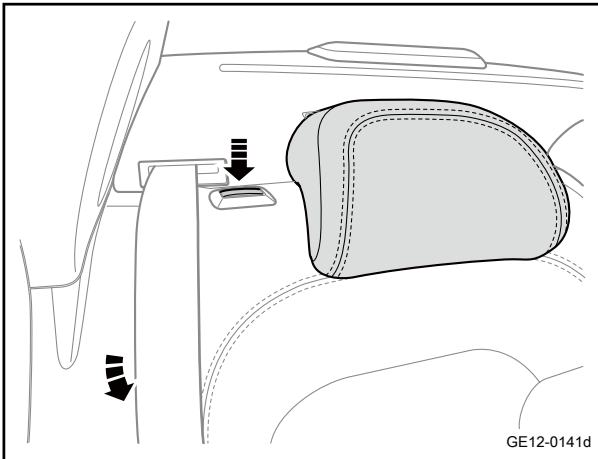
- 2 Install the 2 fixing bolts on the outer side of the left front seat slide rail.

Torque: 23N·m (metric system) 17lb-ft (Imperial system)

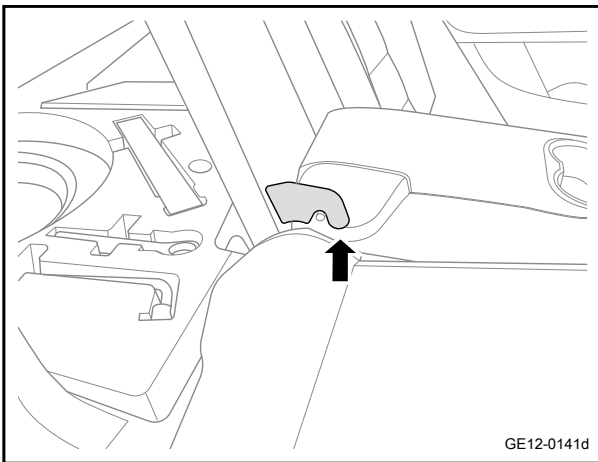
- 3 Install the front manual seats.
- 4 Connect the negative cable of battery.

### 11.7.3.8 Replacement of the central arm assembly of rear seat

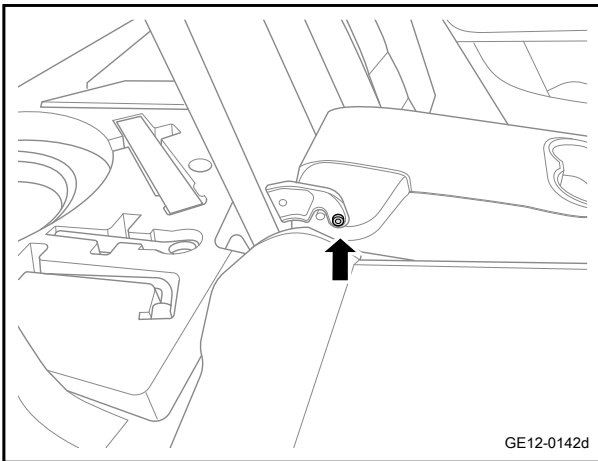
Removal procedure



- 1 Pull up the rear seat unlocking handle and flip the right backrest of the rear seat.



- 2 Take out the right cover of the rear seat armrest.



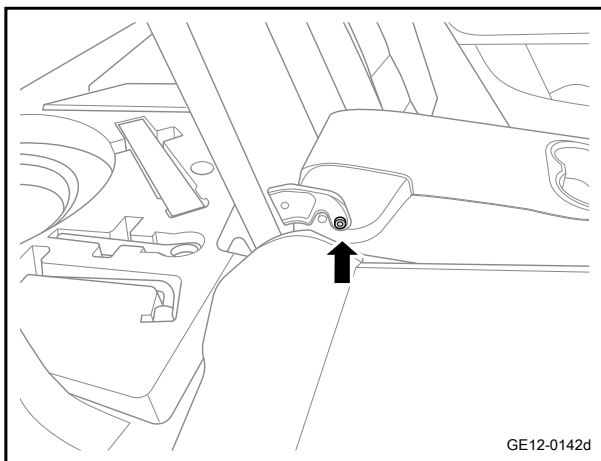
- 3 Remove the fixing bolts of the central arm assembly of rear seat, and take out the central arm assembly of rear seat.

**Caution**

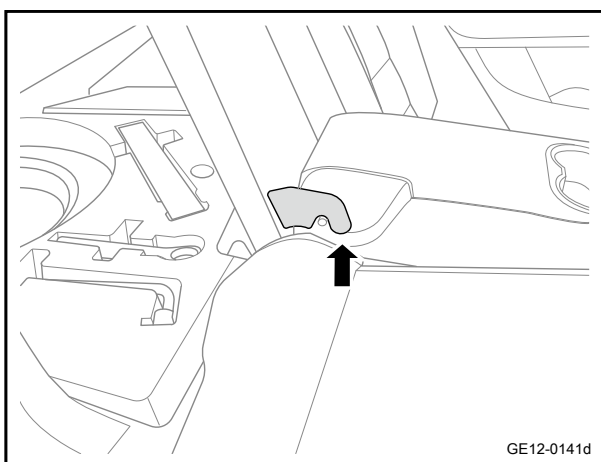
There is an insertion point on the opposite side of central armrest fixing bolt, do not apply too much force when removing it

Installation procedure

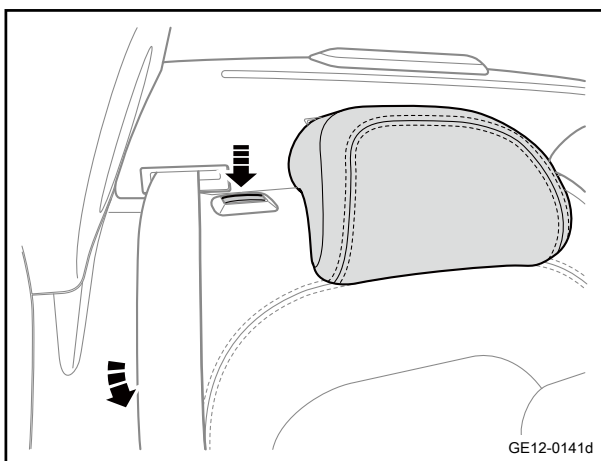




- 1 Install the central arm assembly of rear seat and install the fixing bolts of the rcentral arm assembly of rear seat.  
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 2 Install the right armrest cover of the rear seat.



- 3 Flip the rear-row right backrest and install the rear-row right backrest.

## 11.8 Dashboards, gauges and consoles

### 11.8.1 Specification

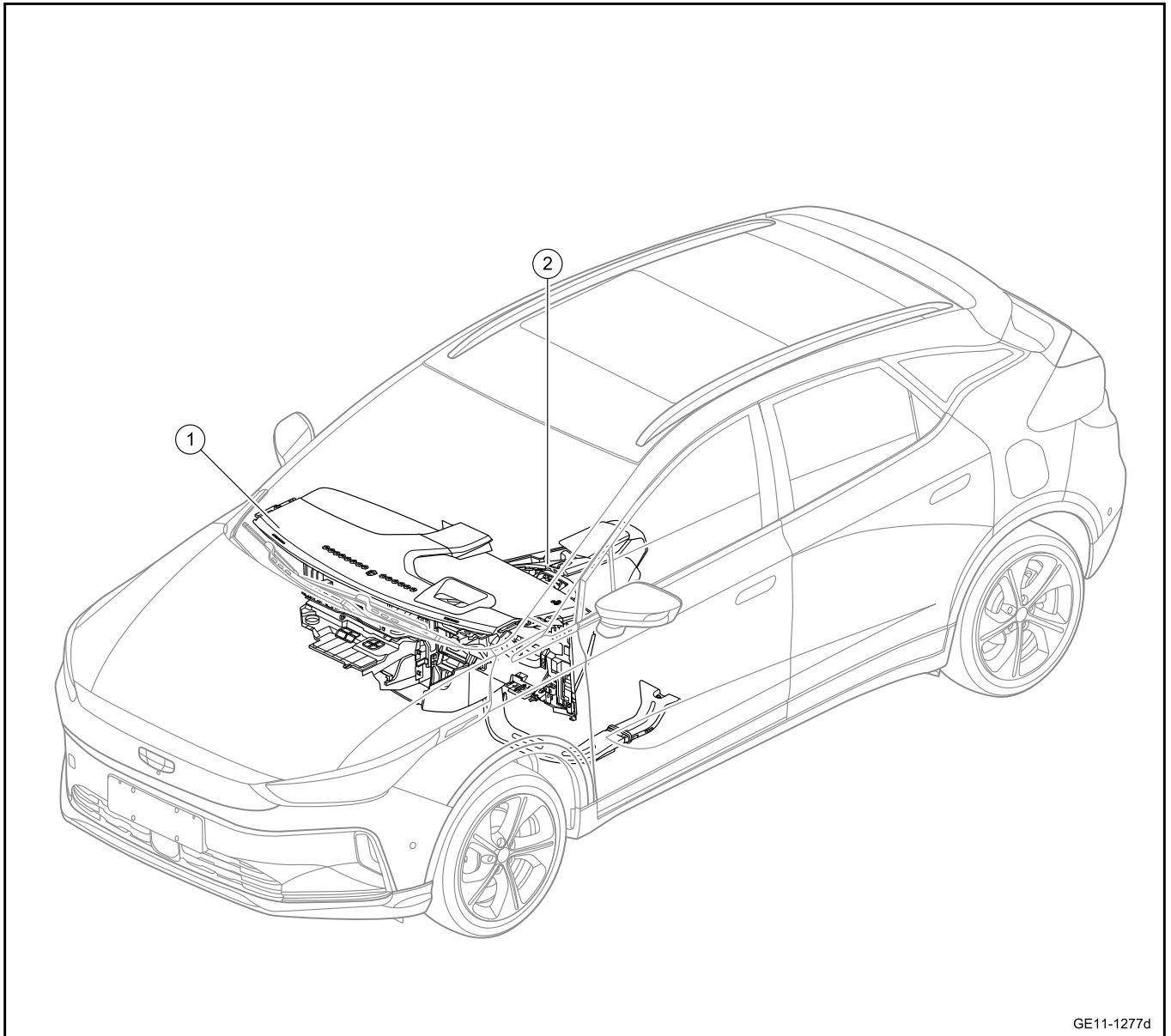
#### 11.8.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Instrument panel lower right fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing screw of diagnostic interface mounting bracket	-	1 - 2	0.7 - 1.5
Fixing screws of left trim panel assembly of the instrument panel	ST4.2x16	1.3 - 1.7	1 - 1.3
Instrument panel lower right fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing screw of instrument panel right trim panel	ST4.2x16	1.3 - 1.7	1 - 1.3
Center console screen mounting bracket cover plate fixing bolt	M6x12	5 - 7	3.7 - 5.2
Fixing screw of upper trim panel assembly of auxiliary instrument	-	1 - 2	0.7 - 1.5
Fixing screw for the auxiliary fascia console arm rest box coverplate assembly	-	1 - 2	0.7 - 1.5
Auxiliary fascia console body assembly fixing bolt	M6x20	5 - 7	3.7 - 5.2
Auxiliary fascia console body assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Instrument panel lower middle fender apron assembly fixing screw	ST4.2	1 - 2	0.7 - 1.5
Fixing nut of 2nd row seat left front ventilator assembly	M6	5 - 7	3.7 - 5.2
Fixing bolt of 2nd row seat left rear ventilator assembly	M6x20	5 - 7	3.7 - 5.2
Instrument panel body assembly fixing bolt	M6x16	5 - 7	3.7 - 5.2
Occupant airbag fixing bolt	M6x16	8.5 - 11.5	6.3 - 8.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts for instrument cross member assembly and body	M8×25	20 - 26	14.8 - 19.2
Fixing bolt of instrument beam assembly and air-conditioning control unit	M6×16	5 - 7	3.7 - 5.2
Fixing bolts for instrument crossbeam assembly and ground wire	M6×16	8 - 10	5.9 - 7.4
Bolts for instrument panel cross member assembly and lower right mounting bracket	M8×20	20 - 28	14.8 - 20.7
Bolts for instrument panel cross member assembly and lower left mounting bracket	M8×20	20 - 28	14.8 - 20.7

## 11.8.2 Part location

### 11.8.2.1 Part Position



GE11-1277d

1. Dashboard body assembly

2. Auxiliary fascia console assembly

### 11.8.3 Removal and installation

#### 11.8.3.1 Replacement of the lower left guard plate assembly of the instrument panel (Type I)

##### Disassembly procedure

##### Caution

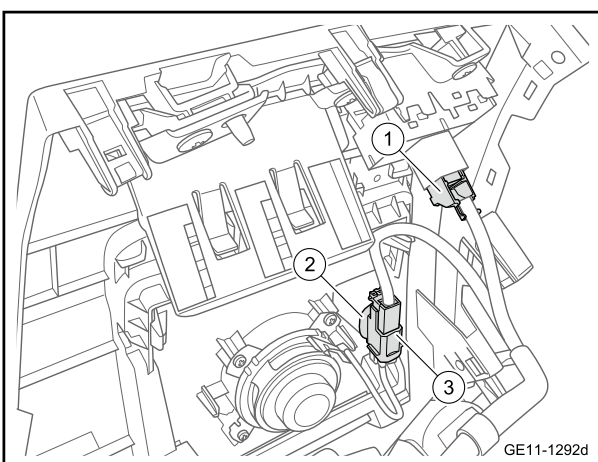
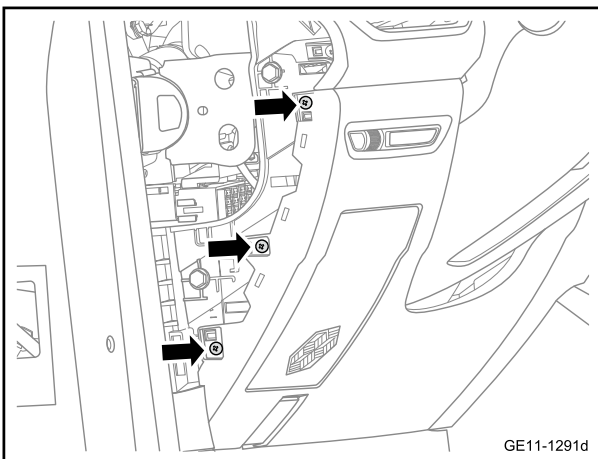
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)

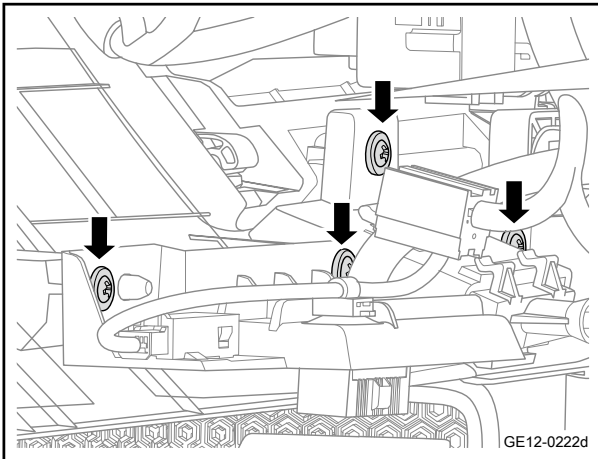
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the driver side end cover assembly of the dashboard. See [Replacement of the end cover assembly at the driver side of the dashboard](#)
- 3 Remove the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.
- 4 Pry off the lower left guard plate assembly of the dashboard.

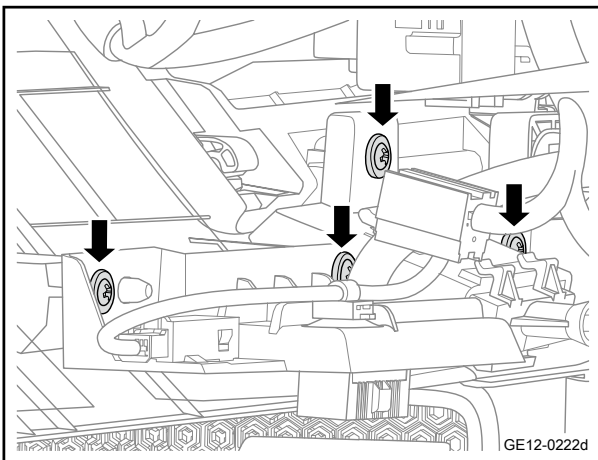


- 5 Disconnect the 1 harness connector 1 of the dashboard switch pack.
- 6 Use a prying board to remove the 1 fixed buckle 2 connecting the instrument wiring harness and the lower left guard plate of the dashboard.
- 7 Disconnect 1 wire harness connector 3 of the loudspeaker of the vehicle-mounted mobile terminal.

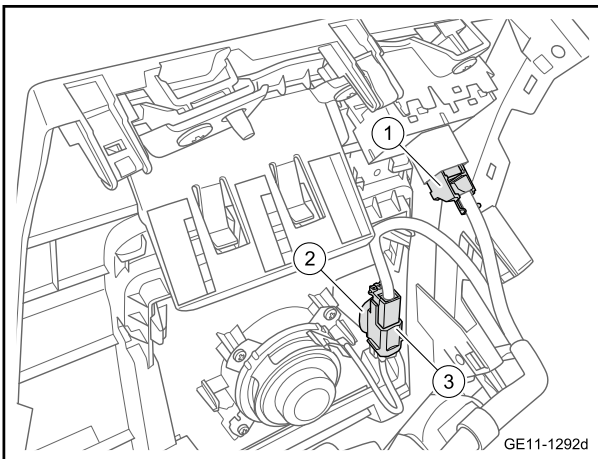


- 8 Remove the 4 fixing screws of the diagnostic interface mounting bracket.
- 9 Remove the lower left guard plate assembly of the dashboard.

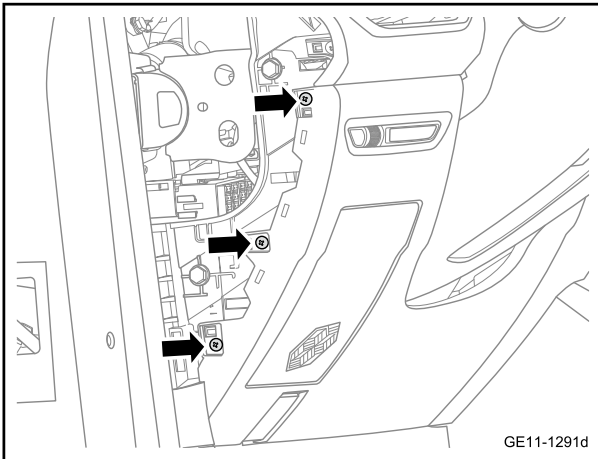
#### Installation procedure



- 1 Move the lower left guard plate assembly of the dashboard to the installation position.
- 2 Install the 4 fixing screws of the diagnostic interface mounting bracket.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Connect the 1 wire harness connector 3 of the loudspeaker of the vehicle-mounted mobile terminal.
- 4 Install 1 fixed buckle 2 connecting the instrument wiring harness and the lower left guard plate of the dashboard.
- 5 Connect the 1 harness connector 1 of the dashboard switch pack.



- 6 Install the left lower fender apron assembly of the dashboard.
- 7 Install the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 8 Install the driver side end cover assembly of the dashboard.
- 9 Connect the battery negative cable.

### 11.8.3.2 Replacement of the lower left guard plate assembly of the instrument panel (Type II)

Disassembly procedure

#### Caution

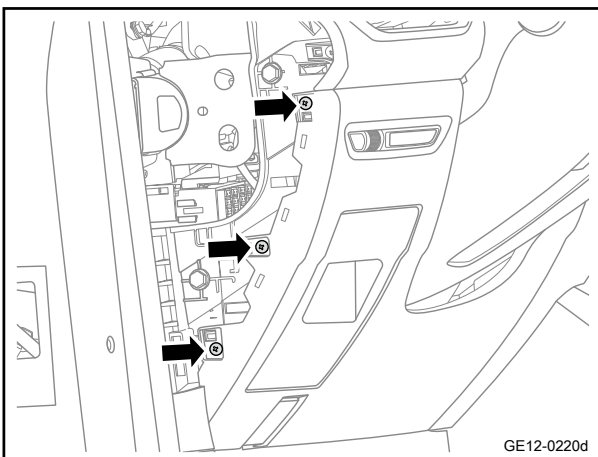
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

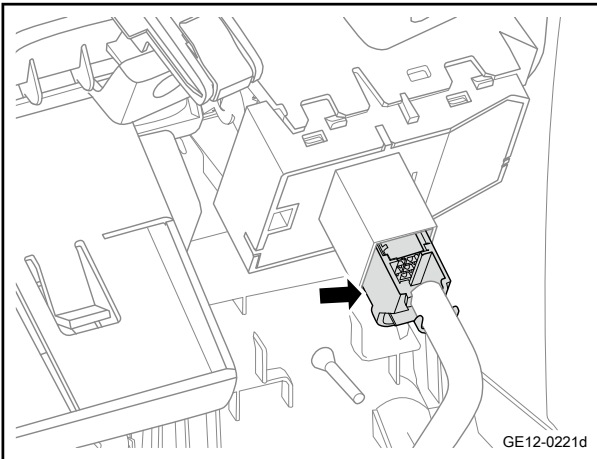
- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

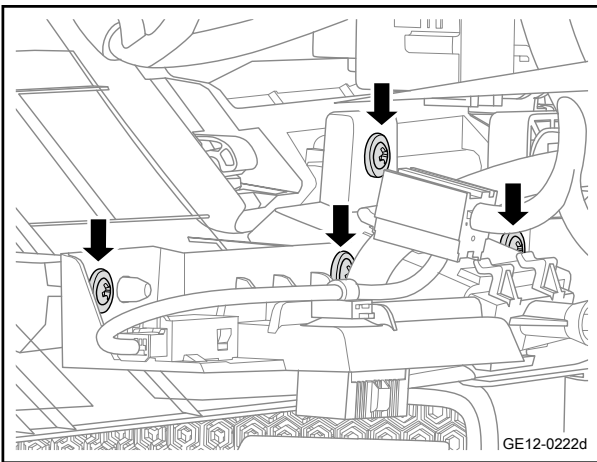
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the driver side end cover assembly of the dashboard. See [Replacement of the end cover assembly at the driver side of the dashboard](#)
- 3 Remove the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.
- 4 Pry off the lower left guard plate assembly of the dashboard.

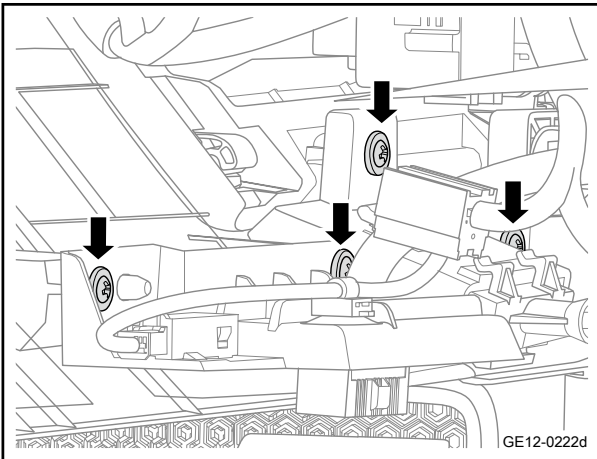




- 5 Disconnect the harness connector of the headlight height adjustment switch assembly.



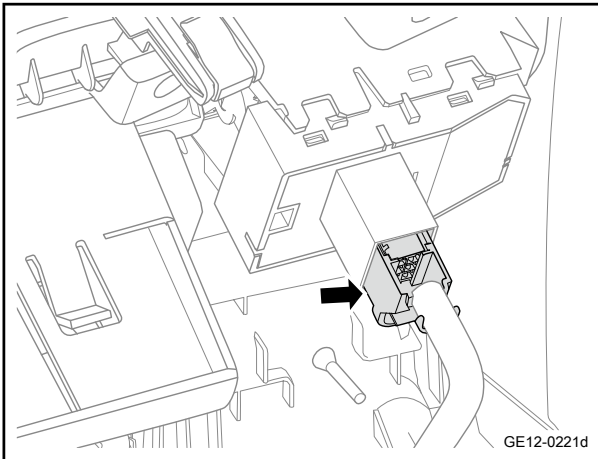
- 6 Remove the 4 fixing screws of the diagnostic interface mounting bracket.
- 7 Remove the lower left guard plate assembly of the dashboard.



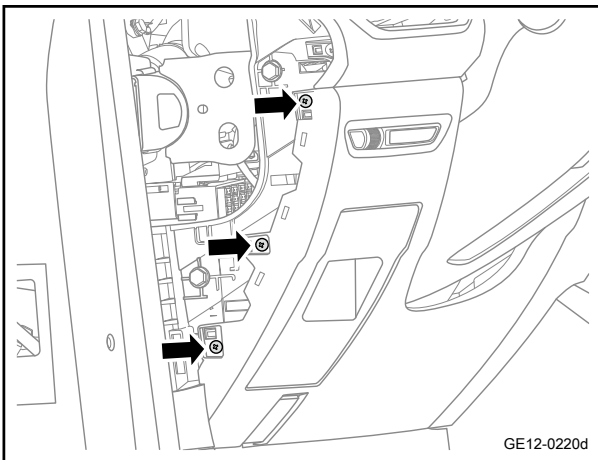
#### Installation procedure

- 1 Move the lower left guard plate assembly of the dashboard to the installation position.
- 2 Install the 4 fixing screws of the diagnostic interface mounting bracket.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)





- 3 Connect the harness connector of the headlight height adjustment switch assembly.



- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Install the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 6 Install the driver side end cover assembly of the dashboard.
- 7 Connect the battery negative cable.

### 11.8.3.3 Replacement of the lower right guard plate sub-assembly of the instrument panel

#### Removal procedure

##### Caution

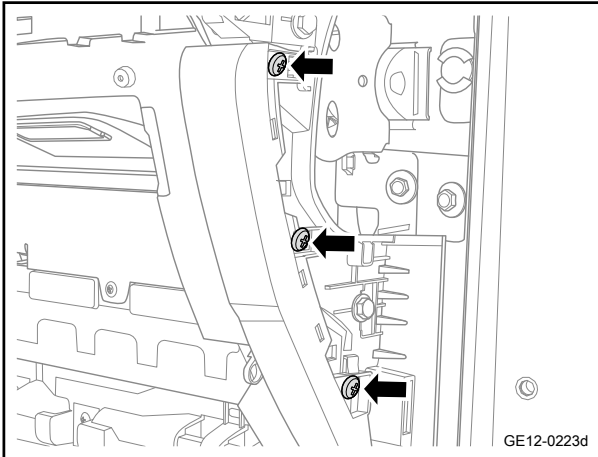
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

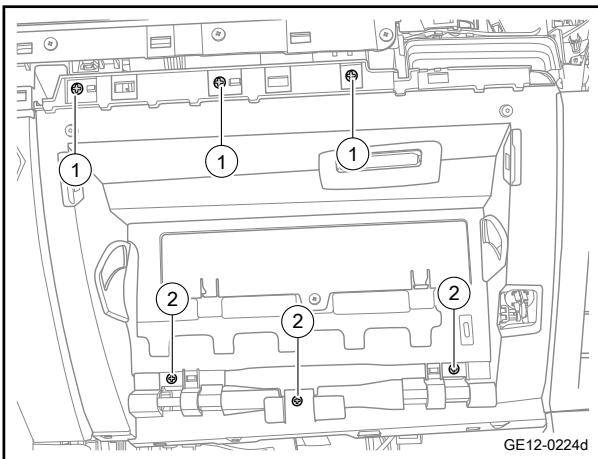
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

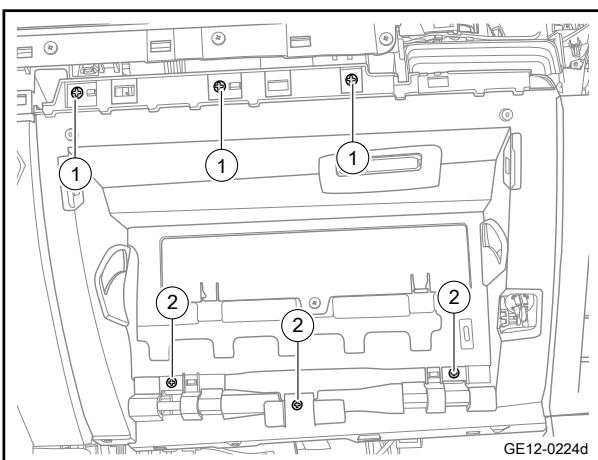
- 2 Remove the lower right baffle assembly of the dashboard. See [Replacement of the lower right baffle assembly of the dashboard](#)



- 3 Remove the lower trim panel assembly of the right A-pillar. Refer to [Replacement of left A-pillar lower trim panel assembly](#)
- 4 Remove the right trim assembly of the dashboard. Refer to [Replacement of the right trim assembly of the dashboard](#)
- 5 Remove 3 fixing screws at the right side of the lower right guard plate sub-assembly of the instrument panel.

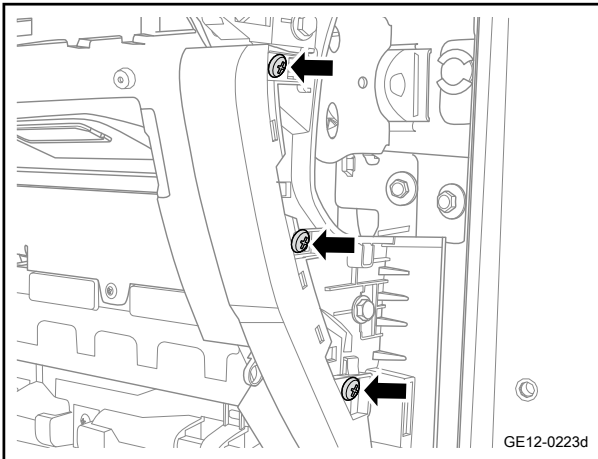


- 6 Remove 3 fixing screws 1 at the upper part of the lower right guard plate sub-assembly of the instrument panel.
- 7 Remove 3 fixing screws at the lower part of the lower right guard plate sub-assembly of the instrument panel.
- 8 Remove the lower right guard plate sub-assembly of the dashboard.



#### Installation procedure

- 1 Move the lower right guard plate sub-assembly of the dashboard to the installation position.
- 2 Install the 3 fixing screws 2 at the lower part of the lower right guard plate sub-assembly of the instrument panel.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install the 3 fixing screws 1 at the upper part of the lower right guard plate sub-assembly of the instrument panel.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



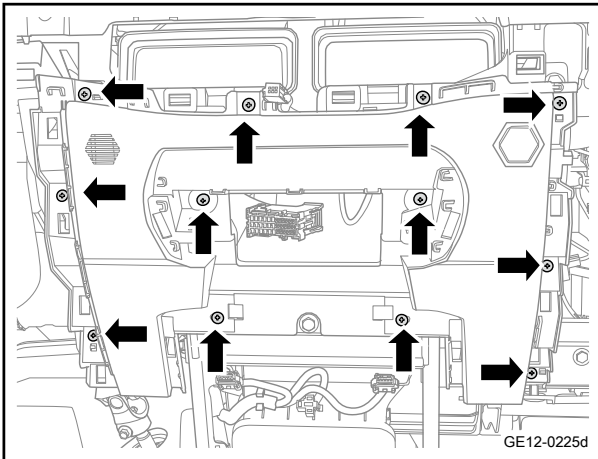
- 4 Install the 3 fixing screws at the right side of the lower right guard plate sub-assembly of the instrument panel.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 5 Install the right trim panel of the dashboard.
- 6 Install the right A-pillar lower trim panel assembly.
- 7 Install the lower right baffle assembly of the dashboard.
- 8 Connect the negative cable of battery.

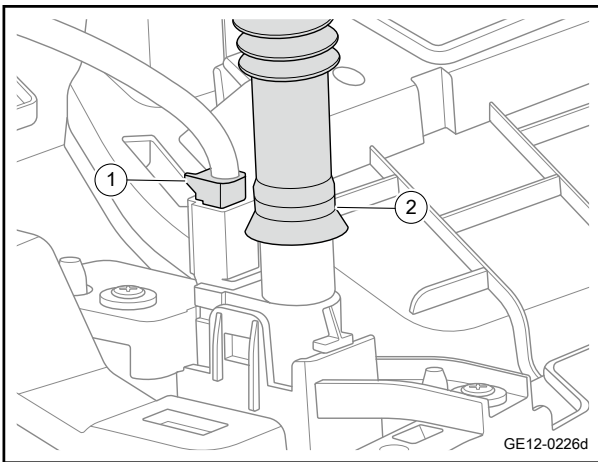
#### 11.8.3.4 Replacement of lower middle guard assembly of the dashboard

##### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the auxiliary fascia console body assembly. See [Replacement of auxiliary fascia console body assembly](#)
- 3 Disassemble the glove box assembly. See [Replacement of glove box assembly](#)
- 4 Remove the right trim assembly of the dashboard. See [Replacement of the right trim assembly of the dashboard](#)
- 5 Remove the lower right guard plate sub-assembly of the instrument panel. See [Replacement of the lower right guard plate sub-assembly of the instrument panel](#)
- 6 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)

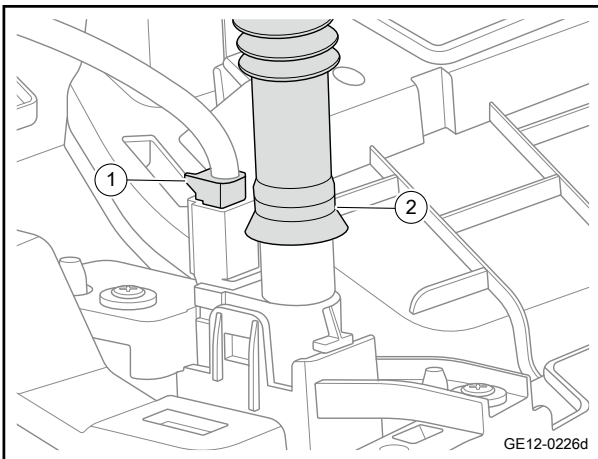


- 7 Remove the 12 fixing screws of the lower middle guard plate assembly of the dashboard.
- 8 Remove the middle lower guard plate assembly of the dashboard.

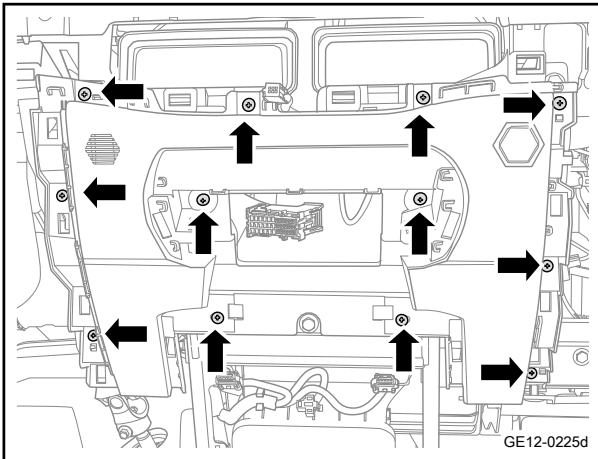


- 9 Disconnect the inside temperature sensor harness connector 1.
- 10 Disconnect the indoor temperature sensor air pipe 2.

#### Installation procedure



- 1 Connect the indoor temperature sensor air pipe 2.
- 2 Connect the inside temperature sensor harness connector 1.



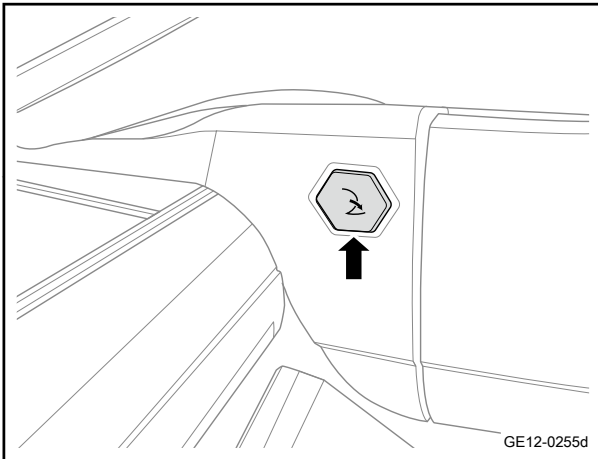
- 3 Install the middle lower fender apron assembly of the dashboard.
- 4 Install the 12 fixing screws of the lower middle guard plate assembly of the dashboard.

Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

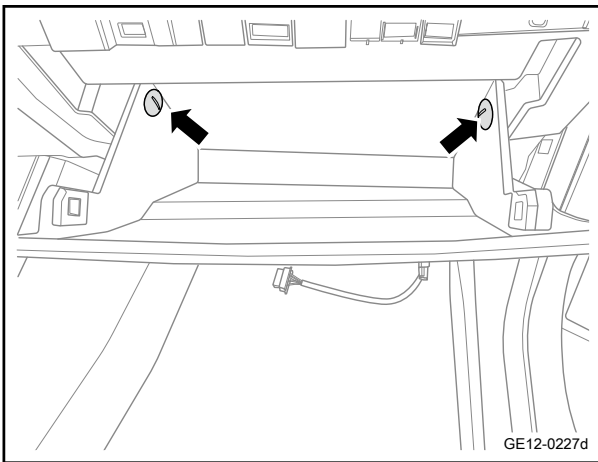
- 5 Install the left lower fender apron assembly of the dashboard.
- 6 Install the lower right guard plate sub-assembly of the instrument panel.
- 7 Install the right trim panel of the dashboard.
- 8 Install the glove box assembly.
- 9 Install the auxiliary fascia console body assembly.
- 10 Connect the negative cable of battery.

### 11.8.3.5 Replacement of glove box assembly

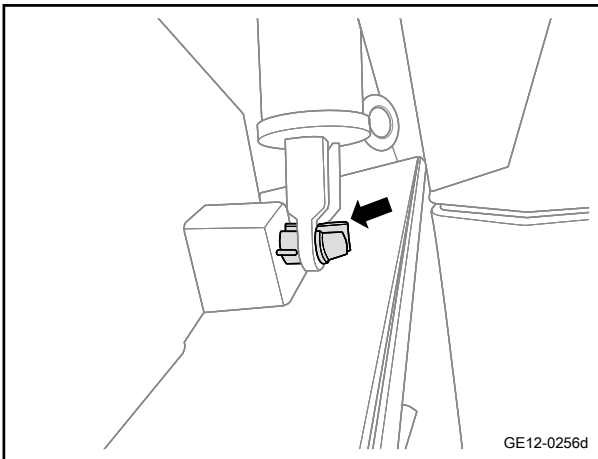
Removal procedure



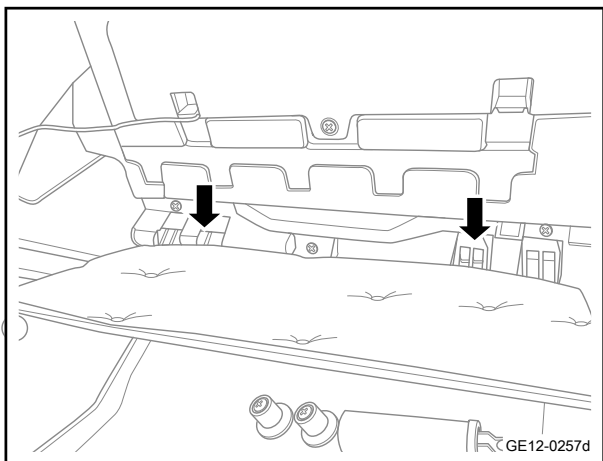
- 1 Press the glove box opening button to open the glove box.



- 2 Remove the glove box to open the stopper.

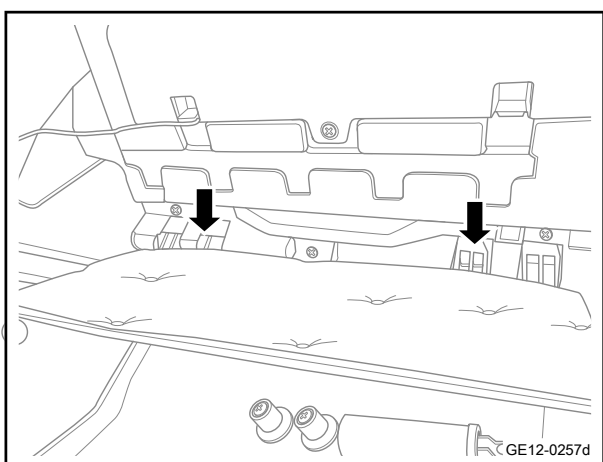


- 3 Release the connection between the glove box damper and the glove box.

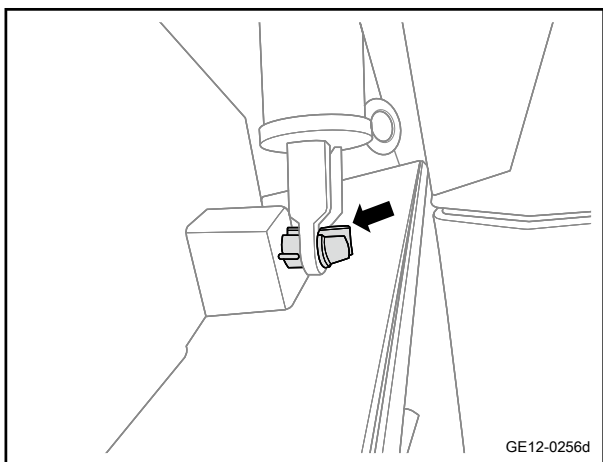


- 4 Break the connection of the slot at the bottom of the glove box assembly.
- 5 Remove the glove box assembly.

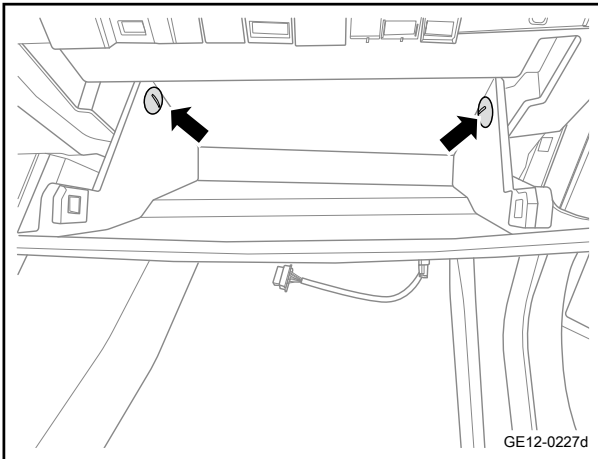
Installation procedure



- 1 Move the glove box assembly to the installation position.
- 2 Install the slot at the bottom of the glove box assembly



- 3 Connect the glove box damper to the glove box.



- 4 Install the glove box opening stopper.

- 5 Close the glove box.

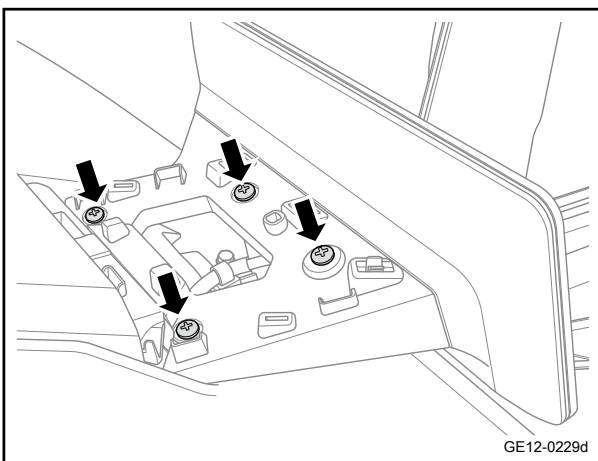
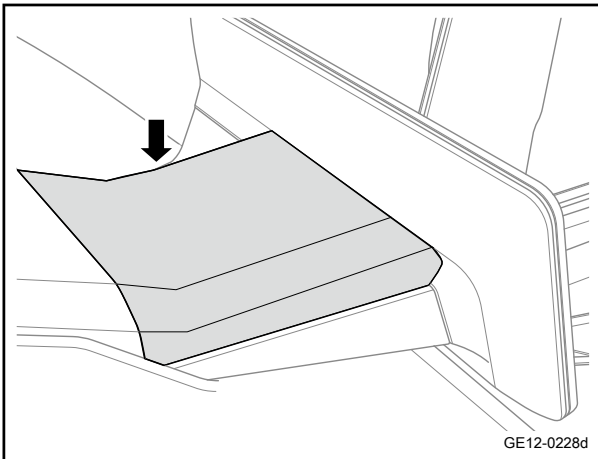
### 11.8.3.6 Placement of the mounting bracket cover plate of the center console screen

#### Removal procedure

#### Caution

Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

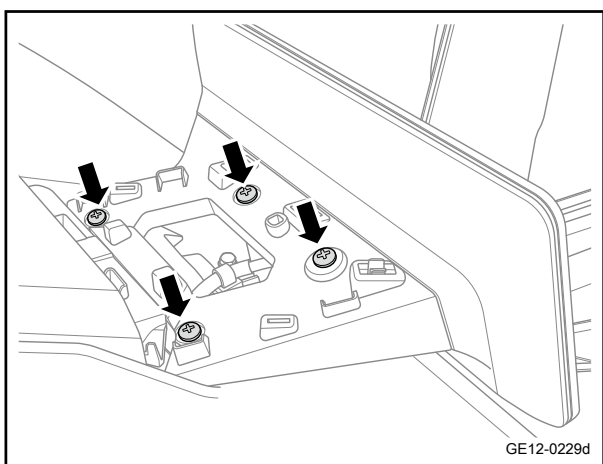
- 1 Pry off the central console screen mounting bracket mask assembly.



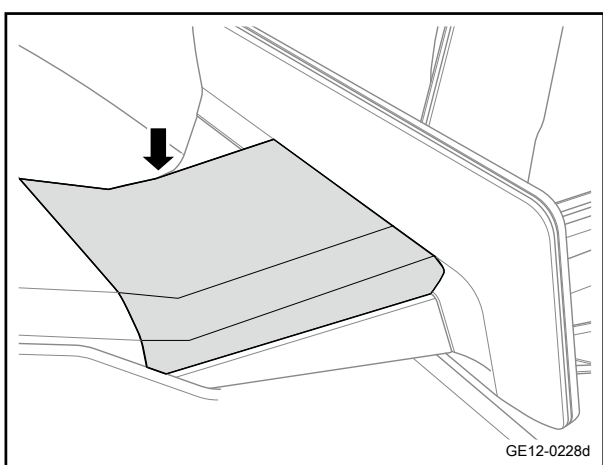
- 2 Remove the 4 fixing bolts of the mounting bracket cover plate of the center console screen.
- 3 Remove the mounting bracket cover plate of the center console screen.



Installation procedure



- 1 Move the central console screen mounting bracket cover plate to the installation position.
- 2 Install the 4 fixing bolts of the mounting bracket cover plate of the center console screen.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 3 Install the central console screen mounting bracket mask assembly.

### 11.8.3.7 Replacement of HUD trim cover assembly

Removal procedure

**Caution**

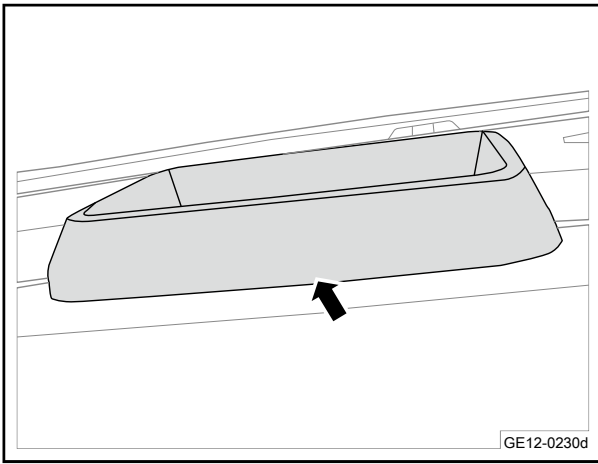
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

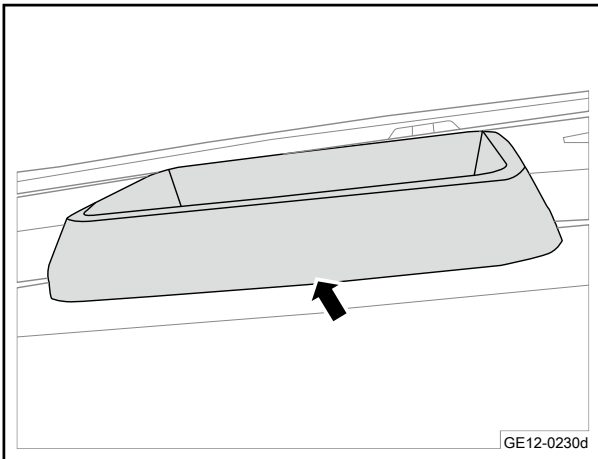
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Pry down the HUD trim cover assembly.

**Installation procedure**

- 1 Install the HUD trim cover assembly.



- 2 Connect the negative cable of battery.

### 11.8.3.8 Replacement of the left trim assembly of the dashboard

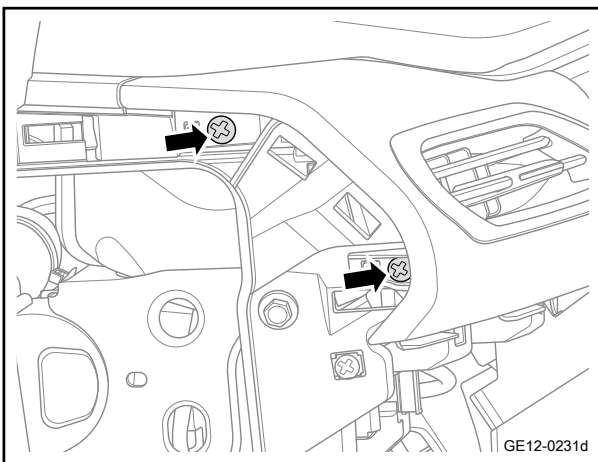
**Removal procedure**

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

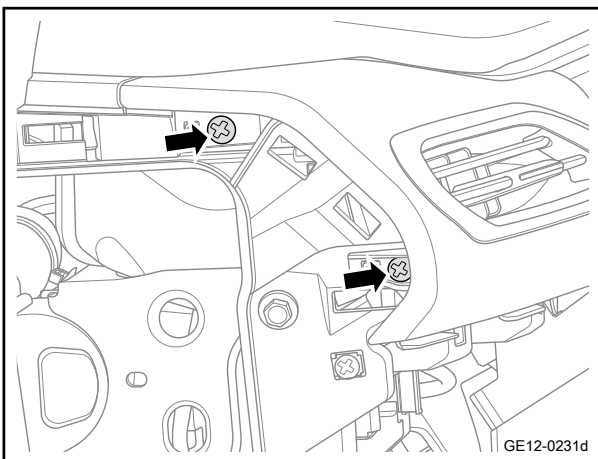
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the driver side end cover assembly of the dashboard. See [Replacement of the end cover assembly at the driver side of the dashboard](#)
- 3 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 4 Remove the 2 fixing screws from the left trim assembly of the dashboard.
- 5 Pry off the left trim assembly of the dashboard.



#### Installation procedure

- 1 Move the left trim assembly of the dashboard to the installation position.
- 2 Install the 2 fixing screws from the left trim assembly of the dashboard.  
Torque: 1.5N·m (metric) 1.1lb·ft (imperial system)



- 3 Install the left lower fender apron assembly of the dashboard.
- 4 Install the driver side end cover assembly of the dashboard.
- 5 Connect the negative cable of battery.

### 11.8.3.9 Replacement of the right trim assembly of the dashboard

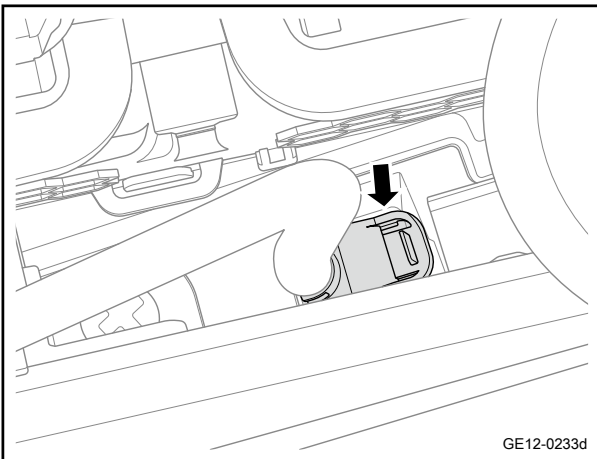
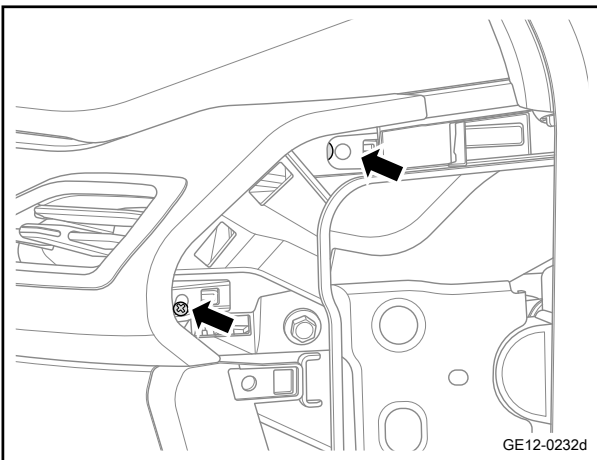
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

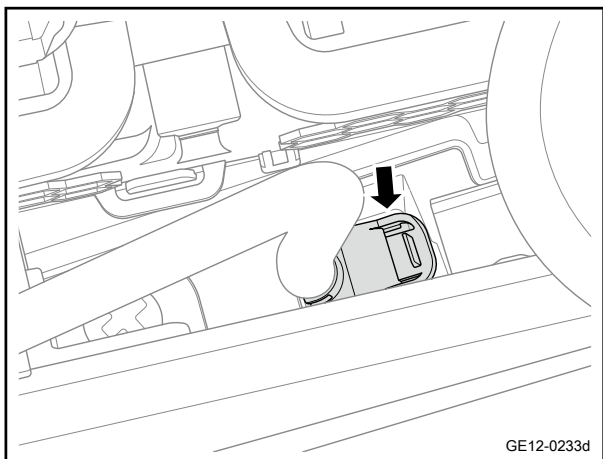
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front passenger side end cover assembly of the dashboard. See [Replacement of the end cover assembly at the driver side of the dashboard](#)
- 3 Remove the 2 fixing screws from the right trim assembly of the dashboard.
- 4 Pry off the right trim assembly of the dashboard.

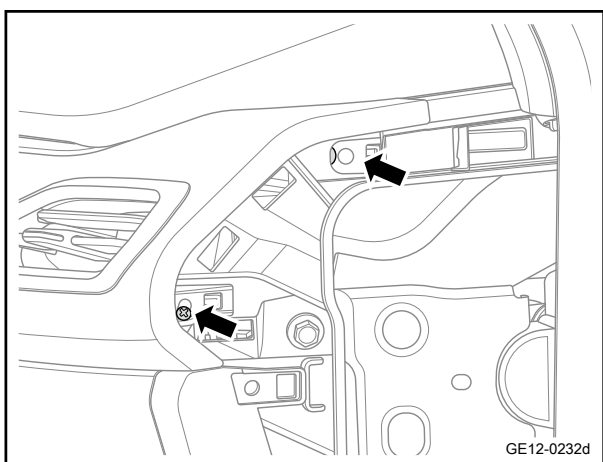


- 5 Disconnect the harness connector of air-conditioning control panel assembly.

#### Installation procedure



- 1 Connect the harness connector of air-conditioning control panel assembly.
- 2 Install the right trim panel of the dashboard.

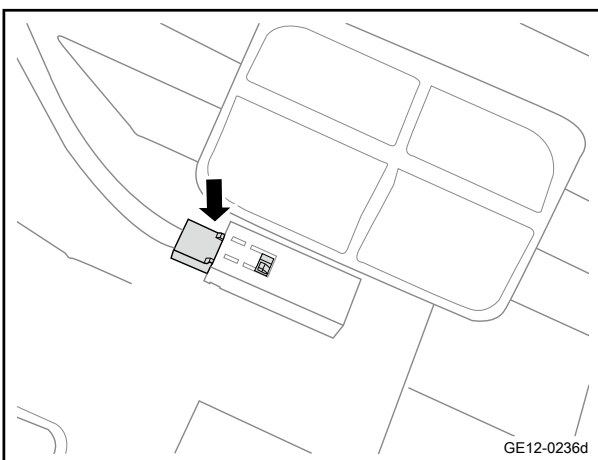
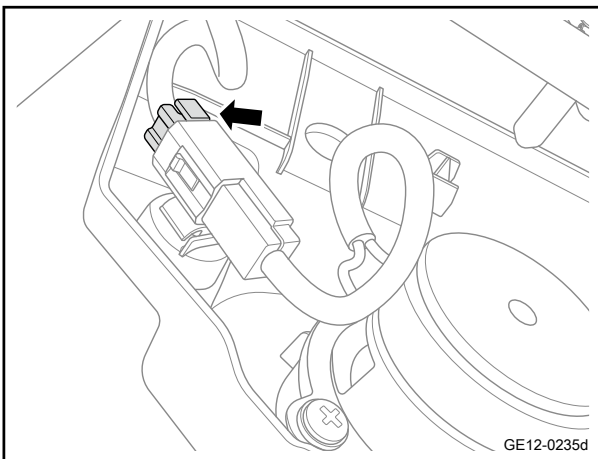
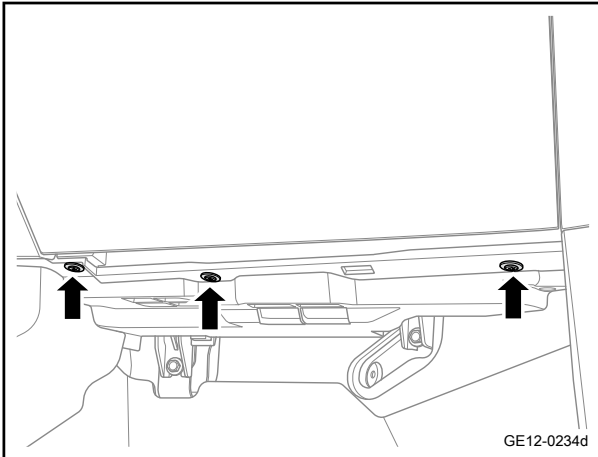


- 3 Install the 2 fixing screws from the right trim assembly of the dashboard.

- 4 Install the front passenger side end cover assembly of the dashboard.
- 5 Connect the negative cable of battery.

### 11.8.3.10 Replacement of the lower right baffle assembly of the dashboard

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

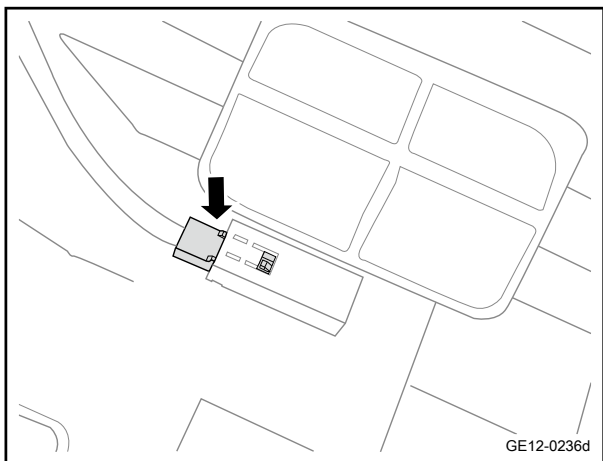
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the 3 fixing buckles of the lower right baffle assembly of the dashboard.
- 3 Remove the lower right baffle assembly of the dashboard.

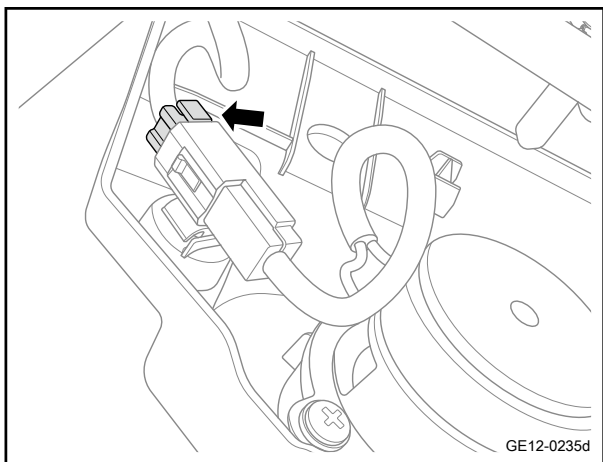
- 4 Disconnect the full-range loudspeaker wire harness connector.

- 5 Disconnect the foot light harness connector.

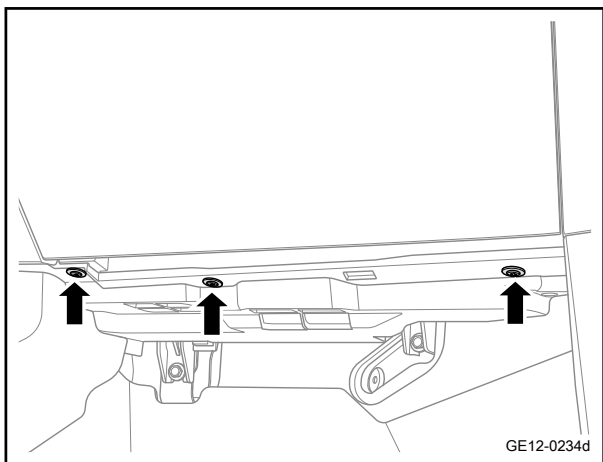
Installation procedure



- 1 Connect the foot light harness connector.



- 2 Connect the full-range loudspeaker wire harness connector.



- 3 Install the lower right baffle assembly of the dashboard.
- 4 Install the 3 fixing buckles of the lower right baffle assembly of the dashboard.

- 5 Connect the negative cable of battery.

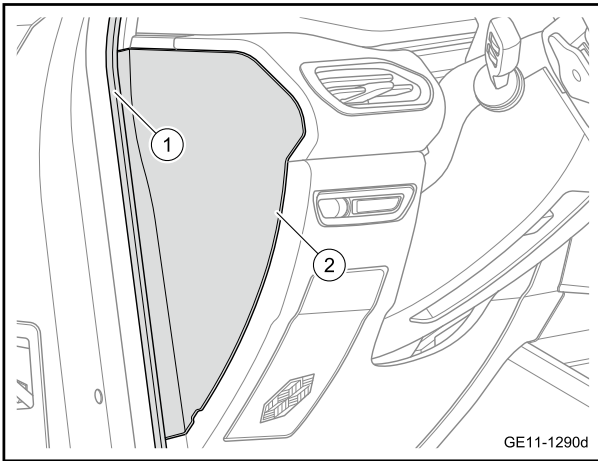
### 11.8.3.11 Replacement of the end cover assembly at the driver side of the dashboard

Removal procedure

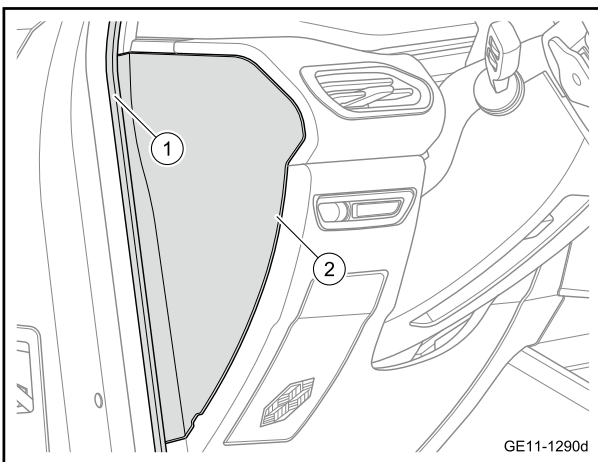
**Caution**

The end cover assembly at the driver side of the dashboard share the same assembly and disassembly methods with the end cover assembly at the front passenger side of the dashboard

- 1 Pry down the sealing strip 1 of the left front door frame.
- 2 Pry off the driving side end cover assembly 2 of the dashboard.

**Installation procedure**

- 1 安装仪表板驾驶侧端盖总成2。
- 2 Install the left front door frame sealing strip 1.

**11.8.3.12 Replacement of dashboard body assembly****Removal procedure**

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

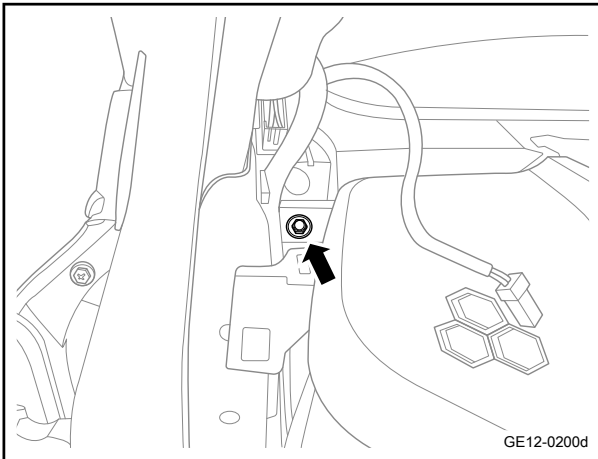
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

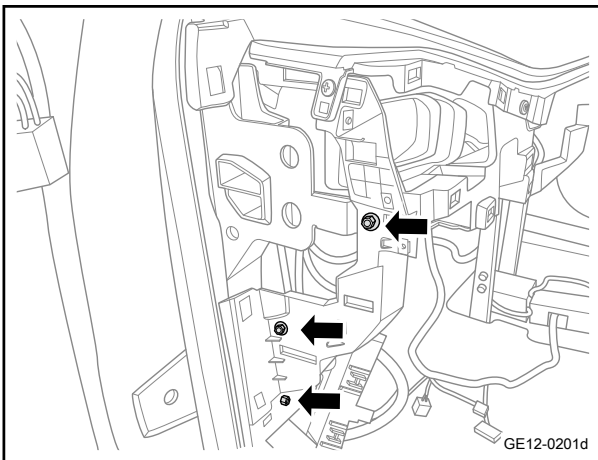
- 2 Remove the auxiliary fascia console body assembly. See [Replacement of auxiliary fascia console body assembly](#)



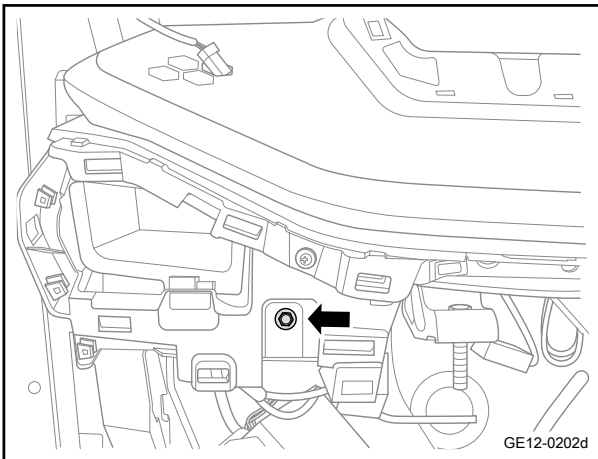
- 3 Disassemble the upper trim panel assembly on the left and right A-pillars. Refer to [Replacement of A-pillar upper trim panel assembly](#)
- 4 Remove assembly of left lower fender apron of dashboard. Refer to the [Replacement of Assembly of Left Lower Fender Apron of Dashboard](#)
- 5 Remove the left trim assembly of the dashboard. See [Replacement of the left trim assembly of the dashboard](#)
- 6 Remove the middle lower guard plate assembly of the dashboard. See [Replacement of the lower guard plate assembly in the dashboard](#)
- 7 Remove the sunlight sensor. Refer to [Replacement of sunlight sensor](#)
- 8 Remove the vehicle-mounted information entertainment display screen. Refer to [Replacement of the vehicle-mounted information entertainment display screen](#)
- 9 Remove the HUD trim cover assembly. See [Replacement of HUD trim cover assembly](#)
- 10 Remove the instrument cluster assembly. Refer to [Replacement of IP cluster Assembly](#)
- 11 Remove the steering wheel assembly. See [Replacement of steering wheel assembly](#)
- 12 Remove the electric power steering column c/w intermediate shaft assembly. Refer to [Replacement of electric power steering column c/w intermediate shaft assembly](#)
- 13 Remove the right trim assembly of the dashboard. See [Replacement of the right trim assembly of the dashboard](#)
- 14 Disassemble the glove box assembly. See [Replacement of glove box assembly](#)
- 15 Remove the lower right guard plate sub-assembly of the instrument panel. See [Replacement of the lower right guard plate sub-assembly of the instrument panel](#)
- 16 Remove the vehicle-mounted information entertainment control unit. Refer to [Replacement of the vehicle-mounted information entertainment control unit](#)



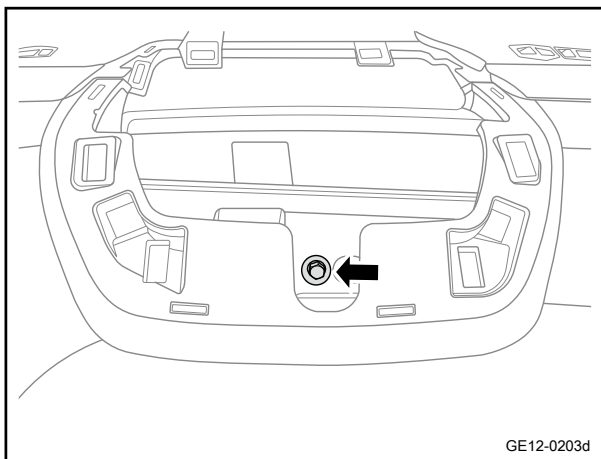
- 17 Remove the 1 fixing bolt on the upper left side of the dashboard body assembly.



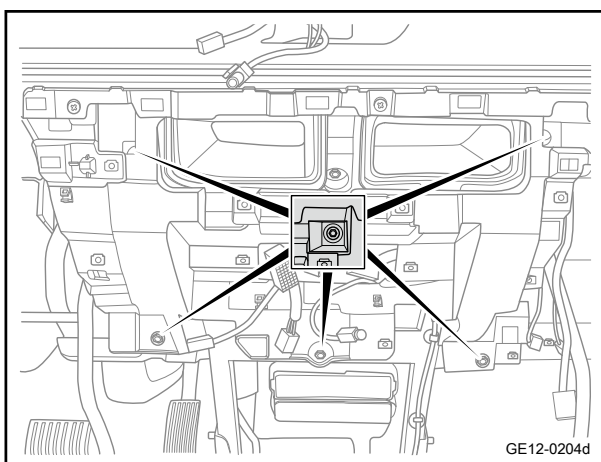
- 18 Remove the 3 fixing bolts on the lower left side of the dashboard body assembly.



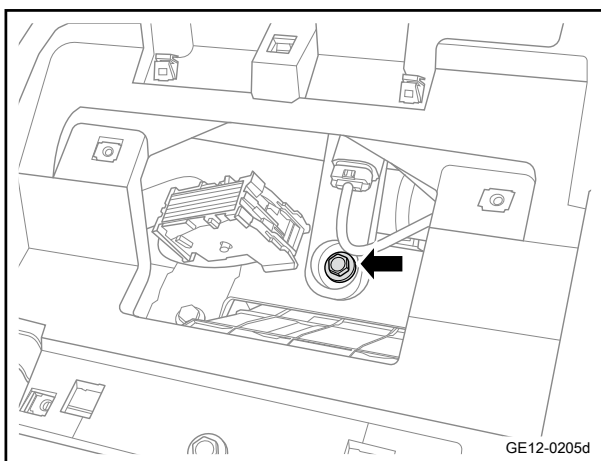
- 19 Remove one fixing bolt at the left air outlet of the dashboard body assembly.



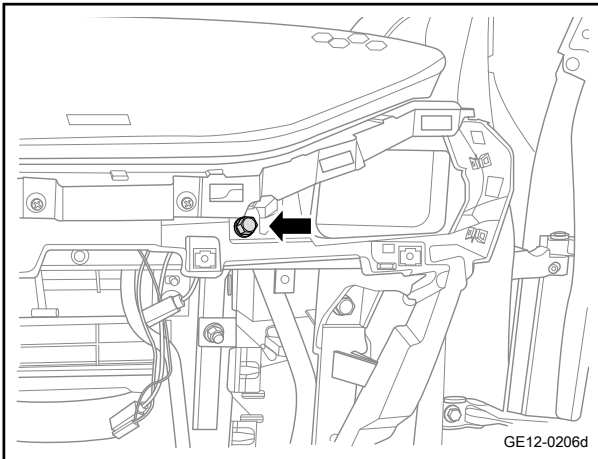
- 20 Remove one fixing bolt from the head-up display of the dashboard body assembly.



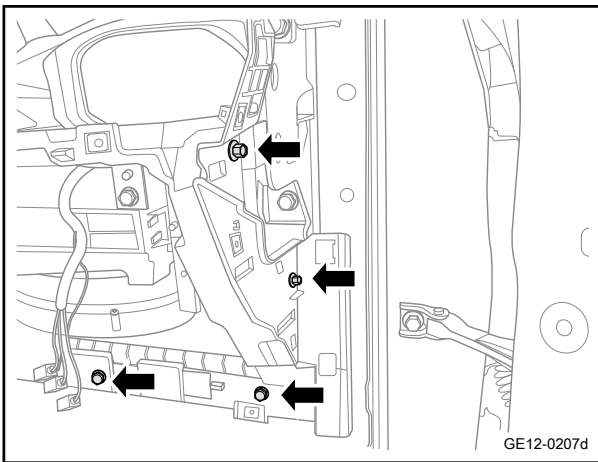
- 21 Remove the 5 fixing bolts in the middle of the dashboard body assembly.



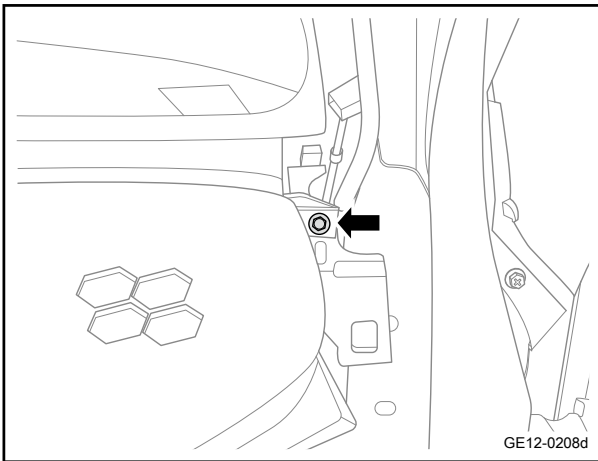
- 22 Remove one fixing bolt from the middle bracket of the dashboard body assembly.



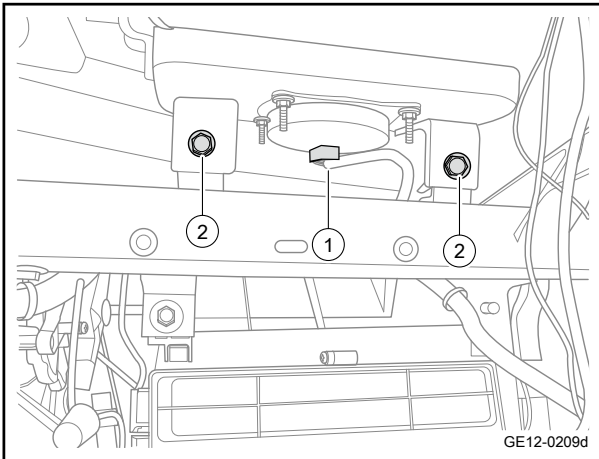
- 23 Remove one fixing bolt at the air outlet on the right side of the dashboard body assembly.



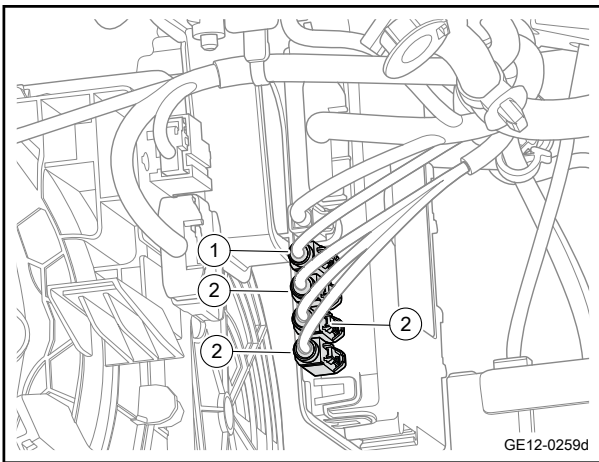
- 24 Remove the 4 fixing bolts on the lower right side of the dashboard body assembly.



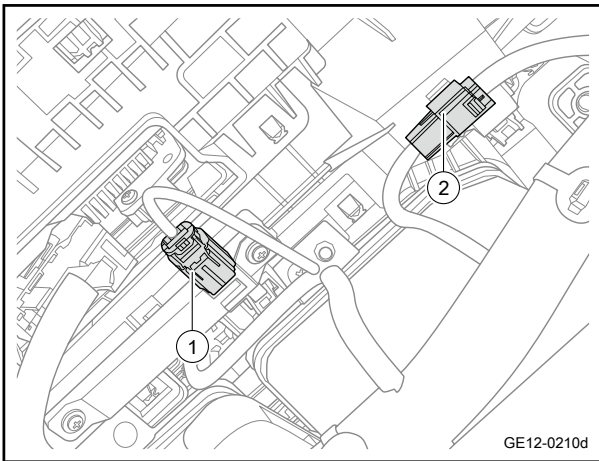
- 25 Remove the 1 fixing bolt on the upper right side of the dashboard body assembly.



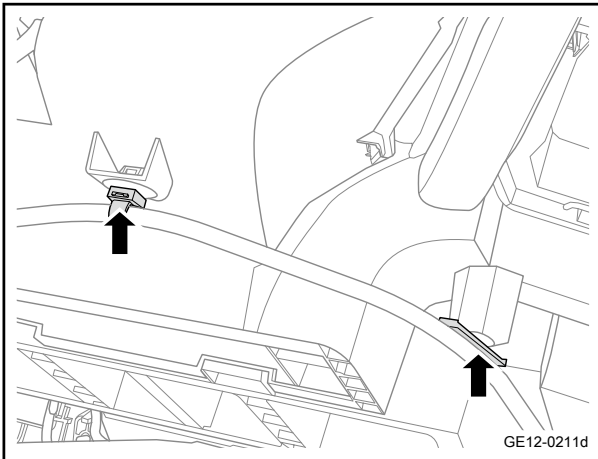
- 26 Disconnect the harness connector 1 of the airbag for passenger seat.
- 27 Remove the 2 fixing bolts 2 from the front passenger seat airbag.



- 28 Disconnect the harness connector 1 of bluetooth antenna.
- 29 Disconnect GPS+4G antenna harness connector 2.

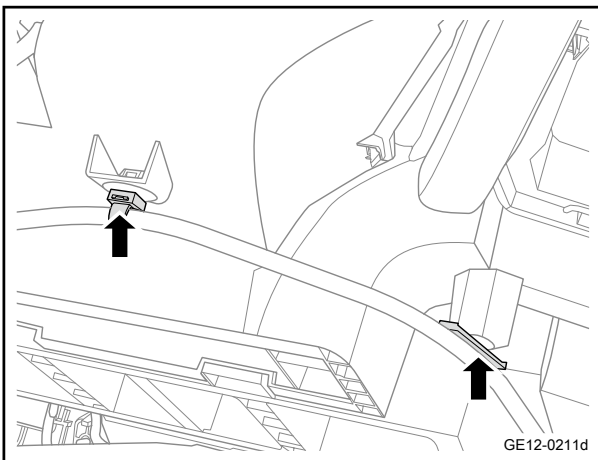


- 30 Disconnect the front keyless entry receiving antenna harness connector 1.
- 31 Disengage the instrument harness buckle 2.

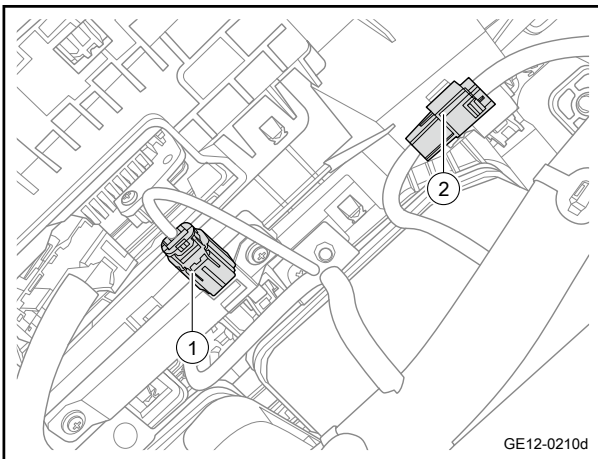


- 32 Disengage the sun sensor harness buckle.
- 33 Remove the dashboard body assembly.

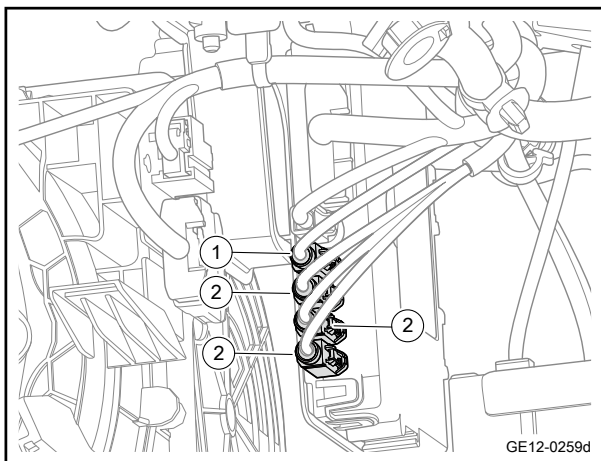
#### Installation procedure



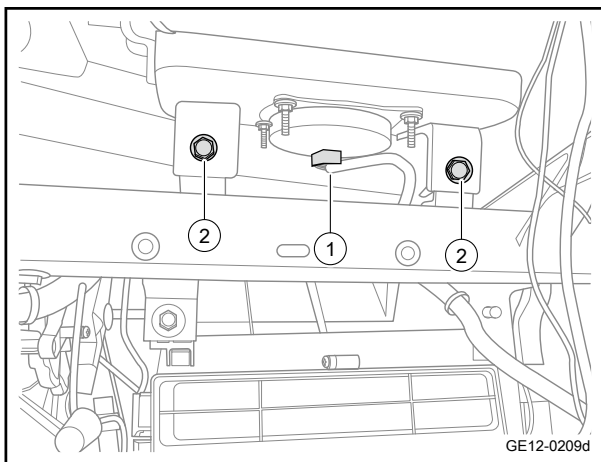
- 1 Move the dashboard body assembly to the installation position.
- 2 Connect the sun sensor harness buckle.



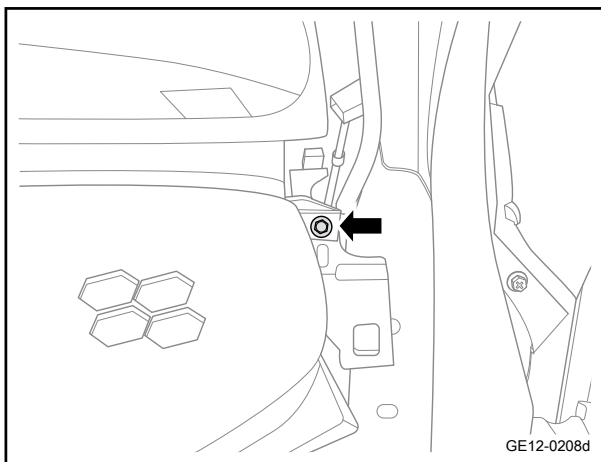
- 3 Connect the instrument harness buckle 2.
- 4 Disconnect the front keyless entry receiving antenna harness connector 1.



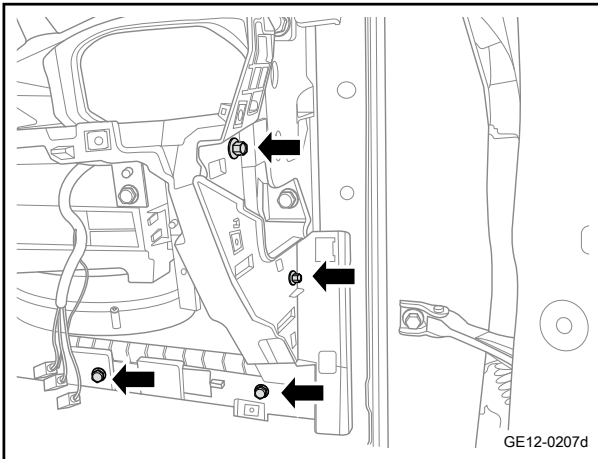
- 5 Connect GPS+4G antenna harness connector 2.
- 6 Connect the harness connector 1 of bluetooth antenna.



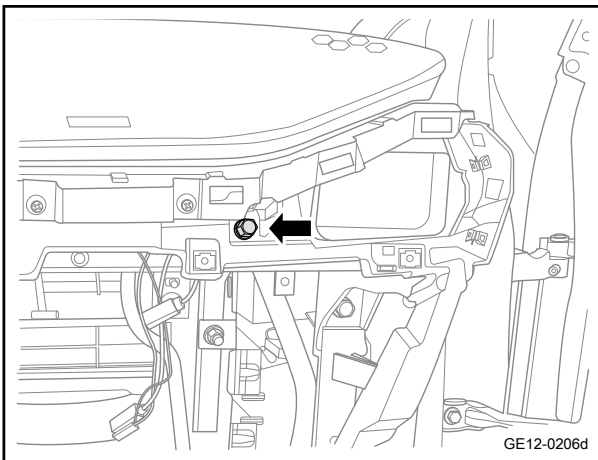
- 7 Install the 2 fixing bolts 2 from the front passenger seat airbag.  
Torque: 10N·m (metric) 7.4lb-ft (imperial system)
- 8 Connect the harness connector 1 of the airbag for passenger seat.



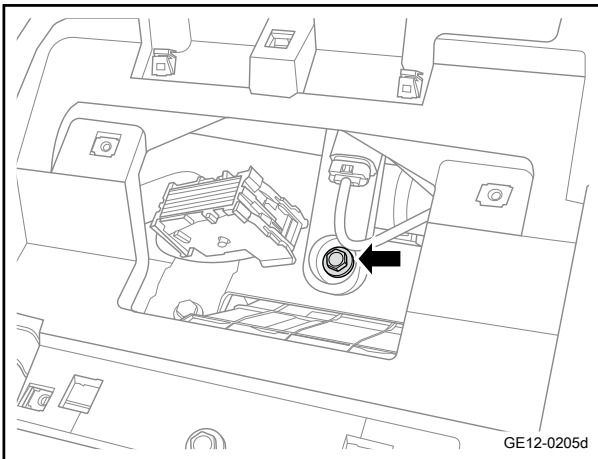
- 9 Install 1 fixing bolt on the upper right side of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 10 Install the 4 fixing bolts on the lower right side of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

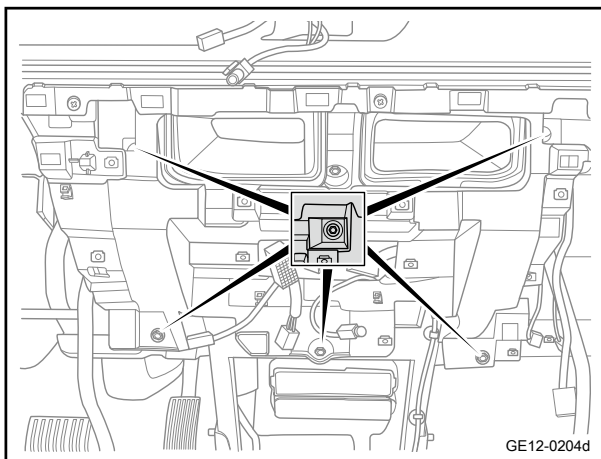


- 11 Install the 1 fixing bolt at the right air outlet of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



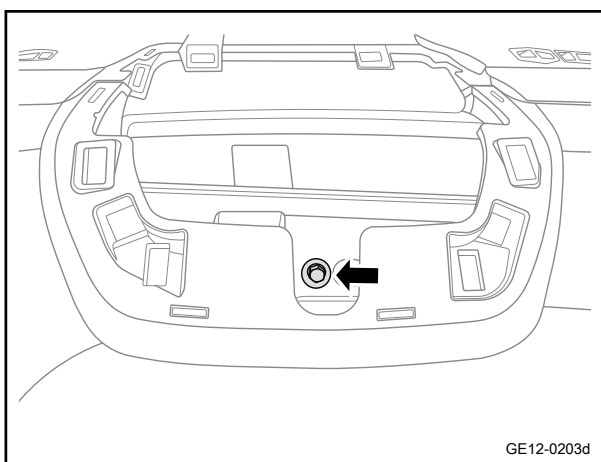
- 12 Install a fixing bolt of the middle bracket of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)





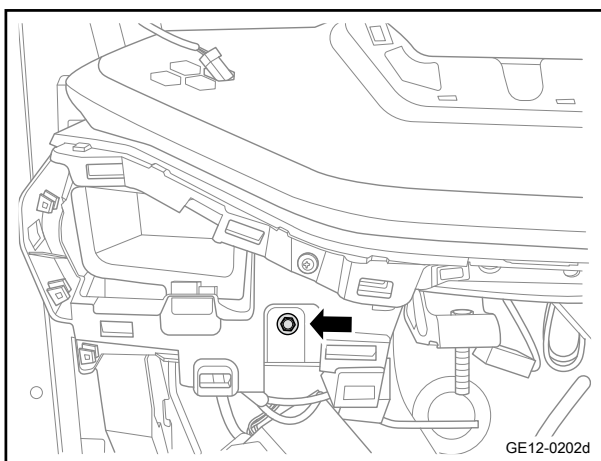
- 13 Install the 5 fixing bolts in the middle of the dashboard body assembly.

Torque: 6N·m (metric) 4.4lb-ft (imperial system)



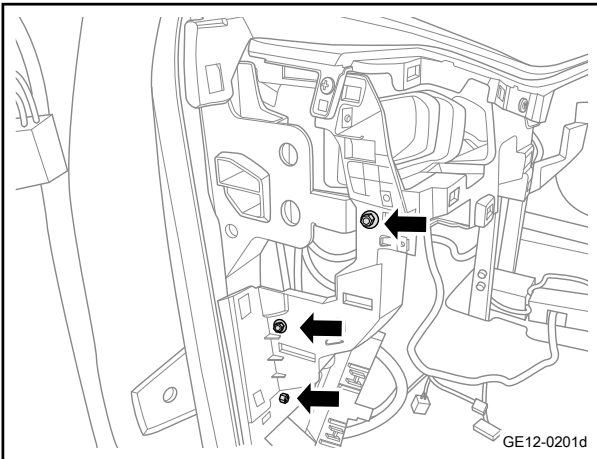
- 14 Install a fixing bolt at the head-up display of the dashboard body assembly.

Torque: 6N·m (metric) 4.4lb-ft (imperial system)

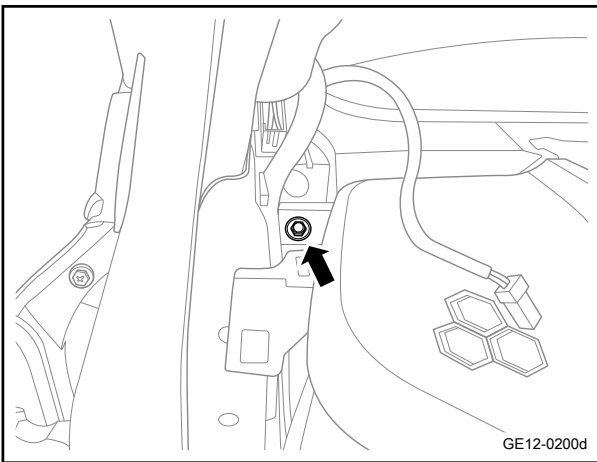


- 15 Install a fixing bolt at the left air outlet of the dashboard body assembly.

Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 16 Install the 3 fixing bolts on the lower left side of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 17 Install a fixing bolt on the upper left side of the dashboard body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 18 Install the vehicle-mounted infotainment control unit.  
19 Install the lower right guard plate sub-assembly of the instrument panel.  
20 Install the glove box assembly.  
21 Install the right trim panel of the dashboard.  
22 Install the electric power steering column c/w intermediate shaft assembly.  
23 Install the steering wheel assembly.  
24 Install the instrument cluster assembly.  
25 Install the HUD trim cover assembly.  
26 Install the vehicle-mounted information entertainment display screen  
27 Install the sunlight sensor.  
28 Install the middle lower fender apron assembly of the dashboard.  
29 Install the left trim panel of the dashboard.  
30 Install the left lower fender apron assembly of the dashboard.  
31 Install the left and right A-pillar upper trim panel assembly.

- 32 Install the auxiliary fascia console body assembly.
- 33 Connect the negative cable of battery.

### 11.8.3.13 Replacement of the dashboard beam assembly

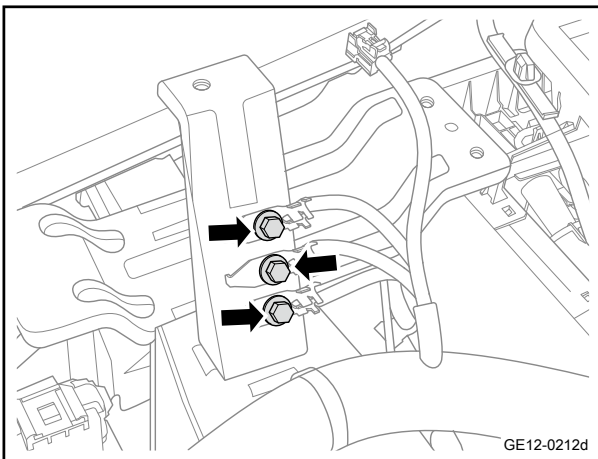
#### Removal procedure

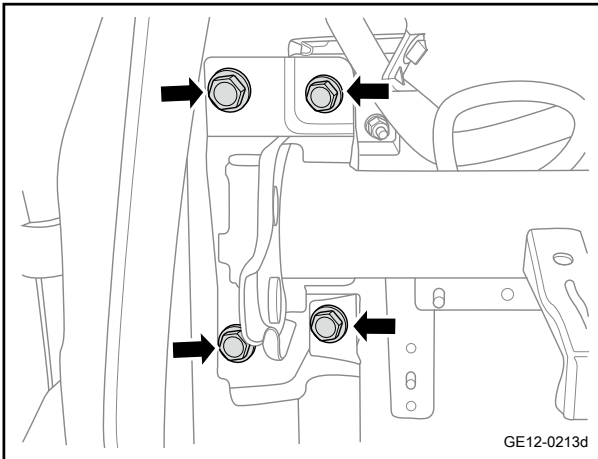
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

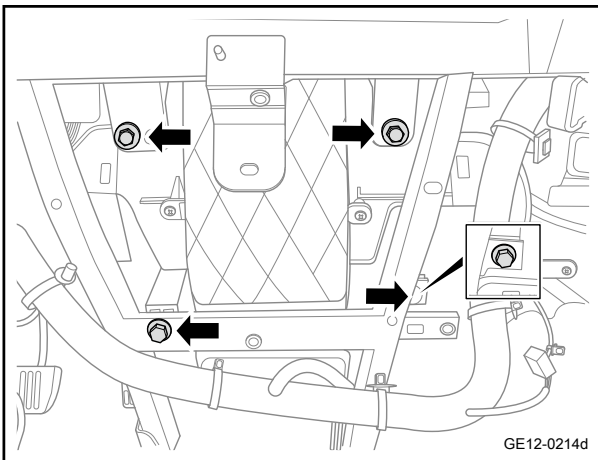
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the dashboard body assembly. See [Replacement of dashboard body assembly](#)
- 3 Remove the central controller. Refer to [Replacement of central control unit](#)
- 4 Remove the head-up display. See [Replacement of head-up display](#)
- 5 Disassemble the emergency call system controller. See [Replacement of emergency call system controller](#)
- 6 Dismount the ventilation cover plate assembly. See [Replacement of vent cover assembly](#)
- 7 Remove the wiper motor c/w connecting rod assembly. Refer to [Replacement of wiper motor c/w connecting rod assembly](#)
- 8 Remove the 3 fixing bolts of instrument console harness bond strap.

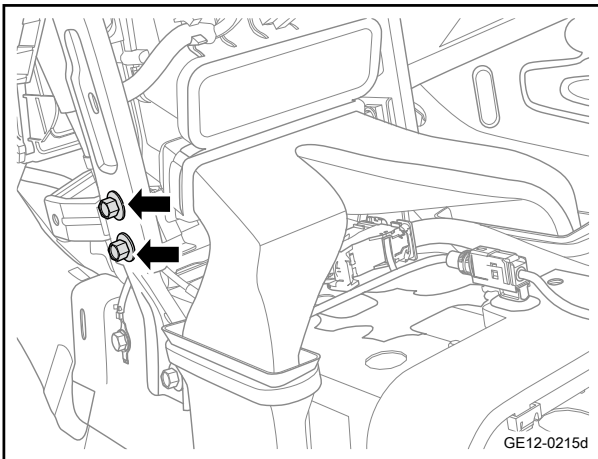




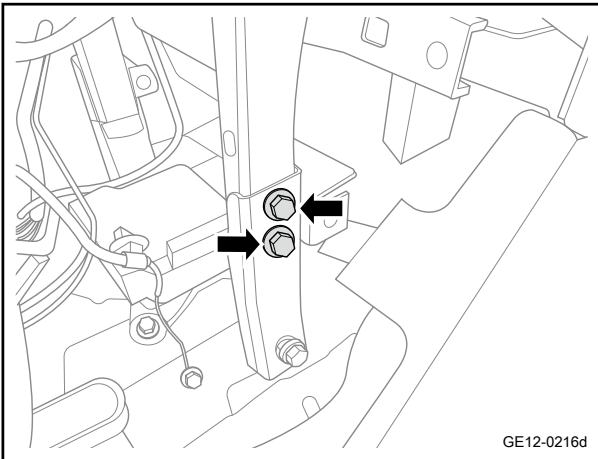
- 9 Remove 4 fixing bolts connecting the left side of dashboard crossmember assembly and the vehicle body.



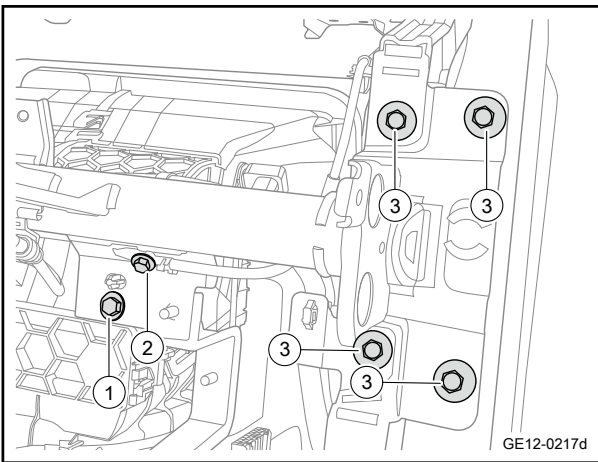
- 10 Remove the 4 fixing bolts connecting the middle part of the dashboard beam assembly and the air conditioning unit.



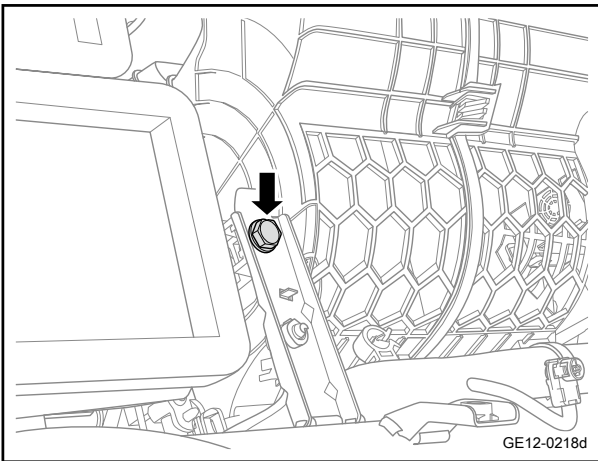
- 11 Remove the 2 fixing bolts connecting the dashboard beam assembly and the lower left mounting bracket.



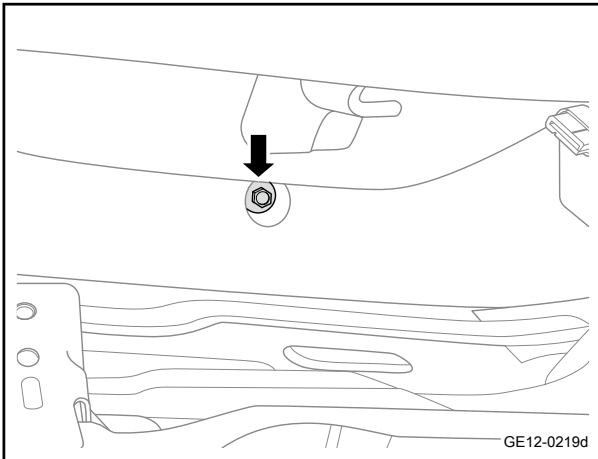
- 12 Remove the 2 fixing bolts connecting the dashboard beam assembly and the lower right mounting bracket.



- 13 Remove the fixing bolt 1 connecting the right side of the dashboard beam assembly and the air conditioning unit.
- 14 Remove the ground wire fixing bolt 2.
- 15 Remove 4 fixing bolts 3 connecting the left side of dashboard crossmember assembly and the vehicle body.

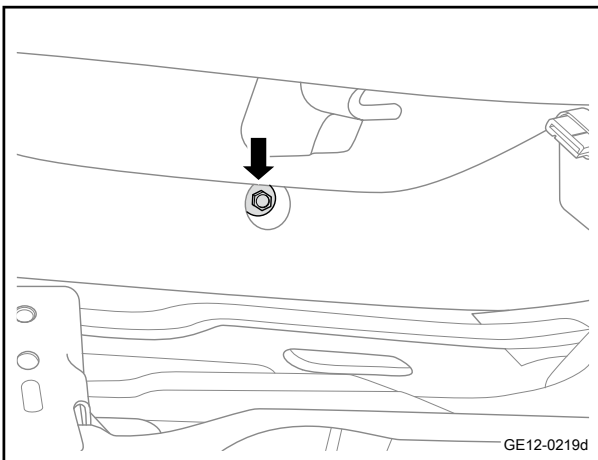


- 16 Remove the 1 fixing bolt connecting the upper part of the dashboard beam assembly and the air conditioning unit.

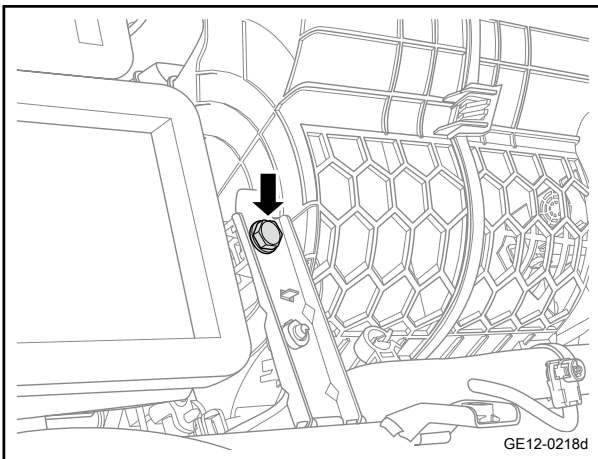


- 17 Remove 1 fixing bolt of the ventilation cover plate.
- 18 Disengage the upper wire harness buckle of the dashboard beam assembly.
- 19 Remove the dashboard beam assembly.

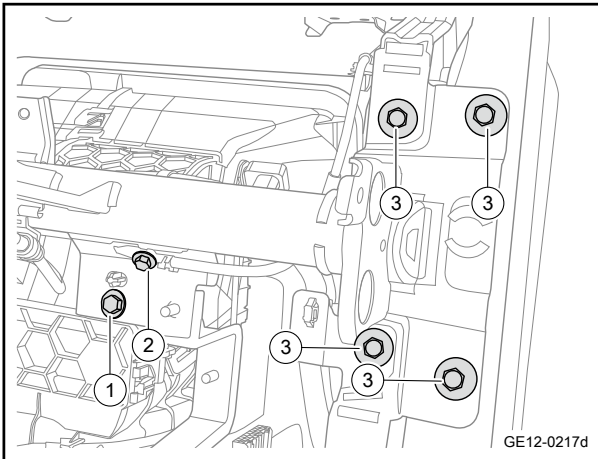
#### Installation procedure



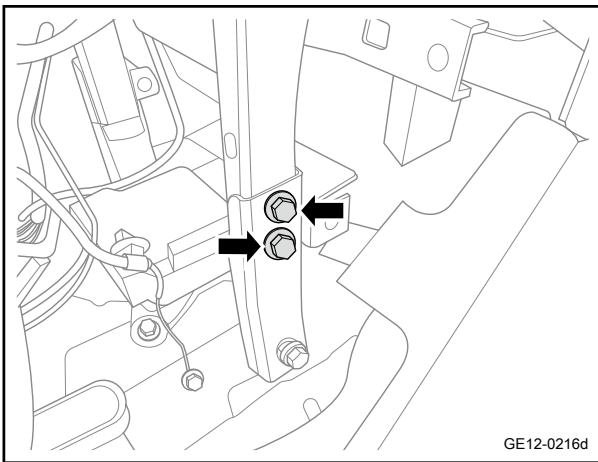
- 1 Move the dashboard beam assembly to the installation position.
- 2 Connect the upper wire harness buckle of the dashboard beam assembly.
- 3 Install 1 fixing bolt of ventilation cover plate.  
Torque: 23N·m (metric) 17lb-ft (imperial system)



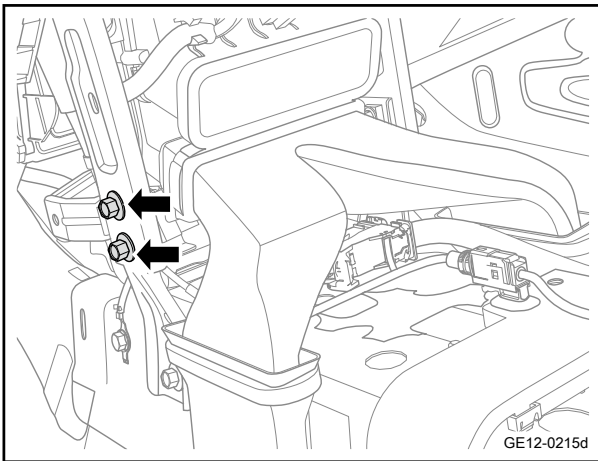
- 4 Install a fixing bolt between the upper part of the dashboard beam assembly and the air conditioning unit.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



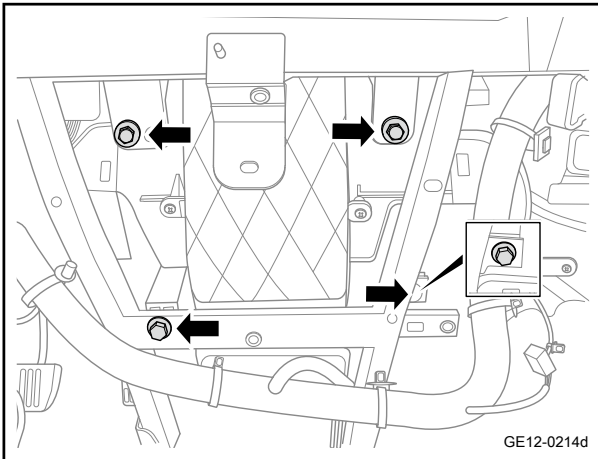
- 5 Install 4 fixing bolts 3 connecting the left side of dashboard crossmember assembly and the vehicle body.  
Torque: 23N·m (metric) 17lb-ft (imperial system)
- 6 Install the grounding wire fixing bolt 2.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)
- 7 Install a fixing bolt 1 on the right side of the dashboard beam assembly and the air conditioning unit.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



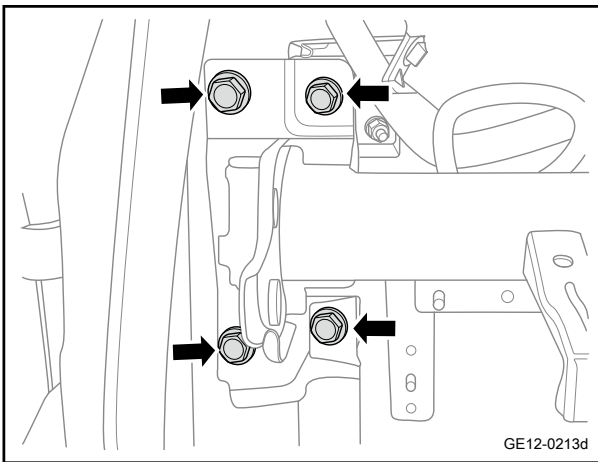
- 8 Install the dashboard beam assembly and the 2 fixing bolts of the lower right mounting bracket.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)



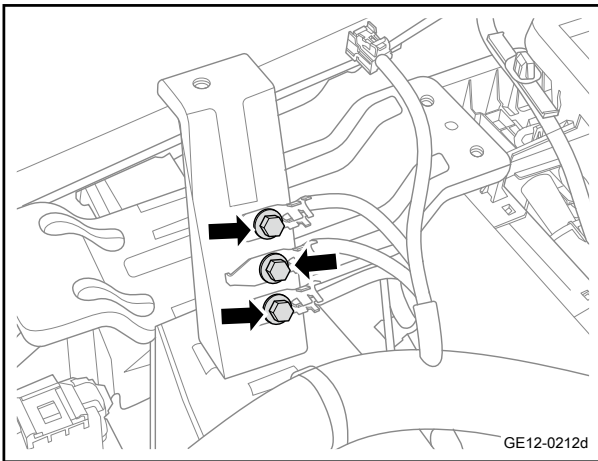
- 9 Install the dashboard beam assembly and the 2 fixing bolts of the lower left mounting bracket.  
Torque: 24N·m (metric) 17.7lb-ft (imperial system)



- 10 Install the 4 fixing bolts connecting the middle part of the dashboard beam assembly and the air-conditioning unit.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 11 Install 4 fixing bolts connecting the left side of dashboard crossmember assembly and the vehicle body.  
Torque: 23N·m (metric) 17lb-ft (imperial system)



- 12 Install the 3 fixing bolts of instrument console harness bond strap.  
Torque: 9N·m (metric) 6.6lb-ft (imperial system)

- 13 Install the wiper motor c/w connecting rod assembly.  
14 Install the plenum mounting assembly.  
15 Install the emergency call system controller.  
16 Install the head-up display.  
17 Install the central controller.  
18 Install the dashboard body assembly.  
19 Connect the negative cable of battery.



### 11.8.3.14 Front left baffle assembly of the auxiliary fascia console

#### Removal procedure

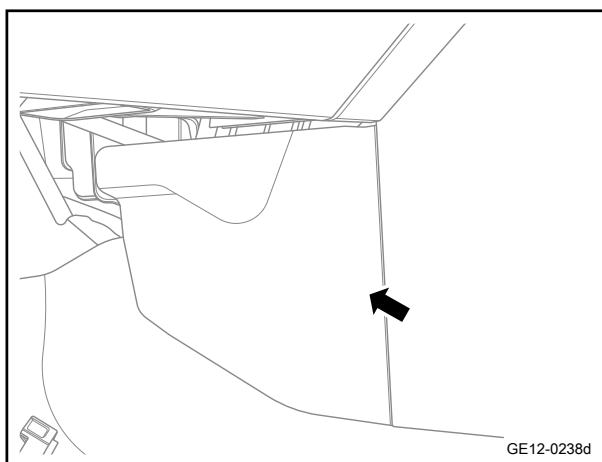
##### Caution

The disassembly and assembly methods are the same for the left and right sides.

##### Caution

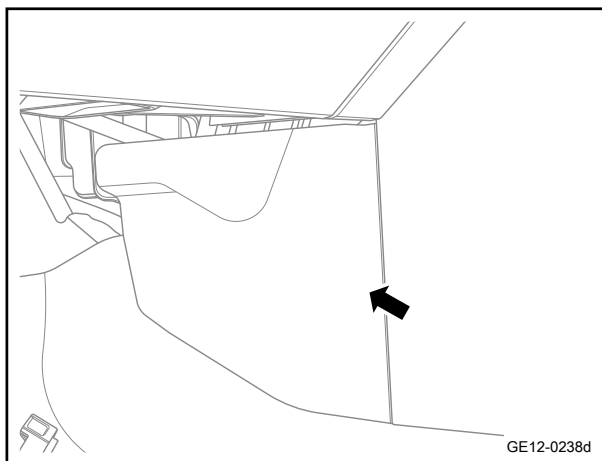
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Pry off the front left baffle assembly of the auxiliary fascia console.



#### Installation procedure

- 1 Install the left front baffle assembly of the auxiliary fascia console.



### 11.8.3.15 Replacement of the front vent pipe assembly of the auxiliary fascia console

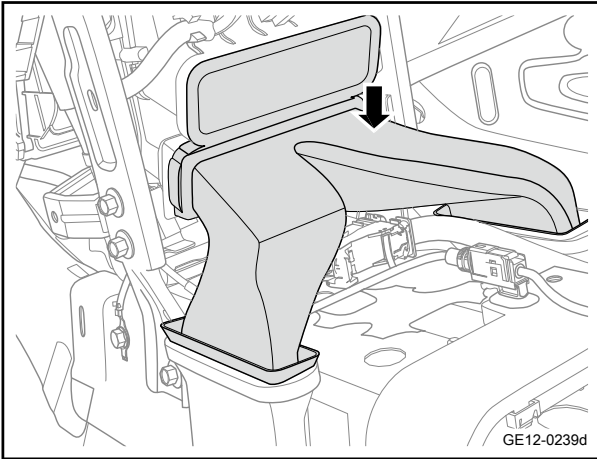
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

Warning

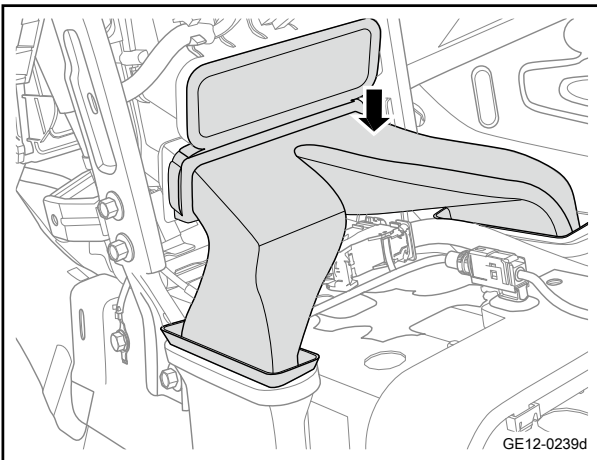
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the auxiliary fascia console body assembly. See [Replacement of auxiliary fascia console body assembly](#)
- 3 Remove the front vent pipe assembly of the auxiliary fascia console.



Installation procedure

- 1 Install the front vent pipe assembly of the auxiliary fascia console.



- 2 Install the auxiliary fascia console body assembly.
- 3 Connect the negative cable of battery.

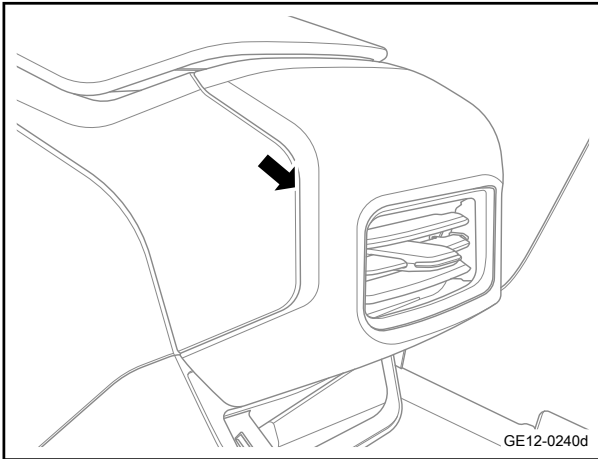
### 11.8.3.16 Replacement of the rear panel assembly of the auxiliary fascia console

Removal procedure

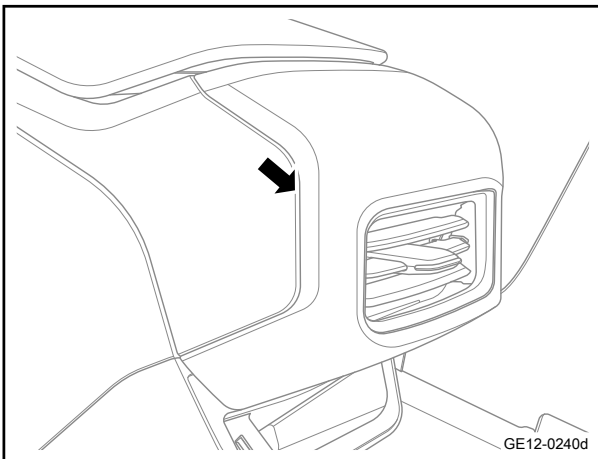
**Caution**

Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Pry off the rear panel assembly of the auxiliary fascia console.

**Installation procedure**

- 1 Install the rear panel assembly of the auxiliary fascia console.

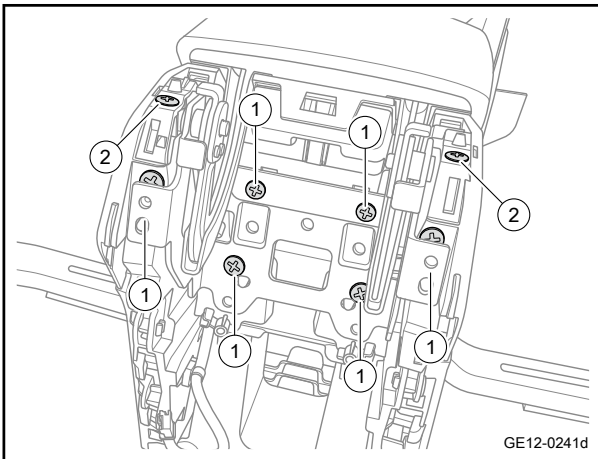
**11.8.3.17 Replacement of upper trim panel assembly of auxiliary fascia console****Removal procedure****Caution**

Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

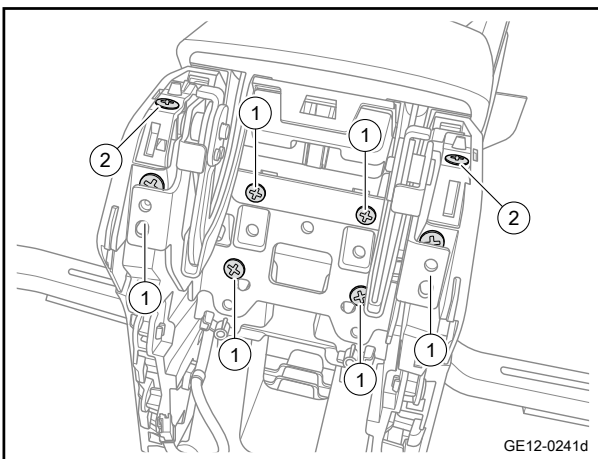
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



- 2 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 3 Disassemble the hazard warning switch. See [Replacement of the hazard warning switch](#)
- 4 Remove the rear panel assembly of the auxiliary fascia console. See [Replacement of the rear panel assembly of the auxiliary instrument](#)
- 5 Remove the rear glove box cover plate assembly at the rear of the auxiliary fascia console Refer to [Replacement of rear USB box](#)
- 6 Remove the 6 fixing screws 1 for the auxiliary fascia console arm rest box cover plate assembly.
- 7 Remove the armrest box cover assembly of the console.
- 8 Remove the 2 fixing screws 2 of the upper trim panel assembly of the auxiliary fascia console.
- 9 Pry down the upper trim panel assembly of the auxiliary fascia console.



#### Installation procedure

- 1 Install the upper trim panel assembly of the auxiliary fascia console.
- 2 Install the 2 fixing screws 2 of the upper trim panel assembly of the auxiliary fascia console.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Move the armrest box cover assembly of the auxiliary fascia console to the installation position.
- 4 Install the 6 fixing screws 1 for the auxiliary fascia console arm rest box cover plate assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 5 Install the rear glove box cover plate assembly at the rear of the auxiliary fascia console.
- 6 Install the rear panel assembly of the auxiliary fascia console.
- 7 安装危险警示开关。
- 8 Install the auxiliary instrument switch pack.
- 9 Connect the negative cable of battery.

### 11.8.3.18 Replacement of second-row seat FL vent duct assembly

#### Removal procedure

##### Caution

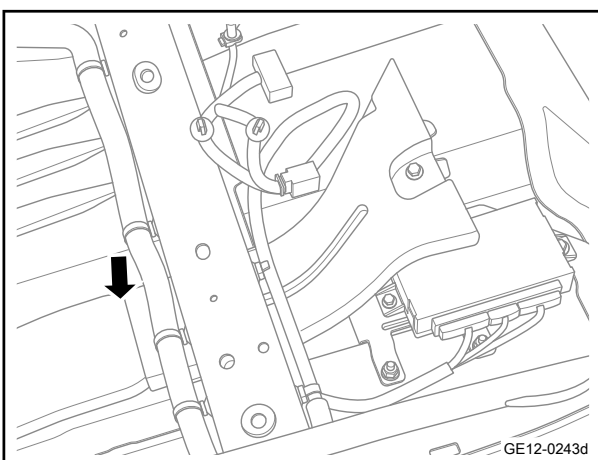
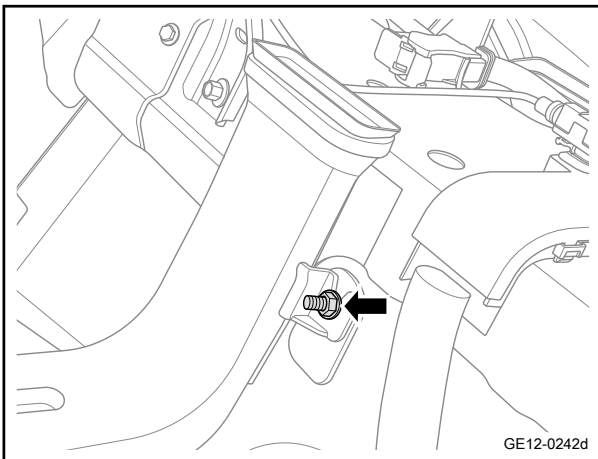
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

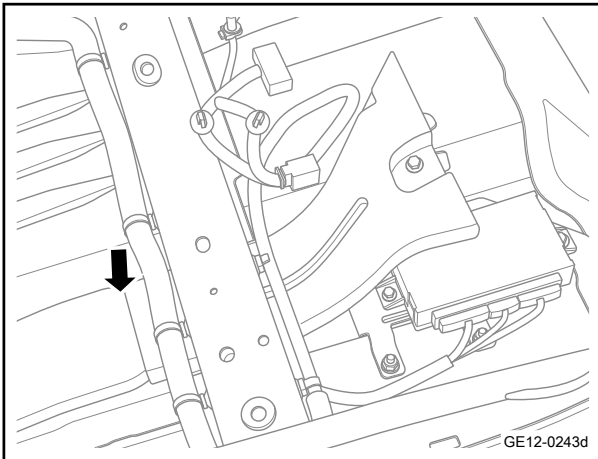
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the carpet assembly. See [Replacement of carpet assembly](#)
- 3 Remove the front vent pipe assembly of the auxiliary fascia console. See [Replacement of front vent pipe assembly of auxiliary fascia console](#)
- 4 Remove the 1 fixing nut of the left front vent pipe assembly of the second-row seats.

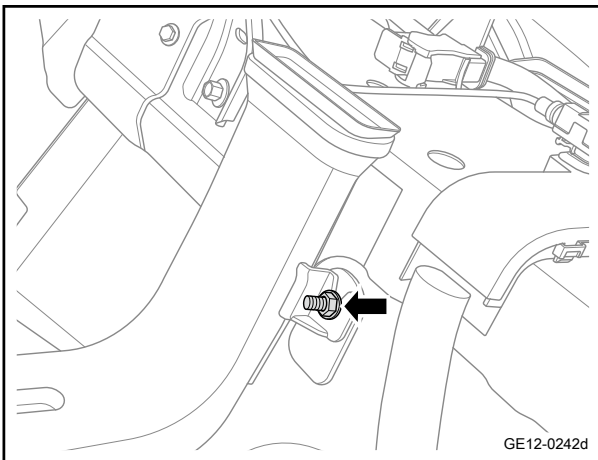


- 5 Disconnect the left front vent pipe assembly of the second-row seats and the left rear vent pipe assembly of the second-row seats.
- 6 Remove the second-row seat FL vent duct assembly.

#### Installation procedure



- 1 Move the left front vent pipe assembly of the second-row seats to the installation position.
- 2 Connect the left front vent pipe assembly of the second-row seats and the left rear vent pipe assembly of the second-row seats.



- 3 Install 1 fixing nut for the left front vent pipe assembly of the second-row seats.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 4 Install the front vent pipe assembly of the dashboard.
- 5 Install the carpet assembly.
- 6 Connect the negative cable of battery.

### 11.8.3.19 Replacement of second-row seat RL vent duct assembly

#### Removal procedure

##### Caution

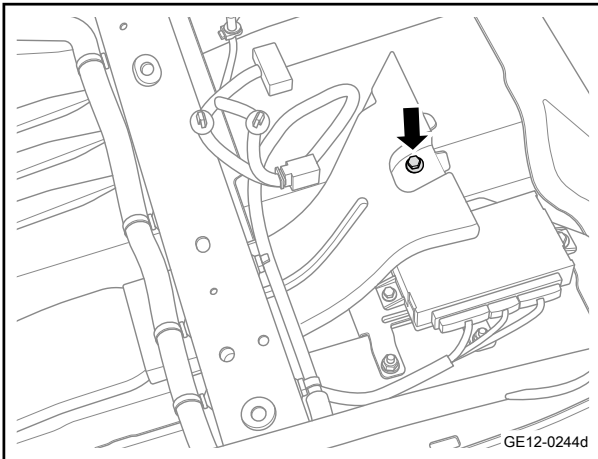
The disassembly and assembly methods are the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

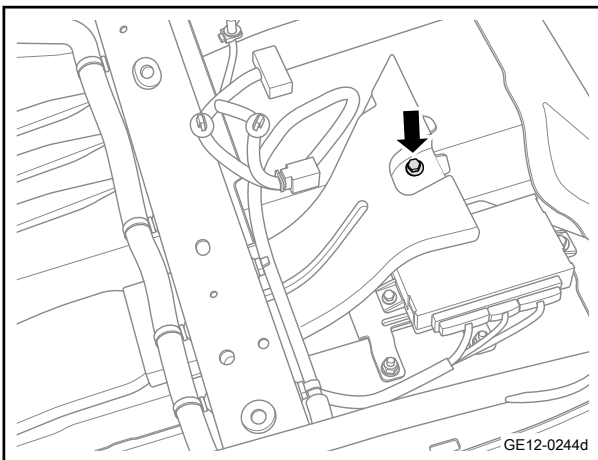
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the carpet assembly. See [Replacement of carpet assembly](#)



- 3 Remove the 1 fixing bolt of the left rear vent pipe assembly of the second-row seats.
- 4 Remove the second-row seat RL vent duct assembly.

#### Installation procedure



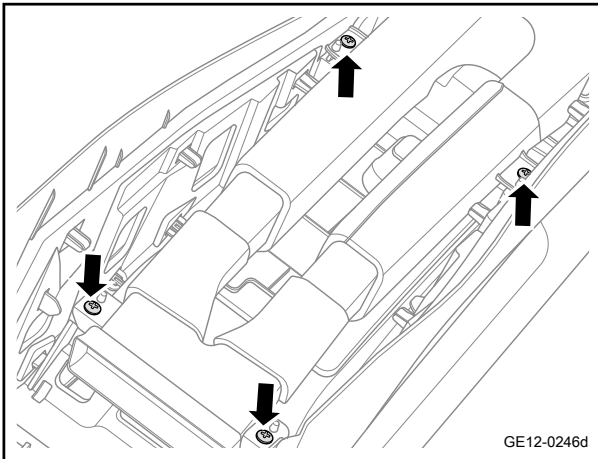
- 1 Move the left rear vent pipe assembly of the second-row seats to the installation position.
- 2 Install the 1 fixing bolt of the left rear vent pipe assembly of the second-row seats.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 3 Install the carpet assembly.
- 4 Connect the negative cable of battery.

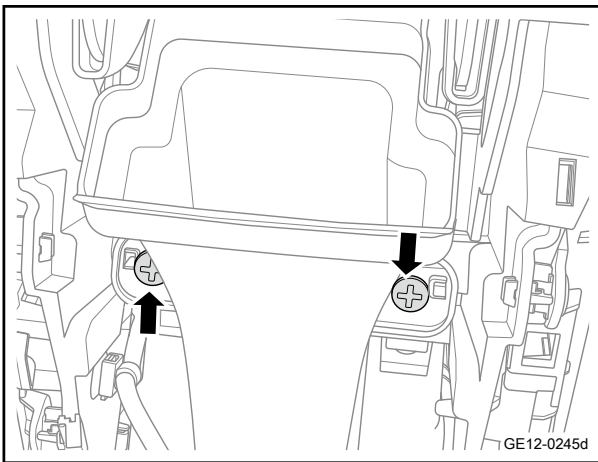
#### 11.8.3.20 Replacement of front section of face-blowing air duct assembly of the auxiliary fascia console

##### Removal procedure

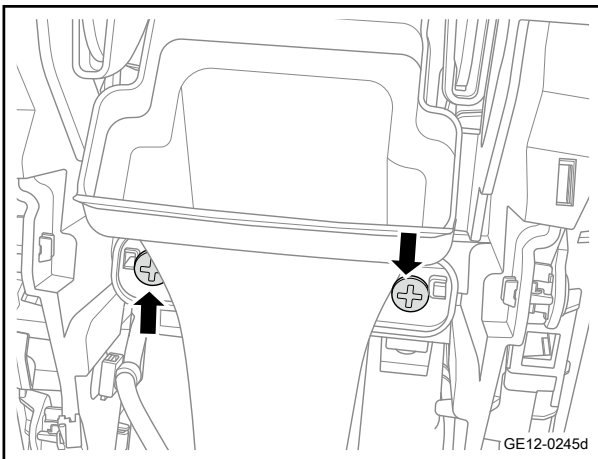
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
**Warning**  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the rear USB box. Refer to [Replacement of rear USB box](#)
- 3 Remove the auxiliary fascia console body assembly. See [Replacement of auxiliary fascia console body assembly](#)



- 4 Remove the 4 fixing screws at the front of the front section of the face-blowing air duct assembly of the auxiliary fascia console.



- 5 Remove the 2 fixing screws at the rear of the front section of the face-blowing air duct assembly of the auxiliary fascia console.
- 6 Remove the front section of face-blowing air duct assembly of the auxiliary fascia console

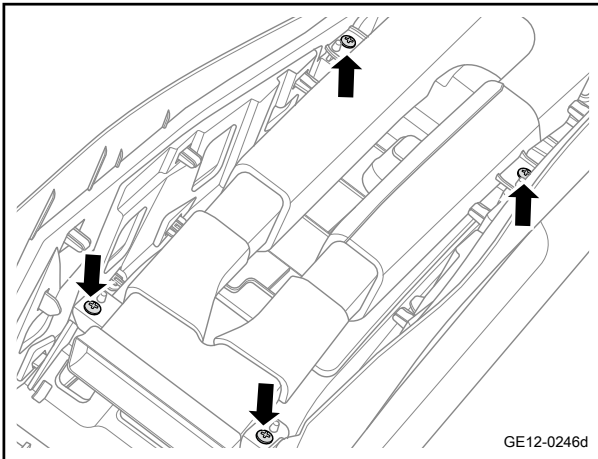


#### Installation procedure

- 1 Place the front section of face-blowing air duct assembly of the auxiliary fascia console to the installation position.
- 2 Install the 2 fixing screws at the rear of front section of the face-blowing air duct assembly of the auxiliary fascia console.

Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)





- 3 Install the 4 fixing screws at the front of the front section of the face-blowing air duct assembly of the auxiliary fascia console.

Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 4 Install the auxiliary fascia console body assembly.
- 5 Install the rear USB box.
- 6 Connect the negative cable of battery.

### 11.8.3.21 Replacement of auxiliary fascia console body assembly

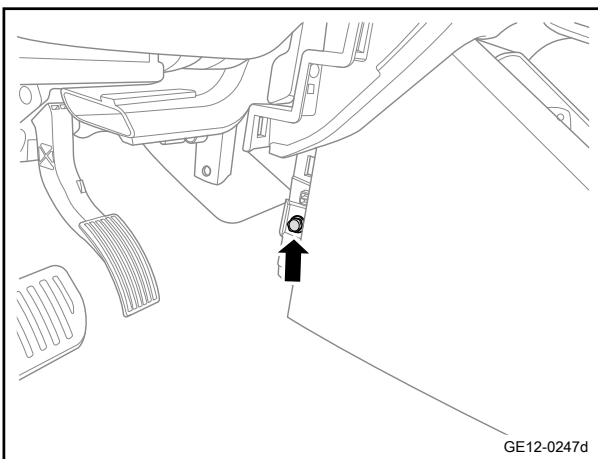
#### Removal procedure

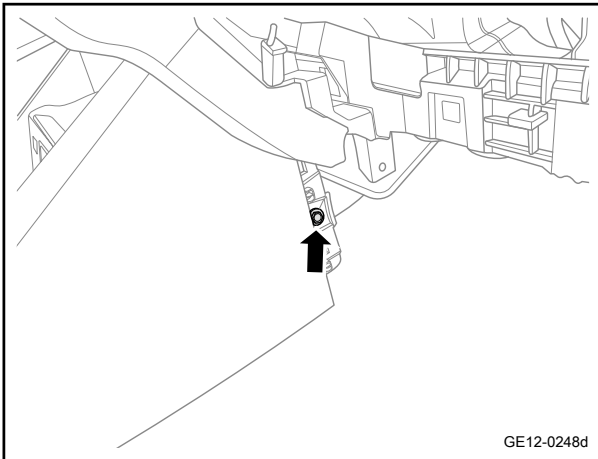
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

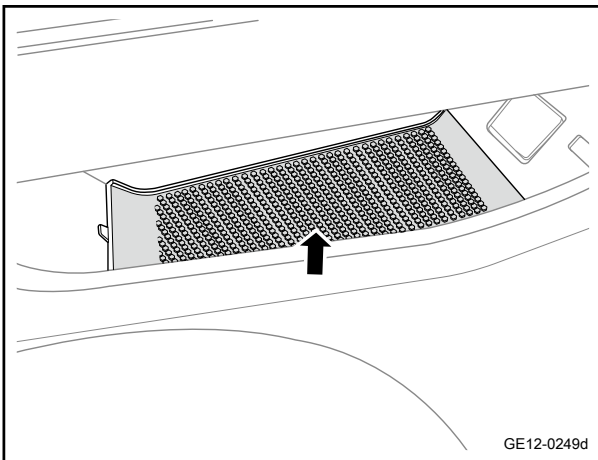
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left and right front baffle assembly of the auxiliary fascia console. See [Replacement of the left front baffle assembly of the auxiliary fascia console](#)
- 3 Remove the auxiliary instrument switch pack. Refer to [Replacement of auxiliary instrument switch pack](#)
- 4 Remove the 1 fixing bolt on the left front side of the auxiliary fascia console body assembly.

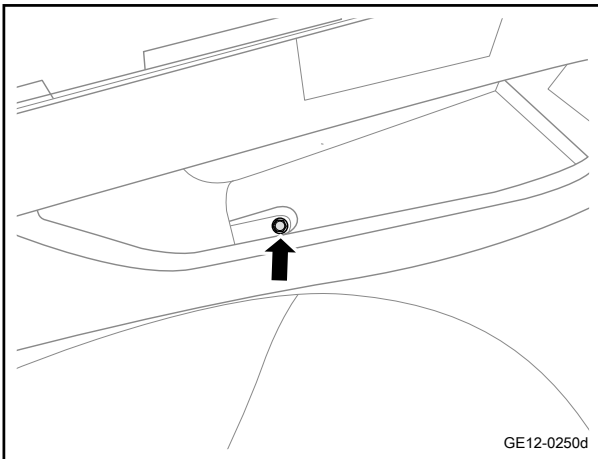




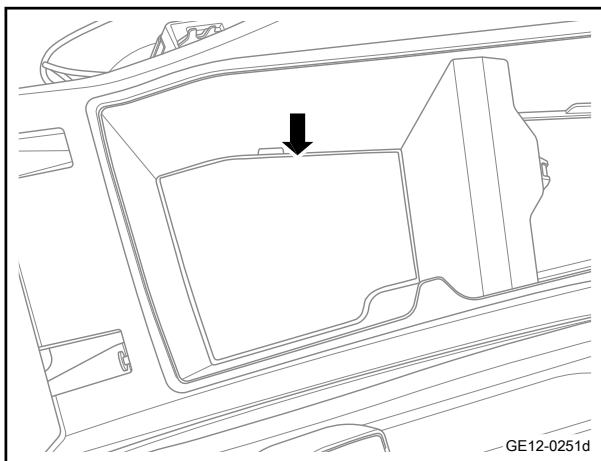
- 5 Remove the 1 fixing bolt on the front right side of the auxiliary fascia console body assembly.



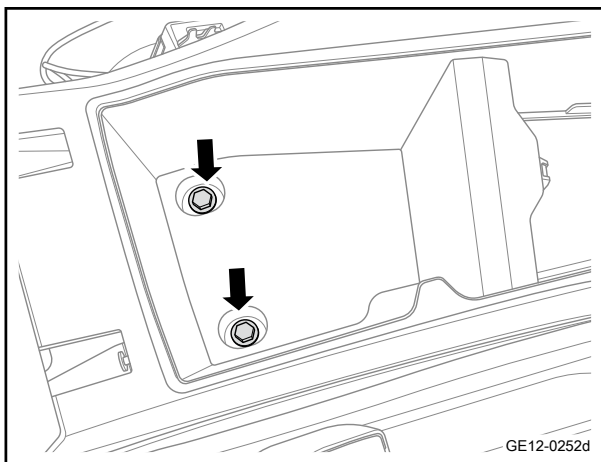
- 6 Remove the non-slip mat of the front glove box of the auxiliary fascia console.



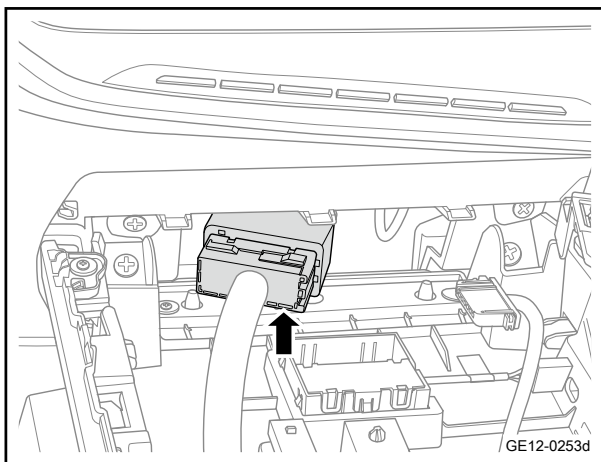
- 7 Remove one fixing bolt from the non-slip mat of the front glove box of the auxiliary fascia console.



8 Remove the armrest box pad of the auxiliary fascia console.

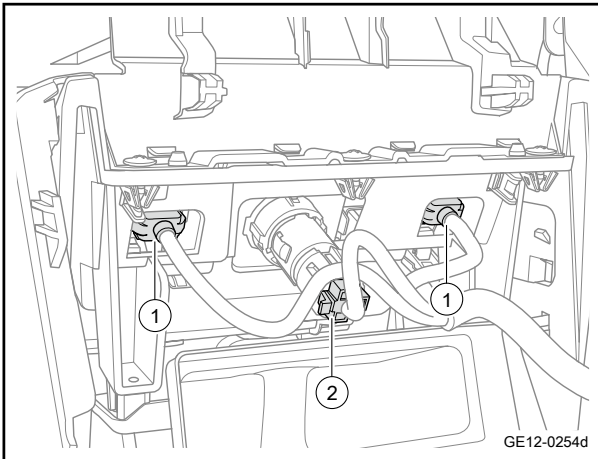


9 Remove the 2 fixing bolts at the armrest box pad of the auxiliary fascia console.



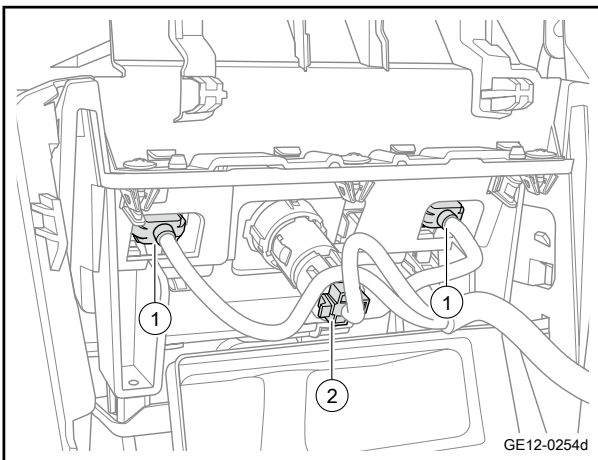
10 Disconnect the auxiliary fascia console wiring harness from the instrument wiring harness 1.

11 Remove the 2 fixing screws 2 of the auxiliary fascia console body assembly.

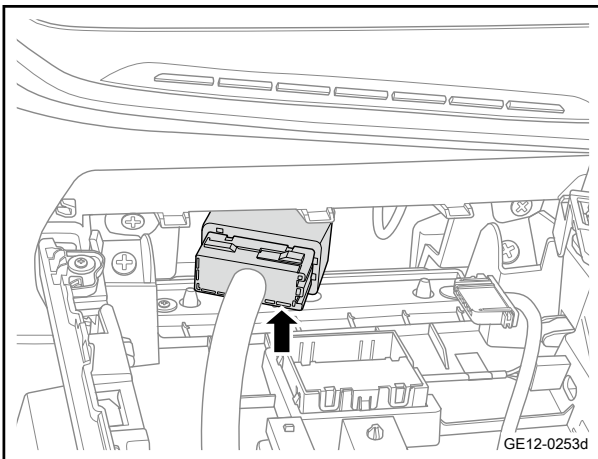


- 12 Disconnect the USB harness connector 1.
- 13 Disconnect the power supply interface harness connector 2.
- 14 Remove the auxiliary fascia console body assembly.

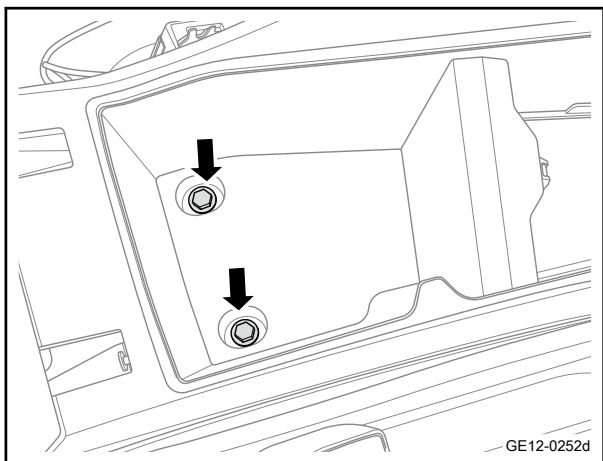
#### Installation procedure



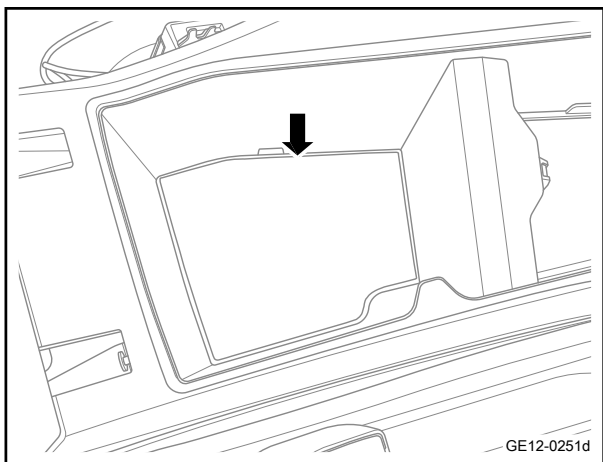
- 1 Move the auxiliary fascia console body assembly to the installation position.
- 2 Connect the power supply interface harness connector 2.
- 3 Connect the USB harness connector 1.



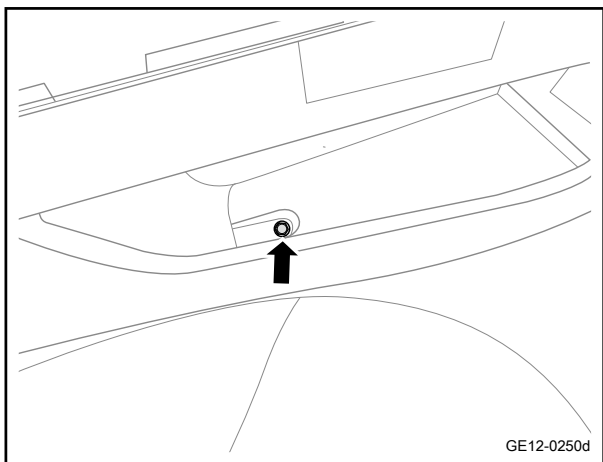
- 4 Install the two fixing screws 2 of the auxiliary fascia console body assembly.
- 5 Connect the auxiliary fascia console wiring harness to the instrument wiring harness 1.



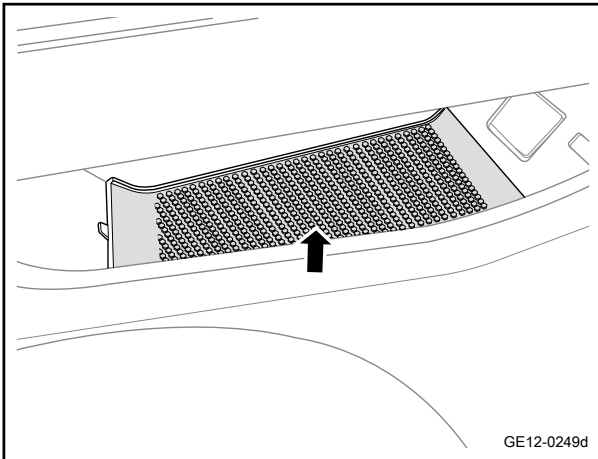
- 6 Install the 2 fixing bolts at the armrest box pad of the auxiliary fascia console.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



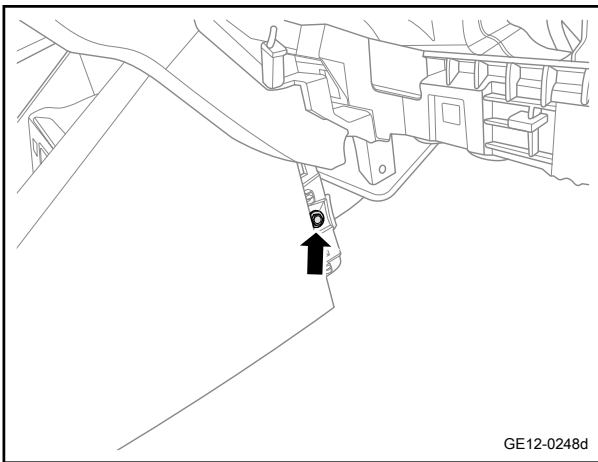
- 7 Install the armrest box pad of the auxiliary fascia console.



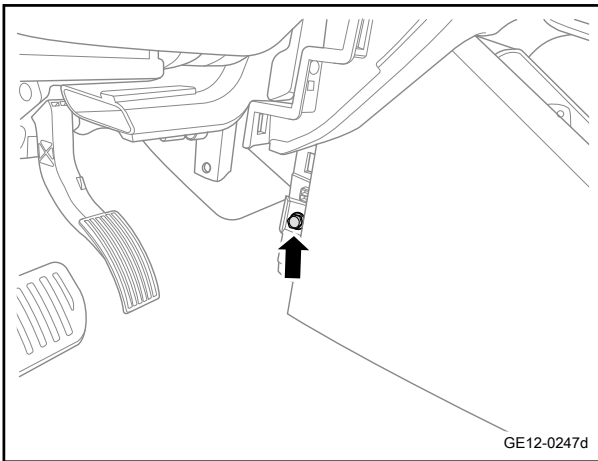
- 8 Install one fixing bolt from the non-slip mat of the front glove box of the auxiliary fascia console.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 9 The non-slip mat of the front glove box of the auxiliary fascia console



- 10 Install the 1 fixing bolt on the front right side of the auxiliary fascia console body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 11 Install the 1 fixing bolt on the front left side of the auxiliary fascia console body assembly.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)

- 12 Install the auxiliary instrument switch pack.  
13 Install the left and right front baffle assembly of the auxiliary fascia console.  
14 Connect the negative cable of battery.

### 11.8.3.22 Replacement of armrest box cover assembly of the auxiliary fascia console

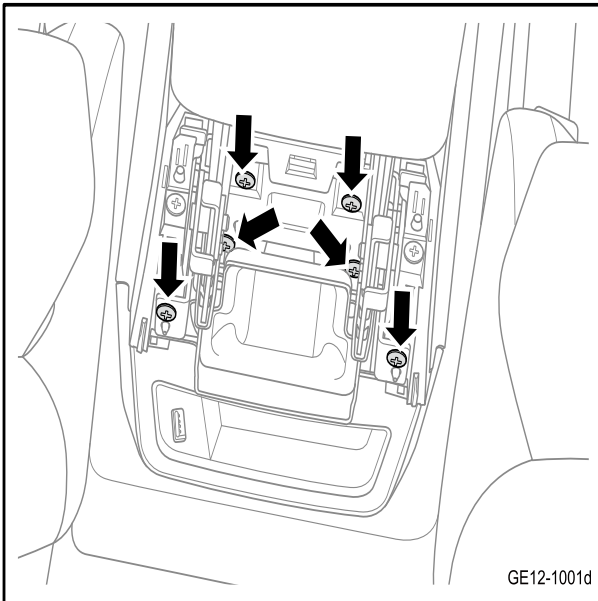
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

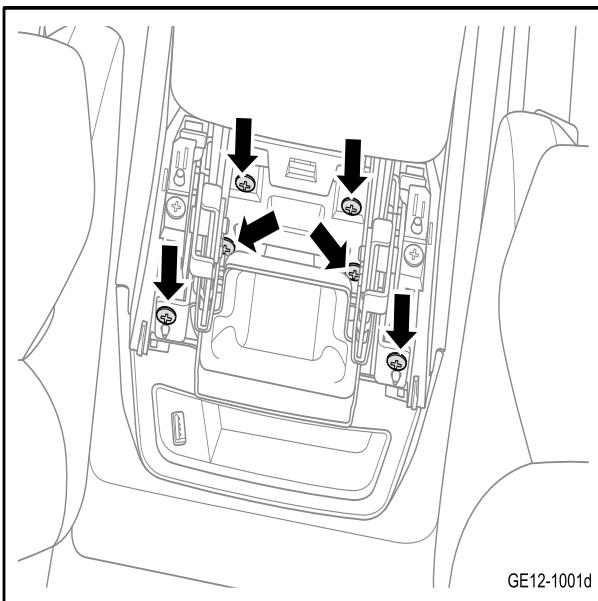
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Install the rear panel assembly of the auxiliary fascia console. See [Replacement of the rear panel assembly of the auxiliary instrument](#)
- 3 Remove the 6 fixing screws 1 for the auxiliary fascia console arm rest box cover plate assembly.
- 4 Remove the armrest box cover assembly of the console.



#### Installation procedure

- 1 Move the armrest box cover assembly of the auxiliary fascia console to the installation position.
- 2 Install the 6 fixing screws 1 for the auxiliary fascia console arm rest box cover plate assembly.  
Torque: 1.5 N·m (metric system) 1.1 lb·ft (British system)



- 3 Install the rear panel assembly of the console.
- 4 Connect the negative cable of battery.

### 11.8.3.23 Replacement of the rear glove box cover plate assembly of the auxiliary fascia console

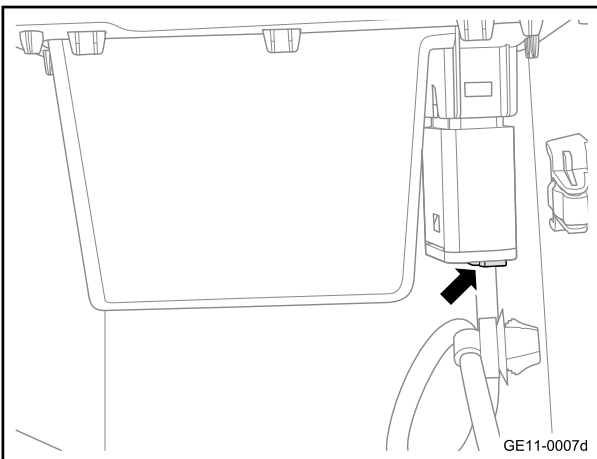
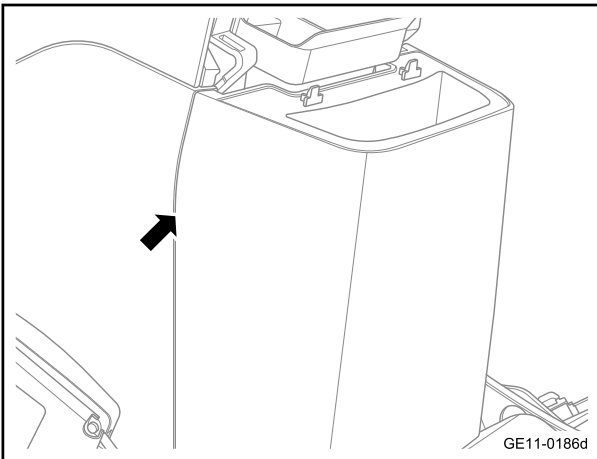
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

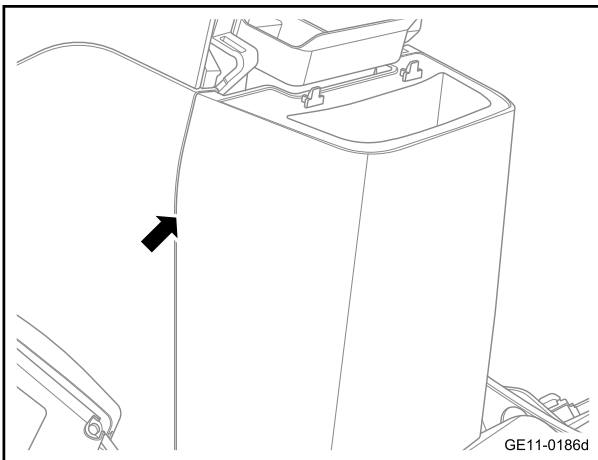
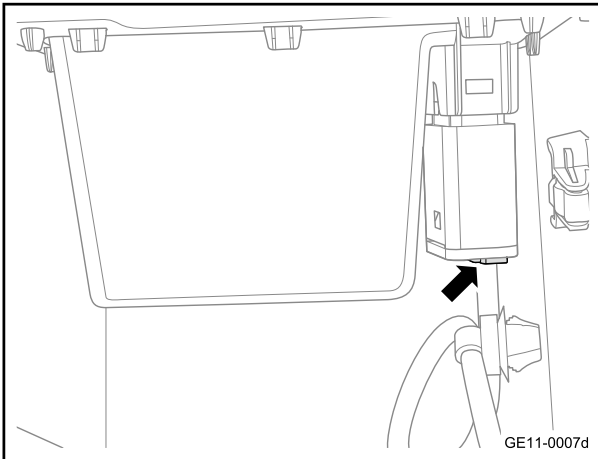
- 2 Remove the rear panel assembly of the auxiliary fascia console. See [Replacement of the rear panel assembly of the auxiliary instrument](#)
- 3 Pry off the rear glove box cover plate at the rear of the auxiliary fascia console.



- 4 Disconnect the rear USB box harness connector.
- 5 Pry off the rear USB box and remove the glove box cover at the rear of the auxiliary instrument.

#### Installation procedure





- 1 Move the glove box cover at the rear of the auxiliary instrument to the installation position, and install the rear USB box.
- 2 Connect the rear USB box harness connector.

- 3 Install the rear glove box cover plate assembly at the rear of the auxiliary fascia console.

- 4 Install the rear panel assembly of the auxiliary fascia console.
- 5 Connect the negative cable of battery.

### 11.8.3.24 Replacement of the lower left guard plate assembly of the instrument panel (Type II)

#### Disassembly procedure

#### Caution

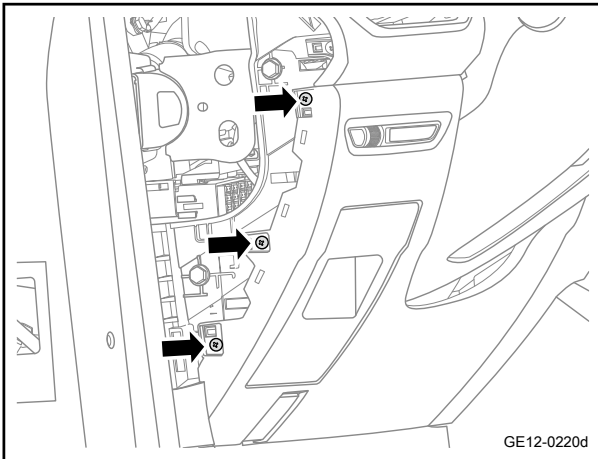
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the interior trim panel.

- 1 Disconnect the battery negative cable. Refer to [Disconnection and connection procedures for battery cable](#)

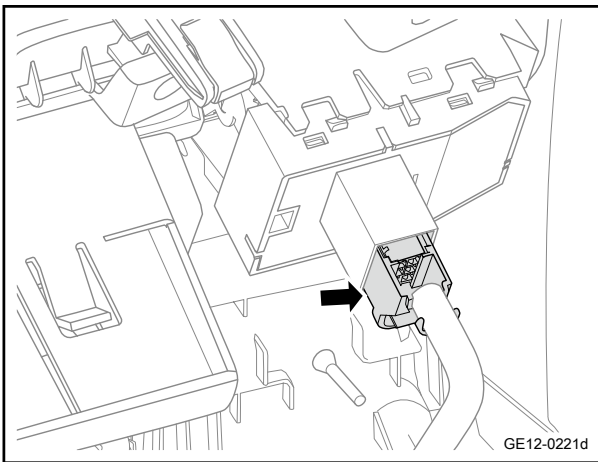
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

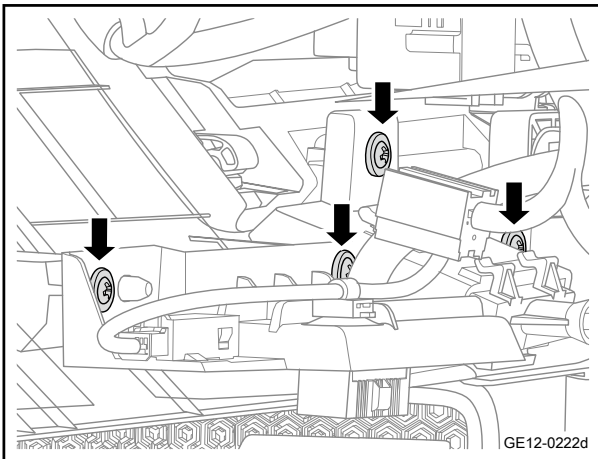
- 2 Remove the driver side end cover assembly of the dashboard. See [Replacement of the end cover assembly at the driver side of the dashboard](#)



- 3 Remove the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.
- 4 Pry off the lower left guard plate assembly of the dashboard.

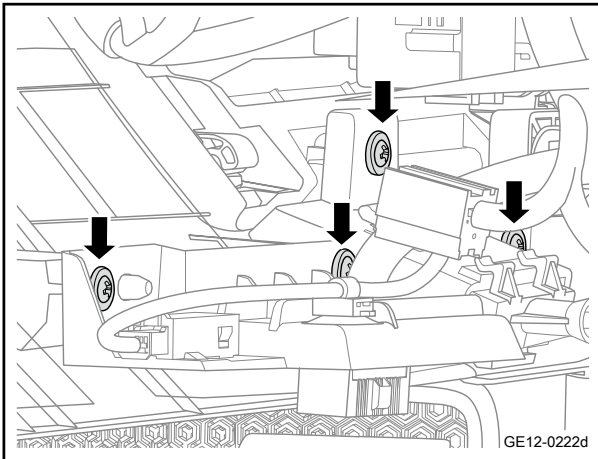


- 5 Disconnect the harness connector of the headlight height adjustment switch assembly.

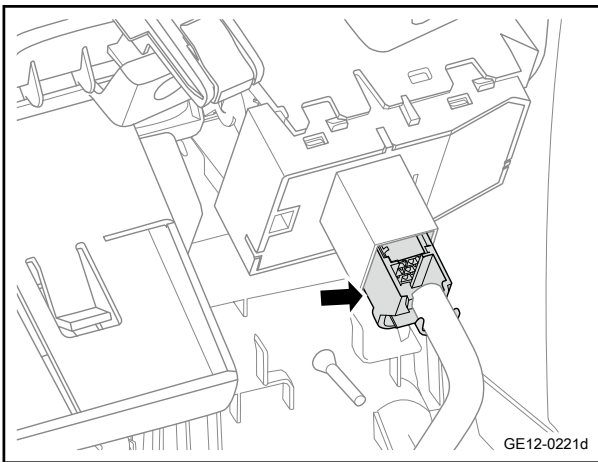


- 6 Remove the 4 fixing screws of the diagnostic interface mounting bracket.
- 7 Remove the lower left guard plate assembly of the dashboard.

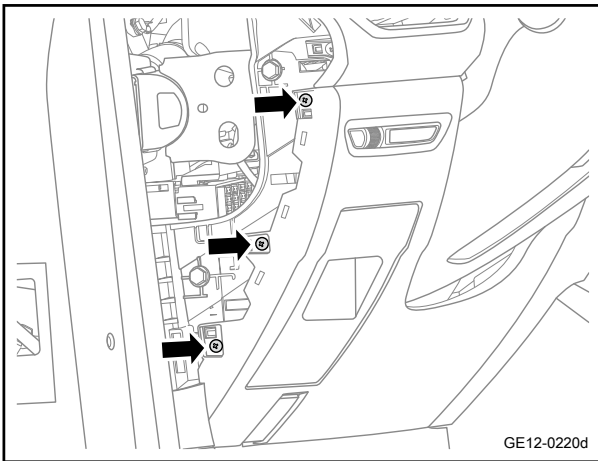
Installation procedure



- 1 Move the lower left guard plate assembly of the dashboard to the installation position.
- 2 Install the 4 fixing screws of the diagnostic interface mounting bracket.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Connect the harness connector of the headlight height adjustment switch assembly.



- 4 Install the left lower fender apron assembly of the dashboard.
- 5 Install the 3 fixing screws on the left of the lower left guard plate assembly of the dashboard.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 6 Install the driver side end cover assembly of the dashboard.
- 7 Connect the battery negative cable.

## 11.9 Interior

### 11.9.1 Specification

#### 11.9.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screw of left rear sill trim panel assembly	ST4.8×16	1 - 2	0.7 - 1.5
Left B-pillar upper trim panel assembly lower fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left B-pillar upper trim panel assembly upper fixing screw	M6×16	3.2 - 4.8	2.4 - 3.5
Front end fixing screw for left front door glass outer sealing strip	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screw of front left door glass outer seal rear end	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Left C-pillar upper trim panel assembly lower fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Left C-pillar upper trim panel assembly upper fixing screw	M6×16	3.2 - 4.8	2.4 - 3.5
Fixing screw of left upper interior trim panel assembly of backdoor	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screws at both sides of lower interior trim panel of backdoor	ST4.2×0.95	0.5 - 1.5	0.4 - 1.1
Fixing screw of cover interior trim panel rear reading lamp bracket	M6×16	3 - 5	2.2 - 3.7
Fixing screw of left rear safety handle	M5×30	3.2 - 4.8	2.4 - 3.5
Fixing screw of left sunshade assembly	M6×25	3.2 - 4.8	2.4 - 3.5
Fixing nut of driver left footrest	M6	8.5 - 11.5	6.3 - 8.5
Fixing screws for connecting rear door trim panel to rear license plate light mounting plate	ST4.8×16	1 - 2	0.7 - 1.5
Fixing nut of rear license plate light mounting plate	M6	3 - 5	2.2 - 3.7

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screw of exterior trim panel of backdoor	ST4.8×16	1.3 - 1.7	1 - 1.3
Fixing screws securing the rear number plate light mounting plate to the back door through light	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for fixing rear license plate lamp mounting plate and back door trim plate	ST4.8×16	1 - 2	0.7 - 1.5
Ventilation cover plate fixing screw	ST4.8×16	1 - 2	0.7 - 1.5
Back door handle box fixing bolt	M6×16	3.2 - 4.8	2.4 - 3.5
Fixing screw at the side of left front door inner opening handle	ST4.8×19	1.3 - 1.7	1 - 1.3
Fixing screw at the side of left rear door inner opening handle	ST4.8×19	1.3 - 1.7	1 - 1.3
Fixing bolt for connecting sunshade buckle to front cross beam of top cover	M6×25	3.2 - 4.8	2.4 - 3.5

## 11.9.2 Removal and installation

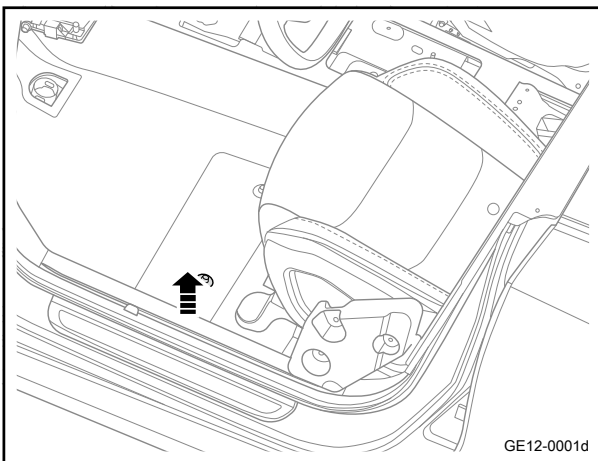
### 11.9.2.1 Replacement of left front door sill trim panel assembly

#### Removal procedure

##### Caution

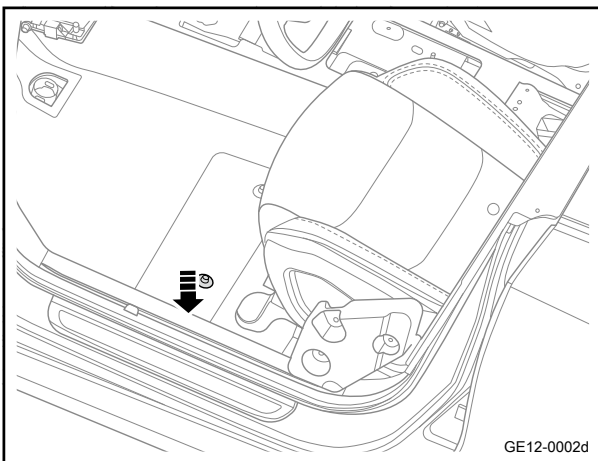
The replacement method is the same for the left and right sides.

- 1 Remove the door sealing strip assembly. Refer to [Replacement of the door door sealing strips](#)
- 2 Pry off the left front door sill trim panel assembly.



#### Installation procedure

- 1 Move the left front door sill trim panel assembly to the installation position.
- 2 Install the left front door sill trim panel assembly.



- 3 Install the door door sealing strips.

### 11.9.2.2 Replacement of left rear door sill trim panel assembly

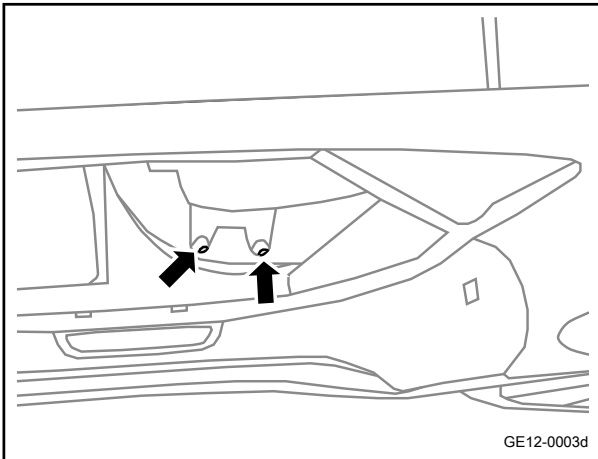
#### Removal procedure

**Caution**

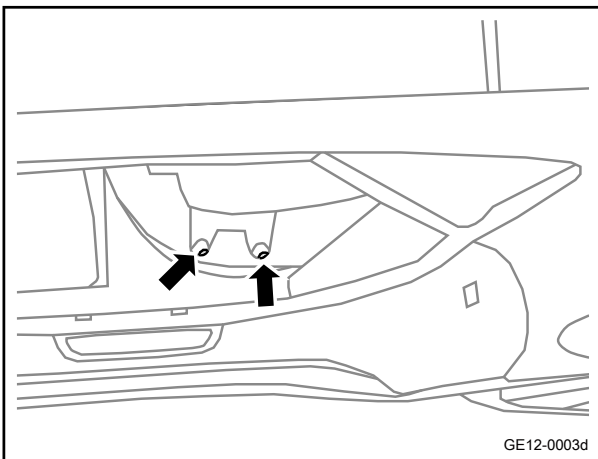
The replacement method is the same for the left and right sides.

To disassemble the left rear door sill trim panel assembly, please use special tools for body repair, otherwise it is easy to scratch the edge of the door sill trim panel.

- 1 Remove the rear-row seat cushions. See [Replacement of rear seat cushions](#)
- 2 Pull up the lower part of the sealing strip of the left rear door frame.
- 3 Remove the 2 fixing screws of the left rear door sill trim panel assembly.
- 4 Pull up the lower section of the door frame sealing strip, and remove the left rear door sill trim panel assembly.

**Installation procedure**

- 1 Move the left rear door sill trim panel assembly to the installation position.
- 2 Install the pulled-up door frame sealing strip.
- 3 Install the 2 fixing screws of the left rear door sill trim panel assembly.  
Torque: 1.5 N·m (metric) 1.1 lb-ft (Imperial system)



- 4 Install the rear-row seat cushions.

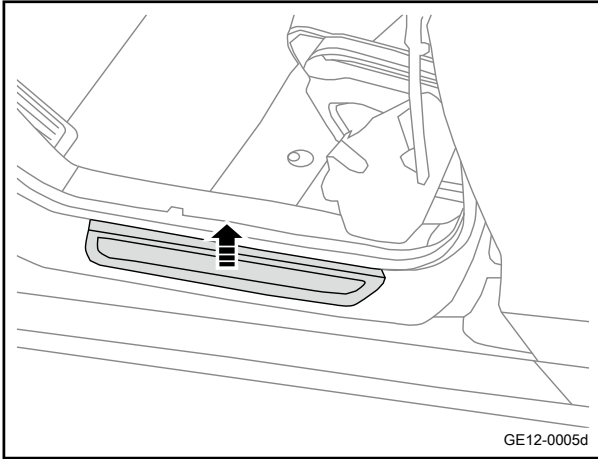
### 11.9.2.3 Replacement of front left scuff plate assembly

**Removal procedure**

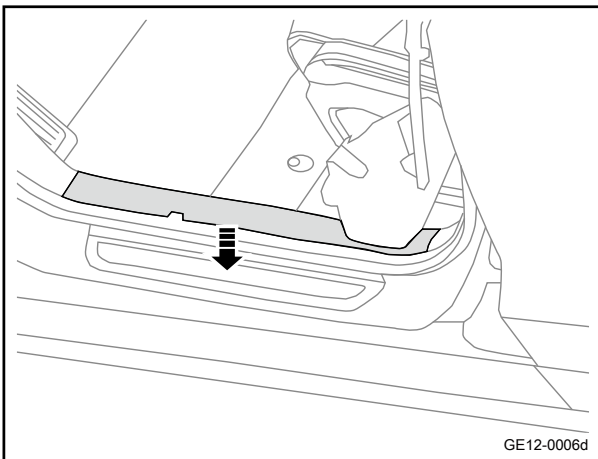
**Caution**

The replacement method is the same for the left and right sides.

- 1 Open the FL door.
- 2 Pry down the front left scuff plate assembly.

**Installation procedure**

- 1 Move the front left scuff plate assembly to the installation position.
- 2 Install the front left scuff plate assembly.



- 3 Close the FL door.

### 11.9.2.4 Replacement of the left A-pillar upper trim panel assembly

**Removal procedure****Caution**

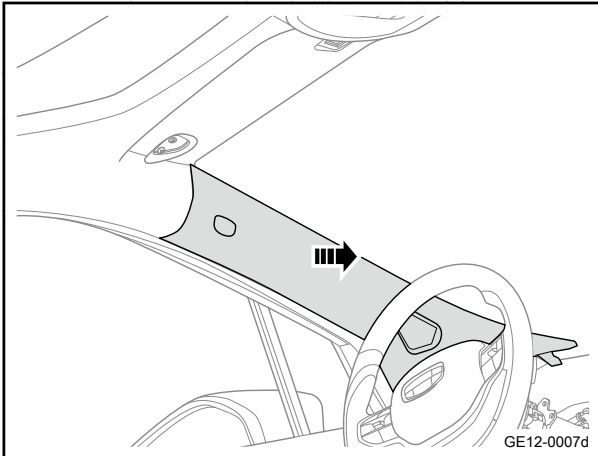
The replacement method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

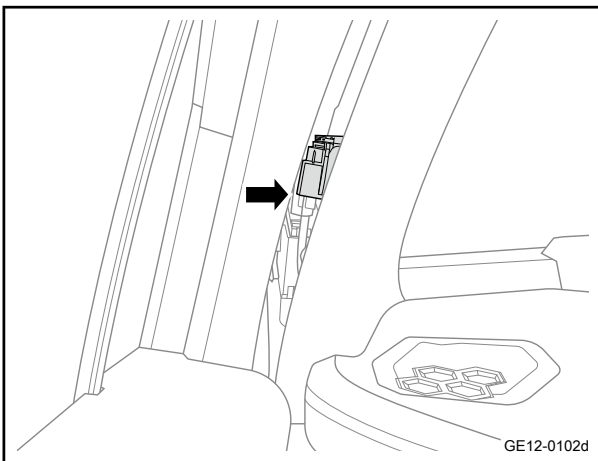
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

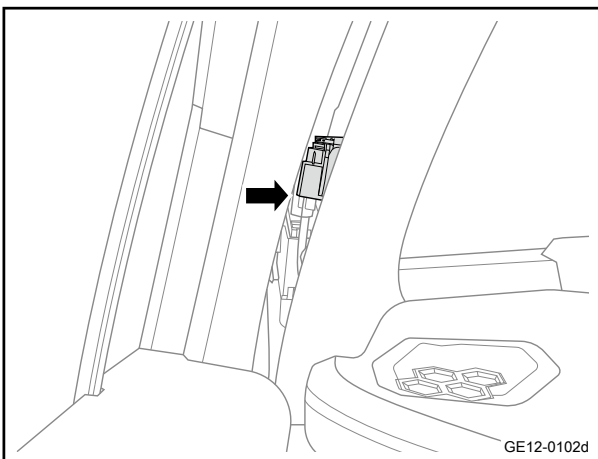




- 2 Remove the end cover at driver side. See [Replacement of end cover at driver side](#)
- 3 Pry open the trim panel assembly on the left A pillar.



- 4 Disconnect the loudspeaker wire harness connector of the upper trim panel of the left A-pillar.
- 5 Take off the left A-pillar upper trim panel assembly.



#### Installation procedure

- 1 Move the upper trim panel assembly of the left A-pillar to the installation position.
- 2 Connect the loudspeaker wire harness connector of the trim panel of the left A-pillar.

- 3 Install the left A-pillar upper trim panel assembly.
- 4 Install the left trim panel of the instrument panel.
- 5 Connect the negative cable of battery.

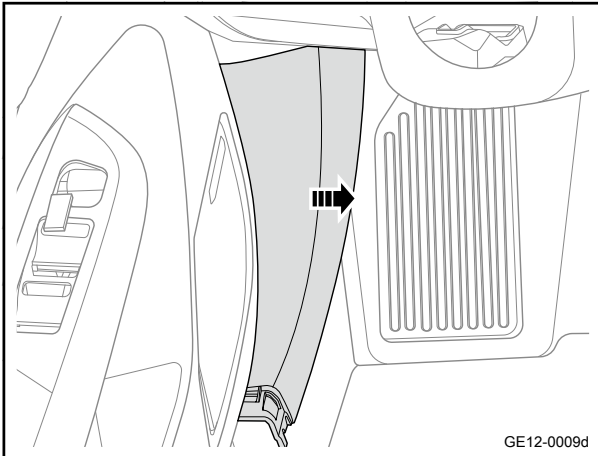
### 11.9.2.5 Replacement of the left A-pillar lower trim panel assembly

#### Removal procedure

#### Caution

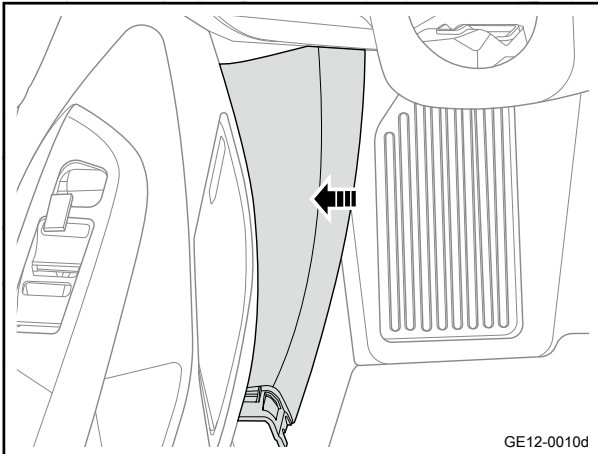
The replacement method is the same for the left and right sides.

- 1 Remove the left front door sill trim panel assembly. Refer to [Replacement of left front door sill trim panel assembly](#)
- 2 Pry down the lower trim panel assembly of the left A-pillar.



#### Installation procedure

- 1 Move the lower trim panel assembly of the left A-pillar to the installation position.
- 2 Install the left A-column lower trim panel assembly.



- 3 Install the left front door sill trim panel assembly.

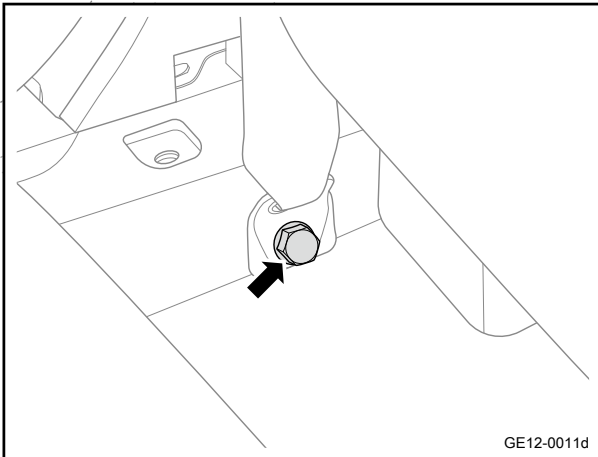
### 11.9.2.6 Replacement of left B-pillar upper trim panel assembly

#### Removal procedure

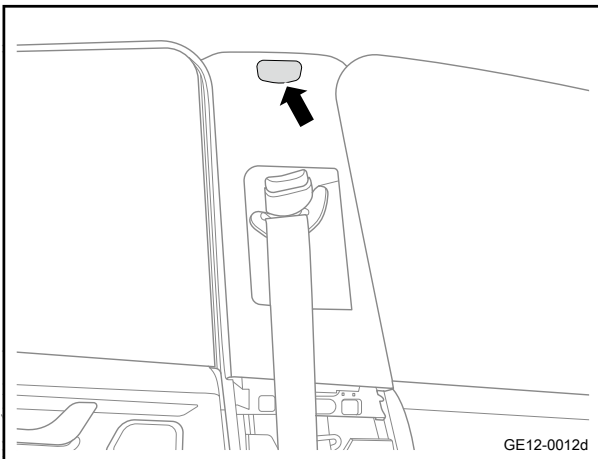
**Caution**

The replacement method is the same for the left and right sides.

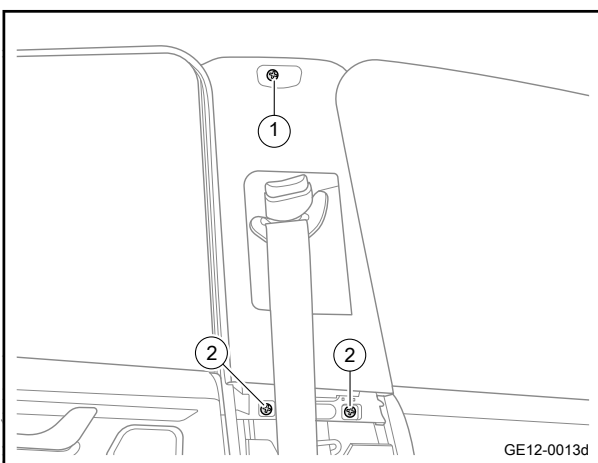
- 1 Remove the lower decorative panel assembly of the right B-pillar. Refer to [Replacement of left B-pillar lower trim panel assembly](#)
- 2 Remove the 1 fixing bolt at the floor end of left front seat belt assembly.



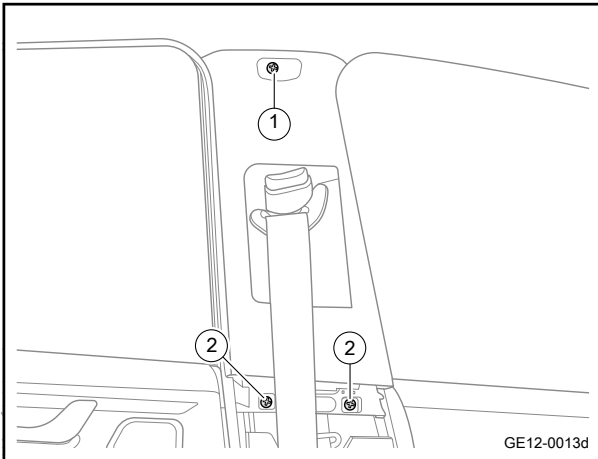
- 3 Pry down the upper air curtain identification cover of the trim panel on the left B-pillar.



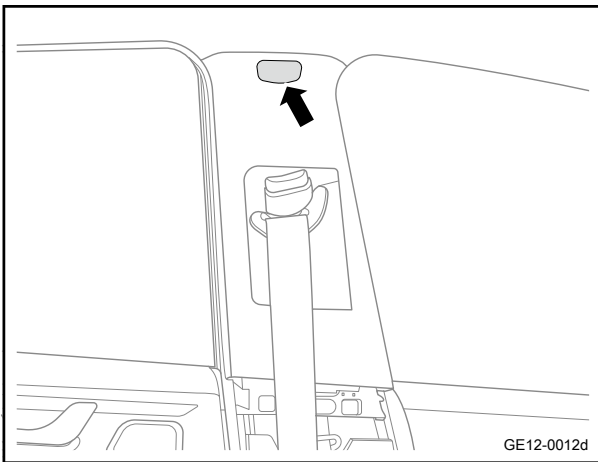
- 4 Remove the 1 fixing screw 1 of the upper part of left B-pillar upper trim panel assembly.
- 5 Remove the 2 fixing screw 2 of the lower part of left B-pillar upper trim panel assembly.
- 6 Take off the left B-pillar upper trim panel assembly.



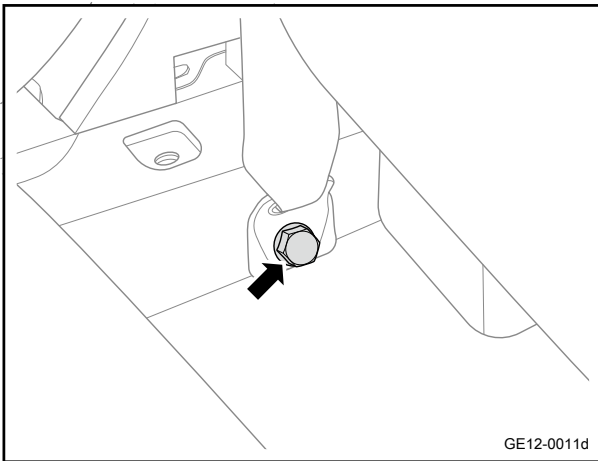
Installation procedure



- 1 Move the upper trim panel assembly of the left B-pillar to the installation position.
- 2 Install the left B-pillar upper trim panel assembly.
- 3 Install the 2 fixing screw 2 of the lower part of left B-pillar lower trim panel assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 4 Install the 1 fixing screw 1 of the upper part of left C-pillar upper trim panel assembly.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 5 Install the upper air curtain identification cover of the trim panel on the left B-pillar.



- 6 Install the 1 fixing bolt at the floor end of left front seat belt assembly.  
Torque: 45N·m (metric) 33.2lb-ft (imperial system)

- 7 Install the left B-pillar lower trim panel assembly.

### 11.9.2.7 Replacement of left B-pillar lower trim panel assembly

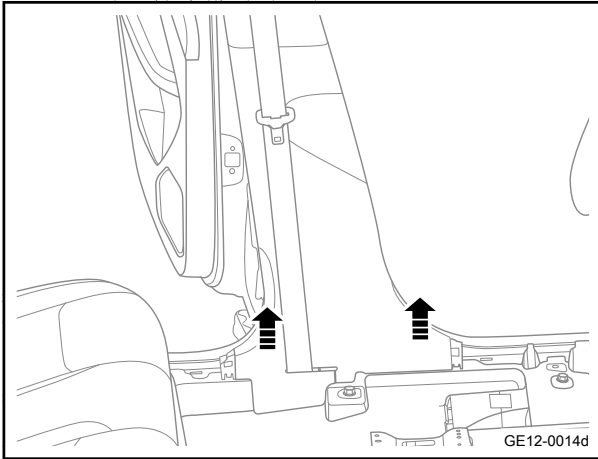
#### Removal procedure

#### Caution

The replacement method is the same for the left and right sides.

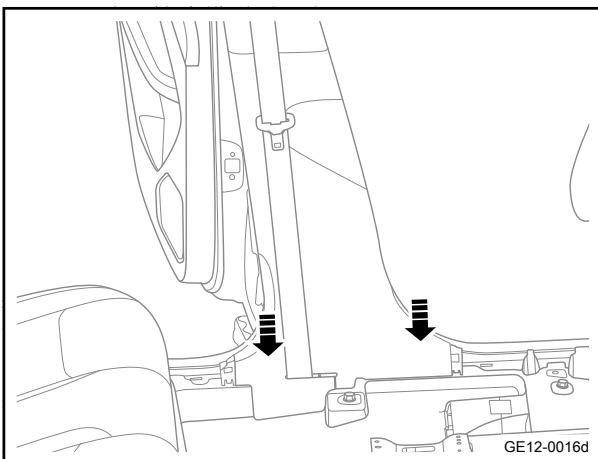
- 1 Open left doors.

- 2 Remove the left front door sill trim panel assembly. Refer to [Replacement of left front door sill trim panel assembly](#)
- 3 Remove the left rear door sill trim panel assembly. Refer to [Replacement of left rear door sill trim panel assembly](#)
- 4 Pry down the lower trim panel assembly of the left B-pillar.



#### Installation procedure

- 1 Move the lower trim panel assembly of the left B-pillar to the installation position.
- 2 Install the left B-pillar lower trim panel assembly.



- 3 Install the left front door sill trim panel assembly.
- 4 Install the rear left door sill trim panel assembly.
- 5 Close left doors.

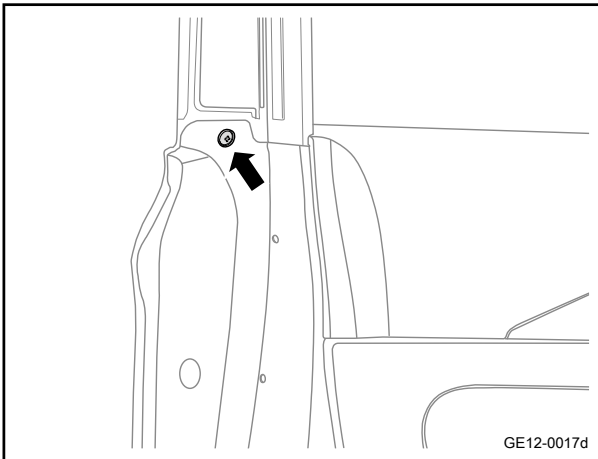
### 11.9.2.8 Replacement of the exterior sealing strip of left front door glass

#### Removal procedure

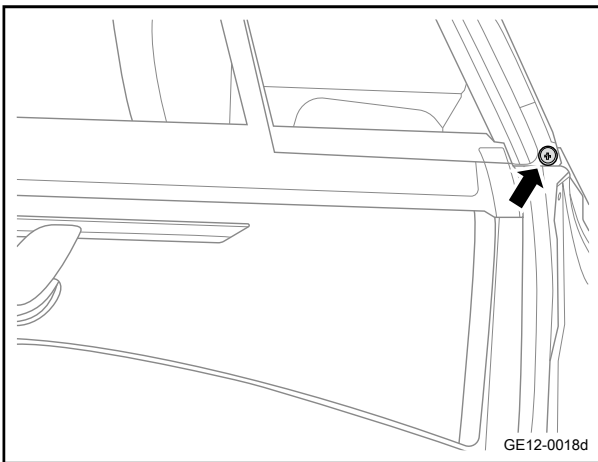
##### Caution

The replacement method is the same for the left and right sides.

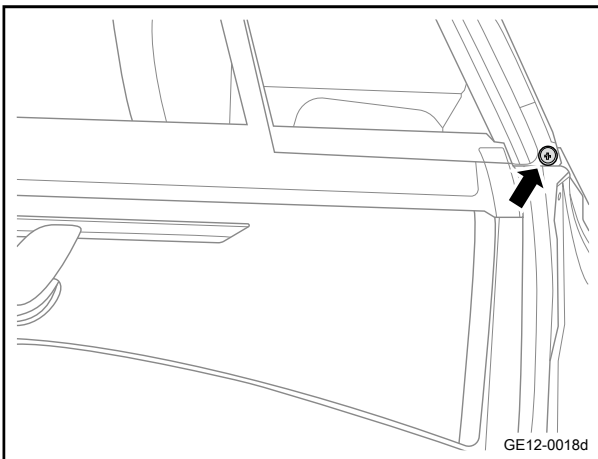
- 1 Open the FL door.



- 2 Remove the 1 fixing screw at the rear end of the outer sealing strip of the left front door glass.

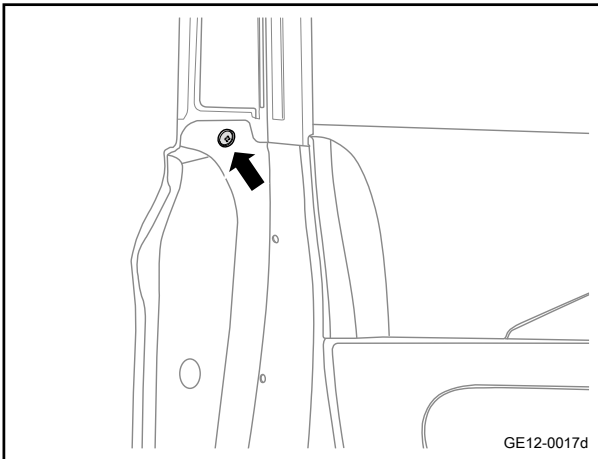


- 3 Remove the 1 fixing screw at the front end of the outer sealing strip of the left front door glass.
- 4 Take off the the exterior sealing strip of left front door glass.



#### Installation procedure

- 1 Move the outer sealing strip of the left front door glass to the installation position.
- 2 Install 1 fixing screw at the front end of the outer sealing strip of the left front door glass.  
Torque: 1 N·m (metric system) 0.7 lb-ft (Imperial system)



- 3 Install 1 fixing screw at the rear end of the left front door glass outer sealing strip.  
Torque 1N·m (metric system) 0.7lb-ft (Imperial system)

- 4 Close left doors.

### 11.9.2.9 Replacement of the interior sealing strip of left front door glass

#### Removal procedure

##### Caution

The replacement method is the same for the left and right sides.

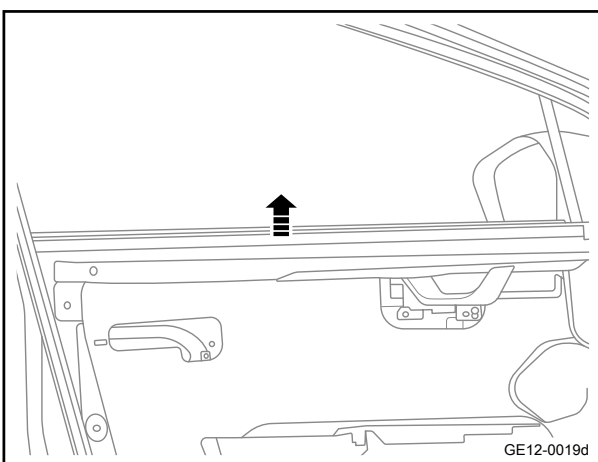
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

##### Warning

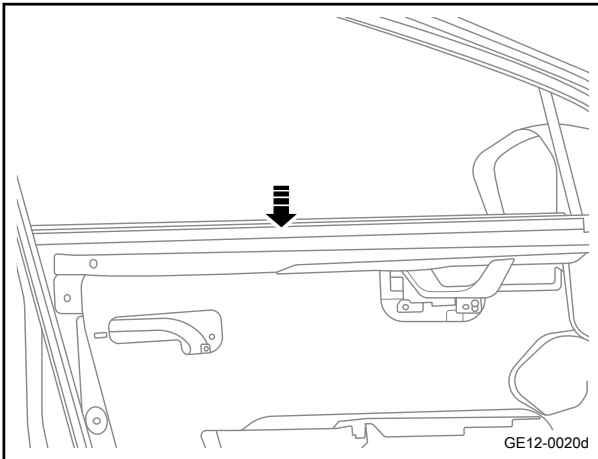
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. See [Replacement of the left front door trim panel assembly](#)

Take off the rear left door glass interior seal upwards



#### Installation procedure



- 1 Move the inner sealing strip of the left front door glass to the installation position.
- 2 Install FL door glass interior seal.

- 3 Install the FL door interior trim panel assembly.
- 4 Connect the negative cable of battery.

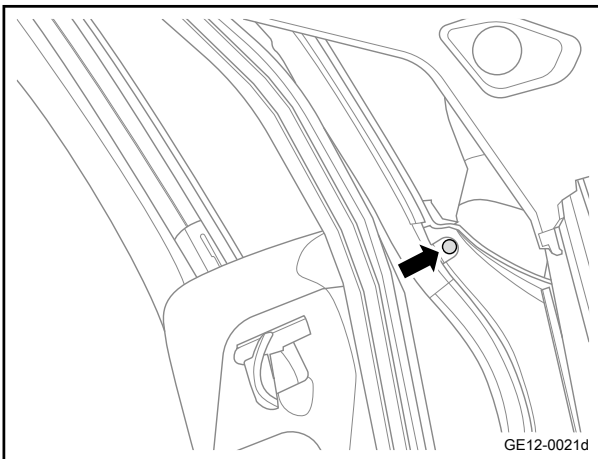
### 11.9.2.10 Replacement of the door door sealing strips

#### Removal procedure

##### Caution

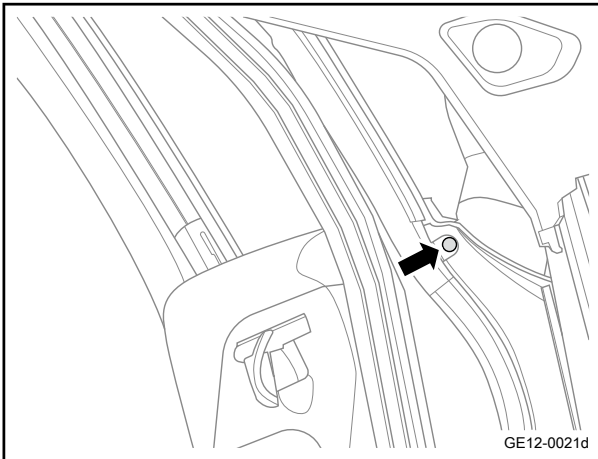
The replacement method is the same for the left and right sides.

- 1 Open the FL door.
- 2 Remove 1 fixing buckle at the front end of the left front door sealing strip assembly.
- 3 Remove the left front door sealing strip assembly.



#### Installation procedure





- 1 Move the left front door sealing strip assembly to the installation position.
- 2 Install the FL door sealing strip assembly.
- 3 Install 1 fixing buckle at the front end of the left front door sealing strip assembly.

- 4 Close the FL door.

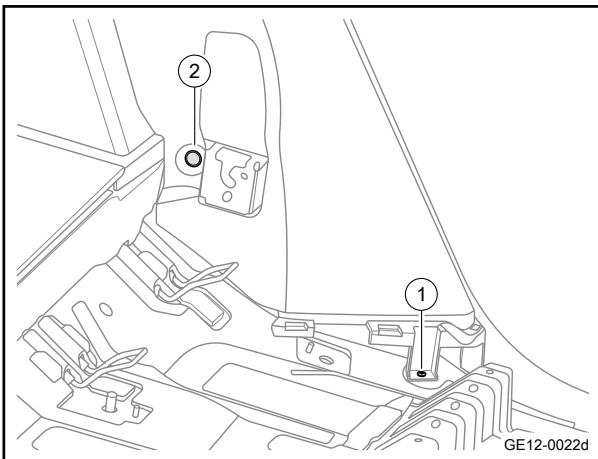
### 11.9.2.11 Replacement of the left C-pillar lower trim panel assembly.

#### Removal procedure

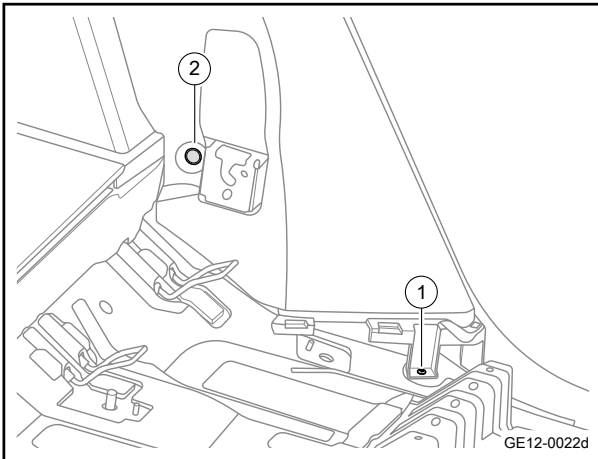
##### Caution

The replacement method is the same for the left and right sides.

- 1 Remove the left rear door sill trim panel assembly. Refer to [Replacement of left rear door sill trim panel assembly](#)
- 2 Remove the rear-row left backrests. See [Replacement of the rear-row left backrests](#)
- 3 Remove 1 fixing bolt 1 of the left C-pillar lower trim panel assembly.
- 4 Remove 1 fixing clip 2 of the left C-pillar lower trim panel assembly.
- 5 Pry down the lower trim panel assembly of the left C-pillar.



#### Installation procedure



- 1 Move the lower trim panel assembly of the left C-pillar to the installation position.
- 2 Install 1 fixing bolt 1 of the left C-pillar lower trim panel assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install 1 fixing clip 2 of the left C-pillar lower trim panel assembly.

- 4 Install the rear-row left backrest.
- 5 Install the rear left door sill trim panel assembly.

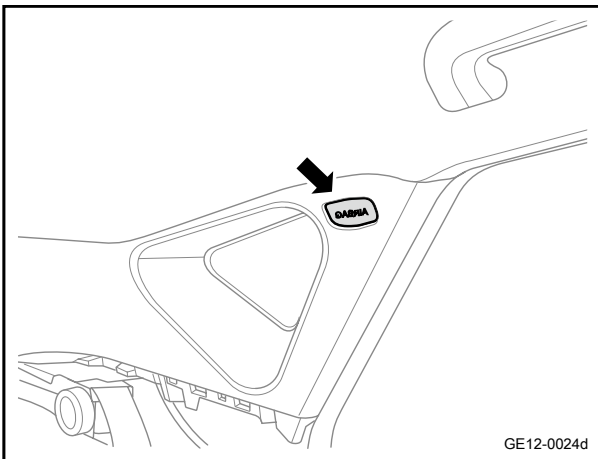
### 11.9.2.12 Replacement of left C-pillar upper trim panel assembly

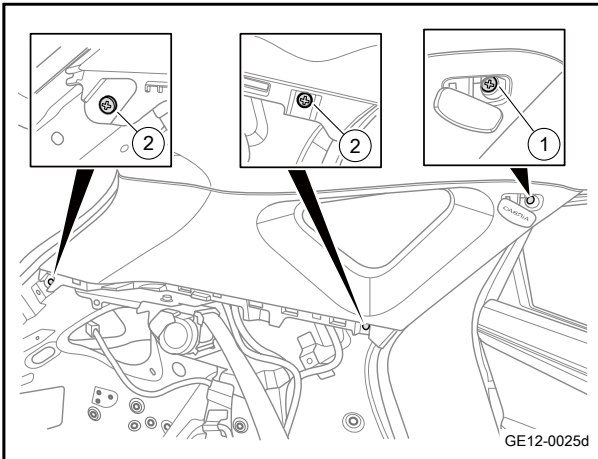
#### Removal procedure

#### Caution

The replacement method is the same for the left and right sides.

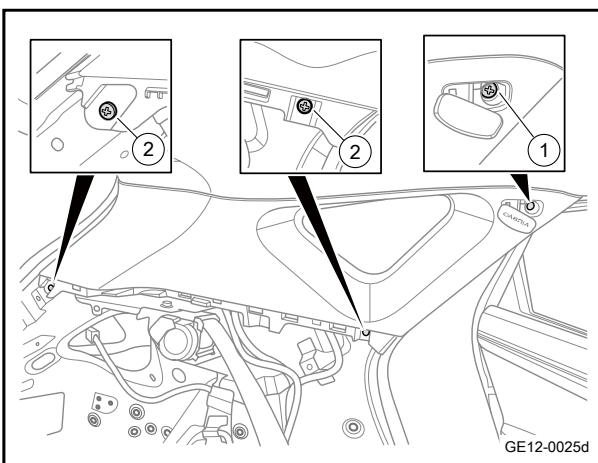
- 1 Remove the trim panel assembly in the left rear column.  
See [Replacement of Trim Panel in the Left Rear Column](#)
- 2 Pry down the air curtain identification cover on the upper trim panel assembly of the left C-pillar.



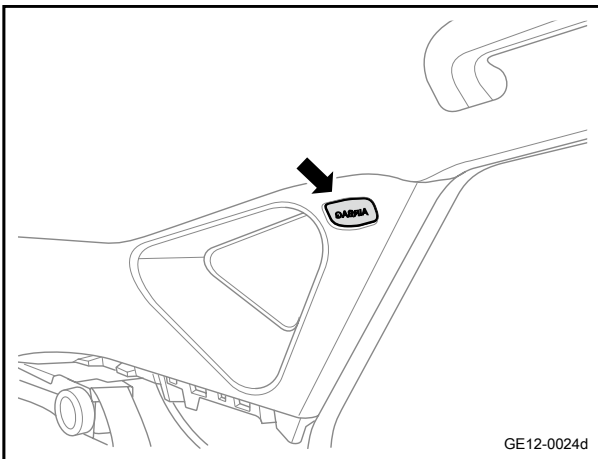


- 3 Remove the 1 fixing screw 1 of the upper part of left C-pillar upper trim panel assembly.
- 4 Remove the 2 fixing screw 2 of the lower part of left C-pillar upper trim panel assembly.
- 5 Take off the left C-pillar upper trim panel assembly.

#### Installation procedure



- 1 Move the upper trim panel assembly of the left C-pillar to the installation position.
- 2 Install the 2 fixing screw 2 of the lower part of left C-pillar upper trim panel assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install the 1 fixing screw 1 of the upper part of left C-pillar upper trim panel assembly.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 4 Install the air curtain identification cover on the upper trim panel assembly of the left C-pillar.

- 5 Install the rear left column middle trim panel assembly.

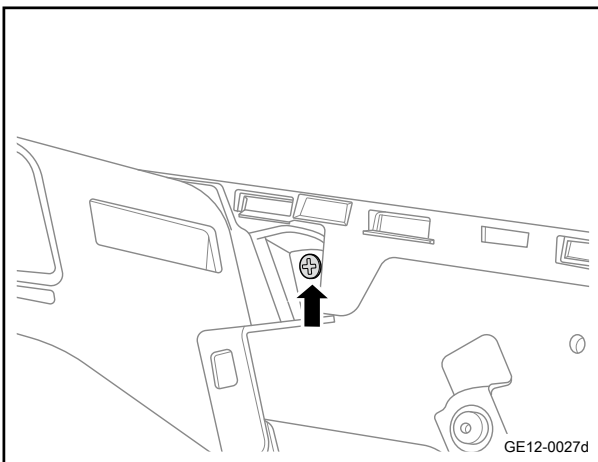
### 11.9.2.13 Replacement of the trim panel assembly in the left rear column

#### Removal procedure

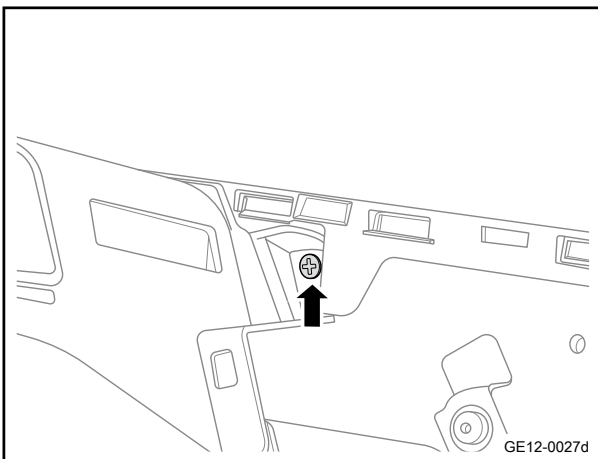
**Caution**

Except there is no luggage compartment lamp on the right side, the replacement method is the same as that on the left side.

- 1 Remove the lower trim panel assembly of the left C-pillar. Refer to [Replacement of the left C-pillar lower trim panel assembly](#)
- 2 Remove the left seat belt of the rear seat. See [Replacement of the seat belt assembly of both rear seats](#)
- 3 Remove the left luggage compartment lamp. Refer to [Replacement of rear compartment lamp](#)
- 4 Remove the rear left column middle trim panel assembly.
- 5 Pry down the trim panel assembly in the left rear column.

**Installation procedure**

- 1 Move the trim panel assembly in the left rear column to the installation position.
- 2 Install the 1 fixing screw of rear left column middle trim panel assembly.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Install the left luggage compartment lamp.
- 4 Install the left seat belt of the rear seat.
- 5 Install the left C-pillar lower trim panel assembly.

### 11.9.2.14 Replacement of left front door switch panel assembly

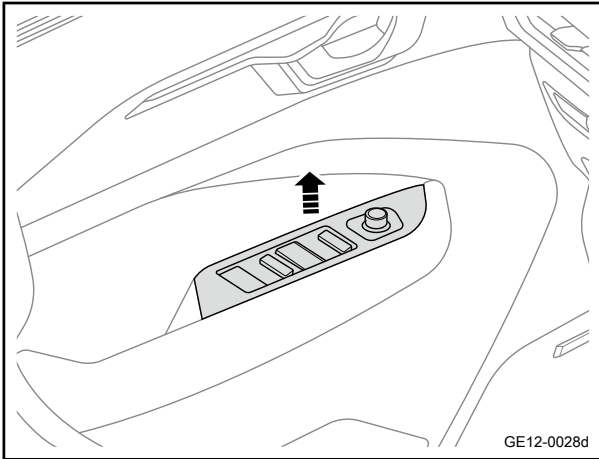
**Removal procedure**

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

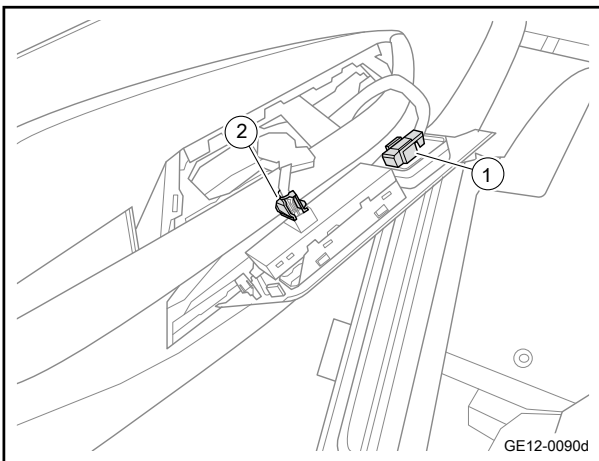
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Pry up the left front door switch panel assembly.

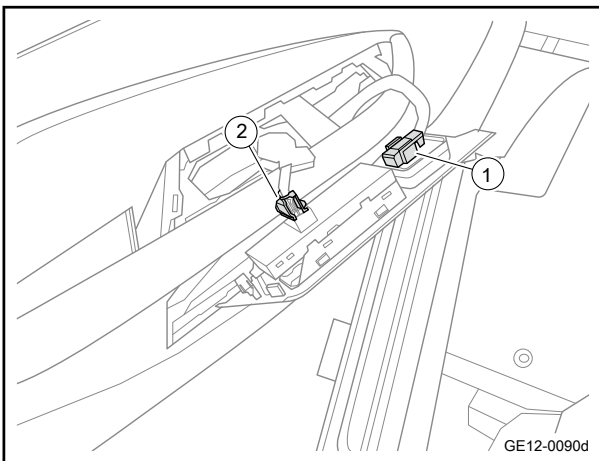


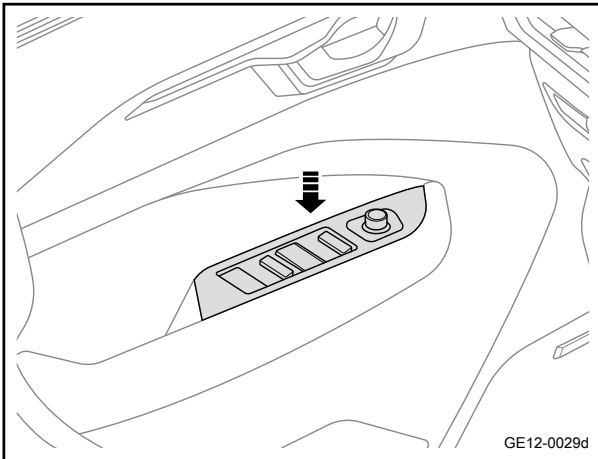
- 3 Disconnect the exterior rearview mirror switch harness connector 1.
- 4 Disconnect the wire harness connector of the left front door electric window regulator switch assembly 2.
- 5 Remove the left front door switch panel.



Installation procedure

- 1 Move the left front door switch panel assembly to the installation position.
- 2 Connect the wiring harness connector of the left front door power window regulator switch assembly.
- 3 Connect the exterior rearview mirror switch harness connector 1.





- 4 Install the left front door switch panel.

- 5 Connect the negative cable of battery.

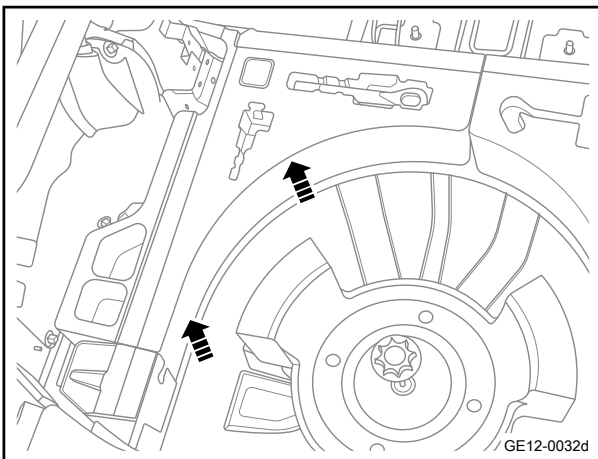
### 11.9.2.15 Replacement of the left mounting liner of the luggage compartment carpet

#### Removal procedure

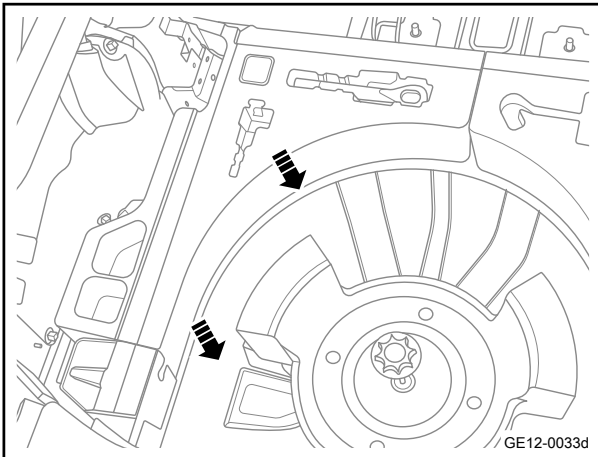
##### Caution

The replacement method is the same for the left and right sides.

- 1 Remove the luggage compartment carpet assembly. See [Replacement of luggage compartment carpet assembly](#)
- 2 Remove the left trim panel assembly of the luggage compartment. See [Trim panel assembly of luggage compartment left](#)
- 3 Take out the tool kit.
- 4 Remove the left trim panel assembly of the luggage compartment carpet.



#### Installation procedure



- 1 Move the left trim panel assembly of the luggage compartment carpet to the installation position.
- 2 Install the left trim panel assembly of the luggage compartment carpet.
- 3 Install the tool box.

- 4 Install the left trim panel assembly of the luggage compartment.
- 5 Install the luggage compartment carpet assembly.

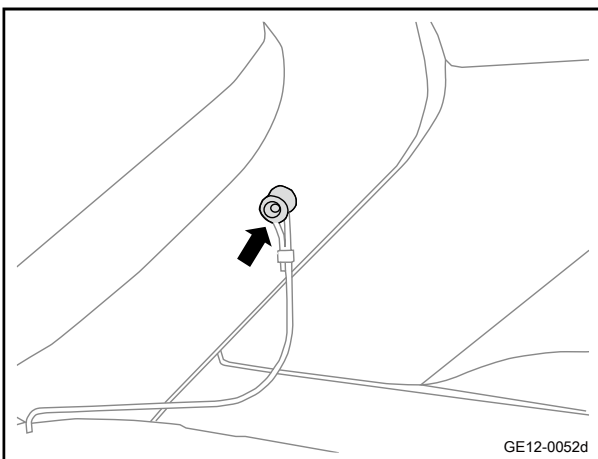
### 11.9.2.16 Replacement of the left trim panel assembly of the luggage compartment

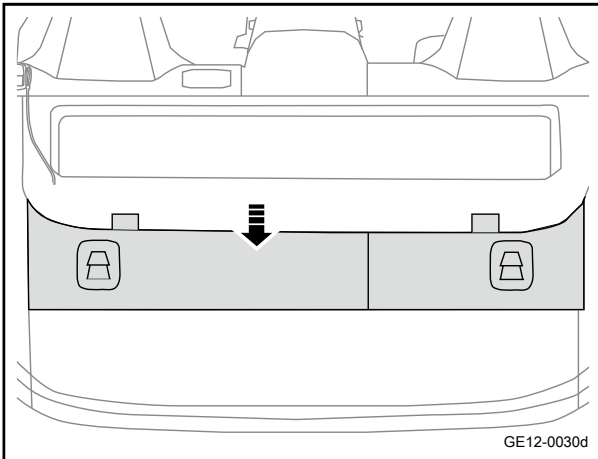
#### Removal procedure

##### Note

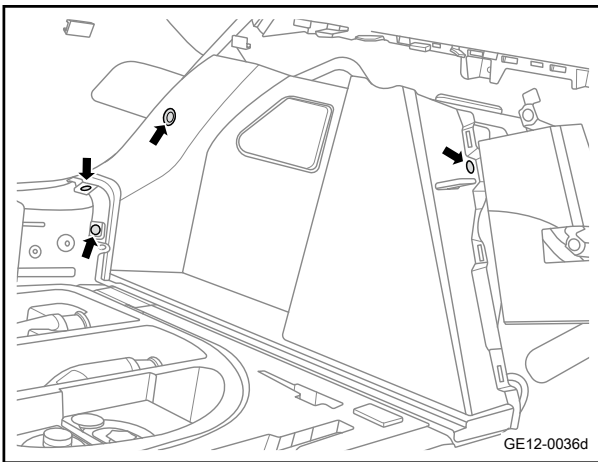
The replacement method is the same for the left and right sides.

- 1 Remove the trim panel assembly in the left rear column. See [Replacement of Trim Panel in the Left Rear Column](#)
- 2 Install the rear wall interior trim panel assembly. Refer to [Replacement of rear wall interior trim panel assembly](#)
- 3 Remove the lower trim panel assembly of the left C-pillar. Refer to [Replacement of the left C-pillar lower trim panel assembly](#)
- 4 Remove the luggage compartment carpet assembly. See [Replacement of luggage compartment carpet assembly](#)
- 5 Disconnect the left and right cables of the trim panel of the luggage compartment division plate.

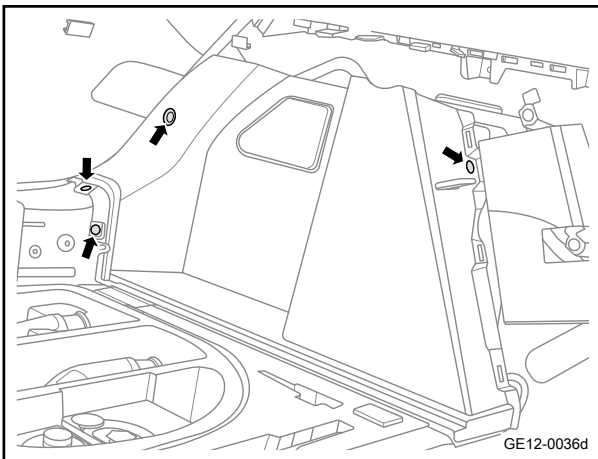




- 6 Take out the trim panel of the luggage compartment division plate.



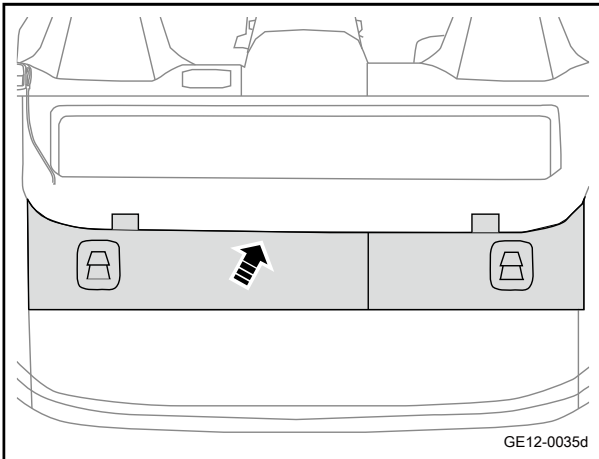
- 7 Remove the 4 fixed buckles of the left side trim panel assembly of the luggage compartment.
- 8 Remove the left trim panel assembly of the luggage compartment.



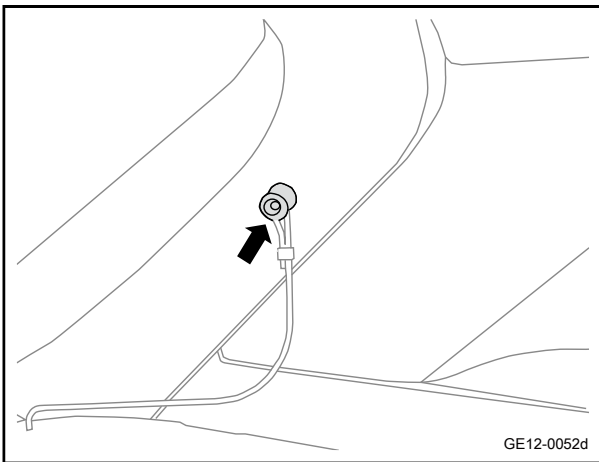
#### Installation procedure

- 1 Move the left trim panel assembly of the luggage compartment to the installation position.
- 2 Install 4 fixed buckles on the left trim panel assembly of the luggage compartment.





- 3 Install the trim panel of the luggage compartment division plate.



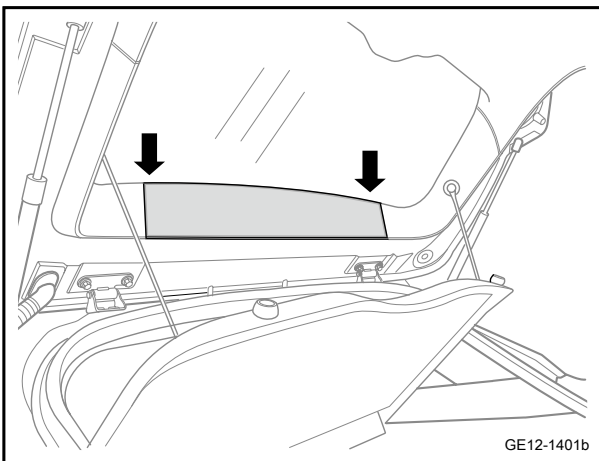
- 4 Install the left and right cables of the trim panel of the luggage compartment division plate.

- 5 Install the luggage compartment carpet assembly.
- 6 Install the left C-pillar lower trim panel assembly.
- 7 Install the assembly-interior trim panel rear wall.
- 8 Install the rear left column middle trim panel assembly.

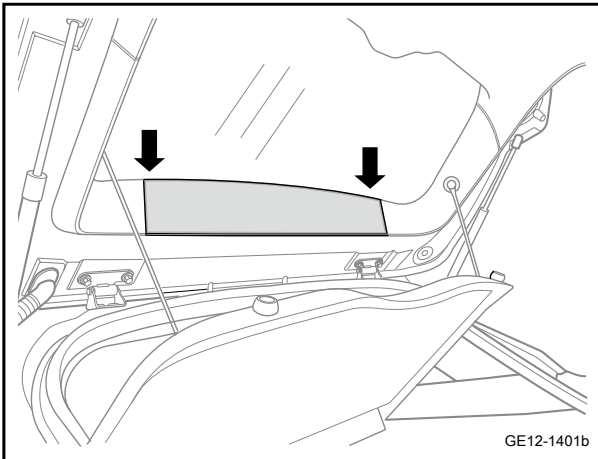
### 11.9.2.17 Replacement of upper middle interior trim panel assembly of the back door

#### Removal procedure

- 1 Pry down the upper middle trim panel assembly of the back door.



#### Installation procedure

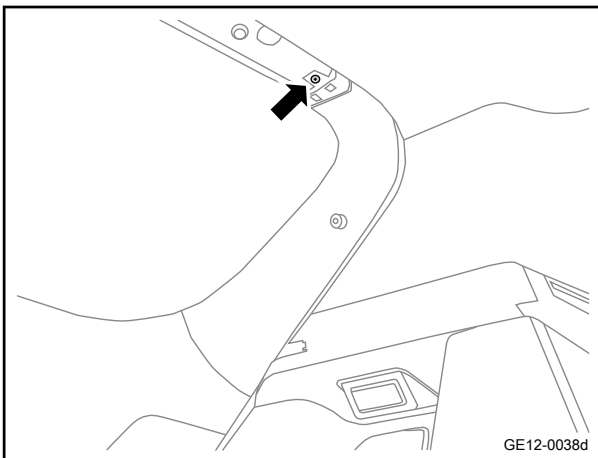


- 1 Move the upper middle trim panel assembly of the back door to the installation position.
- 2 Install the middle upper interior trim panel assembly of the backdoor.

### 11.9.2.18 Replacement of upper left interior trim panel assembly of the back door

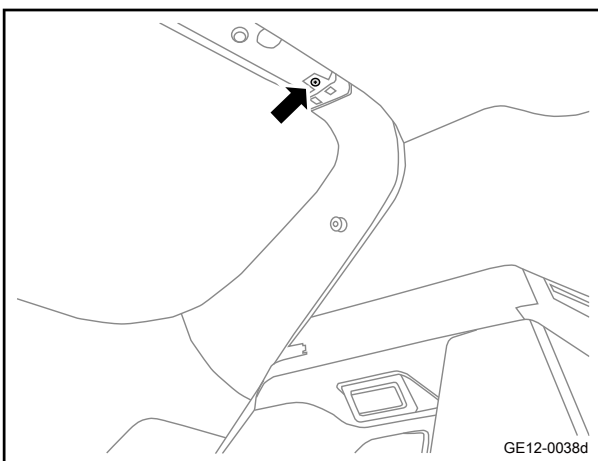
#### Removal procedure

- 1 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 2 Remove 1 fixing screw of the upper left interior trim panel assembly of the back door.
- 3 Pry down the upper left trim panel assembly of the back door.



#### Installation procedure

- 1 Move the upper left trim panel assembly of the back door to the installation position.
- 2 Install 1 fixing screw of the upper left interior trim panel assembly of the back door.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

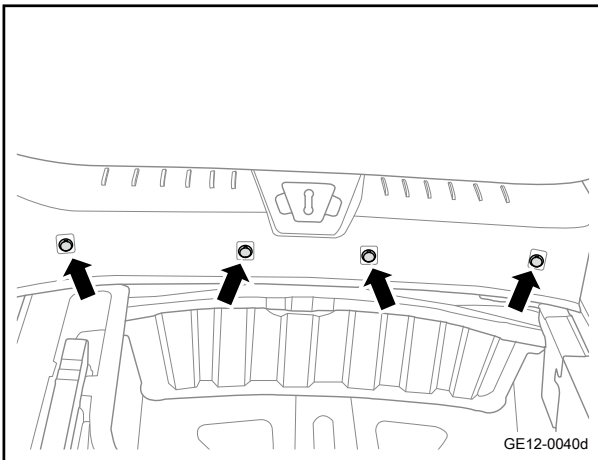


- 3 Install the upper middle trim panel assembly of the luggage compartment.

### 11.9.2.19 Replacement of assembly-interior trim panel rear wall

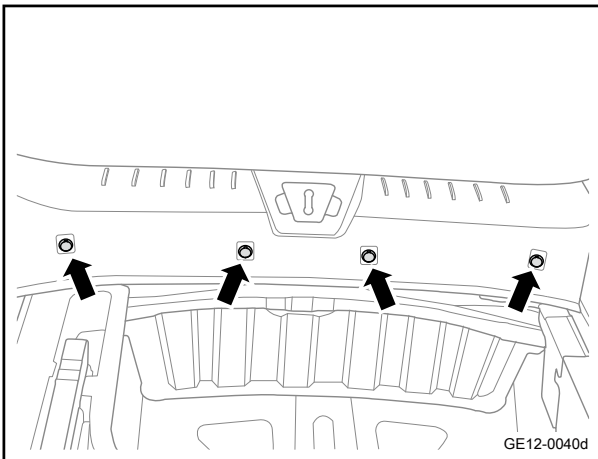
#### Removal procedure

- 1 Remove the 4 fixed buckles of the inner trim panel assembly of the rear wall.
- 2 Pry off the rear wall interior trim panel assembly.



#### Installation procedure

- 1 Move the inner trim panel assembly of the rear wall to the installation position.
- 2 Install 4 fixed buckles on the inner trim panel of the rear wall.



### 11.9.2.20 Replacement of the left front door trim panel assembly

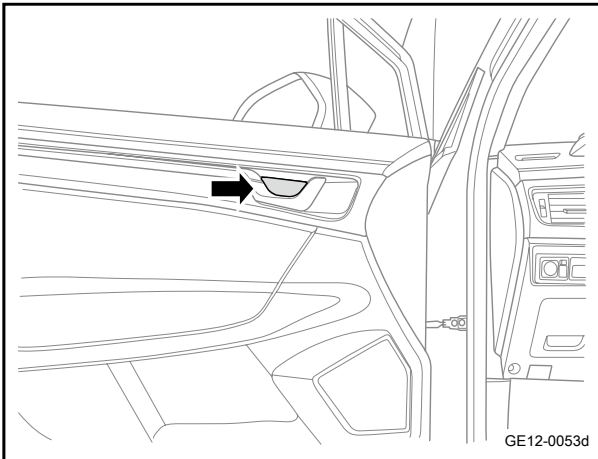
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

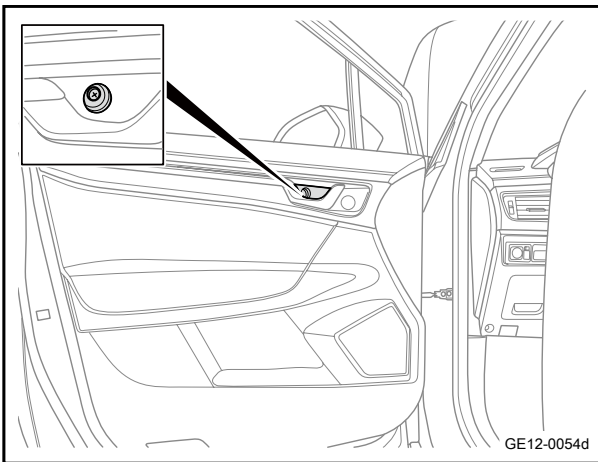
#### Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

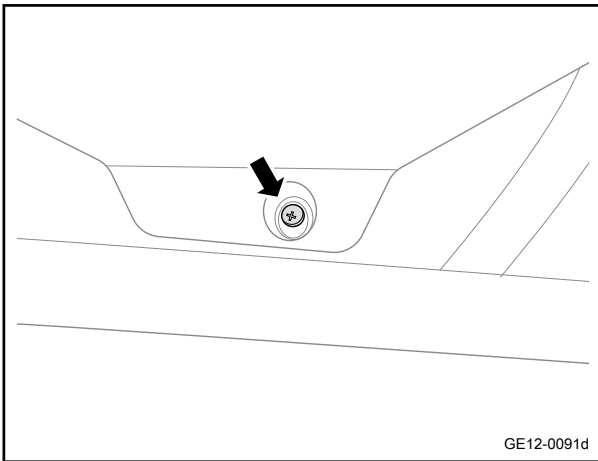
- 2 Remove the left front door switch panel. See [Replacement of the left front door switch panel](#)



- 3 Pry down the small trim cover of the inward-opening handle of the left front door.

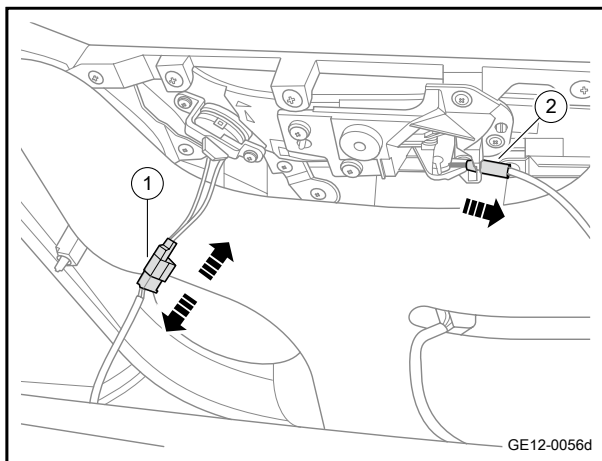


- 4 Remove the 1 fixing screw on the inward-opening handle side of the left front door.

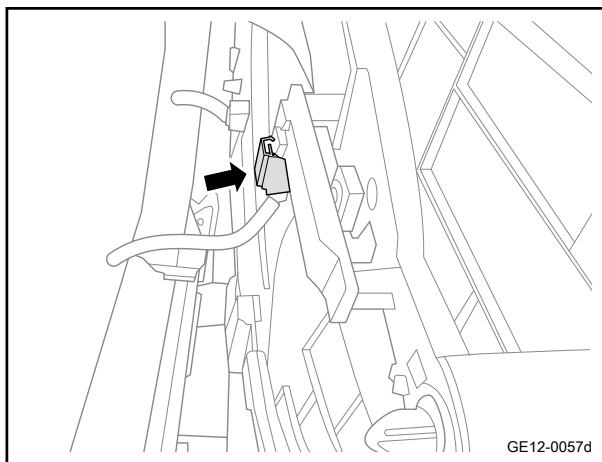


- 5 Take out the rubber cover plate in the armrest box of the left front door.
- 6 Remove the 1 fixing screw of the interior trim handle box of the left front door.

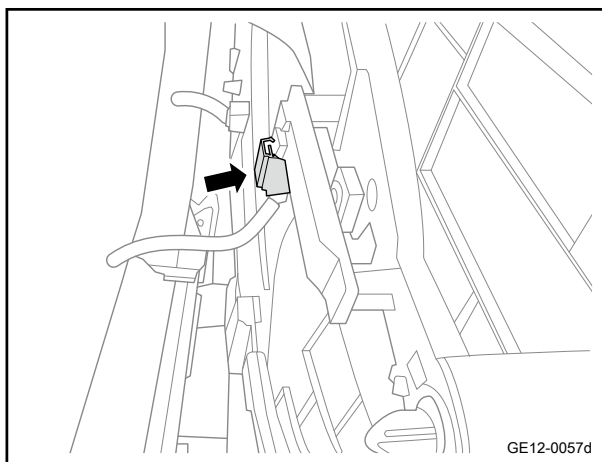
- 7 Pry open the interior trim panel of the left front door.



- 8 Disconnect the left front door ambient light harness connector 1.
- 9 Disengage the inward-opening cable 2 of the left front door.

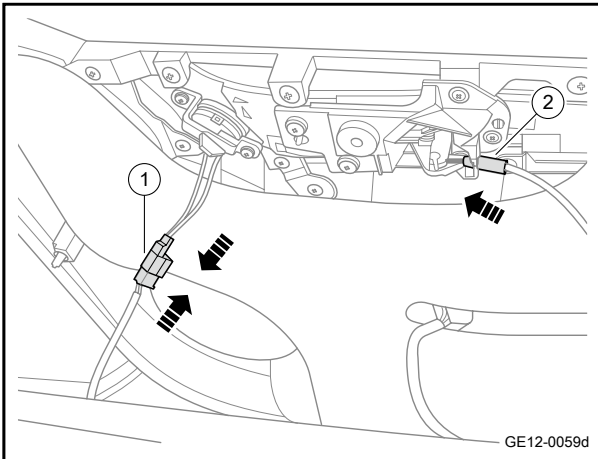


- 10 Disconnect the interior antenna harness connector of the left front door.
- 11 Remove the left front door trim panel assembly.

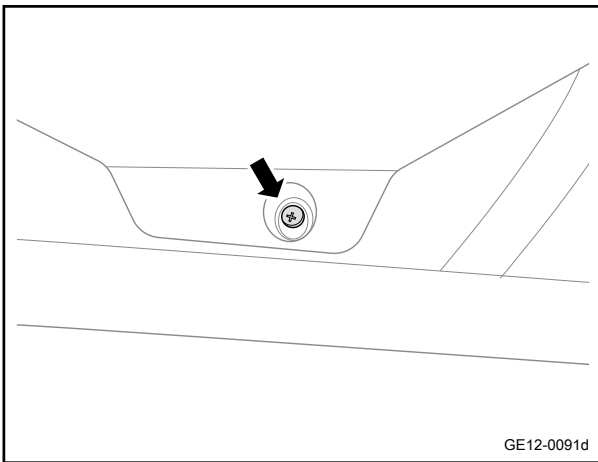


Installation procedure

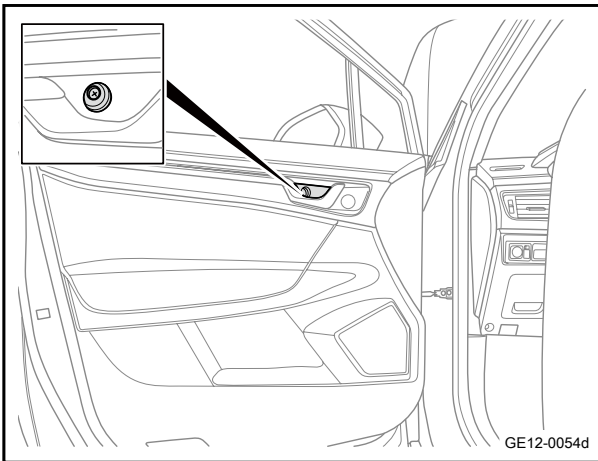
- 1 Move the left front door trim panel assembly to the installation position.
- 2 Connect the interior antenna harness connector of the left front door.



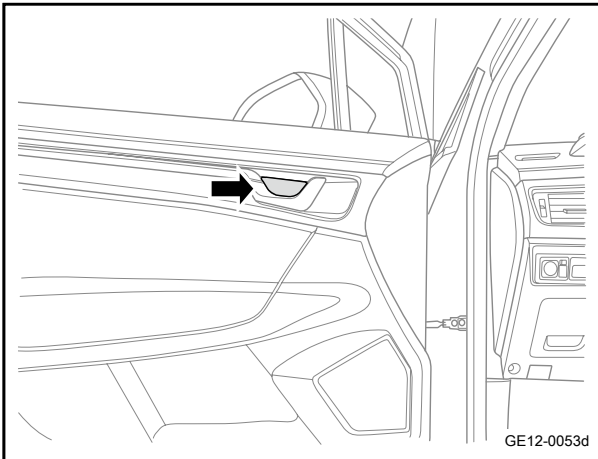
- 3 Connect the inward-opening cable 2 of the left front door.
- 4 Connect the left front door ambient light harness connector 1.



- 5 Install the FL door interior trim panel assembly.
- 6 Install the 1 fixing screw of the interior trim handle box of the left front door.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 7 Install the rubber cover in the armrest box of the left front door.



- 8 Install the 1 fixing screw on the inward-opening handle side of the left front door.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 9 Install the small trim cover of the inward-opening handle of the left front door.

10 Install the left front door switch panel assembly.

11 Connect the negative cable of battery.

### 11.9.2.21 Replacement of left rear door trim panel

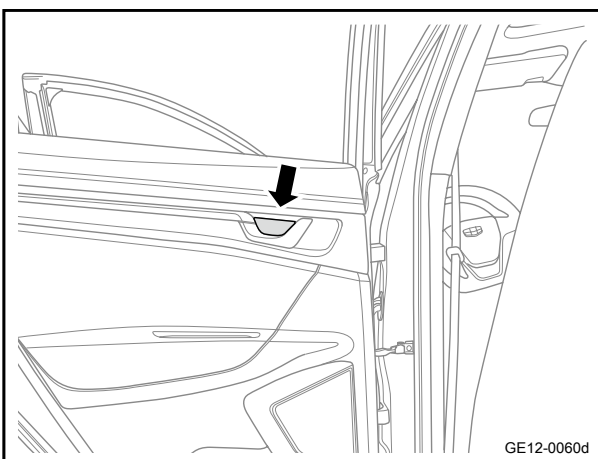
#### Removal procedure

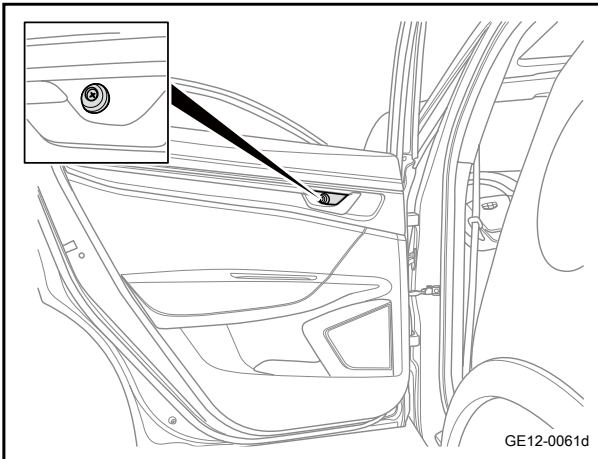
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

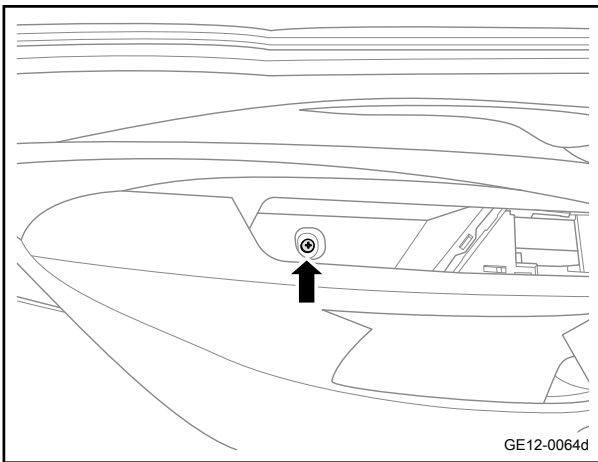
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disassemble the switch assembly of the left rear door single-connection power window regulator. See [Replacement of single-connection switch assembly of power window regulator](#)
- 3 Pry down the small trim cover on the inward-opening handle side of the left rear door.

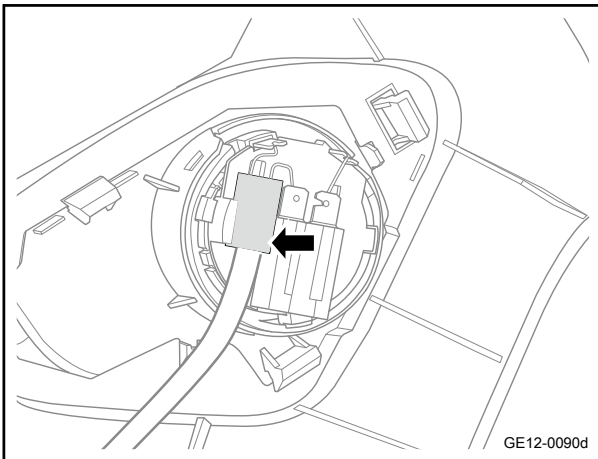




- 4 Remove the 1 fixing screw on the inward-opening handle side of the left rear door.

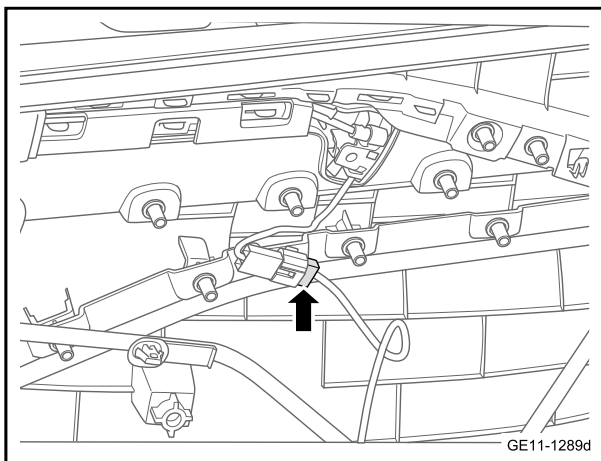


- 5 Take out the rubber cover plate in the armrest box.
- 6 Remove the 1 fixing screw of the interior trim handle box of the left rear door.

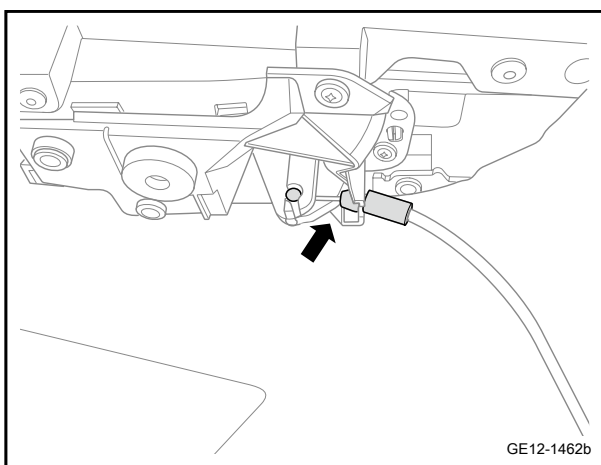


- 7 Pry open the left rear door trim panel assembly.
- 8 Disconnect the 1 harness connector of RL door tweeter.

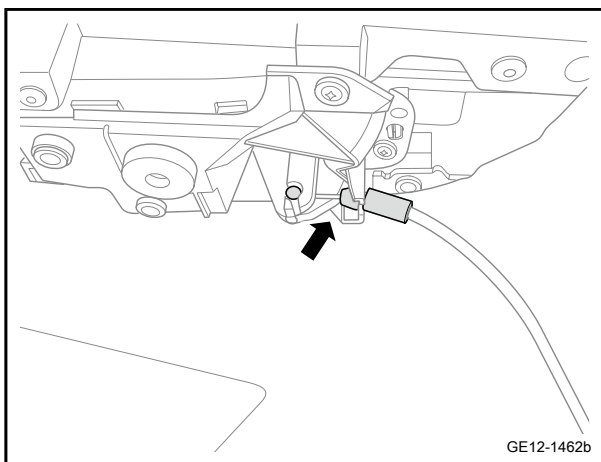




- 9 Disconnect the 1 wire harness connector of the left rear door ambient light.

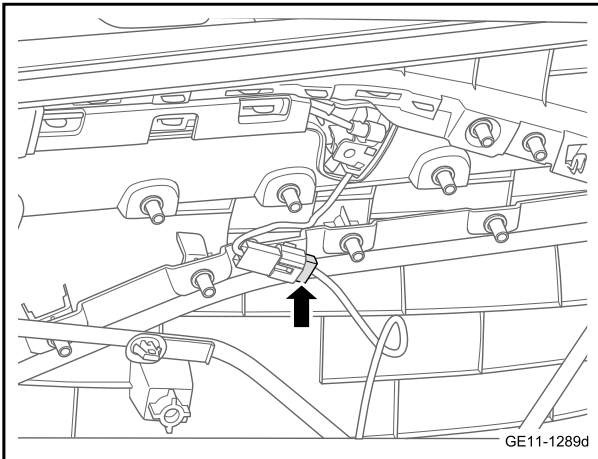


- 10 Disconnect the inward-opening cable of the left rear door.
- 11 Remove the left rear door trim panel assembly.

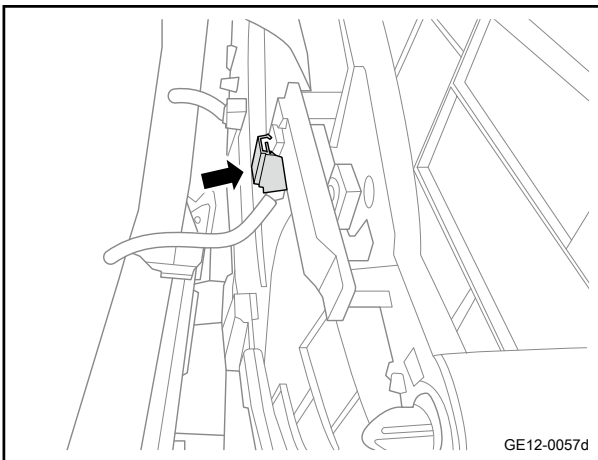


Installation procedure

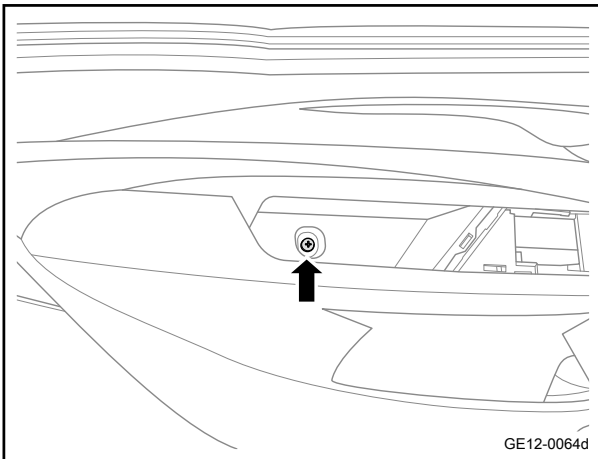
- 1 Move the left rear door trim panel assembly to the installation position.
- 2 Connect the inward-opening cable of the left rear door.



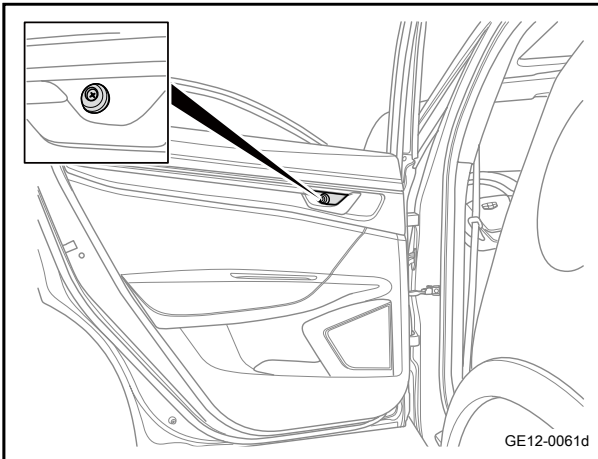
- 3 1 wire harness connector to connect the left rear door ambient light.



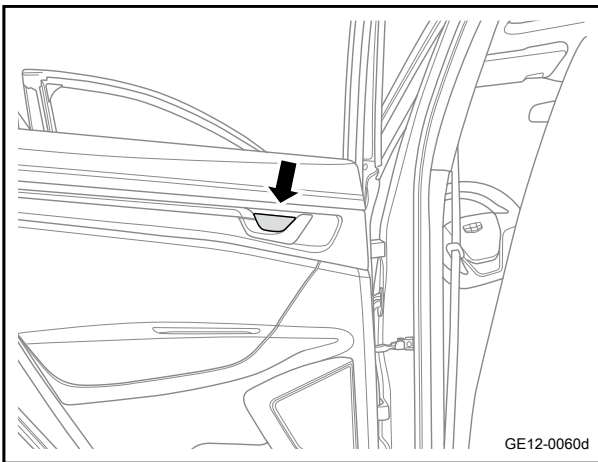
- 4 Connect the 1 harness connector of RL door tweeter.



- 5 Install the RL door interior trim panel assembly.
- 6 Install the 1 fixing screw of the interior trim handle box of the left rear door.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 7 Install the 1 fixing screw on the inward-opening handle side of the left rear door.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



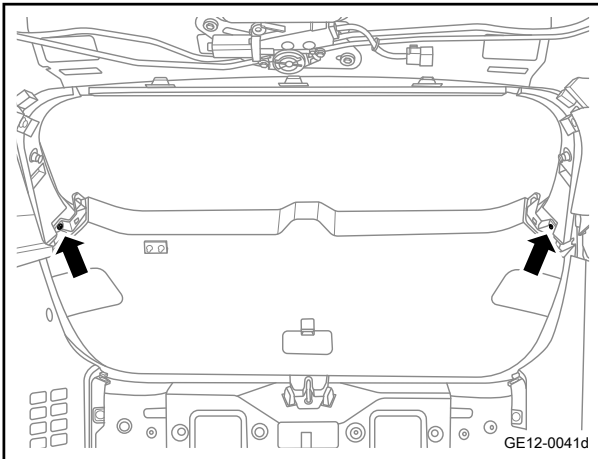
- 8 Install the rubber cover in the armrest box.
- 9 Install the small trim cover plate on the inward-opening handle side of the left rear door.

- 10 Install the switch assembly of the left rear door single-connection power window regulator.
- 11 Connect the negative cable of battery.

### 11.9.2.22 Replacement of the inner lower trim panel assembly of the back door

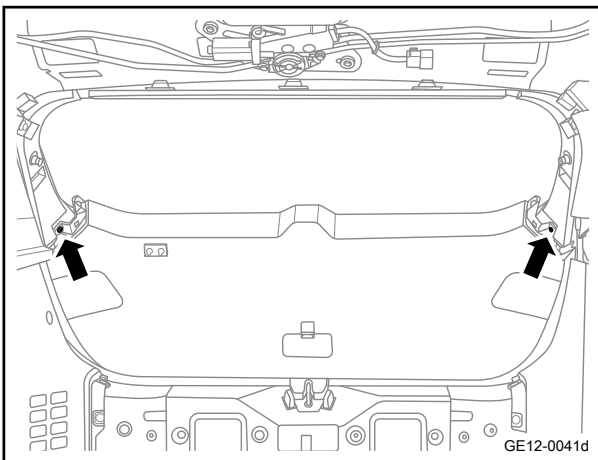
#### Removal procedure

- 1 Remove the upper left and right inner trim panel assembly of the back door. Refer to [Replacement of left upper interior trim panel assembly of the back door](#)
- 2 Remove the back door handle box. See [Replacement of the back door handle box](#)



- 3 Remove the 1 fixing screw at each side of inner lower interior trim panel of the backdoor
- 4 Pry down the inner lower trim panel assembly of the back door.

#### Installation procedure



- 1 Move the inner lower trim panel assembly of the back door to the installation position.
- 2 Install the 1 fixing screw at each side of inner lower interior trim panel of the backdoor  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 3 Install the back door handle box.
- 4 Install the left and right upper interior trim panel assembly of the backdoor.

### 11.9.2.23 Replacement of interior trim panel of roof

#### Removal procedure

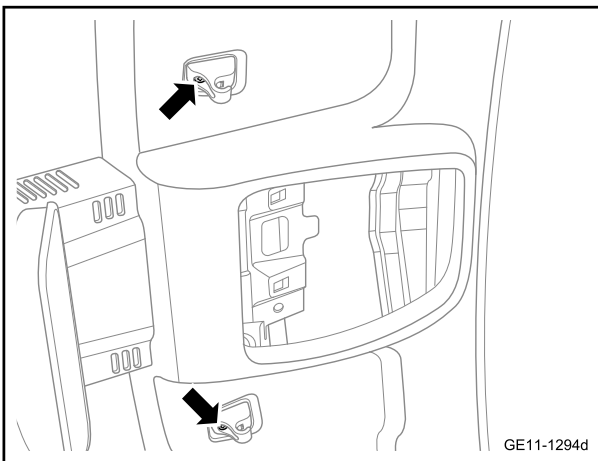
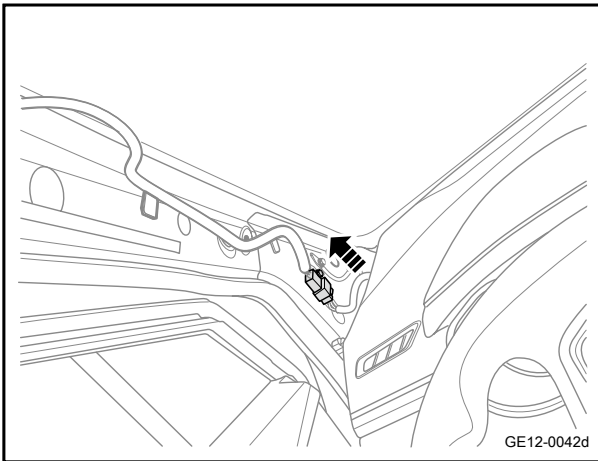
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

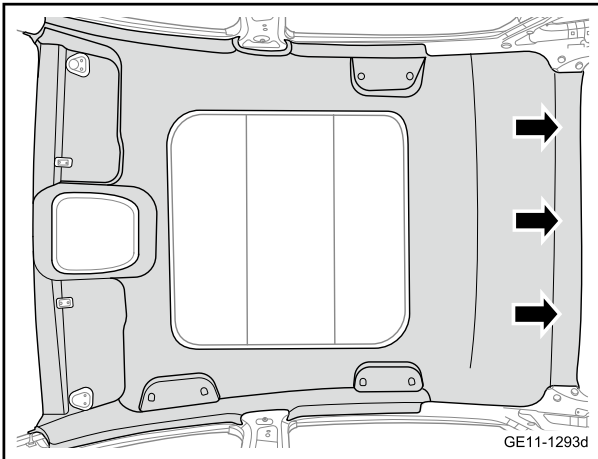
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Disassemble the upper trim panel assembly on the left and right A-pillars. Refer to [Replacement of A-pillar upper trim panel assembly](#)
- 3 Remove the upper trim panel assembly on the left and right B-pillars. Refer to [Replacement of B-pillar upper trim panel assembly](#)

- 4 Remove the upper trim panel assembly on the left and right C-pillars. Refer to [Replacement of left C-pillar upper trim panel assembly](#)
- 5 Remove the left and right sun visor assembly. See [Replacement of left sun visor assembly](#)
- 6 Remove the front reading lamp assembly. Refer to [Replacement of front reading lamp assembly](#)
- 7 Remove the rear reading lamp assembly. Refer to [Replacement of rear reading lamp assembly](#)
- 8 Remove the right front safety handle. See [Replacement of the left rear safety handles](#)
- 9 Remove the left and right rear safety handles. See [Replacement of the left rear safety handles](#)
- 10 Disconnect the roof harness connector and disconnect the harness from the left front pillar.



- 11 Remove the 2 fixing bolts connecting the sun visor buckle to the front cross beam of the roof.
- 12 Remove the 2 sun visor buckles.

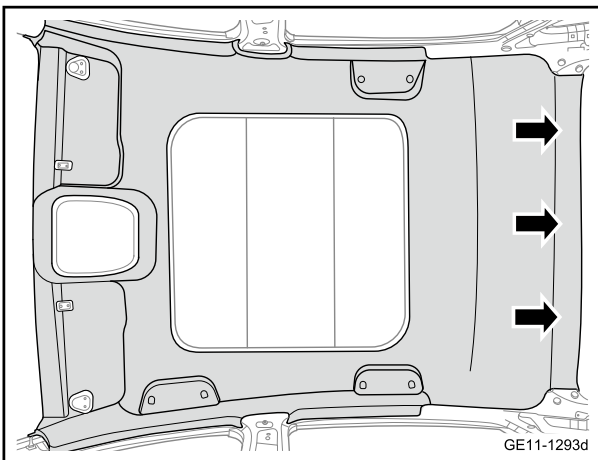


- 13 Use a plastic prying board to pry off the 3 fixing buckles behind the trim panel in the roof.
- 14 Remove the roof trim panel assembly

**Caution**

Two people are required to collaborate here.

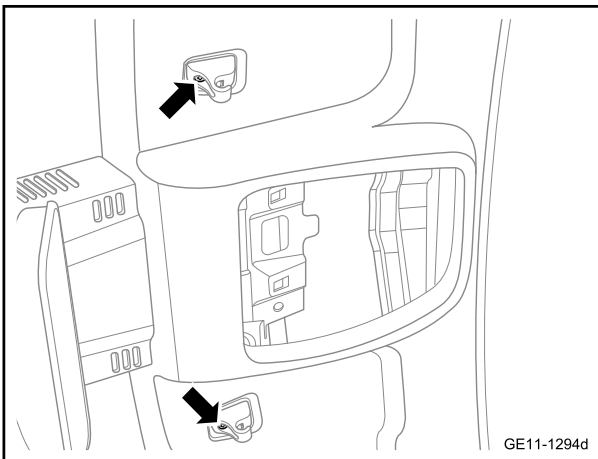
Installation procedure



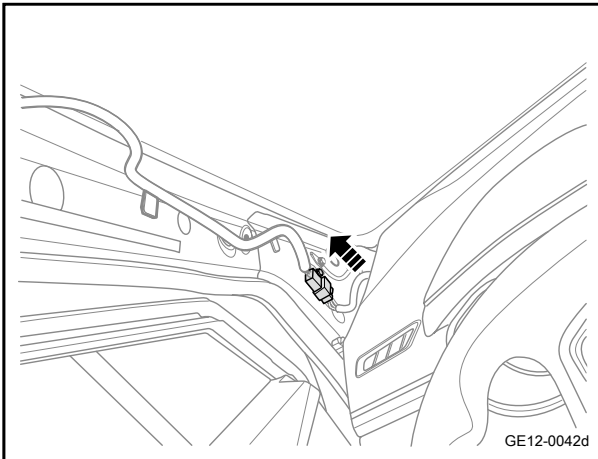
- 1 Align the buckle of the roof interior trim panel assembly with the mounting hole, and press the roof interior trim panel assembly to fasten the buckles.

**Caution**

Two people are required to collaborate here.



- 2 Move the 2 sun visor buckles to the installation position.
- 3 Install the 2 fixing bolts connecting the sun visor buckles to the front cross beam of the roof.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 4 Arrange the ceiling wire harness to the left front column and connect the wire harness connector.

- 5 Install the left and right rear safety handles.
- 6 Install the right front safety handle.
- 7 Install the rear reading lamp assembly.
- 8 Install the front reading lamp assembly.
- 9 Install the left and right sun visor assembly.
- 10 Install the left and right C-pillar upper trim panel assembly.
- 11 Install the left and right B-pillar upper trim panel assembly.
- 12 Install the left and right A-pillar upper trim panel assembly.
- 13 Connect the negative cable of battery.

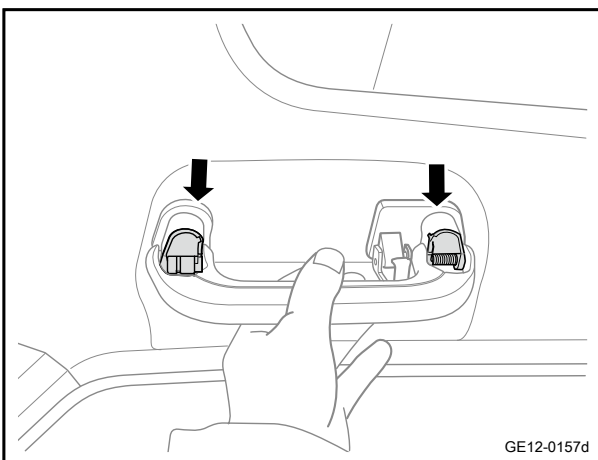
#### 11.9.2.24 Replacement of the left rear safety handle

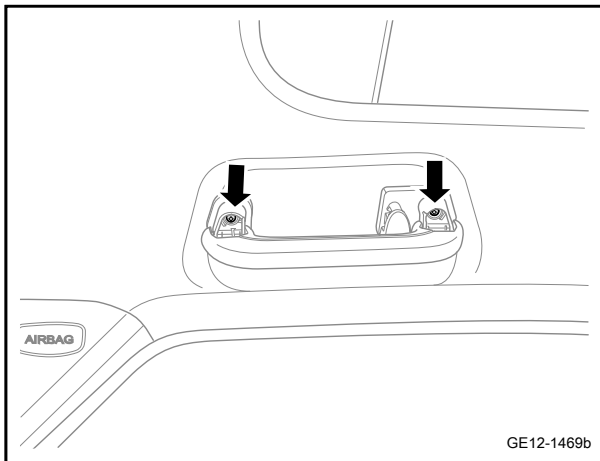
##### Removal procedure

##### Caution

The replacement method is the same for the left and right sides.

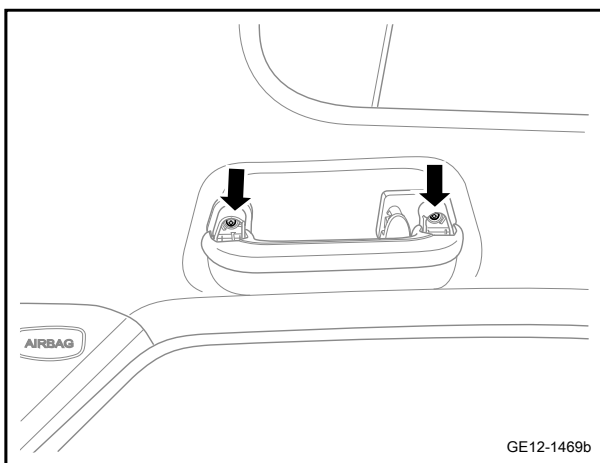
- 1 Open the rear left safety handle screw cover.



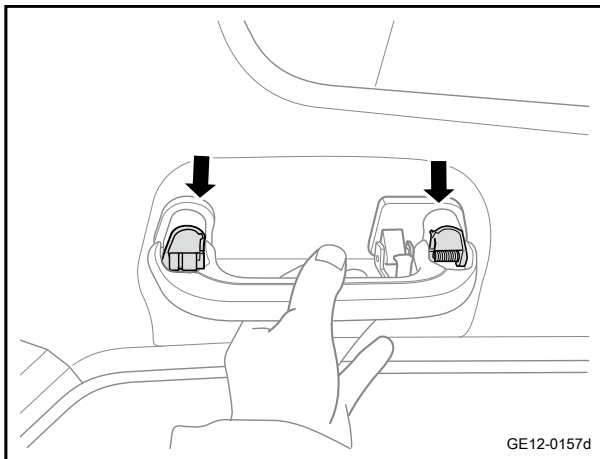


- 2 Remove the 2 fixing screws of the left rear safety handle.
- 3 Remove the left rear safety handle.

#### Installation procedure



- 1 Move the left rear safety handles to the installation position.
- 2 Install the 2 fixing screws of the left rear safety handle.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 3 Install the left rear safety handle screw cover.

### 11.9.2.25 Replacement of the left sun visor assembly

#### Removal procedure



Caution

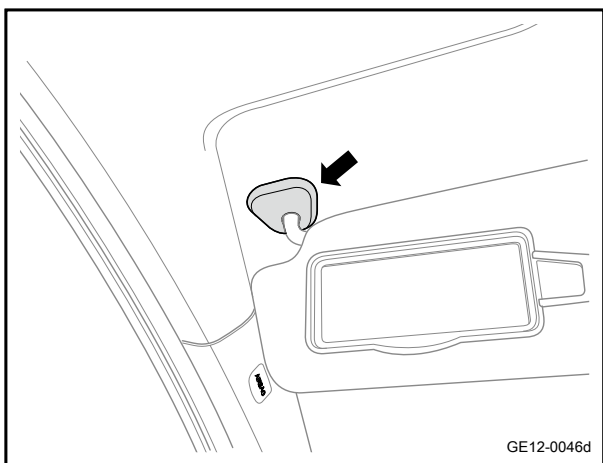
The replacement method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

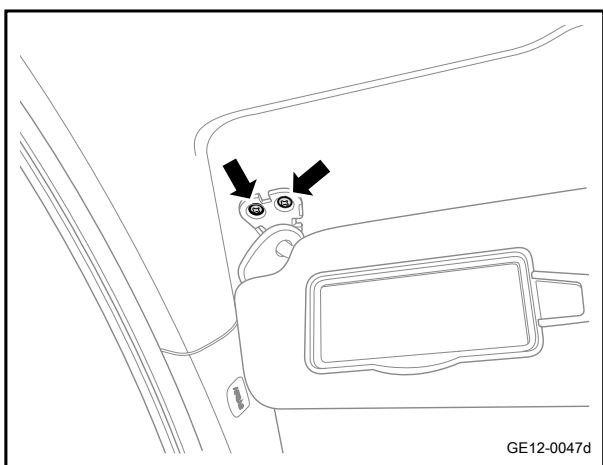
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

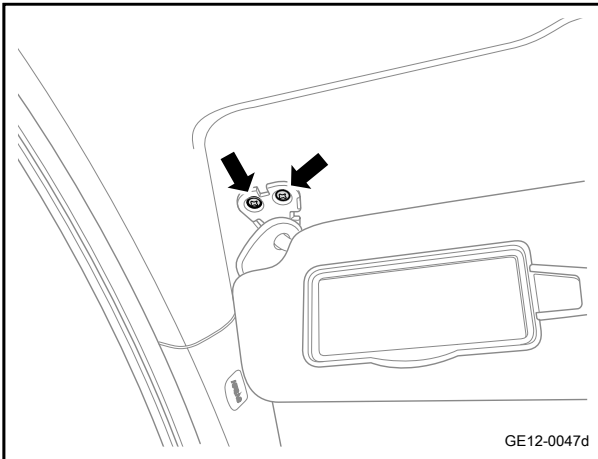
- 2 Pry down the screw cover of the left sun visor.



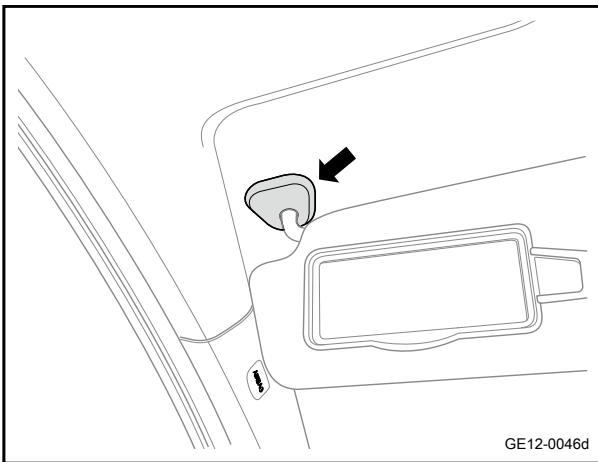
- 3 Remove the 2 fixing screws from the left sunvisor.
- 4 Take off the sunvisor assembly.



Installation procedure



- 1 Move the left sun visor assembly to the installation position.
- 3 Remove the 2 fixing screws from the left sunvisor assembly.  
Torque: 4N·m (metric) 3lb-ft (imperial system)



- 4 Install the left sun visor screw cover.

- 5 Connect the negative cable of battery.

### 11.9.2.26 Replacement of the driver's left footrest

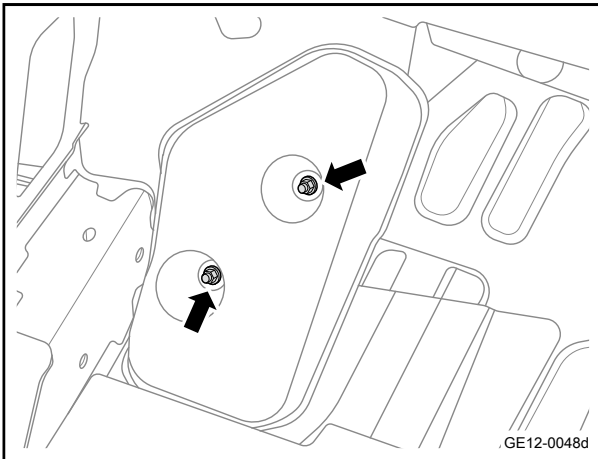
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable negative](#)

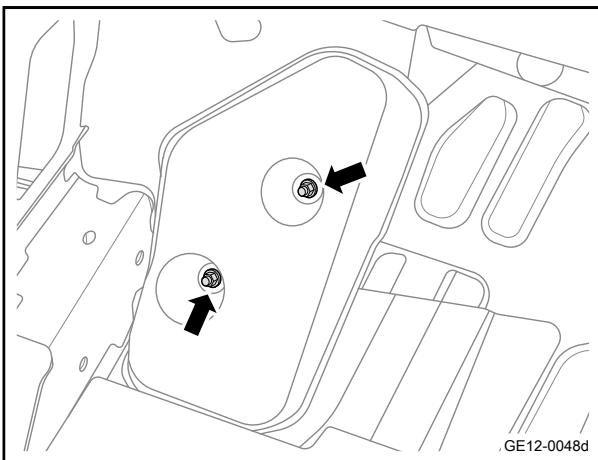
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the carpet assembly. See [Replacement of carpet assembly](#)



- 3 Remove the 2 fixing nuts of the driver's left footrest.
- 4 Remove the driver's left footrest.



#### Installation procedure

- 1 Move the driver's left footrest to the installation position.
- 2 Install 2 fixing nuts of the driver's left footrest.  
Torque: 10N·m (metric) 7.4lb·ft (imperial system)

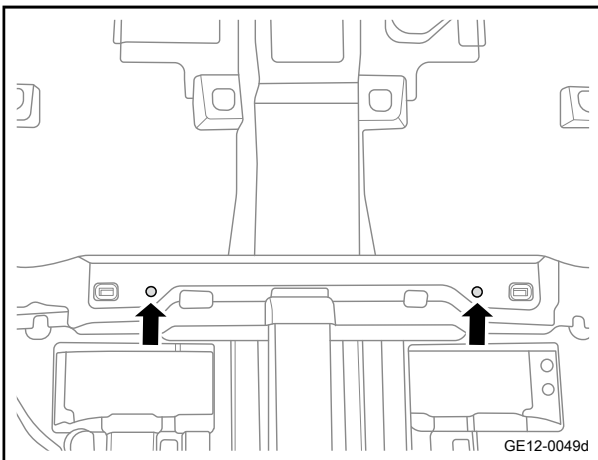
- 3 Install the carpet assembly.
- 4 Connect the negative cable of battery.

### 11.9.2.27 Replacement of carpet assembly

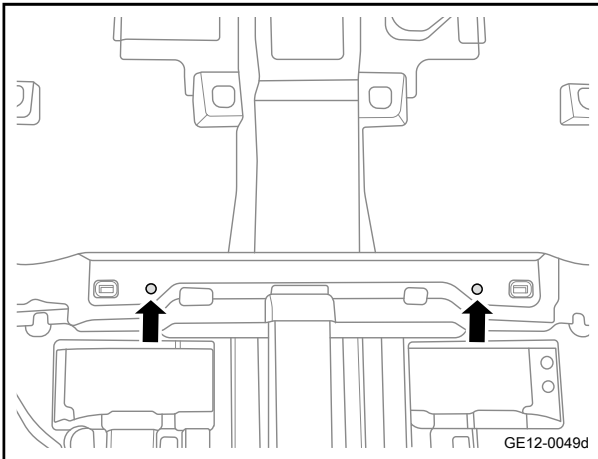
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable negative](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left front seat assembly. See [Replacement of left front seat assembly](#)
  - 3 Remove the right front seat assembly. See [Replacement of right front seat assembly](#)
  - 4 Remove the rear-row seat cushions. See [Replacement of rear seat cushions](#)

- 5 Remove the upper trim panel assembly of the auxiliary fascia console. See [Replacement of upper trim panel assembly of auxiliary instrument](#)
- 6 Remove the wireless charging module. See [Replacement of wireless charging module](#)
- 7 Remove the left front baffle assembly of the auxiliary fascia console. See [Replacement of the left front baffle assembly of the auxiliary fascia console](#)
- 8 Remove the front vent pipe assembly of the auxiliary fascia console. See [Replacement of front vent pipe assembly of auxiliary fascia console](#)
- 9 Remove the middle trim panel assembly of the auxiliary fascia console. See [Replacement of auxiliary fascia console body assembly](#)
- 10 Remove the left and right front door sill trim panel assembly. Refer to [Replacement of left front door sill trim panel assembly](#)
- 11 Remove the left and right rear door sill trim panel assembly. Refer to [Replacement of left rear door sill trim panel assembly](#)
- 12 Remove the left and right A-pillar lower trim panel assembly. Refer to [Replacement of left A-pillar lower trim panel assembly](#)
- 13 Remove the lower trim panel assembly of the left and right B-pillars. Refer to [Replacement of left B-pillar lower trim panel assembly](#)
- 14 Remove the front left and right seat belt assembly. See [Replacement of the front left seat belt assembly](#)
- 15 Remove the 2 fixing buckles at the rear of the carpet.
- 16 Remove the carpet assembly.



Installation procedure

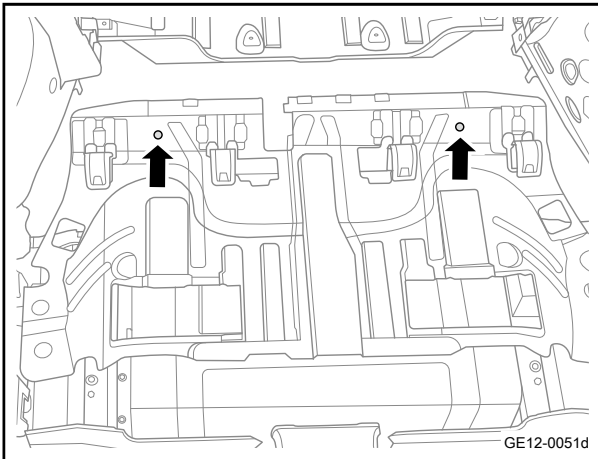


- 1 Move the carpet assembly to the installation location.
- 2 Install 2 fixed buckles at the rear of the carpet.
  
- 3 Install the front left and right seat belt assemblies.
- 4 Install the left and right B-pillar lower trim panel assembly.
- 5 Install the left and right A-column lower trim panel assembly.
- 6 Install the left and right rear door sill trim panel assembly.
- 7 Install the left and right front door sill trim panel assembly.
- 8 Install the middle trim panel assembly of the auxiliary fascia console.
- 9 Install the front vent pipe assembly of the auxiliary fascia console.
- 10 Install the left front baffle assembly of the auxiliary fascia console.
- 11 Install the wireless charging module.
- 12 Install the upper trim panel assembly of the auxiliary fascia console.
- 13 Install the rear-row seat cushions.
- 14 Install the right front seat assembly.
- 15 Install the left front seat assembly.
- 16 Connect the negative cable of battery.

### 11.9.2.28 Rear floor carpet replacement

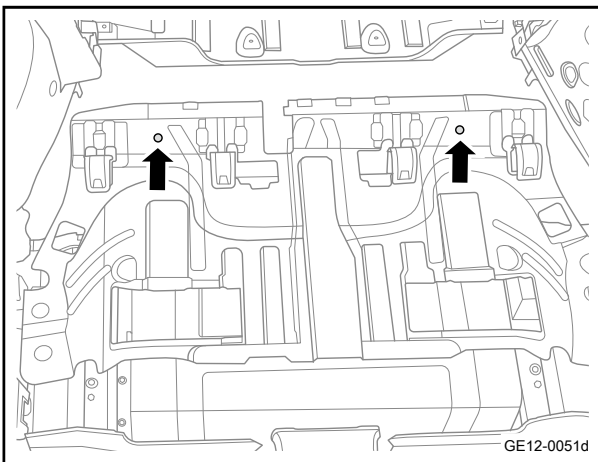
#### Removal procedure

- 1 Remove the left and right lining plates of the luggage compartment carpet. See [Replacement of the left mounting liner of the luggage compartment carpet](#)
- 2 Remove the lower trim panel of the left C-pillar. Refer to [Replacement of the C-pillar lower trim panel assembly](#)
- 3 Remove the rear middle and right lock assembly. See [Replacement of rear middle and right lock assembly](#)



- 4 Remove the 2 fixing buckles of the rear floor carpet.
- 5 Remove the rear floor carpet.

#### Installation procedure



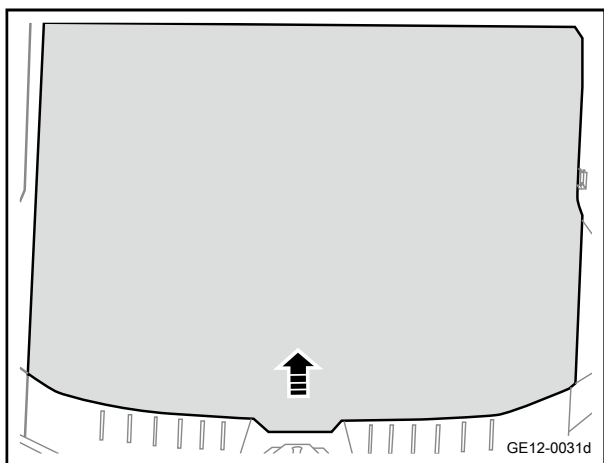
- 1 Move the rear floor carpet to the installation location.
- 2 Install the 2 fixed buckles of the rear floor carpet.

- 3 Install the C-pillar lower trim panel assembly.
- 4 Install the rear middle and right lock assembly.
- 5 Install the left and right mounting liners of the luggage compartment carpet.

### 11.9.2.29 Replacement of luggage compartment carpet assembly

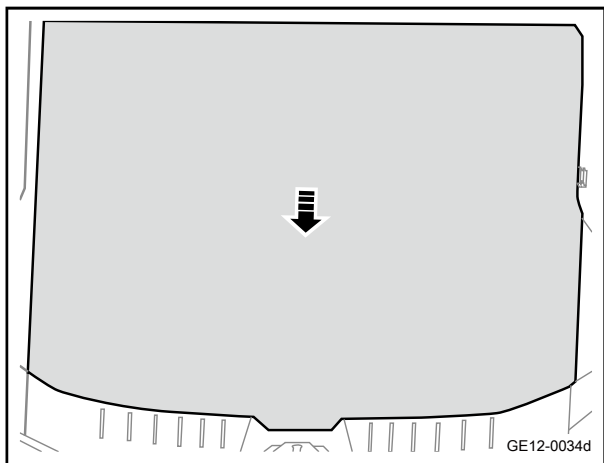
#### Removal procedure

- 1 Open the backdoor.
- 2 Take out the luggage compartment carpet assembly.



Installation procedure

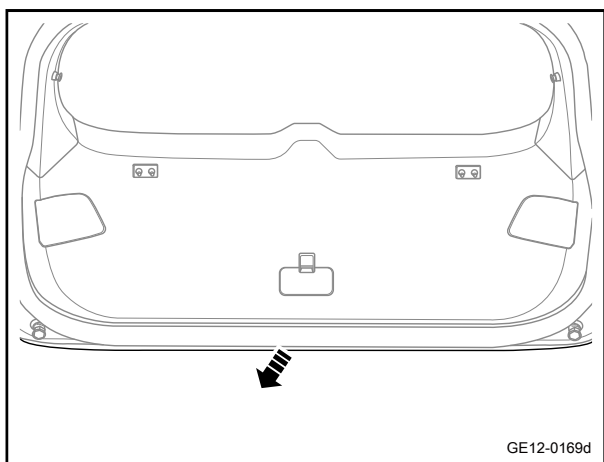
- 1 Move the luggage compartment carpet assembly to the installation position.
- 2 Install the luggage compartment carpet assembly.



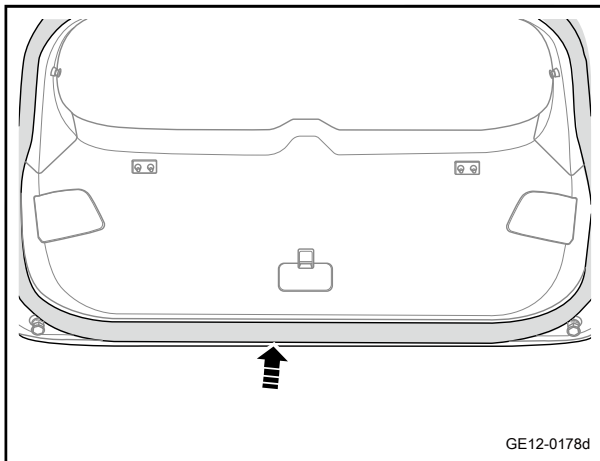
11.9.2.30 Replacement of backdoor sealing strip

Removal procedure

- 1 Open the backdoor.
- 2 Remove the backdoor sealing strip



Installation procedure



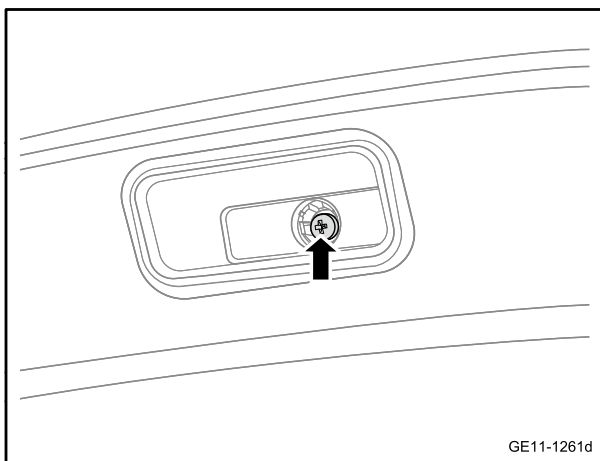
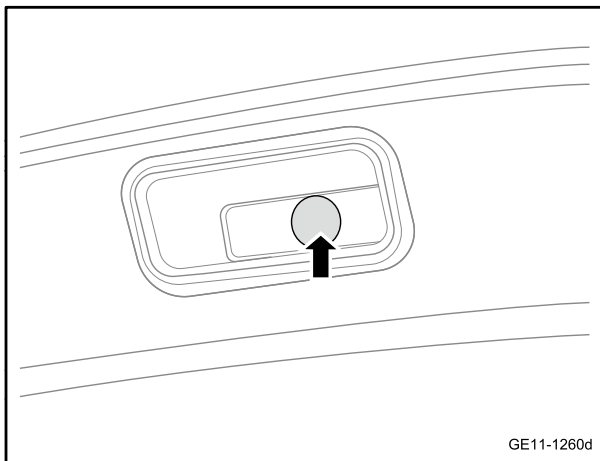
- 1 Move the back door sealing strip to the installation position.
- 2 Install the backdoor sealing strip

- 3 Close the backdoor.

### 11.9.2.31 Replacement of the back door handle box

#### Removal procedure

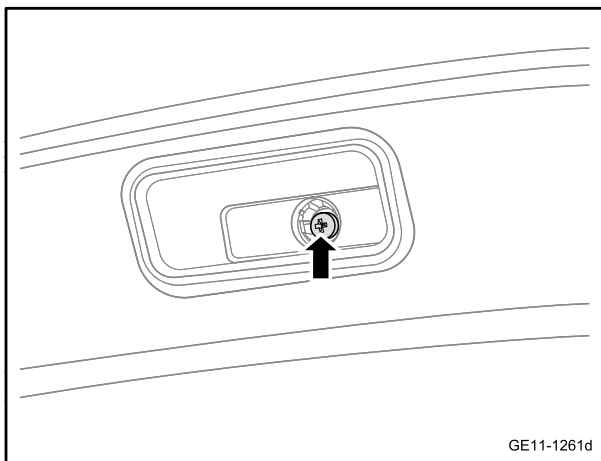
- 1 Pry off the handle box plug cover of the backdoor rear.



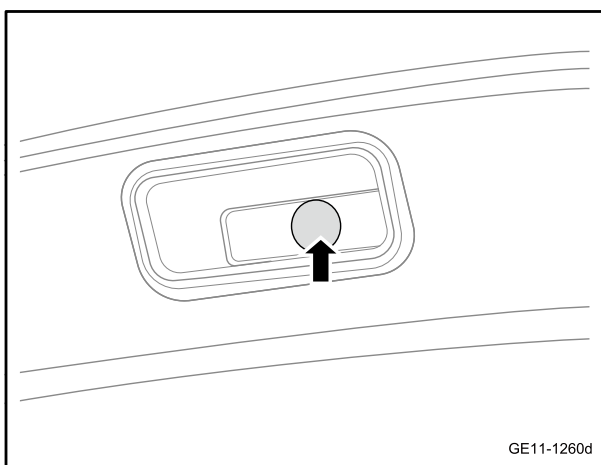
- 2 Remove the 1 fixing screw of handle box of the backdoor.
- 3 Remove the back door handle box.

#### Installation procedure





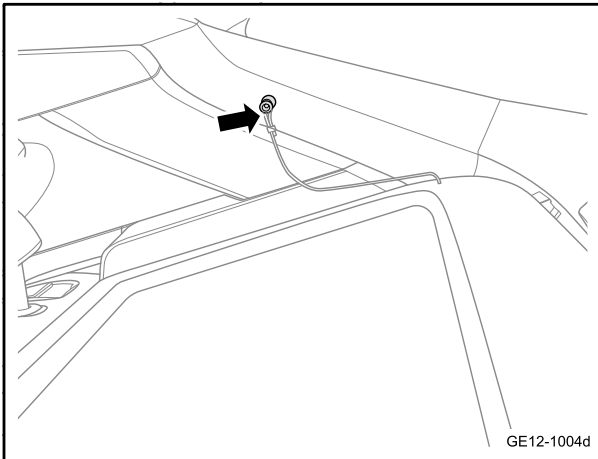
- 1 Move the back door handle box to the installation position.
- 2 Install the 1 fixing screw of handle box of the backdoor.  
Torque: 4 N·m (metric system) 3 lb-ft (Imperial system)



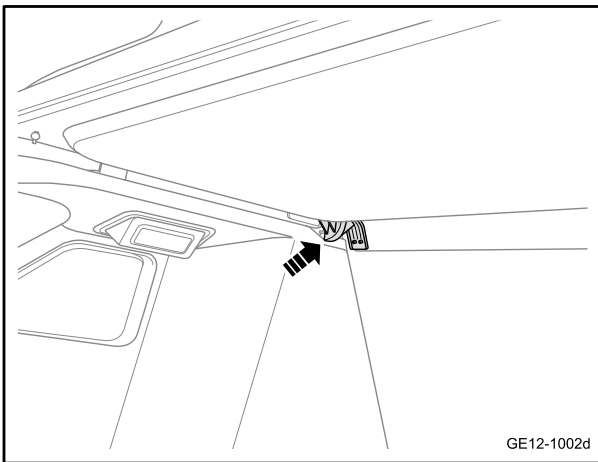
- 3 Install the back door handle plug cover.

### 11.9.2.32 Replacement of trim panel assembly of luggage compartment division plate

Removal procedure

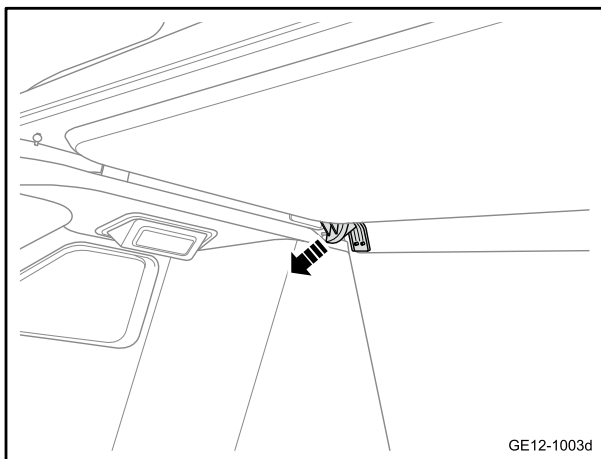


- 1 Remove the trim panel assembly pulling ropes of the luggage compartment division plate on both left and right sides.

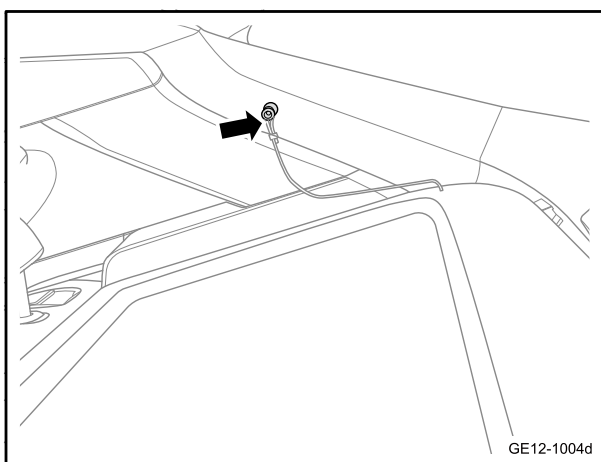


- 2 Remove the luggage compartment division plate trim panel assembly.

Installation procedure



- 1 Move the luggage compartment division plate trim panel assembly to the installation position.

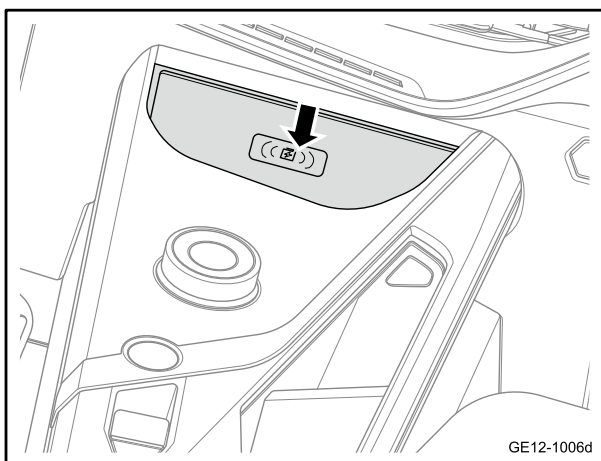


- 2 Install the pulling rope of the trim panel assembly of the luggage compartment division plate on both left and right sides.

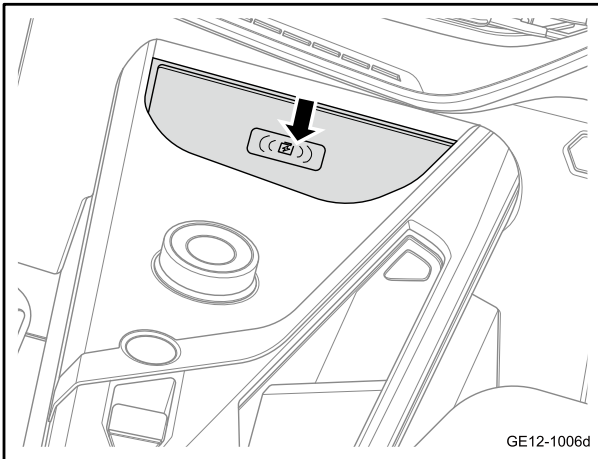
### 11.9.2.33 Replacement of wireless charging non-slip mat

#### Removal procedure

- 1 Remove the wireless charging non-slip mat.



#### Installation procedure



- 2 Install the wireless charging non-slip mat.

## 11.10 Exterior

### 11.10.1 Specification

#### 11.10.1.1 Fastener specifications

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing screws for connecting front nacelle bottom guard to front fender liner plate	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for bottom guard of front engine compartment	ST4.8×16	1 - 2	0.7 - 1.5
Fixing bolts at the left and right sides of battery bottom guard	M6×16	5 - 7	3.7 - 5.2
Fixing bolt of upper air deflector of the radiator air deflector	M6×25	5 - 7	3.7 - 5.2
Left front fender liner fixing bolt	ST4.8×16	1 - 2	0.7 - 1.5
Left rear fender liner fixing bolt	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screw of left outer sill lower trim panel assembly	ST4.8×16	1 - 2	0.7 - 1.5
Fixing bolt of power harness cover assembly	M6×20	5 - 7	3.7 - 5.2
Fixing bolt of luggage compartment bottom guard	M6×16	5 - 7	3.7 - 5.2
Fixing screws for the bottom guard of luggage compartment and the rear bumper	ST4.8×16	1 - 2	0.7 - 1.5
Fixing screws for fixing the bottom guard of luggage compartment to the rear fender liner	ST4.8×16	1 - 2	0.7 - 1.5
Fixing nut of Luggage compartment bottom guard	M6	5 - 7	3.7 - 5.2
Fixing screw for connecting front license plate mounting plate to front bumper upper body	ST4.8×16	1 - 2	0.7 - 1.5

Fastener name	Specification	Torque range	
		Metric system (Nm)	British system (lb-ft)
Fixing bolts for fixing spoiler to back door assembly	M6×12	5 - 7	3.7 - 5.2
Fixing screws at both sides of spoiler	ST4.8×16	1 - 2	0.7 - 1.5
Spoiler assembly fixing screw	M6	5 - 7	3.7 - 5.2
Fixing screw of retro reflector	ST4.8×16	1.3 - 1.7	1 - 1.3
Fixing nut for connecting the left luggage rack sub-assembly to the left front mounting bracket	M6	5 - 7	3.7 - 5.2
Fixing nut for connecting the left luggage rack sub-assembly to the left middle mounting bracket	M6	5 - 7	3.7 - 5.2
Fixing nut for connecting the left luggage rack sub-assembly to the left rear mounting bracket	M6	5 - 7	3.7 - 5.2

## 11.10.2 Removal and installation

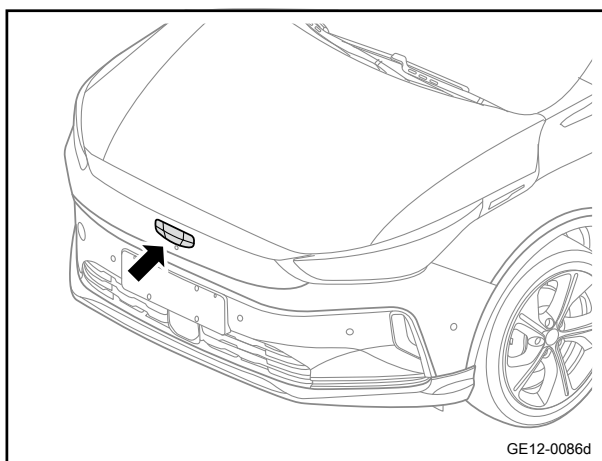
### 11.10.2.1 Replacement of front vehicle logo

#### Removal procedure

##### Caution

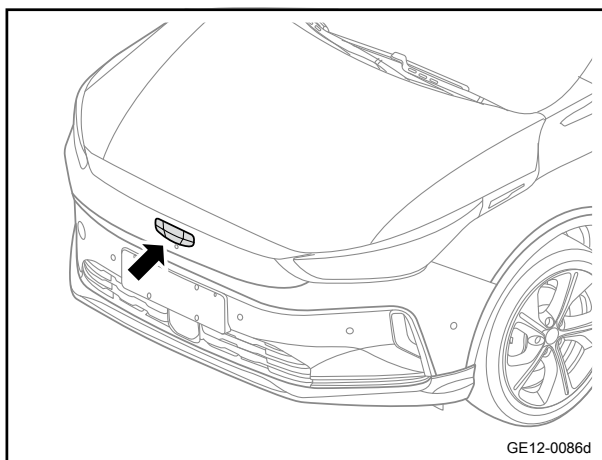
Wrap the straight screwdriver with adhesive tape to protect the parts.

- 1 Open the front engine compartment hood.
- 2 Use a flat-blade screwdriver to pry off the front vehicle logo.



#### Installation procedure

- 1 Move the front logo to the installation location.
- 2 Press evenly and forcefully on the corresponding positions on both sides to completely fit the body of the front bumper.



- 3 Close the front engine compartment hood.

### 11.10.2.2 Replacement of front license mounting plate

#### Removal procedure

**Caution**

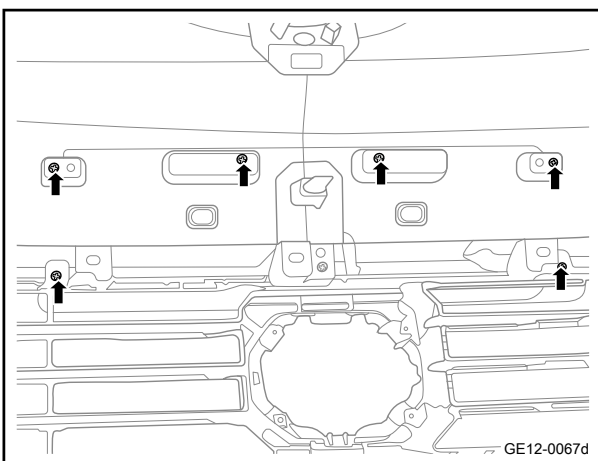
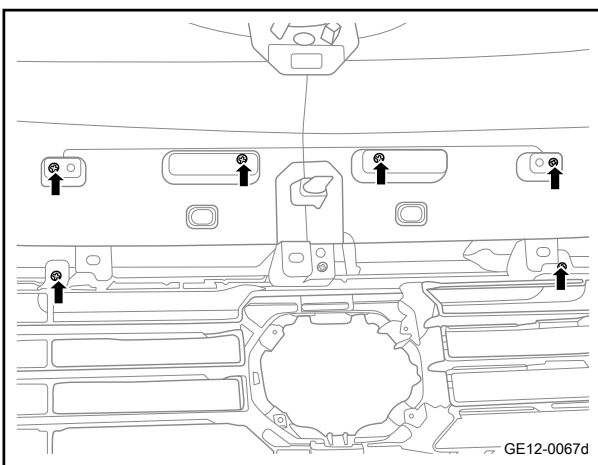
Wrap the straight screwdriver with adhesive tape to protect the parts.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the front bumper assembly. Refer to [Replacement of front bumper assembly](#)
- 3 Remove the 6 fixing screws connecting the front license plate mounting plate and the upper body of the front bumper.
- 4 Use a flat-blade screwdriver to pry off the front license plate mounting plate.

**Installation procedure**

- 1 Move the front license plate mounting plate to the installation position.
- 2 Install the 6 fixing screws connecting the front license plate mounting plate and the upper body of the front bumper.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

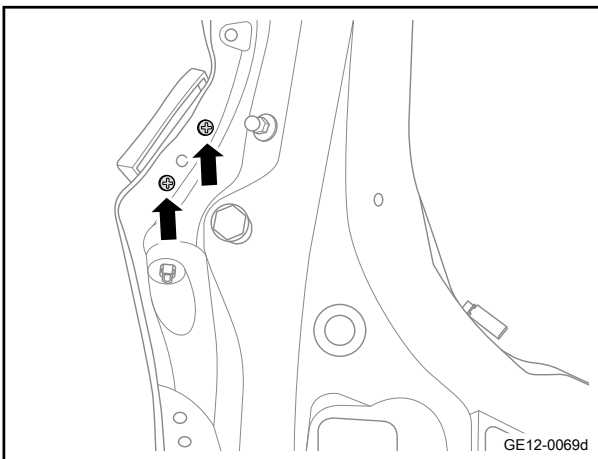
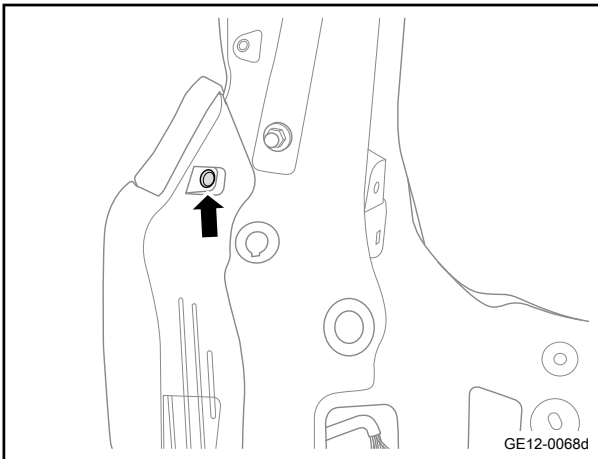
- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

### 11.10.2.3 Replacement of exterior trim panel of tail gate

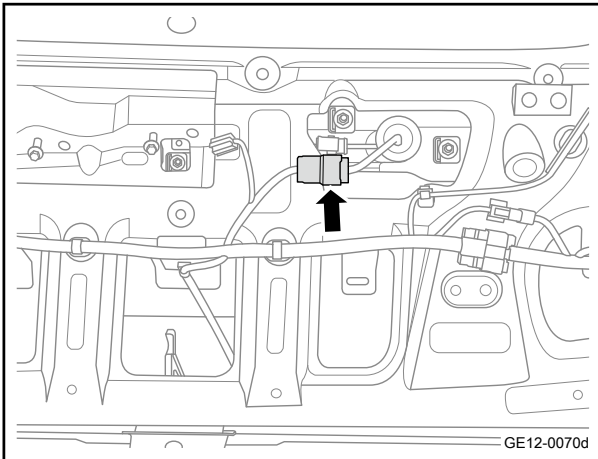
**Removal procedure**



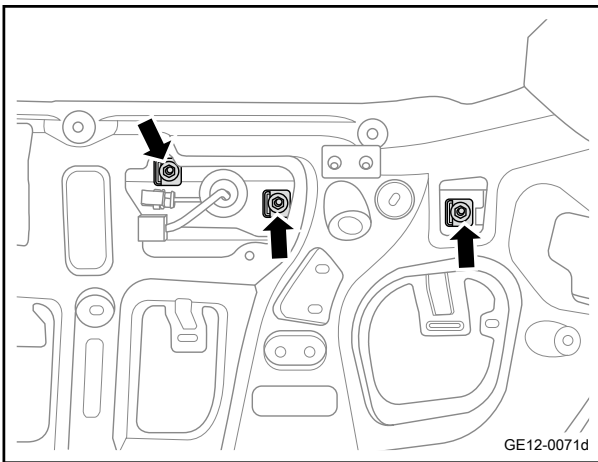
- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)  
Warning  
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left and right combination lights of the back door. Refer to [Replacement of left combination lamp of tail gate](#)
- 3 Disassemble the 360 panoramic view rear parking assist camera. See [Replacement of 360 panoramic view rear parking assist camera](#)
- 4 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of middle upper interior trim panel assembly of the back door](#)
- 5 Remove one fixing buckle for each of the left and right sides of the outer trim panels of the back door.



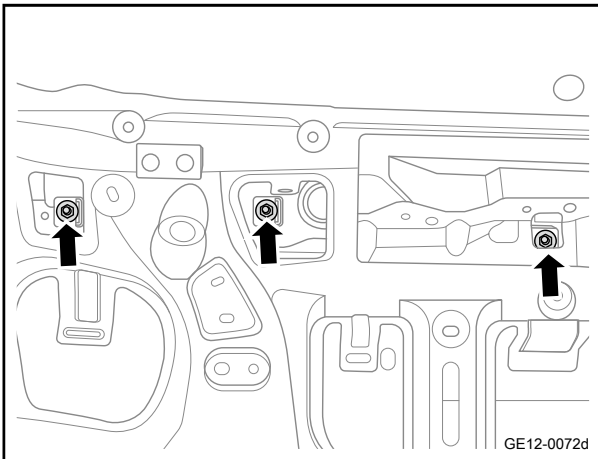
- 6 Remove the 2 fixing screws on each of the left and right sides of the outer trim panels of the back door.



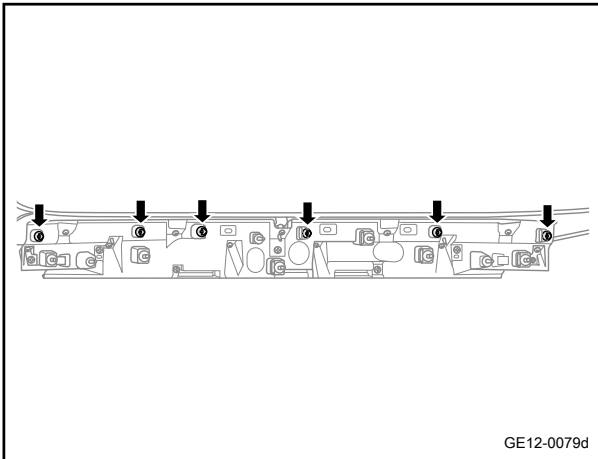
- 7 Disconnect the rear license light harness connector.



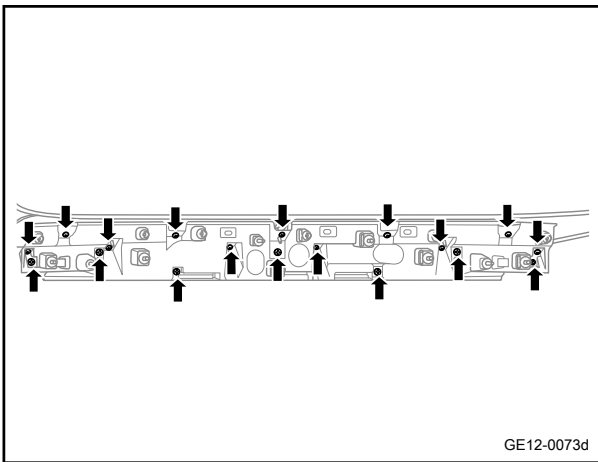
- 8 Remove the 3 fixing nuts on each of the left side of the rear license plate lamp mounting plates.



- 9 Remove the 3 fixing nuts on the right side of the rear license plate lamp mounting plate.



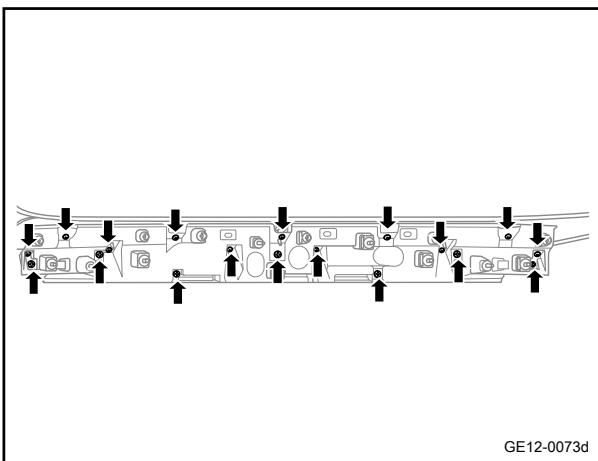
- 10 Use a suitable tool to pry open the 6 fixing buckles of the mounting plate, and remove the rear license plate lamp with the back door outer trim plate and the back door full-width lamp assembly.



- 11 Remove the 18 fixing screws of the rear license plate lamp mounting plate.

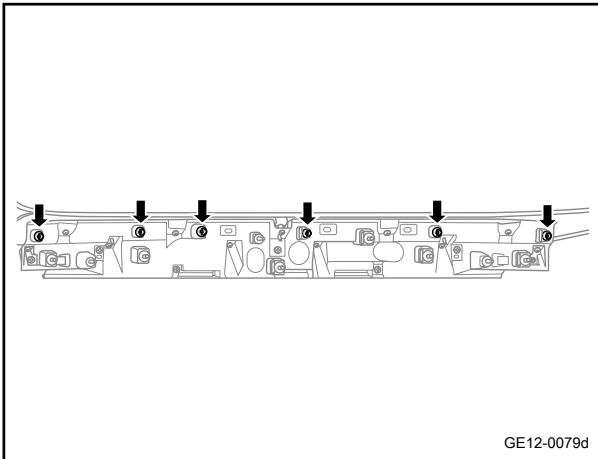
- 12 Separate the license plate lamp mounting plate, the back door outer trim plate, and the back door full-width lamp.

Installation procedure

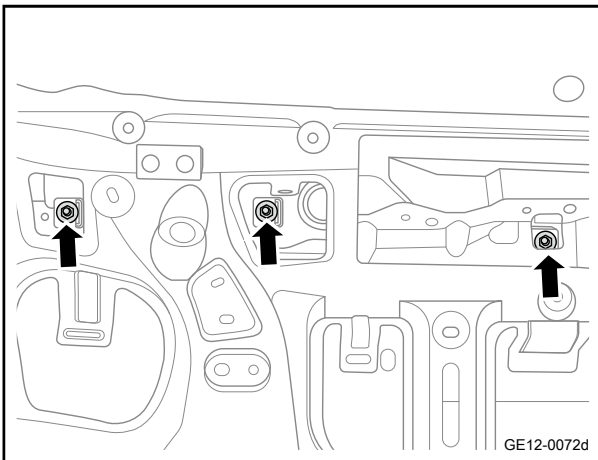


- 1 Move the back door outer trim panel and the back door full-width lamp to the installation position.
- 2 Install the 18 fixing screws of the rear license plate lamp mounting plate.

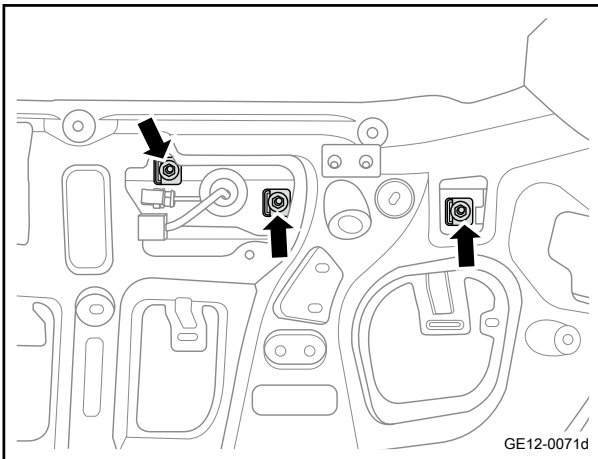
Torque: 1.5N.m (metric) 1.1lb-ft (imperial system)



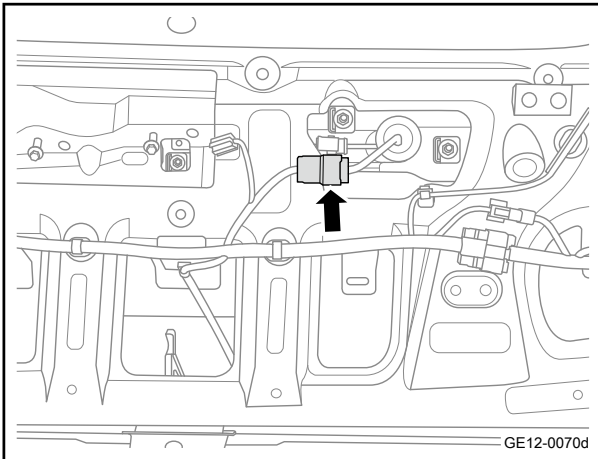
- 3 Move the rear license plate lamp with the back door outer trim panel and the back door full-width lamp assembly to the installation position, and install the 6 fixed buckles in place.



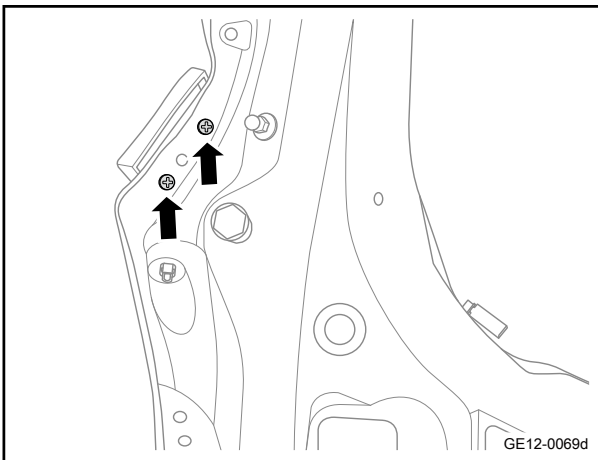
- 4 Install the 3 fixing nuts on the right side of the rear license plate lamp mounting plate.  
Torque: 4N.m (metric) 3lb-ft (imperial system)



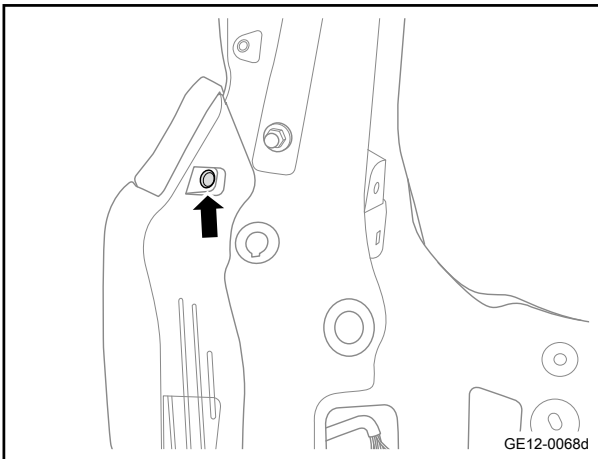
- 5 Install the 3 fixing nuts on the left side of the rear license plate lamp mounting plate.  
Torque: 4N.m (metric) 3lb-ft (imperial system)



- 6 Connect the rear license light harness connector.



- 7 Install the 2 fixing screws on each of the left and right sides of the outer trim panels of the back door.  
Torque: 1.5N.m (metric) 1.1lb-ft (imperial system)



- 8 Install the 1 fixing buckle for each of the left and right sides of the outer trim panels of the back door.

- 9 Install the middle upper interior trim panel assembly of the backdoor.
- 10 Install the 360 panoramic view rear parking assist camera.
- 11 Install the left and right combination lights of the back door.
- 12 Close the backdoor.
- 13 Connect the negative cable of battery.

### 11.10.2.4 Replacement of rear license plate lamp mounting plate

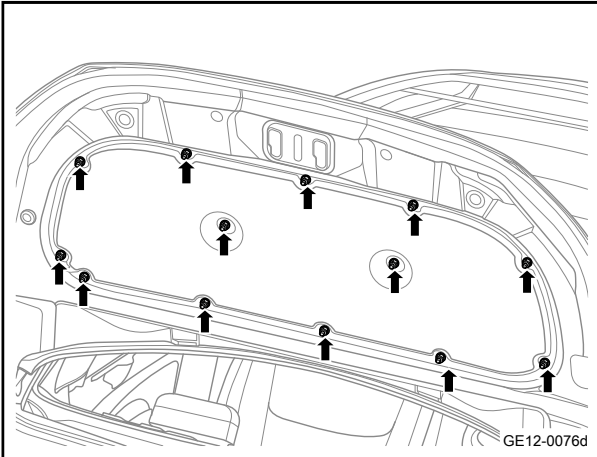
Removal procedure

See [Replacement of the outer trim panel of the back door](#)

### 11.10.2.5 Replacement of front engine compartment sound insulation pad

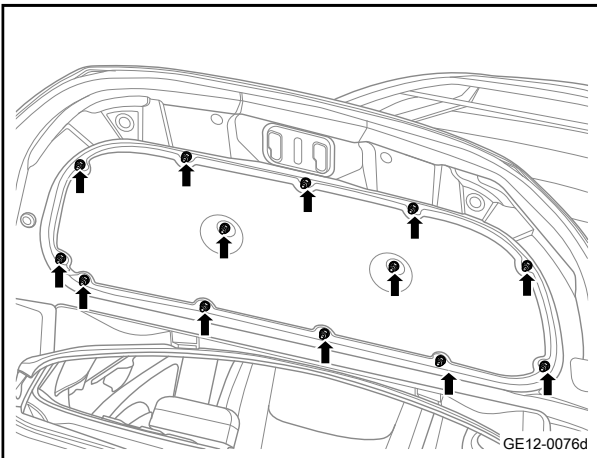
Removal procedure

- 1 Open the front engine compartment hood.
- 2 Remove the 13 fixing buckles of the soundproof pad in the front engine compartment.
- 3 Remove the soundproof pad in the front engine compartment.



Installation procedure

- 1 Move the soundproof pad in the front engine compartment to the installation position.
- 2 Install the with 13 fixed buckles of the soundproof pad in the front engine compartment.



- 3 Close the front engine compartment hood.

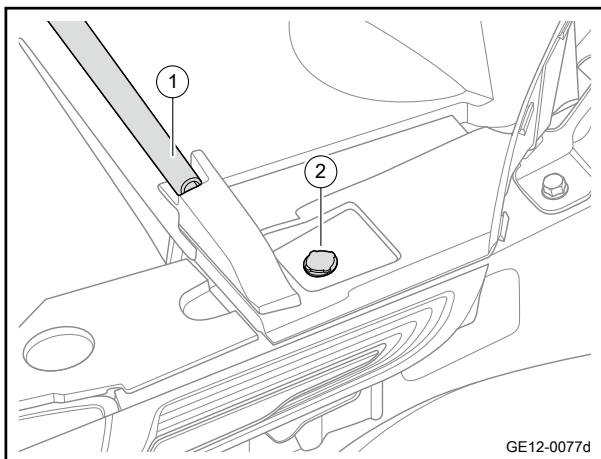
### 11.10.2.6 Replacement of the trim panel on the left fender

Removal procedure

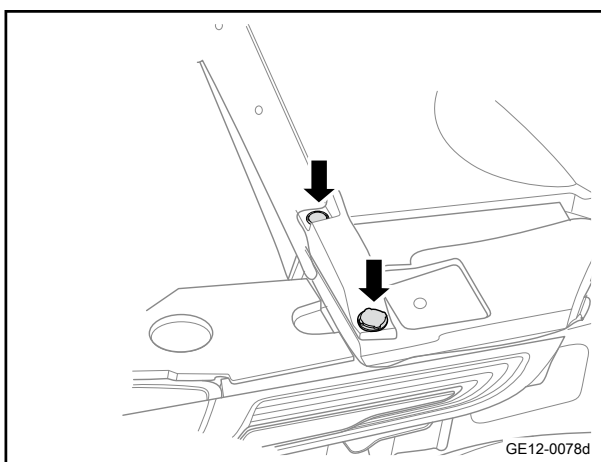
#### Caution

The replacement method is the same for the left and right sides.

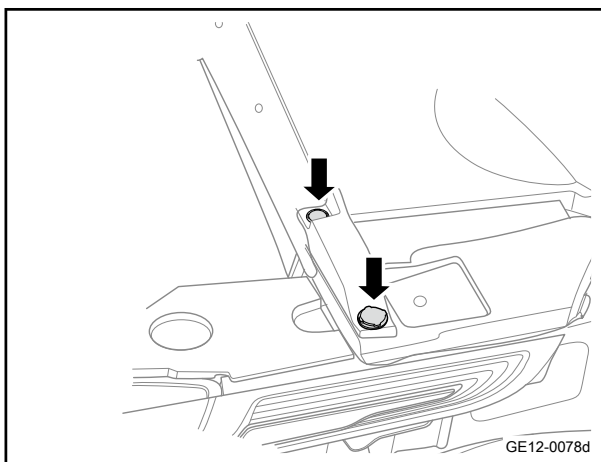
- 1 Open the front engine compartment hood.



- 2 Remove 1 fixing buckle 2 of the trim panel on the left fender.
- 3 Pry off the front engine compartment hood sealing strip 1.

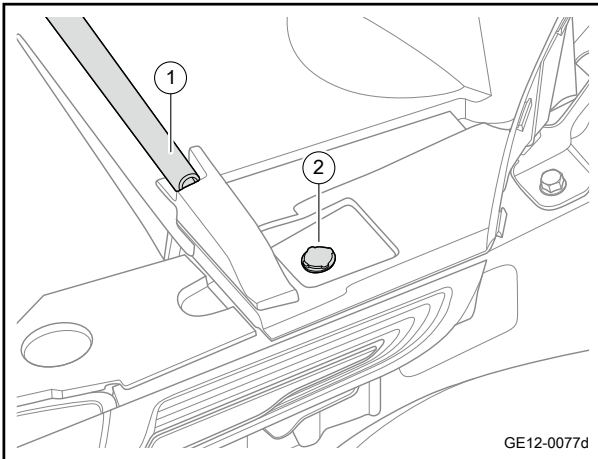


- 4 Remove the 2 fixing buckles of the left stop block of the ventilation cover.
- 5 Remove the left stop block of the ventilation cover.
- 6 Remove the trim panel on the left fender.



Installation procedure

- 1 Move the trim panel on the left fender to the installation position.
- 2 Install 2 fixing buckles of the left block of the ventilation cover.



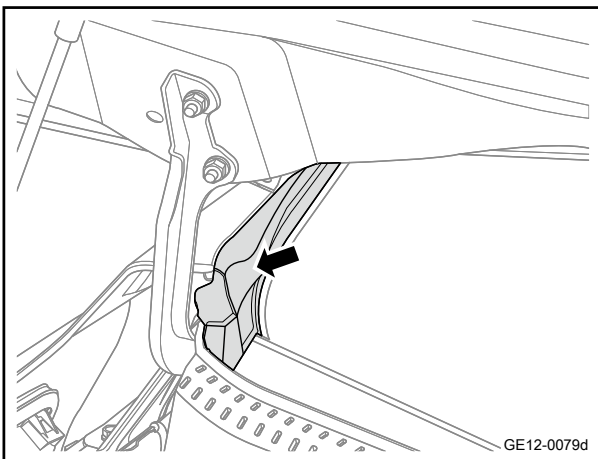
- 3 Install the front engine compartment hood sealing strip 1.
- 4 Install 1 fixing buckle 2 of the trim panel on the left fender.

- 5 Close the front engine compartment hood.

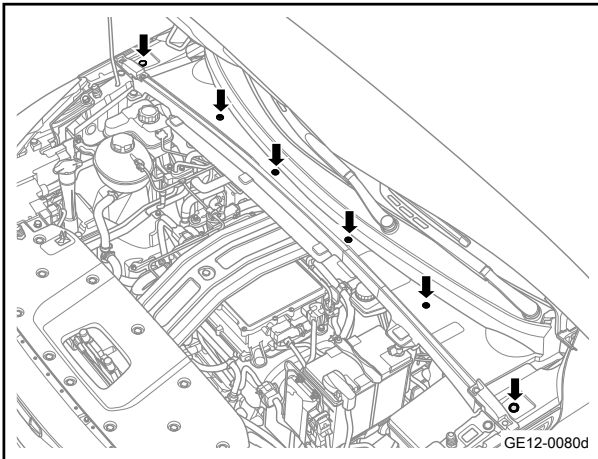
### 11.10.2.7 Replacement of ventilation cover assembly

#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the front wiper arm. Refer to [Replacement of wiper motor c/w connecting rod assembly](#)
  - 3 Remove the trim panels on the left and right fenders. See [Replacement of the decorative plate on the left fender](#)
  - 4 Pry off the left and right corner trims of the ventilation cover respectively.

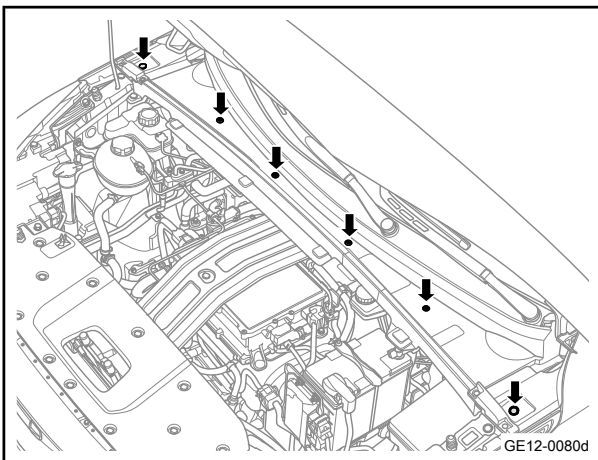




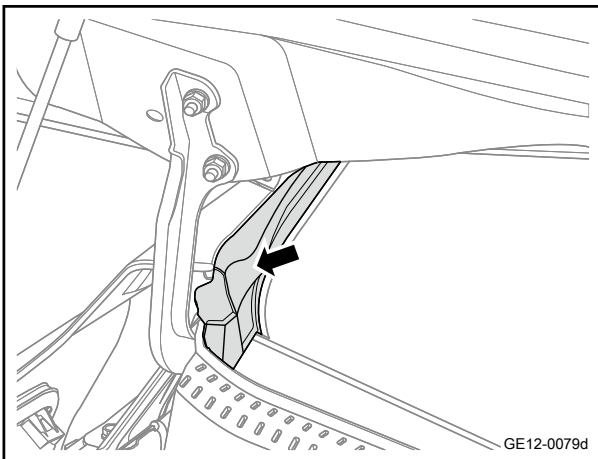


- 5 Remove 6 fixing screws of the ventilation cover plate.
- 6 Remove the ventilation cover assembly.

Installation procedure



- 1 Move the ventilation cover assembly to the installation position.
- 2 Install 6 fixing bolts of the ventilation cover plate.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Install the left and right corner trim panels.

- 4 Install the trim panels on the left and right fenders.
- 5 Install the front wiper arm.
- 6 Connect the negative cable of battery.

**11.10.2.8 Replace the spoiler assembly**

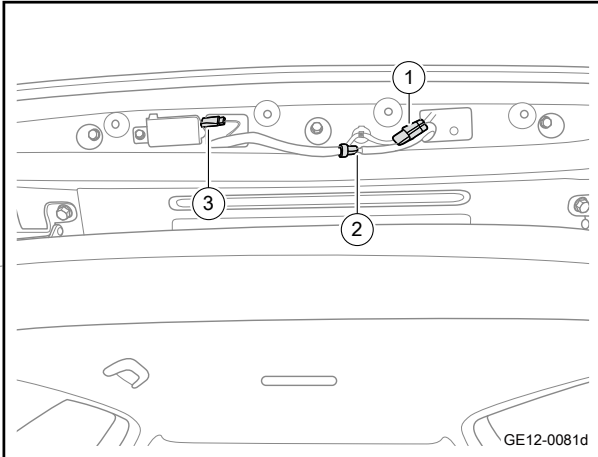
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

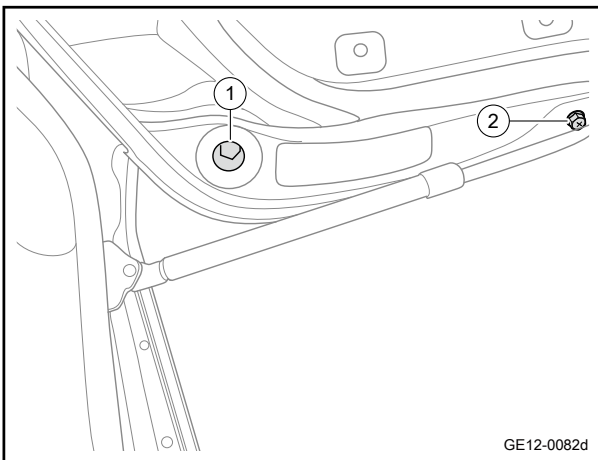
**Warning**

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

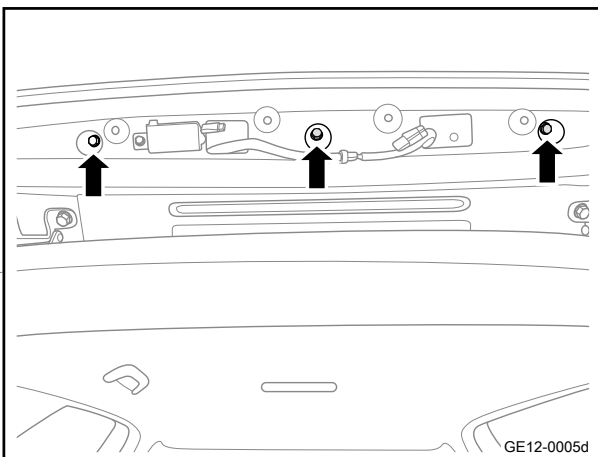
- 2 Remove the middle upper interior trim panel assembly of the back door. Refer to [Replacement of interior trim panel at the upper middle part of the tail gate](#)
- 3 Disengage the rear wiper spray pipe 2.
- 4 Disconnect harness connector 3 of antenna amplifier.
- 5 Disconnect the high mounted brake lamp harness connector 1.



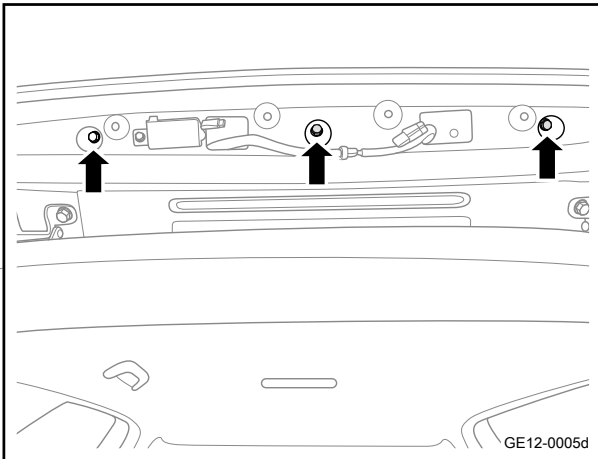
- 6 Remove the 1 fixing bolt 1 for each of left and right spoilers.
- 7 Remove the 1 fixing screw 2 for each of left and right spoilers.



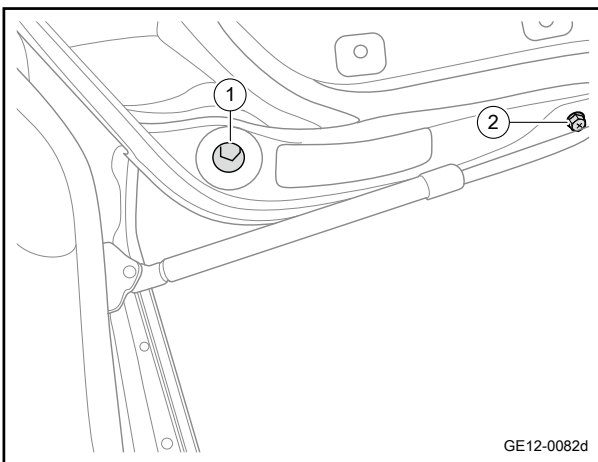
- 8 Remove 3 fixing nuts of the spoiler.
- 9 Remove the spoiler assembly.



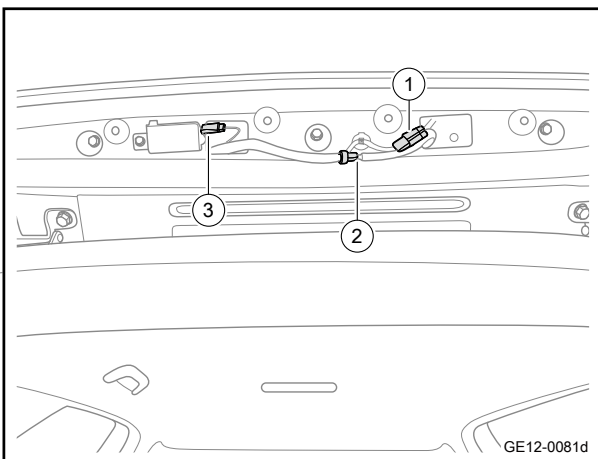
## Installation procedure



- 1 Move the spoiler assembly to the installation position.
- 2 Install 3 fixing nuts of the spoiler assembly.  
Torque: 6N.m (metric) 4.4lb-ft (imperial system)



- 3 Install the 1 fixing screw 2 for each of left and right spoilers.  
Torque: 1.5N.m (metric) 1.1lb-ft (imperial system)
- 4 Install the 1 fixing bolt 1 for each of left and right spoilers.  
Torque: 6N.m (metric) 4.4lb-ft (imperial system)



- 5 Connect high mount brake lamp harness connector 1.
- 6 Connect harness connector 3 of antenna amplifier.
- 7 Install the rear wiper spray pipe 2.

- 8 Install the middle upper interior trim panel assembly of the backdoor.
- 9 Connect the negative cable of battery.

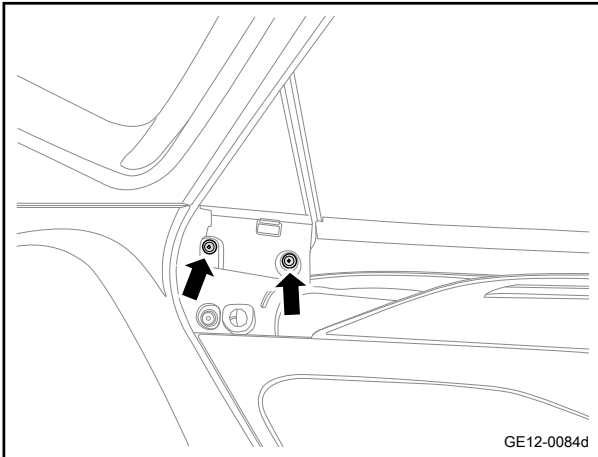
### 11.10.2.9 Replacement of exterior triangular trim panel of rear door

## Removal procedure

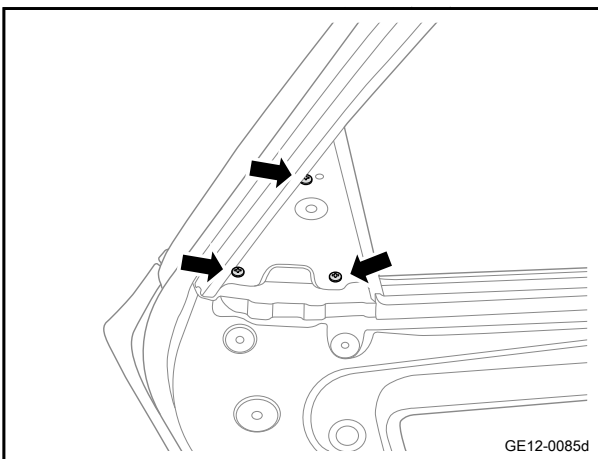
**Caution**

The replacement method is the same for the left and right sides.

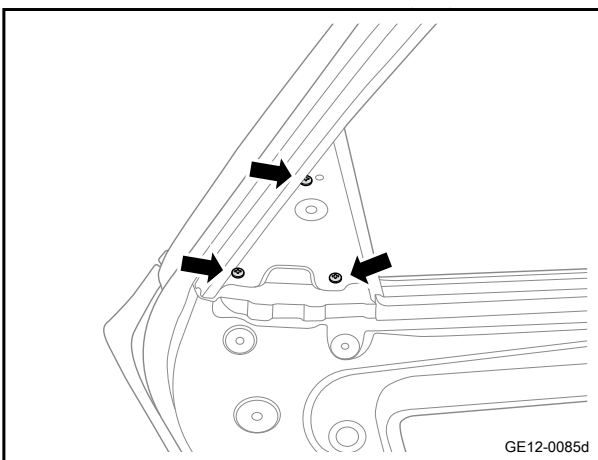
- 1 Remove the upper trim panel interior trim rear door LH  
See [Replacement of the left rear door trim panel assembly](#)
- 2 Remove the 2 fixing buckles of the interior corner trim of the left rear door.
- 3 Remove the interior corner trim panel of the left rear door.

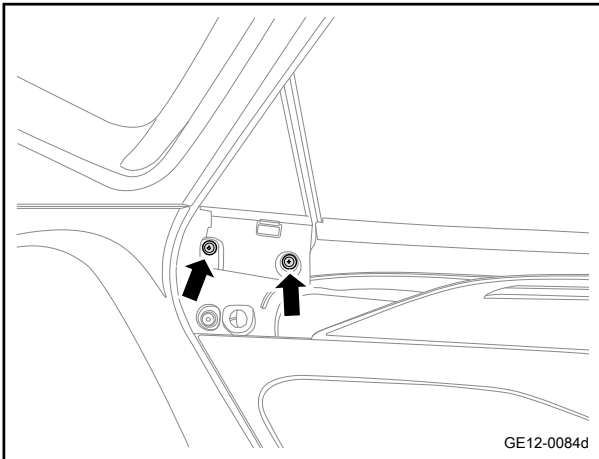


- 4 Remove the 3 fixing screws of the triangle outer trim panel fixing plate of the left rear door.
- 5 Remove the triangle outer trim panel of the left rear door.

**Installation procedure**

- 1 Move the triangle outer trim panel of the left rear door to the installation position.
- 2 Install the 3 fixing screws of the triangle outer trim panel fixing plate of the left rear door.  
Torque: 2N·m (metric) 1.5lb-ft (imperial system)





- 3 Install 2 fixing buckles of the interior corner trim panel of the left rear door.

- 4 Install the upper trim panel interior trim rear door LH

### 11.10.2.10 Replacement of the left trim strip assembly of the roof

#### Removal procedure

##### Caution

The replacement method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

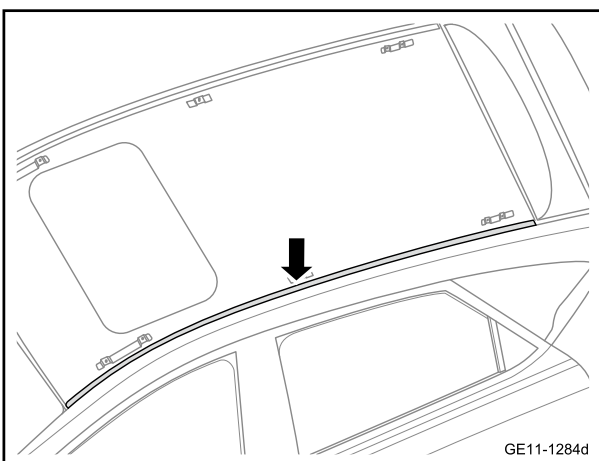
##### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

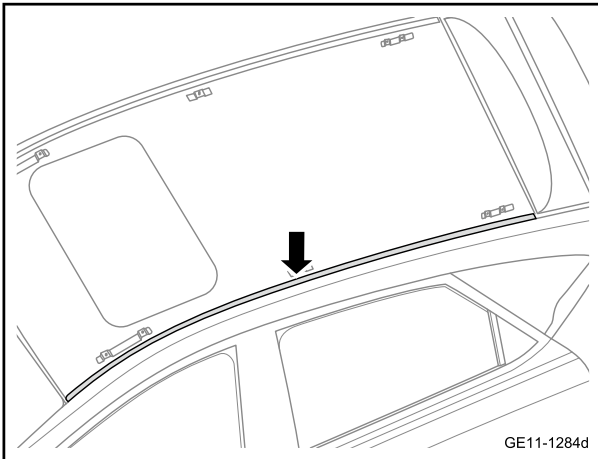
- 2 Remove the left luggage rack sub-assembly. See [Replacement of left luggage rack sub-assembly](#)
- 3 Pry off the roof trim strip.

##### Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.



#### Installation procedure



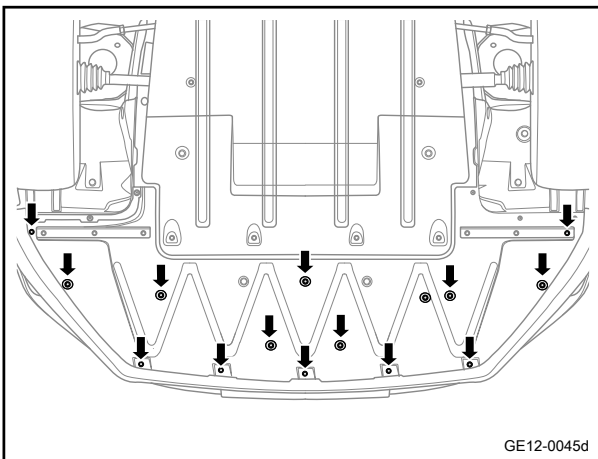
- 1 Move the roof trim strip to the installation position.
- 2 Install the left trim strip of the roof.

- 3 Install the left luggage rack sub-assembly.
- 4 Connect the negative cable of battery.

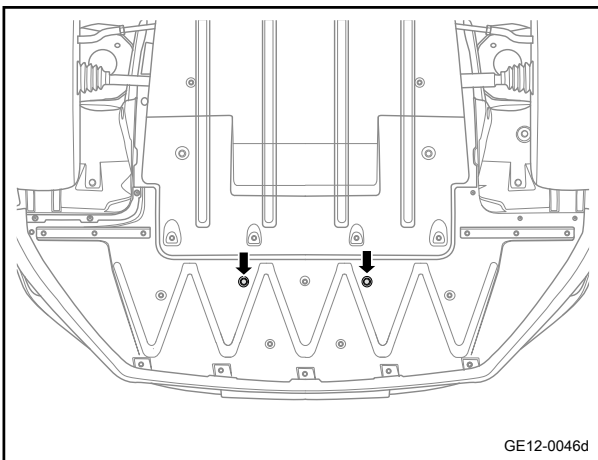
### 11.10.2.11 Replacement of the bottom guard plate of the front engine compartment

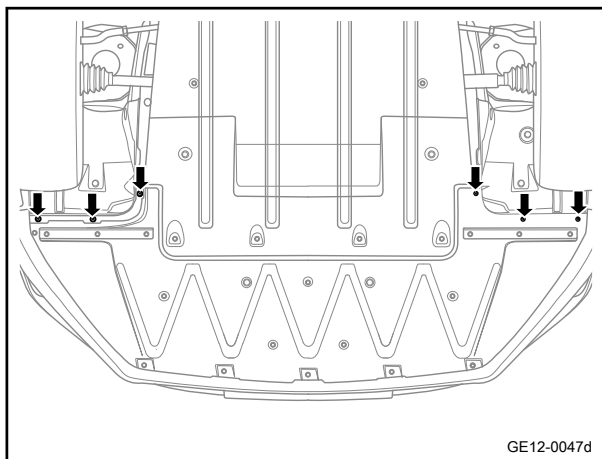
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the 14 fixing screws of the bottom guard plate of the front engine compartment.



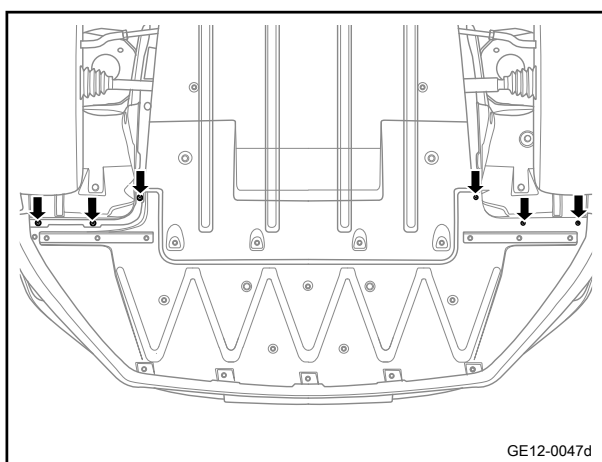
- 3 Remove the 2 fixed buckles on the bottom guard plate of the front engine compartment.



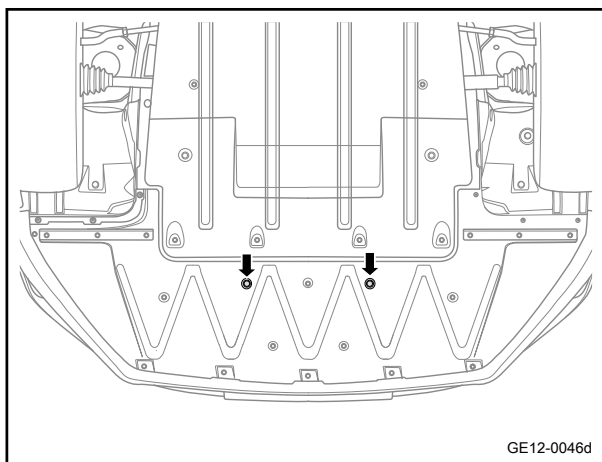


- 4 Remove the 6 fixing screws connecting the bottom guard plate of the front engine compartment and the front fender lining plate.
- 5 Remove the bottom guard plate of the front engine compartment

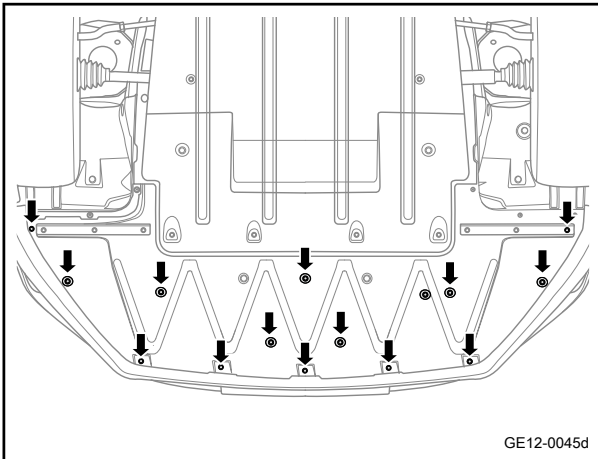
Installation procedure



- 1 Move the bottom guard plate of the front engine compartment to the installation position.
- 2 Install 6 fixing screws connecting the bottom guard plate of the front engine compartment and the front fender lining plate.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



- 3 Install 2 fixed buckles of the bottom guard plate of the front engine compartment.



- 4 Install the 14 fixing screws on the bottom guard plate of the front engine compartment.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 6 Lower the vehicle.

### 11.10.2.12 Replacement of battery base protection module

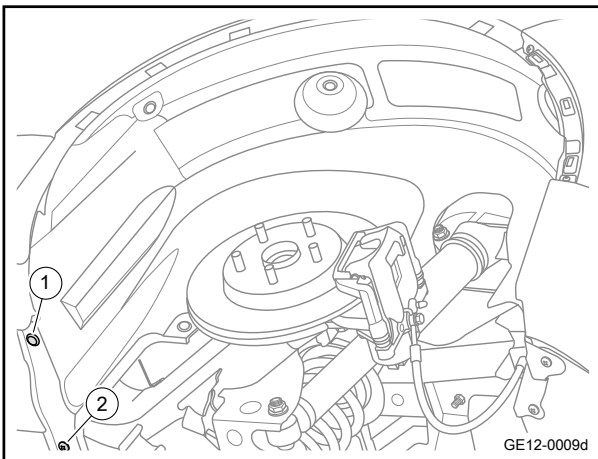
#### Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

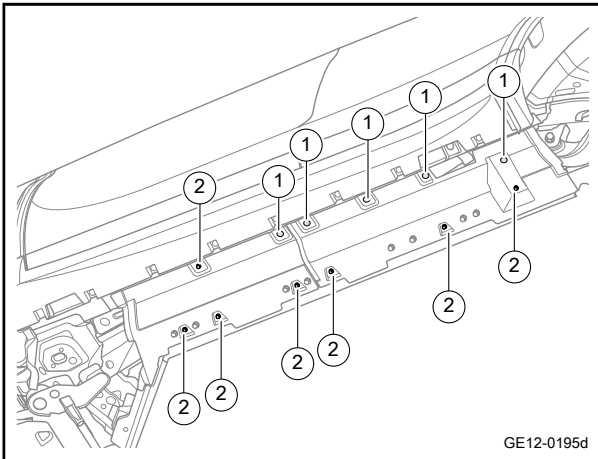
#### Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 3 Remove the power harness cover assembly. See [Replacement of power harness cover assembly](#)
- 4 Remove the 1 fixing buckles 1 for fixing battery base protection module and the left and right rear fender lining plates, respectively.
- 5 Remove the 1 fixing screw 2 for fixing the battery bottom guard plate and the left and right rear fender lining plates respectively.

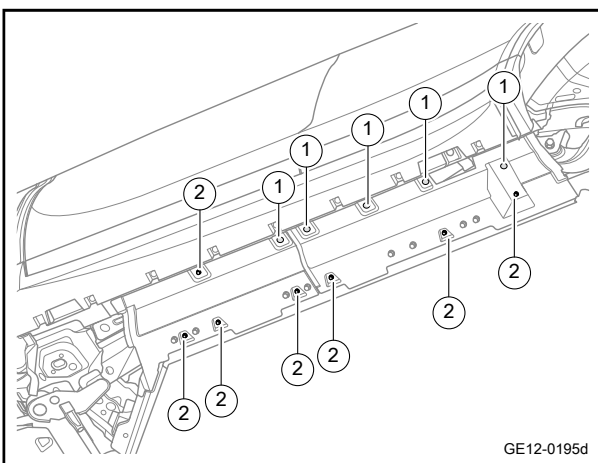




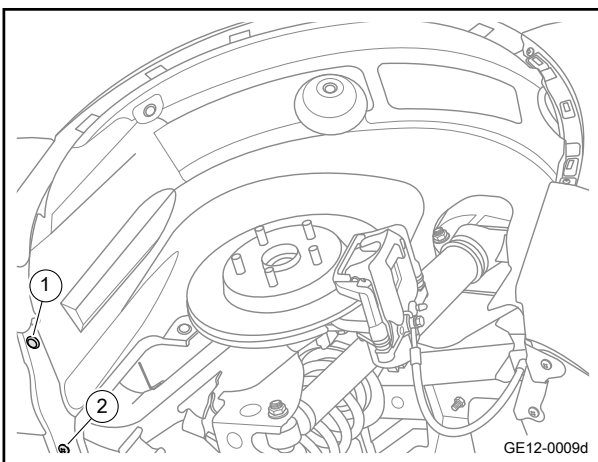


- 6 Remove the 5 fixing buckles 1 for each of left and right battery base protection modules.
- 7 Remove the 7 fixing bolts 2 for each of left and right battery base protection modules.
- 8 Remove the battery base protection module.

Installation procedure



- 1 Move the battery base protection module to the installation position.
- 2 Install 5 fixing buckles 1 for each of left and right battery base protection modules.
- 3 Install 7 fixing bolts 2 for each of left and right battery base protection modules.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 4 Install 1 fixing screw 2 for fixing the battery base protection modules and the left and right rear fender lining plates respectively.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 5 Install the 1 fixing buckle 1 for fixing the battery base protection module and the left and right rear fender lining plates respectively.

- 6 Install the power harness cover assembly.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

**11.10.2.13 Replacement of the upper air deflector of the radiator**

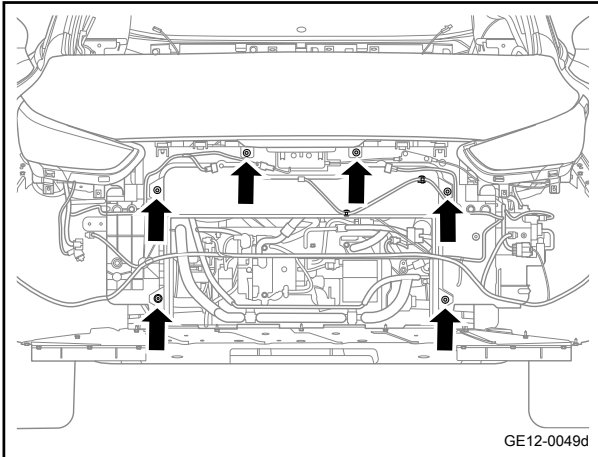
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

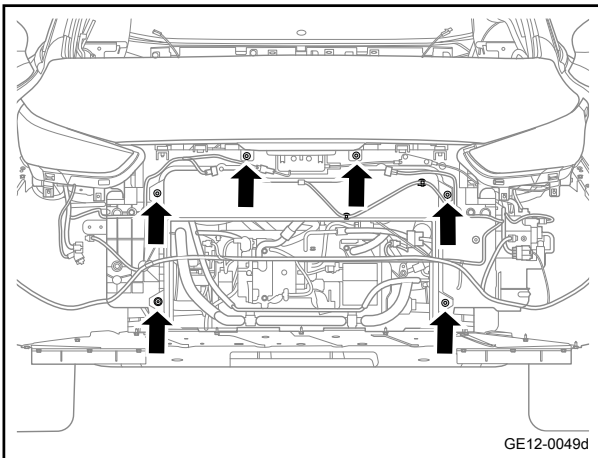
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the tweeter assembly. Refer to [Replacement of tweeter assembly](#)
- 3 Remove the 6 fixing bolts of the upper wind deflector of the radiator.
- 4 Take off the the upper air deflector of the radiator.



#### Installation procedure

- 1 Move the upper wind deflector of the radiator to the installation position.
- 2 Install 6 fixing bolts of the upper wind deflector of the radiator.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 3 Install the tweeter assembly.
- 4 Connect the negative cable of battery.

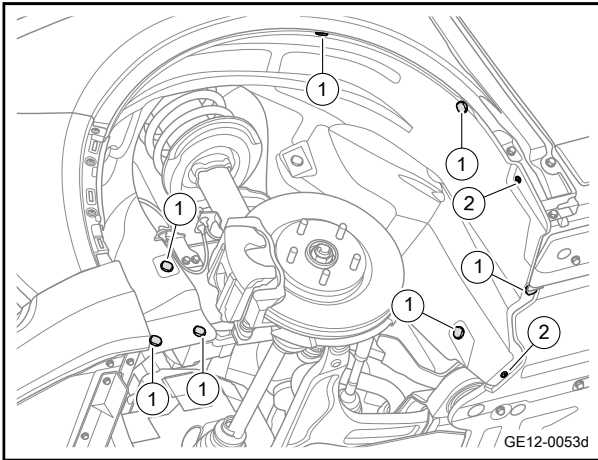
### 11.10.2.14 Replacement of left front fender liner

#### Removal procedure

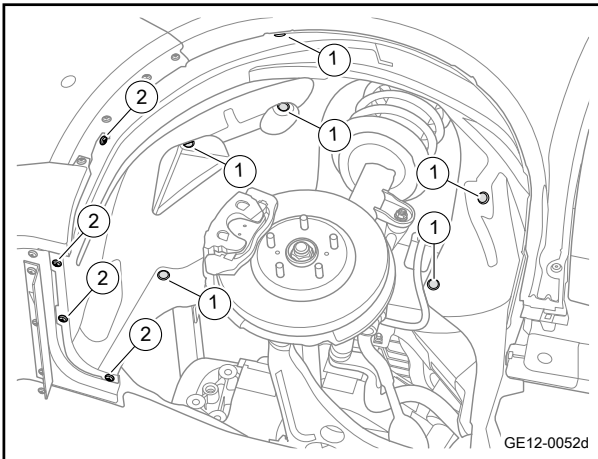
#### Caution

The replacement method is the same for the left and right sides.

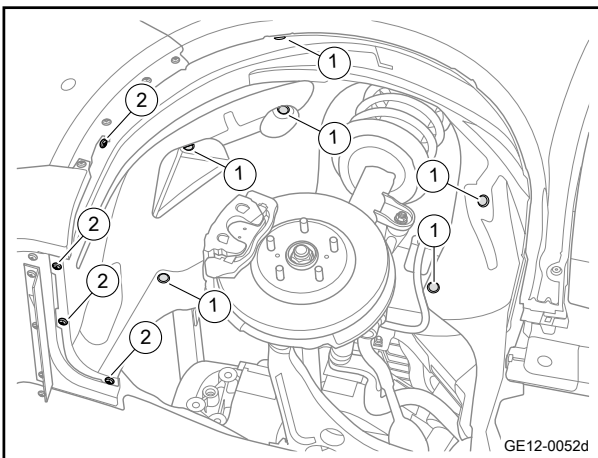
- 1 Lift the vehicle. See [Lifting and elevating vehicles](#)



- 2 Remove the left front wheel. Refer to [Replacement of wheels](#)
- 3 Remove the left front wheel fender flare assembly. See [Replacement of left front wheel fender flare assembly](#)
- 4 Remove 7 fixing clips 1 of the rear of left front fender liner.
- 5 Remove 2 fixing bolts 2 of the rear of left front fender liner.

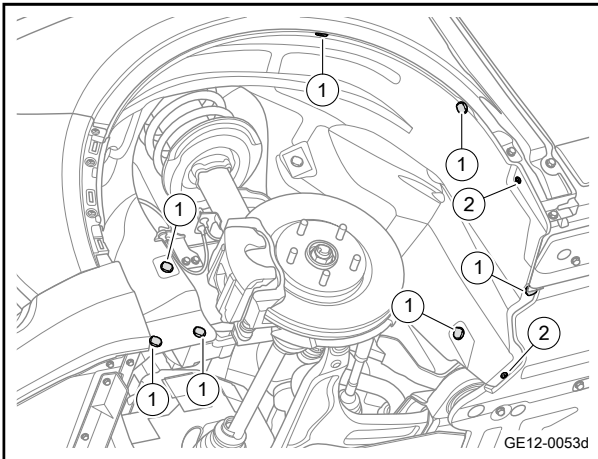


- 6 Remove 7 fixing clips 1 of the front of left front fender liner.
- 7 Remove 5 fixing bolts 2 of the front of left front fender liner.
- 8 Remove the left front fender liner.



Installation procedure

- 1 Move the left front fender liner to the installation position.
- 2 Install 5 fixing bolts 2 of the front of left front fender liner.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install 7 fixing clips 1 of the front of left front fender liner.



- 4 Install 2 fixing bolts 2 of the rear of left front fender liner.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 5 Install 7 fixing clips 1 of the rear of left front fender liner.

- 6 Install the front left wheel fender flare assembly.
- 7 Install the left front wheel.
- 8 Lower the vehicle.

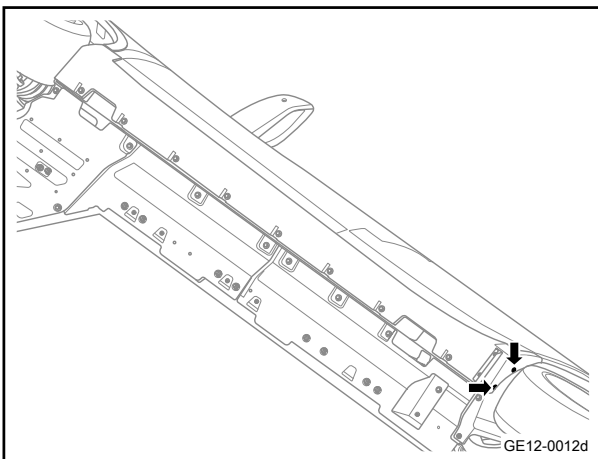
### 11.10.2.15 Replacement of the left rear fender liner

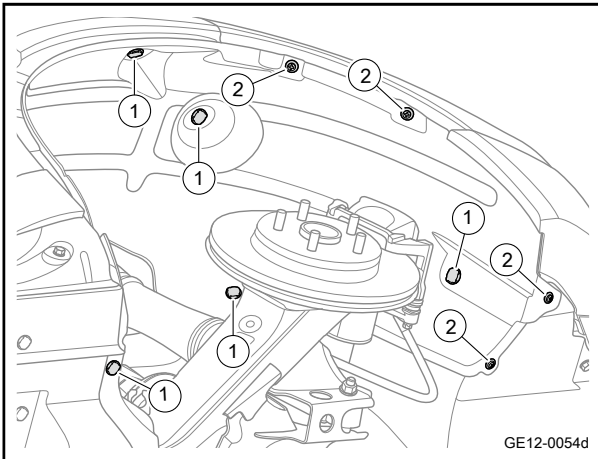
#### Removal procedure

#### Caution

The replacement method is the same for the left and right sides.

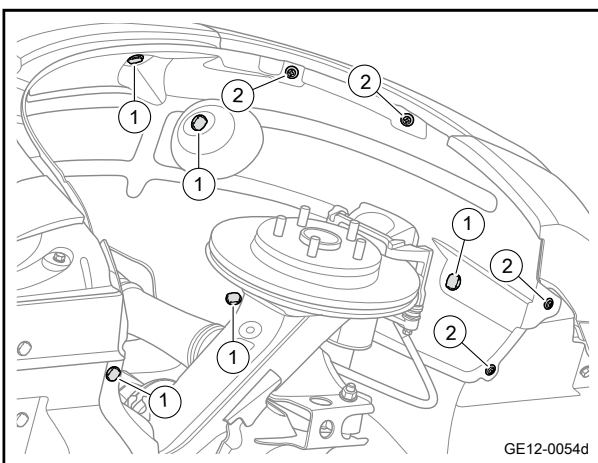
- 1 Lift the vehicle. See [Lifting and elevating vehicles](#)
- 2 Remove the left rear wheel. Refer to [Replacement of wheels](#)
- 3 Remove the left rear wheel fender flare assembly. Refer to [Replacement of the left rear wheel fender flare assembly](#)
- 4 Remove the 2 fixing screws 3 that fix the left rear fender liner and the left outer door sill lower trim panel.
- 5 Remove 6 fixing clips 1 of the left rear fender liner.
- 6 Remove 1 fixing bolts 2 of the left rear fender liner.



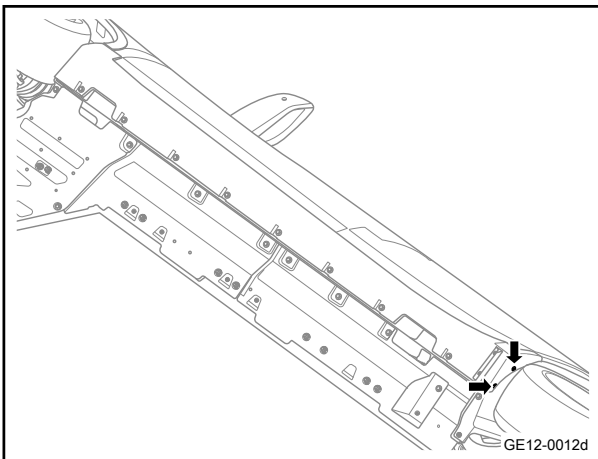


- 7 Remove 5 fixing clips 1 of the left rear fender liner.
- 8 Remove 4 fixing bolts 2 of the left rear fender liner.
- 9 Remove the left rear fender liner.

Installation procedure



- 1 Move the left rear fender liner to the installation position.
- 2 Install 4 fixing bolts 2 of the left rear fender liner.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 3 Install 5 fixing clips 1 of the left rear fender liner.



- 4 Install 1 fixing bolts 2 of the left rear fender liner.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 5 Install 6 fixing clips 1 of the left rear fender liner.
- 6 Install the two fixing screws 3 for fixing the left rear fender liner and the left outer door sill lower trim panel.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 7 Install the left rear wheel.
- 8 Install the rear wheel fender flare assembly.
- 9 Lower the vehicle.

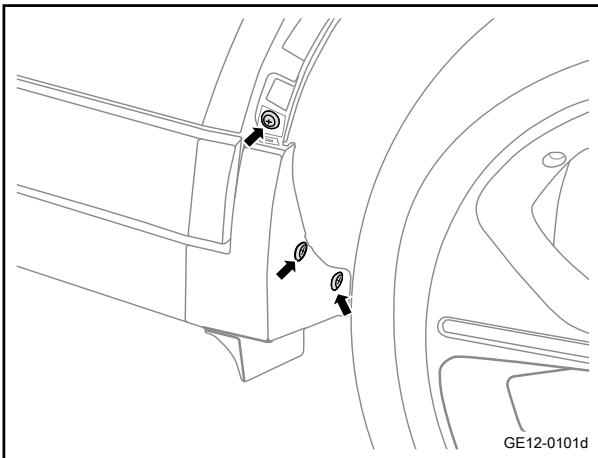
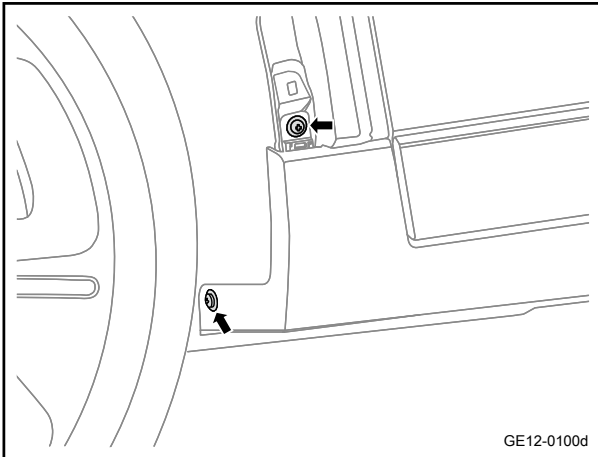
**11.10.2.16 Replacement of rear external door sill lower trim panel assembly**

Removal procedure

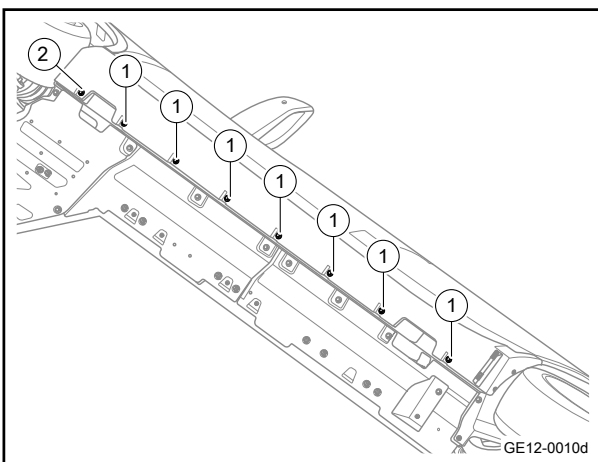
**Caution**

The replacement method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the left front wheel fender flare assembly. See [Replacement of left front wheel fender flare assembly](#)
- 3 Remove the left rear wheel fender flare assembly. Refer to [Replacement of the left rear wheel fender flare assembly](#)
- 4 Remove the 2 fixing screws at the front of the lower trim panel assembly on the left outer door sill.

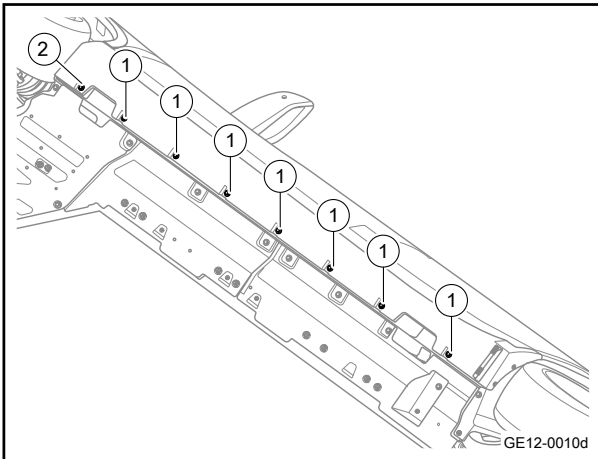


- 5 Remove the 3 fixing screws at the rear of the lower trim panel assembly on the left outer door sill.



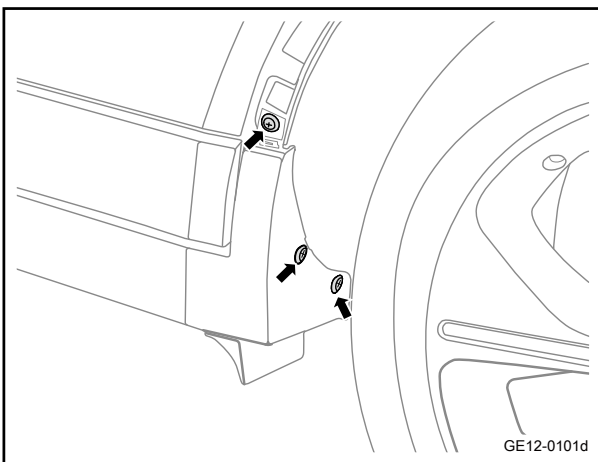
- 6 Remove the 1 fixing screw 2 of the lower trim panel assembly on the left outer door sill.
- 7 Remove the 7 fixed buckles 1 of the lower trim panel assembly of the left outer door sill.
- 8 Pry down the lower trim panel assembly of the left outer door sill.

## Installation procedure



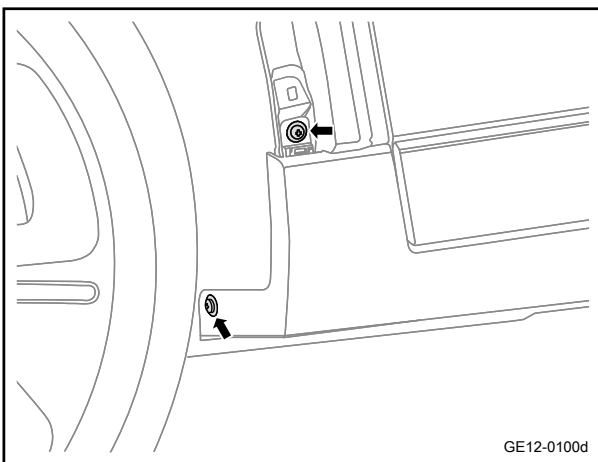
- 1 Move the lower trim panel assembly of the left outer door sill to the installation position.
- 2 Install 7 fixed buckles 1 of the lower trim panel assembly of the left outer door sill.
- 3 Install a fixing screw 2 of the lower trim panel assembly of the left outer door sill.

Torque: 1.5 N·m (metric) 1.1 lb-ft (Imperial system)



- 4 Install the 3 fixing screws at the rear of the lower trim panel assembly of the left outer door sill.

Torque: 1.5 N·m (metric) 1.1 lb-ft (Imperial system)



- 5 Install the 2 fixing screws at the front of the lower trim panel assembly of the left outer door sill.

Torque: 1.5 N·m (metric) 1.1 lb-ft (Imperial system)

- 6 Install the rear wheel fender flare assembly.
- 7 Install the front left wheel fender flare assembly.
- 8 Lower the vehicle.

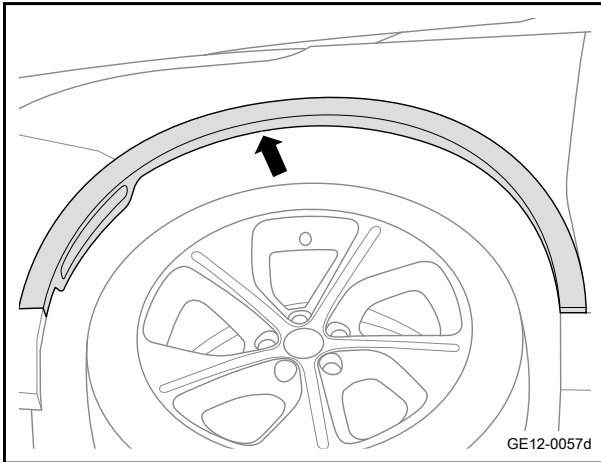
### 11.10.2.17 Replacement of left front wheel fender flare assembly

## Removal procedure

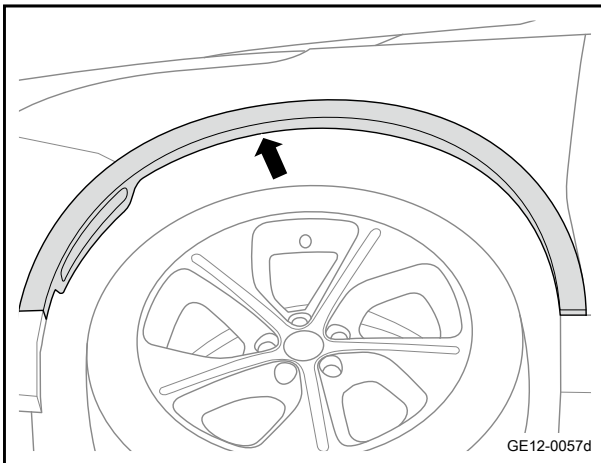
**Caution**

The replacement method is the same for the left and right sides.

- 1 Pry down the left front wheel fender flare assembly.

**Installation procedure**

- 1 Move the left front wheel fender flare assembly to the installation position.
- 2 Install the front left wheel fender flare assembly.

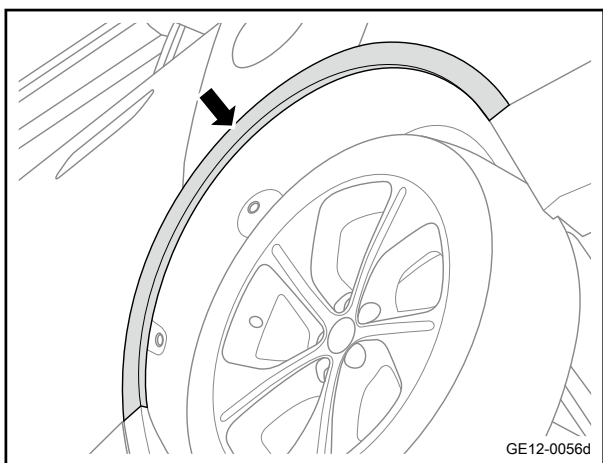
**11.10.2.18 Replacement of left rear wheel fender flare assembly****Removal procedure**



**Caution**

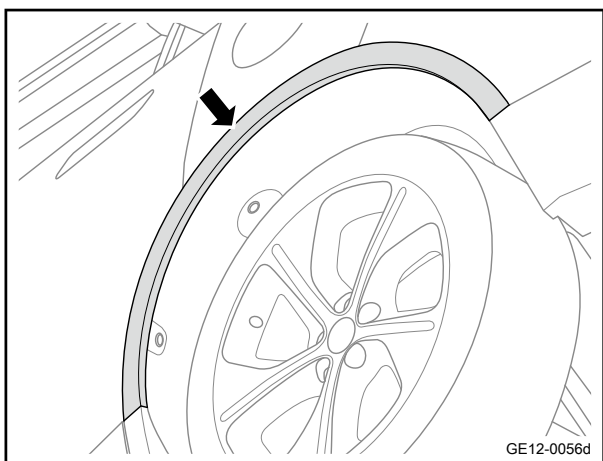
The replacement method is the same for the left and right sides.

- 1 Pry down the left rear wheel fender flare assembly.



**Installation procedure**

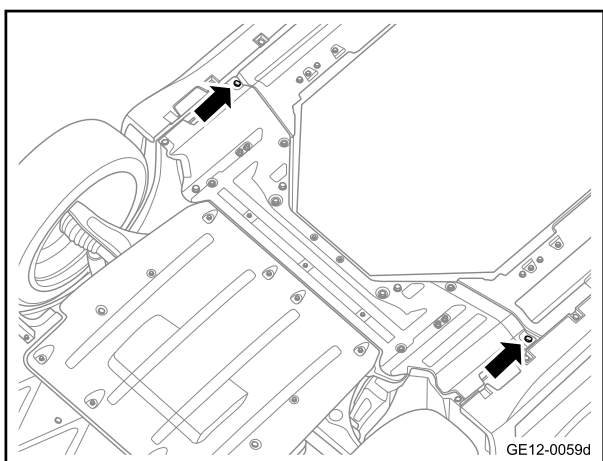
- 1 Move the left rear wheel fender flare assembly to the installation position.
- 2 Install the rear wheel fender flare assembly.

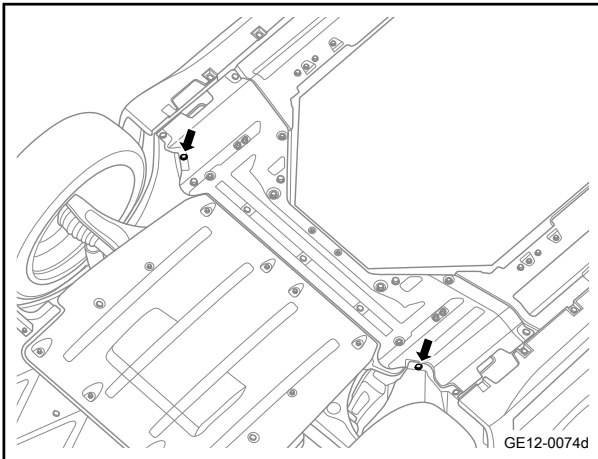


**11.10.2.19 Replacement of power harness coverplate assembly**

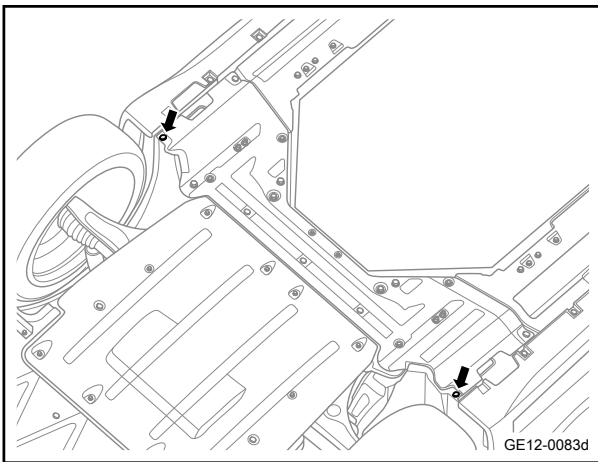
**Removal procedure**

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the 2 fixing buckles of the power harness coverplate assembly.

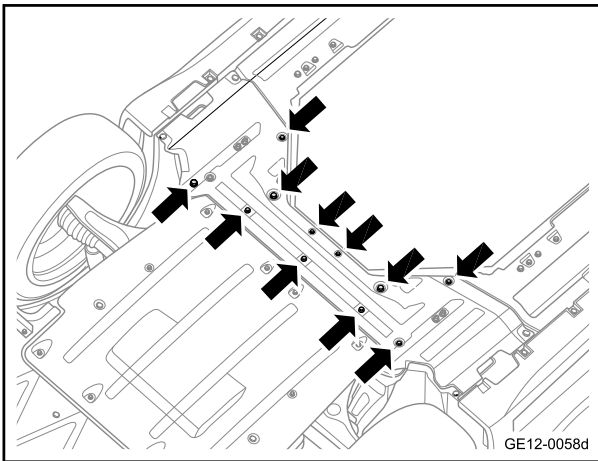




- 3 Remove the 2 fixing screws that fix the power harness cover plate assembly and the left and right front fender lining plates.

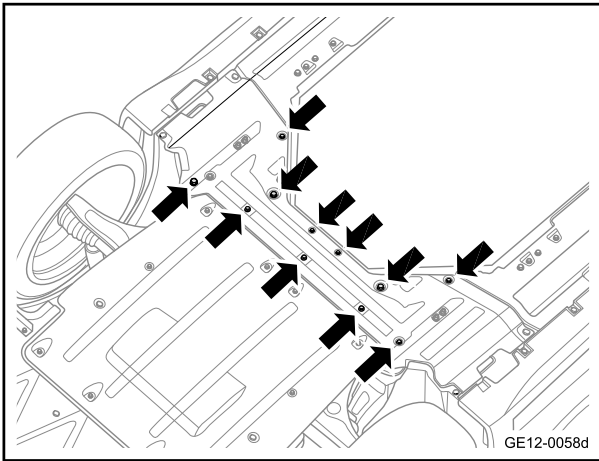


- 4 Remove the 2 fixing buckles that fix the power harness cover plate assembly and the left and right front fender lining plates.

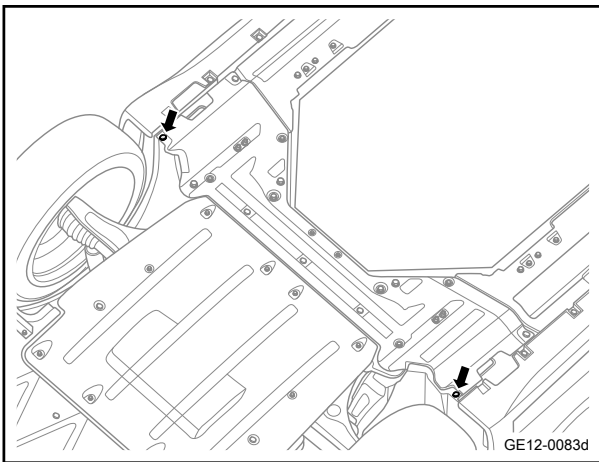


- 5 Remove the 11 fixing bolts of the power harness cover plate assembly.
- 6 Remove the power harness cover plate assembly.

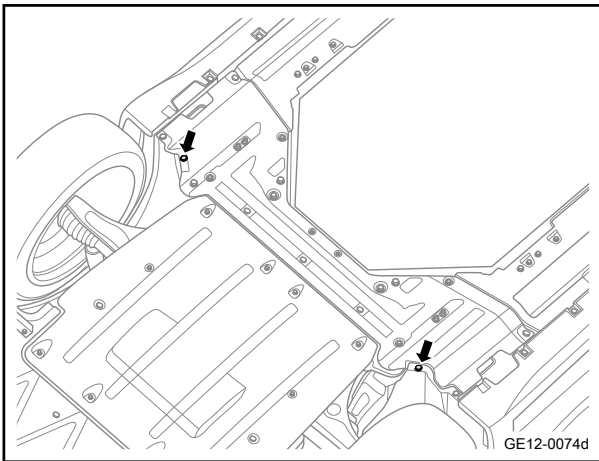
Installation procedure



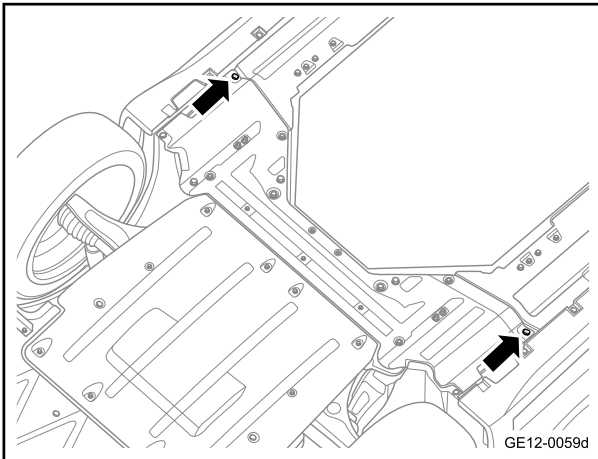
- 1 Move the power harness cover plate assembly to the installation position.
- 2 Install the 11 fixing bolts of the power harness cover plate assembly.  
Torque: 6 N·m (metric) 4.4 lb-ft (Imperial system)



- 3 Install the 2 fixing buckles for fixing the power harness cover plate assembly and the left and right front fender lining plates.



- 4 Install the 2 fixing screws that fix the power harness cover plate assembly and the left and right front fender lining plates.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)



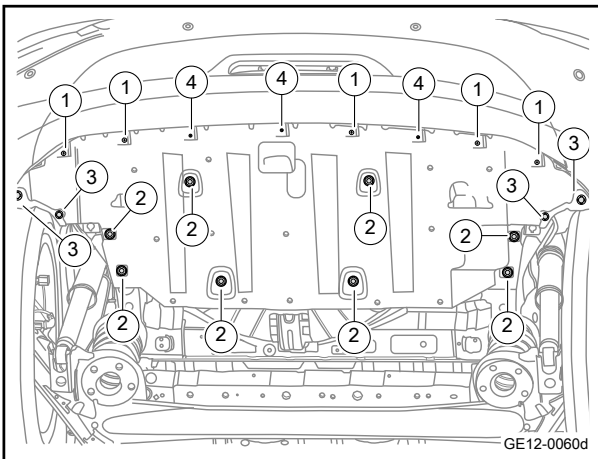
- 5 Install the 2 fixing buckles of the power harness cover plate assembly.

- 6 Lower the vehicle.

### 11.10.2.20 Replacement of the bottom guard plate assembly of the luggage compartment

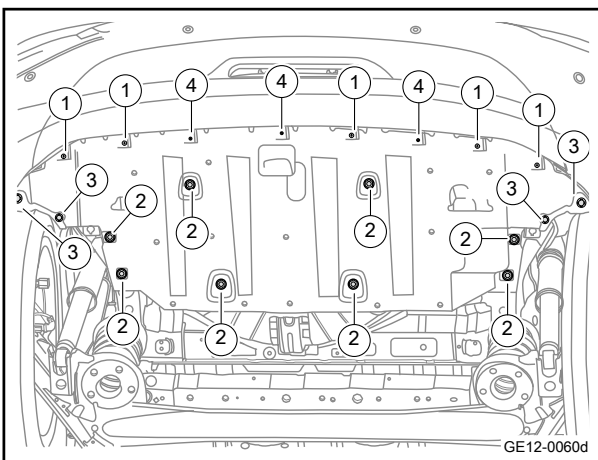
#### Removal procedure

- 1 Lift the vehicle. Refer to [Lift the Vehicle](#)
- 2 Remove the 4 fixing screws 3 that fix the bottom guard plate of the luggage compartment and the rear fender lining plate.
- 3 Remove the 8 fixing nuts 2 of the bottom guard plate of the luggage compartment.
- 4 Remove the 5 fixing screws 1 that fix the bottom guard plate of the luggage compartment and the rear bumper.
- 5 Install 3 fixing bolts 4 of the bottom guard plate of the luggage compartment.
- 6 Remove the bottom guard plate assembly of the luggage compartment.



#### Installation procedure

- 1 Move the bottom guard plate assembly of the luggage compartment to the installation position.
- 2 Install 8 fixing nuts 2 on the bottom guard plate of the luggage compartment.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Install 5 fixing screws 1 for fixing the bottom guard plate of the luggage compartment and the rear bumper.  
Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)
- 4 Install 13 fixing bolts 4 of the bottom guard plate of the luggage compartment.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)



- 5 Install the 4 fixing screws 3 for fixing the bottom guard plate of the luggage compartment and the rear fender lining plate.

Torque: 1.5N·m (metric) 1.1lb-ft (imperial system)

- 6 Lower the vehicle.

### 11.10.2.21 Replacement of Retro-reflector

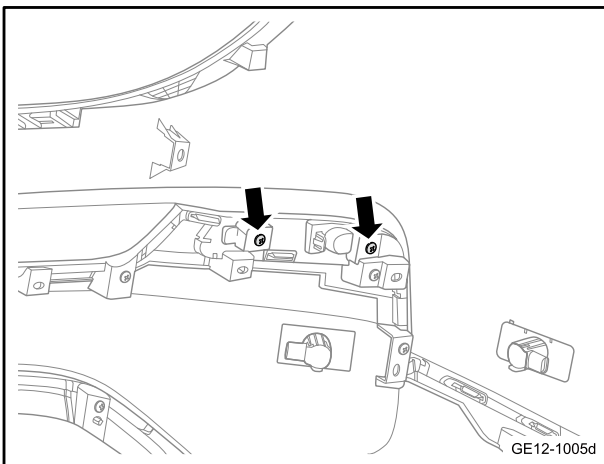
#### Removal procedure

- 1 Open the front engine compartment hood
- 2 Disconnect the negative cable of battery. Refer to [Disconnection and connection procedures for battery cable](#)

#### Warning

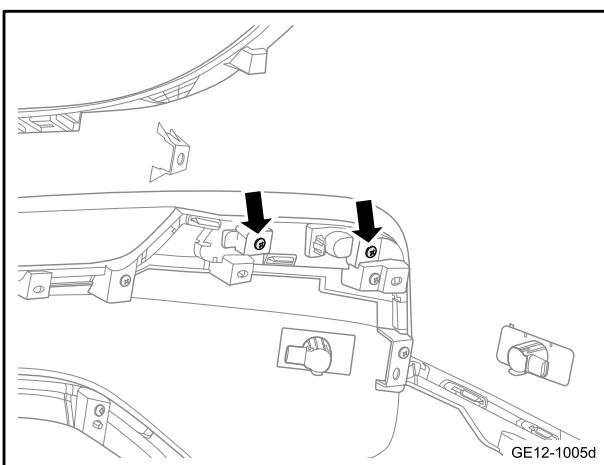
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 3 Remove the rear bumper assembly, refer to [Replacement of rear bumper](#)
- 4 Disassemble the retro reflector assembly
  - a. Remove the 2 fixing screws of the retro reflector and remove the retro reflector.



#### Installation procedure

- 1 Install retro reflector assembly
  - a. Install the 2 fixing screws of the retro-reflector.  
Torque: 1.5 N·m (metric system) 1.1 lb-ft (Imperial system)



- 2 Install the rear bumper assembly.

- 3 Connect the negative cable of battery
- 4 Close engine compartment cover

### 11.10.2.22 Replacement of left luggage rack sub-assembly

#### Removal procedure

##### Caution

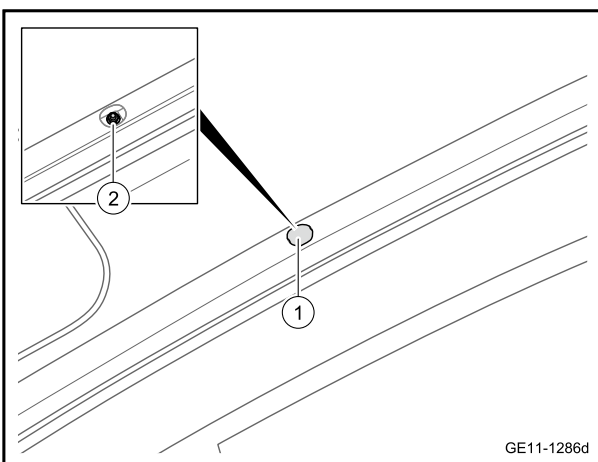
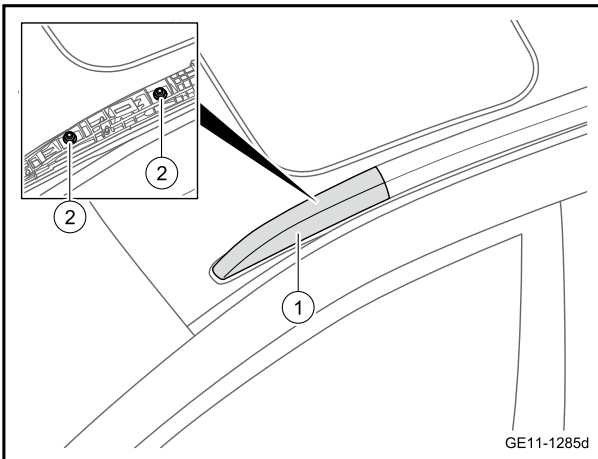
The replacement method is the same for the left and right sides.

- 1 Pry down the front mounting base trim cover 1 of the left luggage rack.

##### Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.

- 2 Remove the 2 fixing nuts 2 connecting the left luggage rack sub-assembly and the left front mounting bracket.

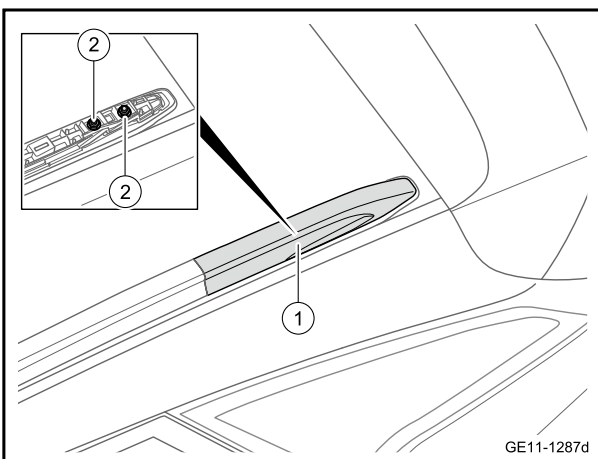


- 3 Pry off the luggage rack blocking cover 1.

##### Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.

- 4 Remove the 1 fixing nut 2 connecting the left luggage rack sub-assembly and the left middle mounting bracket.



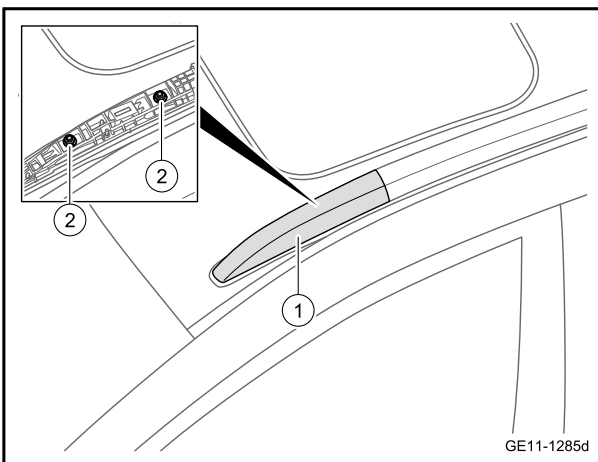
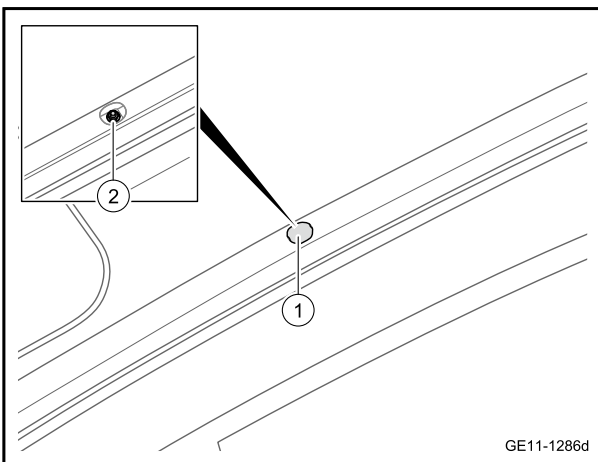
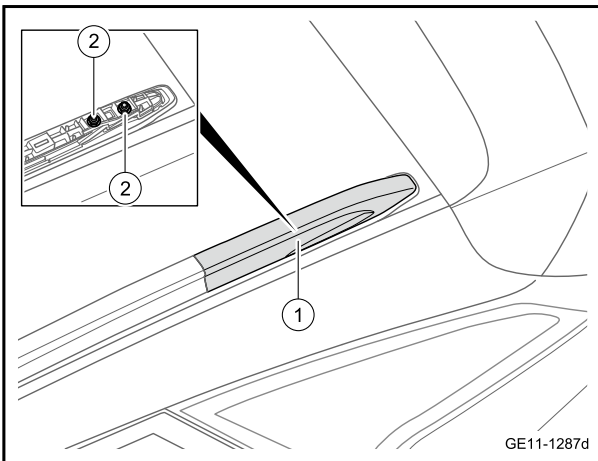
- 5 Pry down the rear mounting base trim cover 1 of left luggage rack.

##### Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.

- 6 Remove the 2 fixing nuts 2 connecting the left luggage rack sub-assembly and the left rear mounting bracket.
- 7 Remove the left luggage rack sub-assembly.

## Installation procedure



- 1 Move the left luggage rack sub-assembly to the installation position.
- 2 Install the 2 fixing nuts 2 connecting the left luggage rack sub-assembly and the left rear mounting bracket.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 3 Install the rear mounting base trim cover 1 of the left luggage rack.
- 4 Install the 1 fixing nut 2 connecting the left luggage rack sub-assembly and the left middle mounting bracket.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 5 Install the luggage rack blocking cover 1.
- 6 Install the 2 fixing nuts 2 connecting the left luggage rack sub-assembly and the left front mounting bracket.  
Torque: 6N·m (metric) 4.4lb-ft (imperial system)
- 7 Install the front mounting base trim cover 1 of the left luggage rack.

## 11.11 Plastic panel information and repair

### 11.11.1 Description and operation

#### 11.11.1.1 Instructions and Operations

At present, the materials covered on the surface of interior and exterior trims are mainly modified PP, ABS, PC+ABS, PVC (artificial leather materials), all of which are thermoplastics or their modified materials. POM, PA and HDPE materials are also used for non-surface covering parts of interior and exterior trims. Thermosetting plastics are rarely used for interior and exterior trims, and only phenolic plastics are used for ashtrays.

Thermosetting plastics are mainly used as structural parts in electronic appliances and safety components. Thermoplastic parts should best be repaired by using hot soldering iron plastic material filling welder, but are usually repaired by replacement. To repair parts made of thermosetting plastics, epoxy resin or other harder two-component repair materials can be used. This chapter only briefly introduces their repair methods, and repairs are not recommended.

Classification of plastic materials: thermosetting plastic refers to the plastics which are solidified in heating or other conditions, or featured with insoluble (infusible) properties, such as phenolic plastic, and epoxy plastics, etc.

Thermoplastics refer to plastics that can be repeatedly heated to soften and cooled to harden within a specific temperature range, such as polyethylene, polytetrafluoroethylene, etc.

Thermoplastics and thermosetting plastics can be hard plastics or soft plastics.



## 11.11.2 Removal and installation

### 11.11.2.1 Plastic Part Repair Notices

- 1 Apply protective cream on exposed skin to prevent skin stimulation.
- 2 Wear rubber gloves.
- 3 When using the compressed air and sanding, properly wear protective glasses.
- 4 Immediately eliminate any mixture contacting the skin, because the curing of the mixture is quick.
- 5 When grinding or sanding, wear a dust mask and protective glasses.
- 6 Use cold water to clean the skin to reduce the weak stimulation caused by resin and dust to the skin.
- 7 The clothes should be free from maintenance materials.
- 8 Use maintenance materials in a good ventilation environment, because the dust, particles and pollutant generated by maintenance materials are poisonous.
- 9 After using, seal all maintenance material containers. Dust or moisture will pollute the repair materials and reduce the repair effect.

### 11.11.2.2 Repair of Thermosetting Plastic Dent

- 1 Clean and dry parts to be maintained.
- 2 Heat the dent part with a hot wind blower, until flattening the dent with the appropriate tools.
- 3 Use abrasive paper/emery paper to polish dent area.
- 4 Then clean the repair part with cleaner and dry in the air for 5min.
- 5 Apply a thin layer of binder and dry in the air for 10min.
- 6 Fill an uneven surface with binder and trowel with a spatula.
- 7 Use infrared light to accelerate the curing process. Adjust the temperature to 60-70 °C (140-158 °F), and heat it for 15 minutes.
- 8 Use abrasive papers to polish dents.
- 9 Remove dust/abrasive dust.
- 10 Apply a thin layer of binder and dry in the air for 10min.
- 11 Restore the lacquer surface according to the plastic surface paint repair process.

### 11.11.2.3 Repair of Thermosetting Plastic Scratch

- 1 Clean and dry parts to be maintained.
- 2 Use abrasive paper to remove projecting materials.
- 3 Then clean the repair part with cleaner and dry in the air for 5min.
- 4 Apply a layer of binder and dry in the air for 10 min.
- 5 Fill an uneven surface with binder and trowel with a spatula.
- 6 Use an infrared lamp to accelerate the solidification process. Set the temperature to 60 - 70 °C (140 -158 °F). Heat for 15min.
- 7 Use abrasive paper to polish sinking parts.
- 8 Remove dust/abrasive dust.
- 9 Apply a thin layer of binder and dry in the air for 10min.
- 10 Restore the lacquer surface according to the plastic surface paint repair process.

### 11.11.2.4 Repair of cracks in thermosetting plastics (less than 100mm in length)

- 1 Clean and dry parts to be maintained.
- 2 Cut the end of the crack for 5mm (0.19in) long, and grind the crack into a V shape to eliminate internal stress and raised parts.
- 3 Clean the repair part with cleaner and dry in the air for 5min.
- 4 Apply a layer of binder and dry in the air for 10min.
- 5 First use an adhesive to stick the reinforcing tape to the back of the repair part, at least 20mm (0.79in) overlap with the damaged part.
- 6 Use an infrared lamp to accelerate the solidification process. Set the temperature to 60 - 70°C (140 158 °F). Heat for 15min.
- 7 Fill the polished crack front end with adhesive and smooth it with a spatula.
- 8 Use infrared lamp to accelerate the curing process at the front end of the crack.
- 9 Use abrasive paper to polish sinking parts.
- 10 Apply a thin layer of binder and dry in the air for 10min.
- 11 Remove dust/abrasive dust.

- 12 Apply a layer of binder and dry in the air for 10min.
- 13 Restore the lacquer surface according to the plastic surface paint repair process.

## 11.12 Collision repair

### 11.12.1 Specification

#### 11.12.1.1 Collision repair materials

In a vehicle body collision accident, the structure deformation, steel plate cracking, welding failure, and other phenomena will be generally caused. Sometimes it also causes local damage of the power synthesis box, chassis, and other assembly parts.

During the body collision repair, bonders, sealants, anti-loosing agents, surface protection materials, anti-corrosion materials, chemical materials may be used. Please operate strictly in accordance with the purpose, scope of use, and application in the product instructions. In the process of body repair, repair materials of the same functions should be selected and used according to the functional requirements of parts and materials. The following table gives the possible repair materials to be used in the process of body repair, for reference only in the process of body repair.

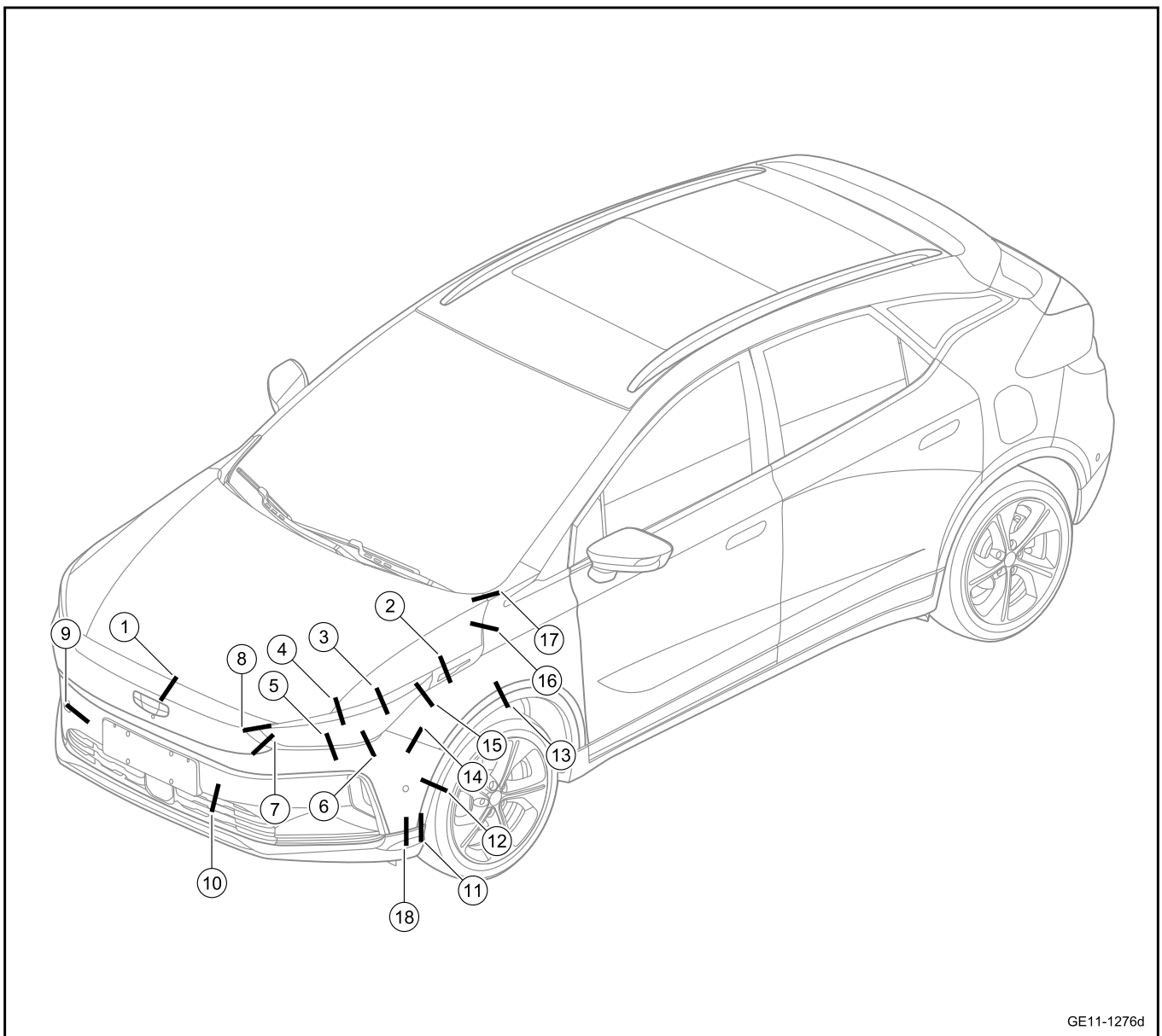
Products	Base materials	Application	Recommended model
Body sealant	Single unit polyurethane	Bond of body skin, interior/ exterior trims, body structure, etc. The sealant should have a strong adhesive force and cohesion force and have good adhesion with metal, various paints, etc.	TONSAN Kesaixin: 1922, 1923
Seam sealant	Single unit polyurethane	Room temperature solidified adhesive for sealing body welding seams. Binder cured at room temperature is used for fine hem sealing of door, front engine compartment, and trunk.	China Auto Parts & Accessories Industry Corporation: C8802
Stone-impact resistant primer layer	Rubber and resin	Room temperature solidified anti-collision adhesive for chassis protection, forming a permanent anti-aging, elastic, corrosion resistant, protective coating at the bottom of the car and the wheel cover, no crack at low temperature. This kind of product can substitute PVC coating, with excellent functions such as rust-proof, sound insulation, anti-stone, anti-oxidation, coating protective.	China Auto Parts & Accessories Industry Corporation: C312DW

Products	Base materials	Application	Recommended model
Windshield sealant	Single unit polyurethane	<p>Room temperature solidified polyurethane adhesive, used for direct bonding and sealing of automobile window glasses.</p> <p>The sealant has a good adhesive performance. It can react with the moisture in the air, solidify and form excellent properties such as high strength, aging resistance, vibration and fatigue resistance, low-temperature resistance, and non-corrosion.</p>	<p>China Auto Parts &amp; Accessories Industry Corporation: C8802 day Tianshan Kesaixin: 1956, 1924</p>
Pressure-sensitive adhesive tape	Acrylic acid tape	<p>Used for the bond of anti-scratch panel, nameplate, fender apron, mud apron, door protection, various trim strips, etc.</p> <p>This adhesive tape should have excellent weather resistance and endurance.</p>	3M4229P, 4215, 4221L
Primer	-	<p>Before applying windshield sealant, a kind of primer should be applied to the body and glasses to make the windshield and body bond more firmly.</p>	-
Cleaner	-	<p>Used for the cleaning of all surfaces contacted with primer paint and adhesives.</p>	-

Products	Base materials	Application	Recommended model
Heat-sensitive adhesive tape	Acrylic acid tape	It is mainly used in the rubber sealing strip system of automobiles. This type of tape should have a strong bonding force and strong sealing performance, to avoid gap and corrosion problems caused by a weak bond.	3M4237P
Tape glue	-	Choose different primers according to the bond surface material. The bonding surface should be clean. After being thoroughly dried, apply the primer evenly on the bonding surface with a brush. After being dried, paste the adhesive tape. Make the tape have strong adhesion.	3MC-100, K-500/520, N-200

### 11.12.1.2 Clearance between body surfaces

- To adjust or check the clearance dimensions, a plastic clearance adjustment gauge should be used.
- Clearance dimensions are always in mm/inch.



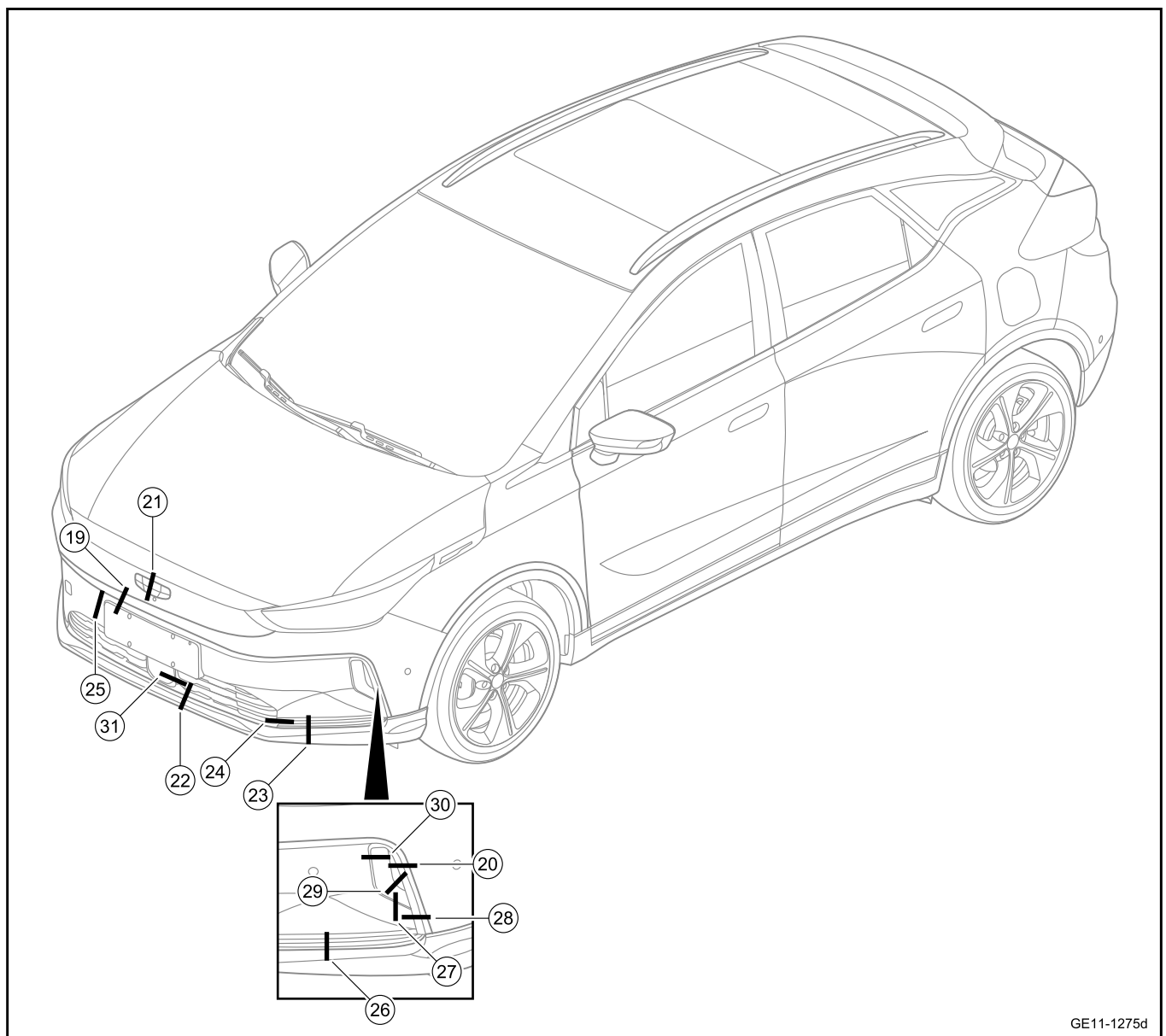
GE11-1276d

Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
1	Front engine compartment cover	Front bumper	3.5±1.5	1.5	-1.0 +1.0/ -1.4	1.2	/	/
2	Front engine compartment cover	Head- lamps	3.5±1.0	1.0	0±1.0	1.0	/	/

Code	Part Name (bench- mark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
3	Front engine compart- ment cover	Head- lamps	3.5±1.0	1.0	/	/	/	/
4	Front engine compart- ment cover	Head- lamps	(3.5~4.2) ±1.0	/	/	/	/	/
5	Headlamps	Front bumper	2.0+/-1.0	1.0	/	/	/	/
6	Headlamps	Front bumper	(2.0~1.5) ±1.0	/	/	/	/	/
7	Headlamps	Front bumper	2.0±1.2	1.0	/	/	/	/
8	Headlamps	Front bumper	2.0~3.5±1.2	/	/	/	/	/
9	Front tow hook	Front bumper	0.5±0.5	/	-0.5±0.5	/	/	/
10	Lower grille	Front bumper moulding upper	0.7±0.7	/	/	/	/	/
11	Front fender flare	Front bumper moulding lower	0.5±0.5	/	-0.5 +0/-1.0	/	/	/
12	Front fender flare	Front bumper	/	/	/	/	/	/
13	Front fender flare	Fender	0(0.5,0)	/	/	/	/	/
14	Front bumper	Fender	0.5 +0.5/- 0.3	/	-0.5±0.7	/	/	/
15	Fender	Head- lamps	1.5±1.0	1.0	/	/	/	/
16	Fender	Front engine compart- ment cover	(3.5~3.4) ±0.8	/	-0.5±0.8	/	1.0	/

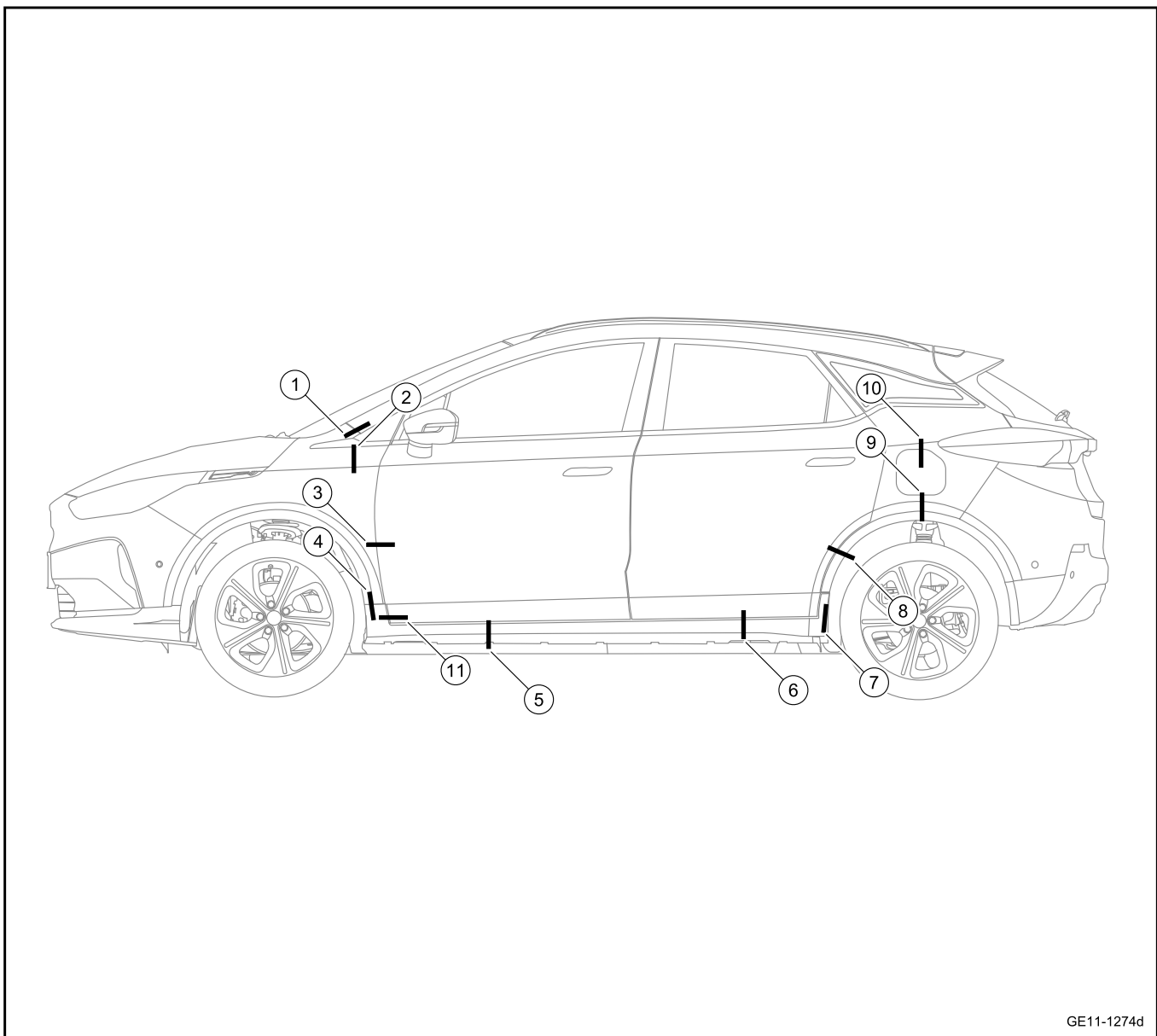


Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
17	Fender	Front engine compartment cover	4.5±0.8	1.0	0±0.8	/	1.0	/
18	Front bumper moulding lower	Front bumper	0.5±0.5	0.5	/	/	/	/



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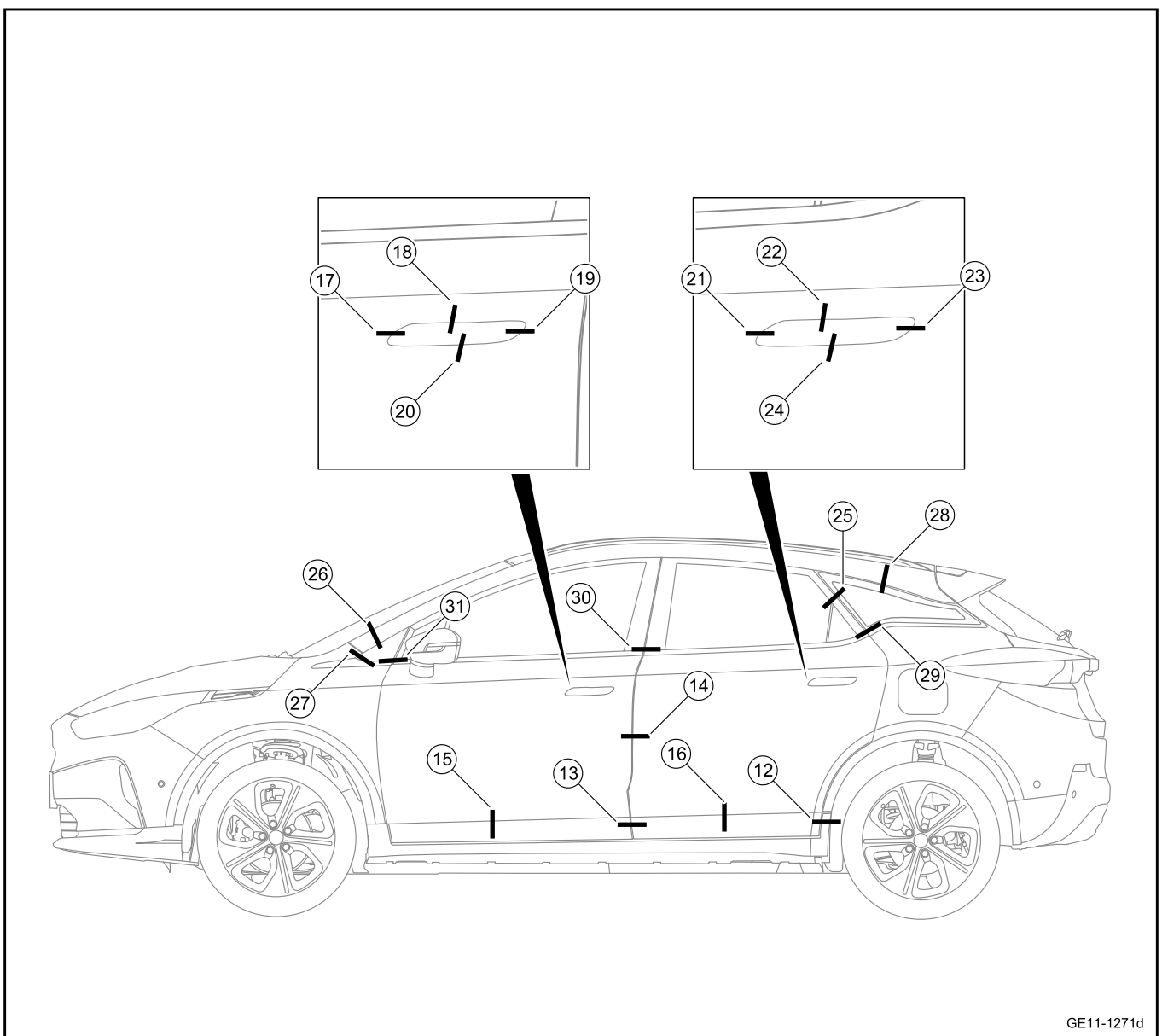
Code	Part Name (bench- mark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
19	Front license mounting plate	Front bumper	0 +0.5/0	/	/	/	/	/
20	Front bumper	Air curtain	0.5±0.5	/	/	/	/	/
21	Front logo	Front bumper	0.5±0.3	/	/	/	/	/
22	Lower grille	Front bumper moulding lower	0.7±0.7	/	/	/	/	/
23	Trim panel of front bumper	Front bumper moulding lower	0.7±0.7	/	/	/	/	/
24	Trim panel of front bumper	Lower grille	0.5±0.5	/	0±0.5	/	/	/
25	Radar bracket	Front bumper	0.2±0.2	/	-0.3±0.3	/	/	/
26	Trim panel of front bumper	Front bumper moulding upper	0.7±0.7	/	/	/	/	/
27	Trim panel of front bumper	Air curtain	0.7±0.7	/	/	/	/	/
28	Front bumper	Air curtain	0.5±0.5	/	/	/	/	/
29	Front bumper	Air curtain	0.5±0.5	/	/	/	/	/
30	Front bumper	Air curtain	0.5±0.5	/	/	/	/	/
31	Front bumper lower grille	Radar cover	0.5±0.5	/	-0.5±0.5	/	/	/



GE11-1274d

Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
1	Side body	Fender	2.0±1.0	/	0±1.0	/	/	/
2	Fender	Front trim panel	0	/	/	/	/	/
3	Front door outer panel	Fender	3.5±0.8	1.0	0+1.0/-0.5	/	1.0	/
4	Front fender flare	Door sill trim panel	0.5±0.5	/	-0.5 +0/-1.0	/	/	/
5	Front door outer panel	Door sill trim panel	5.0+/-1.2	1.2	/	/	/	/

6	Back door outer panel	Door sill trim panel	5.0+/-1.2	1.2	/	/	/	/
7	Rear fender flare	Door sill trim panel	0.5±0.5	/	-1.0 +0/-1.0	/	/	/
8	Rear fender flare	Back door outer panel	4.0±1.0	/	/	/	/	/
9	Rear fender flare	Side body	0 (0.5 , 0)	/	/	/	/	/
10	Side wall outer panel	Charging port cover	2.0±0.5	0.7	-0.5±0.7	/	/	/
11	Front door trim panel lower	Door sill trim panel	4.0±1.0	1.0	/	/	/	/

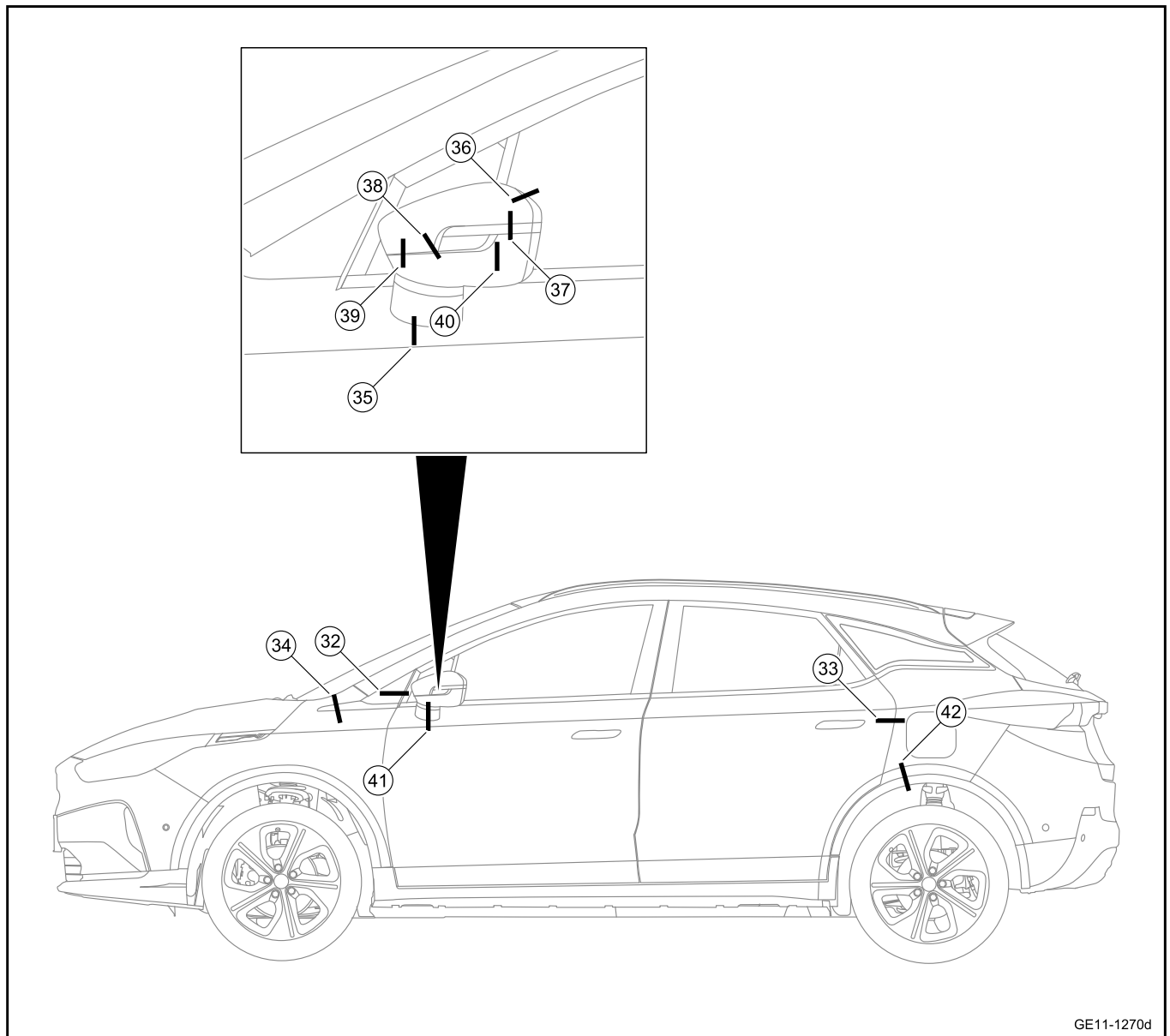


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Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
12	Rear door trim panel lower	Rear fender flare	4.0±1.0	1.0	/	/	/	/
13	Front door trim panel lower	Rear door trim panel lower	5.0±1.0	1.0	0+1.0/-0.5	/	/	/
14	Front door outer panel	Back door outer panel	3.8±0.8	0.8	0+1.0/-0.5	/	/	/

15	Front doors	Front door trim panel lower	0 (0.5/0)	/	/	/	/	/
16	Rear doors	Rear door trim panel lower	0 (0.5/0)	/	/	/	/	/
17	Front door outer panel	Front door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
18	Front door outer panel	Front door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
19	Front door outer panel	Front door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
20	Front door outer panel	Front door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
21	Back door outer panel	Rear door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
22	Back door outer panel	Rear door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
23	Back door outer panel	Rear door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
24	Back door outer panel	Rear door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
25	Rear triangular window	Rear door window frame	4.0±1.0	1.0	0.5 +1.0/-0.5	/	/	/
26	Front triangular window	Side body	0	/	/	/	/	/
27	Front triangular window	Fender	0	/	/	/	/	/
28	Rear triangular window	Side body	0	/	/	/	/	/

29	Rear triangular window trim strip	Back door weather-strip	4.5±1.0	/	0±1.0	/	/	/
30	Back door weather-strip	Front door weather-strip	3.5±1.0	/	0±1.0	/	/	/
31	Front door weather-strip	Front trim panel	4.5±1.0	/	0±1.0	/	/	/

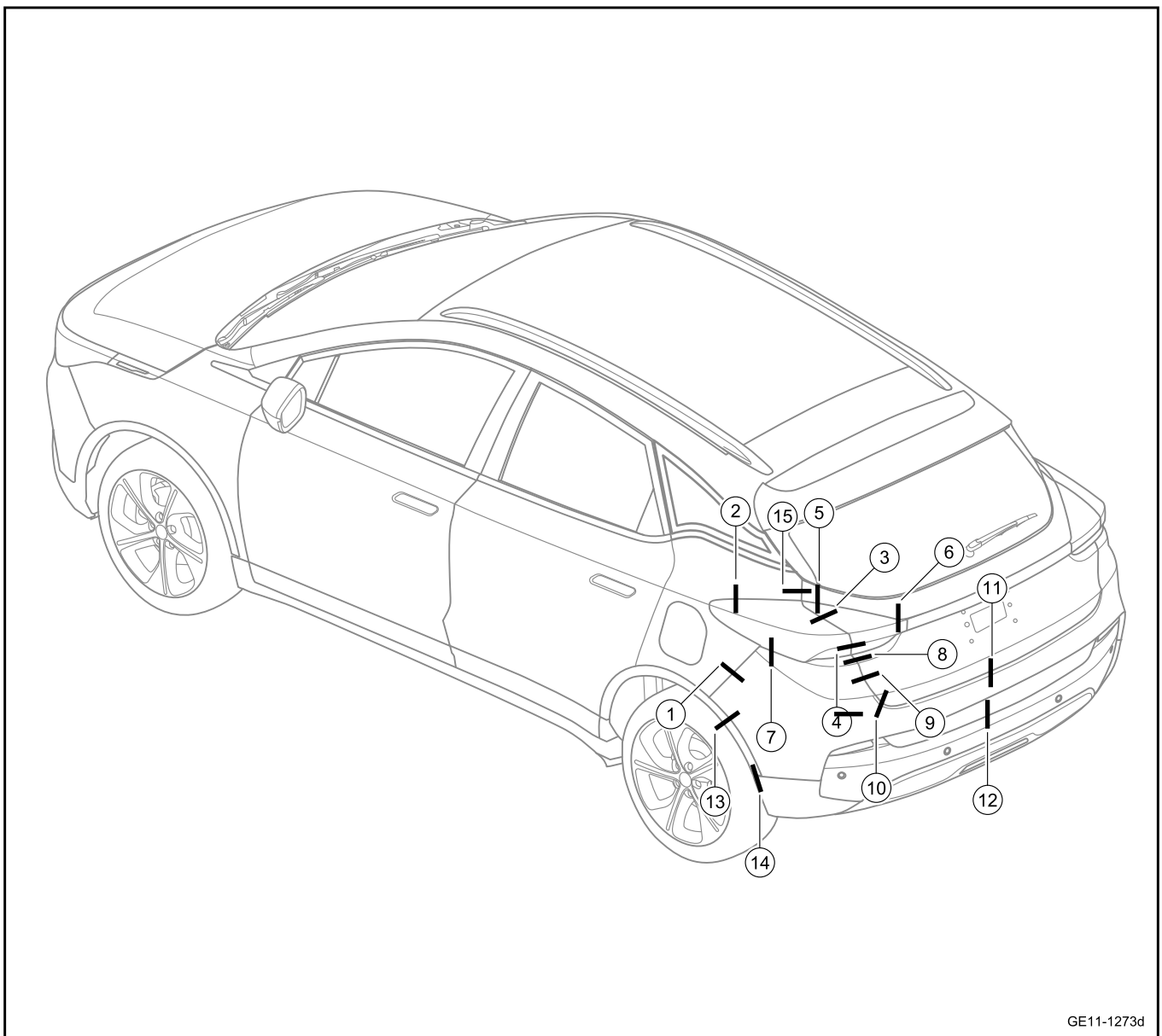


GE11-1270d

Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric

32	Front triangular window	Front door and window frame	4.0±1.0	/	/	/	/	/
33	Side body	Back door outer panel	3.5±0.8	0.8	0+1.0/-0.5	/	/	/
34	Front trim	Fender	3.5	/	/	/	/	/
35	Rearview Mirror	Front doors	1±1	/	/	/	/	/
36	Rearview mirror front cover	Rearview mirror rear cover	3.5±0.5	/	/	/	/	/
37	Rearview mirror front cover	Turn signals	0.5±0.5	/	/	/	/	/
38	Rearview mirror upper housing	Rearview mirror lower housing	0.5±0.5	/	0±0.5	/	/	/
39	Rearview mirror upper housing	Rearview mirror lower housing	0.2±0.2	/	/	/	/	/
40	Rearview mirror housing	Camera	0.3±0.2	/	/	/	/	/
41	Rearview mirror housing	Rearview mirror base	1±0.5	/	0±0.5	/	/	/
42	Rear fender flare	Side wall outer panel	0 0/1.5	/	/	/	/	/

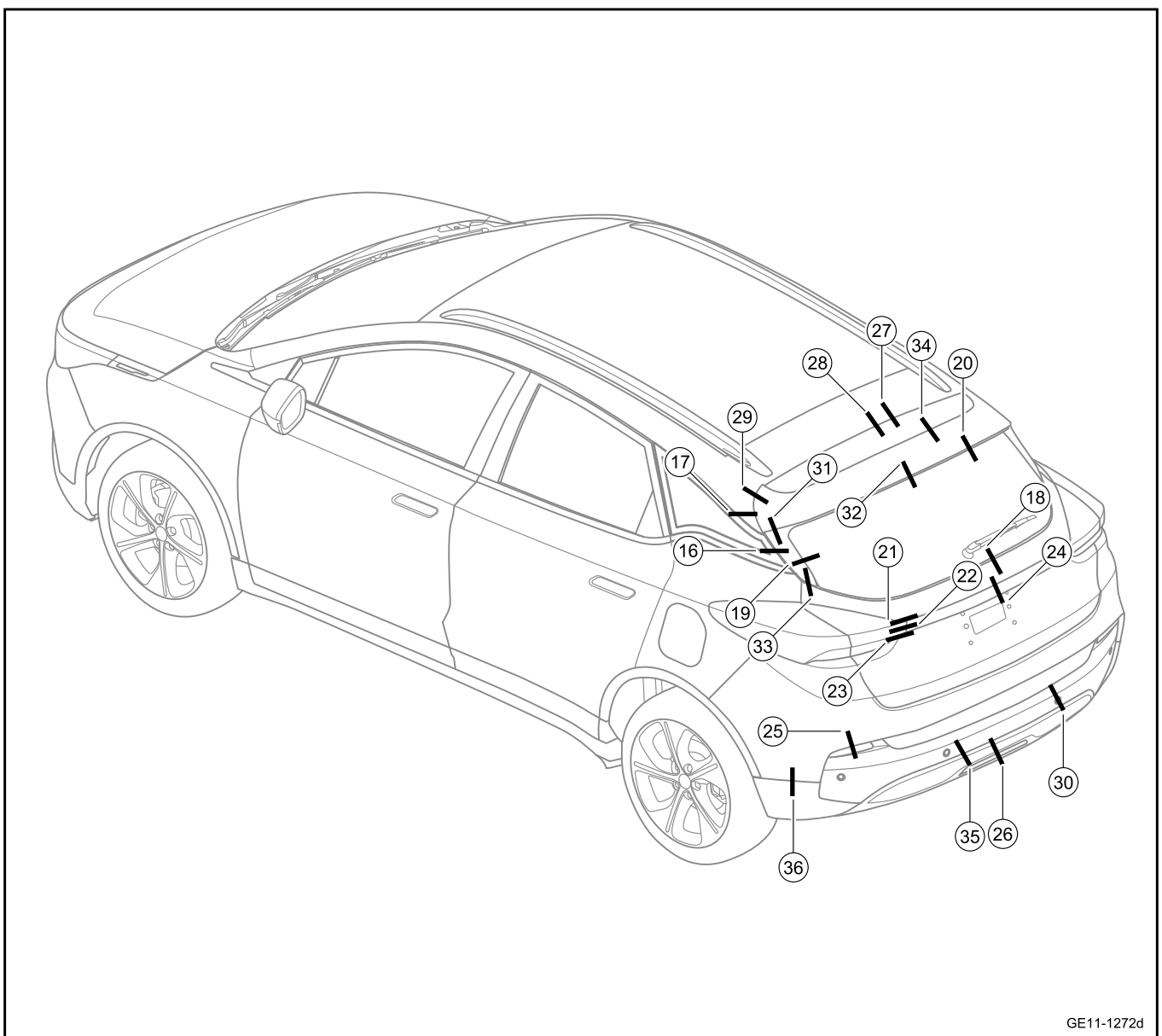




GE11-1273d

Code	Part Name (bench- mark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
1	Side body	Rear bumper	0.5 +0.5/- 0.3	/	-0.5±0.7	/	/	/
2	Side body	Tail lamp A	1.2±0.8	0.8	/	/	/	/
3	Tail lamp A	Tail lamp B	(4~3.5)±1.5	/	-1.0±1.5	/	1.5	/
4	Tail lamp A	Tail lamp B	3.5±1.5	1.5	-1.0±1.5	/	1.5	/
5	Tail lamp B	Backdoor	1.2±0.8	1.0	/	/	/	/
6	Tail lamp B	Backdoor	1.0±0.8	1.0	/	/	/	/

7	Tail lamp A	Rear bumper	$1.2 \pm 0.8$	1.0	/	/	/	/
8	Backdoor	Rear bumper	$4.0 \pm 1.5$	1.5	$0 \sim -1 \pm 1.5$	/	1.5	/
9	Backdoor	Rear bumper	$4.0 \pm 1.5$	1.5	$-1 \pm 1.5$	/	1.5	/
10	Backdoor	Rear bumper	$4.0 \sim 6.0 \pm 1.5$	/	/	/	/	/
11	Backdoor	Rear bumper	$6.0 \pm 1.5$	1.5	/	/	/	/
12	Rear bumper moulding lower	Rear bumper	$0.5 \pm 0.5$	/	/	/	/	/
13	Rear fender flare	Rear bumper	/	/	/	/	/	/
14	Rear fender flare	Rear bumper moulding lower	$0.5 \pm 0.5$	/	$-0.5 + 0 / -1.0$	/	/	/
15	Backdoor	Side body	$4.0 \pm 1.0$	1.0	$-0.5 \pm 0.8$	/	1.0	/

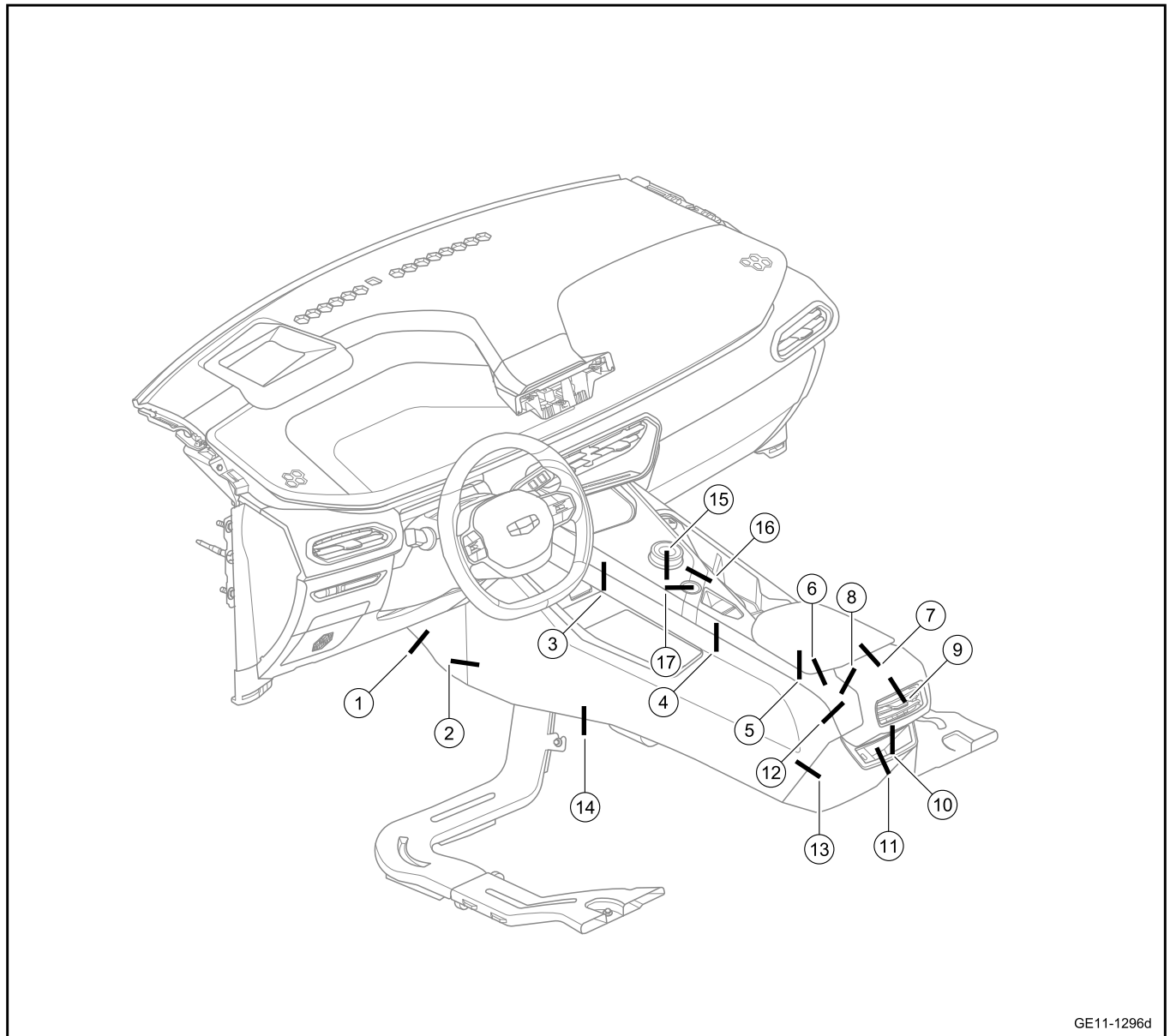


GE11-1272d

Code	Part Name (bench- mark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
16	Trim panel of backdoor	Side body	4.0±1.5	1.5	/	/	1.5	/
17	Spoiler	Rear triangular window	4.0±1.5	1.5	/	/	1.5	/
18	Rear windshield glass	Backdoor	2.5±1.5	1.5	/	/	/	/

19	Rear windshield glass	Trim panel of backdoor	2.0±1.5	/	/	/	/	/
20	Rear windshield glass	Spoiler	2.0±1.5	1.5	/	/	/	/
21	Tail lamp B	Tail lamp C	1.5±1.4	/	-0.3±0.5	/	/	/
22	Tail lamp B	Tail lamp C	1.5±1.4	/	-0.5±0.5	/	/	/
23	Tail lamp B	Tail lamp C	1.5±1.4	/	/	/	/	/
24	Outer trim panel of backdoor rear	Back door full-width lamp	1.0±1	1	/	/	/	/
25	Retro reflector	Rear bumper	0.8±0.7	/	/	/	/	/
26	Rear Fog Lamp	Rear bumper	1.5±1.0	1.0	/	/	/	/
27	Sheet metal roof	Backdoor	6.5±1.2	1.2	-1.0±1.2	/	/	/
28	Glass roof	Backdoor	6.5±1.9	1.2	-1.0±1.2	/	/	/
29	Side body	Spoiler	4.0±1.5	1.5	-1.0±1.5	/	/	/
30	Radar bracket	Rear bumper	0.2±0.2	/	-0.3±0.3	/	/	/
31	Rear spoiler upper body	Rear spoiler lower body	0.5±0.5	/	/	/	/	/
32	Rear spoiler	High braking lamp	1.0±0.7	/	/	/	/	/
33	Rear spoiler lower body	Backdoor trimming	4.0~2.5±1.2	/	/	/	/	/
34	Rear spoiler upper body	Back door sheet metal	1.0±0.7	/	-1.0±0.7	/	/	/

35	Rear bumper moulding lower	Lower trim panel of rear bumper	$0.5 \pm 0.5$	0.5	/	/	/	/
36	Rear bumper moulding lower	Rear bumper	$0.3 \pm 0.3$	/	/	/	/	/

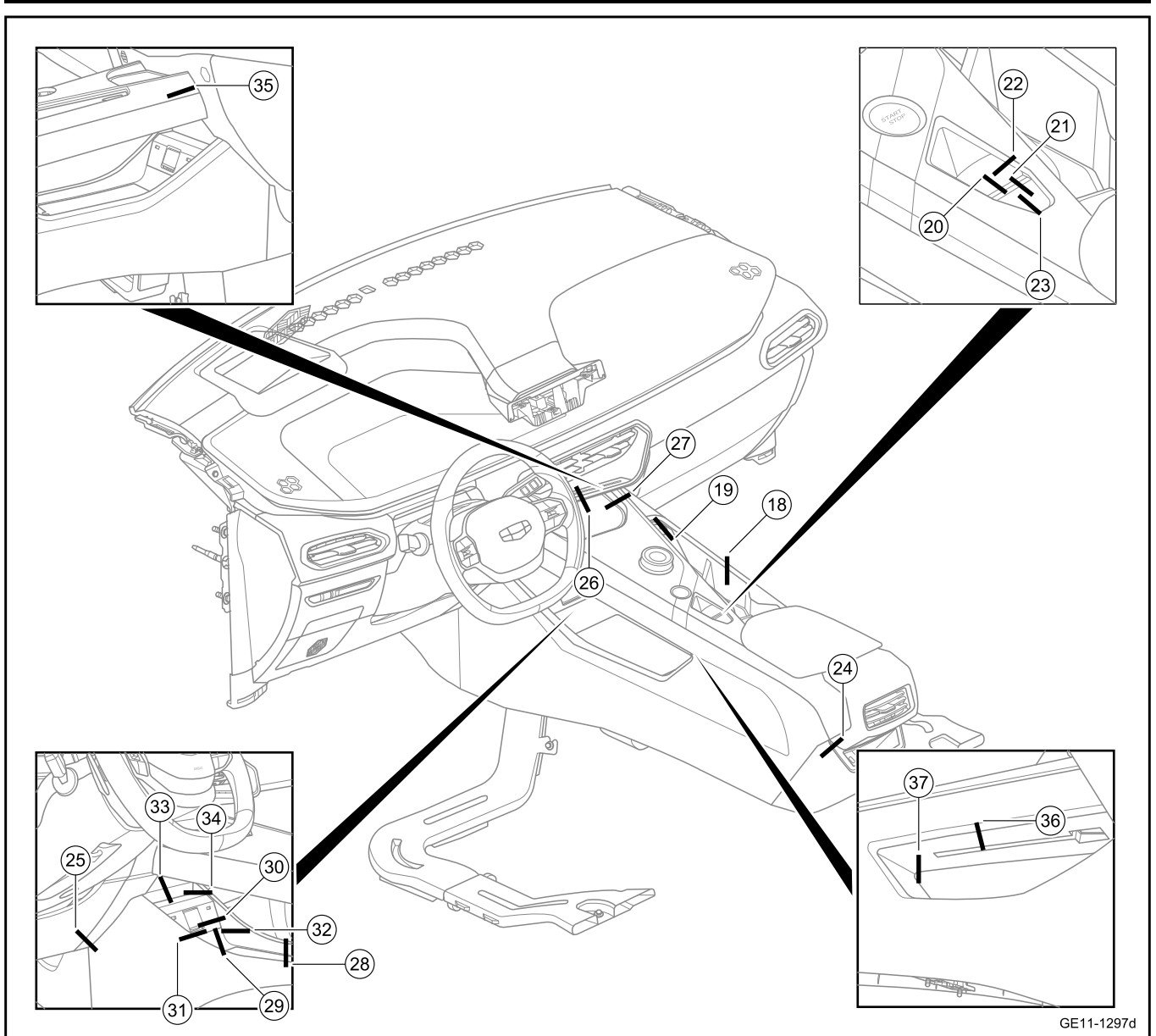


GE11-1296d

Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
1	Front damper	Carpet	/	/	/	/	/	/

2	Side trim panel of auxiliary fascia console	Front damper	0.5±0.3	/	-0.5±0.5	/	/	/
3	Auxiliary fascia console panel	Side trim panel of auxiliary fascia console	0.5±0.3	/	-1.5±0.3	/	/	/
4	Upper trim panel of auxiliary instrument	Side trim panel of auxiliary fascia console	0.5±0.3	/	-1.5±0.3	/	/	/
5	Armrest	Upper trim panel of auxiliary fascia console	3.0±1.0	1.0	/	/	/	/
6	Armrest	Upper trim panel of auxiliary fascia console	3.0±1.0	1.0	/	/	/	/
7	Armrest	Rear panel of auxiliary dashboard	3.0±1.0	/	/	/	/	/
8	Upper trim panel of auxiliary fascia console	Rear air outlet panel	0.5± 0.3	/	-1.0±0.3	/	/	/
9	Rear air outlet panel	Rear air outlet trim strip	0.3±0.3	/	/	/	/	/
10	Rear air outlet panel	Rear auxiliary box of auxiliary dashboard	1.5±0.3	/	/	/	/	/

11	Rear glove box cover plate at the rear of the auxiliary fascia console	Rear glove box of auxiliary fascia console	$0.3 \pm 0.3$	/	$-0.5 \pm 0.3$	/	/	/
12	Upper trim panel of auxiliary fascia console	Side trim panel of auxiliary fascia console	$0.5 \pm 0.3$	/	$-1.5 \pm 0.3$	/	/	/
13	Rear glove box cover plate at the rear of the auxiliary fascia console	Side panel of auxiliary fascia console	$0.5 \pm 0.3$	/	$-0.5 \pm 0.5$	/	/	/
14	Side trim panel of auxiliary fascia console	Carpet	/	/	/	/	/	/
15	Switch	Auxiliary fascia console panel	$0.4 \pm 0.3$	/	/	/	/	/
16	Auxiliary dashboard trim strip	Upper trim panel of auxiliary instrument	$0 \pm 0.3/0$	/	/	/	/	/
17	Switch	Auxiliary fascia console panel	$0.5 \pm 0.25$	/	/	/	/	/



GE11-1297d

Code	Part Name (benchmark)	Relevant Part Name	Specifications					
			Clearance	Uniformity (gap)	Tolerance	Uniformity (face difference)	Symmetry	Alignment metric
18	Upper trim panel of auxiliary fascia console	Cup holder	0.3±0.3	/	-0.5±0.3	/	/	/
19	Cup holder	Hazard warning lamp switch	0.5±0.25	/	/	/	/	/
20	Switch	Trim strip	1.0± 0.25	/	0±0.25	/	/	/
21	Trim strip	Switch	0.5±0.25	/	0±0.25	/	/	/



22	Switch	Upper trim panel of auxiliary instrument	0.7±0.3	/	/	/	/	/
23	Switch	Upper trim panel of auxiliary instrument	0.7±0.3	/	/	/	/	/
24	Rear glove box panel of auxiliary fascia console	Rear air outlet panel	1.0 ± 0.5	/	/	/	/	/
25	Side trim panel of auxiliary fascia console	Lower trim panel of the dashboard	1.0±0.5	/	/	/	/	/
26	Wireless charging panel	Lower fender apron of dashboard	/	/	/	/	/	/
27	Wireless charging panel	Auxiliary fascia console panel	0.3±0.3	/	0.3 +0/-0.3	/	/	/
28	Side guard plate of auxiliary instrument	Lower framework of auxiliary fascia console	0.3±0.3	/	-1.0±0.3	/	/	/
29	12V power panel	Lower framework of auxiliary fascia console	0.5±0.3	/	0±0.5	/	/	/
30	Power socket cover plate	12V power panel	0.5±0.3	/	-0.5±0.5	/	/	/

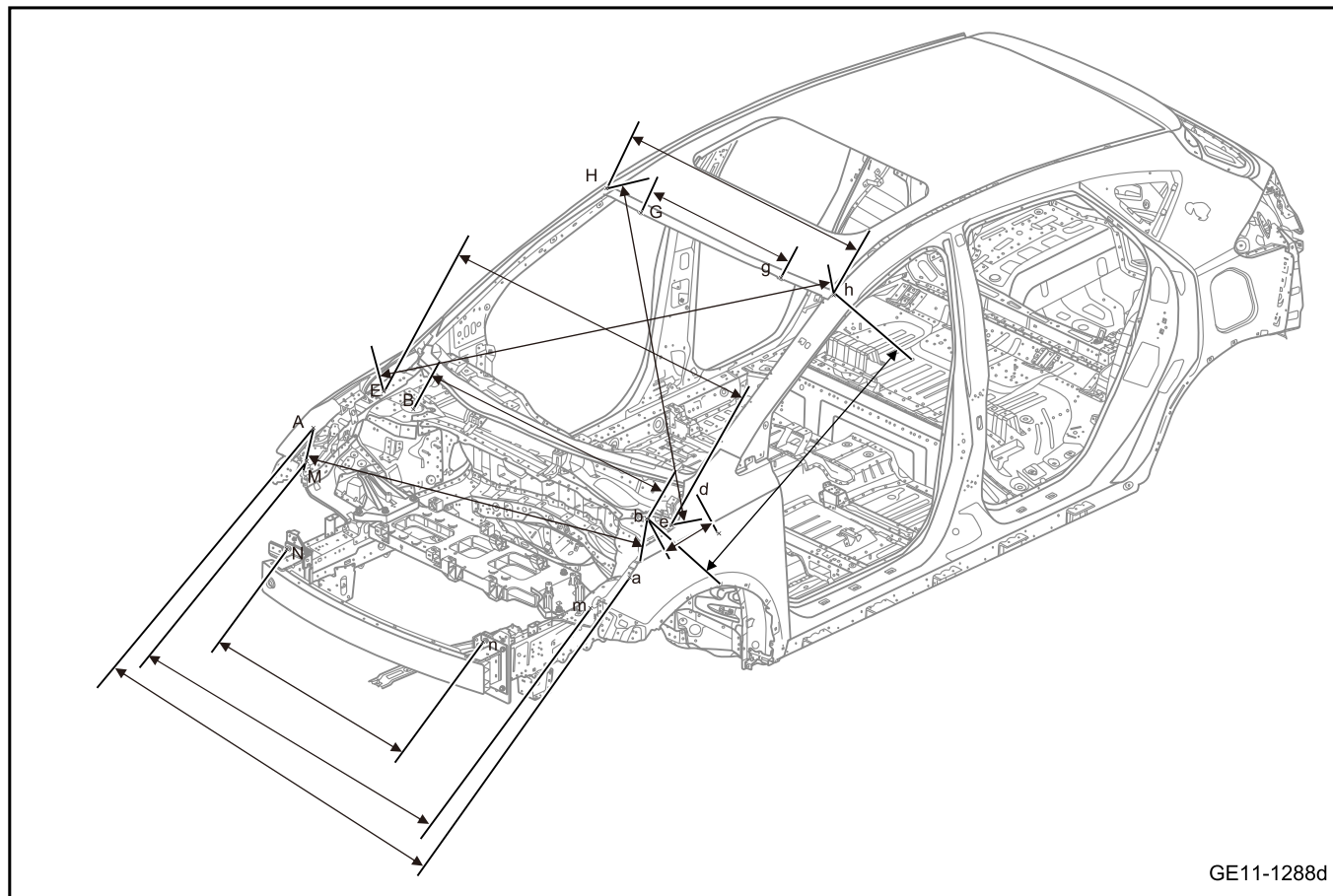
31	Power socket cover plate	12V power panel	$0.5 \pm 0.3$	/	$-0.5 \pm 0.5$	/	/	/
32	12V power panel	Auxiliary dashboard frame	$0.5 \pm 0.3$	/	/	/	/	/
33	Front end cap of auxiliary fascia console	Front USB cover plate	$0.5 \pm 0.3$	/	$0 \pm 0.5$	/	/	/
34	Front end cap of auxiliary fascia console	Auxiliary dashboard frame	$0.5 \pm 0.3$	/	/	/	/	/
35	Auxiliary fascia console panel	Lower trim panel of the dashboard	/	/	/	/	/	/
36	Side guard plate of auxiliary fascia console	Auxiliary dashboard suspension frame	$0.5 \pm 0.3$	/	$-0.5 \pm 0.3$	/	/	/
37	Auxiliary dashboard suspension frame	Lower framework of auxiliary fascia console	$0.5 \pm 0.3$	/	/	/	/	/

### 11.12.1.3 Body dimensions

Body dimensions are used for body check.

Please use a special extension ruler when measuring the body dimensions.

Dimensions of body front

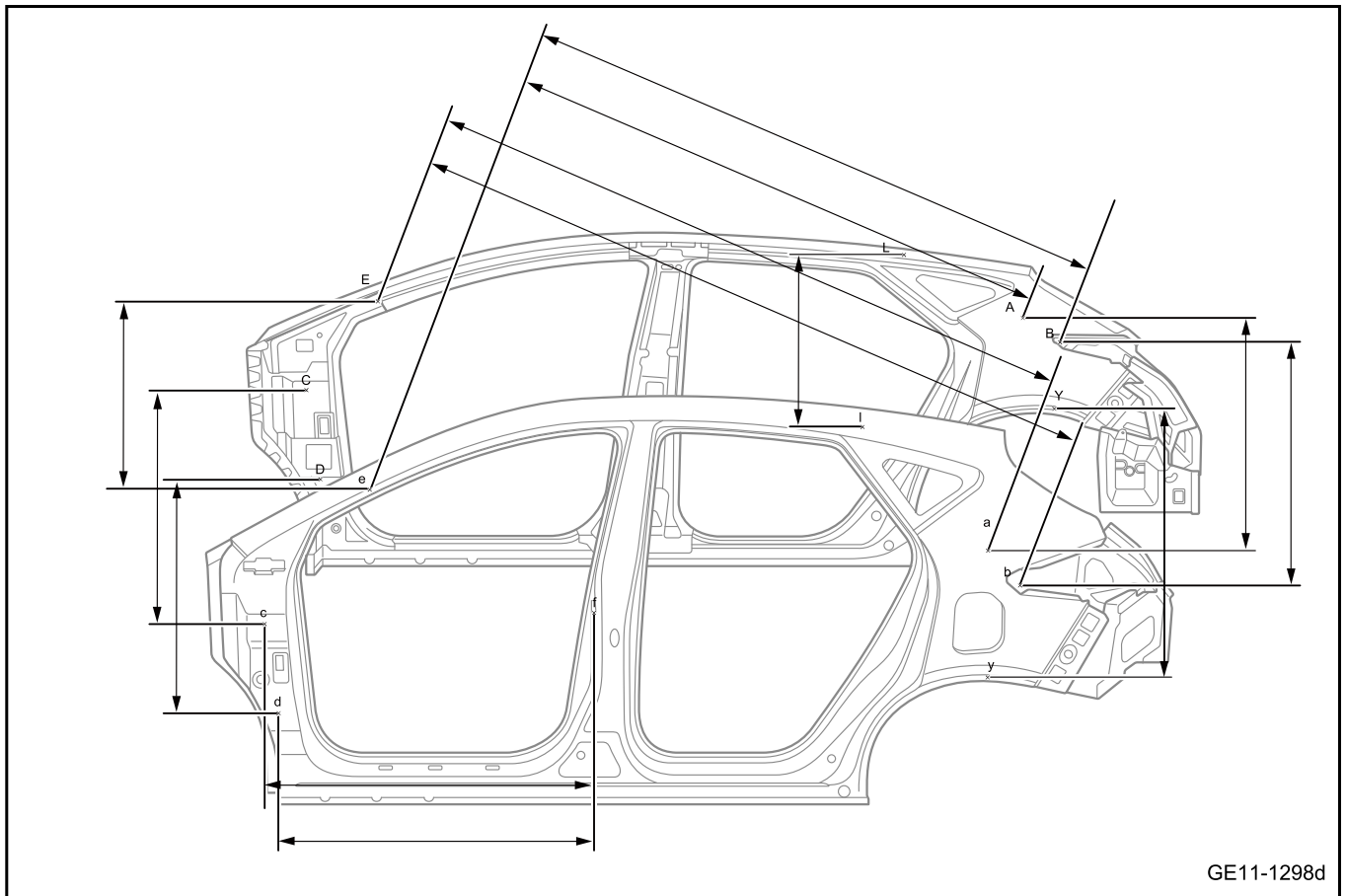


GE11-1288d

Position	Dimensions	Value (mm)	Difference
Fender mounting hole (front)	A-a	1448.6	±1.5
Fender mounting hole (front) - front reducer mounting hole (inside)	A-b	1367.9	±1.5
Front shock absorber positioning hole (inside)	B-b	1104.7	±1.5
Front shock absorber positioning hole (inside)-front engine compartment hood hinge hole (rear)	b-d	205.4	±0.5
Main water guide board mounting hole 1	E-e	1510	±1.5
Main water guide main board mounting hole 1-side body outer panel/roof joint	e-h	1196.1	±1.5
Joint between side wall outer panel/roof	H-h	1087.5	±1.5

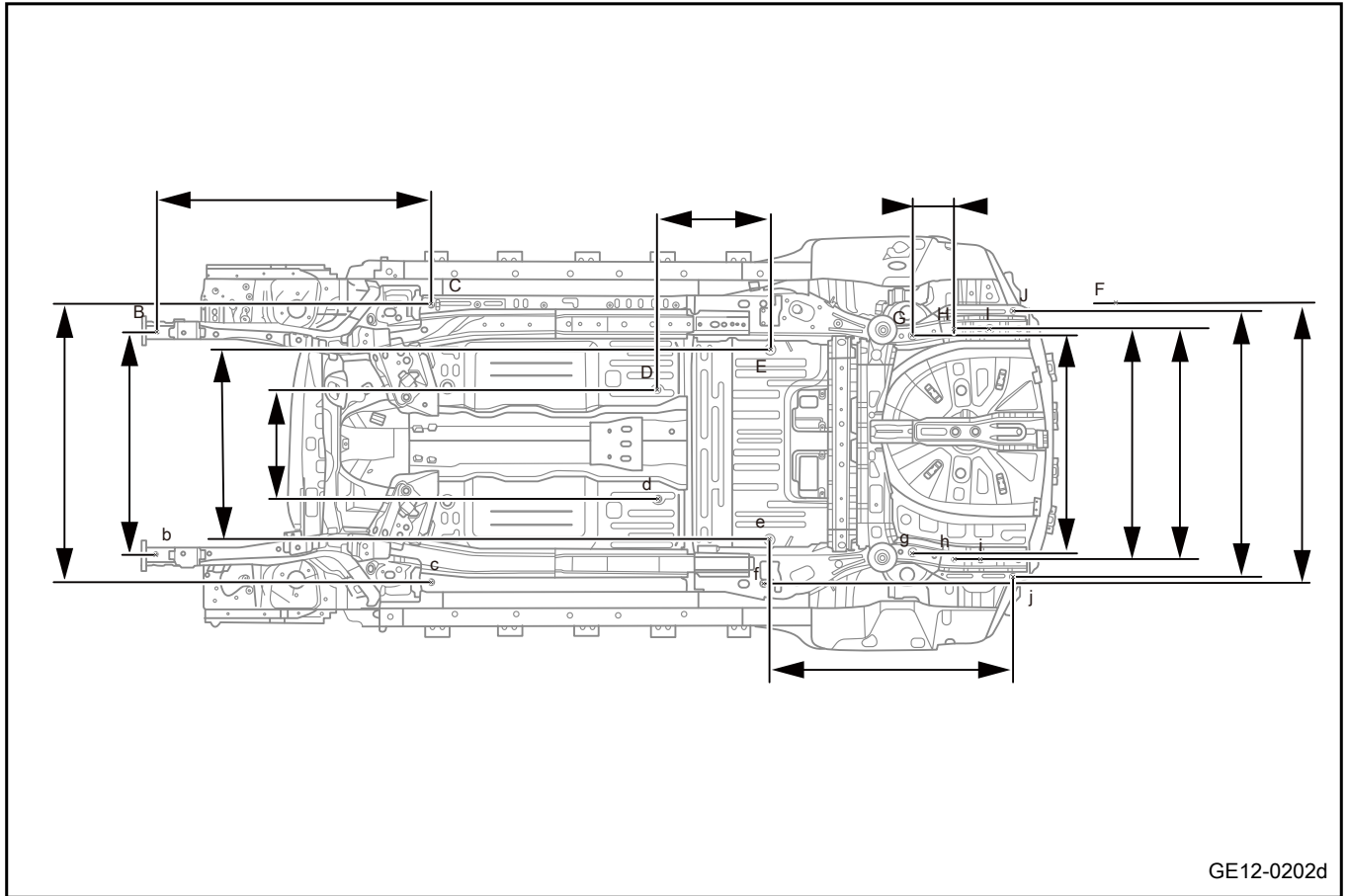
Position	Dimensions	Value (mm)	Difference
Main water guide main board mounting hole 1-side body outer panel/roof joint	E-h	1752.9	±1.5
Main water guide main board mounting hole 1-side body outer panel/roof joint	e-H	1752.9	±1.5
Front windshield non-slipping block mounting hole	G-g	700	±0.5
Front headlamps mounting holes (rear)	M-m	1472	±1.5
Front cross beam mounting hole (lower)	N-n	904	±1.5

Dimensions of body middle



Position	Dimensions	Nominal dimensions	Difference ( $\pm$ )
Side body outer panel/front joint part of the roof-side body outer panel/rear combination lamp panel joint	e-A	2434.2	$\pm 2.5$
Side body outer panel/front joint part of the roof-side body outer panel/rear combination lamp panel joint	E-a	2434.2	$\pm 2.5$
Joint between side wall outer panel/roof front section - rear combination lamp mounting holes	e-B	2315	$\pm 2.5$
Joint between side wall outer panel/roof front section - rear combination lamp mounting holes	E-b	2315	$\pm 2.5$
Side body outer panel/rear combination lamp panel joint	A-a	1300	$\pm 1.5$
Upper hinge mounting hole of front door (rear)	C-c	1589.4	$\pm 1.5$
Front door lower hinge mounting hole (front)	D-d	1611.7	$\pm 1.5$
Side wall outer panel/front junction of roof	E-e	1087.5	$\pm 1.5$
Rear shock absorber mounting hole	Y-y	1136.5	$\pm 1.5$
Side wall outer panel/roof junction	L-l	895.5	$\pm 1.5$
Upper hinge mounting hole of front door (rear) – lock catch mounting hole of front door (upper)	c-f	997.9	$\pm 1.5$
Lower hinge mounting hole of front door (front) – lock catch mounting hole of front door (upper)	d-f	992.5	$\pm 1.5$

Dimensions of body bottom

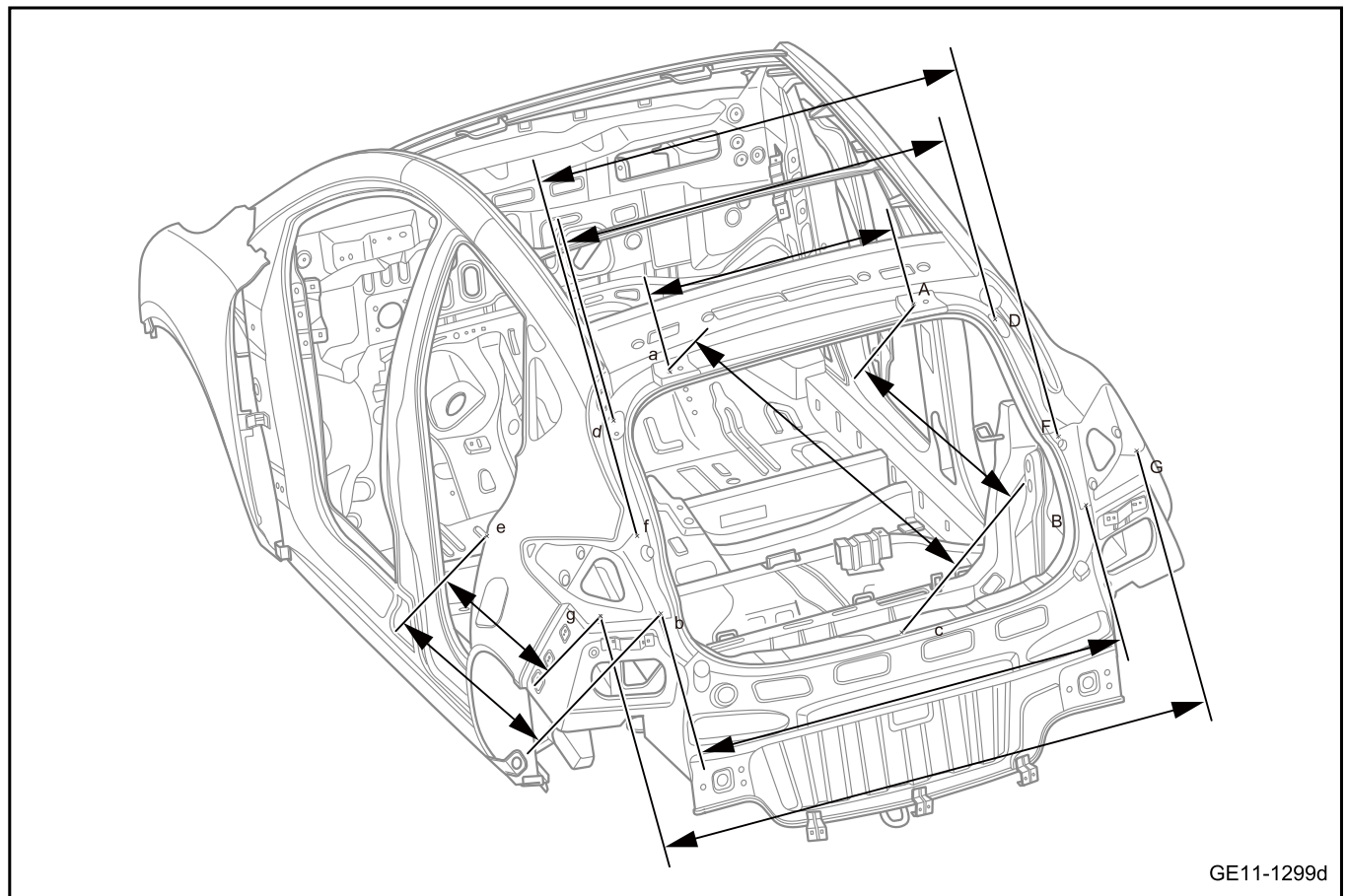


GE12-0202d

Position	Dimensions	Nominal dimensions	Difference (±)
Front side member locating hole	B-b	976	±0.5
Front side member locating hole - front floor mounting holes	B-C	1190	±1.5
Front floor locating holes (front)	C-c	1218	±1.5
Front floor locating holes (rear)	D-d	470	±0.5
Front floor positioning holes (rear) - middle floor positioning holes (front)	D-E	492	±0.5
Middle floor positioning hole	E-e	830	±0.5
Middle floor positioning holes - rear floor positioning holes	e-j	1086	±0.5
Rear side member locating hole (front)	F-f	1225.92	±1.5
Rear side member locating hole (rear)	G-g	944	±1.5

Position	Dimensions	Nominal dimensions	Difference (±)
Rear side member rear section locating hole (front)	H-h	1010	±1.5
Rear side member rear section locating hole (front)	I-i	1010	±1.5
Rear side member locating hole (rear) - Rear side member rear section locating hole (front)	G-H	231.96	±1.5

Dimensions of body rear



GE11-1299d

Position	Dimensions	Nominal dimensions	Difference (±)
Backdoor hinge mounting hole (outer) - Rear combination lamp mounting hole	a-b	626.6	±0.5
Backdoor hinge mounting hole (outer) - backdoor lock catch mounting hole (left)	a-c	875.5	±1.5
Backdoor hinge mounting hole (outer) - backdoor lock catch mounting hole (left)	a-c	891.4	±1.5

Position	Dimensions	Nominal dimensions	Difference ( $\pm$ )
Backdoor pneumatic rod mounting hole (upper)	D-d	1063.4	$\pm 1.5$
Rear combination lamp mounting hole	B-b	1261.8	$\pm 1.5$
Rear combination lamp mounting hole - rear door front lock catch mounting hole (upper)	b-e	691.8	$\pm 1.5$
Rear combination lamp mounting hole	F-f	1429.3	$\pm 1.5$
Rear combination lamp mounting hole	G-g	1528.2	$\pm 1.5$
Rear combination lamp mounting hole - rear door front lock catch mounting hole (upper)	g-e	518.9	$\pm 1.5$



## 11.12.2 Description and operation

### 11.12.2.1 Safety precautions

The following safety precautions must be strictly observed during the maintenance and operation of body sheet metal:

1. During the operation of welding, cutting and polishing body sheet metal, the protective suit, goggles, gloves and work shoes must be worn.
2. The welding area must be well ventilated.
3. Before welding, the battery must be disconnected and the wiring terminal must be covered.
4. If sparks may be generated when working near the battery, the battery must be removed.
5. Before removing the components of the complete vehicle, the vehicle must be fixed on the vehicle lifting frame to avoid the change of gravity of the complete vehicle center, thus affecting operational safety.
6. Directly connect the grounding wire of the welding set to the part to be welded. Make sure that there is no conductive part between the grounding point and the welding point during operation.
7. The grounding wire or welding electrode cannot be connected with the electronic control unit and the wire.
8. Unprotected vehicle cannot be parked in the body maintenance area, because shattering sparks may cause the fire and damage lacquer surface and glass.
9. Any component of the A/C system containing refrigerant cannot be welded, brazed or soldered. Any other components in the vehicle that may cause the A/C system component temperature to rise shall not be welded, because they may cause the A/C system to explode. If welding must be conducted near the refrigerant hosepipe, the refrigerant must be recycled, because the invisible ultraviolet ray generated during welding penetrating the refrigerant hosepipe may cause the refrigerant to decay.
10. The battery grounding line must be disconnected during the airbag system operation or the body calibration. The environment temperature around the airbag component should not exceed 100°C (212°F).

### 11.12.2.2 Status of parts and components

Before repaired automobile or components are delivered to painting hall for painting, their surface must be smooth and seam-filled, and must be polished with sandpaper. The preparation procedure is completed by panel beater. Body and floor components are mainly formed by steel plate cold

stamping. Therefore, same method should be adopted for parts damaged in accident. If damaged components cannot be restored and neighbor parts are corrected, damaged part should be removed and replaced according to the integrity of parts. Do not carry out monomer cutting for parts. The rigidity of complete vehicle, driving safety and convenience of maintenance will be influenced after cutting and melting.

### 11.12.2.3 Description of welding types

Common welding types include spot welding, gas shielded welding and brazing. The number of welding spots shall not be reduced during spot welding. Usually, when the spot-welding device cannot be operated, the plug welding can be carried out through gas shielded welding after drilling. When spot welding is adopted, if it is a connection of three-layer plates and only the outer plate is replaced, the solder joint shall be placed on the original one. When spot welding is adopted, single-row weld, double-row weld and double-row offset weld can be generated. When gas shielded welding is adopted, overlapping weld, continuous weld and continuous weld (intermittent) can be generated. Brazing is commonly used to weld and repair areas with low tensile strength and relatively small component thickness.

### 11.12.2.4 Anti-corrosion treatment

1. Recognized materials must be used to restore the standard anti-corrosion later after repair.
2. Both sides of all welds must be coated with the primer before sealing.
3. Sheet metal coated with primer must be coated with sealant.
4. Lap plates, metal edges, butt welds and welds must be sealed with sealant.
5. The bottom plate must be coated with long-term bottom plate protection agent.
6. After surface coating spraying, empty cavity protection materials must be used to treat the empty cavities within repair area.
7. Clean the outlet after the empty cavity protection materials dry.

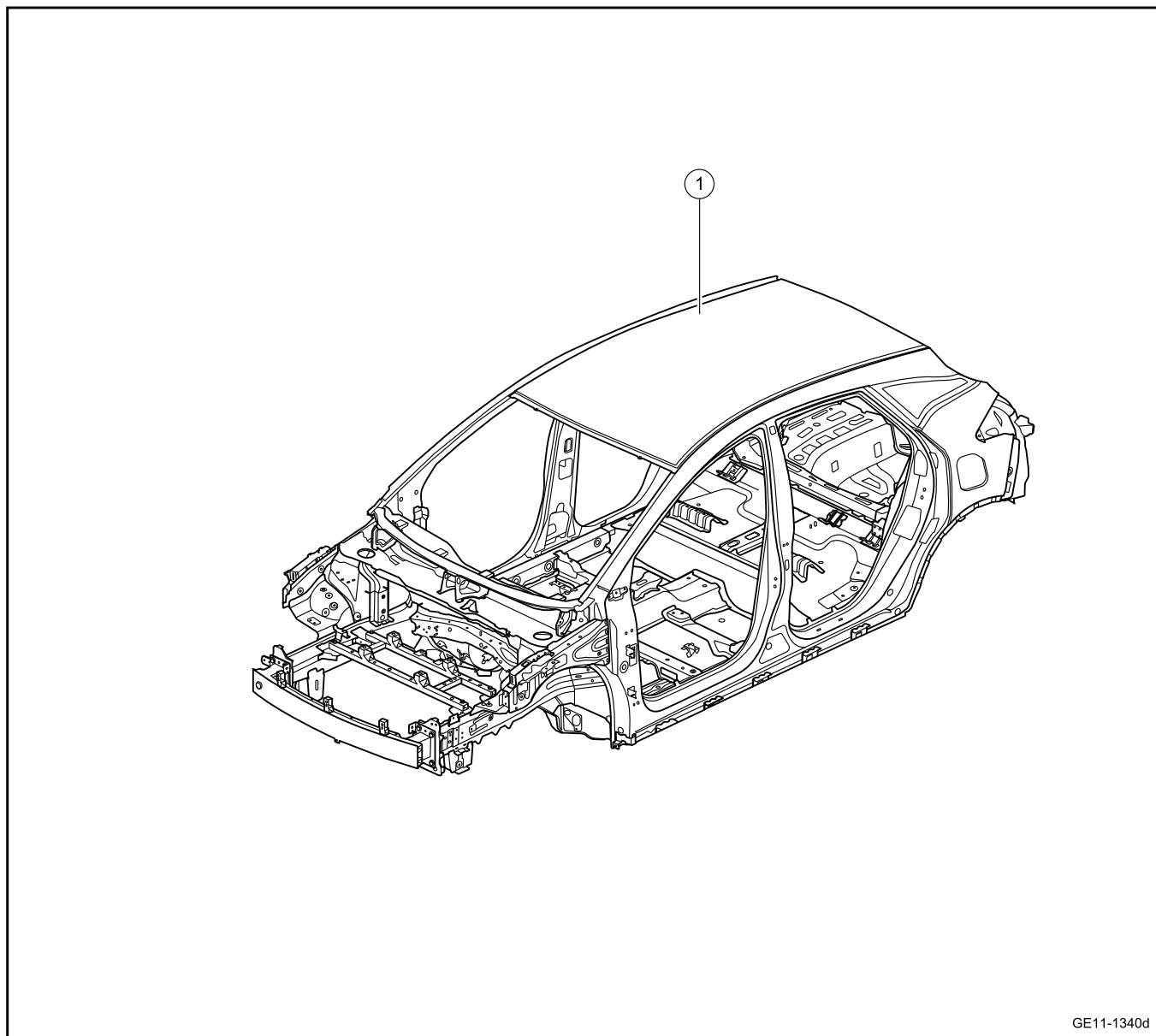
### 11.12.2.5 Scrapped Components Environmentally Friendly Disposal Approach

1. After the maintenance or repair of an automobile, the waste materials must be collected by type.

2. Sort waste materials and check for reusability.

11.12.3 Exploded view

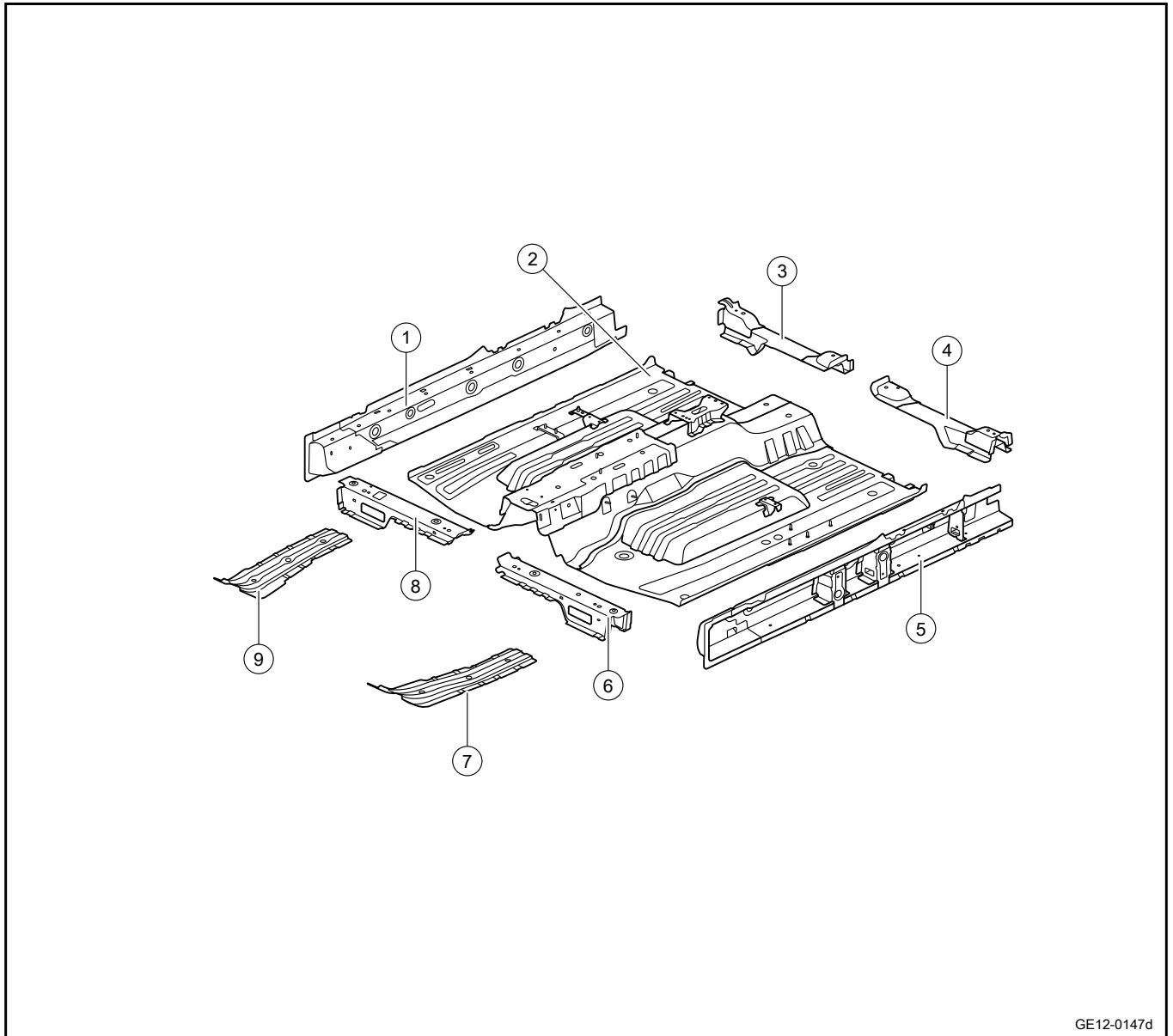
11.12.3.1 Vehicle body assembly



GE11-1340d

- 1. Body in white assembly

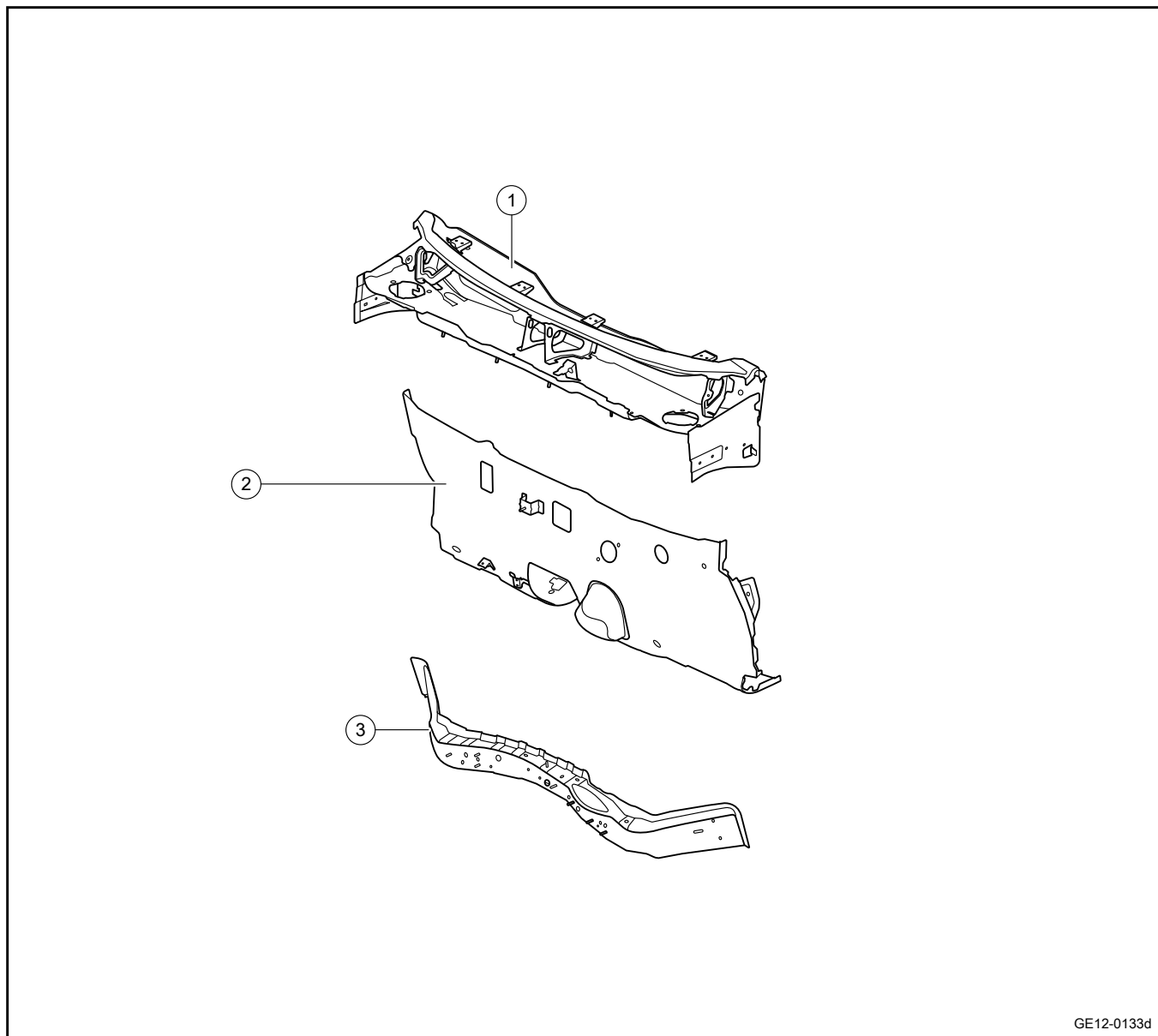
## 11.12.3.2 Front floor



GE12-0147d

- |   |  |
|---|--|
| 1. Right door sill inner plate assembly                   | 6. Front mounting cross beam assembly for front left seat  |
| 2. Front floor body assembly                              | 7. Front floor right upper side member                     |
| 3. Rear mounting cross beam assembly for front right seat | 8. Front mounting cross beam assembly for front right seat |
| 4. Rear mounting cross beam assembly for front left seat  | 9. Front floor left upper side member                      |
| 5. Left door sill inner plate assembly                    |  |

11.12.3.3 Front wall panel

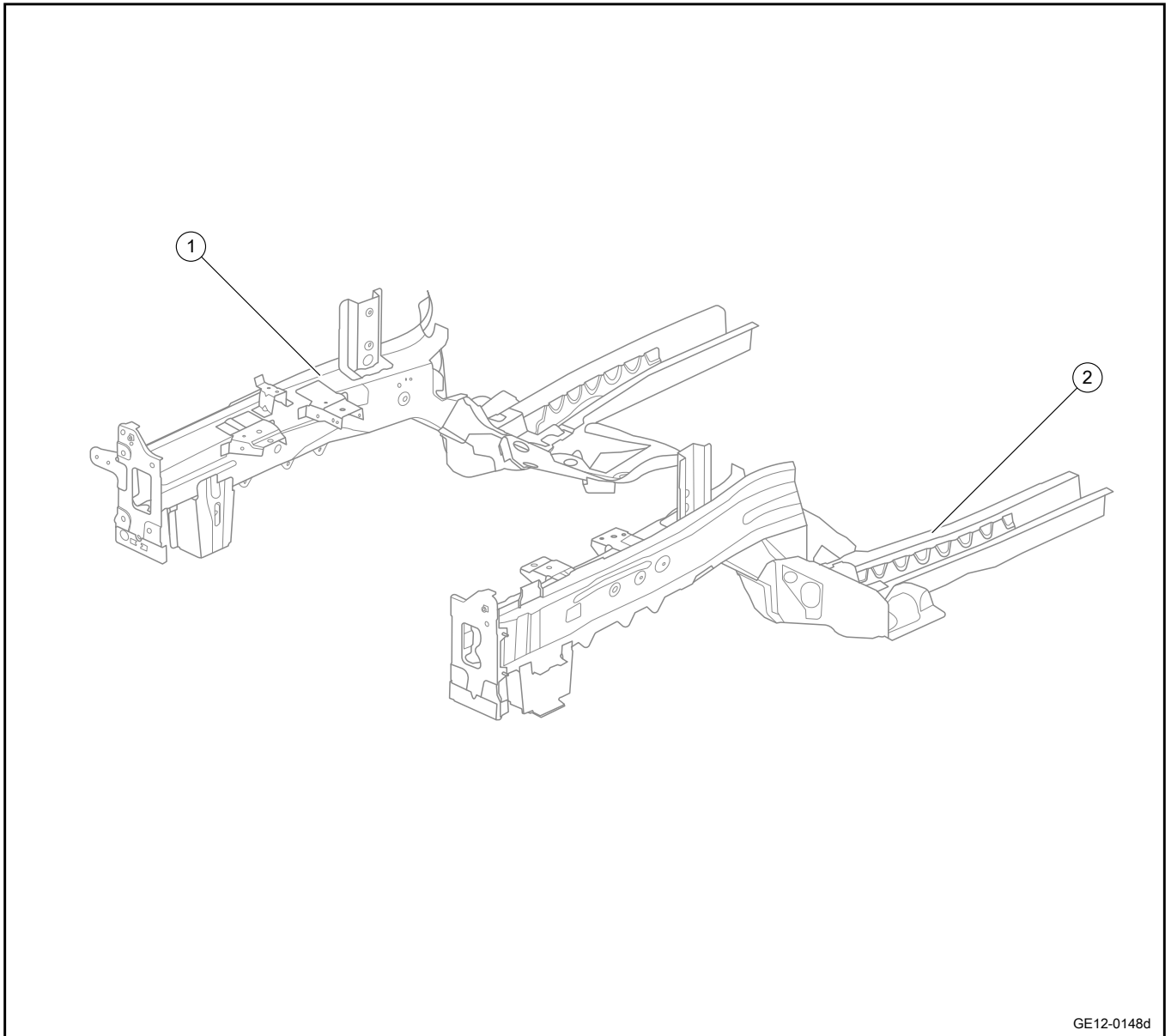


GE12-0133d

- 1. Front wall upper part assembly
- 2. Front body assembly

- 3. Front wall cross member assembly

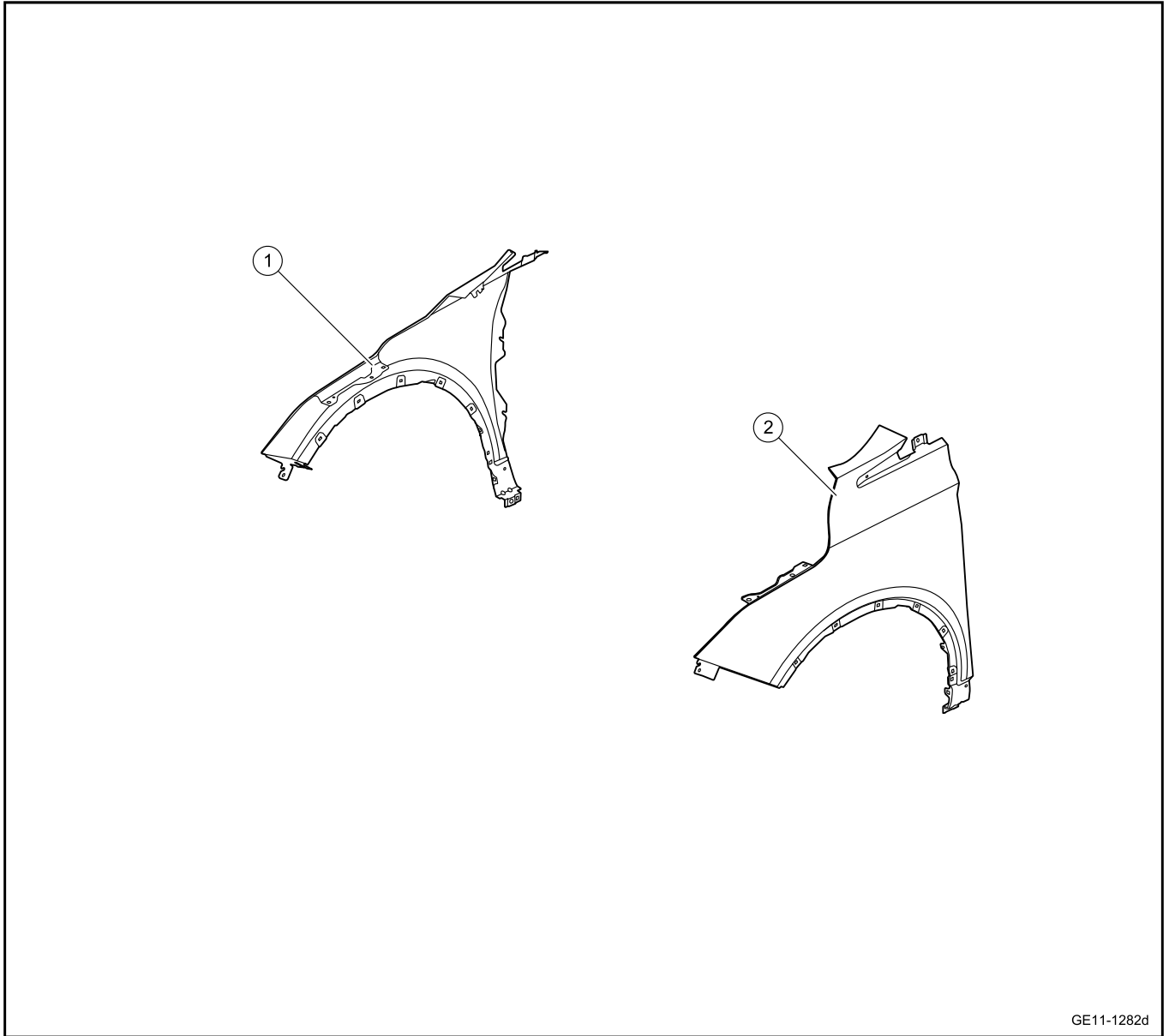
## 11.12.3.4 Front engine compartment



1. Right side member assembly

2. Left side member assembly

11.12.3.5 Front fender

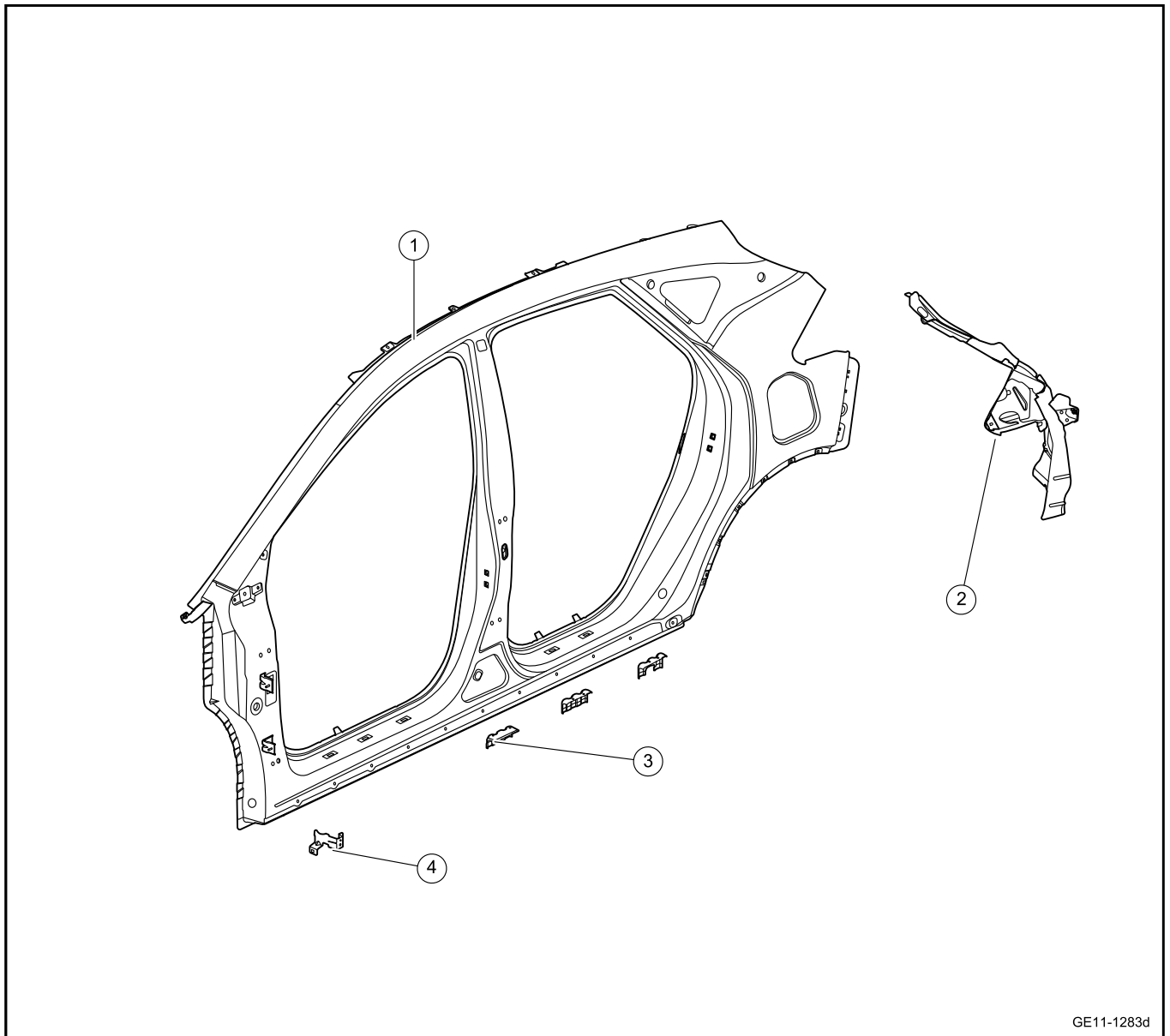


GE11-1282d

1. Front right fender

2. Front left fender

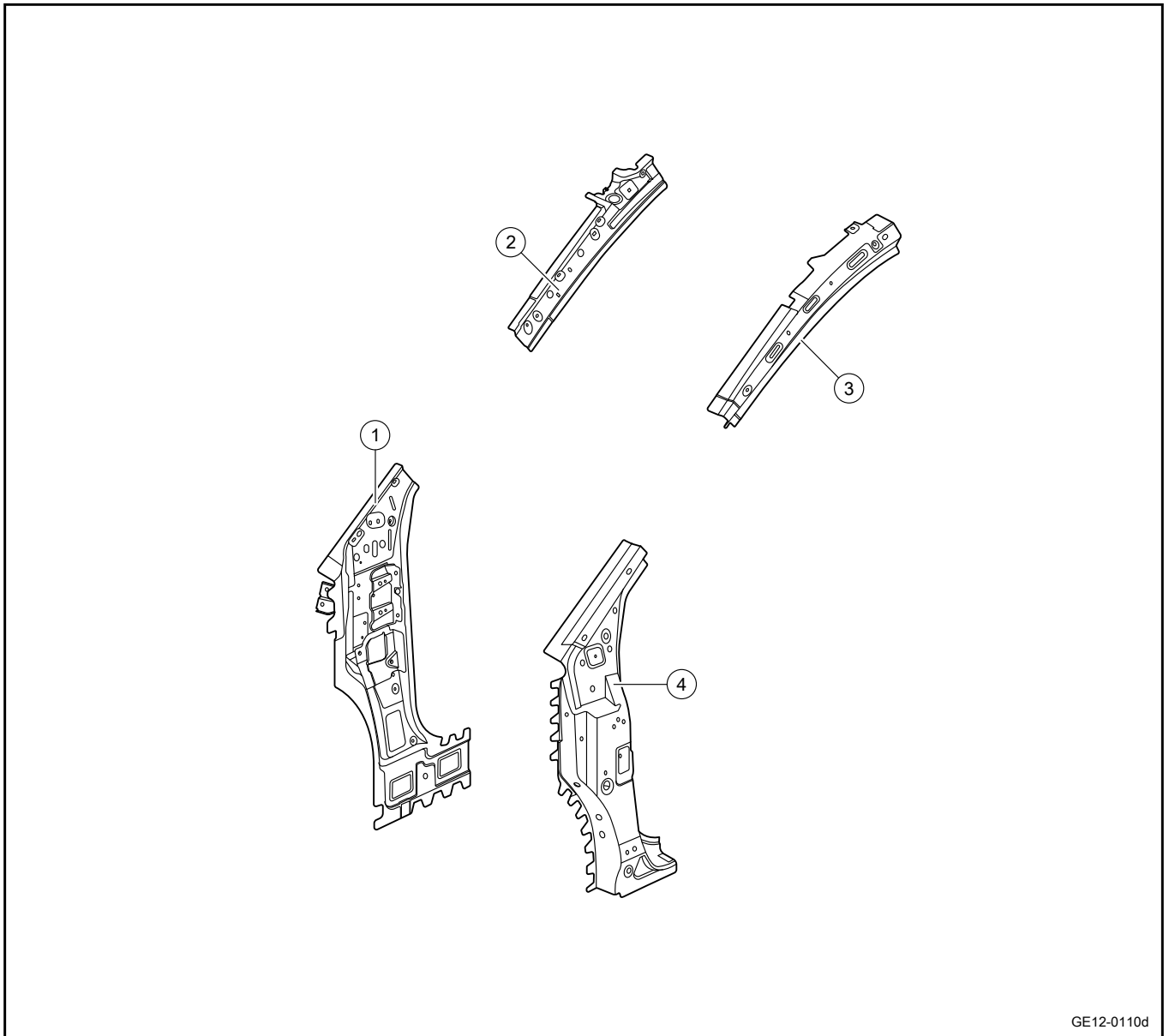
## 11.12.3.6 Side body



- |    |  |    |   |
|----|--|----|---|
| 1. | Left side wall outer panel                         | 3. | Side body door sill outer trim panel supporting bracket |
| 2. | Left rear combination lamp mounting plate assembly | 4. | Lower mounting bracket of left front fender             |



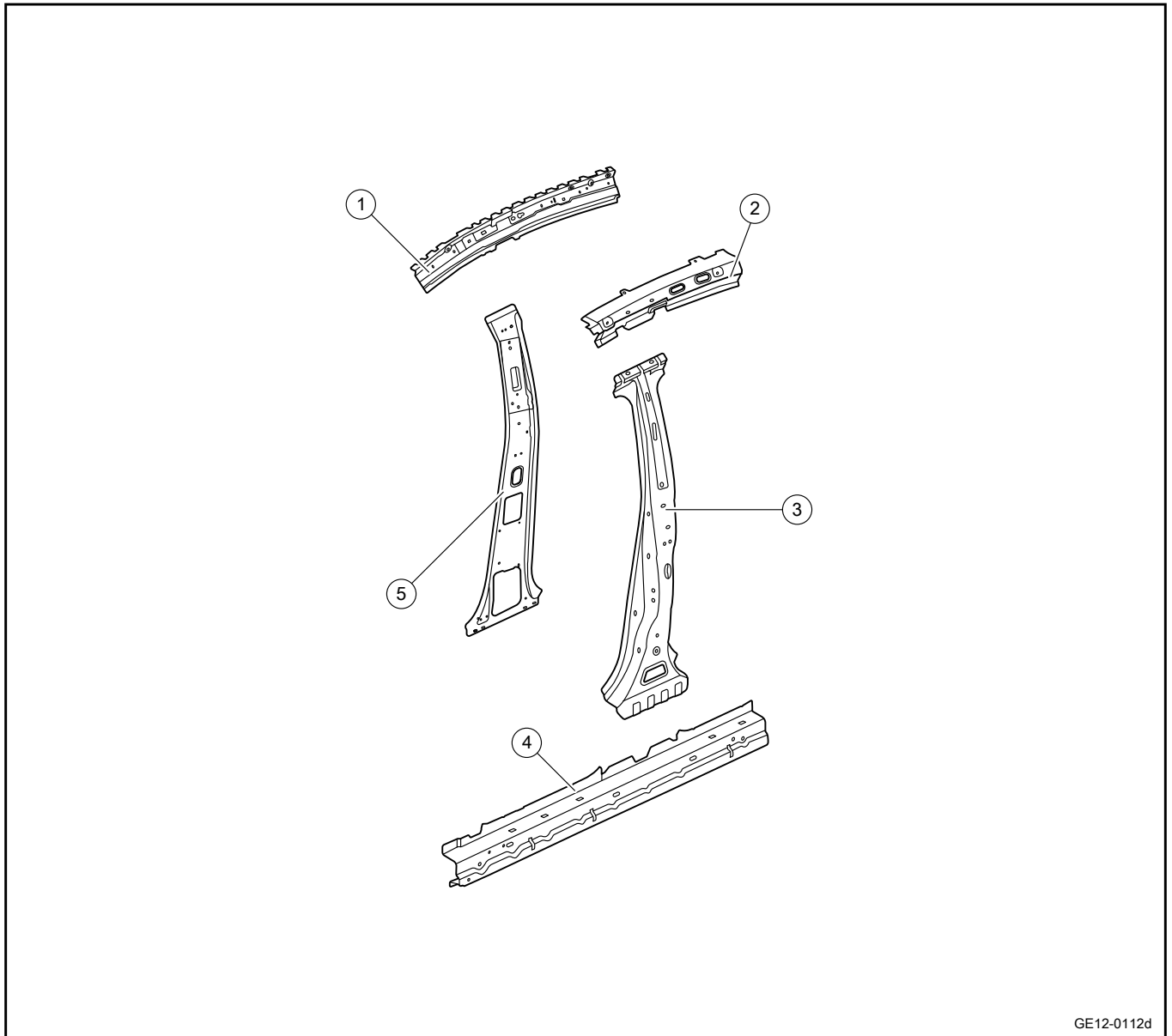
11.12.3.7 Front pillars



GE12-0110d

- |  |  |
|--|--|
| 1. Left A-pillar inner panel                               | 3. Left A-pillar upper reinforcing plate |
| 2. Left connecting plate of front cross member of the roof | 4. Left A-pillar lower reinforcing plate |

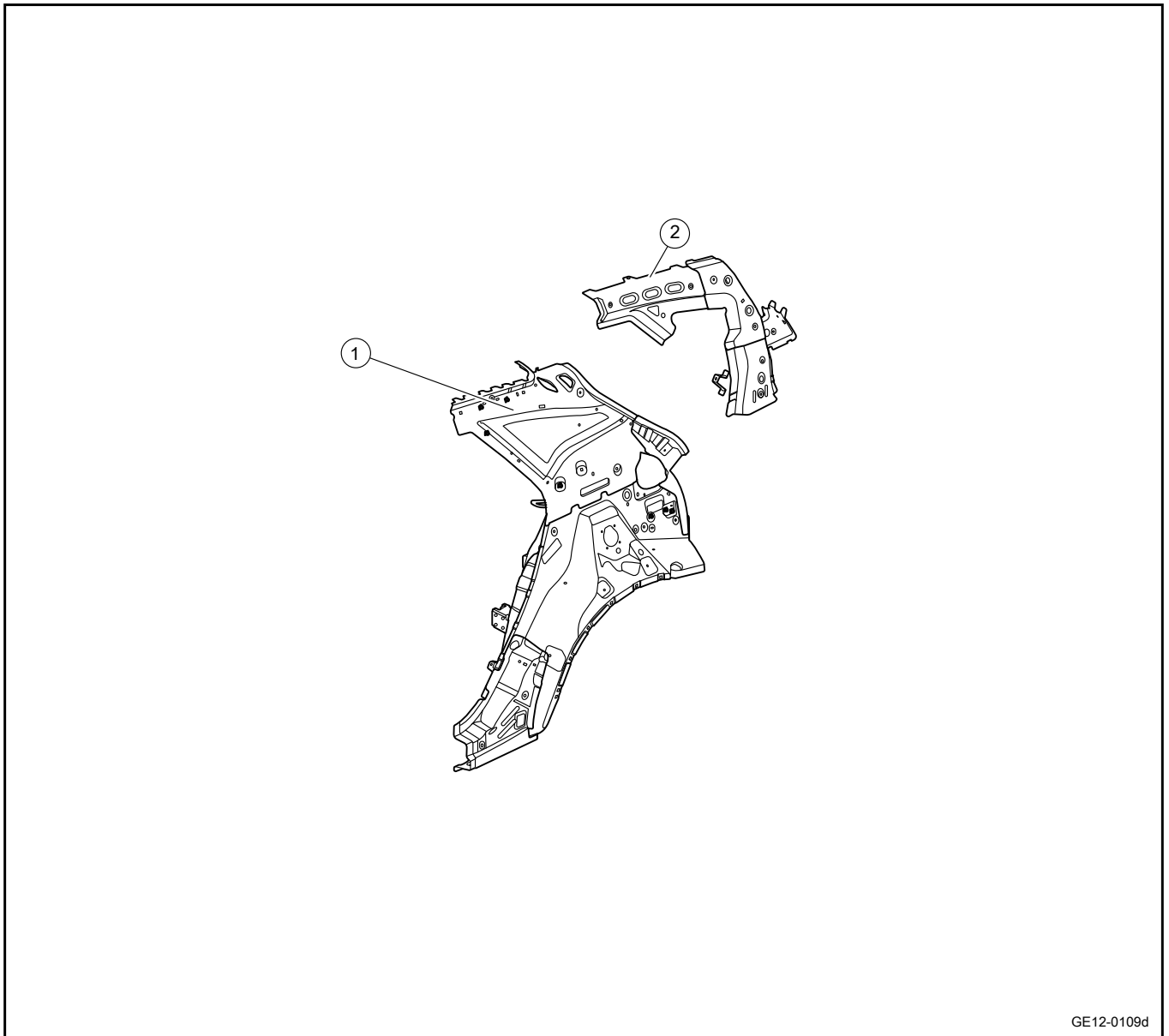
## 11.12.3.8 Middle pillars



GE12-0112d

1. Reinforcing plate of left front edge beam
2. Reinforcing plate cantrail LH
3. Left middle pillar outer reinforcing plate
4. Reinforcing plate of left door sill
5. Left middle pillar inner plate

11.12.3.9 Rear pillars

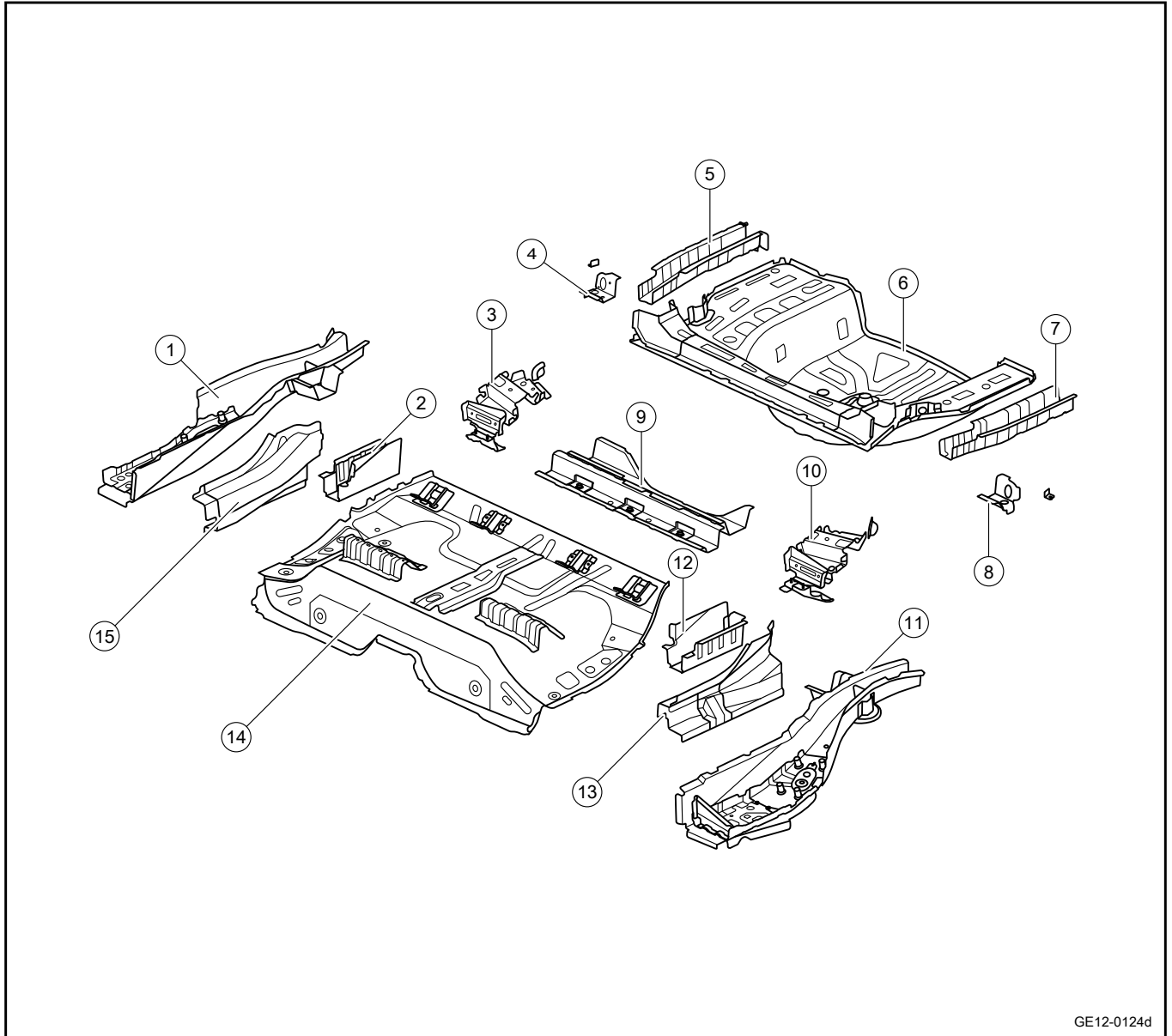


GE12-0109d

1. Front reinforced plate of left rear column

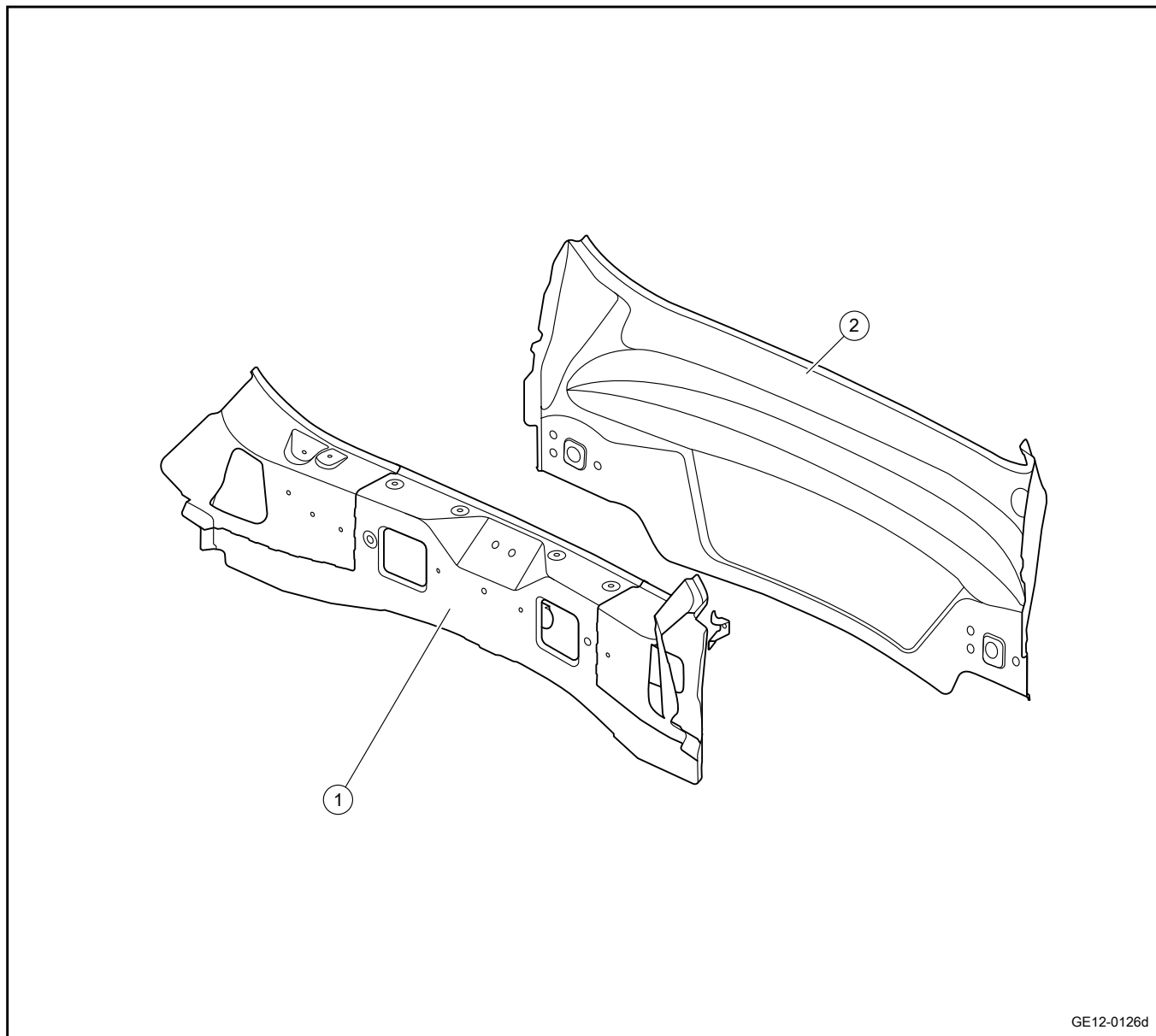
2. Left rear pillar reinforcement plate assembly

## 11.12.3.10 Rear Floor



- |  |  |
|--|--|
| 1. Front section assembly of right longitudinal beam of rear floor       | 9. Lower beam at the front of the middle floor                     |
| 2. RR side member subassembly  | 10. Left rear seat belt mounting plate assembly                    |
| 3. Right rear seat belt mounting plate assembly                          | 11. Front section assembly of left longitudinal beam of rear floor |
| 4. Power wire harness middle cover plate right mounting bracket assembly | 12. RL side member subassembly                                     |
| 5. RR side member body subassembly                                       | 13. Left door sill rear section rear connecting plate assembly     |
| 6. Rear floor body subassembly   | 14. Middle floor assembly  |
| 7. RL side member body assembly  | 15. Right door sill rear section rear connecting plate assembly    |
| 8. Power harness middle cover plate left mounting bracket assembly       |  |

11.12.3.11 Rear wall

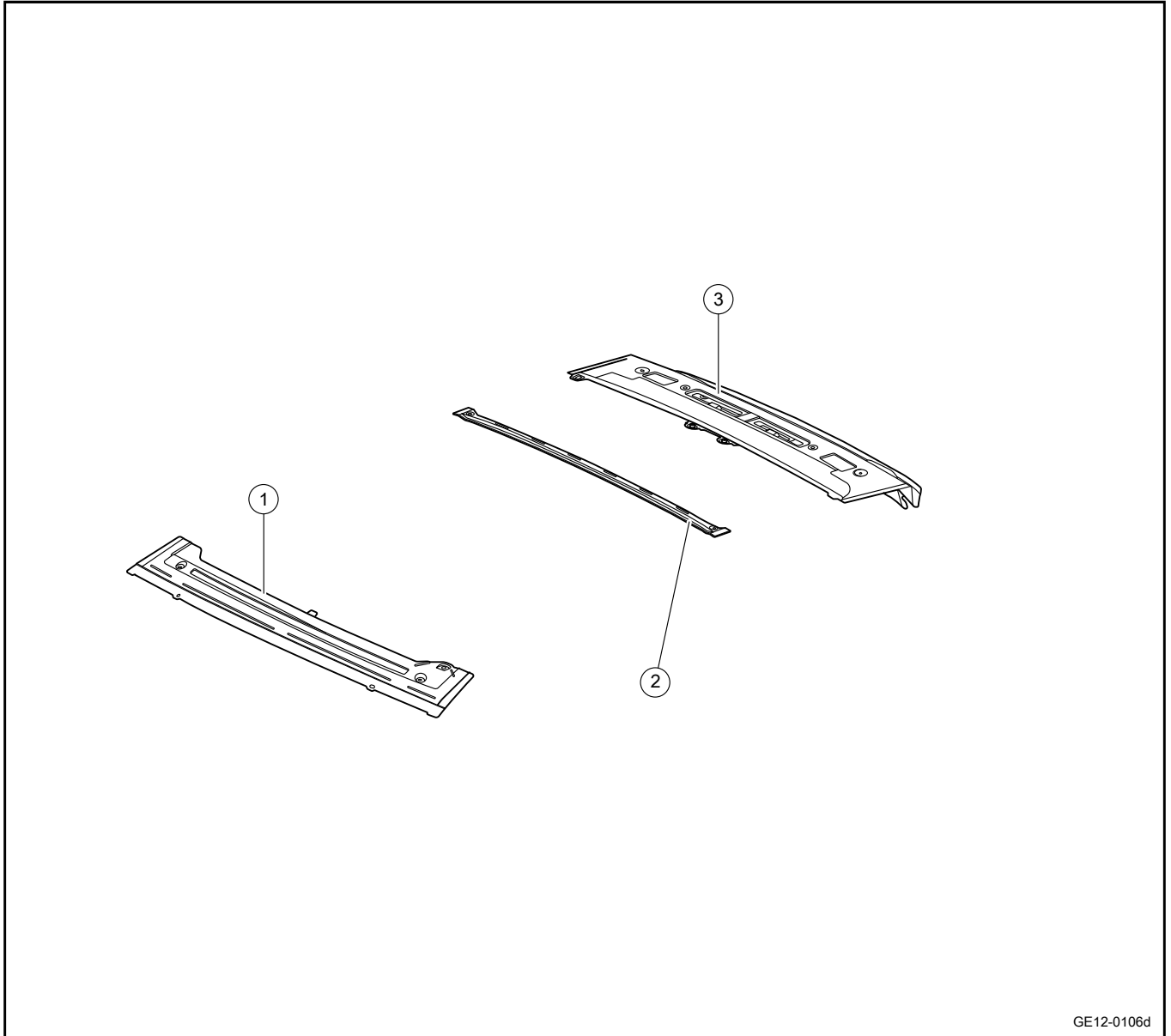


GE12-0126d

1. Rear wall upper cross member assembly

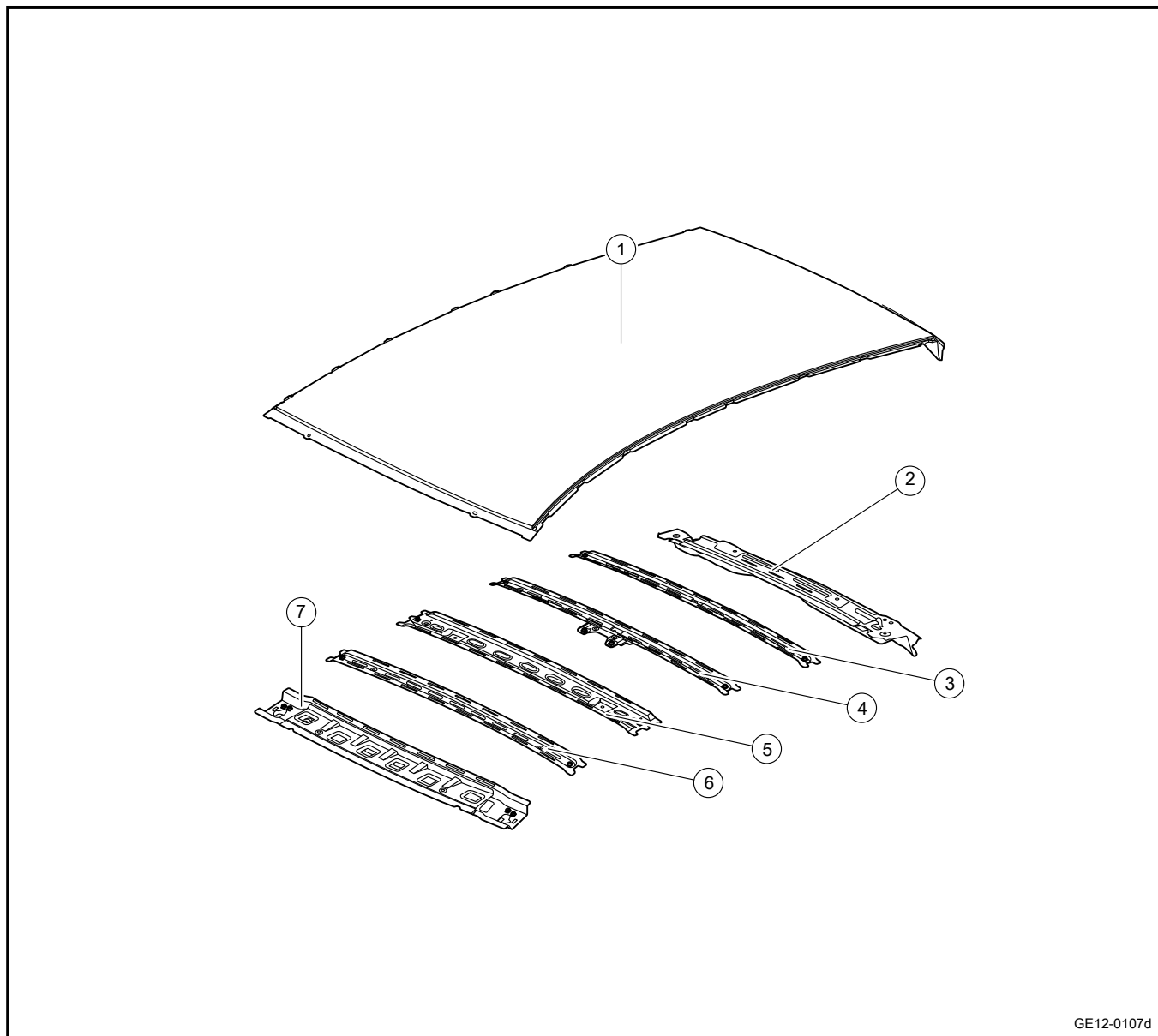
2. Rear panel sub-assembly

## 11.12.3.12 Vehicle roof



1. Front mounting cross member assembly of the roof
2. Middle panel roof bow
3. Rear mounting cross member assembly of the roof

11.12.3.13 Roof (low configuration)



GE12-0107d

- |                                 |  |
|---------------------------------|--|
| 1. Ceiling                      | 5. Middle crossmember assembly of roof                   |
| 2. Assembly-rear panel roof bow | 6. Front crossbeam of roof                               |
| 3. Panel roof bow               | 7. Reinforced plate for the front cross beam of the roof |
| 4. Panel roof bow               |  |

## 11.13 Paint coating

### 11.13.1 Specification

#### 11.13.1.1 Specification

Refer to technical specifications provided by the supplier of materials.



## 11.13.2 Description and operation

### 11.13.2.1 Paint coating description

Paint is a kind of mixed liquid and can be coated on multiple substrates. The paint forms a solid paint film after drying, thus realizing the targets of substrate protection and attractive appearance. The following 4 paints have already been painted when vehicles leave the factory to provide good anti-corrosion performance and gloss.

1. Electrophoresis primer
2. Middle paint
3. Color paint
4. Celluloid paint (transparent outer coating)

#### Main effects of electrophoresis primer:

1. Rust-proof
2. Improvement of working adhesion
3. Improvement of limited filling

#### Main effects of fueller-lackierung:

1. Filling
2. Isolation/tightness
3. Foiling color paint

#### Main effects of color paint:

1. Adding color
2. Providing gloss

#### Main effects of celluloid paint:

Celluloid paint is at the outermost layer of the whole lacquer and have the following main effects:

1. Including anti-ultraviolet ray materials to resist the ultraviolet ray in sunshine.
2. Resisting the corrosion effect of ambient dust (acid rain) on lacquer.
3. Allowing the lacquer to have friction resistance performance.
4. Providing better gloss for the lacquer.

Paint spraying is required to restore the repaired parts; spraying process specified by the manufacturer must be strictly complied with during repair. Please refer to [Paint spraying process for rigid surfaces](#)

### 11.13.2.2 Routine vehicle paint maintenance

Please follow the following principles during the routine vehicle paint maintenance:

1. Please notice not to touch body paint with oily hands or scrub the paint with oily cloth during the vehicle repair and maintenance. Do not place the oily tools or the cleaning cloth with organic solvent on the body to avoid chemical reactions.
2. Do not carry out the secondary painting if there is no clear scratch to avoid improper paint color or poor combination.
3. Vehicles parking for a long time should be parked in a garage or well-ventilated areas. Vehicles should be covered with a dedicated body cover in winter. Cool places should be selected for temporary parking.
4. Avoid severe impacts, collisions and scratches of the body paint film. Damaged, sunken or fallen paint should be repair timely, better in the maintenance stations authorized by Geely.
5. High-quality detergent should be applied for body decoration cleaning. Do not scrub the body heavily during waxing and avoid paint layer penetration and exposure of original body. Clean the special traces with strong corrosion (e.g. asphalt, birds droppings, insects, etc.) timely. For this purpose, dedicated detergent must be used. Do not use a knife to scrape the traces or use gasoline to eliminate them to avoid paint damages.
6. Before, during and after vehicle utilization, it is required to clean dust on the body timely and reduce the dust adhesion due to static electricity of the body as possible.
7. Flush the body timely after rain. The rain stains on the body after rain will gradually decrease, but the concentration of acid materials in rainwater gradually increases. If the body is not flushed with clean water timely, the surface coating will be damaged after a long term.
8. Wait until the power synthesis box cools down and then wash the vehicle. Do not wash the vehicle under burning sun or at high temperature to prevent traces of detergent after drying up. The dedicated detergent must be used when customers wash vehicles by themselves, but do not use the high alkaline washing powder, suds or detergents to avoid washing away the grease in paint and accelerating the paint aging. When your vehicle is washed in a car washing station, please pay attention to prevent the washer from using the dewaxing detergent and avoid paint damages. Especially the vehicles running in costal or heavily polluted areas should be flushed once per day.

9. Clean and soft cloth or sponge should be used to wipe and wash the vehicle. Prevent metal filings and sand inside and do not dry cloth, towel or sponge to polish the vehicle to avoid scratches. During the scrubbing process, scrub the vehicle from top to bottom along the direction of water flow and do not make circles or scrub it horizontally.
10. Carry out waxing protection on the paint irregularly and go to the Geely authorized maintenance stations for care regularly (once a quarter) to timely restore the gloss of body paint. In addition, body paint protection film is also available. 3M paint protection film (invisible vehicle clothing) is a kind of water white paint protection film with super strong toughness. Can be used to protect body bumper, front engine cover, front and rear doors, rearview mirrors and other coated paints to protect the body paint from scratches or paint peeling due to slight collision.

### 11.13.2.3 Warnings and notice in performing paint mixing and painting operations

#### Warning

During paint mixing and painting operations, diffuse solvents can cause serious respiratory illnesses. Operation must be in strict accordance with the manufacturer's instructions for paint, equipment and safety devices. During operations in accordance with this procedure, wear special protective equipment such as gas masks, anti-static clothing, protective eyewear and gloves to prevent injury.

#### Caution

Do not mix paint systems or alternative products from different manufacturers. Mixing of incompatible products may result in:

1. Primer peeling.
2. Poor inter-coat bonding.
3. Insufficient curing.
4. Reduced gloss.
5. Poor color accuracy.
6. Damage to coating (pits, bubbles, orange peel, and loss of gloss).

### 11.13.2.4 Cautions during finishing varnish maintenance and repair

#### Caution

1. Avoid washing the vehicle under direct sunlight.
2. Avoid using the strong soap and chemical detergent.
3. Use brushless automatic vehicle cleaning equipment.
4. Avoid using products containing acid or alkali.
5. Do not use the brush or broom to remove snow or ice.
6. After cleaning thoroughly, the remaining rinse water should be wiped dry immediately, and do not let it dry in air on the surface. It is recommended to wipe dry with soft chamois leather.
7. Only when the defect on the surface can be eliminated by the method of polishing, can the vehicle be polished.
8. If the surface condition is not serious, the maintenance part should be narrowed as much as possible.
9. Avoid removing too much celluloid paint, otherwise paint premature damage will be the result.
10. Use electric polishing equipment in strict accordance with the requirements of polishing manufacturers. Do not use wax or silicone products to cover vortex blot (the user will not be satisfied with the blot reappearing soon).

### 11.13.2.5 Notices for anti-corrosion treatment

#### Caution

1. When sound-proof or anti-corrosion materials are sprayed, preventive measures must be taken to avoid spraying into component openings (such as door locks, vehicle window lift slots, vehicle window regulators, and seat belt retractors) and any moving and rotating parts. After spraying the material, ensure that all vent holes on the body are open.
2. When the body is repaired with an open flame, the foamed sound insulation material must be removed from the repair part. When reinstalling the soundproofing material, avoid inhaling harmful dust.
3. When the procedure is performed, it is needed to wear dedicated protective glasses and gloves to prevent injury.
4. When the vehicle leaves the factory, the body metal plates have been treated with electrophoretic coating primer. After parts are repaired and/or replaced, all exposed metal surfaces must be treated with a rust-proof primer.
5. If the original coating or anti-corrosion material is damaged during welding or heating operation, it needs clean and anti-corrosion treatment.
6. When collision repairs are conducted, the metal will be exposed, and these surfaces must be re-sprayed with dedicated anti-corrosion materials.
7. The role of the sealant is to prevent water and dust from entering the vehicle, and it also has an anti-corrosion effect. The original seal joints are obvious. If these seals are damaged, they should be corrected by resealing. The joint of the newly replaced plate should be resealed. The sealant used must remain flexible after curing and painting. Seal open joints closed with sealant by high-consistency filler. Follow the descriptions for the selected materials.
8. The sound insulation material can control the general noise level in the vehicle. When the sound insulation layer is damaged due to maintenance operations or replacement of new panels, the same material must be used.

### 11.13.3 Diagnostic information and steps

#### 11.13.3.1 Common paint defects and treatment

##### Caution

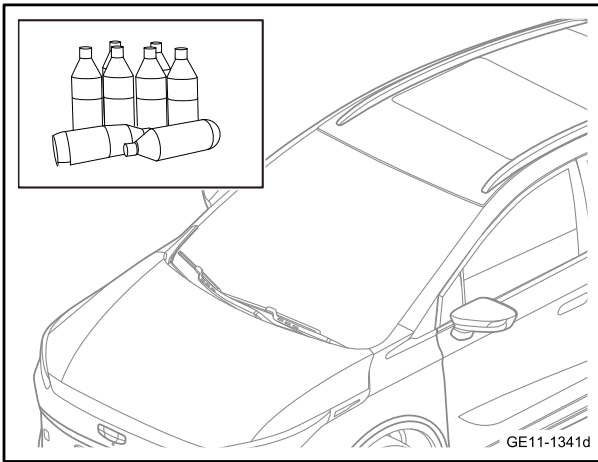
The black boxes in the table indicate the treatment of the defect.

Name	Causes	Treatment
Powder	<ul style="list-style-type: none"> <li>A. The paint film is subject to strong erosion. Such as the intense ultraviolet light.</li> <li>B. The proportion of paint is wrong during construction.</li> <li>C. The coating has poor light and weather resistance.</li> <li>D. Vehicles are not cleaned regularly or cleaned thoroughly.</li> <li>E. The selected vehicle cleaner is not suitable or the polishing paste is coarse.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. □</li> <li>B. Conventional grind and polishing treatment □</li> <li>C. Deep grind and polishing refurbishment treatment □</li> <li>D. Repair locally with painting. ■</li> </ul>
Plastic paint peeling	<ul style="list-style-type: none"> <li>A. The adhesive force of coating and substrate is too poor or the upper coating is too hard compared with the lower coating.</li> <li>B. The coating film is too thick and the paint film is subject to erosion of steam, acid, and alkali of the air.</li> <li>C. The recoatability of the lower coating is bad, or with improper processing. There are defects of pinholes and grinning on the upper coating.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. □</li> <li>B. Conventional grind and polishing treatment □</li> <li>C. Deep grind and polishing refurbishment treatment □</li> <li>D. Repair locally with painting. ■</li> </ul>
Cracking	<ul style="list-style-type: none"> <li>A. The primer base has not been fully blended before spraying.</li> <li>B. The surface coating is too thickly sprayed.</li> <li>C. The intermediate coating is too thickly sprayed.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. □</li> <li>B. Conventional grind and polishing treatment □</li> <li>C. Deep grind and polishing refurbishment treatment □</li> <li>D. Repair locally with painting. ■</li> </ul>
Bird droppings erosion	<ul style="list-style-type: none"> <li>A. Bird droppings dripping erosion.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing treatment (slight erosion). ■</li> <li>B. Conventional grind and polishing treatment (moderate erosion). ■</li> <li>C. Deep grind and polishing refurbishment treatment □</li> <li>D. Repair locally with painting (severe erosion). ■</li> </ul>
Scratch	<ul style="list-style-type: none"> <li>A. The painting film hardness is low.</li> <li>B. Being scratched by a hard object.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing treatment (slight scratch). ■</li> <li>B. Conventional grind and polishing treatment (coarse scratch). ■</li> <li>C. Deep grind and polishing refurbishment treatment □</li> <li>D. Repair locally with painting (scarification). ■</li> </ul>

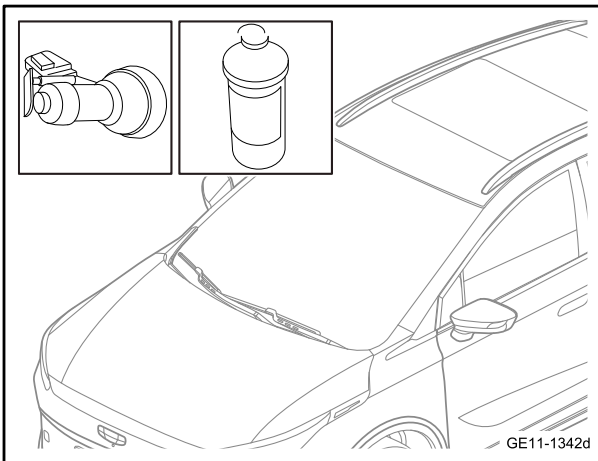
Name	Causes	Treatment
Corrosion	<ul style="list-style-type: none"> <li>A. The painting film is thin on the edges.</li> <li>B. Scratches cause corrosion.</li> <li>C. Acid and alkali erosion.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. <input type="checkbox"/></li> <li>B. Conventional grind and polishing treatment <input type="checkbox"/></li> <li>C. Deep grind and polishing refurbishment treatment <input type="checkbox"/></li> <li>D. Repair locally with painting (severe corrosion requires sheet metal repair before spraying repair). <input checked="" type="checkbox"/></li> </ul>
Paint peeling	<ul style="list-style-type: none"> <li>A. The adhesive force of coating and substrate is too poor or the upper coating is too hard compared with the lower coating.</li> <li>B. The coating film is too thick and the paint film is subject to erosion of steam, acid, and alkali of the air.</li> <li>C. The recoatability of the lower coating is bad, or with improper processing.</li> <li>D. There are defects of pinholes and grinning on the upper coating.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. <input type="checkbox"/></li> <li>B. Conventional grind and polishing treatment <input type="checkbox"/></li> <li>C. Deep grind and polishing refurbishment treatment <input type="checkbox"/></li> <li>D. Repair locally with painting (severe corrosion requires sheet metal repair before spraying repair). <input checked="" type="checkbox"/></li> </ul>
Acid rain erosion	<ul style="list-style-type: none"> <li>A. Acid rain erosion</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing treatment (slight erosion). <input checked="" type="checkbox"/></li> <li>B. Conventional grind and polishing treatment (moderate erosion). <input checked="" type="checkbox"/></li> <li>C. Deep grind and polishing refurbishment treatment <input type="checkbox"/></li> <li>D. Repair locally with painting (severe erosion). <input checked="" type="checkbox"/></li> </ul>
Loss of gloss	<ul style="list-style-type: none"> <li>A. The painting film is subject to severe erosion of acid, alkali, arc, seawater, and salt mist.</li> <li>B. Under severe conditions, the painting film maintenance method is incorrect.</li> <li>C. The painting is not durable enough.</li> <li>D. The inappropriate proportion of the painting during the construction causes poor endurance of the painting film.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing treatment (slight loss of gloss). <input checked="" type="checkbox"/></li> <li>B. Conventional grind and polishing treatment (moderate loss of gloss). <input checked="" type="checkbox"/></li> <li>C. Deep grind and polishing refurbishment treatment <input type="checkbox"/></li> <li>D. Repair locally with painting (severe loss of gloss). <input checked="" type="checkbox"/></li> </ul>
Bubbling	<ul style="list-style-type: none"> <li>A. The painting film is exposed to the humid environment for a long time and infiltrated by steam, and when the temperature rises, the steam jacks up the bubbles.</li> <li>B. The substrate is corroded by the substance infiltrated.</li> <li>C. The painting film is subject to the erosion of gasoline, acid, and alkali.</li> </ul>	<ul style="list-style-type: none"> <li>A. Polishing and refining treatment. <input type="checkbox"/></li> <li>B. Conventional grind and polishing treatment <input type="checkbox"/></li> <li>C. Deep grind and polishing refurbishment treatment <input type="checkbox"/></li> <li>D. Repair locally with painting (severe corrosion requires sheet metal repair before spraying repair). <input checked="" type="checkbox"/></li> </ul>

### 11.13.4 Removal and installation

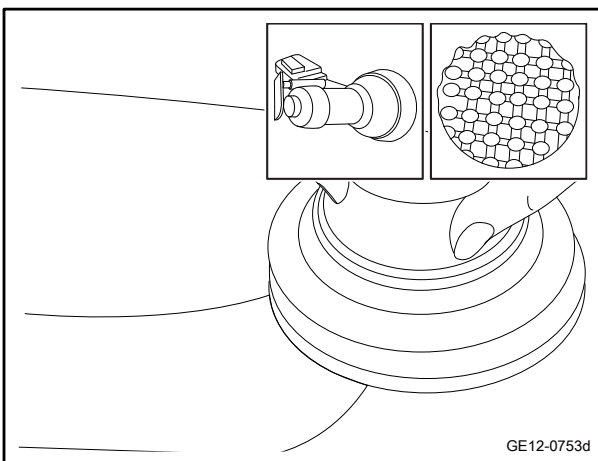
#### 11.13.4.1 Common coating film defect treatment example



- 1 Clean the surface to be polished with degreasing material before polishing.



- 2 First, moisten the sponge sufficiently, and squeeze out the excess water. Apply a small amount of polishing wax to the paint surface to be polished, and adjust the speed of the polisher.



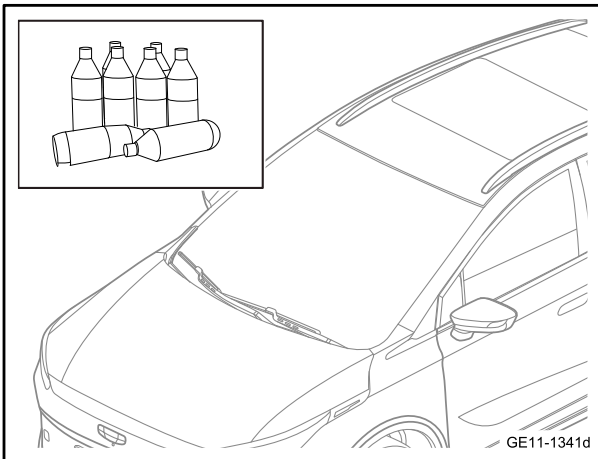
- 3 Put the sponge on the painted surface and then turn on the polisher at a speed of 2500-3000 r/min. Then lightly press for 3-5s for glazing.

#### Caution

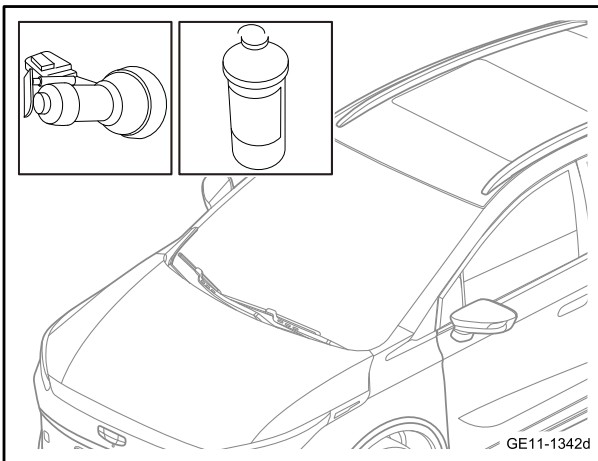
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

- 4 Wipe off the excess wax with cloth.

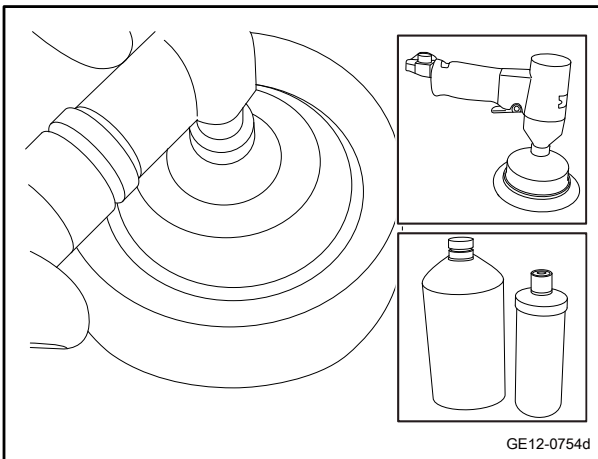
### 11.13.4.2 Conventional grind and polishing treatment process



- 1 Clean the surface to be polished with degreasing material before polishing.



- 2 Apply a proper amount of polishing paste to the paint surface to be polished and adjust the speed of the polishing machine.



- 3 Put the wool ball on the paint surface and then turn on the machine. The speed should be 2500 - 3000r/mi.

#### Caution

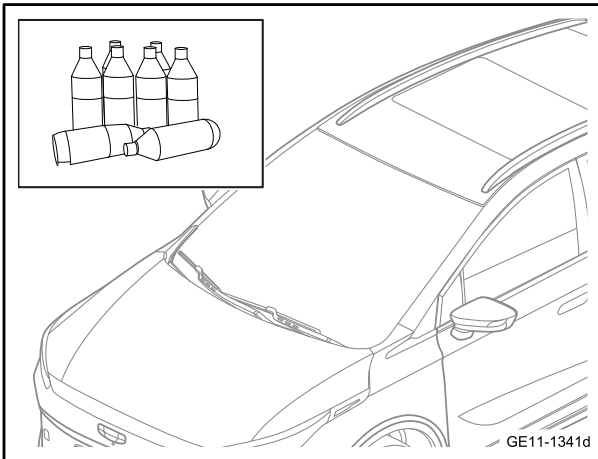
Keep the machine moving smoothly and gently as well as avoid excessive grinding. Ensure as-short-as-possible time for grinding and as-small-as-possible grinding area.

- 4 Fully moisten the sponge first, squeeze out the excessive water. Apply a small amount of glazing wax to the paint surface to be polished, attach the sponge onto the paint surface and then turn on the machine at a speed of 2500-3000r/min. Then lightly press for 3-5s for glazing.

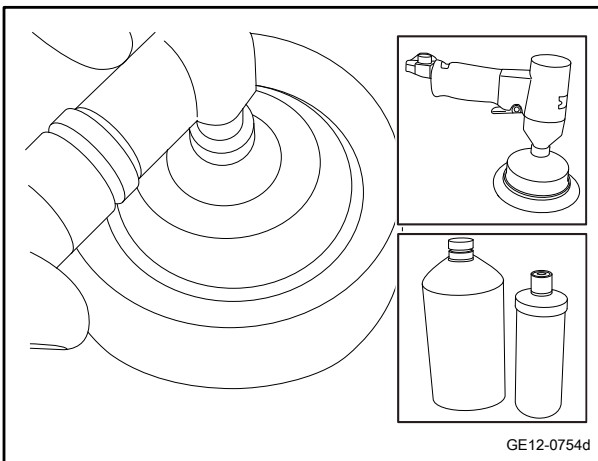
#### Caution

Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

### 11.13.4.3 Deep polishing treatment example

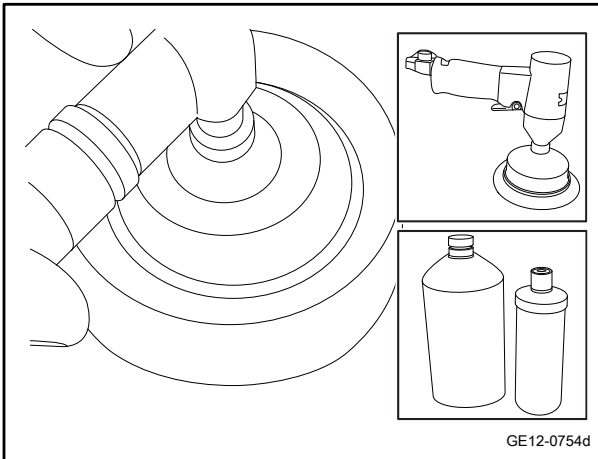


- 1 Use 2000 # waterproof abrasive paper to grind and process the damaged lacquer surface. Carry out the circular polish in the direction parallel and close to the lacquer surface to be polished.



- 2 Clean up the surface and polish dust.
- 3 Apply a proper amount of polishing paste to the paint surface to be polished and adjust the speed of the polishing machine.

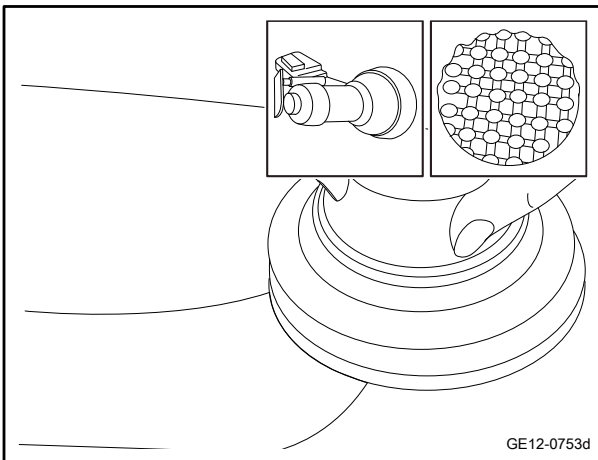




- 4 Affix the wool ball to the lacquer surface before starting the machine, with the revolving speed being 2,500 – 3,000r/min.

**Caution**

Keep the machine moving smoothly and gently as well as avoid excessive grinding. Keep the grinding time as short as possible (3-5s) and keep the grinding area as small as possible.



- 5 Fully moisten the sponge first, squeeze out the excessive water. Apply a small amount of glazing wax to the paint surface to be polished, attach the sponge onto the paint surface and then turn on the machine at a speed of 2500-3000r/min. Then lightly press for 3-5s for glazing.

**Caution**

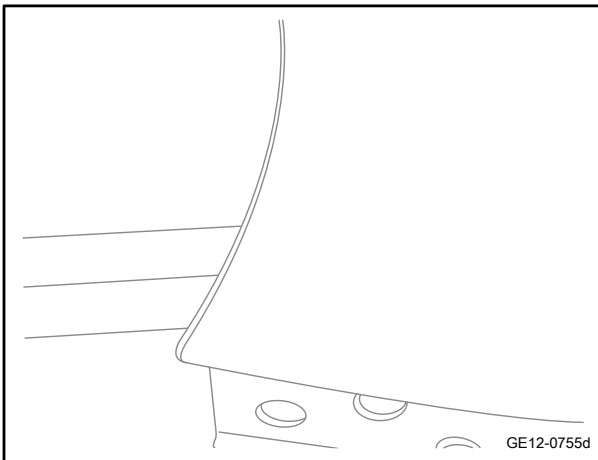
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

#### 11.13.4.4 Rigid surface spray paint process

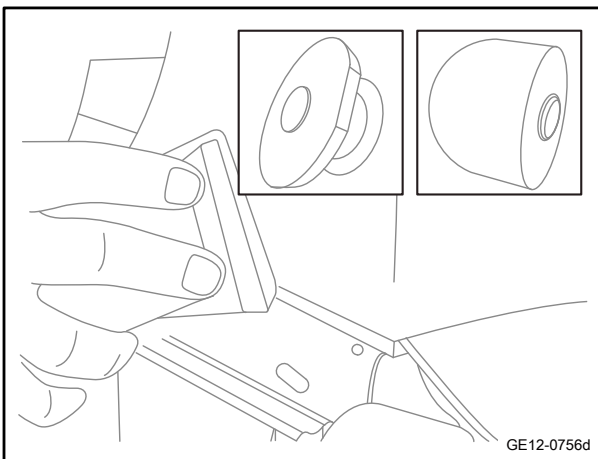
Fender is taken as an example to describe the partial spraying (paint touch-up) process

##### Caution

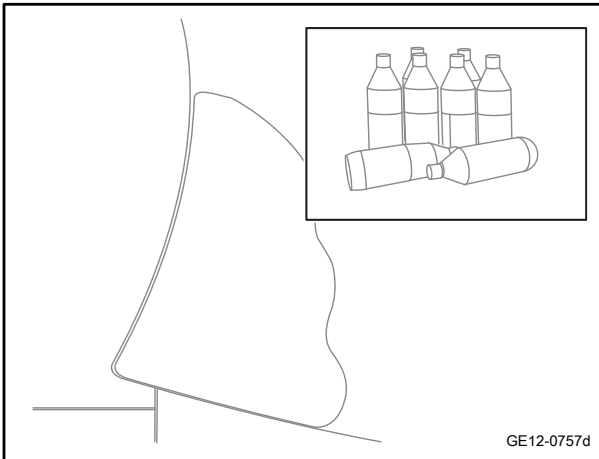
All paint repairs on rigid surfaces must meet Geely standards. Confirm the repair area and select the repair range. For example: partial repair, whole repair and complete vehicle repair. In case of the damage caused by a collision, perform the corresponding repair after the sheet metal repair according to the damage situation or spray paint after replacing the parts.



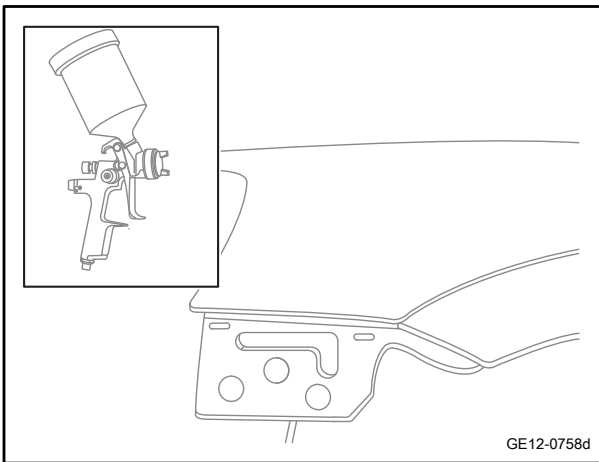
- 1 If the fenders has serious scratches, adopt the partial spraying (paint touch-up) process.



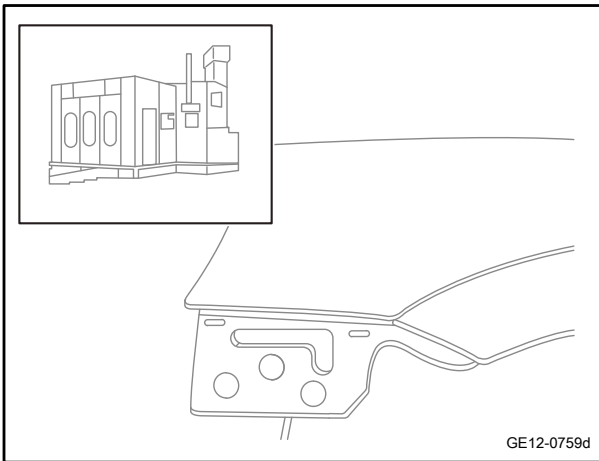
- 2 Use P500# wet (water) sandpaper to polish the damaged paint surface (circular polishing).



3 After polishing, use degreaser to remove oil and clean.



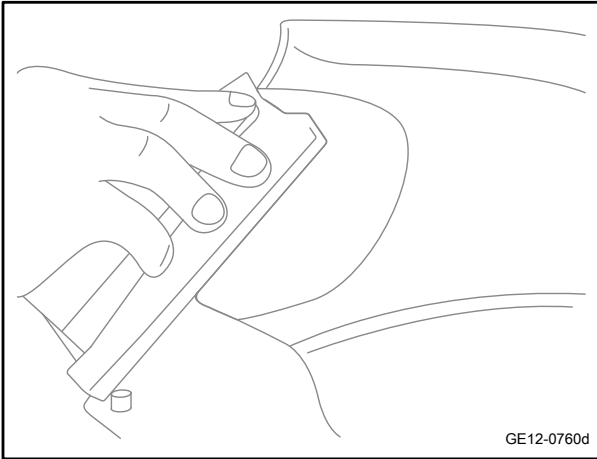
4 When spraying the middle coating, it is important to control the range of the spray primer. In addition, the edge position of the coating shall be gradual and not stepped.



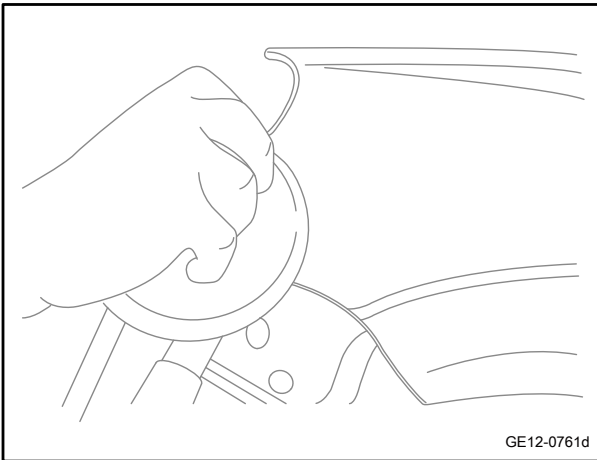
5 Flash dry for 4-5min, then dry for 20-30min. The temperature of the baking paint room is 70-80°C (158-176°F)

**Caution**

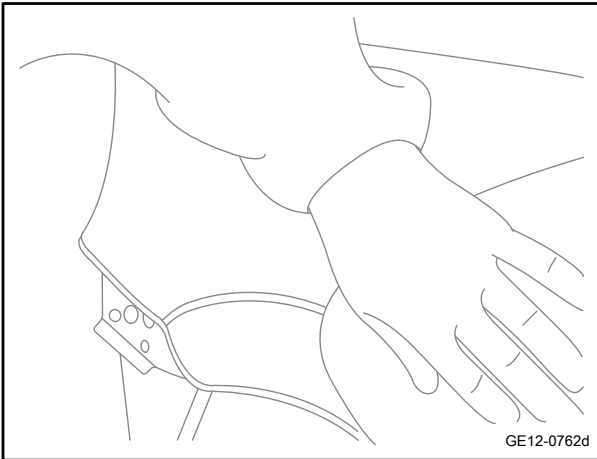
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.



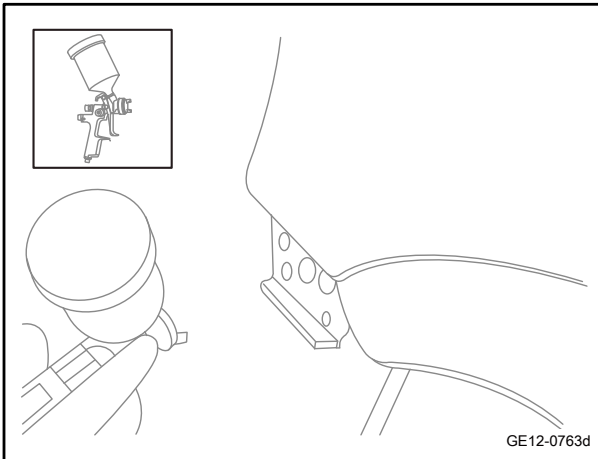
- 6 After drying by braking, use P800-1000 # sandpaper for wet polishing.



- 7 Use 2000# finewaterproof abrasive paper to polish and expand the polishing range.



- 8 Use sticky gauze to remove dust before spraying after polishing.



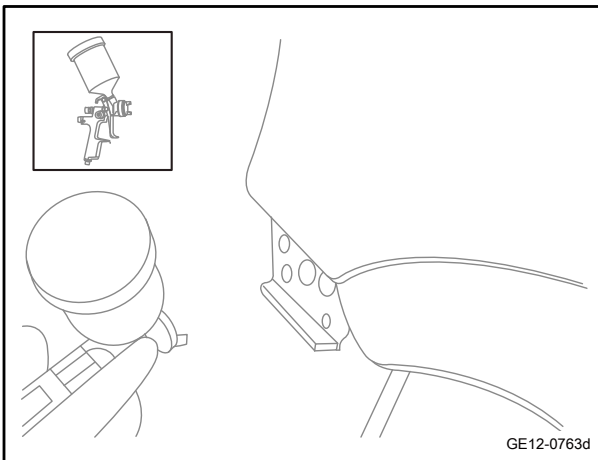
- 9 Spray the base colour paint.

Air pressure 150~200kPa (21.8~29.0psi)

Spraying distance 20~30cm (7.87~11.81in)

**Caution**

For the purpose of color transition, the spraying range should be slightly wider than layer beneath it.



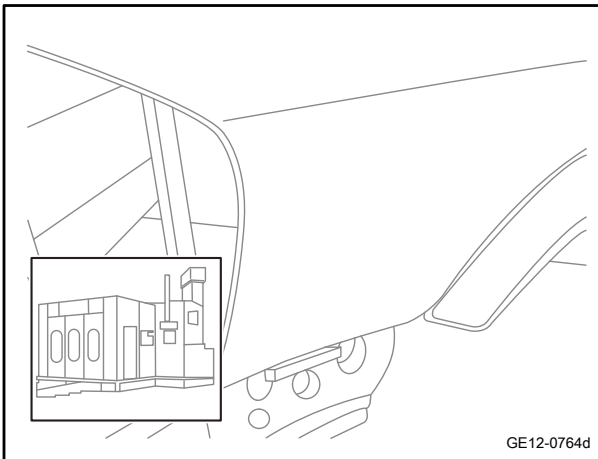
- 10 After flash dry for 2-3min, spray the second base colour paint until the joint position is not obvious.

Air pressure 150~200kPa (21.8~29.0psi)

After flash dry for 2-3min, spray the second base colour paint until the joint position is not obvious.

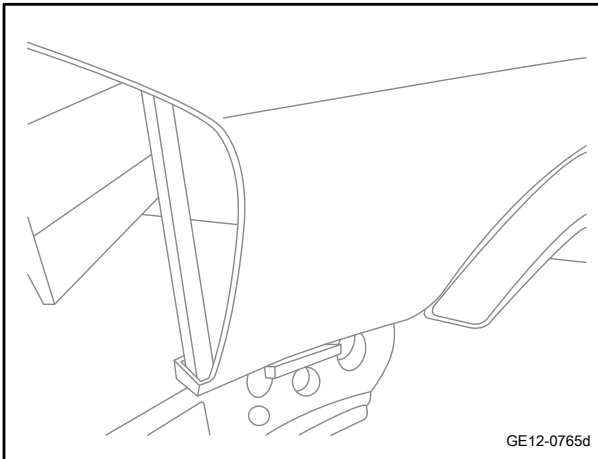
Air pressure 150~200kPa (21.8~29.0psi)

Spraying distance 20~30cm (7.87~11.81in)

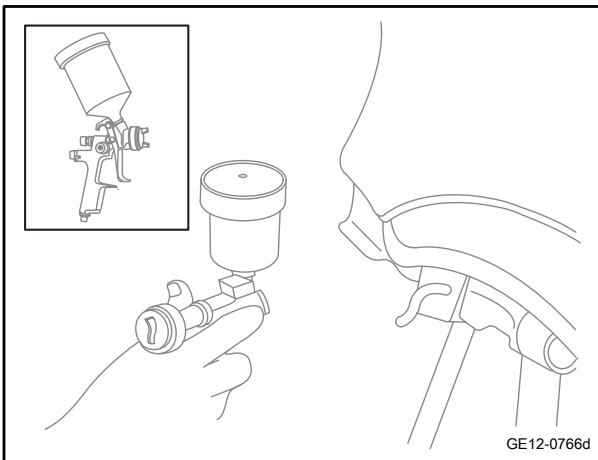


- 11 Flash dry for 4-5min and then dry for 20-30min.

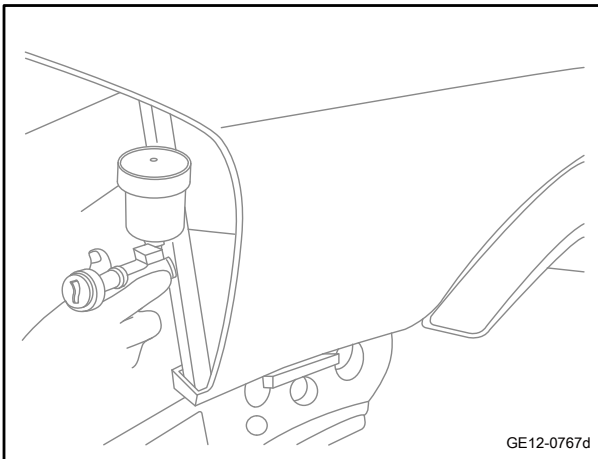
The temperature of the paint room is 70-80°C (158-176°F)



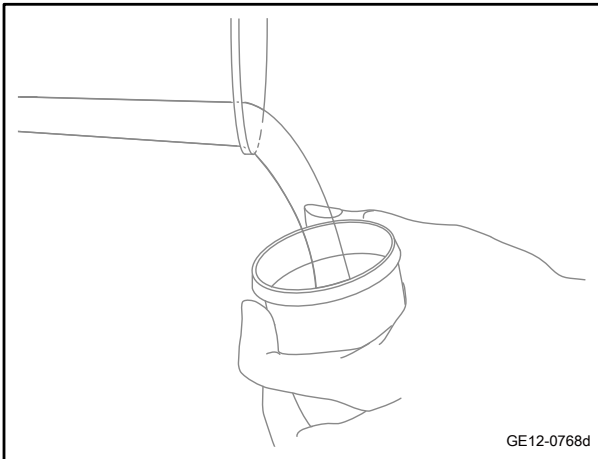
- 12 Use the sticky gauze to remove dust before spraying the lacquer after drying.



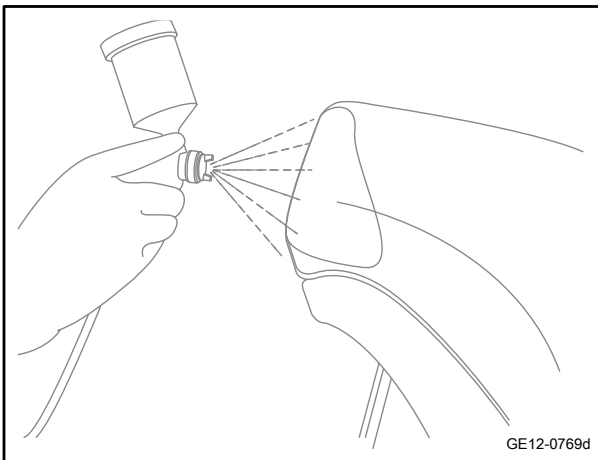
- 13 Spraying the clear lacquer and the spraying range completely covers the range of the base colour paint.  
Air pressure 150-200 kPa (21.8-29.0 psi)  
Spraying distance 20-30cm(7.87-11.81in)



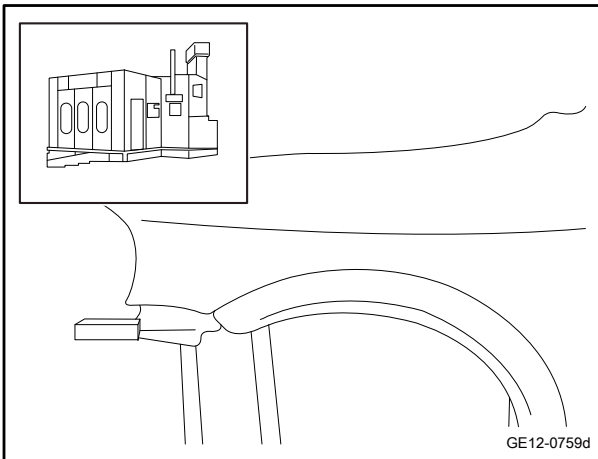
- 14 Flash dry for 2-3min and spray the second clear lacquer.  
The spraying range completely covers the range of the first lacquer.  
Air pressure 150~200kPa (21.8~29.0psi)  
Spraying distance 20~30cm (7.87~11.81in)



- 15 After finishing the clear lacquer spraying, immediately replace the saliva or add interface additives or thinners to the original clear lacquer.



- 16 Spray 2-3 times of the saliva or the diluted clear lacquer at the interface position.



- 17 Dry in the paint-bake room for 20-30min.  
The temperature of the baking paint room is 70-80°C (158-176°F)

#### 11.13.4.5 Paint on the repaired rigid sheet metal surfaces

Spray paint procedure on the repaired rigid sheet metal surface is similar to rigid surface spray paint process. It's only added with the following steps after primer grinding and before spraying primer color paint:

- 1 Apply poly-putty base.
- 2 Grind poly-putty base.
- 3 Dust blowing, oil removing, cleaning.

- 4 Apply the filling putty.
- 5 Sanding the surface of old coating film.
- 6 Clean, oil removing, and cover areas not painted.  
Specific operation steps: refer to Rigid Surface Spray Paint Process.

### 11.13.4.6 Plastic surface paint repair process

There are three basic requirements for plastic surface paint repair:

- 1 Paint has a certain adhesion to plastics without losing the mechanical properties.
- 2 The paint film should be flexible enough to make sure it will not break as the plastic distortion.
- 3 The original grain and rough texture of some plastic surface can be reflected.

Plastic surface paint repair process:

The plastic surface paint repair can refer to the above local spray paint process, and notice low temperature baking.

The baking conditions are 70~80°C (158~176°F), lasting for 20~30min.

### 11.13.4.7 Color matching of the paint

#### Caution

- All paint operations must be carried out in the well-ventilated environment and the operating room equipped with an exhaust device
- Thorough reading the related information and the product specification before the color matching operation to the paint.
- Personal safety protection must be taken during the painting operation.
- Hands and face must be cleaned after the painting operation.

Step 1	Confirm the color of the paint position to be touch up.
--------	---

- A. Confirm the color code of the paint position to be touch up.

Next Step

Step 2	Confirm the paint formula.
--------	----------------------------

- A. Confirm the deployed data according to the color code of the paint position to be touch up.

Next Step

Step 3	Prepare the paint the primary color.
--------	--------------------------------------



- A. Prepare and stir the primary color of the recorded date.

Next Step

Step 4	Metering the matching color.
--------	------------------------------

- A. Put the measuring cup on the meter regulator. Refer to the color formula table, and confirm the color number and mix the required color master.

Next Step

Step 5	Trial application.
--------	--------------------

- A. Use a muddler to apply the matching paint to the test panel.

#### Note

Using a muddle well-dipped paint to apply a triangle on the test panel, and repeat applying until the base color of the test panel is covered.

#### Caution

If the sufficient curing time is not reserved and force drying is carried out, the air hole will appear on the test panel and the color ratio will be affected.

Next Step

Step 6	Color comparison.
--------	-------------------

- A. After the trial applying color is dried on the test panel, compare with the position of the paint position to be touch up of the original vehicle and confirm whether the color is consistent.

#### Note

When the paint dries, the relatively low-density pigment will move toward the surface. Therefore the color of the paint will be slightly different between the post-drying color and the just-applied color.

#### Caution

- Place the test board and the position of the paint position to be touch up of the original vehicle on the same level to make a comparison.
- At least 2 different light sources should be compared under different light sources before determining the color.
- A comparison should be made between direct angle, middle angle and indirect angle.

Yes

Carry out spraying/touching up paint.

No

Step 7 | Micro-matching color.

- A. Find out the difference between the color of the test panel and the actual vehicle paint. Add the amount of the primary color in the modulated paint for micro-matching color.

#### Note

A small amount of matching-color paint can be poured from multiple containers. Pour a different amount of color master into each container and make the color comparison respectively. Color master to be added is determined by the color on the test panel closest to the target color.

Next Step

Step 8 | Trial application.

- A. Use a muddler to apply the matching paint to the test panel.

#### Note

Using a muddle well-dipped paint to apply a triangle on the test panel, and repeat applying until the base color of the test panel is covered.

#### Caution

If the sufficient curing time is not reserved and force drying is carried out, the air hole will appear on the test panel and the color ratio will be affected.

Next Step

Step 9 | Color comparison.

- A. After the trial applying color is dried on the test panel, compare with the position of the paint position to be touch up of the original vehicle and confirm whether the color is consistent.

**Note**

When the paint dries, the relatively low-density pigment will move toward the surface. Therefore the color of the paint will be slightly different between the post-drying color and the just-applied color.

**Caution**

- Place the test board and the position of the paint position to be touch up of the original vehicle on the same level to make a comparison.
- At least 2 different light sources should be compared under different light sources before determining the color.
- A comparison should be made between direct angle, middle angle and indirect angle.

No

Go to Step 7.

Yes

Step 10	Carry out spraying/touching up paint.
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