Foreword

To ensure the safety during service and the optimal working performance, always read the Service Manual carefully. Make sure to be fully aware of precautions outlined in Chapter I especially before the service and maintenance.

All materials, charts and instructions are the latest available product information before the Manual is released. Our company reserves the right to, at any time, change the specification and service method without notice.

Important Safety Instruction

The proper service and use of special tools is of vital importance for the safety of maintenance technician and the reliability of vehicle performance.

The steps described in the Manual shall be followed so that the service will be as safe, reasonable, standard and accurate as possible.

The service qualify can vary with the steps, tools, components and technician's experience. Therefore, if the implementation of service and use tools or components not approved by Dongfeng Motor Corporation Passenger Vehicle Company may result in personal injury or vehicle damage.

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

1

Overview

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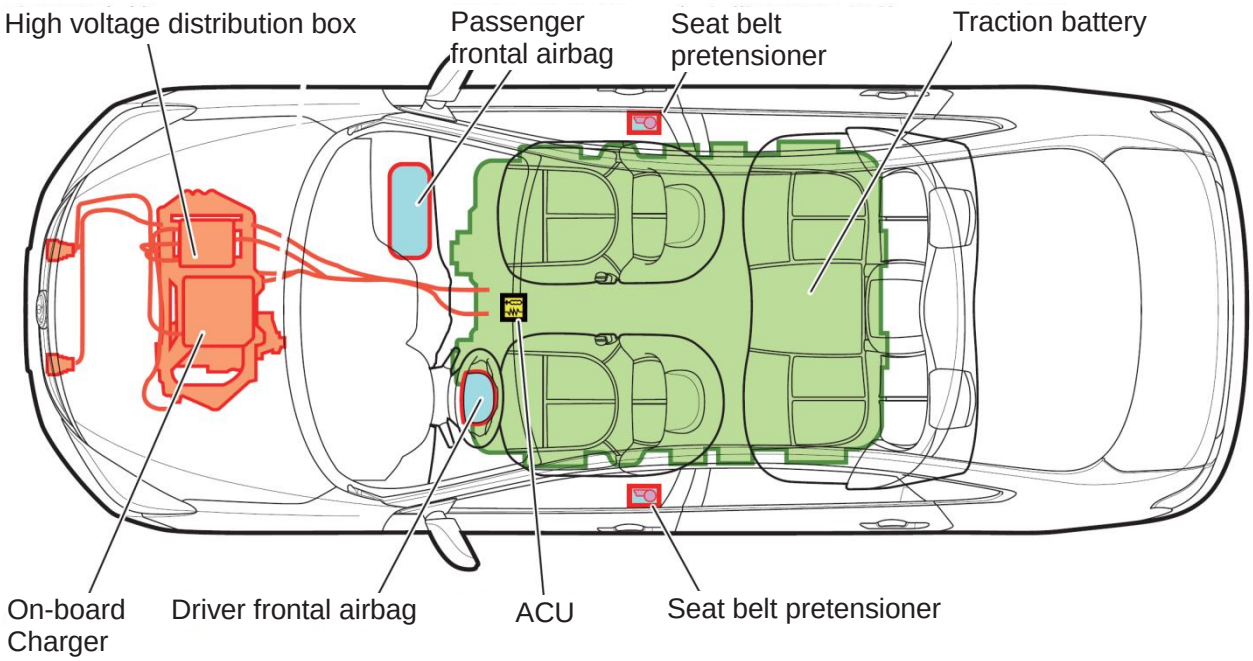
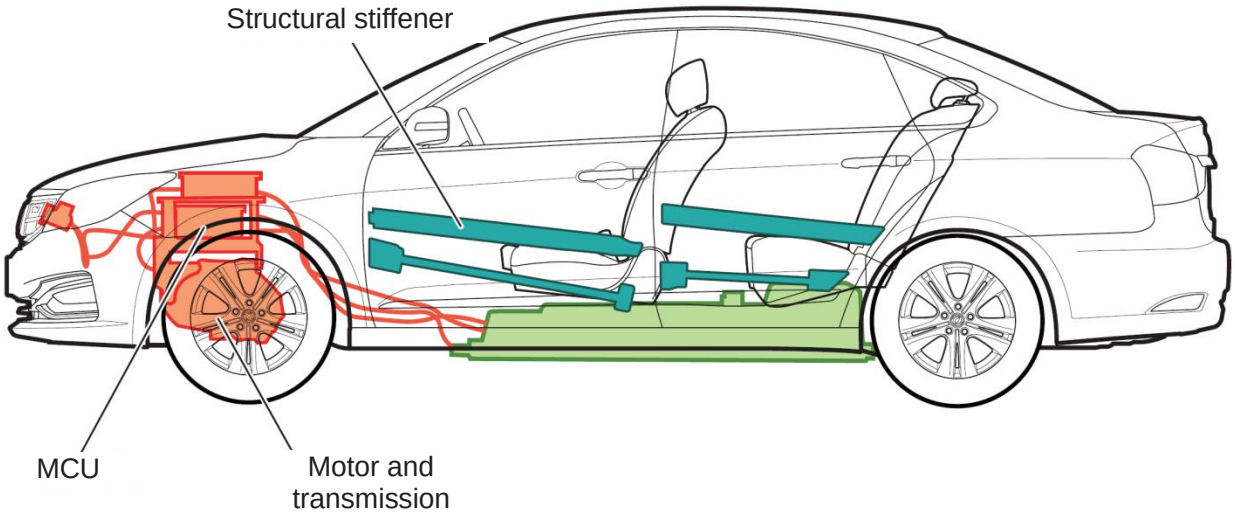
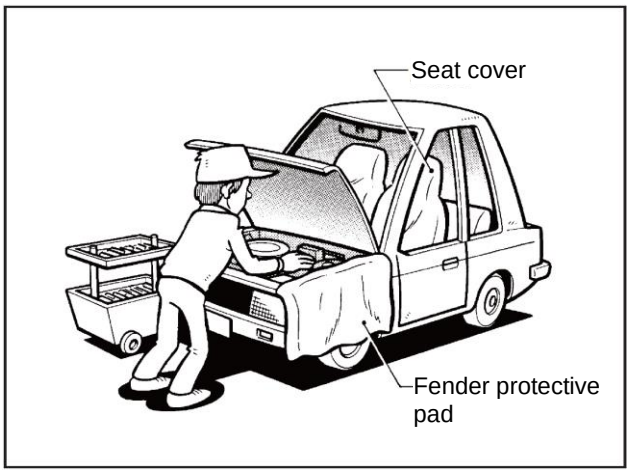

High voltage distribution box
Passenger frontal airbag
Seat belt pretensioner
Traction battery
On-board Charger
Driver frontal airbag
ACU
Seat belt pretensioner


Structural stiffener
MCU
Motor and transmission

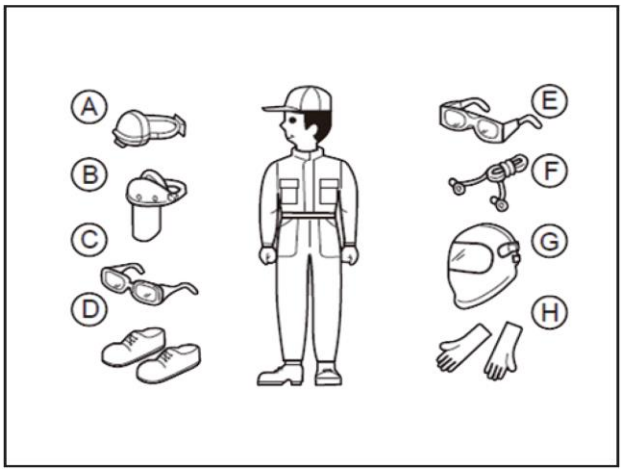


General Maintenance Specifications

1. Vehicle protection

Before repairing the vehicle:

- Place protective pad or protective sleeve at fenders, steering wheel, shift lever and carpet, etc.
- Be careful not to scratch the painted surface with keys, buttons and other hard objects.

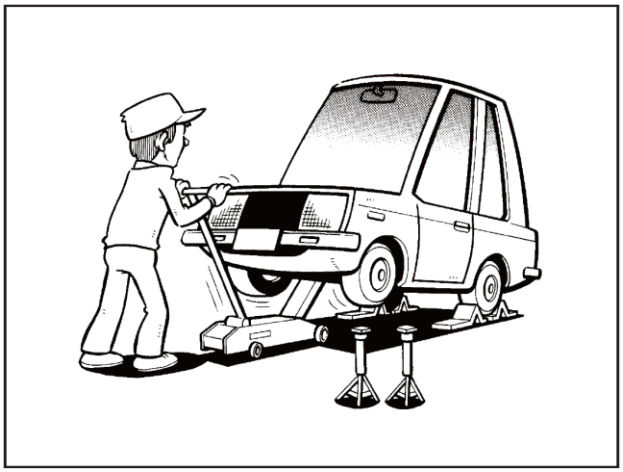


2. Safety precautions

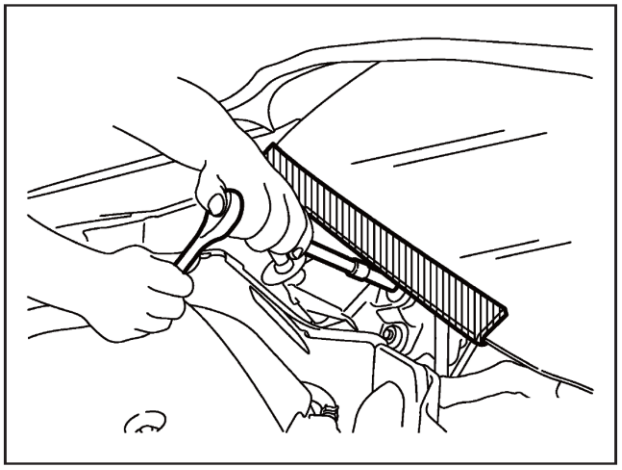
Symbol	Name
A	Protective respirator
B	Protective mask
C	Safety goggles
D	Safety shoes
E	Welder's goggles
F	Earplug
G	Welder's shield
H	Welder's gloves

Personal protection:

- Maintenance personnel shall always wear safety goggles, gloves, safety shoes, earplugs and other personal protective equipment before operation according to the specific conditions.

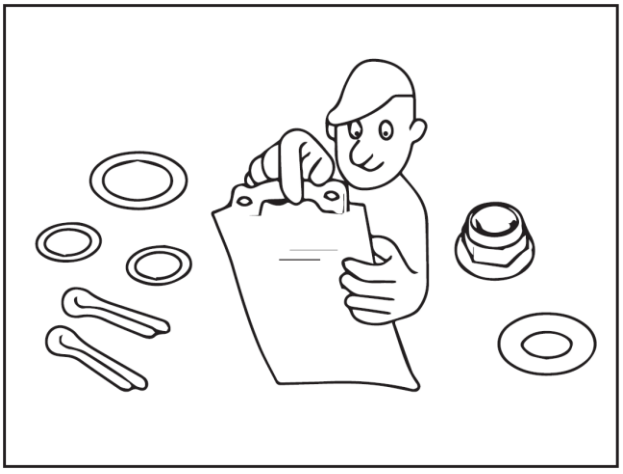


- When lifting a vehicle with a lift, always strictly follow the operating instructions of lift.
- Before lifting the vehicle from a level ground, place the wheel chocks or other tire stoppers under the wheels to prevent the vehicle from moving. After the vehicle is lifted, use a safety strut to support the vehicle at the specified lifting points before any operation.
- While removing transmission and other heavy objects, prevent them from falling off due to out-of-balance. Moreover, protect them, especially the brake pipe, from colliding with the adjacent components.

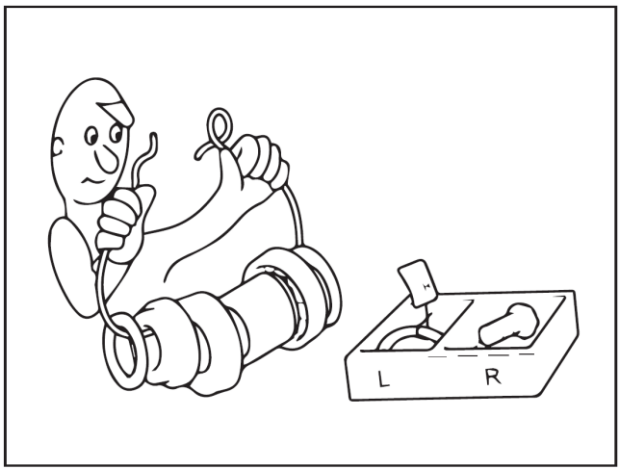


- When operating with front wall upper cover panel removed, mask the lower end of windshield with a PU cover to avoid damaging the glass.

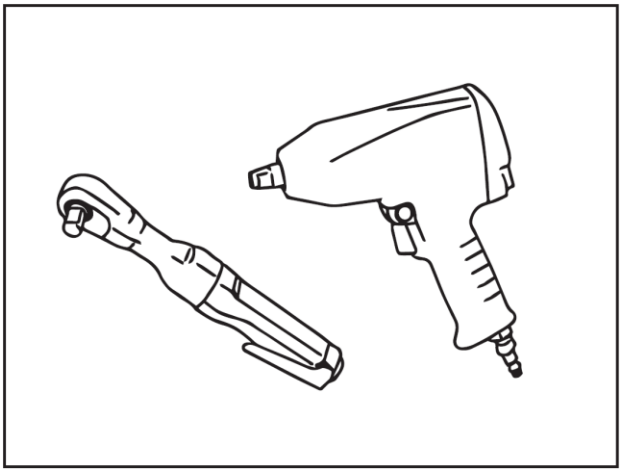
- Treat or recycle the discharged transmission oil and the solvent used for washing parts properly.
- Before checking and refitting the removed parts, use the specified liquid or solvent to wash them up.
- Do not touch the terminals of any electronic elements, otherwise, the internal electronic elements may be damaged by static charge.
- After disconnecting the vacuum pipe or air pipe, paste a label indicating the proper connection method.
- Use only the oil and lubricants recommended in this manual.
- Use the approved adhesives, sealants or the equivalents as required.



- Replace the removed oil seals, gaskets, sealing rings, O-rings, lock washers, split pins, self-locking nuts and other parts with new ones.
- Replace the inner and outer rings of tapered roller bearing or needle roller bearing as a whole.



- Place the removed parts in accordance with the positions and order for assembly.



- Properly select and use hand tools, power tools (for removal only) and special tools in order to repair the components safely and efficiently.

Precautions for Occupant Restraint System

Precautions for Supplemental Restraint System (SRS), including airbag and seat belt pretensioner

- SRS, including "Airbag" and "Seat Belt Pretensioner", when used in combination with the front seat belts, helps to reduce the risk or severity of injury to driver and front passenger in case of collision. For details of proper maintenance of the system, please refer to the SRS and SB sections of this manual.

⚠ CAUTION

- **All services and maintenance should be carried out by authorized Dongfeng Franchise Stores in order to prevent increasing personal injury or casualty as a result of failure of the SRS system in a collision where the airbag should have inflated. Improper servicing and maintenance, including incorrect SRS removal or refitting, may trigger the system unexpectedly and lead to personal injury or casualty.**
- **For removal methods of rotary switch and airbag module, please refer to the PS and SRS sections.**
- **Before servicing the SRS, turn off the ignition switch, disconnect the battery negative cable, and wait at least 3min. That is because, within about 3min after the cable is removed, the airbag and seat belt pretensioner may still have accumulated power. Therefore, no work related with SRS connector and circuit should be performed within 3min.**
- **Under no circumstances should any position associated with the SRS components be tapped; otherwise, the airbag will be ignited. If it is necessary to tap such a position during service, turn off the ignition switch in advance, disconnect the battery negative cable and wait at least 3min, and then remove the airbag module & impact sensor connector.**
- **The rotary switch must be aligned with the center position because it can rotate in a restricted range only. Do not turn the steering wheel or steering column after the steering gear is removed.**
- **Be careful when operating the airbag module. Place the driver's airbag module always with the padded surface upward.**
- **After the airbag deploys, if the front instrument panel assembly is damaged, replace it.**
- Never use an electric testing equipment to inspect any SRS circuit unless otherwise stated in this manual. SRS circuits can be identified by yellow and/or orange wire harnesses or their connectors.
- Do not use any electric testing equipment to check front seat belt pretensioner.
- Do self-diagnosis after any component is replaced, so as to check if SRS functions well.

Precautions for Servicing Seat Belt

- Before removing the front seat belt pretensioner assembly, turn off the ignition switch, disconnect the battery negative cables, and wait for at least 3min.
- Do not use disassembled buckle or seat belt assembly.
- Replace the fixing bolt if it is deformed or worn.
- Do not lubricate the latch plate and buckle.
- Replace the seat belt assembly rather than repairing it if its any part is faulty.
- Replace the seat belt assembly if the seat belt is broken, worn or damaged.
- Replace with original Dongfeng seat belt assembly.
- After any collision, check all seat belt assemblies, including the retractors and other metal parts.
- If the seat belt is intact and works well after a slight collision, it is recommended to replace the seat belt assemblies used in the collision. Or, serious personal injury may occur in a future accident. The belt damaged or functions improperly shall also be replaced even though it is not used in the collision. If a front collision resulting in airbag deployment happens, the seat belt pretensioner shall be replaced, even if the seat belt is not used in this collision.
- In following cases, please replace the seat belt assembly (including its fixing bolts):

- Seat belt is being used when the collision happens (except that the collision is very slight, and the seat belt, retractor and buckle can well, not to mention any damage).
- Seat belt is damaged during accident (i.e. seat belt is damaged and the retractor/guide is deflected).
- Seat belt is damaged during accident (Before installing a new seat belt assembly, check the seat belt anchorage for damage or deformation, and repair it when necessary.)
-

Any fixing bolt is deformed or worn.

- If a collision resulting in airbag deployment happens, the front seat belt pretensioner shall be replaced, even if the seat belt is not used.

Precautions for IMMO System

- For model with IMMO system, the vehicle cannot be started by a key not registered in IMMO system.
- For model with IMMO system, the key provided together with the vehicle has been registered in IMMO system.
- The Dongfeng special scan tool should be used to service the IMMO system (fault diagnosis, system initialization, and registration of identification code for other ignition key).
- The instructions given by the scan tool should be followed to initialize the IMMO system and register the identification code of ignition key.

Precautions for Service of EV Circuit System

- Overhaul of high voltage system:
- Confirm if any body is performing maintenance works to the high-voltage system before power-up to avoid unnecessary danger.
- Before checking the high-voltage system, pull out the key, disconnect the battery negative cable and service switch and hand them over to the designated supervisor for preservation, and ensure that no one is about to refit them.
- When checking the high-voltage harness, wrap the exposed high-voltage parts with insulating tape immediately after removal for insulation.
- When installing the high-voltage harness, always fix it according to fixing holes on the body.
- Do not touch the live part in the high-voltage harness connector for fear of electric shock; also prevent tiny metal tools or iron wires from contacting the live part in the high-voltage harness connector.
- Multimeter measurement:
- Before checking the high-voltage system, use a multimeter to measure that the high-voltage circuit of vehicle has been de-energized as follows: 5 minutes after pulling out the service switch, measure the voltage between the traction battery and the body to determine if there is electric leakage preliminarily; if the measured voltage is 50V or above, stop the operation immediately and identify the leaking part.
- When measuring a high voltage with the multimeter, select an appropriate range, where the multimeter shall have an precision not below Grade 0.5, the DC voltage measurement function and a range no less than 500V.
- In this case, single-hand operation is required.
- Equip one probe of the multimeter with insulated crocodile clip (with a withstand voltage of 3kV and an overcurrent capacity above 5A), and before measurement, snap the crocodile clip to one terminal of the circuit, and then connect the other probe to the measured terminal and make reading. Hold the probe with one hand only during each measurement.
- When measuring a high voltage, do touch the metal part of the probe.
- Overhaul of traction battery:
- To prevent personal injury due to electrolyte leakage when servicing the traction battery, be sure to wear acid-base resistant gloves and goggles to prevent the electrolyte from splashing to skins or eyes and causing corrosion effect.
- After pulling out the service switch, block the service switch opening with the special plug.
- The action to pull out the service switch is only intended to disconnect the power supply from traction battery to high-voltage electrical appliances, and thus, the traction battery is still live after the service switch is pulled out. In view of this, wrap the exposed high-voltage part with insulating tape to avoid electric shock.
- When the traction battery is to be removed, use the hydraulic lift.
- Move the traction battery to the special service bench using special spreader instead of your hands.
- **The orange harness is at a high voltage, and if the service switch is not disconnected, never touch the high-voltage parts, high-voltage cables and their connectors for fear of electric shock; if the orange high-voltage cable is exposed or damaged, replace it immediately.**

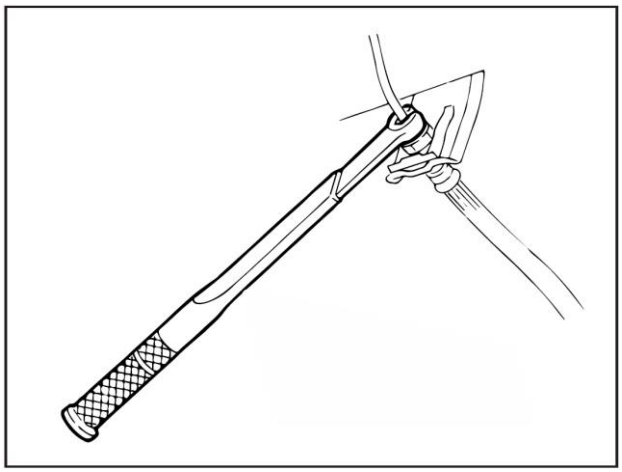
Precautions for Suspension System

- When installing the rubber bush of triangular arm, the bush cannot be tightened finally unless the tires are grounded and vehicle is unloaded. The oil sprayed onto the rubber bush should be wiped up; otherwise, its service life will be shortened.
- After servicing the suspension parts, check for wheel alignment.
- Never reuse the self-locking nut. Instead, always use a new one for refitting. The new self-locking nut can be tightened directly as it is oiled in advance.

⚠ CAUTION

- **"No load" refers to a vehicle condition that the motor has been filled with coolant and lubricant, and the jack, manual tools and foot pads are at the designated positions.**

Precautions for Brake System

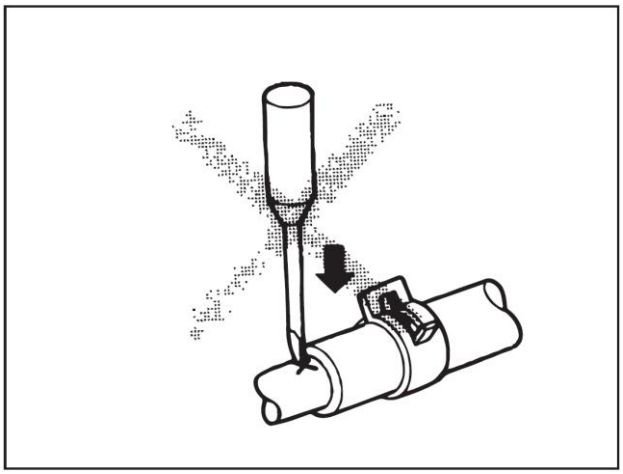


- The recommended brake fluid is "DOT4". Please refer to "Recommended Fluids and Lubricants" in Maintenance section.
- Never reuse the discharged brake fluid.
- Never use gasoline, kerosene or other mineral oil. Otherwise, rubber parts inside the hydraulic system may get damaged.
- Prevent the brake fluid from spilling onto the paint. Or the paint will be damaged. If this happens by accident, wash it immediately with water.
- Before any operation to the chassis, disconnect the connectors of ABS actuator and hydraulic control unit, or the battery negative cables.
- Remove and tighten the nuts of brake pipe with a pipe nut wrench and a pipe nut torque wrench respectively.
- Always tighten the brake pipes and hoses to the specified torque during installation.
- The bake system is an important safety part for the vehicle. In case of brake fluid leakage or other faults, service the brake system immediately.
- After the ignition switch is turned to ON, you may hear the working sound from the vacuum pump motor or feel slight vibration from the brake pedal, which is normal.
- When ABS indicator or other warning lamps indicates a fault, the maintenance personnel should collect all necessary information from the customer (including fault phenomenon and specific situations), and find out the basic causes before troubleshooting. In addition to electrical system, the operation of brake booster, and level and leakage of brake fluid should also be inspected.
- In case that the size and type of tires are not correct, or the original Dongfeng brake pad is not used, the braking distance may be shortened or the steering stability may decrease.

Precautions for A/C System

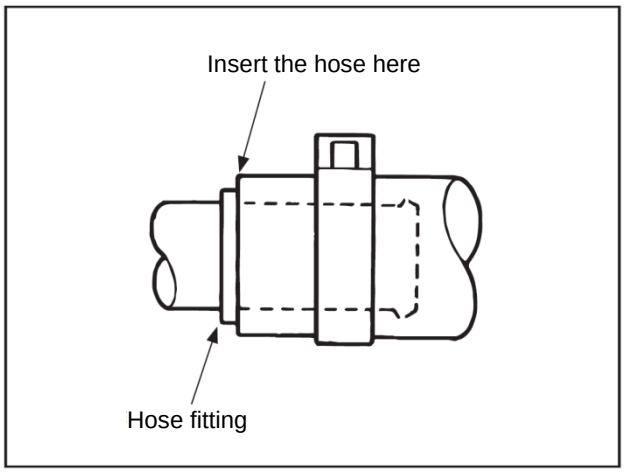
- The specified recovery unit should be used when discharging the refrigerant from A/C system. For details, see "Recovering/vacuuming/adding/leakage detection of refrigerant" in A/C section.

Precautions for Removal and Refitting of Rubber Hose

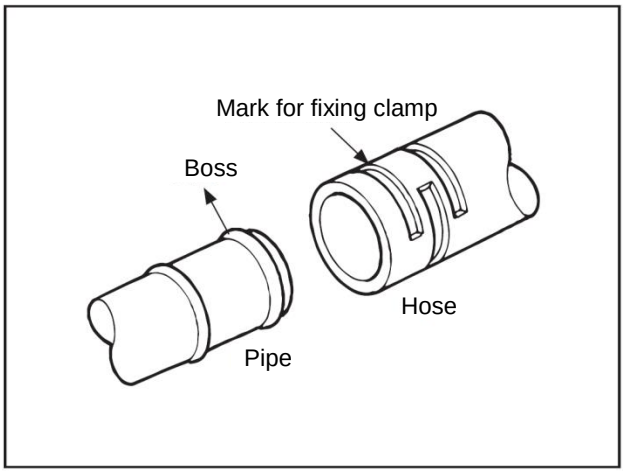


Removal and refitting of rubber hose

- To prevent damage to the rubber hose, do not pry open the rubber hose with a sharp tool or screw.

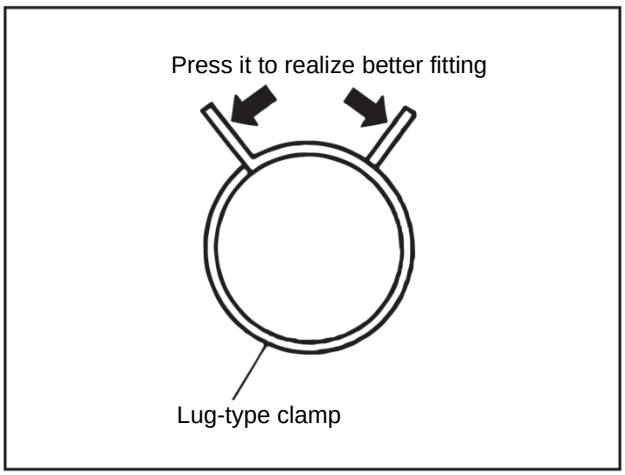


- To refit the rubber hose, make sure that the hose is fitted properly, the clamp is positioned in placed.



Hose clamp

- If the used rubber hose is reused, the clamp should be refitted to the original position (to pressure mark for the used clamp). If there is a mark for raised metal pipe, the rubber hose shall be aligned with the mark.
- Discard the old clamp and use a new one.



- After installing the lug-type clamp, apply pressure to it in the directions as shown by the arrows, so that it can lock the rubber hose uniformly along the periphery of the entire hose.

Precautions for Health Protection

- Avoid working with oil repeatedly for a long time, particularly with the used oil.
- Wear protective clothes and gloves.
- Do not put any oiled cloth into the pocket.
- Do not let the oil get on your clothing, especially the underwear.
- Do not wear dirty clothes or oiled shoes. Regularly clean all working cloth.
- In case of skin trauma and any other body injuries, seek for medical attention immediately.
- Before working, apply some protective scream on the skin before so that the oil and dirt can be removed easily.
- Always remove the oil thoroughly with soap and water (skin cleansers and nail brush can be used). Apply appropriate amount of cream like lanolin.
- Do not use any gasoline, kerosene, diesel, gas oil, thinners or solvents to clean the skin. If any skin discomfort occurs, seek medical treatment immediately.
- Remove the oil and dirt from the component before use.
- If the oil may contact eyes, always wear goggles or face shield; In addition, the eye washing equipment should be provided.

Precautions for Environmental Protection and Recycling

- The authorized specialists shall classify and treat the discarded components and fluid in a designated scrap station. It is forbidden to pour any fluid polluting environment into the ground, sewer and gutter, or to let it flow into any water source.

Safety Information

- The subject of safety information is used to remind you of essential operation, thus avoiding personal injury or component damage. The warning symbol ⚠ and one of the words (WARNING, CAUTION, NOTE) precede each safety information.

⚠ WARNING

- If the operator fails to follow the instruction, serious personal injury or death will occur.

⚠ CAUTION

- If the operator fails to follow the instruction, personal injury or components damage may occur.

⚠ NOTE

- The operator shall follow the instruction to service the vehicle in a correct and safe way.

Units

- The units in this manual are provided mainly in the metric system,

For example:

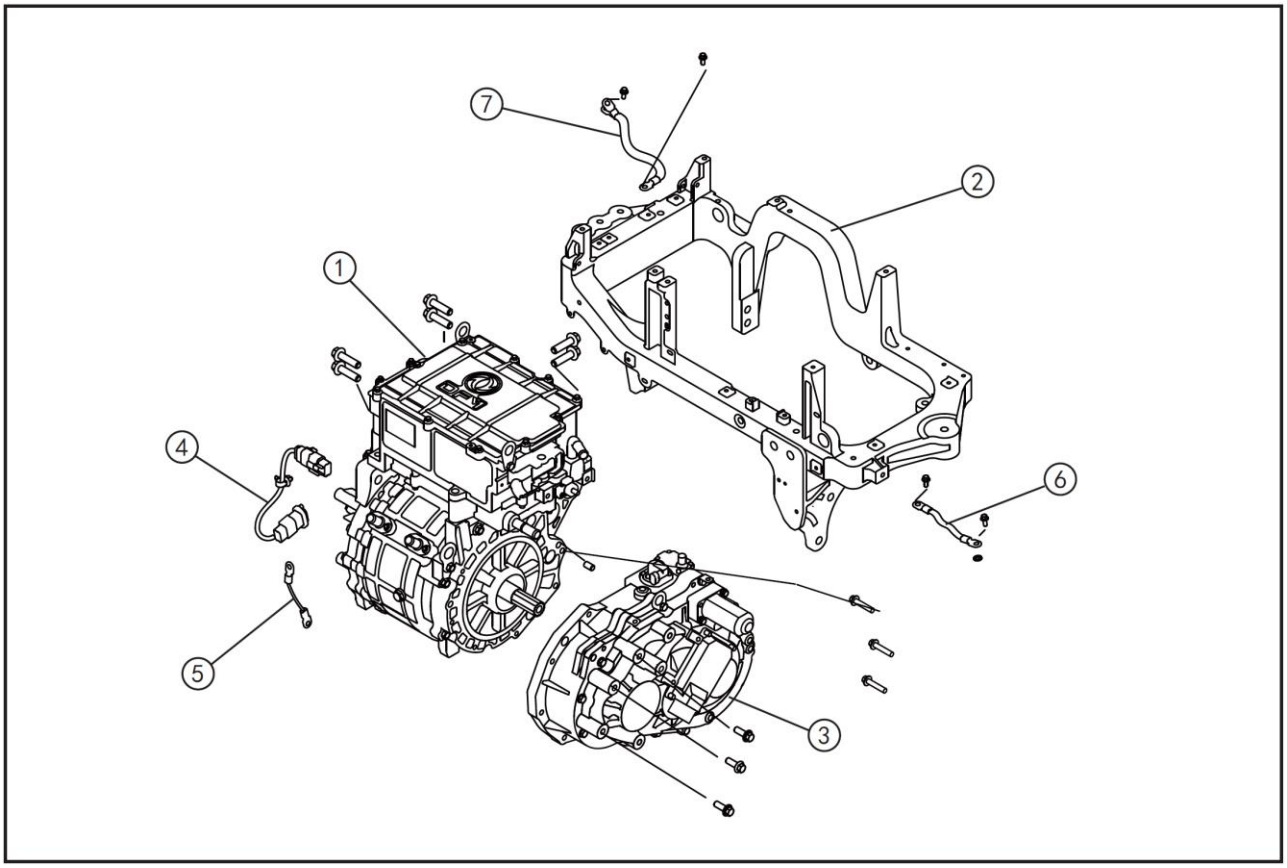
Tightening torque for fixing nut of wiper arm: 23.5N·m

Description

- A black label linking Quick Reference Index can be found on each page. You can search for each chapter quickly as long as its corresponding label is found.
- The contents can be found in the first page of each chapter. The page includes the code for specific chapter and a number.
- The small illustrations are used to display the important steps for inspection, use of special tools and service and for hidden or necessary skills not shown in the previous large illustrations.

Components

- The large illustration is the exploded view of systems (as shown below), and components of the system are indicated in the drawing by a sequence number with cycle, and described below the drawing by a form. The illustrations are for reference for service. While ordering the spare parts, refer to the Parts Catalog.



1. Motor & motor control unit assembly	4. Motor control unit ware harness	7. Braided ground cable
2. Motor bracket	5. Braided ground cable	
3. Transmission assembly	6. Braided ground cable	

Fastener information

⚠ CAUTION

- **Special parts are excluded.**
- **Bolts / nuts in the table all have a strength (identification) code / symbol on their heads or similar positions. For the correlation between the grade and (identification) code/symbol of strength, please refer to "Identification of bolts and nuts".**

1. Based on new ISO standards

Grade of (strength)	Bolt size	Bolt diameter (mm)	Hexagon diagonal width (mm)	Thread pitch (mm)	Tightening torque (W/O lubricant)	
					Hexagon head bolt	Hexagon flange bolt
					N·m	N·m
4.8 (W/O lubricant)	M6	6.0	10	1.0	5.5	7
	M8	8.0	13	1.25	13.5	17
				1.0	13.5	17
	M10	10.0	16	1.5	28	35
				1.25	28	35
	M12	12.0	18	1.75	45	55
				1.25	45	65
	M14	14.0	21	1.5	80	100
4.8 (W/ lubricant)	M6	6.0	10	1.0	4	5.5
	M8	8.0	13	1.25	11	13.5
				1.0	11	13.5
	M10	10.0	16	1.5	22	28
				1.25	22	28
	M12	12.0	18	1.75	35	45
				1.25	35	45
	M14	14.0	21	1.5	65	8.
8.8 (W/ lubricant)	M6	6.0	10	1.0	8	10
	M8	8.0	13	1.25	21	25
				1.0	21	25
	M10	10.0	16	1.5	40	50
				1.25	40	50
	M12	12.0	18	1.75	70	85
				1.25	70	85
	M14	14.0	21	1.5	120	140
10.9 (W/ lubricant)	M6	6.0	10	1.0	10	12
	M8	8.0	13	1.25	27	32
				1.0	27	32
	M10	10.0	16	1.5	55	62
				1.25	55	62
	M12	12.0	18	1.75	95	105
				1.25	95	105
	M14	14.0	21	1.5	160	180

⚠ CAUTION

- **In principle, the "with lubricant" tightening torque should be used on bolts / nuts of the new standards.**
- **The bolts/nuts shall be tightened to the torque when the lubricant is not applied.**
- **The M6 bolts (Grade 4.8) are equipped with the conical spring washers; and coating-removed nuts (M6 and M8) are fastened with welded bolts.**

2. Identification of bolts and nuts

Bolt

	Grade (strength)	Distinction	
Former standard	4**T** (**392N/mm²**)		(Without any number / symbol)
	7**T** (**686N/mm²**)		
	9**T** (**883N/mm²**)		
New standard	4.8 (**420N/mm²**)		(Without any number / symbol)
	8.8 (**800N/mm²**)		
	10.9 (**1040N/mm²**)		

Nut

	Grade (standard load stress)	Distinction		
Former standard	7**N** (686**N/mm²**)	(Without any number / symbol)		
	9**N** (883**N/mm²**)			
New standard	8 (800**N/mm²**)			(Without any number / symbol)
	10 (1040**N/mm²**)			

CAUTION:

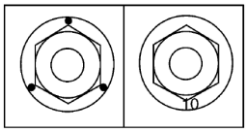
- In some cases, the number is marked on the side of the nut.
- For flange nuts, the number or symbol can be found on the upper surface of the flange.

Machine screws and tapping screws

Shape for screw head:

Cross recessed screws for former standard

Recessed Torx screws for new standard



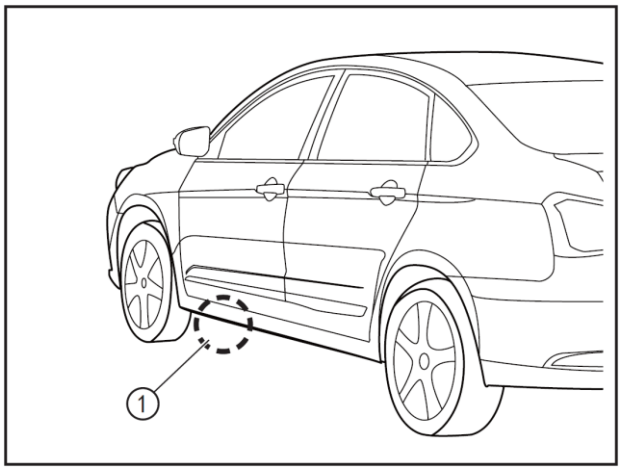
Screw size	Screw diameter	Torx size
M4	4.0	**T**20
M5	5.0	**T**20
M6	6.0	**T**30

CAUTION:

Although ISO standard specifies that the T25 screwdriver bit shall be used, the T20 screwdriver bit for cross head bolt (matching with M4 screw) shall be used for M5 screw.

Vehicle Lifting Point

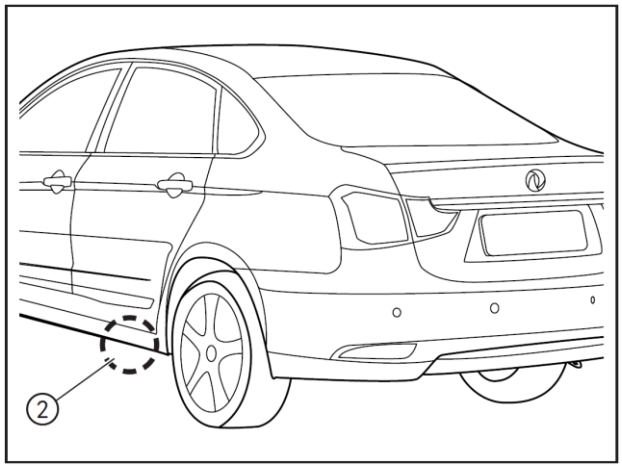
2-column lift



- Safety strut supporting point and jacking point (1) (front)

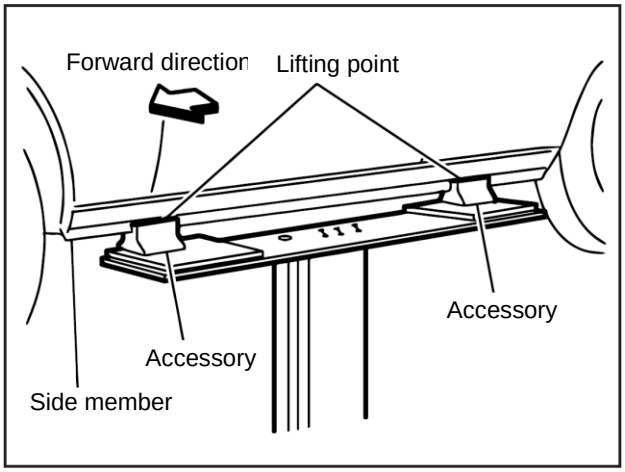
⚠ WARNING

- **When the jack is to be used, park the vehicle on a level ground. Make sure the pipes, circuits and the like under vehicle will not be damaged.**
- **Never work under the vehicle unless the vehicle is supported by a jack. Always support the vehicle with a safety strut before working under the vehicle.**
- **Place wheel chocks before and after the grounded wheels.**
- **When lifting the vehicle, extend the lifting arm as much as possible, and balance the front and rear ends of the vehicle.**
- **When placing the lifting arm, make sure that it will not contact with brake pipeline, brake cable or side member spoiler.**



- Safety strut supporting point and jacking point (2) (rear)

Platform lift

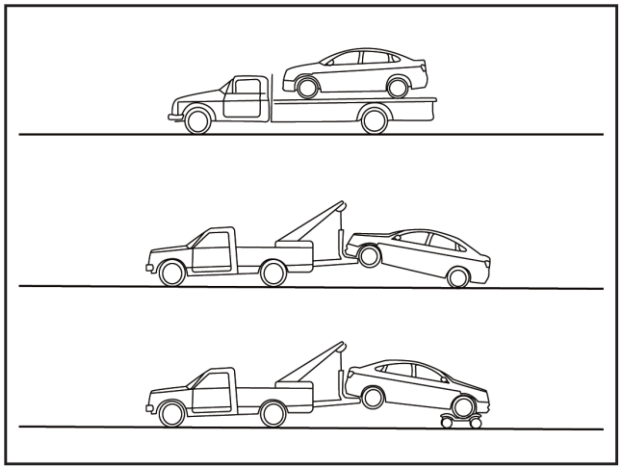


⚠ CAUTION

- **Make sure the vehicle is vacant before lifting.**
- **The accessories for pallet lift in front of vehicle should be placed under the front end of side member below the front door.**
- **The accessories should be placed on front and rear ends of pallet lift.**

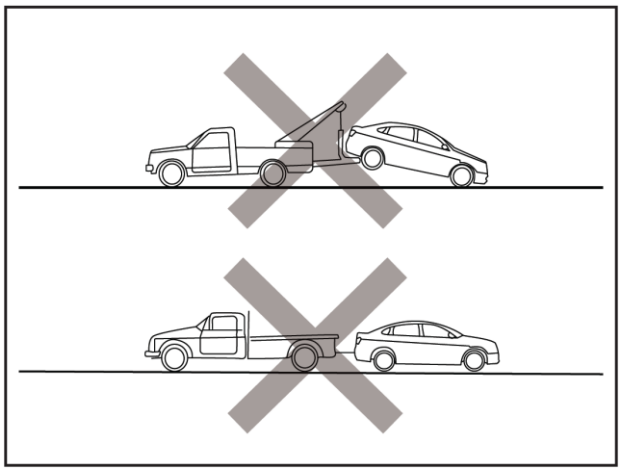
Towing

Trailer towing



⚠ CAUTION

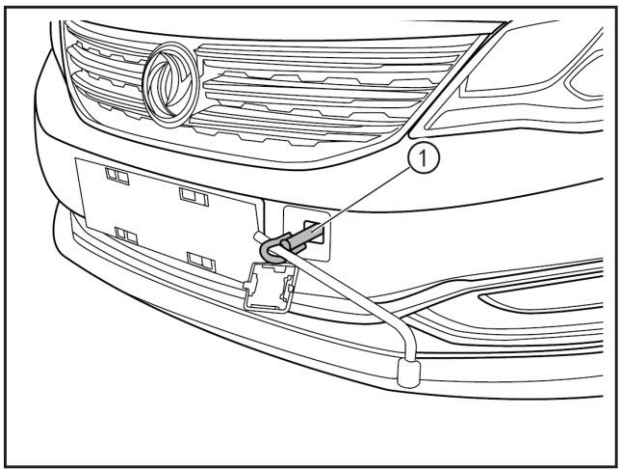
- **The vehicle is equipped with a transmission, the driving wheels (front wheels) must be lifted off the ground during towing.**
- **Always follow the applicable traffic laws and regulations during towing.**
- **Always use a correct towing device to avoid damaging the vehicle in towing. The towing must be performed as specified in Towing Manual provided by the manufacturer for towing device.**
- **Always attach the safety chains before towing.**
- **Check that the transmission, steering system and drivetrain are in good working condition. When one of the above systems is damaged, it is a must to use a trolley.**



⚠ CAUTION

- **Be sure not to tow a vehicle with all four wheels grounded. Otherwise, the transmission might be damaged.**

Vehicle Recovery

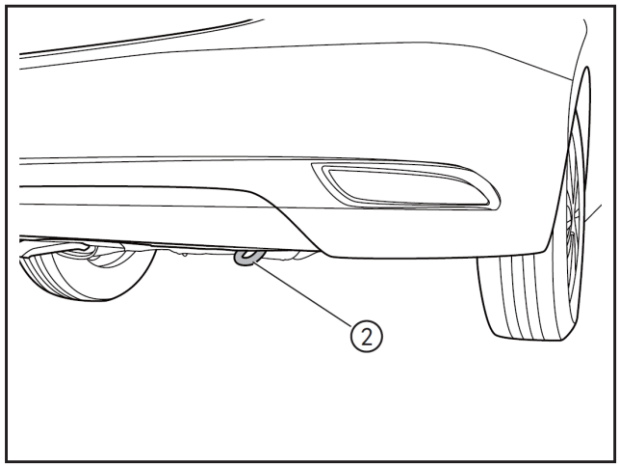


1. Front

- Always use a special towing hook (1) (provided for the vehicle). Otherwise, the body may get damaged.
- The towing hook is only used for rescuing a vehicle trapped in the sand, snow, mud, etc. Therefore, do not use it to tow a vehicle for long distance.
- The towing hook will bear great force while rescuing a trapped vehicle. Thus, please pull the towing cable toward right front/rear of the vehicle. Do not pull the vehicle when it form a certain angle with the towing hook.
- Keep all personnel unconcerned away from the trapped vehicle.

⚠ WARNING

- **Do not let the wheel spin at a high speed, otherwise, the tire may burst and cause serious damage, and the parts may be damaged due to overheating.**
- **Use the wheel bolt wrench to fix the detachable towing hook securely.**



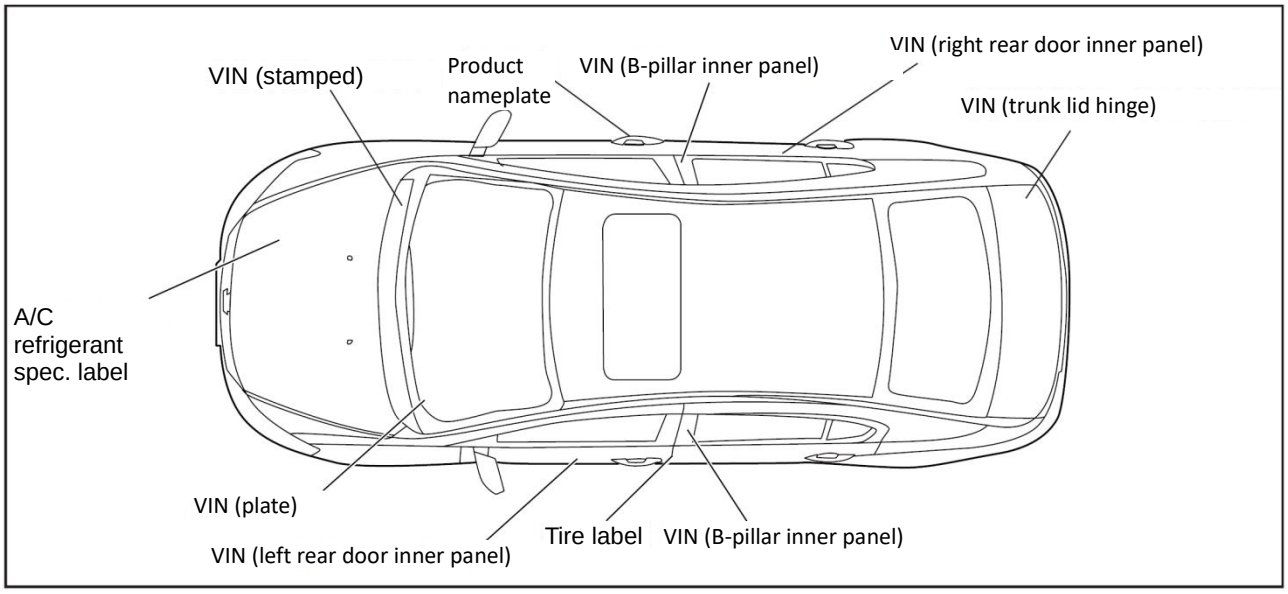
2. Rear (without towing hook)

- The machining hook (2) at the rear shall not be used as the towing hook; or the car body may be seriously damaged, resulting in expensive service cost.

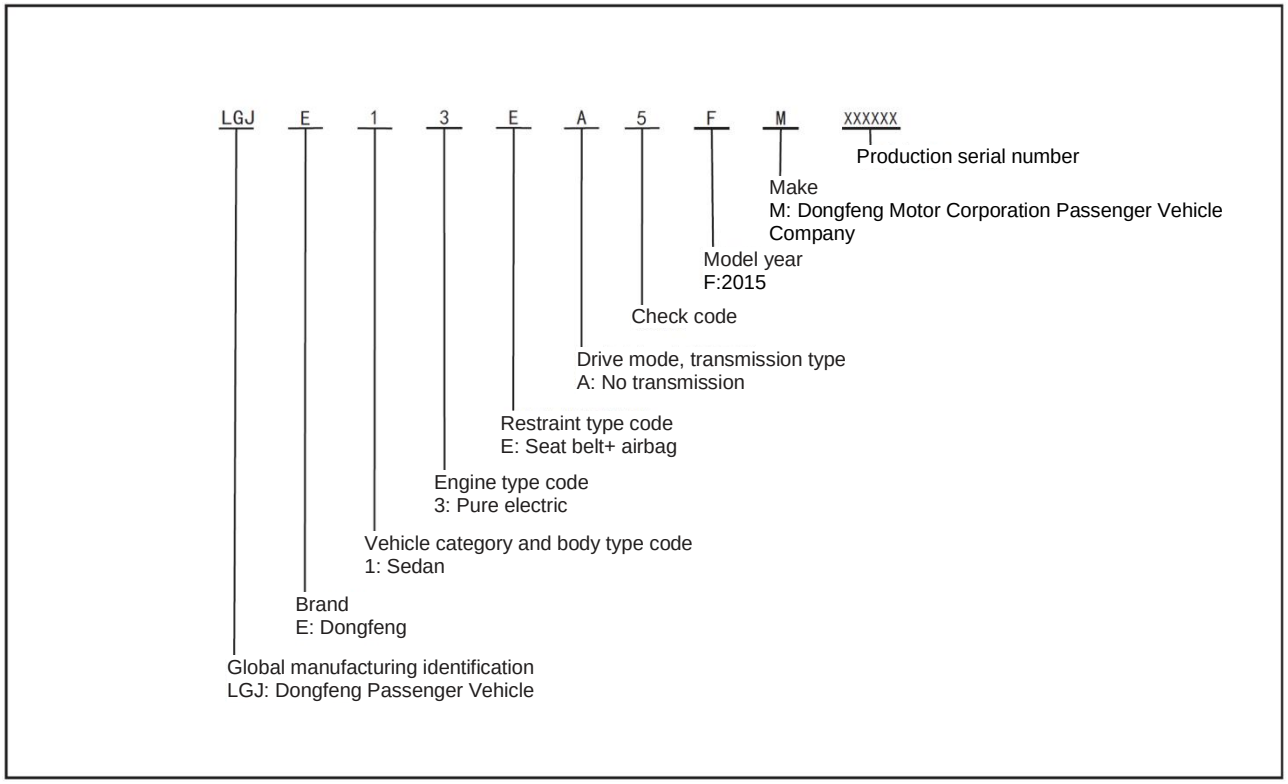
Identification Information

Vehicle identification number

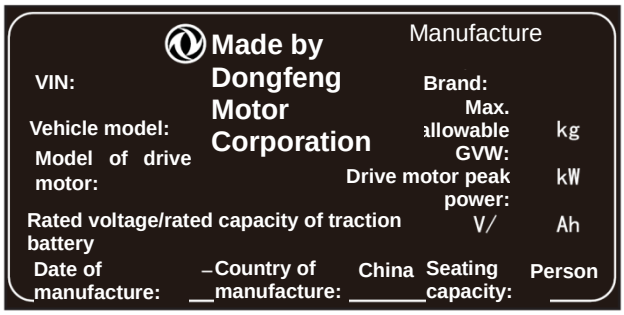
1. Identification number



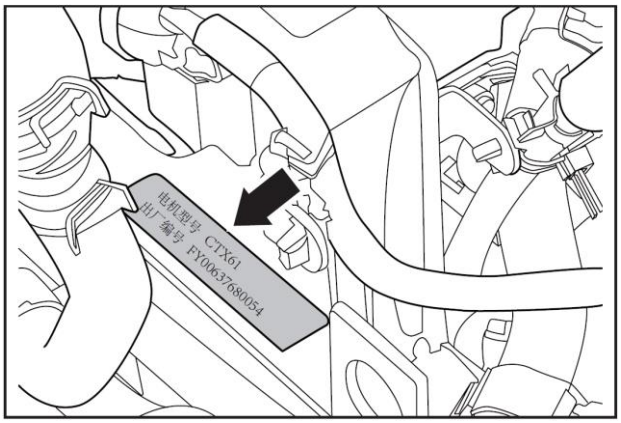
2. VIN designation



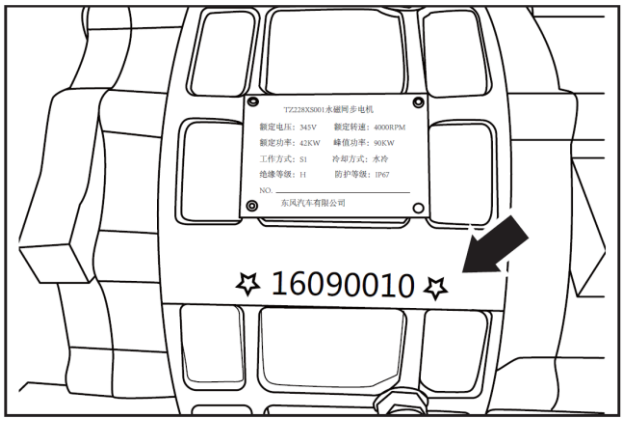
Location of main nameplate



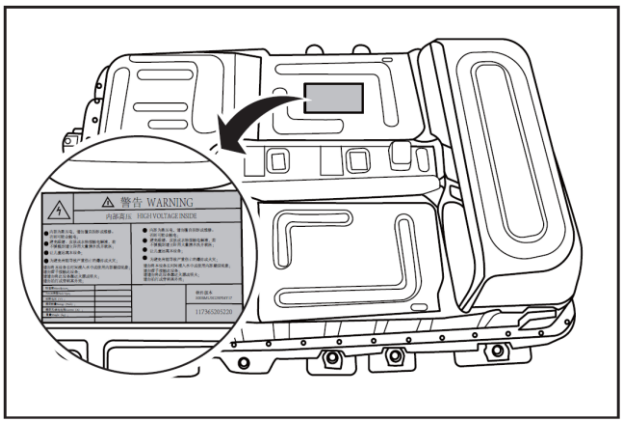
1. Product nameplate



2. Motor code (Continental motor)



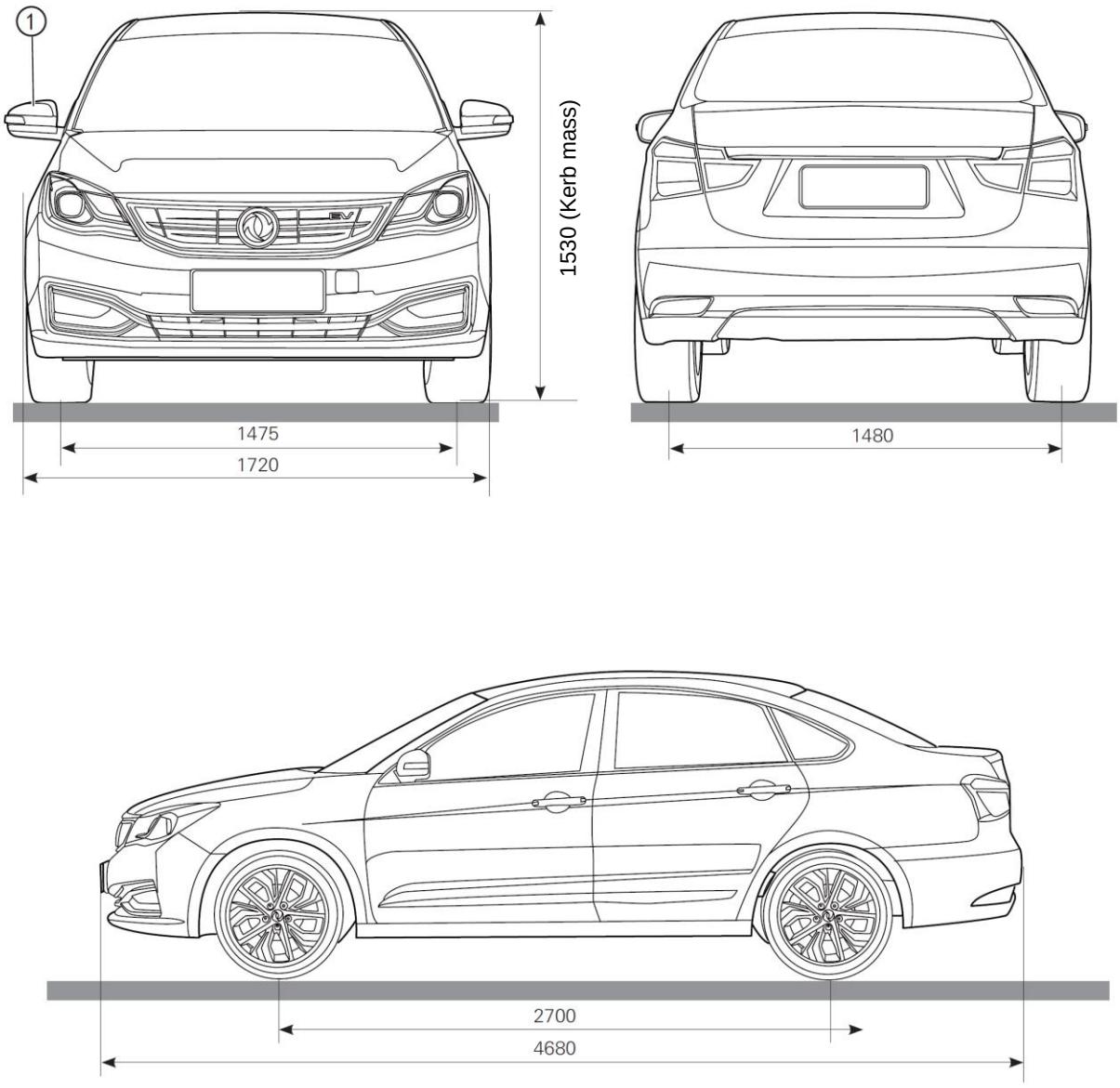
3. Motor code (independent motor)



4 Traction battery code

Overall Dimensions

Dimensions in mm



Note: Exterior rearview mirrors ①not included in the measurement of overall dimensions of the vehicle.

Technical Parameters

Vehicle model	DFM7000G1F2BEV/DFM7000G1F3BEV/DFM7000G1F4BEV		
Series	E70		
Body type	Sedan, 4-door, integral		
Kerb mass (kg)	**Front axle laden mass**	859	
	Rear axle laden mass	705	
	Total mass	1564	
Max. allowable GVW (kg)	**Front axle laden mass**	970	
	Rear axle laden mass	969	
	Total mass	1939	
Power performance	**Maximum vehicle speed (instantaneous) (km/h)**	DFM7000G1F2BEV	140
		DFM7000G1F3BEV/DFM7000G1F4BEV	145
	Maximum vehicle speed 30min after startup (km/h)	DFM7000G1F2BEV	130
		DFM7000G1F3BEV/DFM7000G1F4BEV	135
	Acceleration time (0~50km/h) (s)		≤5
	Acceleration time (50~80km/h) (s)	DFM7000G1F2BEV	≤5
		DFM7000G1F3BEV/DFM7000G1F4BEV	≤4.5
	Max. gradability (%)		20
NEDC range			351

Parameters of major systems

1. Electric drive system

Drive motor	**Peak power/max. rotation speed (kW/rpm)**	DFM7000G1F2BEV	70/12000
		DFM7000G1F3BEV	90/10500
		DFM7000G1F4BEV	100/10500
	Rated power/rated rotation speed (kW/rpm)	DFM7000G1F2BEV	70/12000
		DFM7000G1F3BEV/DFM7000G1F4BEV	42/4000
	Peak torque (N·m)	DFM7000G1F2BEV	226
		DFM7000G1F3BEV/DFM7000G1F4BEV	260
	Rated torque (N·m)	DFM7000G1F2BEV	60
		DFM7000G1F3BEV/DFM7000G1F4BEV	100

- Mounting of drive system: the three-point mounting structure is applied, with left/right mountings arranged on the transmission and motor and the middle torsion mounting on the transmission, and connected with the integral lower bracket.

2. Energy storage system

Traction battery	**Type of traction battery**	NCM lithium battery pack
	Energy (kW·h)	49 (1C discharge)
	Capacity (A·h)	≥140
	Nominal voltage (V)	350.4

3. Battery management system

- The system is designed to monitor the battery capacity in real time during the charging and discharging of the battery to provide the remaining capacity of the whole system at any time you need.
- Diagnosis to battery fault and system fault: the system will perform self-test with IGN ON, and if everything is OK, it gives a signal indicating that the system can work normally; otherwise, it gives a fault signal and cuts off the power supply.
- Protection for overcurrent, overvoltage and overtemperature: when the battery (including the whole system and its modules) incurs overcurrent, overvoltage, undervoltage or overtemperature, the system will cut off the charge/discharge circuit, give visible and audible alarms, and send a notice to the vehicle management system. These protection will be disabled when the factors triggering the protection disappear.
- Communication with vehicle: the system communicates with the vehicle via CAN bus.
- When the battery is working, it will record the working parameters of the battery at any time, and determines the availability of the battery through a certain mathematical model. If it is found that any battery has or is about to fail or its inconsistence with other batteries increases, the system will give visible and audible alarms and send a notice to the vehicle management.
- Charging control function and charging equalization function.
- When the external circuit incurs serious fault or failure, the module will trigger the safety protection to protect the battery against overdischarge, overcharge or short circuit.
- The module has the capability to measure and record the battery temperature, and when the temperature rises above the upper limit, it will cut off the charge/discharge circuit.
- Power-off protection function.

4. On-board charger

Items	Parameters
Output voltage (V)	230 ~ 440
Output power (kW)	0 ~ 6.6
Working temperature (℃)	-30 ~ 85
Cooling method	Liquid cooled

5. Vehicle controller

- DFM7000G1F3BEV & DFM7000G1F4BEV: integrated in the motor control unit;
- The main technical parameters for vehicle controller of DFM7000G1F2BEV are listed in the table below.

Items	Parameters
Voltage (V)	9 ~ 16
Working temperature (℃)	-25 ~ 85
Storage temperature (℃)	-40 ~ 85

6. Drivetrain

- Type and main technical parameters of transmission should be as specified in the table below.

Items	Parameters	
Model	DFM7000G1F2BEV	DFM7000G1F3BEV/ DFM7000G1F4BEV
Type	Parallel-axis	Parallel-axis
Final drive ratio	9.337	7.793
Peak torque (Nm)	250	260
Max. rotation speed (rpm)	12000	10000
Weight (kg)	*	25

- *: The equipped Continental motor is integrated with a transmission.

7. Axle shaft

- Drive mode: 4×2 front-wheel drive; CV joint axle shaft, with motion type tripod universal joint connected to the differential, and fixed type CV joint to the wheel.
- The axle shaft should not produce vibration or unusual noise during rotation, and the intermediate bearing and UV joint should be free of crack or looseness.

8 Suspension system

- Front suspension: MacPhersan independent suspension with stabilizer bar and two-way actuator type shock absorber; rear suspension: twist-beam semi-independent suspension.

Items		Parameters
Front wheel alignment	Camber	-0°05′±45′
	Inclination angle	9°50′±45′
	Kingpin caster	4°45′±45′
	Toe-in	IN1mm
Rear wheel alignment	Camber	-1°30′±30′
	Toe-in	IN3.5mm

9. Steering system

- Power-assisted steering linkage adopted.
- Type: split steering drive axle
- Steering wheel: formed three-spoke steering wheel with airbag
- Type of steering gear: pinion-and-rack type mechanical steering gear.
- Steering column: column type electric power steering (C-EPS). Two universal joints, adjustable steering angle, telescoping steering column, and steering axle with impact energy absorption function.
- Radial tire.

Items		Parameters
Main tire	Tire model	205/50ZR17
	Air pressure (full load/no load) (kPa)	250/230 (front)/260/250 (rear)
	Rim model	17×6.5J
	Rim material	Aluminum alloy
Spare wheel	Tire model	T125/80R17
	Air pressure (kPa)	420
	Rim model	17X4T
	Rim material	Steel

10 Brake system

Items		Parameters
Booster type		Vacuum booster
ABS		4-sensor, 4-channel
Brake circuit		X type
Parking brake		Electronic parking brake, acting on rear wheels
Front brake	Type	Disc brake
	Brake disc outer diameter (mm)	295.5
	Brake disc thickness (mm)	28
	Piston diameter (mm)	45*2
Rear brake	Type	Disc brake
	Brake disc outer diameter (mm)	305
	Brake disc thickness (mm)	10.3
	Piston diameter (mm)	42

11. HVAC

- Environment-friendly pure electric-control A/C system, with R134a used as the refrigerant.
- Heating system: PTC water heating type; cooling system: high-voltage driven compressor; condenser: parallel flow condenser;
- Heating capacity (W): 6300; airflow rate (m^3/h): 330.
- Cooling capacity (W): 4500; airflow rate (m^3/h): 480.

12. Lighting & signaling devices and electrical devices

- Main technical parameters of lamps are listed in the table below:

Name and model of lamp		Qty	Light color	Power (W)	Bulb model
Front combination lamp	High beam	2	White	55W	H7
	Low beam	2	White	55W	H7
	Turn signal lamp	2	Amber	8W	LED
	Front position lamp	2	White	1.1W	LED
	Daytime running lamp	2	White	10W	LED
Front fog lamp (premium)		2	White	35W	H8
Rear fog lamp		1	Red	21W	H21W
License plate lamp		2	White	5W	W5W
Rear combination lamp	Turn signal lamp	2	Amber	21W	P21W
	Brake lamp	2	Red	21W	P21W
	Back-up light	2	White	16W	W16W
	Rear position lamp	2	Red	1.4W	LED
Rear high-mounted brake lamp		1	Red	1.35W	LED

- Meters: including speedometer, trip meter, odometer, traction battery coulombmeter, traction battery temperature meter, motor overheat warning light, READY indicator light and other displays, which should be all normal.
- Vehicle status indication signal: traction battery available capacity during driving and charging, vehicle speed, motor working status and strength indicator, gear indicator, READY indicator, charging cable connection status, and range.
- Warning signals:
- System fault signals: overheat warning signal of drive motor and its controller and other key assemblies, and traction battery fault signal;
- Other warning signals: performance limitation signal, low SOC warning signal, EPS & electric vacuum pump failure warning signal, traction battery external charging indication signal, etc.
- Combination switches: switches for lighting, front wiper, washer and steering; other functional switches mainly including ignition switch, hazard warning lamp switch, START function switch, A/C switch, window regulator switch, and rearview mirror adjusting switch etc.

Fluids Capacity Data

Position	Vehicle model	Fluid name	Type	Consumption per vehicle
Motor	DFM7000G1F2BEV	Drive motor coolant	DF-3	4.8±0.3L
	DFM7000G1F3BEV/ DFM7000G1F4BEV			5.3±0.3L
Transmission	DFM7000G1F2BEV	Transmission oil	ETL8997B or Castrol SAF-PD or MobilubePTX75W-90	0.6±0.02L
	DFM7000G1F3BEV/ DFM7000G1F4BEV		BOT130M/75W-90	1±0.1L
Brake fluid reservoir		Synthetic brake fluid	DOT4	0.85L
Windshield washer		Windshield washer fluid	Golden Glass 002	3.3±0.3
Air-conditioner		Refrigerant	R134a	0.52kg
		Coolant	DF-3	2.4±0.3
Thermal management system*		Coolant	DF-3	5.3±0.3

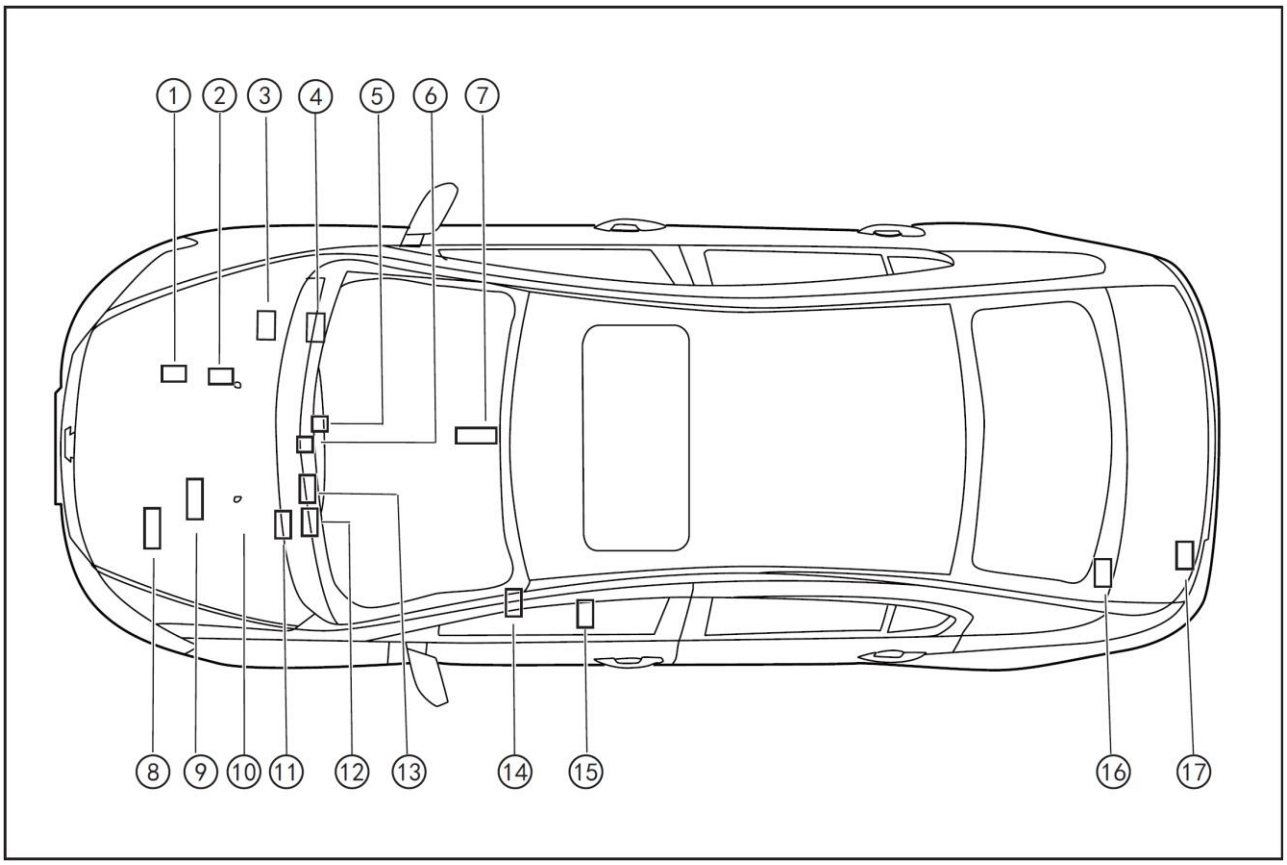
Notes:

1. Values given herein are designed values, and can be adjusted depending on the product, equipment and weather change in actual use. The coolant in the radiator is used to cool the drive motor through circulation, and the A/C refrigerated is heated by the PTC heater.
2. For technical specification and reasonable change interval of brake fluid, refer to Warranty Manual.

ECU Version No.

Part name	Part No.	Spare part No.	Latest software version	Update date
Independent motor and controller	A190010J-P0900	1137000	4.0.04	20171122
	A190010J-P0902	1137001	4.2.04	20171122
Continental motor and controller	A360050J-G0100	2641005	VC3_01	201512
Transmission control unit (TCU)	G210200J-G0111 (gear shifter E0)	—	V1.8.20	20171206
	G210200J-G0112 (gear shifter E1)	—	V1.7.00	20171129
	C510055J-P0900 (PCU)	3402010	DFM_EF126B11_ build20170602	20170602
Body control module (BCM)	Z960010J-G0101	7671005	S0402	20160515
	Z960010J-G0103	7671006	S0400	20160115
Instrument Cluster	Z410010J-G0120-DH	7341038DH	V3.0.00	20171017
	Z410010J-G0121-DH	7341039DH	4.0.01	20171128
Passive entry passive start (PEPS)	Z870010J-G0106		V2.0.00	20161012
Electric A/C control panel	V2A0021J-G0100 V2A0021J-G0104		V4.1.12	20171114
TPMS	—	—	—	—
Parking sensor controller	Z460010J-G0101	7761001	V4.1.00	20141106
Airbag Control Unit (ACU)	U410010J-G0109	8521031	V2.0.00	20150215
MP5 player	Z710080J-G0105	7703024	V4.1.02	20171130
Automatic emergency braking (AEB)	—	—	—	—
Electric power steering (EPS)	E470010J-G0104		V4.0.01	20170913
Electronic stability control (ESC)	—	—	—	—
Anti-lock braking system (ABS)	F6A0010J-G0110	—	3.0.04	20170602
Electric water pump controller	A160020J-G0100	—	A360147J-G0107_ V4.0.00	20170928
	A160020J-G0101	—	A360147J-G0108_ V4.0.00	20170928
Electronic parking brake (EPB)	F720040J-G0102	—	V4.0.01	20171124
Remote monitoring terminal assembly	Z750011J-G0100	—	V4.0.00	20171103
Vehicle controller	A360130J-G0110	7821003	V4.0.02	20171012
BMS	Z110030J-P0900		V4.0.04	20171208
On-board Charger	Z110083J-G0101		4.5.00	20170622

ECU Diagram



1. Independent motor and controller	7. Airbag control unit (ACU)	13. Passive entry passive start (PEPS)
2. Continental motor and controller	8. Electric water pump controller	14. Remote monitoring terminal assembly
3. Anti-lock braking system (ABS)	9. On-board charger	15. Vehicle controller
4. Body control module (BCM)	10. Transmission control unit (TCU)	16. Electronic parking brake (EPB)
5. Electric A/C control panel	11. Instrument cluster	17. Parking sensor controller
6. MP5 player	12. Electric power steering control unit (EPS)	

Abbreviations

For the purpose of this manual, the following abbreviations apply.

Abbreviations	Description
A/C	Air-conditioner
ABS	ABS
AC	A/C System
AV	Audio, Video, Navigation and Telephone System
BC	Body Check
BCM	Body Control Module
BD	Body Structure
BL	Body, Door Lock and Security System
BMS	Battery Management System
BR	Braking System
BRC	Brake Control System
CAN	Controller Area Network
CO	Cooling system
DC/DC	High-voltage converter
DI	Driver Information System
EBD	Electronic Brakeforce Distribution
ED	Electrical Diagram
EI	Exteriors and Interiors
FFS	Front Axle and Front Suspension
FR, RR	Front, rear
GI	Overview
GW	Glass, Window and Rearview Mirror
IP	Instrument Panel
LAN	Local Area Network
LH, RH	Left, right
LT	Lighting System
MA	Maintenance
EPS	Electric Power Steering
EPB	Electronic parking brake
PG	Power, Grounding and Circuit Components
PTC	Positive Temperature Coefficient
RF	Roof
RF	High voltage distribution box
RRS	Rear Axle and Rear Suspension
SAE	Society of Automotive Engineers
SB	Seat Belt
SC	Starting and Charging System
SE	Seat
SOC	State of Charge
SRS	Supplemental Restraint System
STC	Steering Control System
WT	Wheels
WW	Wiper, Washer and Horn
DC	Energy Storage and Power Supply System

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

2

Pre-delivery Inspection

Contents

Dongfeng New-energy Vehicle PDI Checklist ..... 2-错误!未定义书签。
Pre-delivery Inspection 2-4
Dongfeng New-energy Vehicle PDI Process 2-4
Operating Instructions 2-4

Dongfeng New-energy Vehicle PDI Checklist

Signature of PDI operator_____Date_____

I. Basic information

Franchise store name:	VIN:
Franchise store code:	Motor No.:
Model code:	Manufacturing date:
Traction battery No.:	

II. Checklist

Note: For the acceptable items, mark "√" in "☐". For the unavailable items, mark "/" in "☐". For the items which are accepted after the modification or adjustment, mark "√" in "☐". For the unacceptable items which need to be reworked or replaced, describe in the Remarks column. If they are accepted after rework, mark "√" in "☐". Record the parameter identification in the corresponding field "___", if required.

Inspection of materials, tools, and items: (1) ☐ No missing or failure of attached items and tools (2) ☐ No error or missing of VIN and product nameplates **Inspection of electrical parts:** **Note: Some models shall be changed from inventory mode to user mode.** (3) ☐ No fast charging abnormality (4) ☐ No slow charging abnormality (5) ☐ Opening, closing and hinges of drive motor hood (6) ☐ Low-voltage battery and fixing of connection cables, record of battery number (7)☐Fluids level, and top-up when necessary (drive motor coolant, heater coolant, brake fluid, transmission oil etc.) (8)☐No damage, leakage or interference of pipelines for systems in drive motor compartment (9)☐Visual inspection for routing, appearance and fixing condition of lines (high-voltage harnesses etc.) (10) ☐ Drive motor cooling fan (11) ☐ No damage of drive motor and its controller, traction battery and management system, on-board charger and other components **Inspection of four sides, top and interior:** (12) ☐ Charging port and rubber plug (13)☐Pressure and bolt tightening torque of 4 tires and the spare wheel (14)☐Normal locking/unlocking of front/rear doors, trunk lid and charging port cover (15) ☐ Function of keys (including mechanical key, remote control key and smart key) (16) □ Lighting (interior ceiling lamp, exterior lighting and signals, Follow Me Home) (17)☐Key-in-cylinder and lamp-on alarm (18) ☐Horn (19)☐12V power outlet (20)☐ A/V, radio, and MirrorLink, onboard communication etc. (21) ☐ Exterior rearview mirror (electric adjustment function) (22) ☐ Normal door window regulation (on-button window regulation and anti-pinch function on driver's door) (23) ☐ Normal sunroof functioning (including opening, closing and anti-pinch) (24) ☐Working condition of wiper and washer (25) ☐ Electric heating and defrosting of exterior rearview mirror and rear windshield (26) ☐ Up/down adjustment and locking of steering wheel (27) ☐ Seat adjustment function (28) ☐ Function of front/rear armrests, shelf and storage box of trunk (29) ☐ Normal and free extension/retraction of seat belts, front seat belt height adjustment device, rear seat ISOFIX, rear seat belt emergency locking function (30) ☐ Visual inspection of interiors (for scratches, deformation or looseness) **Road test:** (31) ☐ Height, free travel and working condition of brake pedal	(32) ☐ Unusual noise of drive motor in working (33) ☐ Seat belt reminder and speed-sensitive auto locking function (34) ☐ Nimble steering without off-track or interference (35)☐Whether the steering wheel is in the center without deviation when the vehicle travels along a straight line (36) ☐ Gearshift condition (harshness and noises etc. at each mode) (37) ☐ Normal indication of instrument indicators and tell-tales (38) ☐ Multifunction display/ECU (39)☐ Working condition and functions of A/C (heating/cooling switchover, mode, airflow rate at air outlets) (40) ☐ Braking effect of service brake and parking brake, ABS, ESC fault warning (41)☐No unusual noises in driving (42) ☐ Parking sensor, reverse image, navigation and other functions (43)☐Condition of radiator and cooling fan (44)☐No DTC inspected via electrical inspection after road test (by scan tool) (45) ☐No acceleration abnormality or other faults that affect the driving safety **Underbody inspections:** (46) ☐ No damage of critical components of powertrain (47)☐No looseness, damage or leakage of electrical circuits (48) ☐ Firm fixing of powertrain bracket without looseness (49) ☐ No damage or looseness of plugs and clamps at water inlet and outlet of traction battery (50) ☐ Tightening condition of key bolts and nuts, and necessary verification for tightening torques of key torque points within specified range (51) ☐ No leakage of front/rear shock absorbers, and no damage of dust boot (52) □ No transmission oil leakage (at oil seals and drain plug) (53) ☐ No cracks or damage of dust boots and rubber sleeves (54)☐No looseness of ball joints and bearings (55)☐No leakage from and proper installation of brake pipeline (56) ☐ Proper installation of EPB motor (57) ☐ Wheel tightening torque, tread condition and model (58) ☐ Visual inspection of underbody appearance (for scratches, bruises, cracks, deformation, damage, rust, defects or flaws) **Final inspection:** (59)☐Category, installation quality and function of optional accessories (60) ☐Washing & cleaning (no water leakage at 4 doors, sunroof and trunk lid) (61) ☐Exteriors and interiors inspection (body/paint/window/interior) (62) ☐Zeroing of trip meter, and setting of time, date, navigation, radio etc. **Notes:**

Note: This table is to be filed up after signed by the PDI operator.

Dongfeng New-energy Vehicle PDI Process

⚠ TIP

- **Fill in the Dongfeng New-energy Vehicle PDI Checklist during PDI.**
- **The PDI Instructions for newly-added models will be issued in the supplemental sheets.**

Necessary conditions

- The environment for PDI shall be well-illuminated.
- Pre-delivery inspection shall be finished at a special station (for franchise stores, the pre-delivery inspection shall be performed on a 4-column lift or shear lift; for secondary outlets, at the designated station).
- Enough tools, devices and auxiliary materials listed below are required:

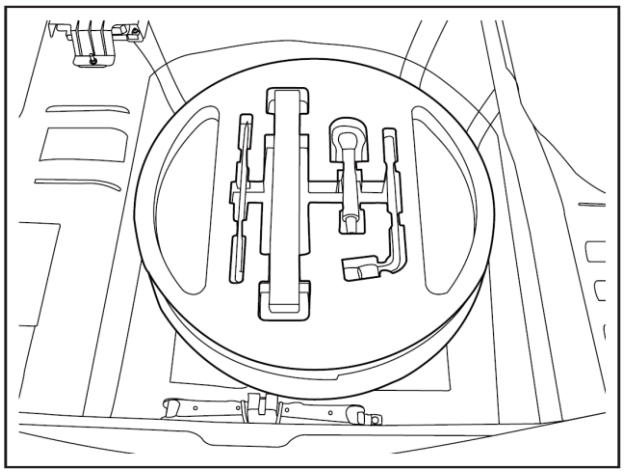
Sequence number	Name	Remarks
1	DFPV special scan tool	Diagnostic softwares should be updated to the latest version
2	High-pressure cleaner with cold/hot water	The vehicles working in cold areas shall feature cleaning with hot water.
3	Dust cleaner	For industrial use
4	Digital multimeter	As per metrological calibration requirements
5	Battery charger	Constant voltage, variable current
6	Inflating nozzle with pressure gauge	As per metrological calibration requirements
7	Common hand tools	As per metrological calibration requirements
8	6-piece protection kit	Fender, three-piece front protective pad kit, five-piece interior protection kit (steering wheel cover, seat cover, floor mat)
9	General detergent	For cleaning PVC material and ABS engineering plastics
10	Insulated protection equipment	Insulated protection suite, insulated rubber shoes, goggles, insulated gloves
11	Insulated tools	Insulated rubber pad, insulated tools, traction battery safety cover

- Necessary materials for PDI operator: *Dongfeng New-energy Vehicle PDI Practices*, *Dongfeng New-energy Vehicle PDI Checklist*, and complete User Manual for each model.
- PDI operators should wear clean gloves and working clothes in working.

Operating Instructions

⚠ NOTE

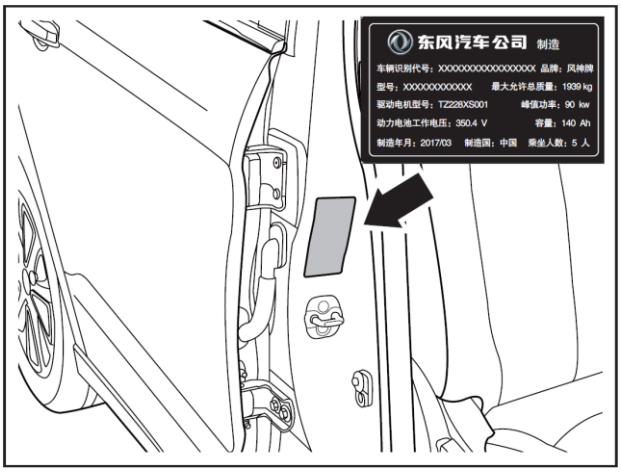
- **Vehicles subject to PDI must pass the acceptance inspection by Dongfeng franchise stores as per *Management Procedures for Shipment and Delivery of Commercial Vehicles*, with all inspection items carried out in accordance with *Shipment Order of Commercial Vehicles*.**
- **Prepare in advance the PDI plan: the PDI must be finished within two days before delivery (for any delay, the PDI should be performed again on any day before the delivery).**



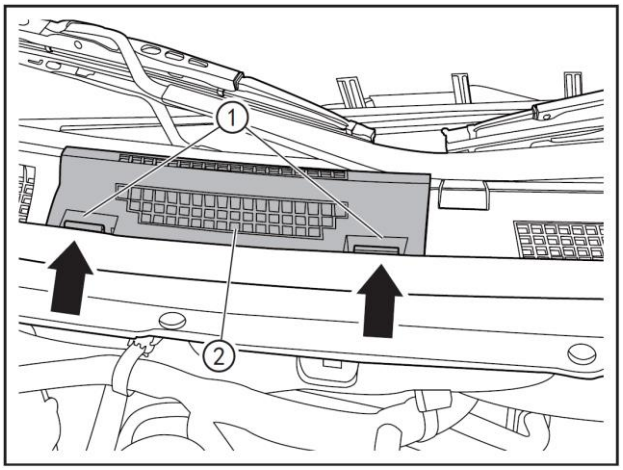
(1) Inspection of materials, tools, and items

1) After accepting the vehicle, check if the following items are provided:

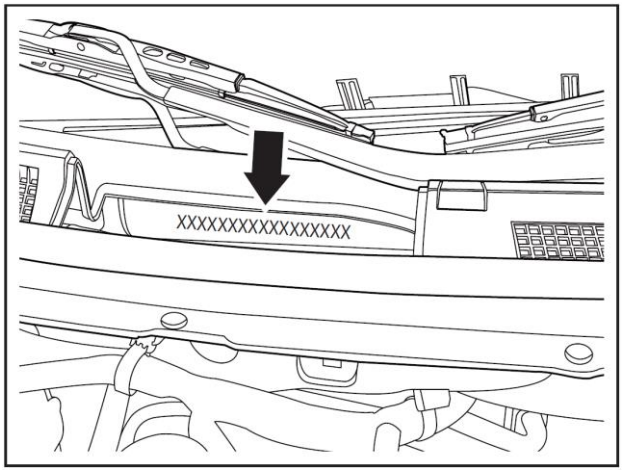
- Accompanying materials (including User's Manual, Warranty Manual, Franchise Store Contact List, and other accompanying materials for vehicles of different configurations)
- Accompanying materials (including warning triangle, wheel removal & refitting wrench, jack and handle etc.)
- Remote control and keys
- Power socket

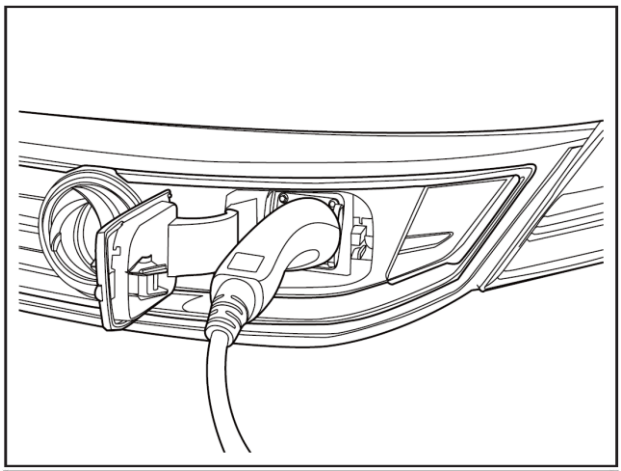


2) Check that VIN on the Certificate and Delivery Safety Checklist is the same with that marked on the vehicle.



- Press up the clamps (1) of the VIN (stamped) cover below the wiper arm to open the VIN cover (2) to make the stamped VIN visible.

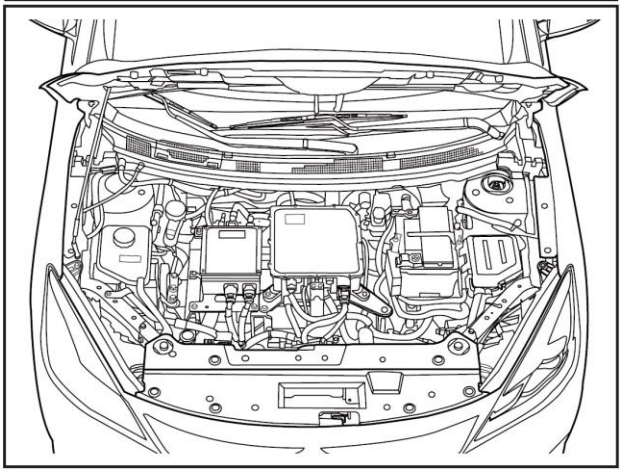




(2) Inspections of motor compartment

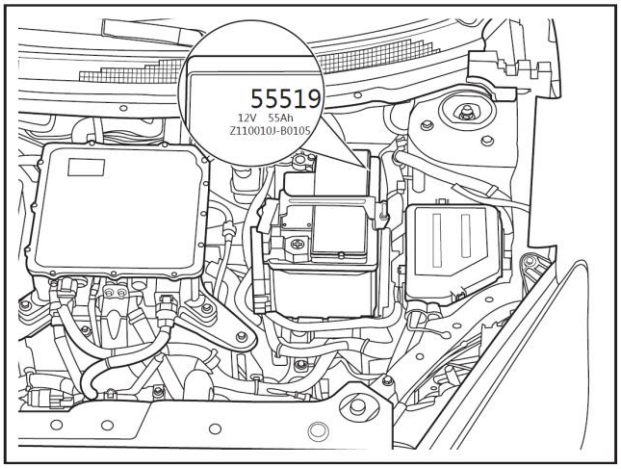
1) Check the fast charging function and slow charging function

- Open the charging port cover and connect the charging cable for charging; check if the “Charging Cable Connection Indicator” is on and if the “Charging Indicator” is flashing.
- Observe if the fast charging and slow charging of the vehicle is normal.



2) Check the opening function of hood

- Unlock the hood (pull the release handle of powertrain hood on the driver's side in the vehicle).
- Lift the hood, and check if it is still latched;
- Disengage the hood latch, open the hood and check if the hinge is normal.
- Secure the stay bar.



3) Check the battery

a. Check if the battery terminal is firmly connected (so that the cable connector cannot be turned by hand) and rusted.

b. Check the battery appearance for:

- leakage;
- scratches or cracks on housing;
- deformation.

c. Check and record the battery number.

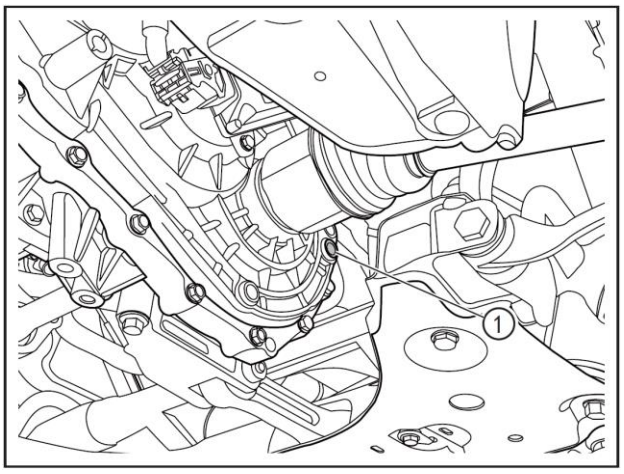
- Check the battery number and record it on the Inspection Record.

d. Check the voltage and capacity of battery.

- If the new vehicle has been stored for a long time and the battery has run out so that difficult start and improper functioning of electrical devices occur, check the voltage and capacity of battery.
- Set the battery still for 1h (at least) before measuring its voltage. Measure the voltage between the negative and positive terminals by a voltmeter (standard: ≥12.4 V).
- If the measured voltage is less than 12.4V, charge the battery (and when necessary, check the battery capacity with a capacity tester).

e. Charge or replace the battery.

- Disconnect the battery positive/negative cables.
- Charge the battery fully with a charger.
- Remove the charger, and then connect the battery positive/negative cables.
- Set the battery still for 1 h, and measure the voltage between the positive and negative terminals with a voltmeter. If the voltage fails to meet the standard again, replace the battery.
- When the battery is to be replaced, always use Dongfeng special spares.

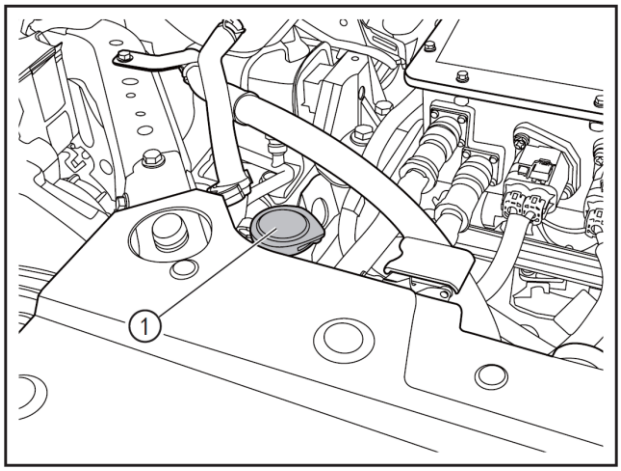


4) Check levels of fluids

Check if the following fluid levels are satisfactory:

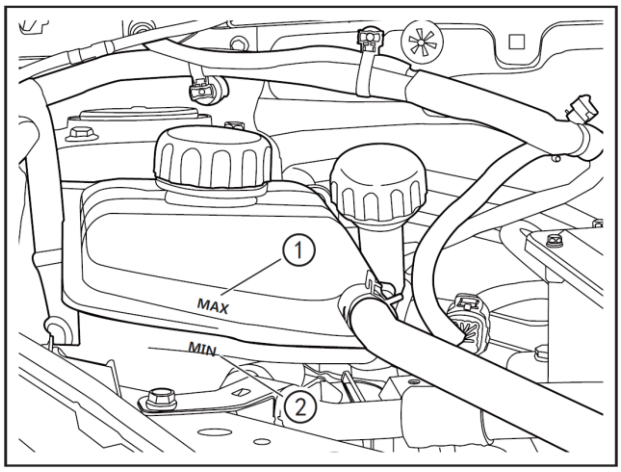
a. Transmission oil level

- Unscrew the transmission filler bolt (1). In normal cases, the oil shall flow out. If not, add transmission oil through the filler.



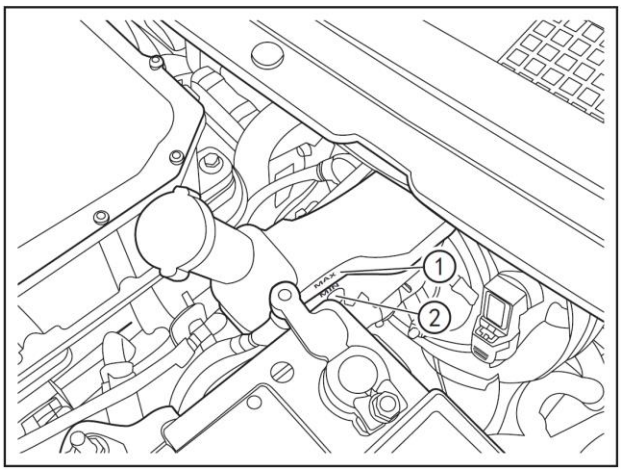
b. Front windshield washer fluid level

- Turn on the ignition switch and operate the front windshield washer switch. In normal case, the fluid shall spray out. If the washer fluid is insufficient, open the cap (1) and add some washer fluid of the same specification. Meanwhile, verify that the washer pump and its pipelines work normally.



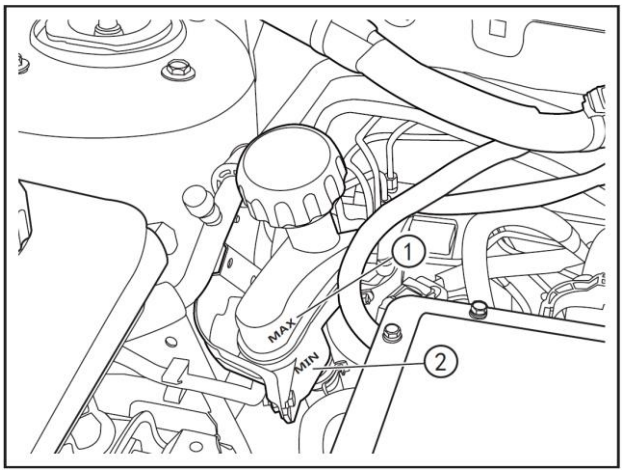
c. Motor coolant level

- When the vehicle is parked on a level ground, the coolant level should be between MIN (2) and MAX (1) marks (approaching MAX mark).
- If the level is low, add some coolant of same specification. If more than 1L coolant is to be added, check if the cooling system has leakage or other quality defects. When necessary, bleed off the cooling system (refer to the related process).



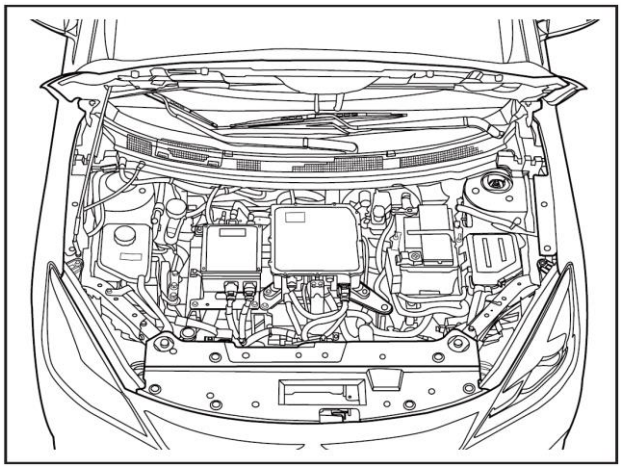
d. Brake fluid level

- The brake fluid level should be between MIN (2) and MAX (1) marks.
- If the level is low, replenish with brake fluid of same specification to the upper limit.



e. A/C heater coolant level

- After the A/C heater cools down, check the coolant level in the reservoir, which should be ensured between MAX (1) and MIN (2) marks.
- If the fluid level is too low, first check that the brake system does not leak, and then add brake fluid to the required level.



5) Check for pipe leakage and hose conditions

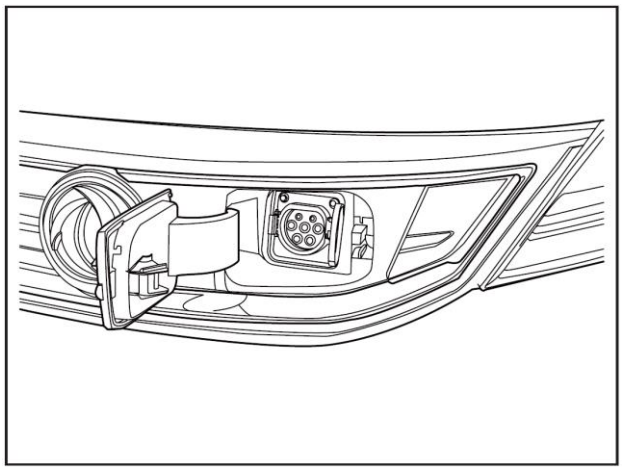
- Water pipe
- Brake pipeline
- Front windshield washer fluid pipeline
- A/C pipeline

6) Check the high/low-voltage harnesses of electrical equipment (routing direction, no looseness, and no damage).

7) Check the sealing performance of drive motor harness and controller.

8) Check the drive motor and its controller, the traction battery and management system, on-board charger and other components for damage.

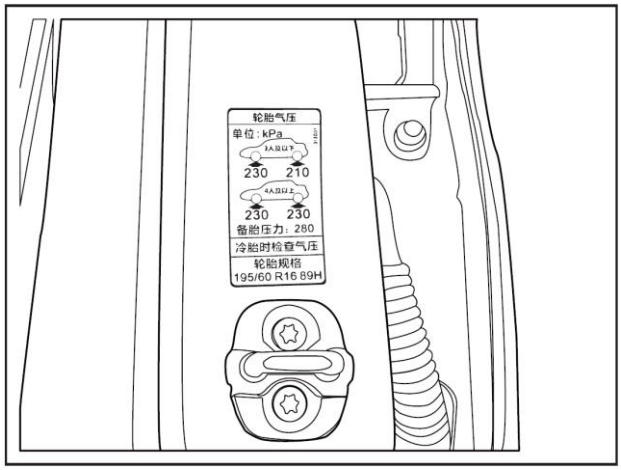
9) After the above inspections are finished, close the hood, and check whether it is closed properly.



(3) Inspection of surrounding, top and interior of vehicle

1) Charging port

- Check the charging port for blockage, damage or cracking.
- Check if the charging port cover can be opened and closed normally.
- Check that the charging cable is free of damage or aging, and its connector can be normally connected and locked.

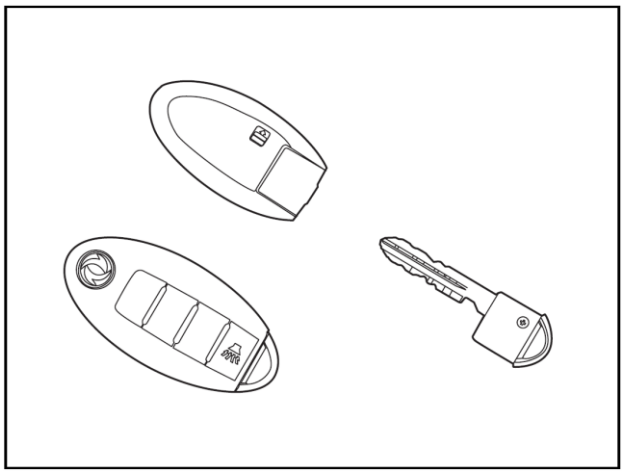


2) Wheels and tires

- Check the bolt tightening condition of 4 tires one by one. If unsatisfactory, adjust as per the standard torque.
- Check the pressure of 4 tires one by one. If unsatisfactory, adjust as per the standard pressure.

⚠ NOTE

- **For standard tire pressure, refer to the tire pressure label pasted below the B-pillar.**

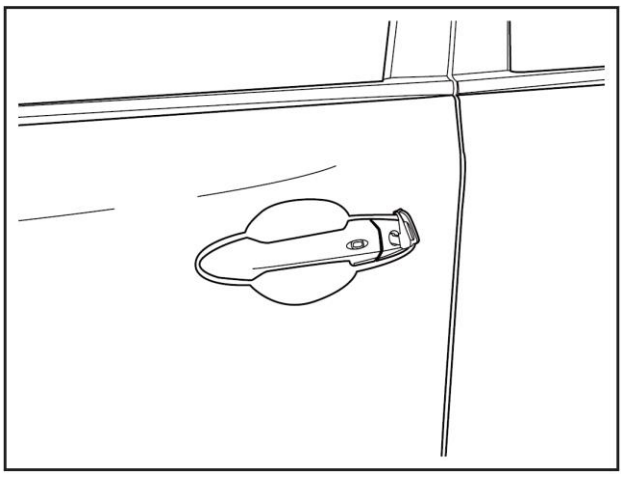


3) Keys and remote control

- Test if all the keys can unlock and lock left front door and steering wheel respectively.
- Check if the ignition switch can be turned on and off and the IMMO be activated and deactivated with a key.
- Check if the remote control can unlock and lock all doors.
- Check the remote control can resume locking automatically.

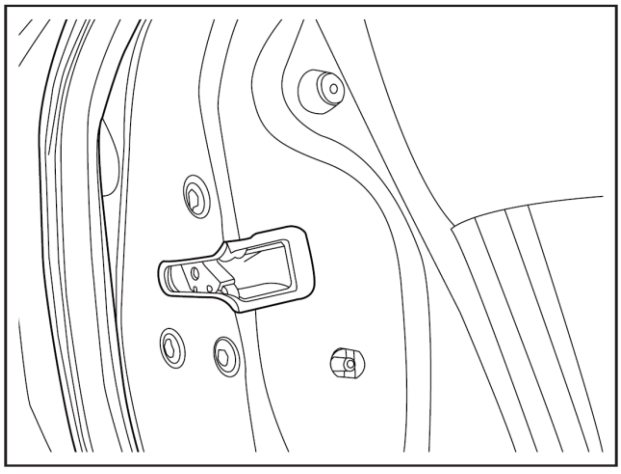
⚠ NOTE

- **Refer to the User Manual for the conformity of this inspection item.**

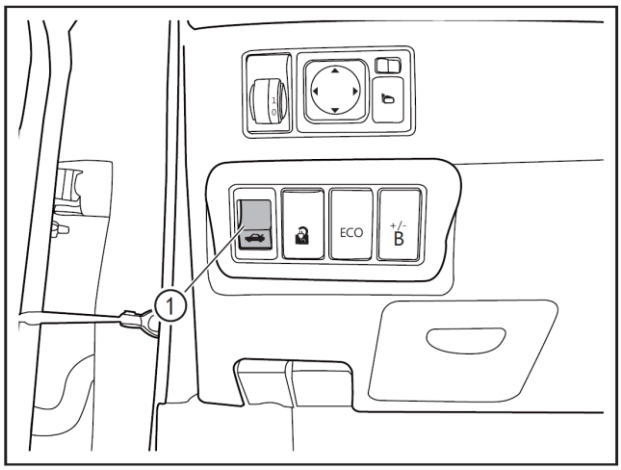


4) Door/trunk lid

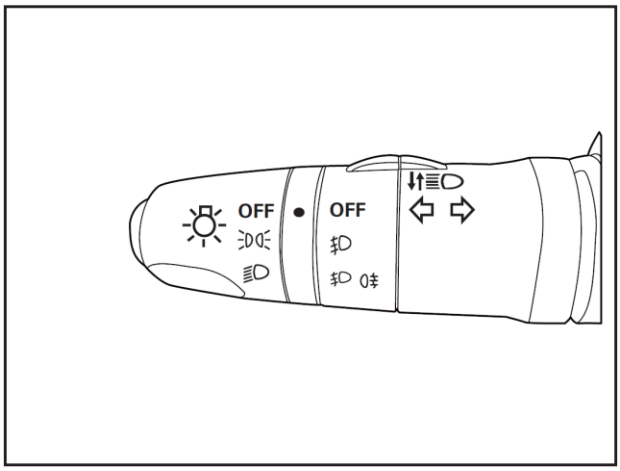
- When using the key or remote control, open/close doors and the trunk lid to check their opening and closing condition (check if the door inside and outside handles function normally, if there is unusual noise during opening/closing, if the hinge is normal, if the closing force is appropriate, and if the trunk lid opening/closing is normal etc.);



- Check whether the child safety lock on rear door can work properly (if the lock is acceptable, deactivate it).



- Check if the trunk lid can be unlocked normally by pressing and holding the trunk lid release switch (1).

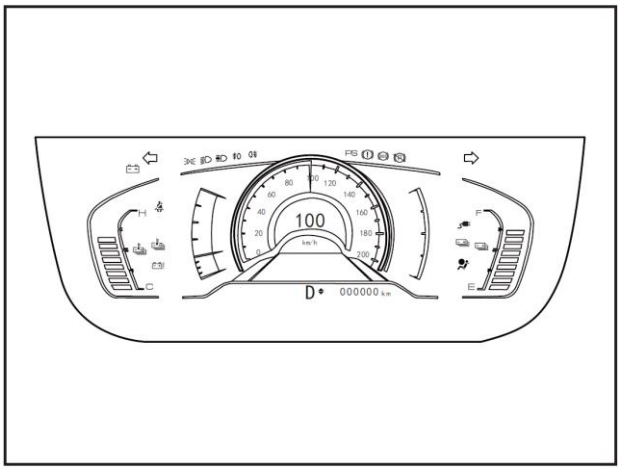


5) Lighting

- Check if the low beam, high beam, turn signal lamp, position lamp (front/rear), brake lamp, reversing lamp, front fog lamp, rear fog lamp, hazard warning lamp and interior lamp work normally.
- Check the headlamp delay function (i.e. Follow Me Home), lamp-on reminder and key-in-cylinder warning function (the warning will be activated when any of the four doors is opened with IGN ON) work normally.

⚠ NOTE

- **Refer to the User Manual to verify the conformity of all inspection subitems.**

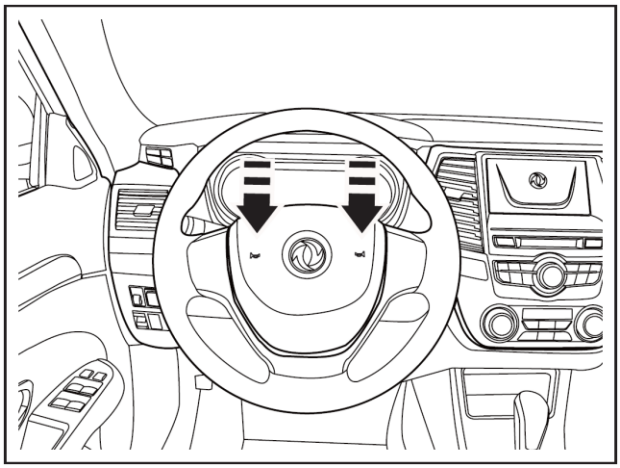


6) Warning lights, indicators and tell-tales on the instrument

- Set the ignition switch to ON or start the vehicle, and check the working condition of warning lights, indicators and tell-tales on the instrument (adjust the backlight luminance as appropriate).

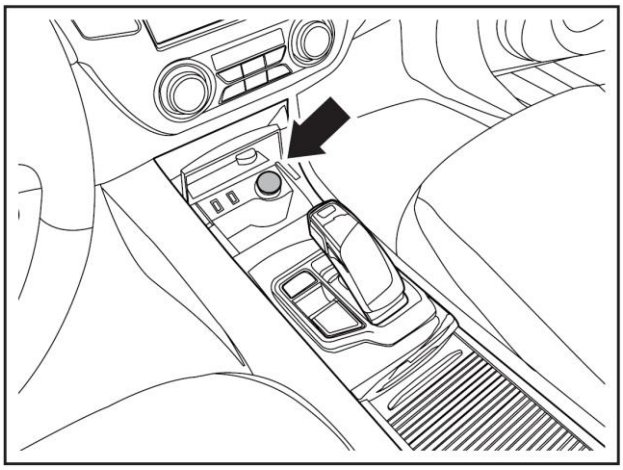
⚠ NOTE

- **Refer to the User Manual for the conformity of this inspection item.**



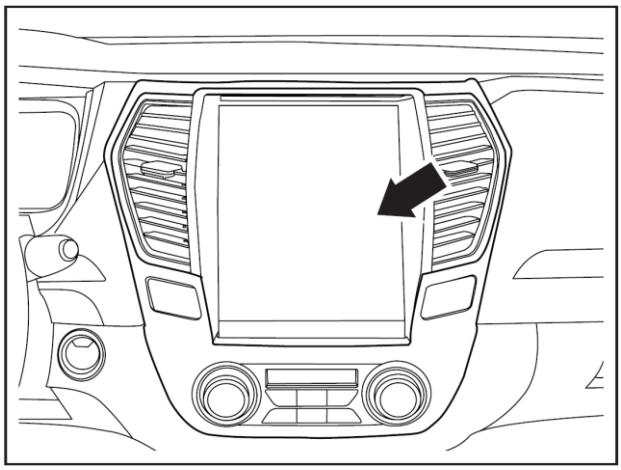
7) Horn

- Press the horn switch to check the working condition of horn (check if the sound is loud enough and if the tone effect is normal).



8) Power outlet

- Turn on the ignition switch, and insert any onboard electrical equipment. Then, the onboard electrical equipment will be supplied with power.

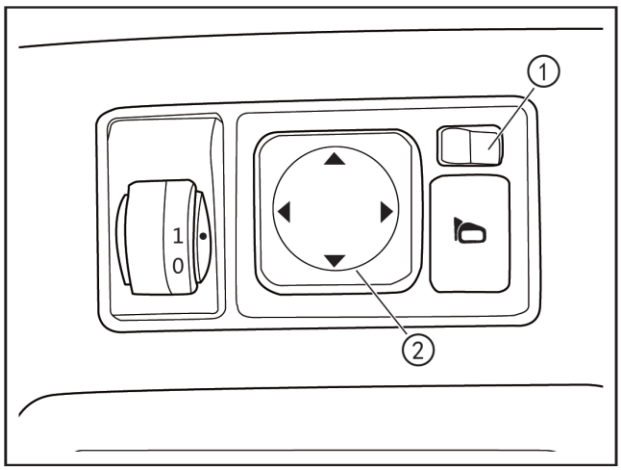


9) Audio/video system (MP3 & radio multi-media system/multi-media audio/video & navigation system)

- Functioning of radio.
- Functioning of USB and AUX.
- Functioning of multi-media audio/video & navigation system

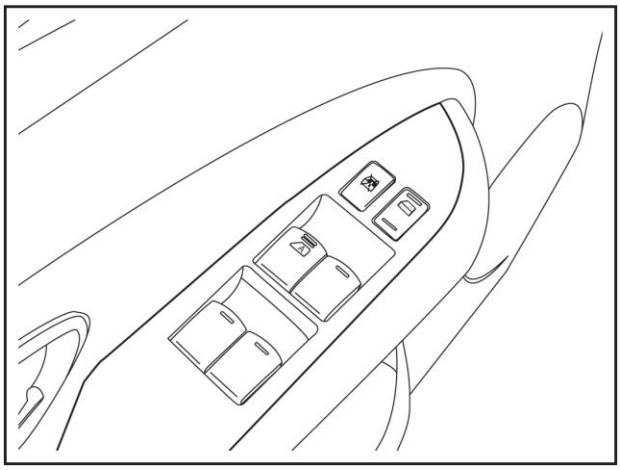
⚠ NOTE

- **Refer to the User Manual for conformity of MP3 & radio multi-media system/multi-media audio/video & navigation system.**



10) Electric exterior rearview mirror

- Check if the electric exterior rearview mirror can be adjusted according to the action of control switch, and if its field of view is satisfactory.
- (1): Select the left/right electric exterior rearview mirror, make adjustment and then move the switch to the middle position.
- (2): Adjust the field of view.

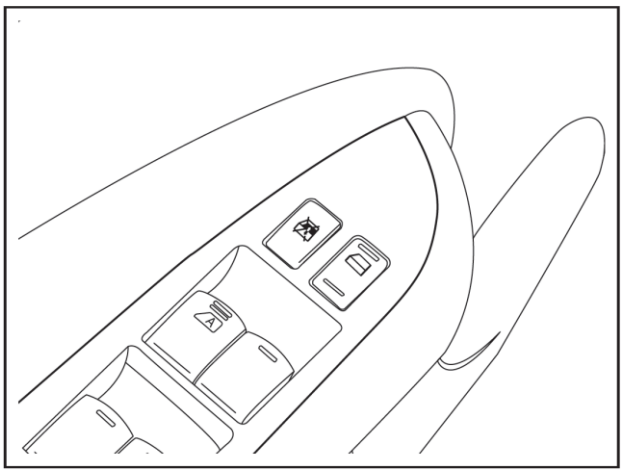


11) Power window regulator

- Turn the ignition switch to ON.
- Check the front/rear power windows for working condition (function and unusual noises etc.);
- Check the left front window for one-button regulation and anti-pinch function;
- Check if the window regulator locking button for doors other than left front door on the left front door is effective.

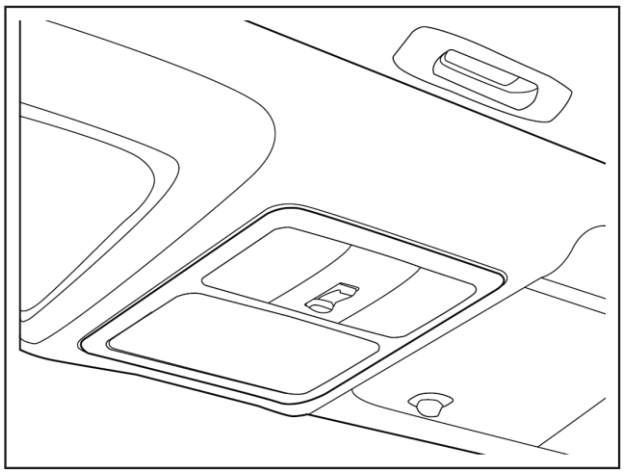
⚠ NOTE

- **Refer to the User Manual for conformity of power window regulator.**



12) Central locking

- Turn the ignition switch to ON.
- Press the LOCK/UNLOCK button of central locking;
- Check if the central locking system works normally.

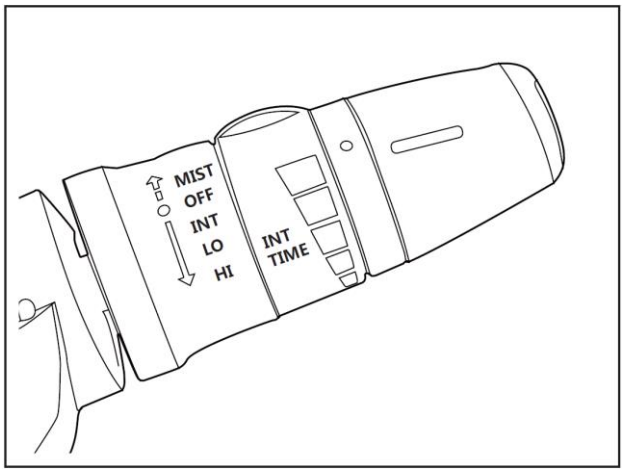


13) Sunroof

- Check the opening, tilting-up and closing of sunroof.
- Check the anti-pinch function of sunroof (extra care shall be taken).
- Check the opening and closing of sunroof sun visor.
- Close the sunroof and sun visor after the inspection.

⚠ NOTE

- **Refer to the User's Manual for conformity of sunroof of corresponding model.**
- **The simulative obstacle for inspecting window anti-pinch function should have a light-colored and soft package, so as to protect the body against deformation due to squeezing.**

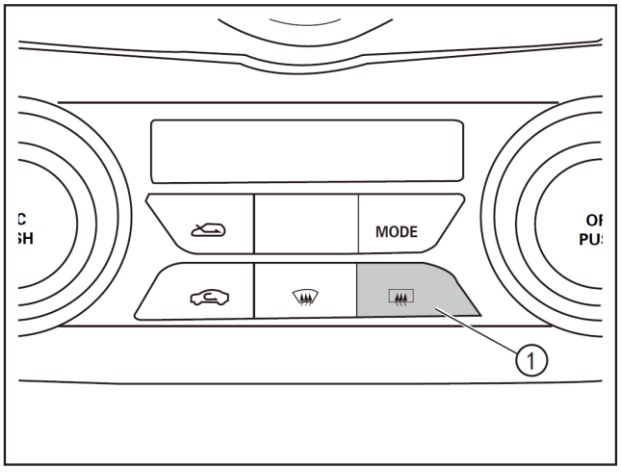


14) Wiper

- Operate the wiper switch to check if the wiper works normally at each gear.
- Switch from Low gear to High gear to run the wiper mechanism.
- Replace the unacceptable rubber wiper blade.

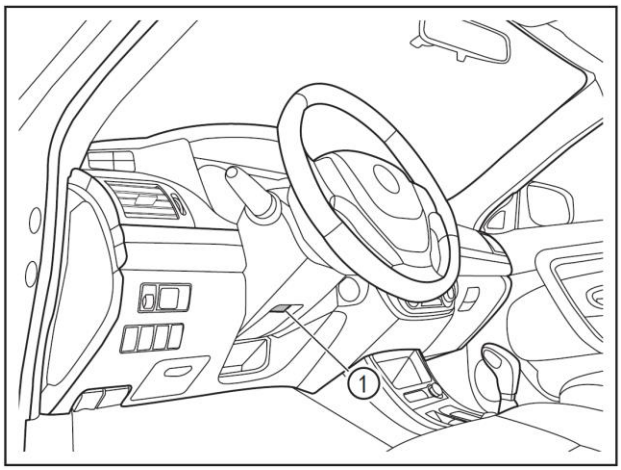
⚠ NOTE

- **Refer to the User Manual to verify the conformity of wiper mechanism. Wiping without fluid is prohibited. Never turn off the ignition switch until the wiper is switched off and the wiper arm stops at the bottom of the front windshield.**



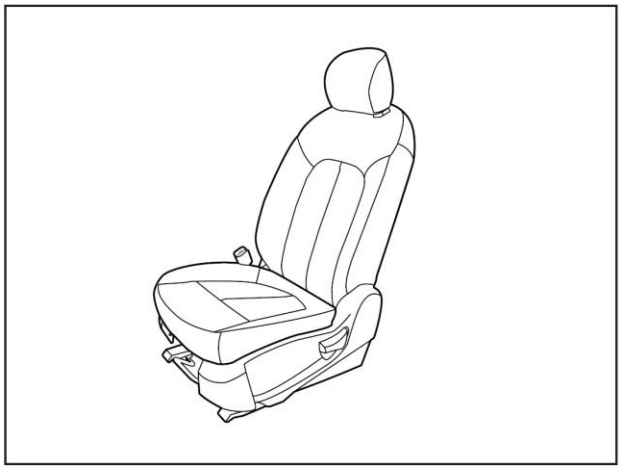
15) Electric heating and defrosting of exterior rearview mirror and rear windshield

- With ignition switch at ON, press down the electric heating & defogging/defrosting switch (1) of rear windshield, and 5 min later, touch the windshield to feel if the temperature increases. After this test, turn off the electric heating switch in time.



16) Steering wheel

- Release the adjuster handle (1), and check if the steering wheel can be moved up and down freely without seizure.
- Release the adjuster handle, and check if the steering wheel can be positioned reliably during the upward and downward adjustment.
- After the inspection, adjust the steering wheel to the upper limit position, and lock it up.

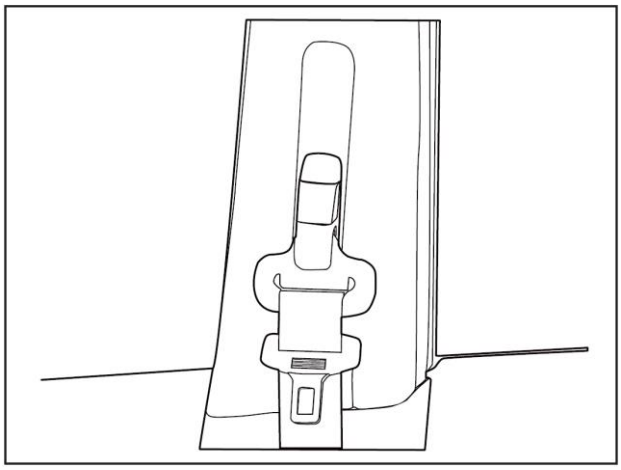


17) Seat

- Check the adjusting function of seats, backrests, head restraints and armrests.
- Adjust the two front seats to the same condition.
- Place the rear seats in the seating condition, and adjust their head restraints to the lowest position.
- Place the rear seat belts and their buckles at conspicuous positions.

18) Storage spaces

- Check that the central armrest can be moved out and turned over normally without seizure, and then locked reliably.
- Check that the rear armrest can be moved out and pushed in normally without seizure.
- Check that the trunk shelf is tidy without debris.
- Check that the storage box is tidy and clean.



19) Seat belt

- Check the condition of all seat belts (free extending/retraction without twist, and buckle conditions etc.).
- Check if the front seat belt height adjustment device functions normally.
- Check if the rear seat ISOFIX functions normally.

(4) Road test

1) Inspections and adjustments before road test

a. Reading of fault information

• Read the DTCs with scan tool and delete them, ensuring that all systems are free of DTCs.

⚠ CAUTION

• **For the permanent malfunctions that cannot be deleted, troubleshoot them based on the nature of malfunction before road test.**

b. Rearview mirror

• Adjust the interior and exterior rearview mirrors to appropriate positions.

2) Inspections during road test

a. Check if the drive motor makes any unusual noises.

b. Check the brake pedal for height and free travel, and the interference when the pedal is depressed to the bottom, and the working condition of vacuum booster.

c. b. When the vehicle has traveled for 60 s and the speed is greater than 10 km/h, check the functioning of driver seat belt reminder.

d. Check the automatic locking function of doors when the vehicle speed is greater than 20km/h (the function reactivated).

e. Check if the steering wheel is in the center and if the vehicle runs off track in straight traveling.

f. Check if the steering wheel can be turned to left or right easily (functioning of power steering system). Check if the steering wheel can be centered automatically when the vehicle runs straightly back from turning.

g. Check that no motion interference occurs among tires, suspension mechanism and steering mechanism during steering, even when the steering wheel is turned to the rightmost/leftmost.

h. Check the gearshift condition (harshness and noises etc. at each mode)

i. Check that there is no acceleration abnormality or other faults that affect the driving safety

j. Check for unusual noises during driving.

k. Instrument cluster: check that warning lights, indicators and tell-tales display normally, and the gear indication of shift lever is normal.

l. ECU display: Check the functioning of odometer (total mileage, double-trip mileage and range) is normal.

m. Check the working condition of cabin cooling unit (air conditioning).

n. Check the working condition of cabin heater. Turn off the A/C switch and fan switch while inspecting cooling (air conditioning) unit and heater.

o. Check for brake pulling, unusual noises and braking efficiency during the braking.

p. Check if the ABS functions in case of emergency braking.

q. Pull up the EPB switch for stopping, and then you will hear the working sound of motor and find that the brake system warning light on the instrument cluster goes on, and then, check that the vehicle is parking braked reliably.

r. Reverse the vehicle to check the functioning of parking sensor and reverse image system.

s. Check that the radiator and cooling fan are in good condition and work normally.

t. The vehicle has no abnormalities when the drive motor inputs no torque (at normal idle speed).

3) Inspections after road test

a. After the test, stop the vehicle and check the followings:

• Check the condition of radiator and cooling fan.

b. Check the scan tool

• Read and delete DTCs.

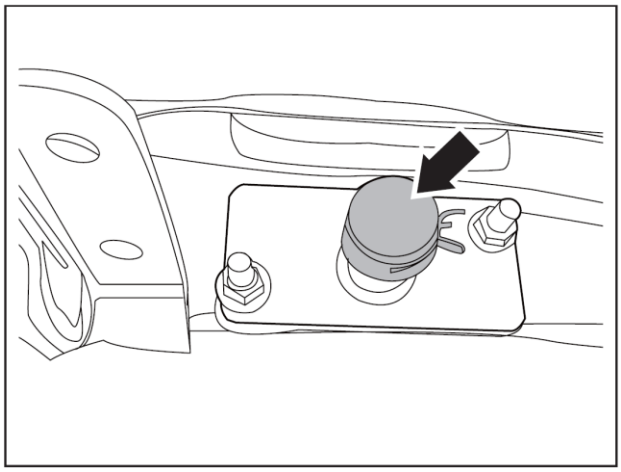
⚠ CAUTION

• **For the permanent malfunctions that cannot be deleted, troubleshoot them based on the nature of malfunction.**

c. Check the chassis

Lift the vehicle to an appropriate height using a shear lift, and do the following checks:

- Check the critical components of powertrain for damage.
- Check the electrical circuits for looseness, damage or leakage.
- Check that the powertrain bracket is fixed firmly without looseness.
- Check the plugs and clamps at water inlet and outlet of traction battery for damage or looseness.



- Check the torque of key torque points, and if the tightening torque is unsatisfactory, adjust to the specified range. (See Tightening Torques at Key Torque Points in Maintenance section)
- Check the front shock absorber for dust boot damage and leakage.
- Check the dust boot of axle shaft CV joint (whole perimeter) for cracks or leakage.
- Check the axle shaft oil seal for leakage.
- Check the steering tie rod ball joint for looseness.
- Check the transmission drain bolt for oil stains.
- Check the dust boot of steering gear for cracks.
- Check the stabilizer bar for ball joint looseness and rubber boot damage.
- Check the rear shock absorber for dust boot damage and leakage.
- Check the triangular arm ball joint for looseness.
- Check the brake pipeline for leakage and out-of-place installation.
- Check if EPB motor is installed firmly.
- Check if the 4 hub bearings become loose.
- Turn the wheel and check for brake slagging.
- Turn the wheel and check the surface condition of tires (pattern, wear, foreign matters, bulge, cracks etc.).
- Visual inspect the model and specification of tires (turn the wheel as appropriate).

(5) Inspection of optional accessories

Check the optional accessories installed at a franchise store for:

- Consistence of type with the customer's order.
- Installation quality
- Function.

⚠ NOTE

- **Refer to the Installation & Operation Instructions of the corresponding accessory to check conformity of its function.**

(6) End of PDI

a. Clean/wash the vehicle

- Tear off the protective tape at handles and sills of four doors; and remove seat cover and carpet protective pad;
- Clear all stains in the vehicle. Note: Check if the originally masked position involves appearance defects when removing those protections; never leave any articles for recording in the process of manufacture and transport in the vehicle; keep some protections upon persistent request by the customer.
- Wash the body with clean water.
- Wipe off the body.
- Check four doors, sunroof and trunk lid for leakage.

b. Check the body/paint/windows

Walk around the vehicle by one circle within 1.5 m and do the following inspections:

- Check the vehicle for deformation (crinkles, dents and sharp points etc.)
- Check the paint surface for deposit, burrs, dents, crinkles, color difference or scratch.
- Check if window glasses and light shields are intact.

c. Zero the trip meter, and set the time, date, navigation, radio etc.

d. Place front/rear carpets and trims (as appropriate).

e. Complete the PDI checklist, and hand it over to the sales personnel.

⚠ NOTE

- **Check if the originally masked position involves appearance defects when removing those protections. Never leave any articles for recording in the process of manufacture and transport in the vehicle. Keep some protections upon persistent request by the customer.**

(7) Precautions for PDI

- In the process of PDI, for unacceptable items which become accepted after modification or adjustment, mark "√" in "☐".
- For unacceptable items which need rework or parts replacement, describe in the Remarks column, and when they become accepted after rework or parts replacement, mark "√" in "☐". Items requiring rework or parts replacement should be treated following the normal maintenance procedures.
- If any malfunction is found in the process of PDI, fill in the Quality Information Report (QIR) as per the related procedures for malfunction feedback.
- All franchise stores shall carry out the PDI carefully, which is subject to the supervision and audit of After-sales Service Dept.

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Service Manual

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The company reserves the right to make changes to and interpret this manual.

Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

3

Maintenance

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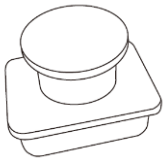
Precautions for service

- **Preparations prior to maintenance**
- **Prior to conducting maintenance, please wear necessary protection articles to avoid accidents.**
- **Ensure that the site is clean and well-ventilated with tools and instruments placed in order and the fire extinguishing equipment provided.**
- **Check the safety conditions of instruments and equipment for operation, such as lifter, jack etc.**
- **Check the safe driving conditions to ensure smooth maintenance.**
- **Precautions during maintenance**
- **Before driving the vehicle into the lifter, ensure that enough clearance between the bottom and two sides of the vehicle and the lifter is available for avoidance of scratches.**
- **Before lifting the vehicle, ensure that the vehicle weight does not exceed the nominal load capacity of the lifter.**
- **Always select the correct lifting point during lifting.**
- **During lifting, it is not allowed to start the vehicle and engage a driving gear with driving wheels contacting the ground, otherwise, it may cause injury to the operator and damage to the vehicle.**
- **The operator must observe all safety regulations and operation rules during maintenance.**
- **Always replace parts and consumables with original accessories provided or approved by Dongfeng Passenger Vehicle Company.**
- **Post-maintenance precautions**
- **Upon completion of maintenance, it is required to determine necessity of test run inspection based on maintenance items, especially inspection on the brake system and passenger protection system.**
- **The vehicle can be delivered to the customer only when DTCs stored in the ECU have been eliminated.**
- **Planned items**
- **The planned maintenance interval depends on the odometer and time interval, whichever comes first; see the routine maintenance period table for routine maintenance.**
- **The maintenance interval for the next maintenance shall be calculated from the time of last maintenance.**
- **See the maintenance schedule for maintenance intervals of all parts.**
- **Pay special attention on some parts during maintenance. In case of aging or damage of a hose, please replace it immediately (aging of the rubber hose will occur as time goes on, thus causing ballooning, scratches or cracks).**
- **After driving the vehicle in a severe environment, please check the following parts and conduct maintenance or repair according to actual conditions:**
- **Brake lining and brake disc;**
- **Brake pipeline and hoses;**
- **Brake fluid.**

Special tools

Tool No.	Tool Name	Tool Picture	Description
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
BF0104	Coolant filling barrel		For filling coolant

Technical Parameters

Recommended Fluids and Lubricants

Position	Vehicle model	Fluid name	Type	Consumption per vehicle
Motor	DFM7000G1F2BEV	Drive motor coolant	DF-3	4.8±0.3L
	DFM7000G1F3BEV/ DFM7000G1F4BEV			5.3±0.3L
Transmission	DFM7000G1F2BEV	Transmission oil	ETL8997B or Castrol SAF-PD or MobilubePTX75W-90	0.6±0.02L
	DFM7000G1F3BEV/ DFM7000G1F4BEV		BOT130M/75W-90	1±0.1L
Brake fluid reservoir		Synthetic brake fluid	DOT4	0.85L
Windshield washer		Windshield washer fluid	Golden Glass 002	3.3±0.3
Air-conditioner		Refrigerant	R134a	0.52kg
		Coolant	DF-3	2.4±0.3
Thermal management system*		Coolant	DF-3	5.3±0.3

Notes:

1. Values given herein are designed values, and can be adjusted depending on the product, equipment and weather change in actual use. The coolant in the radiator is used to cool the drive motor through circulation, and the A/C refrigerated is heated by the PTC heater.
2. For technical specification and reasonable change interval of brake fluid, refer to Warranty Manual.

Service Parameters

Items	Measurement	Condition	Standard value	Limit value
Accessory belt	Tension	-	520±30 N·m	-
Battery	Voltage	Static voltage	＞12V	-
		Starting voltage	＞10V	-
		Generating capacity	＞13.8V	-
Steering wheel	Clearance	Play	-	30mm
Brake disc	Thickness	Front/rear	28.0/10.3	26/8.3
	Outside diameter	Front/rear	295.5/305	-
	Runout	Front/rear	-	0.035/0.1
Brake lining	Thickness	Front/rear	11.6/9	2.0/2.0

- General maintenance items refer to the items to be checked on a daily basis during the normal operation of the vehicle. These maintenance items are crucial to maintain the normal usage performance of the vehicle. The maintenance personnel can make a deep understanding of the vehicle, so as to make themselves and the franchise store well received by customers.

Vehicle Outside

- Unless otherwise specified, these listed items should be checked often.

Items	
Tires	Check the air pressure of tires (including the spare wheel) with an air pressure gauge. Adjust to the specified pressure if necessary. Check the tires carefully for damage, cracks or excessive wear.
Window	Clean all windows and windshields on a regular basis. Check all windows and windshields for cracks or other damages. Repair or replace as needed.
Wiper blade	In case of poor wiping effects, check if the wiper blade edge is cracked or worn.
Doors, hood and trunk lid	Check that all doors, hood, and trunk lid can be opened and closed properly. Make sure that all latches can be securely locked at the same time. Lubricate as needed. Confirm that after the main lock of the hood is unlocked, the second lock can still prevent the hood from being opened. If the vehicle frequently runs on salt-sprinkled roads or areas with other corrosive substances, it will be required to check lubrication frequently.
Tire Rotation	Do tire rotation every 10,000 km.
Lighting	Check that headlamps, brake lamps, tail lamps, turn signal lamps and other lighting equipment work normally and are fixed securely. Also, check the headlamp aiming function.
Front and rear bumpers	Ensure that front and rear bumpers are fixed firmly, and check that their surface paint is free of scratches and damages.
Charging port	Check that the charging port cover can be opened and closed normally. Check that the inside of the charging port is clean without metal chips, fluids or other foreign matters that may affect the charging performance.

Vehicle Inside

- Perform the following maintenance on a regular basis, such as cleaning the vehicle during routine maintenance.

Items	
Instruments, warning lamps, buzzers	Make sure that all warning lamps and buzzers are working properly.
Combination switch and other function switches	Check that the wiper and washer work properly with the combination switch turned to ON, that there are no stripes on the wiper and that corresponding functions can be realized by operating other function switches.
Instrument Panel	Ensure that the instrument panel is free of color fading, wrinkle, crack and peeling off, and kept clean and glossy.
Steering wheel	Make sure the steering wheel free play complies with the standard. Check change of steering performances to see if any problems such as excessive free play, hard steering, unusual noise etc. occur.
Seat and seat belt	Check if all components of the seat belt system (e.g., buckle, fixing bolts, regulator and retractor) are working normally, flexible and fitted securely. Check the seat belt to see if it is cracked, scratched, worn or damaged.
Accelerator pedal	Check if the pedal can be moved smoothly without seizure or nonuniform stressing, and if the floor mat stays away from the pedal.
Brake pedal and booster	Check the pedal for smooth operation, and confirm that there is appropriate clearance from the floor when fully stepped. Check that the brake booster functions normally and the floor mat stays away from the pedal.
A/C panel and air outlet	When operating the A/C panel, check that air flows out from the correct air outlet at a sufficient rate.

Hood and Chassis

- Maintenance items listed herein should be checked regularly.

Items	
Windshield washer fluid	Check that there is enough washer fluid in the reservoir.
Motor coolant level	Check the coolant level while the motor is in cold state. The level should be between the "MAX" and the "MIN" marks.
A/C coolant level	Check the A/C coolant level The level should be between the "MAX" and the "MIN" marks.
Brake fluid level	Check that the brake fluid level in the reservoir is between "MAX" and "MIN" marks.
Liquid leakage	Wait a period of time after parking the vehicle and then check if there is any leakage indication of water or other liquid under the vehicle. Water drops caused by A/C operation is normal. In case of notable leakage or abnormal smell, identify and eliminate the cause immediately.
Front and rear suspensions	Check the front and rear suspensions for any cracks, wear or other damages. Check if suspension nuts and bolts are loose. Check the shock absorber for oil leakage or other damages. Check if the suspension ball joint leaks grease, and if the ball joint dust cover is cracked.
Brake pipeline	Check if the pipeline components involve crack, damage or excessive bending, and if the clamps of the pipeline are secured at correct positions without damage.
Motor compartment harness	Check harnesses for damage, connector looseness or motion interference with other parts.
Condenser	Check pipe connection assembly for looseness or damage. Check for leakage.

Maintenance Under General Driving Conditions

- After the second free-of-charge mandatory maintenance, the routine maintenance should be performed every 3 months or 5,000 km (whichever comes first).
- The following table shows the routine maintenance plan. Service interval may be increased or shortened depending on the weather and air conditions, different road conditions, individual driving habits or vehicle applications.
- Any maintenance items that have not been implemented the last time should be supplemented in subsequent maintenances.

Items		Maintenance interval (also applicable for the remaining service life after the time mentioned in this table)																
	Month	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
	km×1000	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
Maintenance																		
Charging port		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Charging port rubber plug		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sealing performance of drive motor harness and controller.		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Drive motor cooling fan		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Drive motor coolant		I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	R
Drive motor cooling system pipeline		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Traction battery				I		I		I		I		I		I		I		I
Battery (12V)		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Computer diagnosis				I		I		I		I		I		I		I		I
Maintenance for chassis and body																		
Brake fluid★										R								R
Brake system and brake fluid (level and leakage)		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Vacuum pipe, joint and check valve of brake booster						I				I				I				I
Wear, aging and leakage of brake lining, disc/drum and other related components★		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Transmission Oil				I		I		I		I		I		R		I		I
EPB★		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Suspension★		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Front axle shaft★		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Wheels and tires		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Alignment (rotation/dynamic balance as needed)				I		I		I		I		I		I		I		I
Door lock, hinge, hood latch, charging port cover and opening mechanism★		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Seat belt, buckle, retractor, fixing bolts and regulator		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Free play, travel and action of pedals		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
A/C filter★				I		R		I		R		I		R		I		R
A/C pipelines and harnesses		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
PTC coolant		I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	R
Inspection of retrofitting or modification (please make records if any)		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

Abbreviations: I = to be adjusted or replaced during inspection (material cost to be charged separately), R = Replace, L = Lubricate

Note: The maintenance items marked with "★" should be performed more frequently as per the specifications in "Maintenance Under Harsh Driving Conditions"

Maintenance of Motor System

- The maintenance of motor system includes:
- Check if the low-voltage signal terminal is connected firmly;
- Check if the coolant is sufficient;
- Check if cooling fan works normally;
- Check if the working ambient humidity is normal;
- Check if the strong electricity voltage is within the reasonable range;
- Check if the motor produces unusual noise in working;
- Check if the rotation speed feedback is normal;
- Check if the motor surface is clean;
- Check if the high-voltage harness is installed reliably;
- Check the motor and its controller are well sealed;
- Check if the water duct is connected reliably;
- Check if the motor is fixed reliably;
- Check if the motor housing is well grounded with body;
- Check if the temperature feedback is normal;
- Check if the sampled voltage is consistent with the battery feedback voltage;
- Check if the command is accepted normally;
- Check if the signal line is arranged normally;
- Check if the power line is arranged normally.
- Check if the water ducts are arranged properly.

Maintenance Under Harsh Driving Conditions

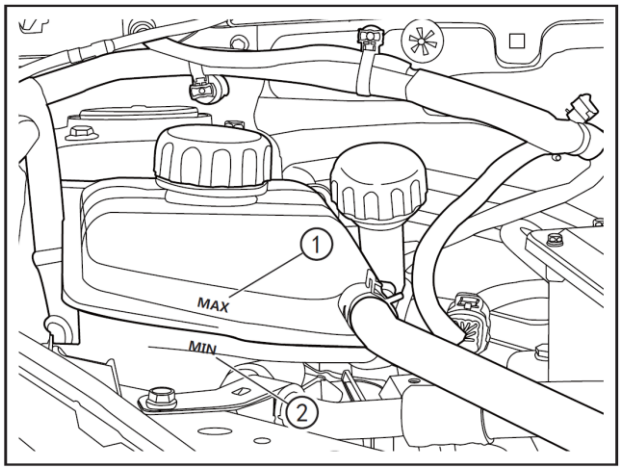
- The routine maintenance mileage is applicable for normal driving conditions.
- More frequent maintenance as shown in the following table must be performed if the vehicle is driven under harsh conditions.

Harsh driving conditions

A - Driving in dusty environment
B - Repeated short distance driving
C - Driving in areas with extremely bad weather or extremely low/high temperature
D - Driving in high humility region or mountainous region
E- Driving on road with salty or corrosive materials
F - Driving on coarse/muddy roads or in desert
G - Driving of frequent braking or in hilly areas
H - Driving off road or through water
I - Continuous high-speed driving

Operation: Inspect - adjust or replace as needed after inspection

Driving environment												Maintenance items	Description	Maintenance interval
			D									Brake fluid	Replacement	Every 20,000 km or 12 months
			E	F								Electric power steering	Inspect	Every 5000km or 3 months
			E	F								Suspension	Inspect	Every 5000km or 3 months
			E	F								Front axle shaft	Inspect	Every 5000km or 3 months
A			E	F	G							Door lock, hinge, hood latch, charging port cover and opening mechanism	Lubricate	Every 5000km or 3 months
A												A/C Filter	Replacement	Every 10000km or 6 months



Inspection of Motor Coolant Level

- After the motor cools down, check the coolant level in the reservoir, which should be ensured between MAX (1) and MIN (2) marks.
- If the fluid level is too low, first check that the motor cooling system does not leak, and then add coolant to the required level.

⚠ CAUTION

- **The coolant is toxic, and thus please keep it away from children or pets. If not to be recycled, please dispose of it as per the related regulations adopted by the local department.**
- **The motor coolant is consumable, therefore, inspection and adding is not limited during maintenance; the service personnel should tell the customer to fill with coolant specified by Dongfeng Passenger Vehicle Company whenever appropriate.**

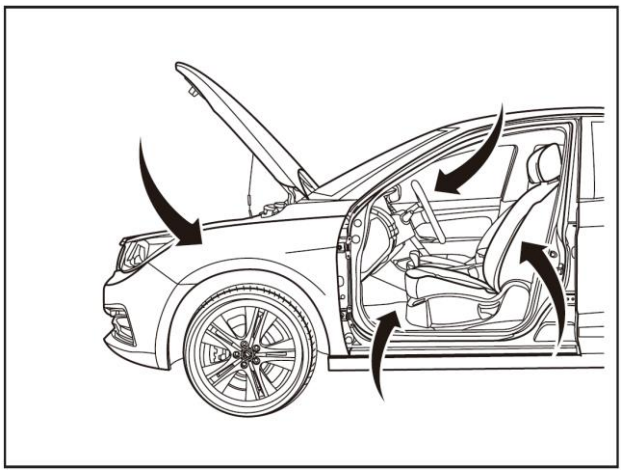
⚠ WARNING

- **Do not add low-temperature coolant directly into the high-temperature motor, otherwise, the castings of the motor may be damaged. Keep the motor temperature below 50℃ before filling it with coolant.**
- **Use the motor coolant specified by Dongfeng Passenger Vehicle Company instead of water, as water will cause corrosive damage to the coolant duct of motor control unit, and thus leads to internal coolant leakage of electric drive system if the corrosive damage persists for a long time.**

Inspection of Coolant Pipeline

⚠ CAUTION

- **Inspection of coolant pipeline should be done after the motor is cooled.**
- Parts to be checked are as follows:
- Radiator water inlet and outlet pipes;
- Expansion tank and its water inlet and outlet pipes;
- Water pump
- Check the pipes for aging, expansion or cracks, and the joints for coolant leakage or white crystal, and check if the joint clamps loosen.
- Check if the radiator, water pump and other components have coolant leakage or white crystal.
- If so, repair or replace them immediately, and bleed the cooling system and add coolant.

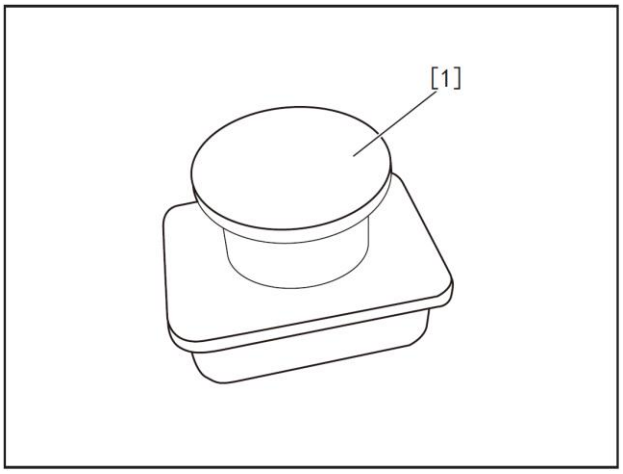


Change of Motor Coolant

1 - Protection

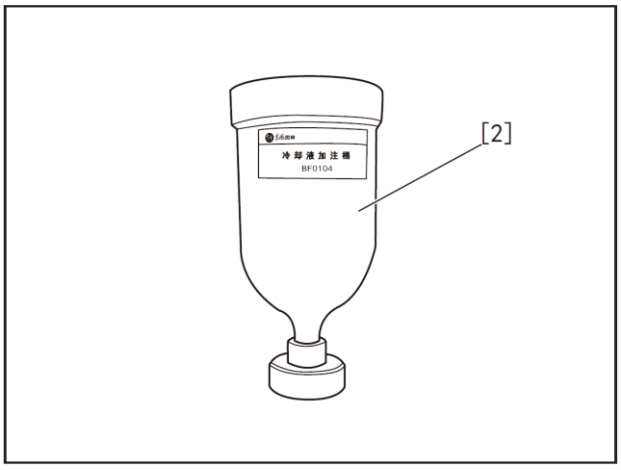
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

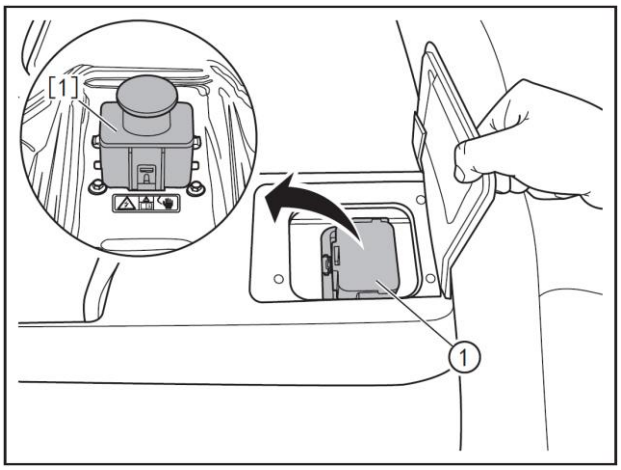


2 - Recommended tools

- Traction battery service switch plug (E700101) [1].



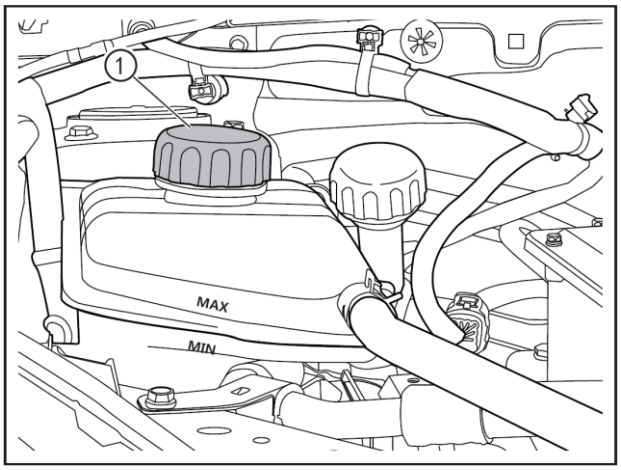
- Coolant filling barrel (BF0104) [2].



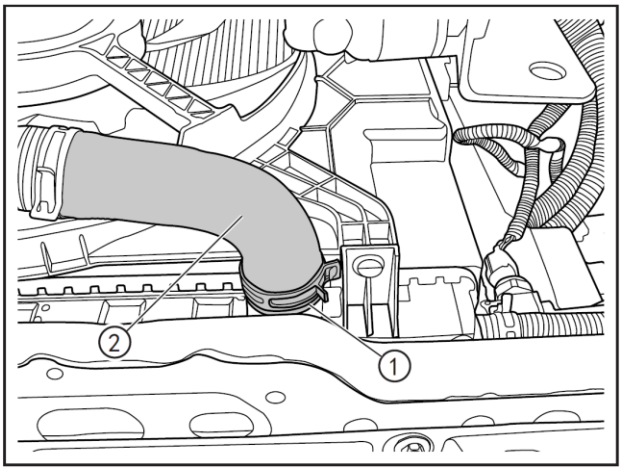
3 - Removal

⚠ CAUTION

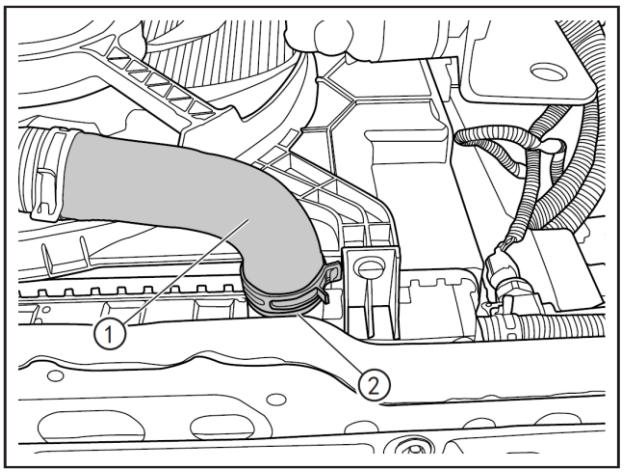
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)



- Open the expansion tank cap (1).

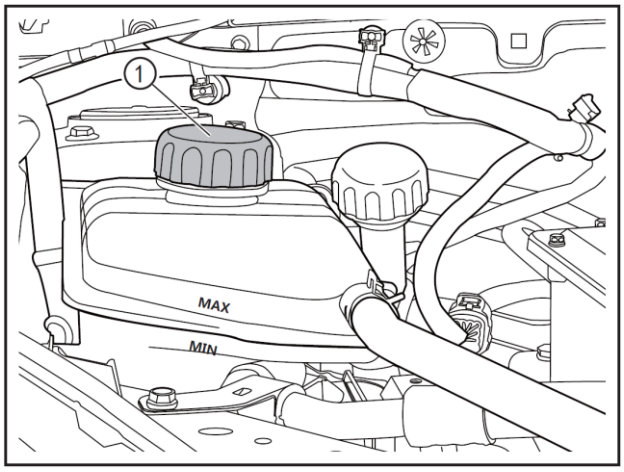


- Lift the car.
- Place a container below the radiator water outlet pipe to collect the drained coolant.
- Remove the radiator water outlet pipe clamp (1) with the water pipe clamp removal pliers (BF0109).
- Disconnect the radiator water outlet pipe (2), and discharge the coolant.

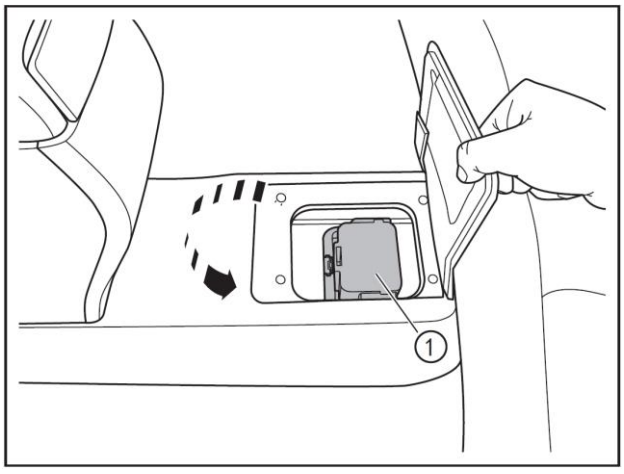


4- Refitting

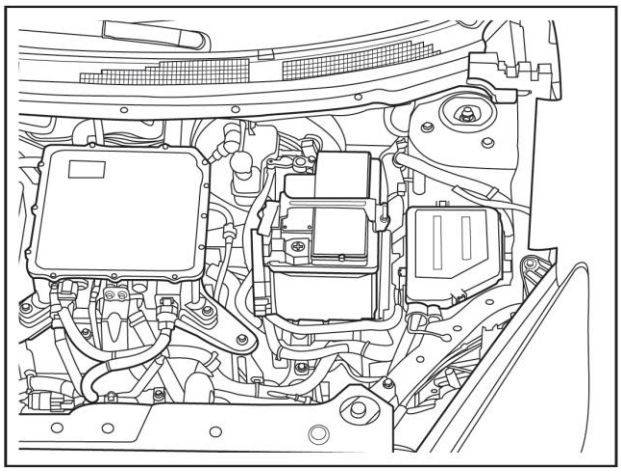
- Insert the radiator water outlet pipe (1) into the radiator.
- Refit the radiator water outlet pipe clamp (2) with the water pipe clamp removal pliers (BF0109).



- Open the expansion tank cap (1).
- Add the motor coolant while squeezing the radiator water outlet pipe, until the coolant level is stabilized between the MAX and MIN marks of expansion tank.
- Refit the expansion tank cover (1).

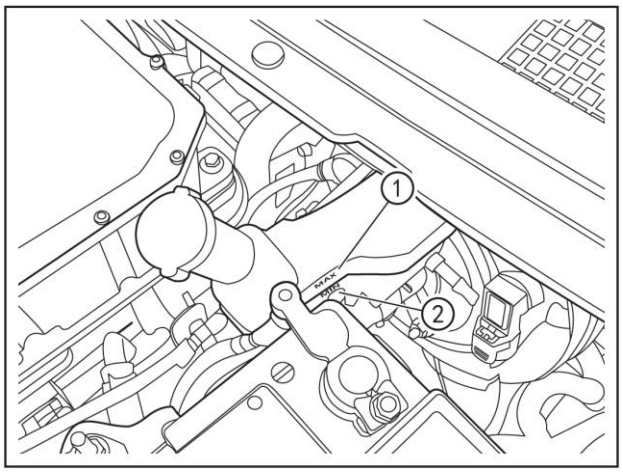


- Refit the service switch (1) (refer to “Removal and Refitting of Service Switch” in “Traction Battery”).
- Connect the battery negative cable.



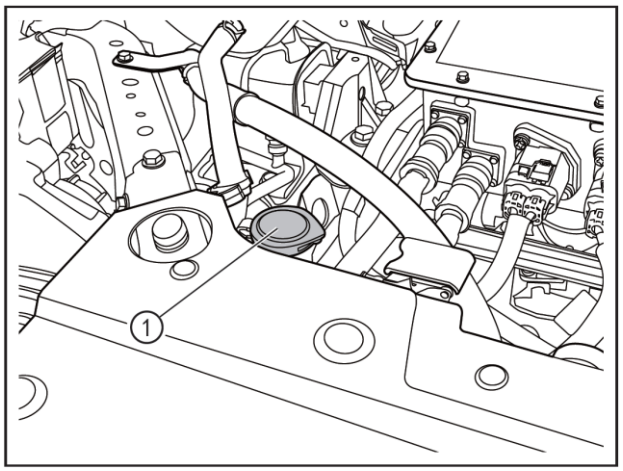
Inspection of Battery

- Visually check the outside conditions, connection of the battery and if it is fixed.
- Check the battery case for damage. Electrolyte may flow out in case of damage, in this case, apply the electrolyte diluent or soap solution to deal with parts which electrolyte contacts immediately.
- Check the battery terminals and cables for oxidization and corrosion; in case of initial oxidization, it is possible to solve it by using boiling water to dissolve the oxide, and then apply grease or antioxidant on the exposed metal surface, which can extend the service life; in case of serious oxidization and corrosion, it is required to replace battery terminals and cables.



Inspection of Brake Fluid Level

- Check brake fluid level in the reservoir and ensure that the level is between MAX mark (1) and MIN mark (2).
- If the fluid level is too low, please first check and make sure the brake system does not leak, and then add brake fluid to the required level.

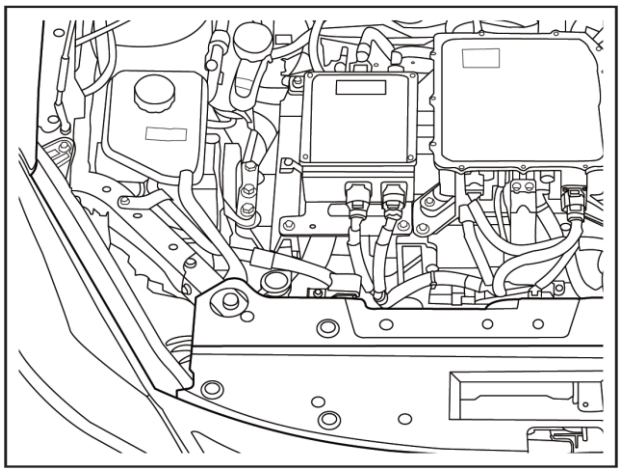


Inspection of Windshield Washer Fluid

- Open the windshield washer fluid reservoir filler cap (1), and add washer fluid to visible level in the reservoir and filling pipe.

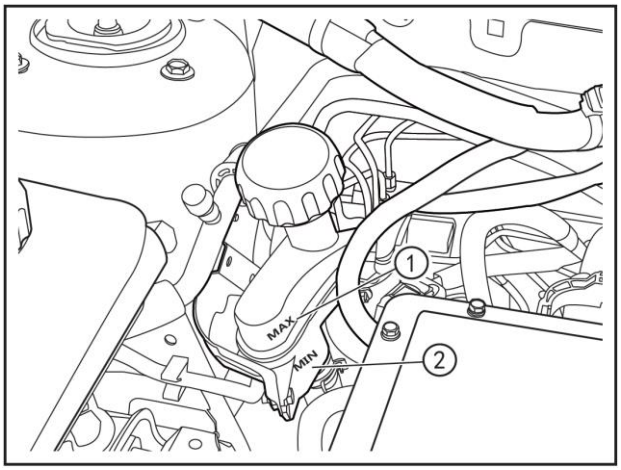
⚠ CAUTION

- **Windshield washer fluid have functions of anti-freezing and effective cleaning of wax and oil residuals on the windshield. The windshield washer fluid are available from the Dongfeng franchise store.**
- **The windshield washer fluid is consumable, therefore, inspection and adding is not limited during maintenance; the service personnel should tell the customer to add fluid for many times and to use the fluid specified by Dongfeng Passenger Vehicle Company.**



Inspection of A/C Pipeline Components

- Check connections of A/C pipeline components and the body for looseness, corrosion or pits (dents), deformation or crack, etc.
- Check if there is interference between A/C pipeline components and other pipelines.



Inspection of A/C Heater Coolant

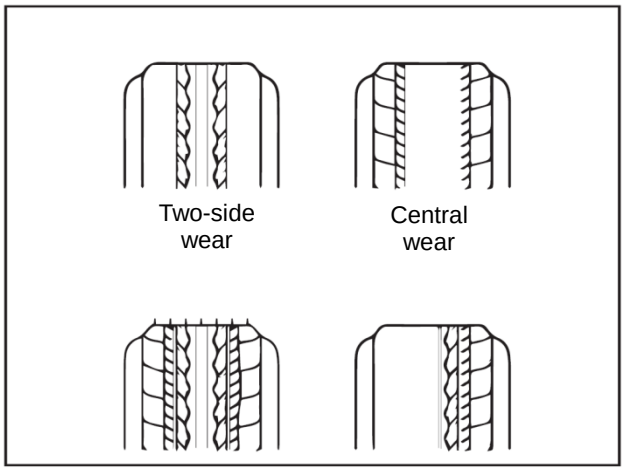
- After the A/C heater cools down, check the coolant level in the reservoir, which should be ensured between MAX (1) and MIN (2) marks.
- If the fluid level is too low, first check that the brake system does not leak, and then add brake fluid to the required level.

Inspection of Motor Compartment Wire Harness

- Check the fixing clips round the wire harnesses in the motor compartment for falling off, the wire harnesses for damage, aging, corrosion, and if the connecting clamps have been tightened.
- Check if the fuse in the fuse box in the motor compartment is missing or tightened, and check connectors of fuse for ablation, deformation, etc.

⚠ CAUTION

- Check what extent the damaged cable has been aged to, and repair and wrap the cable which has not been aged.
- Replace the wire which is seriously aged or corroded.



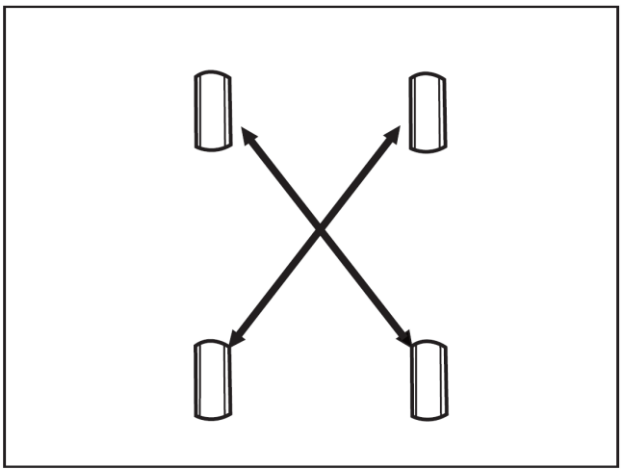
Inspection of Wheels and Tires

Inspection of tires

- Check tires for unevenness, over-wear or damage, if any, replace tires. Wear limit of tire tread is about 1.6 mm.
- Check pressure of each tire and adjust it to the specified inflation pressure.
- Check each wheel for dents, deformation or cracks. Replace it in case of serious deformation.

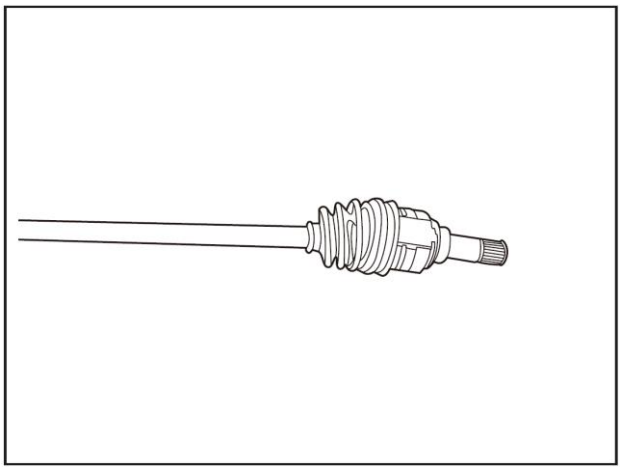
⚠ CAUTION

- **Inspection of tire inflation pressure should be done when the tire is in the cold condition.**
- **See the specified tire inflation pressure in the tire label or user's manual.**
- **The inflation pressure can never be higher than the specified pressure; otherwise, it will cause abnormal wear of tires.**



Tire Rotation

- Tire rotation can be conducted as shown, and after tire rotation the tire pressure shall be readjusted to the specified value.
- Interval mileage for tire rotation: 10,000 km

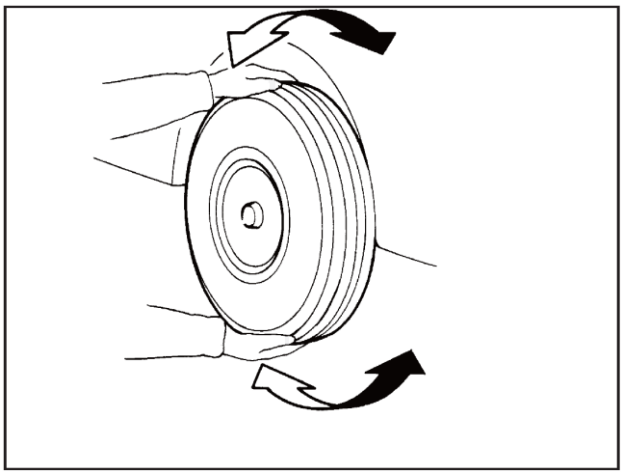


Inspection of Drive Shaft (Axle Shaft)

- Check the dust cover for cracks, wear, damage or grease leaking.
- Check if the axial clearance of drive shaft cage at the wheel side and the lateral clearance of drive shaft cage at the transmission side are too large; in case of excessive clearance, remove the drive shaft to check the cages for wear.

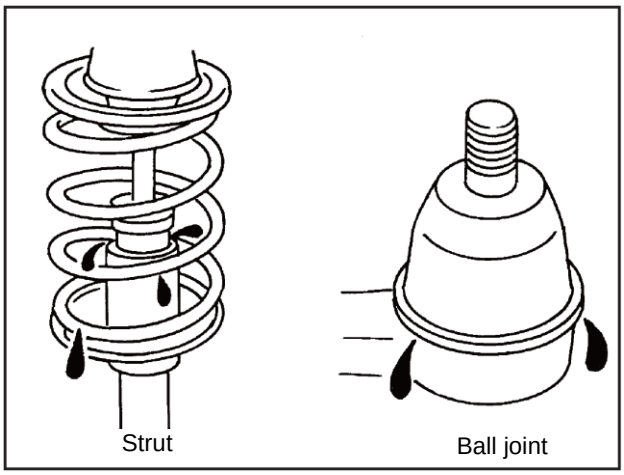
Inspection of Steering System

- Keep the vehicle in a straight line on the road, and check the steering wheel for clearance and unusual noise.
- The leftward/rightward free turn of steering wheel at the middle position should not exceed 5°.
- Check the steering gear housing assembly and the dust cover for looseness, damage or grease leakage.
- Check connection of steering gear and steering column assembly for looseness.
- Check if bolts and nuts are tightened. Tighten them if necessary. If necessary, repair or replace the damaged parts.
- Check the steering tie rod for looseness or damage. If any, repair or replace the damaged parts.
- Check the steering tie rod sheath and steering gear housing for damage (leakage, disengagement, cracks, etc.) If any, replace the damaged protective bush. If the steering gear housing sheath has any twist, turn the steering wheel leftward or rightward to the end and keep it for several seconds, and then correct the sheath to the original shape.
- Check the universal joint of steering shaft for unusual noise and damage. If any, replace the damaged parts.
- Check if the steering wheel can be turned leftward or rightward to the end. If necessary, repair or replace the damaged parts.

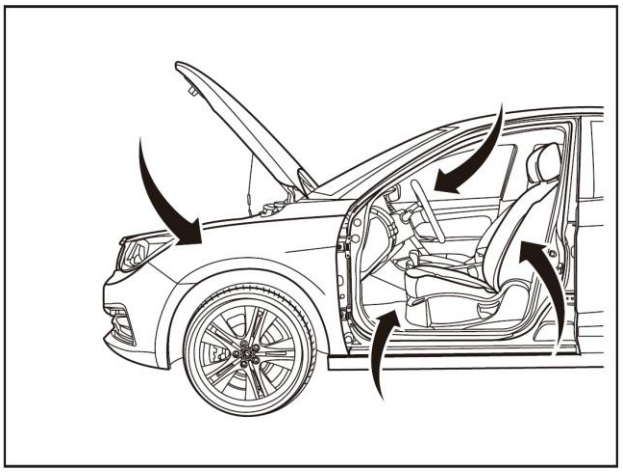


Inspection of Axles and Suspension Components

- Check the front and rear axles and suspension parts to see if the gaps are too large, and if there are any cracks, wear or other damage.
- Shake each wheel to check whether the gap is too big.
- Check if the axle and suspension nuts and bolts are loose.



- Check the shock absorber for oil leakage or other damages.
- Check if the suspension ball joint leaks grease, and check if the ball joint dust cover is cracked or otherwise damaged.



Draining and Adding of Transmission Oil (Continental Motor)

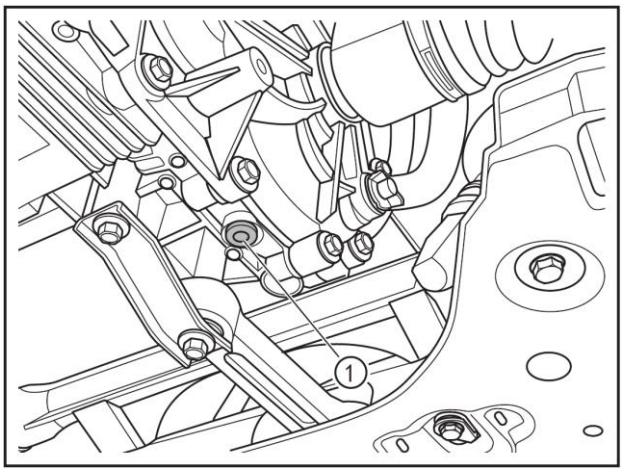
1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

⚠ CAUTION

- **Always wear insulated protection equipment for all operations.**

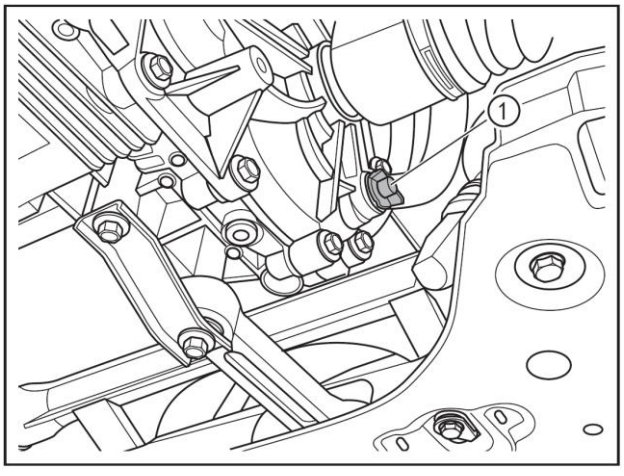


2-Draining

- Lift the vehicle, confirm that it is in a level condition, and place a collecting basin under it.
- Remove the transmission drain bolt (1) with 8mm Allen wrench, and the drain off the transmission oil until the oil drops out.
- Refit the drain bolt (1).

⚠ CAUTION

- **Before changing the transmission oil, check the transmission for obvious leakage first, and if any, repair the leaking part first.**

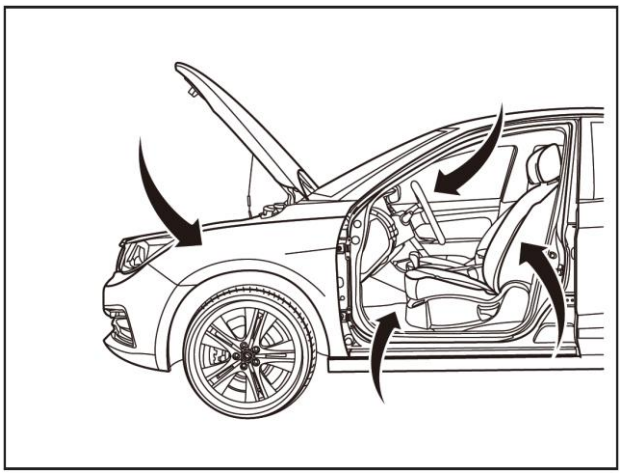


3-Filling

- Unscrew the filler plug (1) counterclockwise.
- Fill the transmission with new oil through the hand-pressed oil filler (filling amount: 0.6±0.02L).
- After oiling, check for transmission oil leakage.

⚠ CAUTION

- **When adding transmission oil, insert the funnel into the transmission filler tube such that a small clearance is retained to guarantee outflow of air.**
- **Always use the transmission oil specified by Dongfeng Passenger Vehicle Company.**



Draining and Adding of Transmission Oil (Independent Motor)

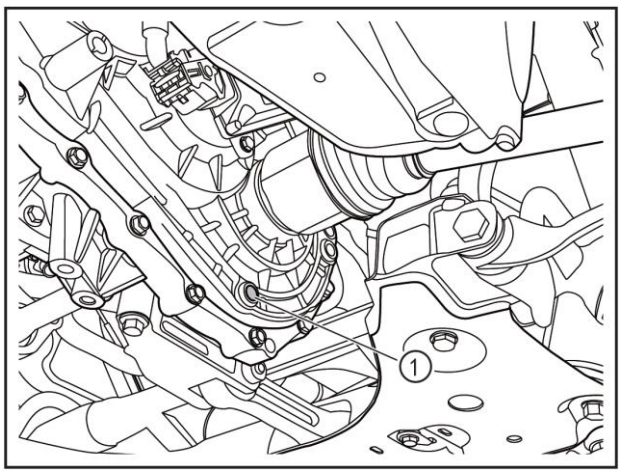
1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

⚠ CAUTION

- **Always wear insulated protection equipment for all operations.**

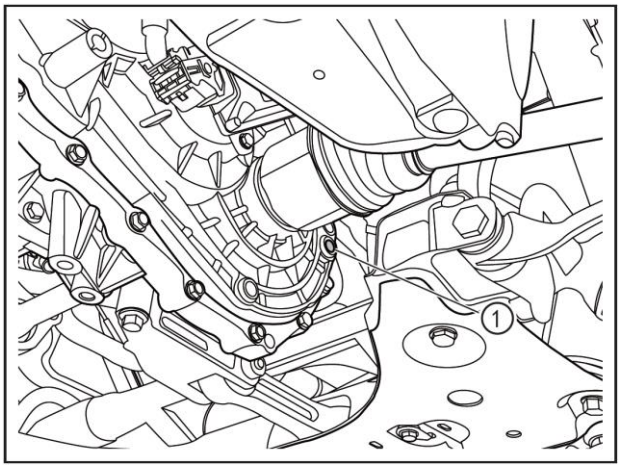


2-Draining

- Lift the vehicle, confirm that it is in a level condition, and place a collecting basin under it.
- Remove the transmission drain bolt (1) with 10mm Allen wrench, and the drain off the transmission oil until the oil drops out.
- Refit the drain bolt (1).

⚠ CAUTION

- **Before changing the transmission oil, check the transmission for obvious leakage first, and if any, repair the leaking part first.**



3-Filling

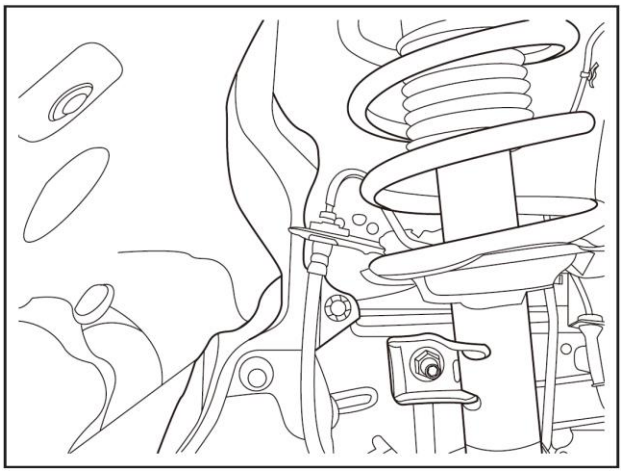
- Undo the drain plug (1) with 10mm Allen wrench.
- Fill the transmission with new oil through the hand-pressed oil filler (filling amount: 1±0.1L).
- After oiling, check for transmission oil leakage.

⚠ CAUTION

- **When adding transmission oil, insert the funnel into the transmission filler tube such that a small clearance is retained to guarantee outflow of air.**
- **Always use the transmission oil specified by Dongfeng Passenger Vehicle Company.**

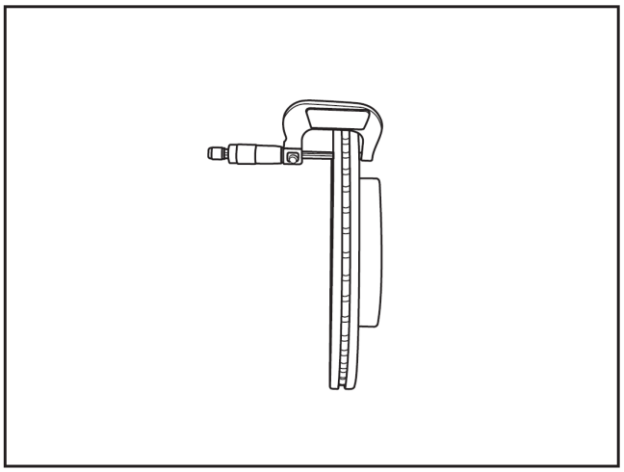
Change of Brake Fluid

- Replace the brake fluid (refer to "Change of Brake Fluid" in "Brake System").



Inspection of Brake System Pipeline

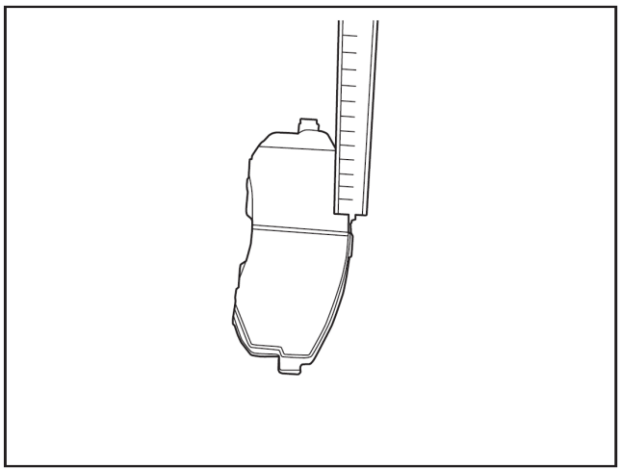
- Check if brake hoses of front and rear brakes are connected correctly, and if there is leakage, cracks, scratch, partial deformation and other damage.



Wear Inspection of Brake Disc and Brake Lining

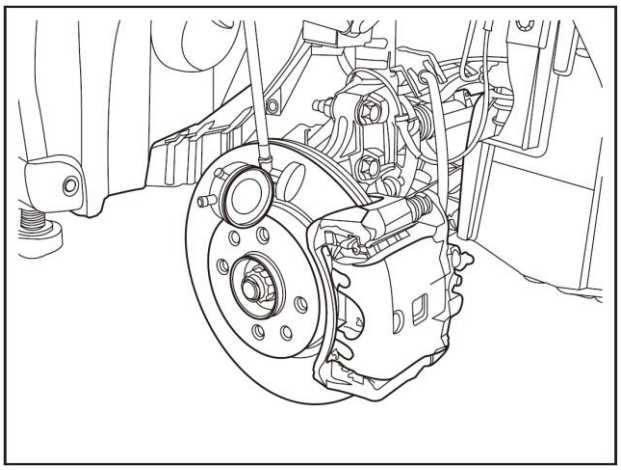
- Check the thickness of the front/rear brake disc with a measuring tool.

Items	Measurement	Condition	Standard value	Limit value
Brake disc	Thickness (mm)	Front/rear	24.0/9.0	22.0/8.0



- Check the thickness of the front/rear brake lining with a measuring tool. Replace with new parts in case the measured values exceed the specified values.

Items	Measurement	Condition	Standard value	Limit value
Brake pad	Thickness (mm)	Front/rear	9.5/8.5	2.0/2.0

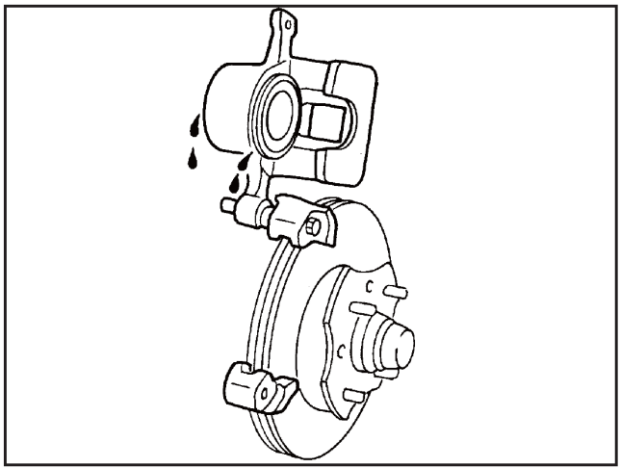


- Check the runout of the front/rear brake disc with a dial gage.

⚠ CAUTION

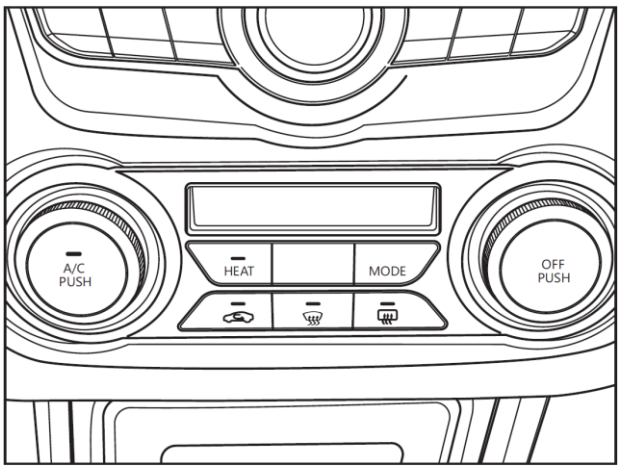
- **Check if brake pads on both sides are worn to the same extent, if not, find out reasons of abnormality.**

Items	Measurement	Condition	Standard value	Limit value
Brake disc	Runout (mm)	Front/rear	-	0.035/0.010



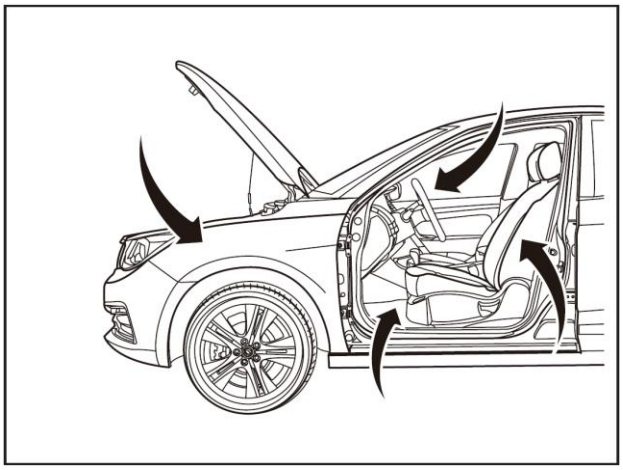
Inspection of Brake Caliper

- Check the brake caliper for wear, and the piston dust cover for cracks or damage.
- Check moving pins for seizure, and the dust cover for wear, cracks or damage.



Electric A/C

- Start the motor and check functions of A/C panel.
- Operate the fan control knob and check if airflow rate at the air outlet changes；
- Operating a mode button can allow airflow at the corresponding air outlet；
- When the "A/CPUSH" switch is pressed, the indicator lamp on the button will be on; when the cooling/heating mode knob is operated, temperature at the air outlet will change accordingly.

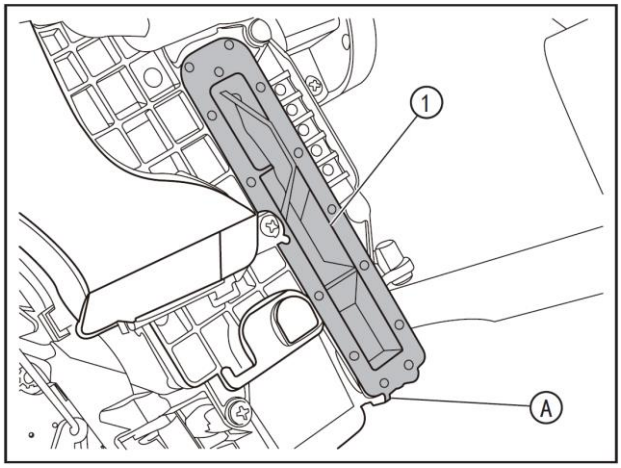


Removal and Refitting of A/C Filter Element

1 - Protection

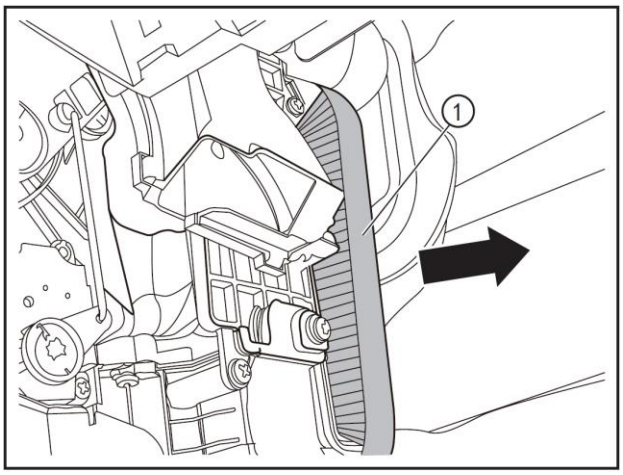
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

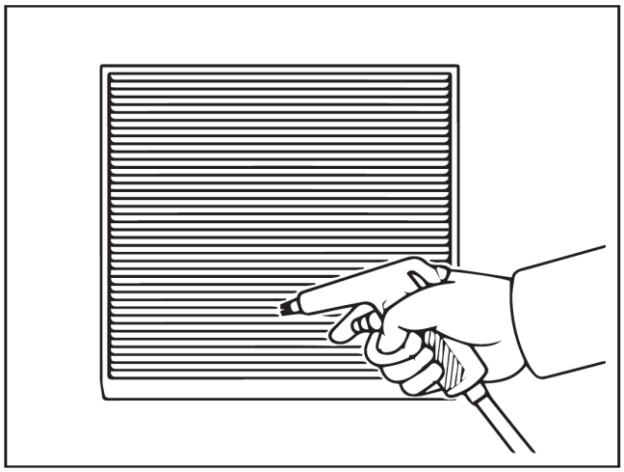


2 - Removal

- Loosen the clip (A) at the lower part of the trim cover on the A/C filter. Press down the trim cover (1) of the A/C filter, and take it down rightward.

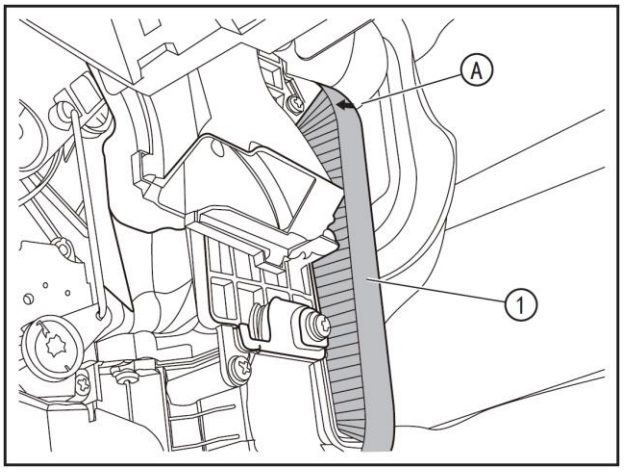


- Take out the A/C filter element (1) from the A/C filter assembly.



3 - Cleaning

- Check the conditions of the A/C filter, and clean or replace it as per the recommended interval.
- Blow the compressed air in from the back side of the A/C filter until all foreign matters have been cleared.

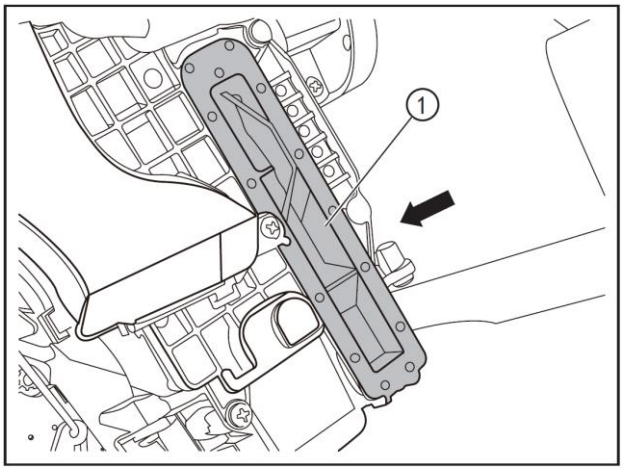


4- Refitting

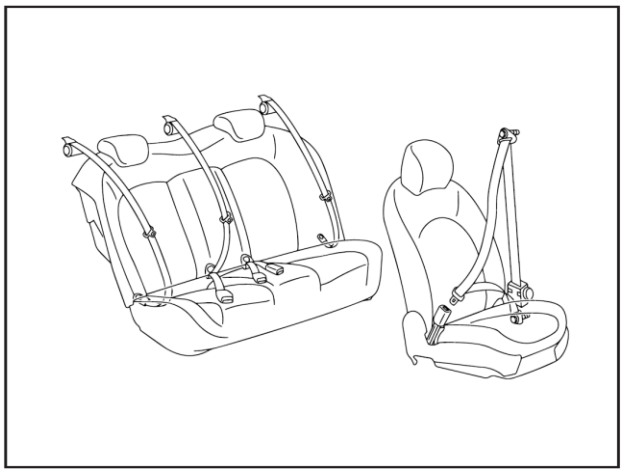
- Install the A/C filter element (1) into the cavity on the A/C assembly.

⚠ CAUTION

- **Refit the A/C filter element according to the airflow direction indicated by arrow (A).**

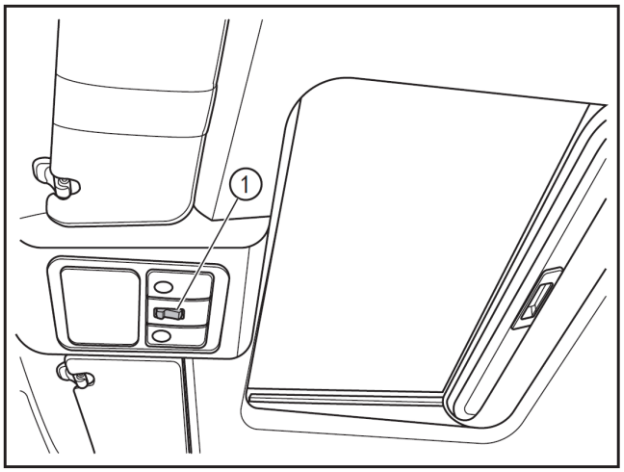


- Refit the A/C filter trim cover: first snap the fixing lip at the lower part of A/C filter trim cover onto the A/C housing, and press the trim cover (1) horizontally until it is firmly fixed.



Inspection of Seat Belts, Buckles, Retractors and Regulating Devices

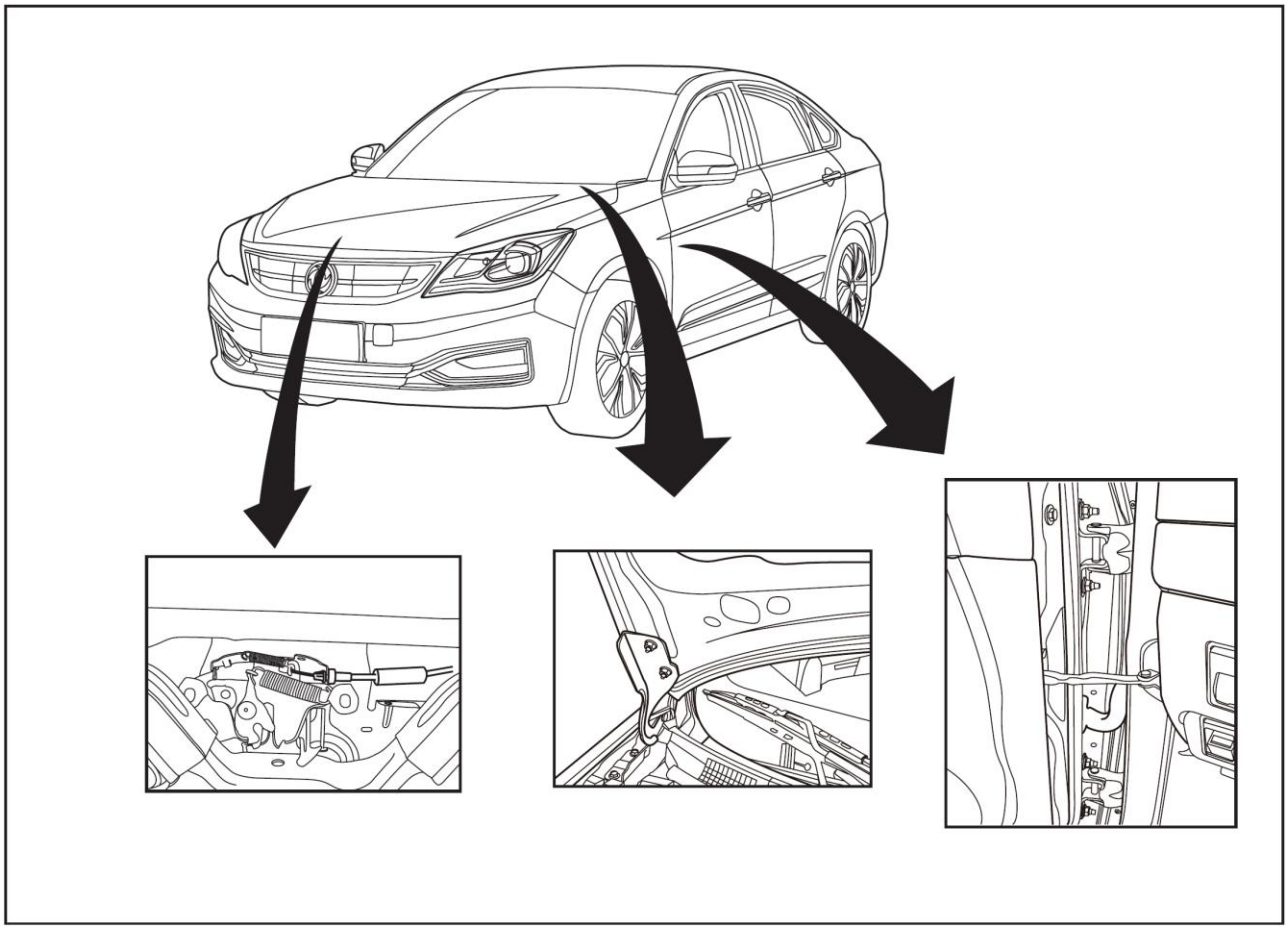
- Check the seat belt for breakage, wear or damage.
- Check if the buckle and the latch plate operate normally when fastening and releasing the seat belt.
- Check if the holder is loose.
- Check if the operation of the retractor is flexible.



Inspection of Sunroof

- Operate the sunroof button (1) to check if opening and closing of sunroof are smooth.
- Check if the anti-pitch function of the sunroof is normal.

Lubrication of Door Locks, Hinges, and Hood Lock



- Check if doors and trunk lid can be opened or closed freely and have good sealing as it is closed. If any fault is found, lubricate hinges and lock mechanisms, and if necessary, adjust hinges or replace the lock system.
- Check the secondary lock mechanism of hood can work normally (the check criterion is that the hood can not be opened completely by pulling the hood release handle in the vehicle), at the same time, check if the hood can be closed freely and safely. If any fault is found, lubricate hinges and lock mechanisms, and if necessary, replace the lock system.

Motor Compartment Inside

Inspection of Battery

- Visually check the outside conditions, connection and positioning of the battery.

Inspection of Pipeline Assembly in Motor Compartment

- Check if the fixing clamps for pipeline assembly in the motor compartment are tightened.

Inspection of Coolant and Brake Fluid

- Check if the level is between upper scale mark and lower scale mark.

Inspection of Motor Conditions

- Check the motor for unusual noise and vibration.

Body and Chassis

Inspection of Body

- Check the body paint for damage and if there is oil stain on the body.

Inspection of Wheels

- Check if the wheel pressure is normal.

Inspection of Doors and Windows

- Check if opening of doors is normal, if lifting and lowering of electric windows are normal without seizure, and if glasses are in good conditions.

Inspection of Chassis pipeline Assembly

- Check pipeline components for leakage or looseness, and if fixing clamps are tightened.

Passenger Compartment Inside

Inspection of Seats

- Check if seats can slide freely and be locked firmly at any position. Check if seats can be locked when the seat back is adjusted to any angle.

Inspection of Seat Belts

- Check the seat belt system, including webbing, latch plate, buckle, retractor and locking mechanism for damage or wear, and if the seat belt is locked safely.

Inspection of Steering Wheel

- Check stability of steering wheel to ensure that there is no any abnormality.
- Check to ensure that no side-to-side swing or swaying occurs.

Inspection of Instruments

- Check if the speedometer, odometer and coulombmeter can display normally.

Inspection of Light

- Check if all lamps can work normally.

Inspection of Windshield Defogger

- Check if any airflow is present from the defogging outlet with the heater or A/C turned on.
- During inspection, turn the blower fan control mechanism to "H" position, and check if it is working normally.

Inspection of Wiper

- Check if the wiper can work normally.

Inspection of Shift Control Mechanism

- Check if the vehicle can be started quickly.
- Check if the transmission works normally at each position.

Inspection of Accelerator Pedal Operation

- Check if accelerator pedal can be operated smoothly and freely without seizure.

Inspection of Service Brake

- Check the followings:
- Check if brake pedal travel is normal.
- Check if the brake system can work normally.
- Check if there is any abnormal sound during braking.
- Check braking force on left and right wheels is even.
- Check if there is any coasting after the brake is applied.

August 2018

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

4.1

Motor Makeup

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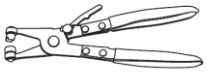
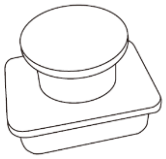
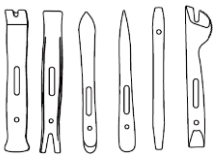
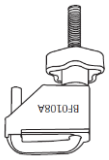
Removal and Refitting of Torsion Link Assembly 4.1-49

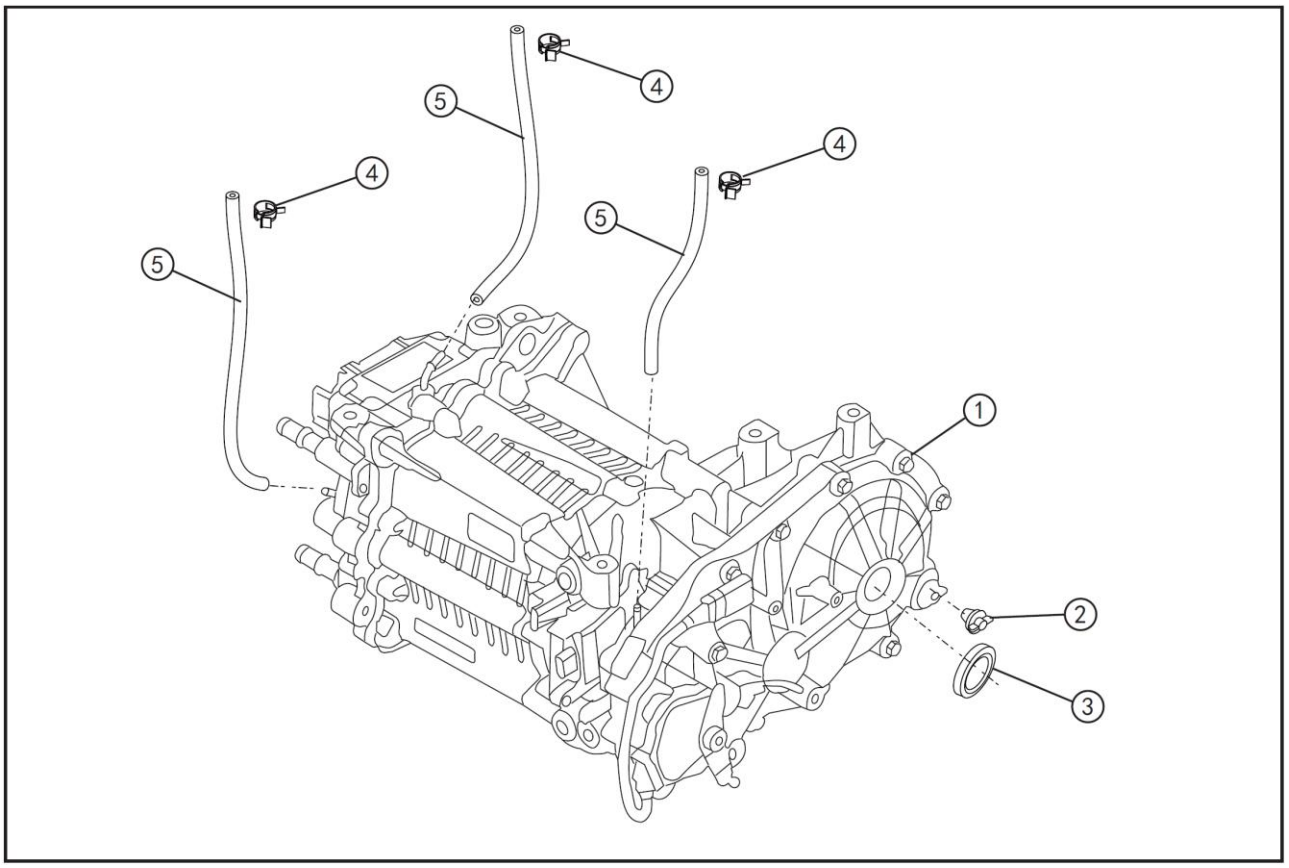
- Make sure all connecting cables are disconnected before removing the motor.
- Before removing the motor, ensure that a suitable safety transport equipment is prepared for the motor to prevent possible damage!
- Do not over-tilt when removing and placing the motor.
- The normal operating temperature range of the motor is -40°C~85°C. Operating the motor at an atmospheric temperature outside the normal operating temperature range will cause performance degradation and shorter service life of motor!
- When the temperature of the coolant in the motor water inlet pipe is 65°C~90°C, it will cause performance degradation and shorter service life of motor!
- When the coolant is so insufficient that the flow rate is 6~8 L/min, it will cause performance degradation of motor!
- Thoroughly clean the motor and drain the coolant before servicing.
- Place the motor on a level surface and protect it from turnover.
- Make sure that the motor is away from the cable so as to avoid the motor from deforming or damaging the cable.
- Before installing the motor, measure that the insulation resistance of the high-voltage interface electrode is greater than or equal to 20MΩ, otherwise, it is not allowed to install the motor.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF0109	Water hose clamp removal and refitting pliers		For removing and refitting the hose clamp
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
BF1102	Interior trim removal tool		For removing interior trims and wire harness clips, etc.
BF0108A	Hose pincers		For clamping flexible hose
A60EV0104	Insulation resistance tester		For testing the insulation performance of high voltage components of traction battery, motor, motor control unit, high voltage distribution box, charger, heater, and electric compressor

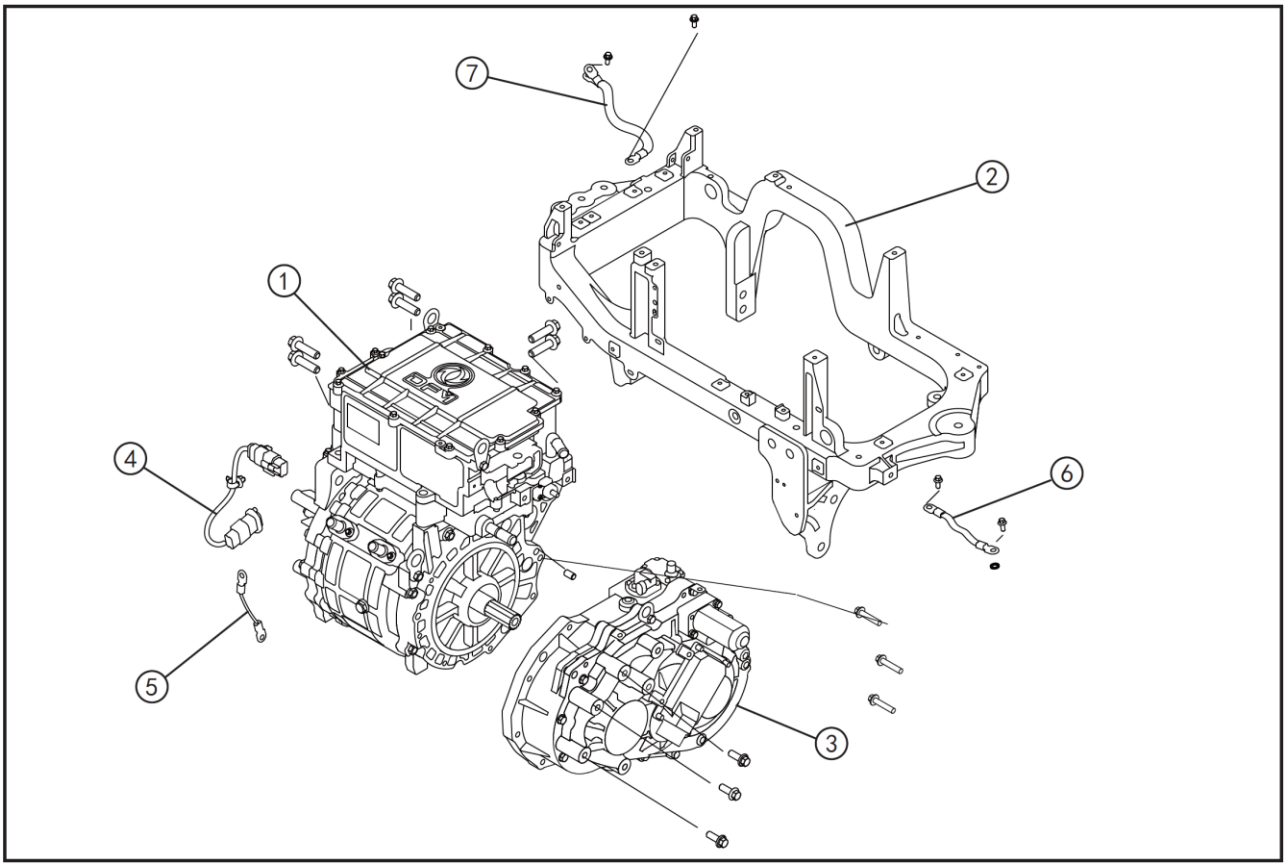
Structure and Features

Powertrain (Continental Motor)



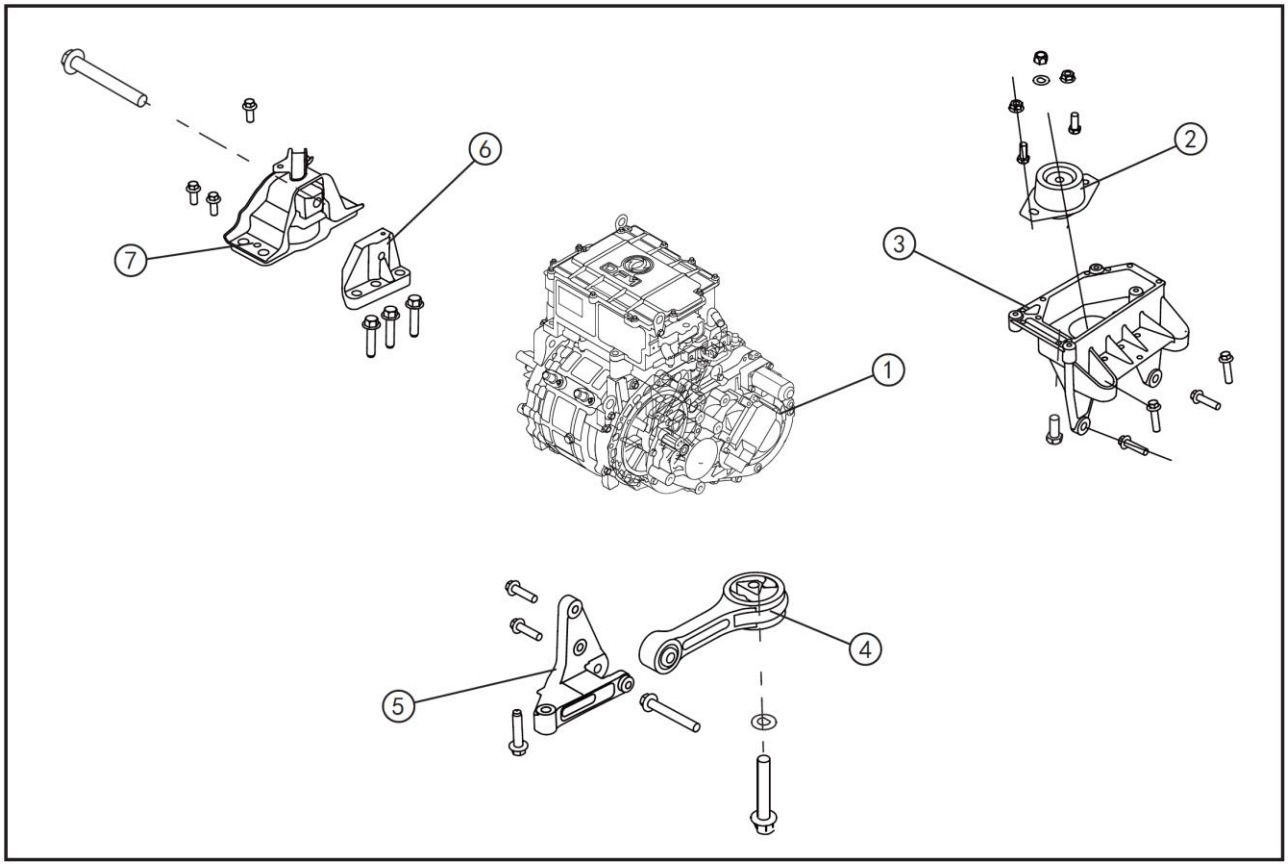
1. Powertrain	3. Oil seal	5. Powertrain ventilation pipe
2. Transmission filler bolt	4. Pipe clamp	

Powertrain (Independent Motor)



1. Motor & motor control unit assembly	4. Motor control unit wire harness	7. Braided ground cable
2. Motor bracket	5. Braided ground cable	
3. Transmission assembly	6. Braided ground cable	

Motor Elastic Bracket (Independent Motor)



1. Powertrain	4. Torsion link assembly	7. Motor right elastic bracket
2. Motor left elastic bracket	5. Motor lower right bracket	
3. Motor left bracket	6. Motor right upper bracket	

DTCs of Motor Control Unit (Independent Motor)

- Use a special scan tool to perform fault diagnosis.

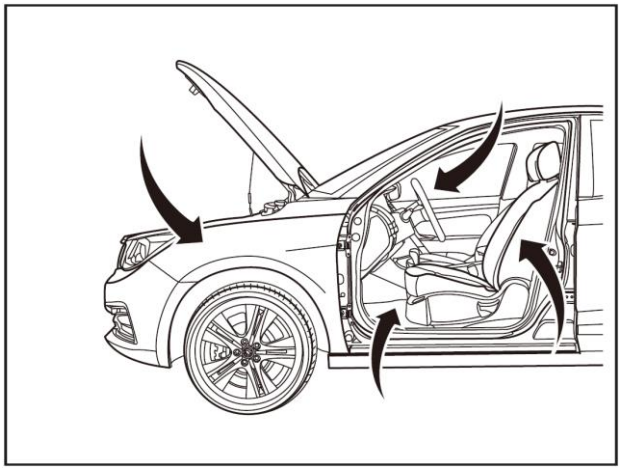
Sequence number	DTC	Description
1	P1D00	Controller version error
2	P1D01	ROM exception
3	P1D02	RAM exception
4	P1D04	EEPROM fault
5	P1D05	AD pulse test failure
6	P1D08	Abnormal CPLD data
7	P1D09	MCU chip component safety inspection exception
8	P1D0A	Interlock clock driver exception
9	P1D0E	12V power supply voltage fault
10	P1D0F	12V power supply voltage fault
11	P1D10	Ignition lock voltage signal error
12	P1D11	Drive power abnormality
13	P1D12	Other power module exceptions
14	U0001	CANbusoff
15	P1D40	CAN message frame timeout
16	P1D41	Motor rotor resistance stored value invalidated
17	P1D42	Motor position angle stored value invalidated
18	P1D43	RCM inaccessible
19	P1D44	Parameter out of valid range
20	P1D45	Motor request torque not provided
21	P1D46	Torque request value comparison error
22	P1D47	Torque request CAN value check error
23	P1D48	Bus voltage CAN value out of the valid range
24	P1D49	Low voltage CAN value out of the valid range
25	P1D60	MCU high voltage input end voltage measurement out of range
26	P1D61	MCU high voltage input end voltage abnormality
27	P1D62	MCU high voltage input end voltage overhigh (software threshold)
28	P1D63	MCU high voltage input end voltage overlow (software threshold)
29	P1D65	Bus current above the limit (emergency stop required)
30	P1D66	Bus current above software limit (derating)
31	P1D67	Bus current above peak value (peak limit)
32	P1D68	Three-phase current abnormality
33	P1D69	Single-phase current above the limit (hardware threshold)
34	P1D6A	Over-high single-phase current (derating)
35	P1D6B	High single-phase current
36	P1D6C	MCU excitation current out of valid range
37	P1D6D	MCU excitation current overhigh
38	P1D6E	MCU-IGBT temperature out of limits
39	P1D6F	MCU-MOS temperature out of limits
40	P1D70	Power module (IGBT) failure
41	P1D71	MCU temperature sensor sample value out of valid range
42	P1D72	U-phase current sensor sample value out of valid range
43	P1D73	V-phase current sensor sample value below valid range
44	P1D74	Phase current sensor sample value overhigh
45	P1D75	MCU excitation current sensor sample value out of valid range

Sequence number	DTC	Description
46	P1D76	DC bus three-phase line interlock circuit abnormality (short circuit or open circuit)
47	P1D77	Excitation line interlock circuit abnormality (short circuit or open circuit)
48	P1D78	Motor interlock circuit abnormality (short circuit or open circuit)
49	P1D79	Three-phase line loop short circuit
50	P1D7A	U phase loop open circuit
51	P1D7B	V-phase loop open circuit
52	P1D7C	W phase loop open circuit
53	P1D7D	MCU excitation line abnormality (short circuit or open circuit)
54	P1D80	Motor phase loss
55	P1D81	Motor blocking
56	P1D82	Motor rotation direction error
57	P1D83	Motor forward overspeed
58	P1D84	Motor reverse overspeed
59	P1D85	Motor speed out of limit
60	P1D86	Motor system motoring condition positive high speed
61	P1D87	Motor system motoring condition out of design value
62	P1D88	Motor temperature out of limit
63	P1D89	Motor temperature overhigh
64	P1D90	Motor temperature sensor sample value out of valid range
65	P1D91	Position sensor SIN sample value abnormality
66	P1D92	Position sensor COS sample value abnormality
67	P1D93	Position sensor feedback signal abnormality
68	P1D94	Position sensor excitation line short to ground
69	P1D96	Position sensor excitation line short to B+
70	P1D97	Position sensor excitation line open
71	P1D95	Position sensor feedback line short to ground
72	P1D98	Position sensor feedback line short to B+
73	P1D99	Position sensor feedback line open
74	P1DA0	DC-DC converter output short to ground
75	P1DA3	DC-DC converter low voltage output end open circuit
76	P1DA1	DC-DC converter overvoltage
77	P1DAB	DC-DC converter undervoltage
78	P1DA2	DC-DC converter low voltage output end overvoltage
79	P1DAC	DC-DC converter low voltage output end voltage out of valid range
80	P1DAD	DC-DC converter low voltage output end voltage error overhigh
81	P1DA4	DC-DC converter output end overcurrent (hardware threshold)
82	P1DA5	DC-DC converter low voltage output end current overhigh
83	P1DA6	DC-DC converter high voltage input end overvoltage (software threshold)
84	P1DAE	DC-DC converter high voltage input end undervoltage (software threshold)
85	P1DA7	DC-DC converter high voltage input end voltage overhigh
86	P1DAF	DC-DC converter high voltage input end voltage overlow
87	P1DA8	DC-DC converter low voltage output end current abnormality
88	P1DA9	DC-DC converter-MOS temperature out of limit
89	P1DAA	DC-DC converter-diode temperature overhigh
90	P1DB0	DC-DC converter transformer temperature sensor abnormality
91	P1DB1	DC-DC converter power module temperature sensor abnormality
92	P1DB2	DC-DC converter driver board temperature sensor abnormality
93	P1DB3	DC-DC converter low voltage output end current sensor abnormality

Sequence number	DTC	Description
94	P1DB4	DC-DC converter low voltage output end voltage sensor failure
95	P1DB5	DC-DC converter communication error
96	P1DB6	DC-DC converter initialization exception
97	P1DB7	DC-DC converter access control check error
98	P1DB8	DC-DC converter parameter configuration error
99	P1DB9	DC-DC converter calibration parameter error
100	P1DBA	DC-DC converter low voltage output end voltage request value unreasonable
101	P1DBB	DC-DC converter low voltage output end voltage request out of valid range
102	P1DBC	DC-DC converter power module power supply interruption

DTCs of Motor Control Unit (Independent Motor)

DTC	Description	Possible causes	Recommended countermeasures
B1500	Ignition key position signal abnormal	Key switch sensor abnormal	Replace the key.
B1501	High accelerator pedal angle signal voltage	High accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1502	Low accelerator pedal angle signal voltage	Low accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1507	Vehicle POST failure	Motor or battery failed	Inspect the power system.
B1511	Motor precharging abnormal	Service switch not turned on in or precharging circuit failure	Check the service switch or pre-charge circuit
P2304	Vacuum sensor failure	Sensor short to ground Sensor short to power supply; Sensor open; Sensor signal not within the effective range	Replace the vacuum sensor.
P2310	Vacuum pump pressure increases abnormally or slowly leaks	Abnormal performance degradation of vacuum pump; slow leakage of inlet pipe (between the electric vacuum pump and the check valve); slow leakage of booster (including inlet pipe from check valve to the booster\vacuum tank)	Replace the vacuum pump assembly.
P2314	PCAN bus failure	CAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2315	HCAN bus failure	HCAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2318	Master cylinder pressure sensor or circuit fault	Sensor or circuit failed	Replace the master cylinder pressure sensor and inspect the related wire harness.
P2319	Master cylinder pressure sensor signal abnormal	Sensor failed	Replace the master cylinder pressure sensor.
P2320	Brake lamp switch sensor or circuit failed	Sensor or circuit failed	Replace the brake lamp switch sensor and inspect the related wire harness.
P2322	PCU position sensor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2323	PCU actuator motor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2324	PCU lock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2325	PCU unlock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2326	PCU unknown state	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P0561	Battery voltage abnormal	Battery failure or loss of electricity	Replace the battery.
U0294	BMS communication loss	BMS fault or wire harness fault	Check wire harness and BMS
U0292	MCU communication loss	MCU fault or wire harness fault	Check wire harness and MCU
U0155	Instrument communication loss	Instrument failed or wire harness fault	Inspect the wire harness and the instrument.
U0116	A/C communication loss	A/C control unit failed or wire harness fault	Inspect the wire harness and A/C control unit.
U0121	ABS communication loss	ABS fault or wire harness fault	Check wire harness and ABS
U0140	BCM communication loss	BCM fault or wire harness fault	Check wire harness and BCM
U0131	EPS communication loss	EPS fault or wire harness fault	Check wire harness and EPS



Removal and Refitting of Powertrain (Continental Motor)

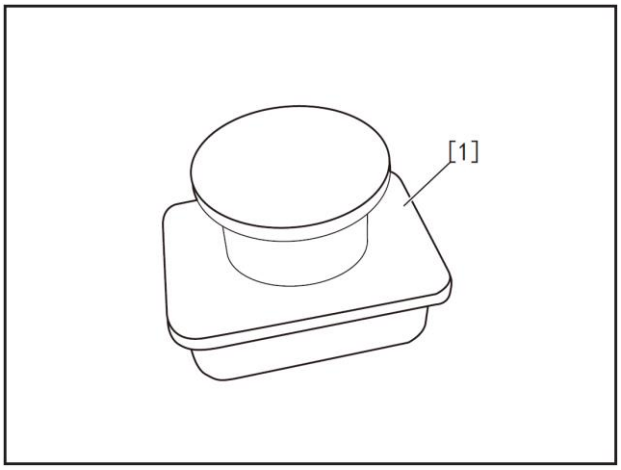
1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

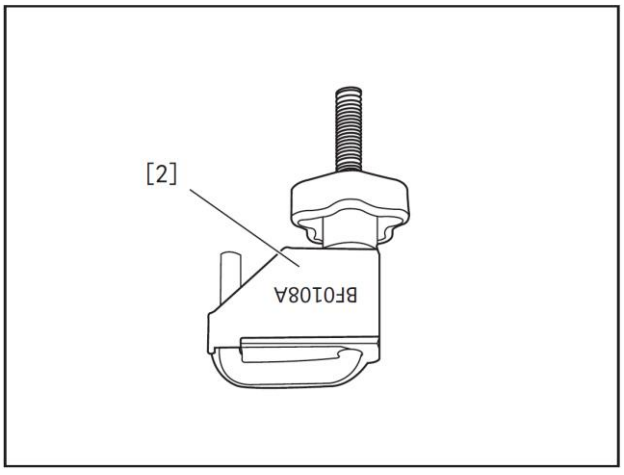
⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**

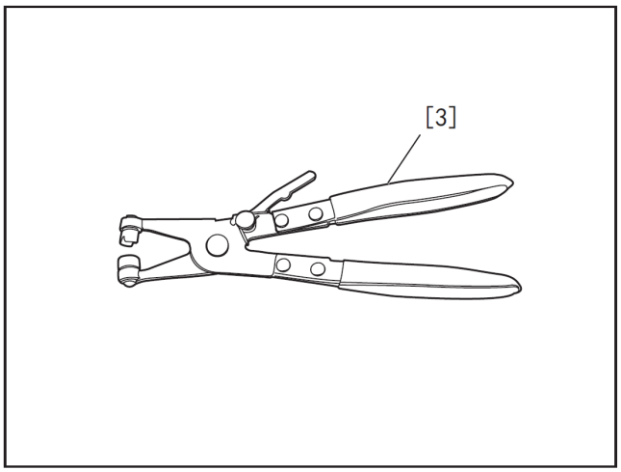


2 - Recommended tools

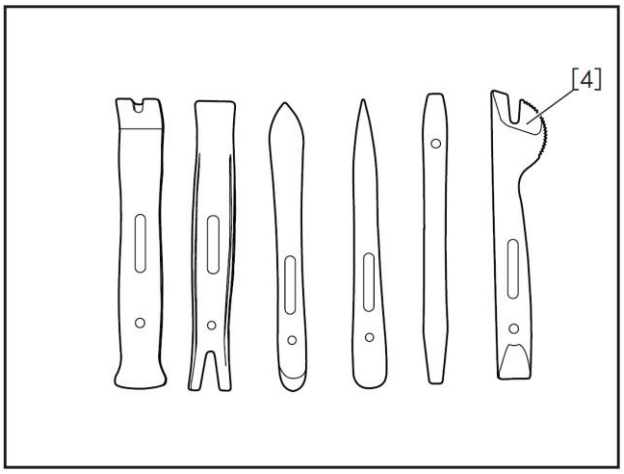
- Traction battery service switch plug (E700101)[1].



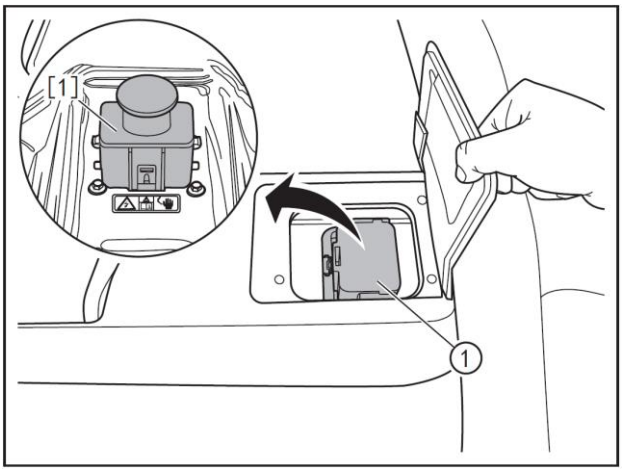
- Hose pincers (BF0108A) [2].



- Water hose clamp removal and refitting pliers (BF0109) [3].



- Interior trim removal tool (BF1102) [4].

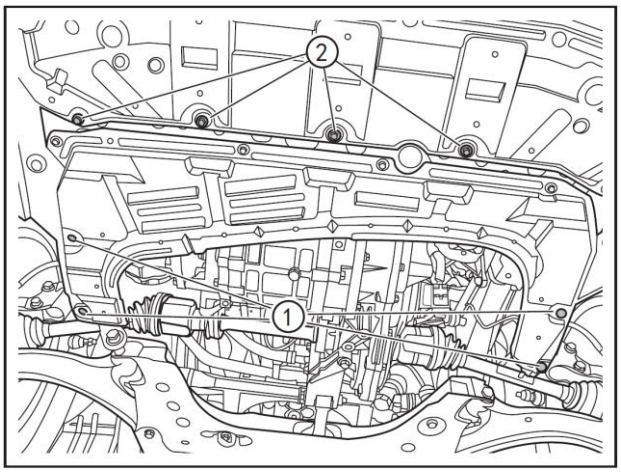


3 - Removal

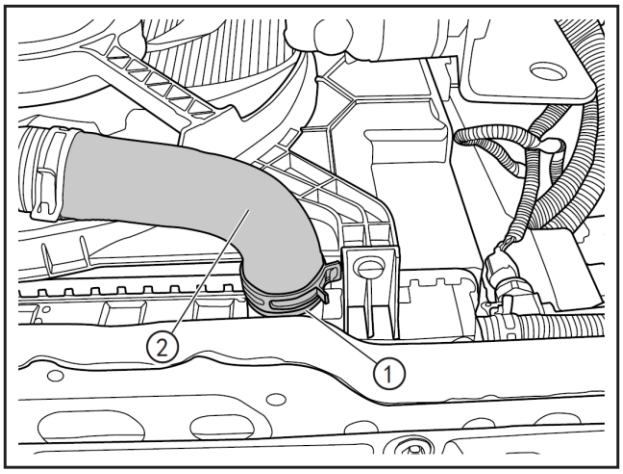
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

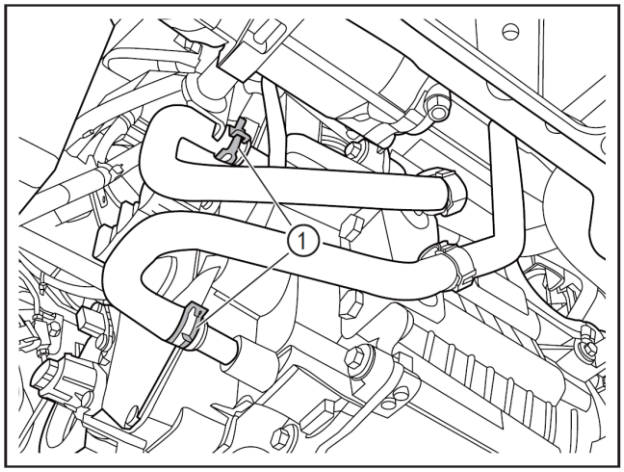
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- Drain off the transmission oil. (Refer to “Draining and Adding of Transmission Oil” in “Transmission Makeup”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)



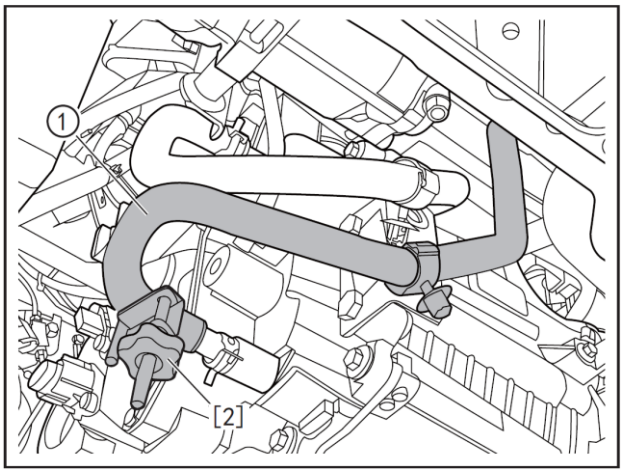
- Use the interior trim removal and refitting tool (BF1102) to remove the 4 fixing clips (1) of powertrain lower protective plate.
- Remove 4 fixing bolts (2) (M6X20) of powertrain lower protective plate with a 10 mm socket;



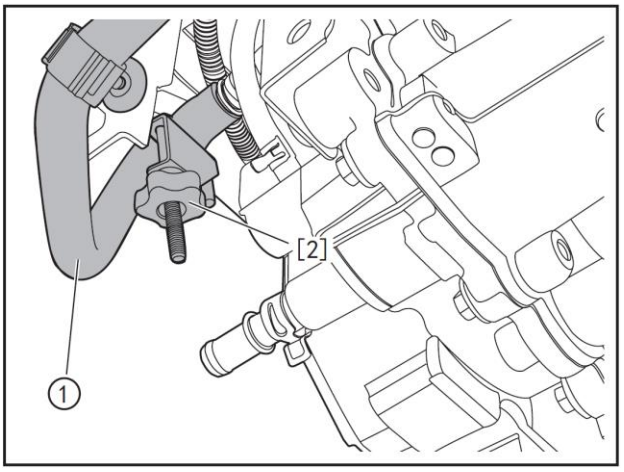
- Place a container below the radiator water outlet pipe to collect the drained coolant.
- Remove the radiator water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the radiator water outlet pipe (2), and discharge the coolant.



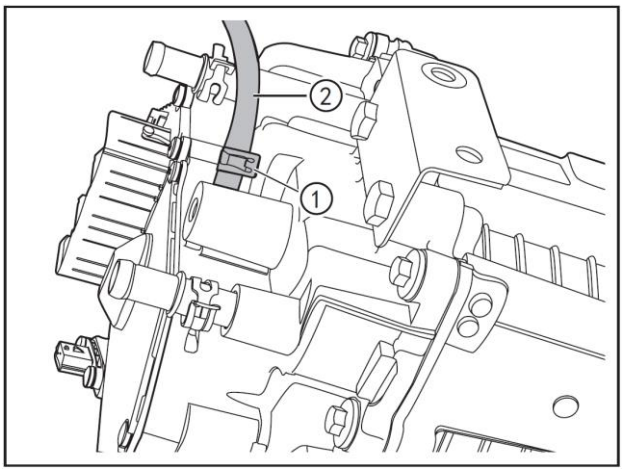
- Disconnect the motor water inlet/outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).



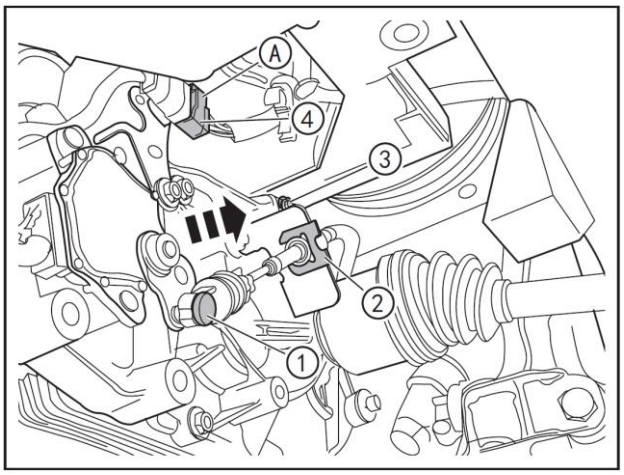
- Clamp the orifice of the motor water inlet pipe (1) with the hose clamp pliers (BF0108A)[2].
- Place a container below the water pipe to collect the coolant in the motor.
- Disconnect the motor water inlet pipe (1).



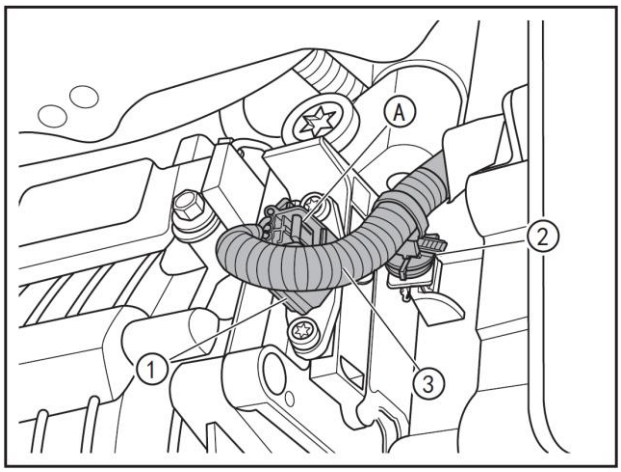
- Clamp the orifice of the motor water outlet pipe (1) with the hose clamp pliers (BF0108A)[2].
- Place a container below the water pipe to collect the coolant in the motor.
- Disconnect the motor water outlet pipe (1).



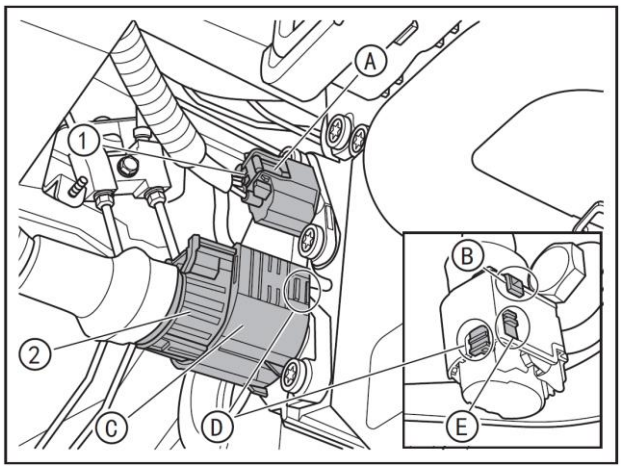
- Disconnect the motor ventilation pipe clamp (1) with the clamp removal and refitting pliers (BF0109).
- Disconnect the ventilation pipe (2) from the motor.



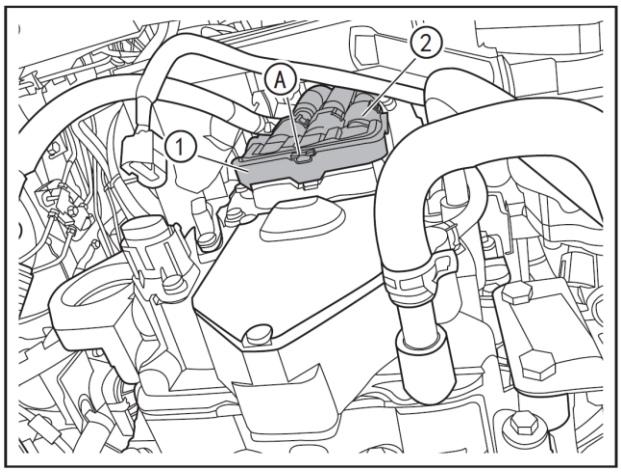
- Use the 10mm box spanner to pry the gear selector switch cable end (1).
- Use the slotted screwdriver to pry out the U-clip (2) as indicated by the arrow.
- Use the 10mm socket to remove the fixing bolts (3) (M6 × 15) of the cable bracket.
- Detach the shift cable from the transmission.
- Disconnect the gear selector switch connector (4) while prying the locking clip (A).



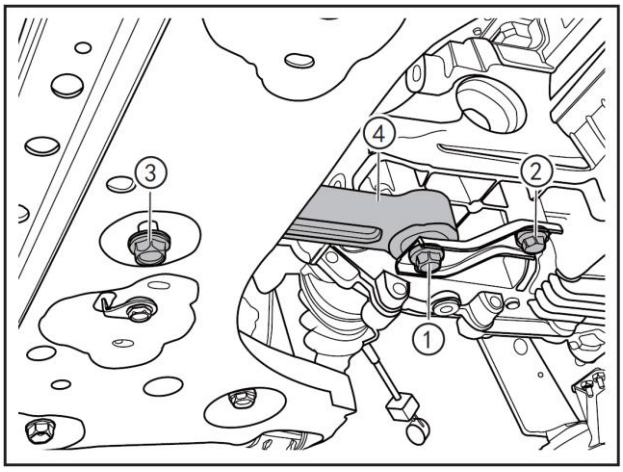
- Disconnect the rotor position sensor connector (1) while pressing the locking clip (A).
- Pry open the wire harness clip (2) and disconnect the rotor position sensor wire harness (3) from the bracket.



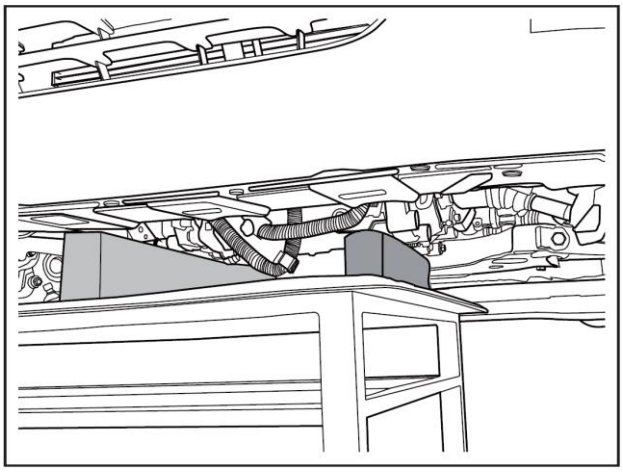
- Disconnect the stator winding temperature connector (1) while pressing the locking clip (A).
- Open the blue locking clip (B) on the motor excitation cable connector (2).
- Press button (D) on the locking clip (C), and move the locking clip (C) outwards.
- Then, press the locking clip (E) and move the locking clip (C) outwards.
- Disconnect the connector (2) after unlocking.



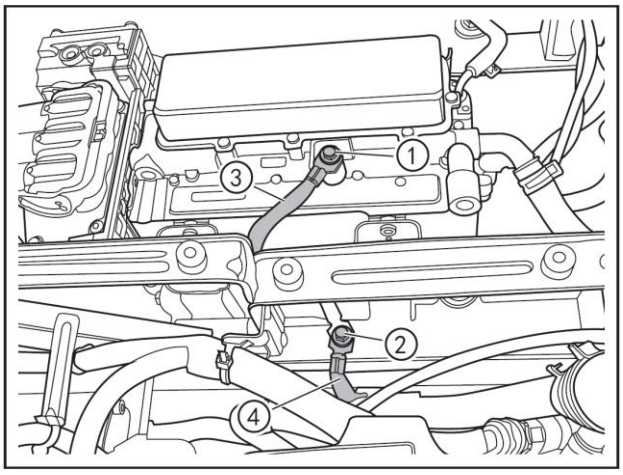
- Pull up the clip (A) of release handle (1) for three-phase output cable connector of motor control unit.
- Turn the release handle (1) for three-phase output cable connector (2) of motor control unit.



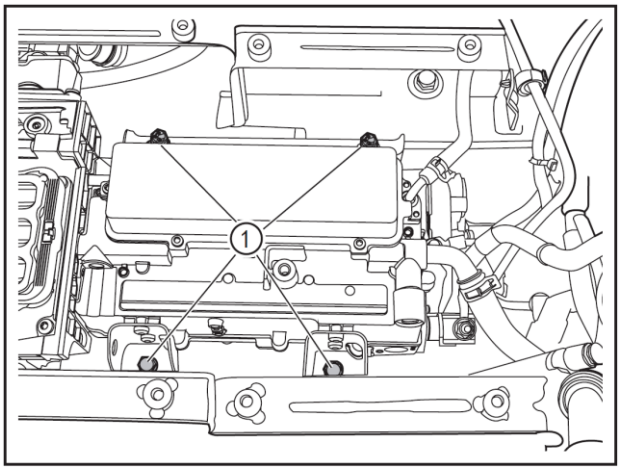
- Use the 16mm socket to remove the fixing bolts (1) (M12 × 65) and fixing bolts (2) (M12 × 35) of motor lower bracket, and remove the motor lower bracket.
- Use the 18mm socket to remove the fixing bolt (3) (M12×85) of motor torsion bracket .
- Take out the motor torsion link (4).
- Remove the left and right front axle shafts. (Refer to “Removal and Refitting of Left Axle Shaft” and “Removal and Refitting of Right Axle Shaft” in “Front Axle and Front Suspension”)



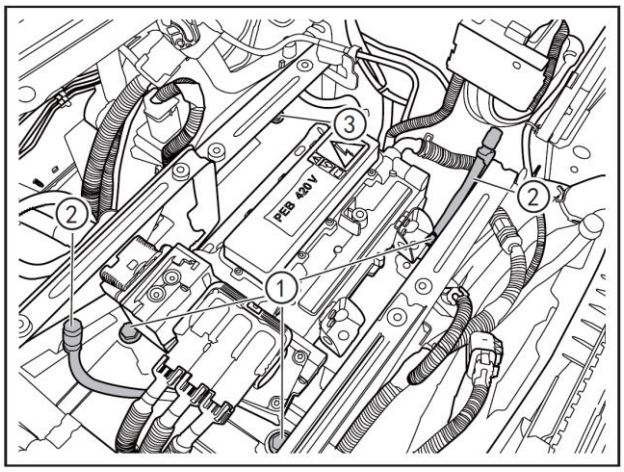
- Place the work bench under the motor and put two sleepers directly below the motor; lower down the vehicle until the motor is completely seating on the sleepers.



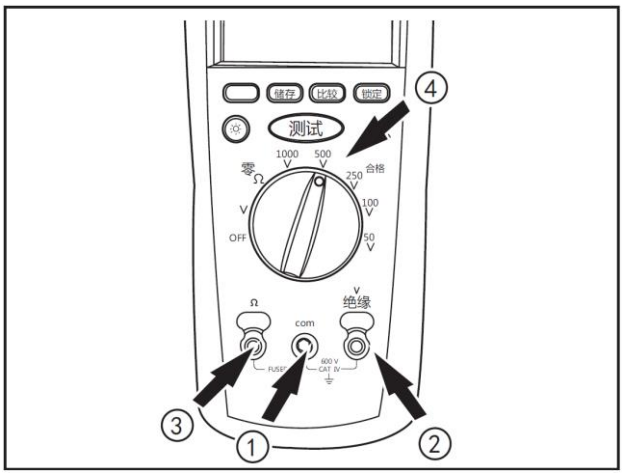
- Remove the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in “Starting and Charging System”.)
- Remove the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")
- Use the 13mm socket to remove the ground wire fixing bolt (1) on the motor control unit, and use the 10mm socket to remove the body ground wire fixing bolt (2).
- Disconnect the ground wire (3) and the ground wire (4).



- Use the 13mm socket to remove the 4 fixing bolts (1) (M8 × 25) of the motor control unit.



- Move the motor control unit slightly to expose the motor fixing bolts (1).
- Disconnect the ventilation pipe (2) from the motor.
- Use the 18mm socket to remove the fixing bolts (1) (M12 × 140) and fixing bolts (3) (M12 × 100) of the motor.
- Slowly lift the vehicle, check the four sides of motor and take out the motor.

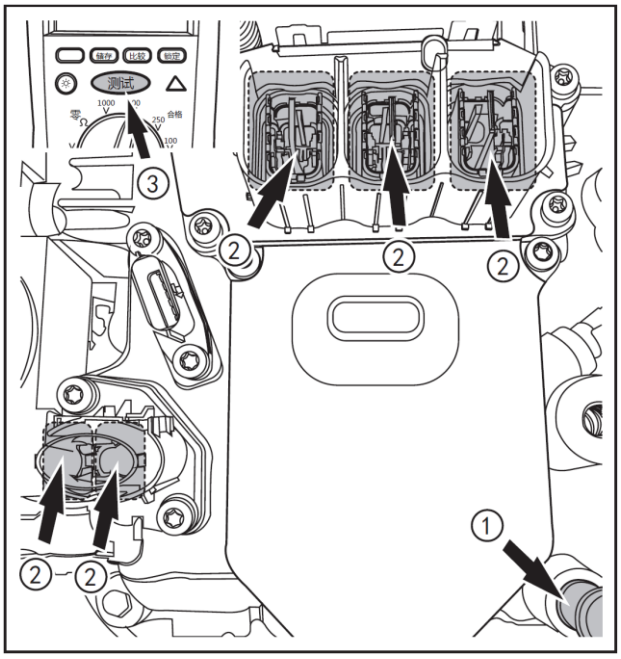


4 - Check

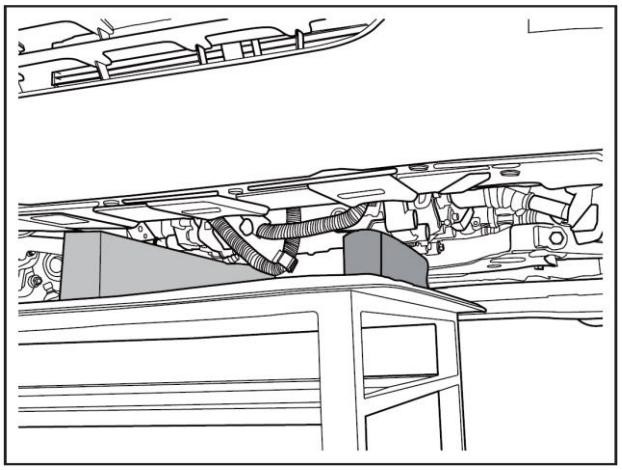
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**



- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the resistance of 5 electrodes (2) of the 2 illustrated connectors to housing with the red probe in sequence.
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

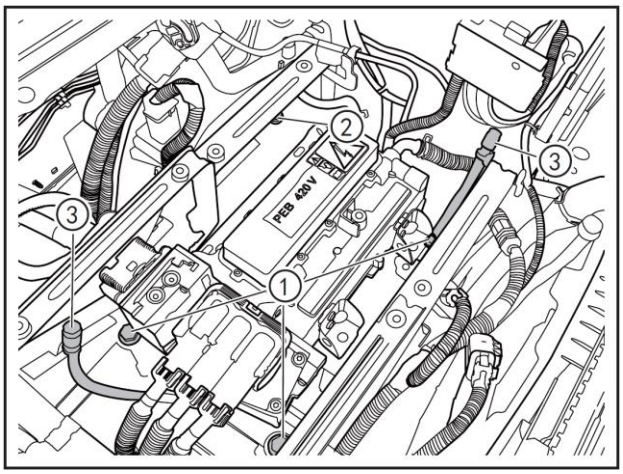


5- Refitting

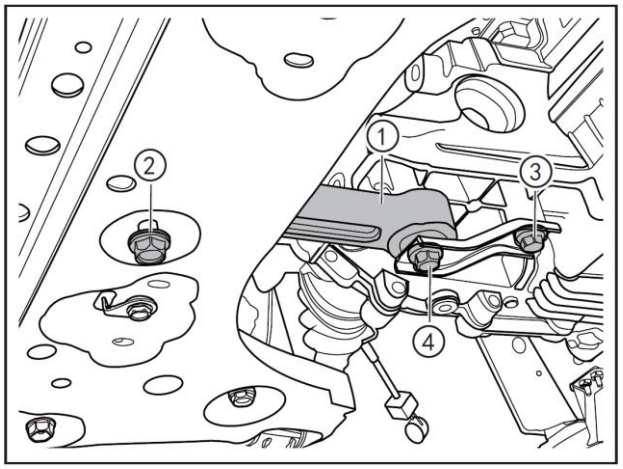
- Place the motor on the work bench and put two sleepers.
- Move the worn bench while slowly lowering the vehicle to align the screw holes of the motor with the mounting holes of the motor bracket.

⚠ CAUTION

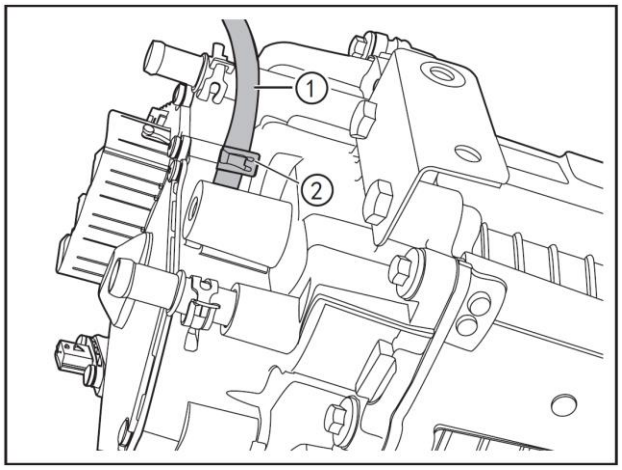
- **Protect the wire harnesses around the motor bracket from being pressed between the motor and the bracket; otherwise, the wire harness may be damaged.**



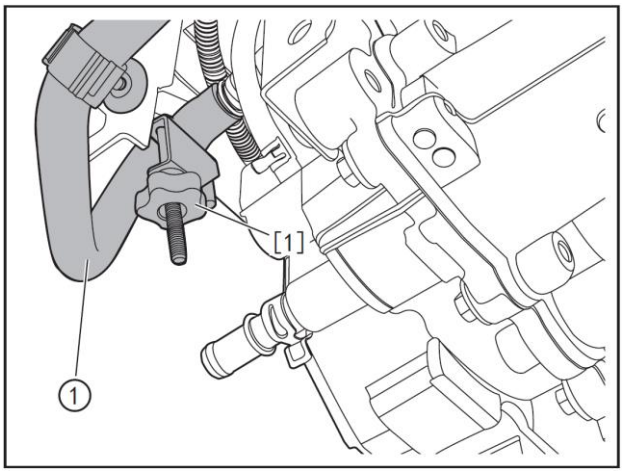
- Slowly lower the vehicle as appropriate, align the mounting holes, pre-tighten the fixing bolt (1) (M12 × 140) and fixing bolt (2) (M12 × 100) of the motor at first, and then tighten the fixing bolts to 90 ± 4.5N·m.
- Refit the motor ventilation pipe (3).
- Refit the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in “Starting and Charging System”.)
- Refit the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")



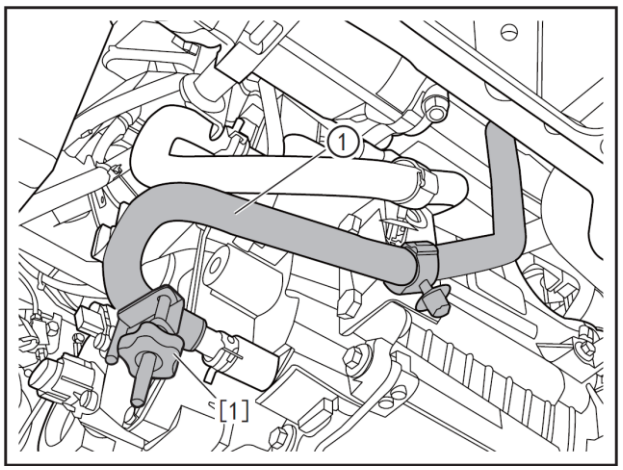
- Refit the motor torsion link (1).
- Refit the fixing bolt(2) (M12 × 85) of motor torsion bracket.
- Refit the motor lower bracket and its fixing bolt (3) (M12 × 35) and fixing bolt (4) (M12 × 65).
- Tighten the fixing bolt (2) of motor torsion bracket, and fixing bolt (3) (M12 × 35) and fixing bolt (4) (M12 × 65) of motor lower bracket with the 18mm socket and 16mm socket cyclically.



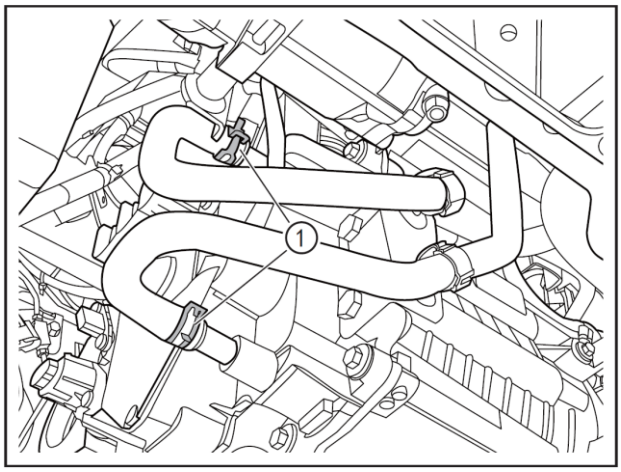
- Refit the left and right front axle shafts. (Refer to “Removal and Refitting of Left Axle Shaft” and “Removal and Refitting of Right Axle Shaft” in “Front Axle and Front Suspension”)
- Connect the ventilation pipe (1).
- Refit the motor ventilation pipe clamp (2) with the clamp removal and refitting pliers.



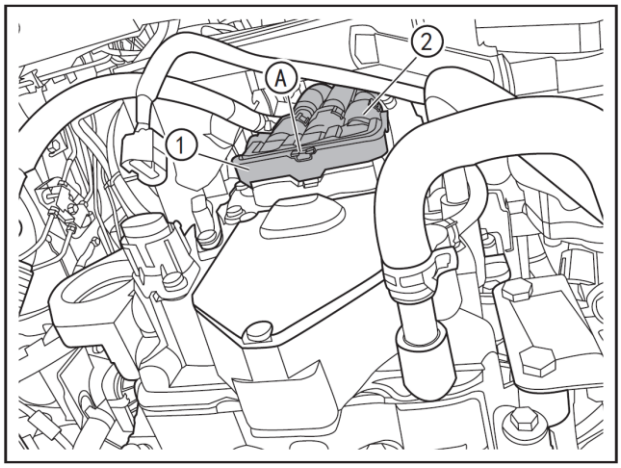
- Connect the motor water inlet pipe (1).
- Remove the hose clamp pliers (BF0108A) [1] from the orifice of the motor water inlet pipe (1).



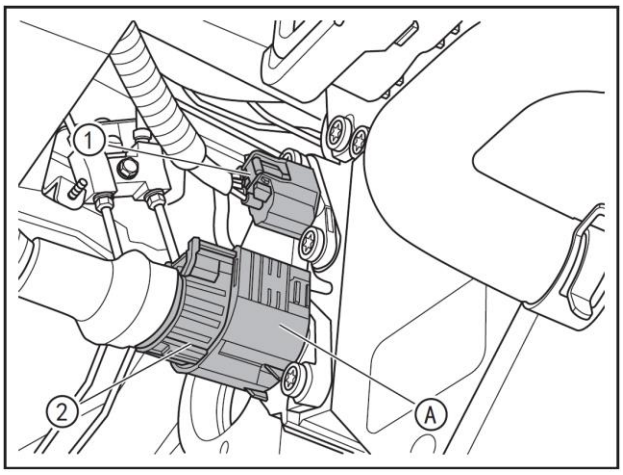
- Connect the motor water outlet pipe (1).
- Remove the hose clamp pliers (BF0108A) [1] from the orifice of the motor water outlet pipe (1).



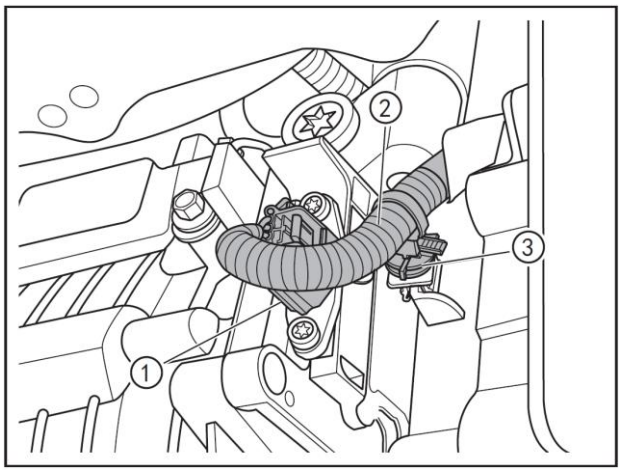
- Refit the motor water inlet/outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).



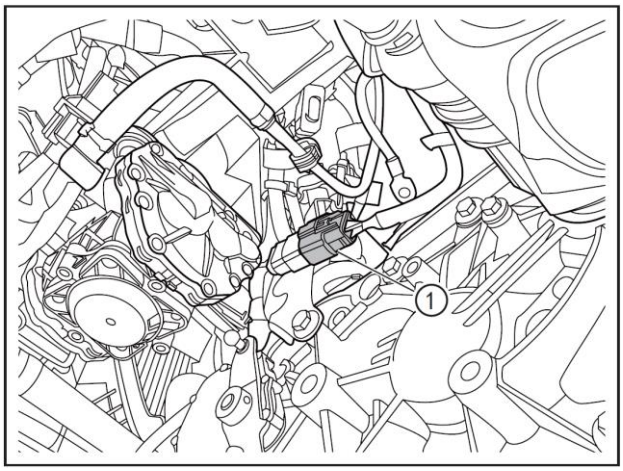
- Turn the release handle (1) for three-phase output cable connector of motor control unit and connect the three-phase output cable connector (2) of motor control unit.
- Press down the clip (A) of release handle (1) for three-phase output cable connector of motor control unit.



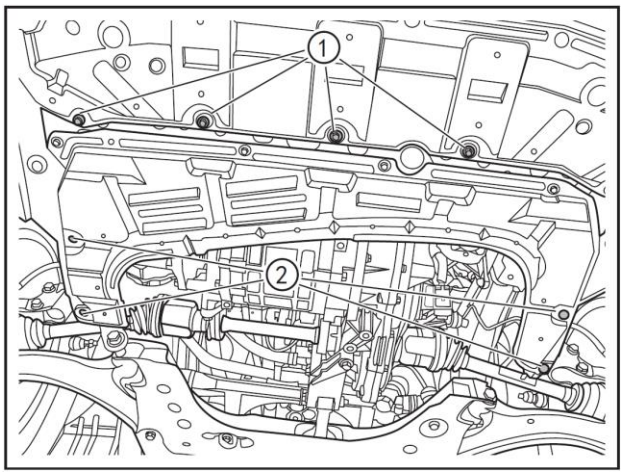
- Insert the stator winding temperature sensor connector (1) inward.
- Insert the motor excitation cable connector (2) inward and push the locking clip (A) inward.



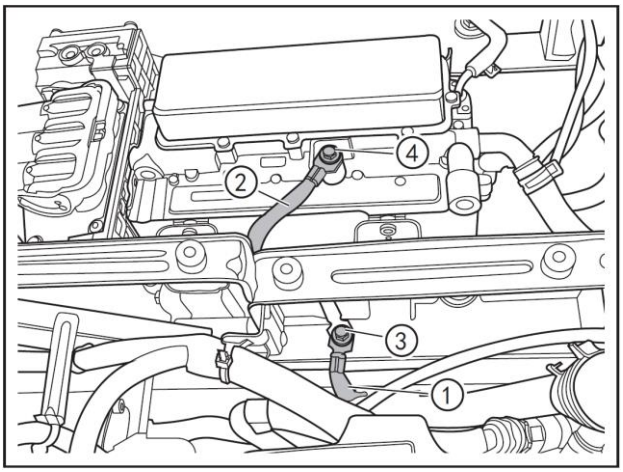
- Connect the rotor position sensor connector (1).
- Install the rotor position sensor wire harness (2) onto the bracket (3).



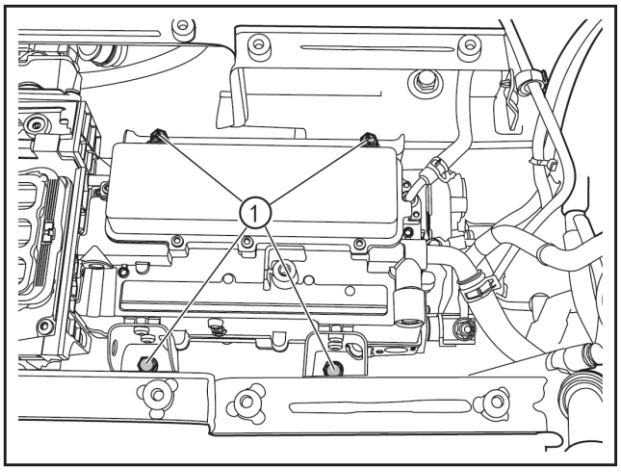
- Connect the gear selector switch connector (1).



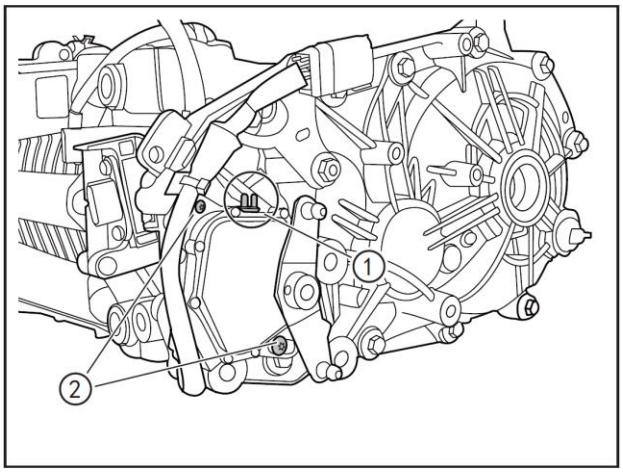
- Tighten 4 fixing bolts (1) (M6X20) of powertrain lower protective plate with a 10 mm socket;
- Refit the 4 fixing clips (2) of powertrain lower protective plate.



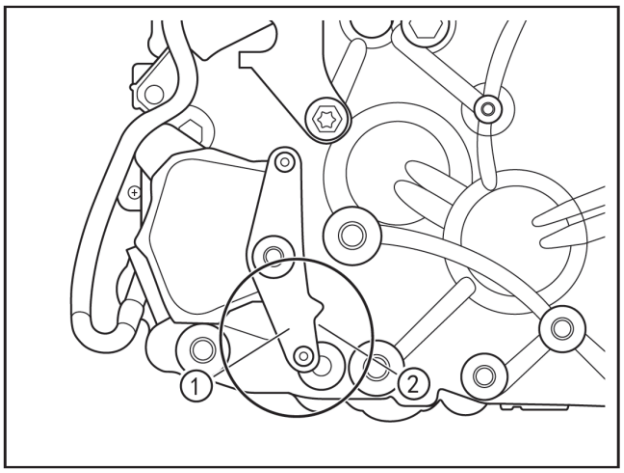
- Refit the ground wires (1) and (2).
- Tighten the fixing bolts (3) of body ground wire with the 10mm socket to the specified torque of 25N·m.
- Tighten the ground wire fixing bolts (4) of the motor control unit with the 13mm socket to the specified torque of 25N·m.



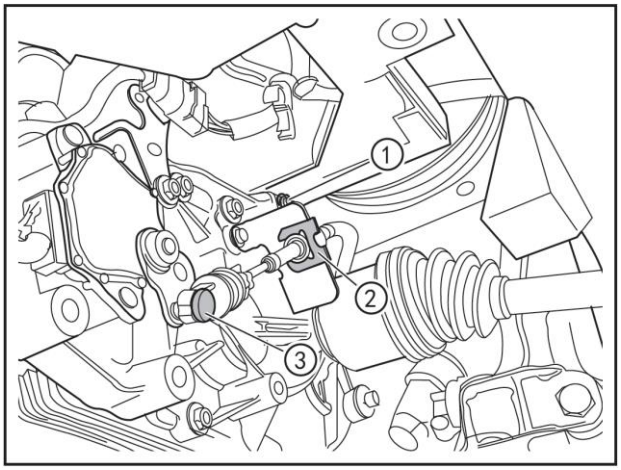
- Tighten the 4 fixing bolts (1) (M8×25) of the motor control unit with the 13mm socket to the specified torque of 25±1.25N·m.
- Refit the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in “Starting and Charging System”.)
- Refit the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")



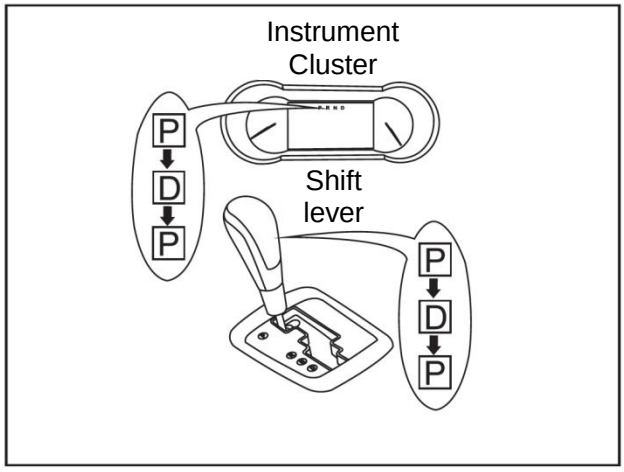
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Adjust the multimeter to diode buzzer position, and check the continuity between 2 terminals (1) on the gear selector switch.
- Adjust the fixing screw of the gear selector switch, and when the multimeter beeps, tighten the fixing screw (2).



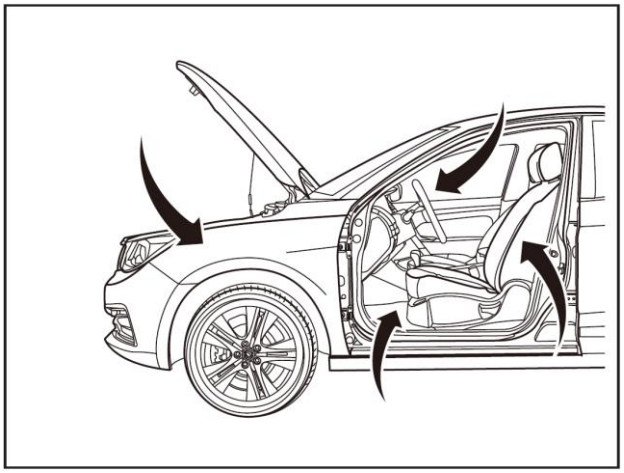
- Check if the boss (1) of the shift linkage is aligned with the “D-gear” mark (2) on the transmission, if not, do alignment.



- Put the shift lever in D.
- Insert the shift cable into the bracket and tighten the fixing bolts (1) (M6 × 15) of the bracket.
- Insert the U-clip (2) into the cable groove and knock to secure it.
- Clamp the cable end (3) into the shift linkage and press to secure it.



- Add transmission oil. (Refer to “Draining and Adding of Transmission Oil” in “Transmission Makeup”)
- Add motor coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- After refitting, connect the battery negative cable.
- Turn the ignition switch to ON, operate the shift lever, and check if the gear indication on the instrument cluster is consistent with the actual gear position, and if not, adjust the gear selector switch again.

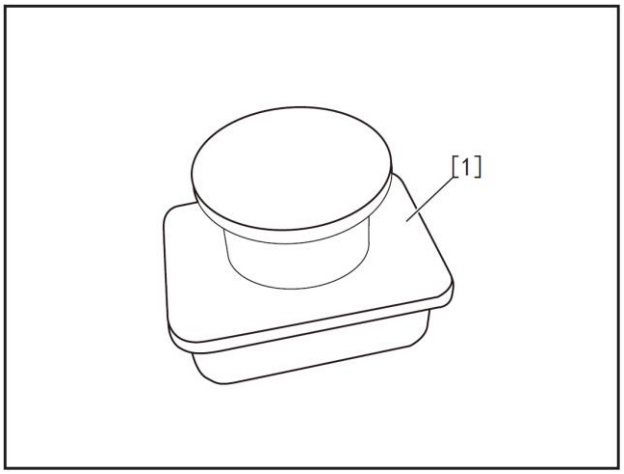


Removal and Refitting of Powertrain (Independent Motor)

1 - Protection

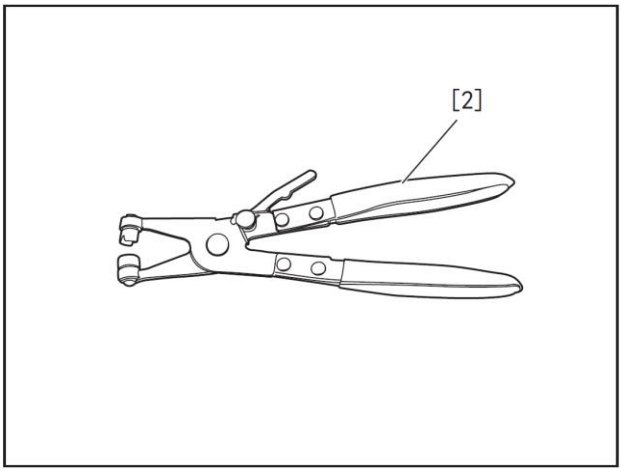
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

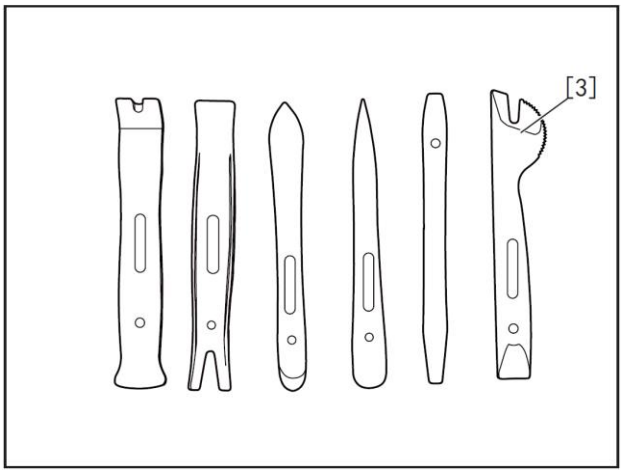


2 - Recommended tools

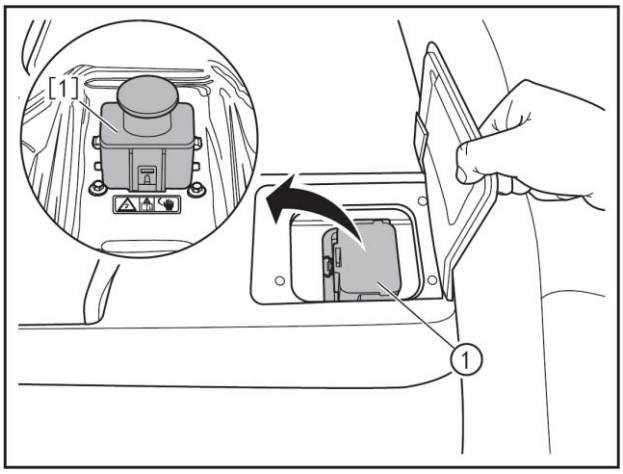
- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



- Interior trim removal tool (BF1102) [3].



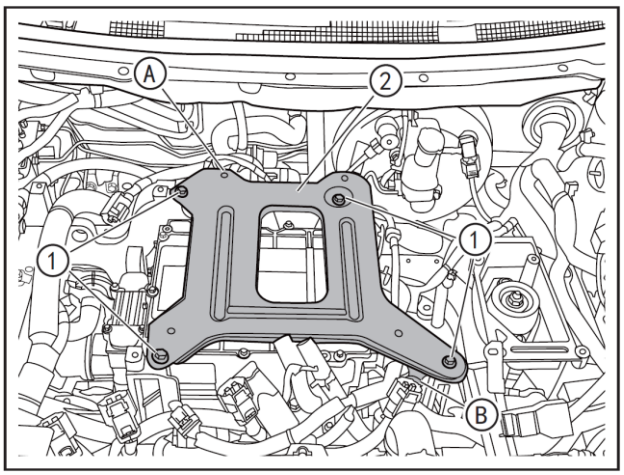
3 - Removal

⚠ CAUTION

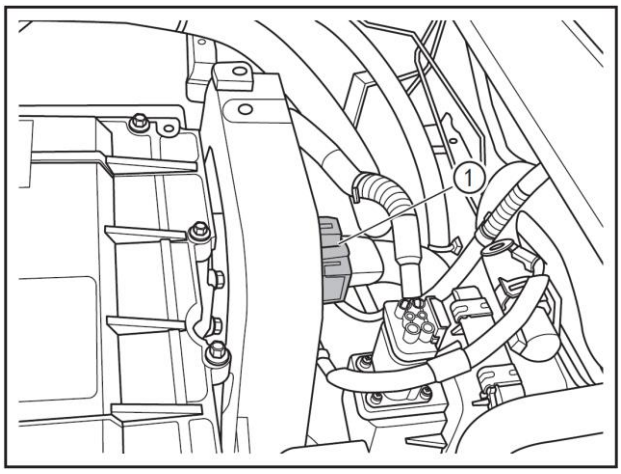
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

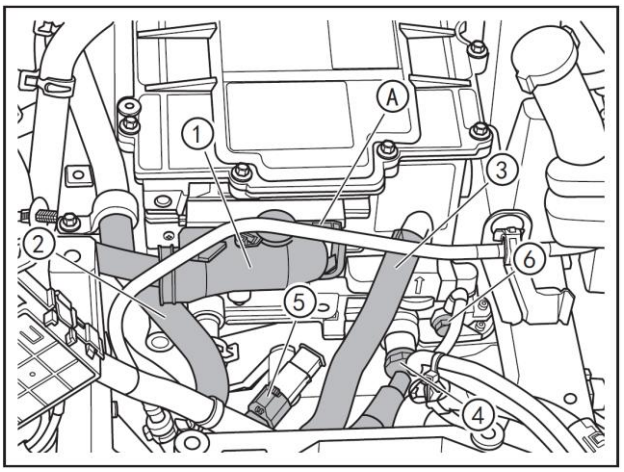
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- Drain off the transmission oil. (Refer to “Draining and Adding of Transmission Oil” in “Transmission Makeup”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Remove the battery. (Refer to "Removal and Refitting of Battery" in “Starting and Charging System”.)
- Remove the battery bracket. (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")
- Remove the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in “Starting and Charging System”.)
- Remove the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")



- Use the interior trim removal tool (BF1102) to disconnect the wire harness clips A and B.
- Remove the fixing bolt (1) of the high voltage distribution box bracket with the 10mm socket.
- Remove the high voltage distribution box bracket (2).



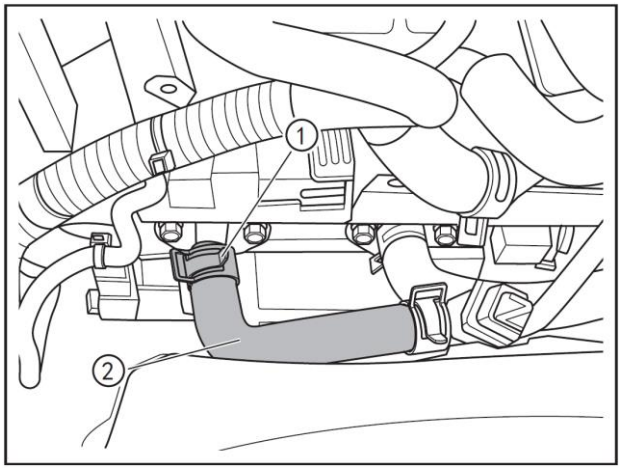
- Disconnect the DC high voltage connector (1) at the back of the motor control unit.



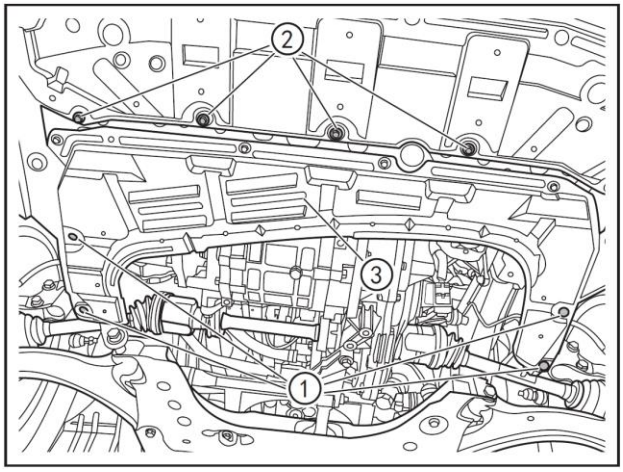
- Press the locking clip of motor control unit signal connector, and open the connection clip (A) outwards to release the connector (1).
- Move back the motor control unit water inlet pipe clamp with the water hose clamp removal and refitting pliers (BF0109), and disconnect the water inlet pipe (2).
- Move back the motor control unit water outlet pipe clamp with the water hose clamp removal and refitting pliers (BF0109), and disconnect the water inlet pipe (3).
- Rotate the DC-DC converter connector (4) counterclockwise to disconnect it.
- Open the locking clip of connector (5) and disconnect the connector.
- Use the 13mm socket to remove the fixing bolt (6) (M8 × 16) of the motor control unit ground wire, and disconnect the ground wire.

⚠ CAUTION

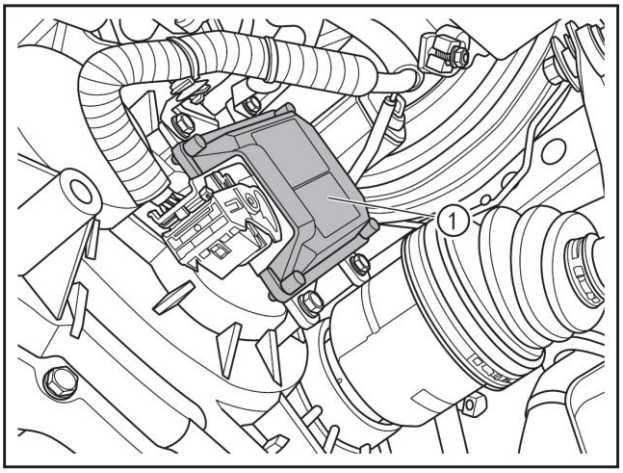
- **Pull out the motor control unit connector (4) after the water inlet pipe and water outlet pipe are disconnected, so as to prevent the coolant from leaking into the motor control unit.**



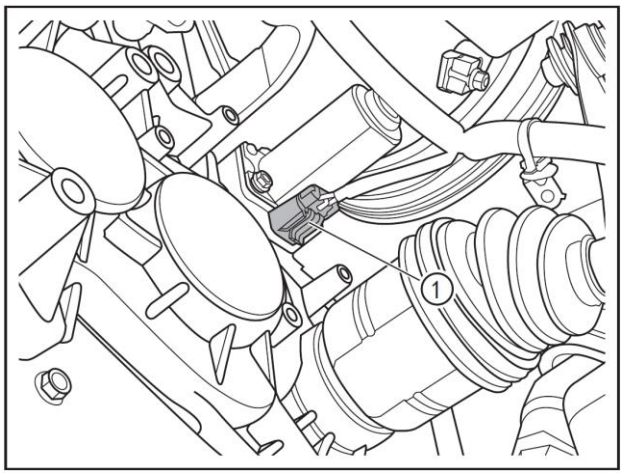
- Remove the motor water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and then disconnect the motor water outlet pipe (2).



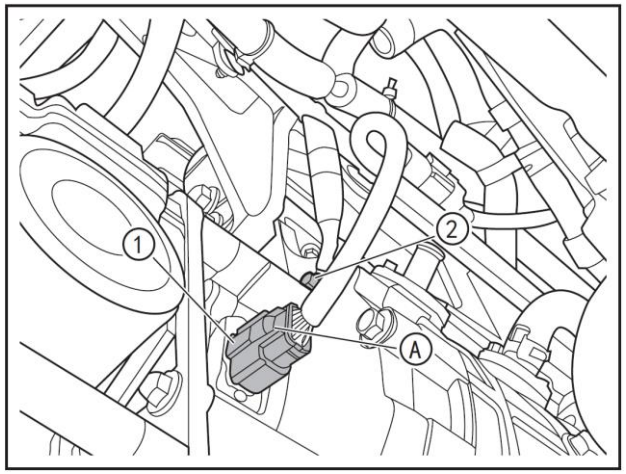
- Lift the car.
- Remove the fixing clips (1) of front bumper lower protective plate with the interior trim removal tool (BF1102).
- Remove the fixing bolts (2) (M6×20) of the front bumper lower protective plate with a 10 mm socket.
- Remove the motor lower protective plate (3).



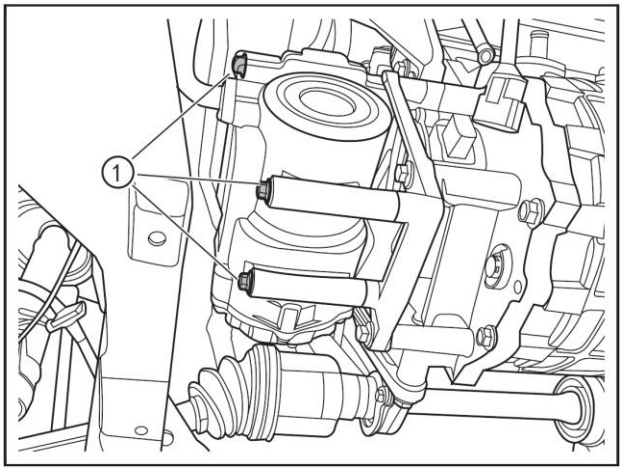
- Remove the PCU (1). (Refer to “Removal and Refitting of PCU” in “Transmission Makeup”)



- Open the connector clip outward and disconnect the PCU motor connector (1).

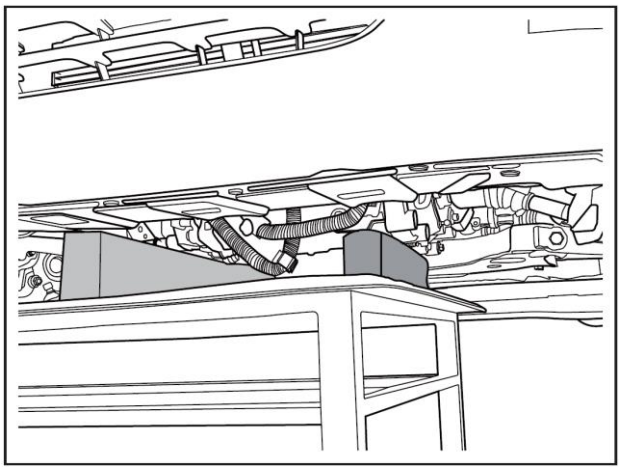


- Move back the connector to reveal the locking clip A, press the connector clip, and disconnect the motor assembly connector (1).
- Remove the fixing bolt (2) (M6×10) of the motor ground wire with the 8mm socket.

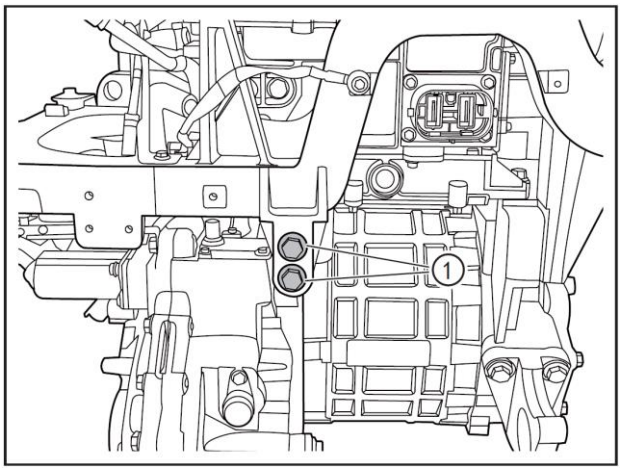


- Remove the 3 fixing bolts (1) (M8 × 100) from the compressor with the 10 mm socket, and secure the compressor with a rope until no interference is involved.

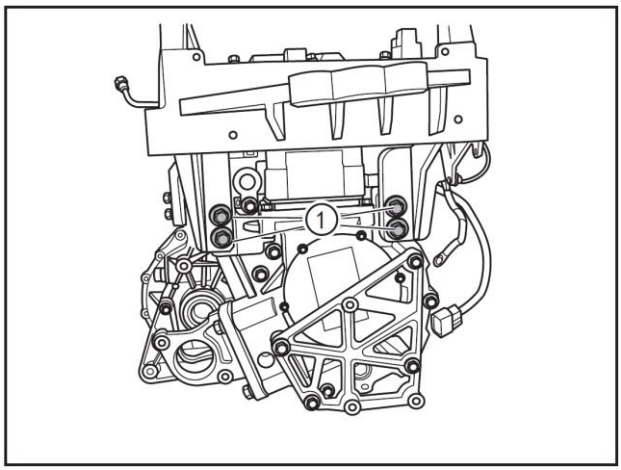
- Remove the left and right front axle shafts. (Refer to “Removal and Refitting of Left Axle Shaft” and “Removal and Refitting of Right Axle Shaft” in “Front Axle and Front Suspension”)
- Remove the motor lower torsion link. (Refer to "Removal and Refitting of Torsion Link Assembly” in this section).



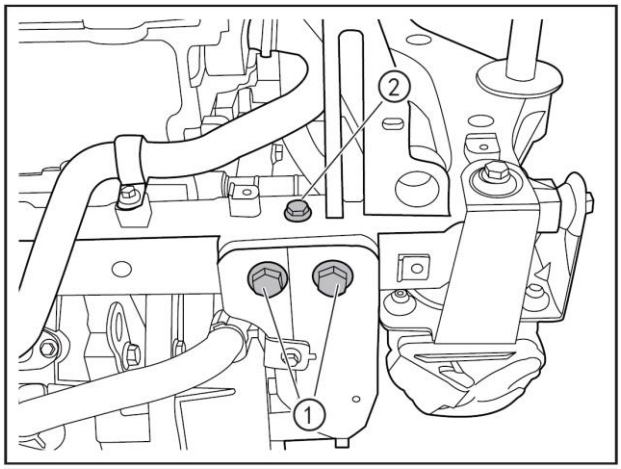
- Place the lift under the motor and place two sleepers in the appropriate position of the lift.
- Lower the vehicle until the motor is completely seating on the sleepers.



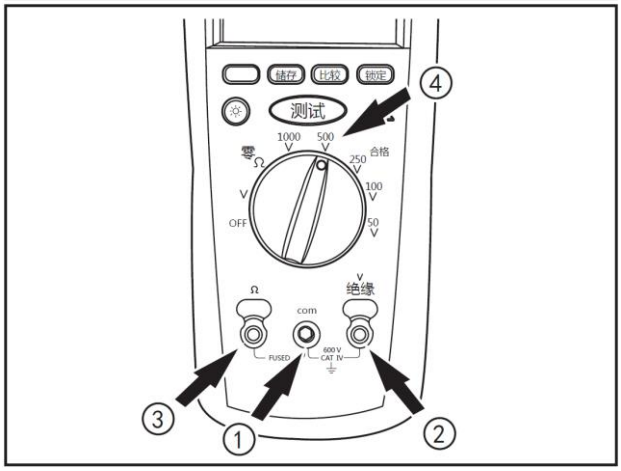
- Use the 16mm socket to remove the left rear connecting bolts (1) (M12 × 45) for connecting the motor assembly and the motor bracket.



- Use the 16mm socket to remove the right connecting bolts (1) (M12 × 45) for connecting the motor assembly and the motor bracket.



- Use the 17mm socket to remove the left front connecting bolts (1) (M12 × 60) for connecting the motor assembly and the motor bracket, and use the 12mm socket to remove the bolt (2) (M8 × 70).
- Slowly lift the vehicle and remove the motor assembly.

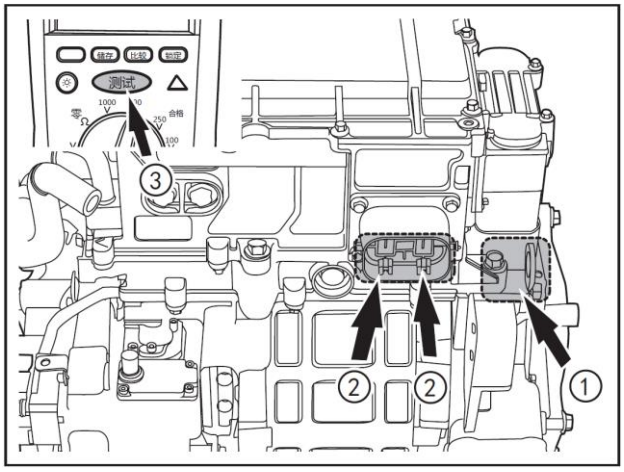


4 - Check

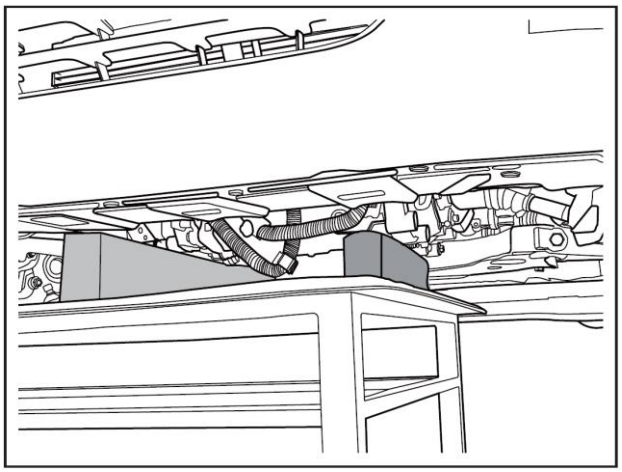
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**



- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the resistance of 2 electrodes (2) of the 2 illustrated connectors to housing with the red probe in sequence.
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

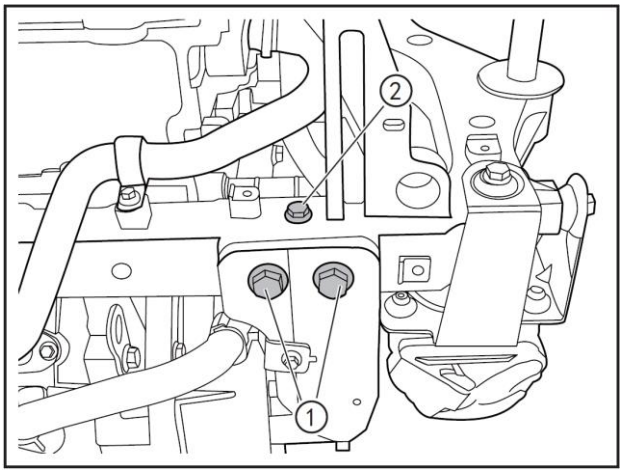


5- Refitting

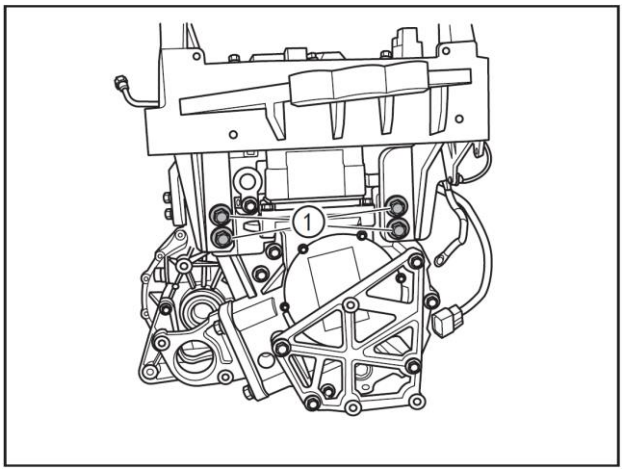
- Mount the MCU-integrated DC-DC converter to the motor assembly. (Refer to “Removal and Refitting of MCU-Integrated DC-DC Converter” in “Motor Control”)
- Place the motor on the work bench and put two sleepers.
- Move the worn bench while slowly lowering the vehicle to align the screw holes of the motor with the mounting holes of the motor bracket.

⚠ CAUTION

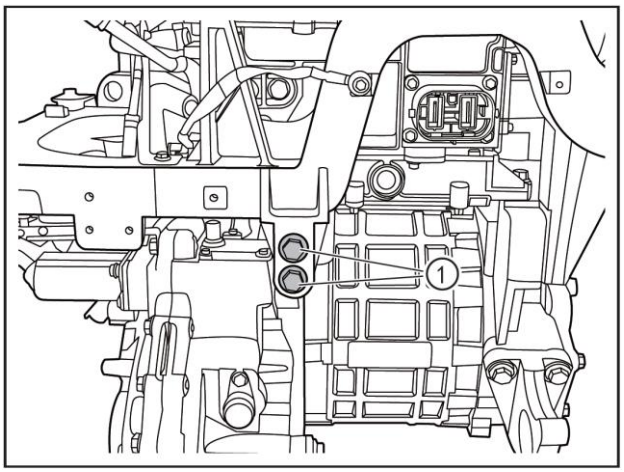
- **Protect the wire harnesses around the motor bracket from being pressed between the motor and the bracket; otherwise, the wire harness may be damaged.**



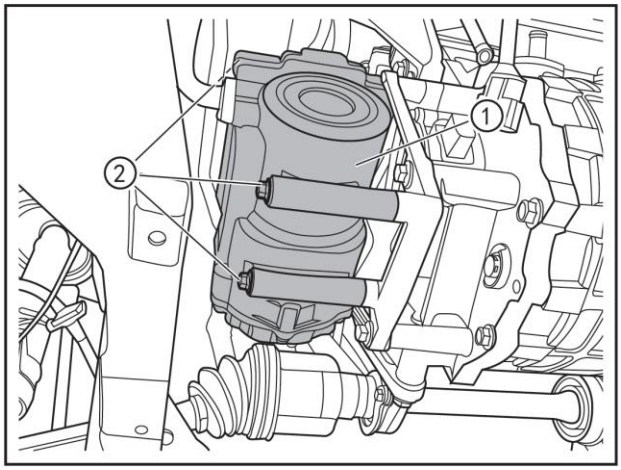
- Refit the left front connecting bolts (1) (M12 × 60) for connecting the motor assembly and the motor bracket, tighten the connecting bolts with the 17mm socket to 78.5N·m and then make mark with a marker.
- Refit the left front connecting bolts (2) (M8 × 70) for connecting the motor assembly and the motor bracket, tighten the connecting bolts with the 12mm socket to 24.5N·m and then make mark with a marker.



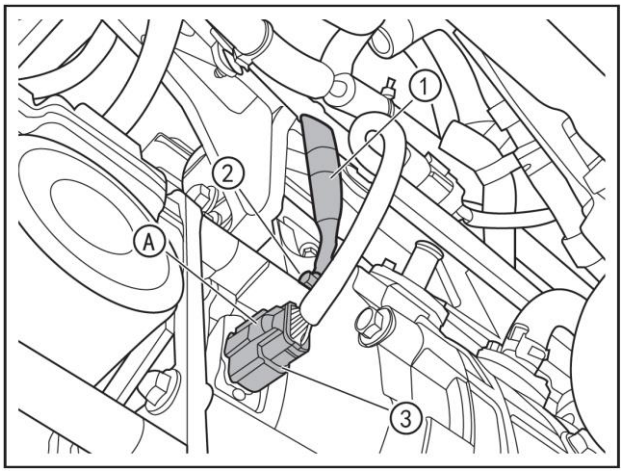
- Refit the right connecting bolts (1) (M12 × 45) for connecting the motor assembly and the motor bracket, tighten the connecting bolts with the 16mm socket to 78.5N·m and then make mark with a marker.



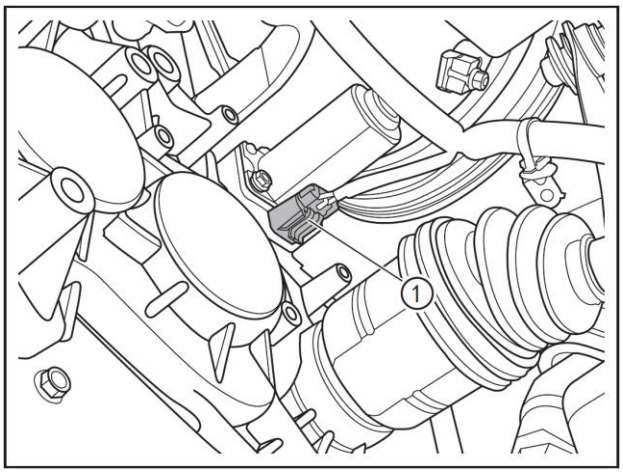
- Refit the left rear connecting bolts (1) (M12 × 45) for connecting the motor assembly and the motor bracket, tighten the connecting bolts with the 16mm socket to 78.5N·m and then make mark with a marker.
- Remove the left and right front axle shafts. (Refer to “Removal and Refitting of Left Axle Shaft” and “Removal and Refitting of Right Axle Shaft” in “Front Axle and Front Suspension”)
- Refit the motor lower torsion link. (Refer to "Removal and Refitting of Torsion Link Assembly” in this section).



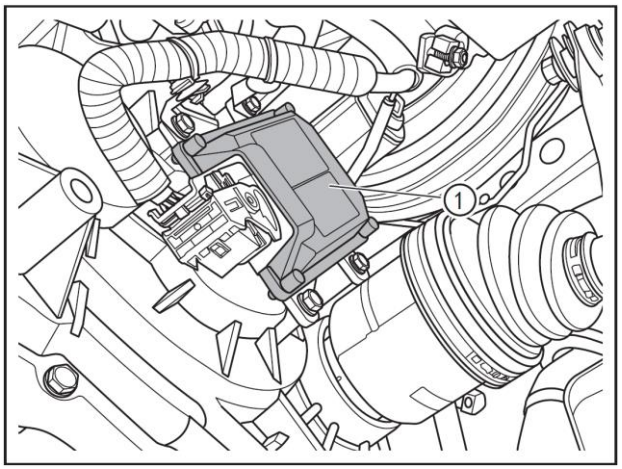
- Align the compressor (1) with the compressor mounting bracket and install the 3 fixing bolts (2) (M8 × 100) of the compressor.
- Pre-tighten the fixing bolt of compressor to 20±3N·m with the 10mm socket.



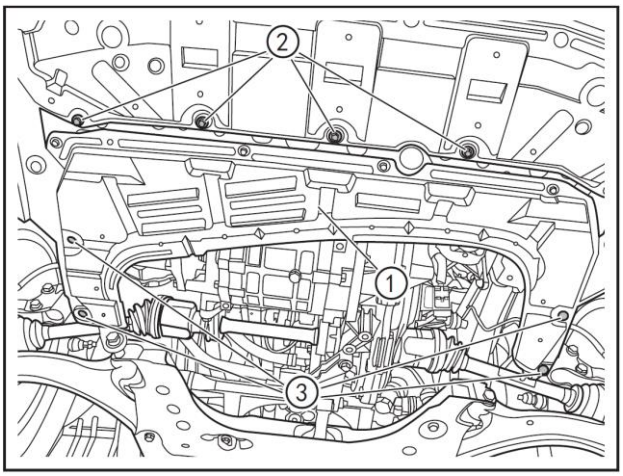
- Refit the motor ground wire (1) and tighten the fixing bolt (2) (M6 × 10) of motor ground wire with the 8 mm socket to 9.8N·m.
- Refit the motor connector (3) in place, and then push in the locking clip A of connector.



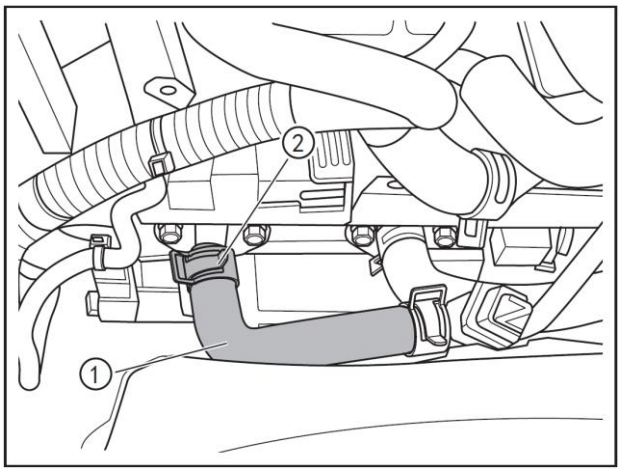
- Refit the PCU motor connector (1) in place.



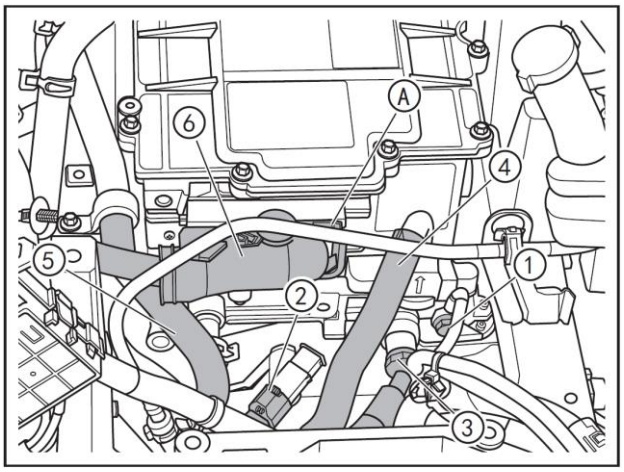
- Refit the PCU (1). (Refer to “Removal and Refitting of PCU” in “Transmission Makeup”)



- Refit the motor lower protective plate (1).
- Tighten the 4 fixing bolts (2) (M6 × 20) of motor lower protective plate with the 10mm socket to 9.8N·m.
- Refit the 4 fixing clips (3) of the motor lower protective plate in place.



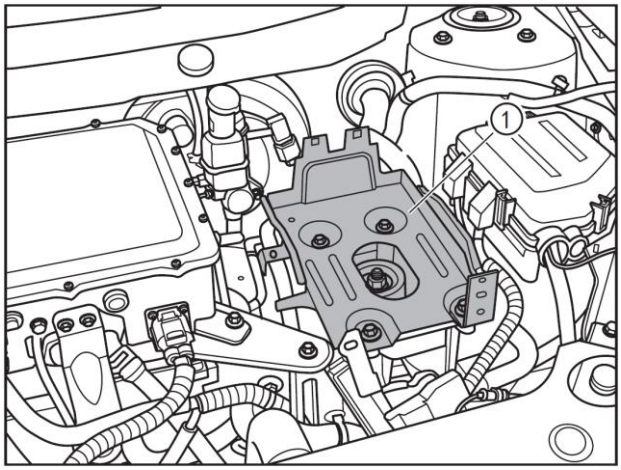
- Insert the motor water outlet pipe (1), and then refit the motor water outlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109).



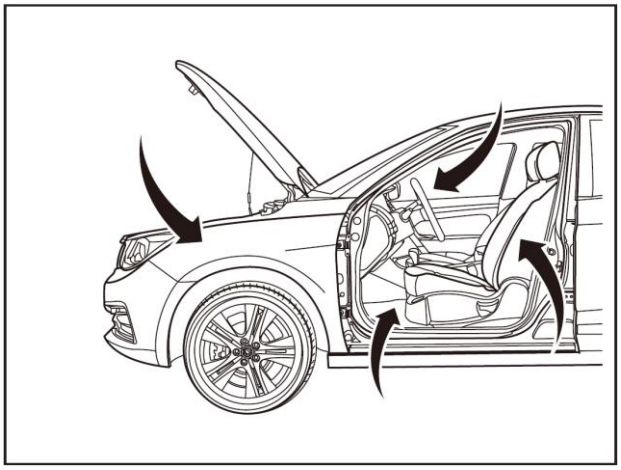
- Refit the motor control unit ground wire, and tighten the fixing bolt (1) of the ground wire to 20±3N·m with the 13mm socket.
- Refit the motor wire harness connector (2) in place.
- Install the end of the motor control unit connecting wire harness (3) to the motor end after alignment, and tighten the end clockwise.
- Refit the motor control unit water outlet pipe (4), and then move the water outlet pipe clamp to the mounting position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the motor control unit water inlet pipe (5), and then move the water inlet pipe clamp to the mounting position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the motor control unit connector (6), turn over the connector locking clip (A) to the bottom and ensure that the motor control unit connector is securely locked.

⚠ CAUTION

- **Always install the motor control unit connector (3) before the water outlet and inlet pipes are installed.**
- **Before installing the water inlet and outlet pipes, always wipe them dry without residual coolant thereon; so as to prevent the coolant on water inlet and outlet pipes from leaking into the motor control unit.**



- Refit the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box" in "High Voltage Distribution Box")
- Refit the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in "Starting and Charging System".)
- Add transmission oil. (Refer to "Draining and Adding of Transmission Oil" in "Transmission Makeup")
- Add motor coolant. (Refer to "Change of Motor Coolant" in "Motor Cooling System")
- Refit the battery bracket (1). (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")
- Install the battery. (Refer to "Removal and Refitting of Battery" in "Starting and Charging System".)
- Refit the service switch. (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")
- Connect the battery negative cable.
- After the installation is completed, connect the scan tool and enter the "MCU (Independent Motor)" and match the motor control unit as prompted.

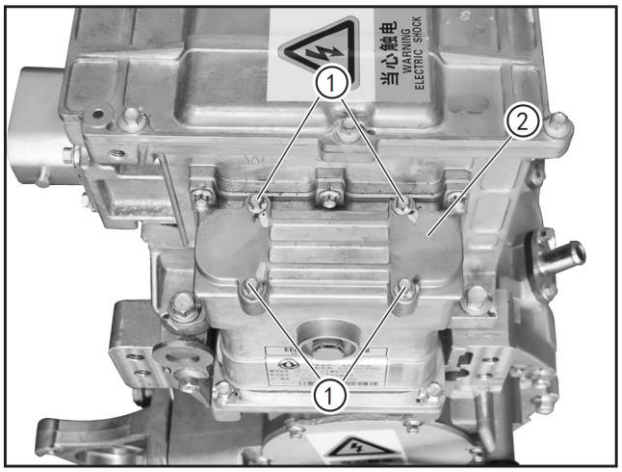


Disassembly of Powertrain (Independent Motor)

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

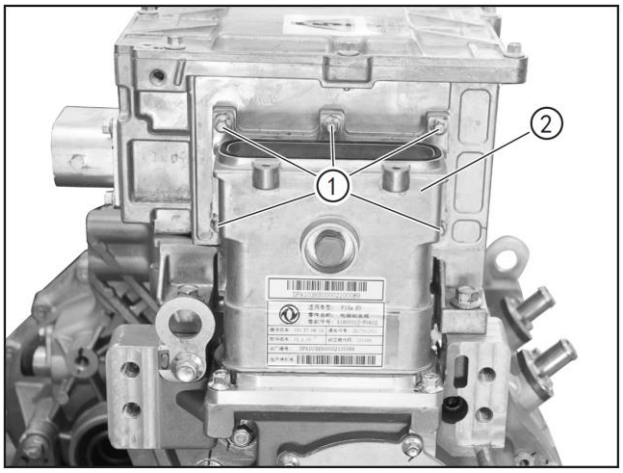


2 - Removal

- Remove the powertrain. (Refer to "Removal and Refitting of Powertrain (Continental Motor)" in this section)
- Use the 7mm socket to remove the 4 fixing bolts (1) (M5 × 12) of upper protective cover of MCU-integrated DC-DC converter, and then take down the upper protective cover (2).

⚠ CAUTION

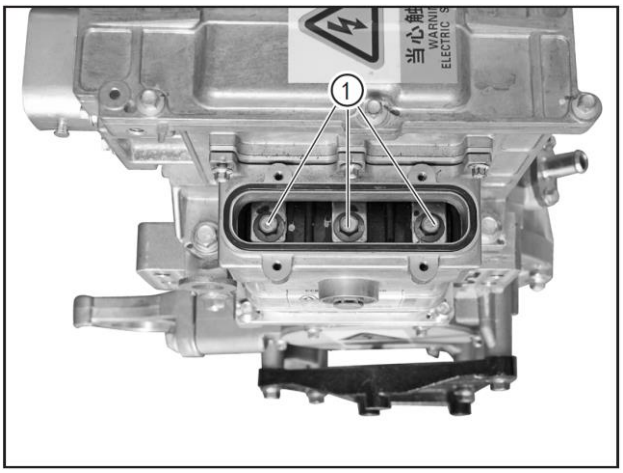
- **Discard the old seal and replace it with a new one.**



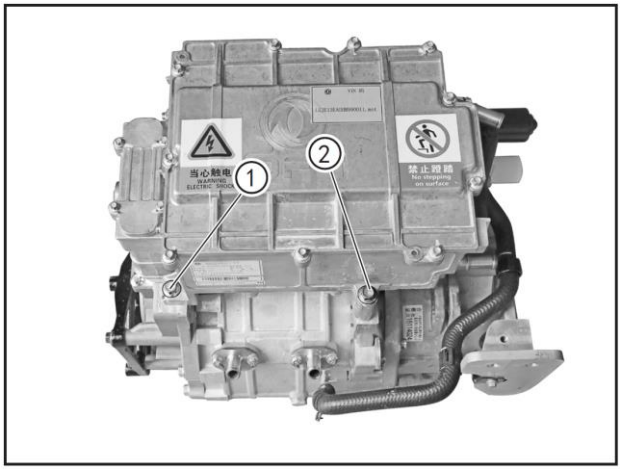
- Use the 7mm socket to remove the 5 fixing bolts (1) (M5 × 16) of protective cover of MCU-integrated DC-DC converter.
- Take down the protective cover (2).

⚠ CAUTION

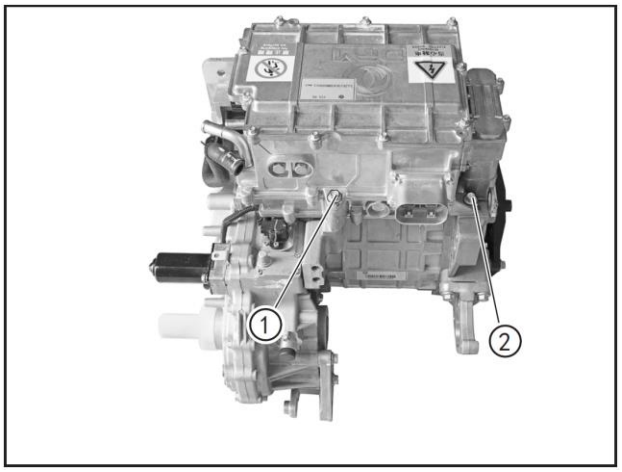
- **Discard the old seal and replace it with a new one.**



- Remove the 3 fixing bolts (1) (M8×16) of the connecting wire between the MCU-integrated DC-DC converter and the motor with the 10mm socket.



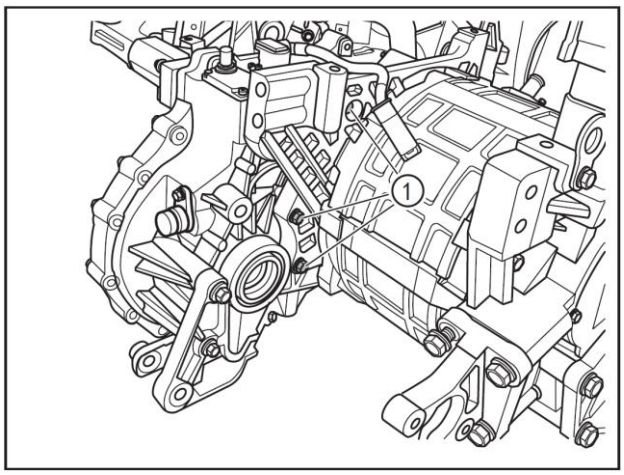
- Remove the front fixing bolt (1) (M10 × 35) and fixing bolt (2) (M10 × 75) of the MCU-integrated DC-DC converter with the 13mm socket.



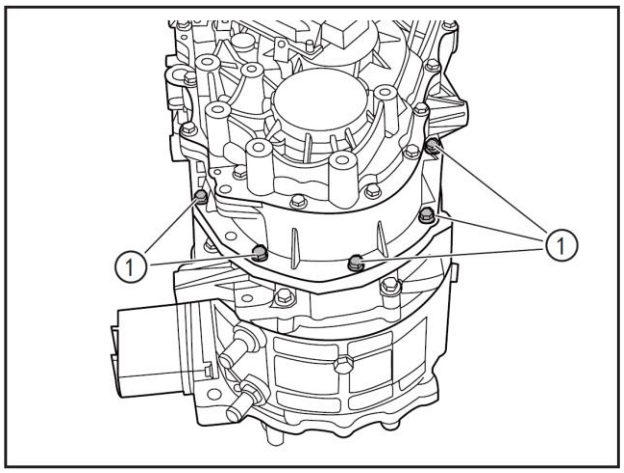
- Remove the fixing bolt (1) (M10×75) and fixing bolt (2) (M10×35) of motor with the 13mm socket, and lift up the MCU-integrated DC-DC converter (2) and then pull it out.

⚠ CAUTION

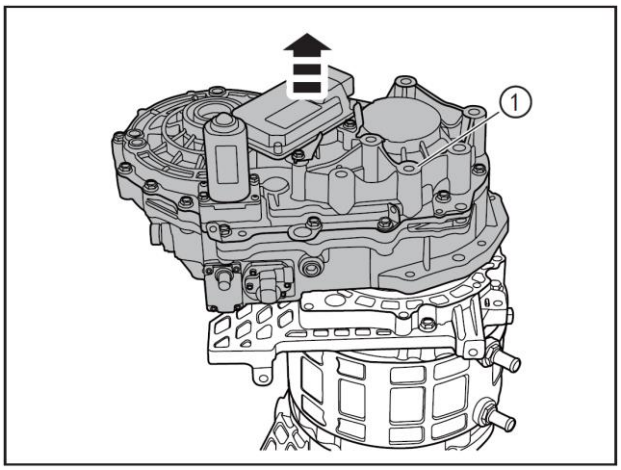
- **Handle the MCU-integrated DC-DC converter gently when taking it out and place it in a dry and well-ventilated place, otherwise the motor control unit will be damaged.**



- Use the 12mm socket to remove the 3 connecting bolts (1) (M8 × 35) inside the motor & transmission assembly.



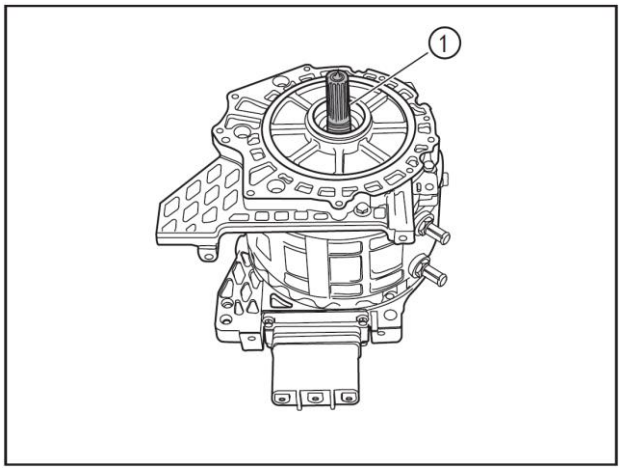
- Use the 12mm socket to remove the 5 connecting bolts (1) (M8 × 35) outside the motor & transmission assembly.



- Lift out the transmission assembly (1) evenly.

⚠ CAUTION

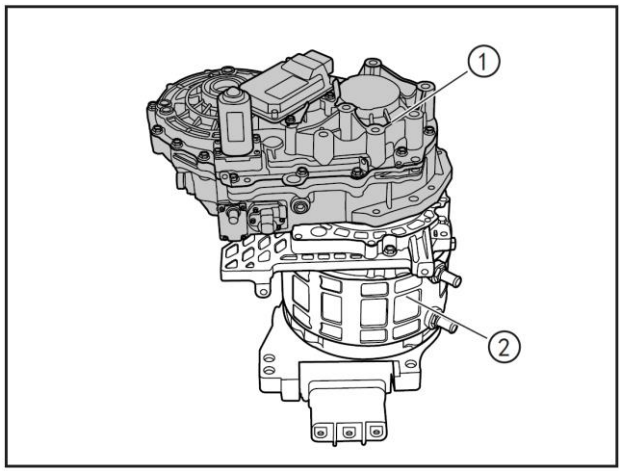
- **When removing the transmission assembly, always lift it out evenly. If the force is applied at an inclination, the transmission is difficult to be taken out.**
- **When removing the transmission assembly, another person is required to hold the motor stably, so as to prevent the personal injury or motor damage is the motor transmission falls down or moves unexpectedly.**



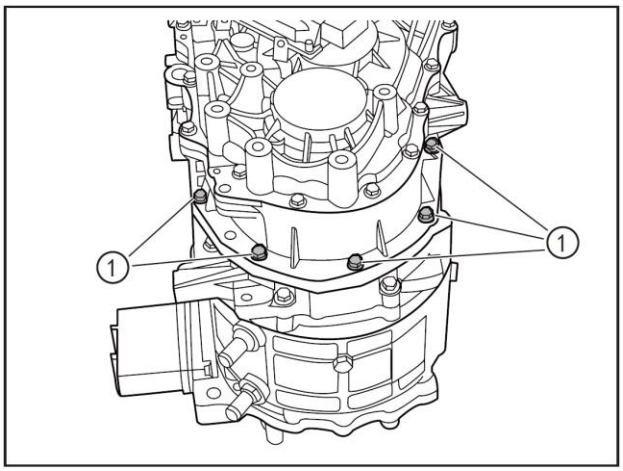
3- Refitting

⚠ CAUTION

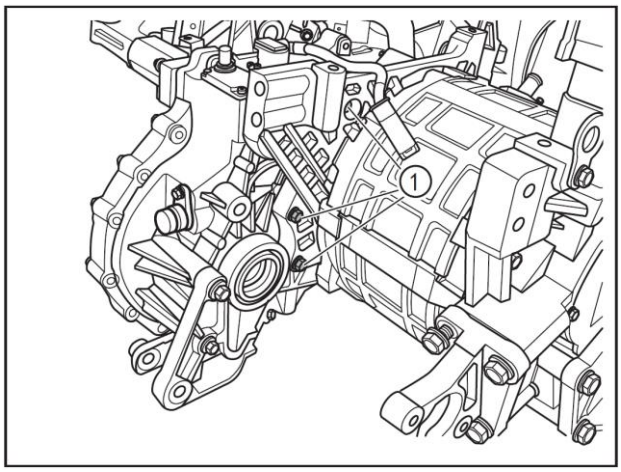
- **Tighten all bolts to the specified torque and make the mark with a marker to avoid to avoid missed installation or missed tightening of bolts.**
- Apply a proper amount of grease to the joint of the drive motor output shaft (1).



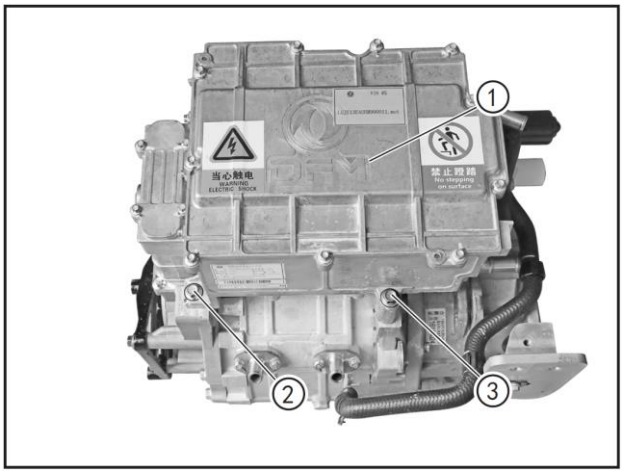
- Attach the transmission assembly (1) to the motor (2) with 2 dowel pins aligned, and then shake the transmission assembly side to side with uniform force to install the transmission assembly in place.



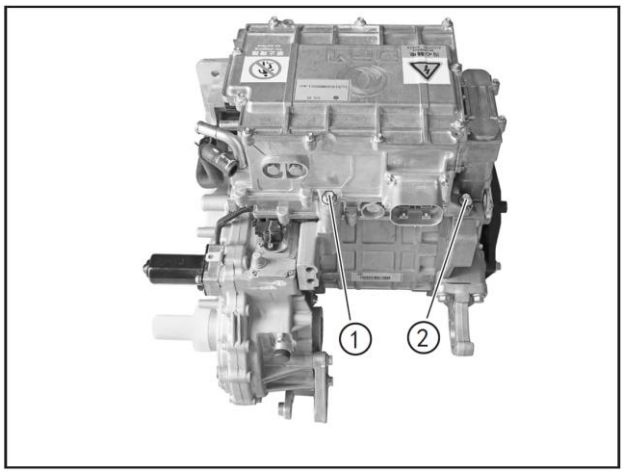
- Use the 12mm socket to tighten the 5 connecting bolts (1) outside the motor & transmission assembly to 24.5N·m, and then make mark with a marker.



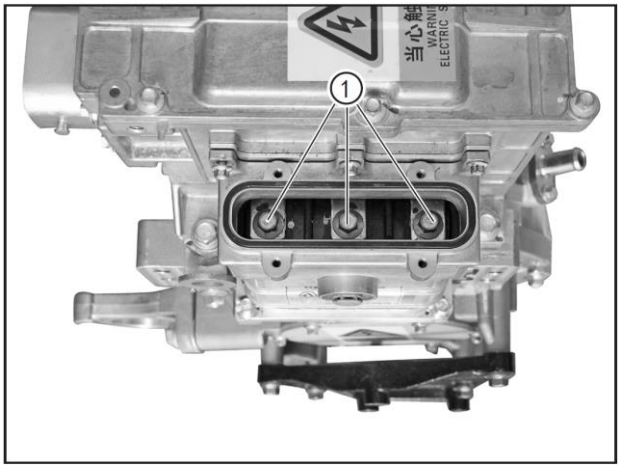
- Use the 12mm socket to tighten the 3 connecting bolts (1) inside the motor & transmission assembly to 24.5N·m, and then make mark with a marker.



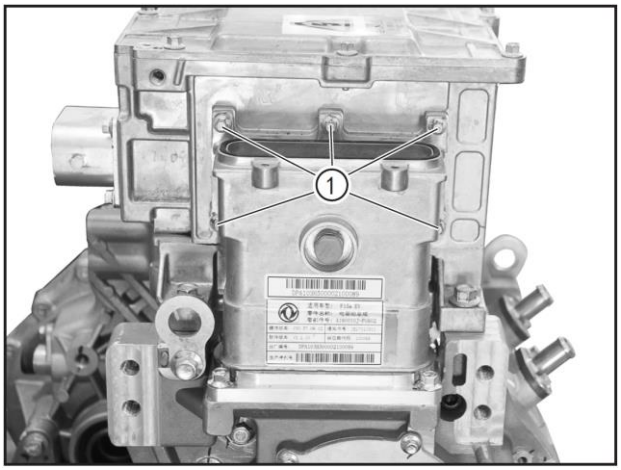
- Install the MCU-integrated DC-DC converter (1) in place after alignment, refit the 4 fixing bolts, and then use the 13mm socket to tighten the front fixing bolts (2) (M10 × 35) and (3) (M10 × 75) to 44.5N·m, and the make mark with a marker.



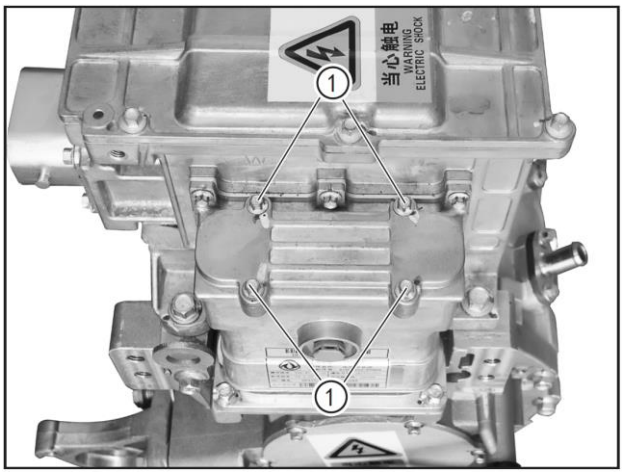
- Use the 13mm socket to tighten the fixing bolts (1) (M10 × 75) and (2) (M10 × 35) to 44.5N·m, and the make mark with a marker.



- Refit the fixing bolt (1) (M8 × 16) of the connecting cable between the motor and the MCU-integrated DC-DC converter, and tighten it with the 10mm socket to 25 ± 3N·m.

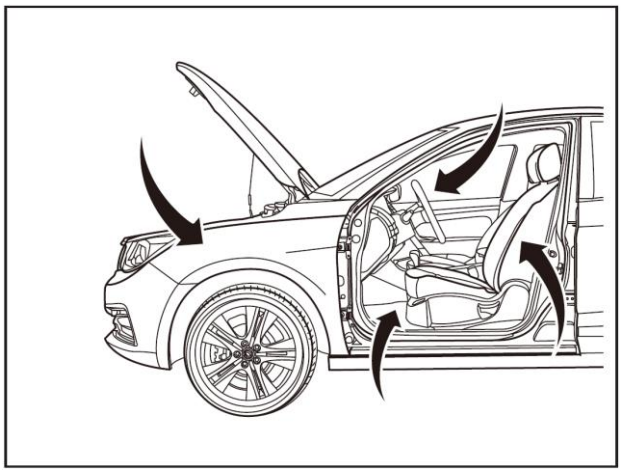


- Refit the fixing bolt (1) (M5×12) of upper protective cover of MCU-integrated DC-DC converter, and then tighten it with the 7mm socket to 5.6N·m.



- Refit the side fixing bolts (1) (M5 × 16) of MCU-integrated DC-DC converter protective cover with the 7mm socket to 5.6N·m.

- Refit the powertrain. (Refer to “Removal and Refitting of Powertrain (Continental Motor)” in this section)

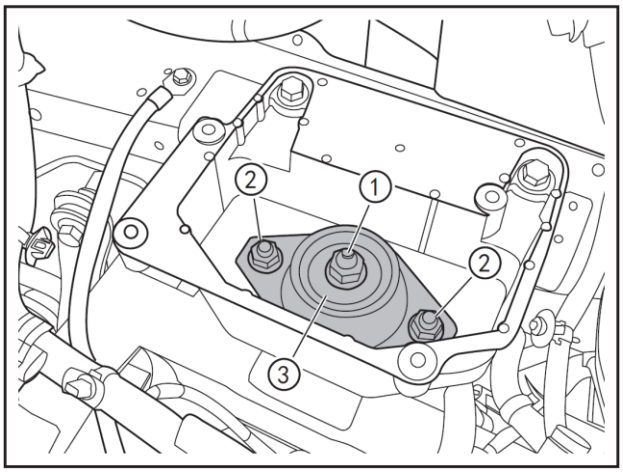


Removal and Refitting of Motor Left Elastic Bracket

1 - Protection

Place protective pads at following locations:

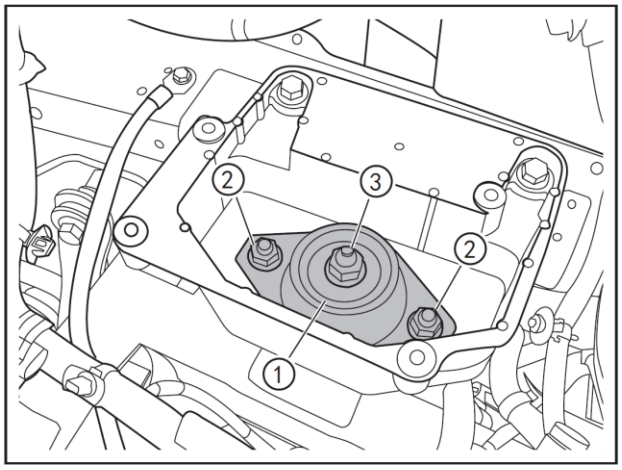
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Removal

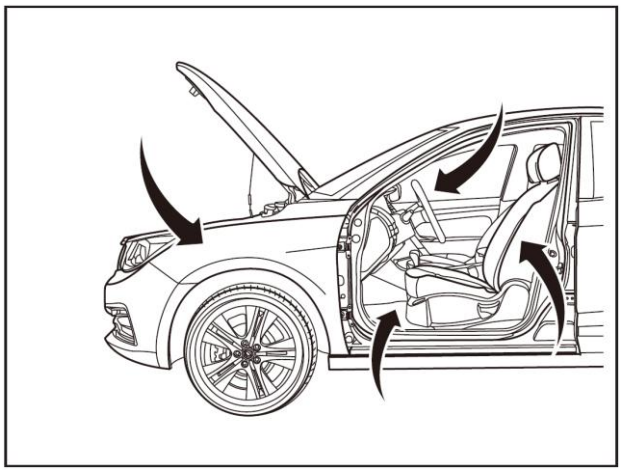
⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Remove the battery. (Refer to "Removal, Inspection and Refitting of Battery" in "Starting and Charging System")
- Remove the battery bracket. (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")
- Lift the vehicle as appropriate, and use the lift to support the bottom of the motor.
- Remove the motor left elastic bracket fixing nuts (1) with a 18mm socket.
- Remove the 2 fixing nuts (2) of motor left elastic bracket with the 16mm socket.
- Remove the motor left elastic bracket (3).



3- Refitting

- Refit the motor left elastic bracket (1).
- Tighten the 2 fixing nuts (2) of motor left elastic bracket with the 16mm socket.
- Tighten the motor left elastic bracket fixing nuts (3) with a 18mm socket.
- Move away the lift.
- Refit the battery bracket. (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")
- Install the battery. (Refer to "Removal, Inspection and Refitting of Battery" in "Starting and Charging System")

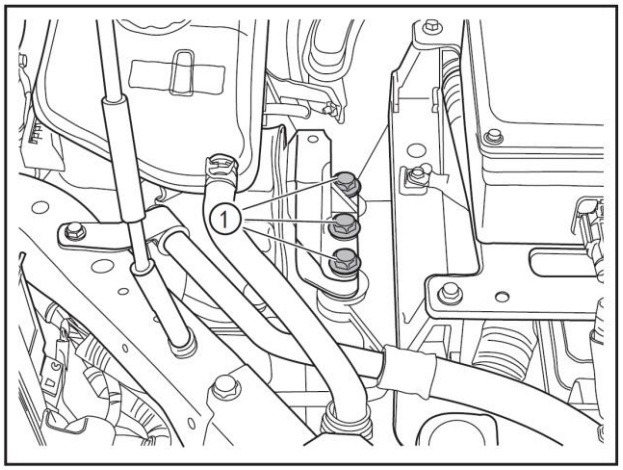


Removal and Refitting of Motor Right Elastic Bracket

1 - Protection

Place protective pads at following locations:

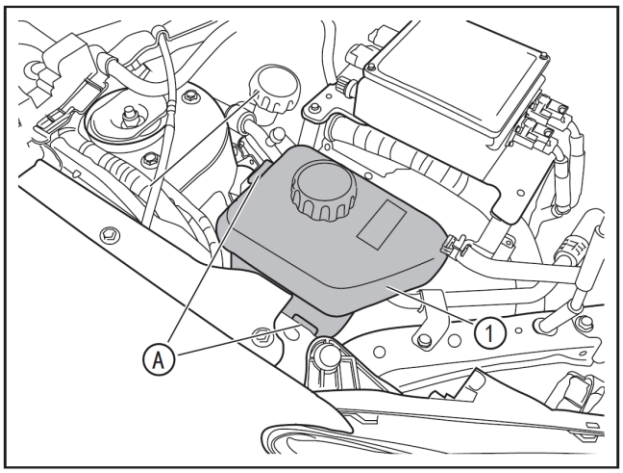
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



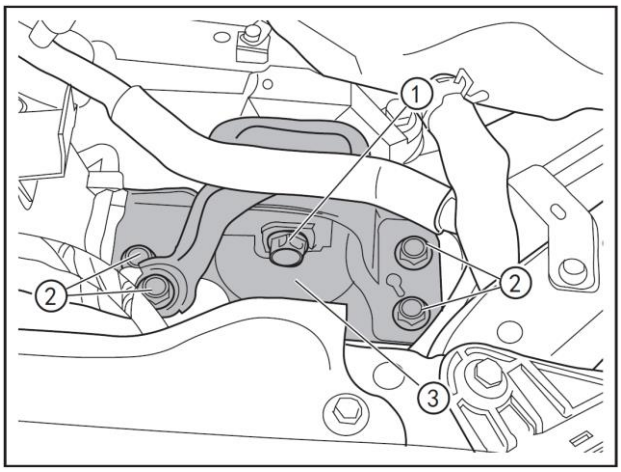
2 - Removal

⚠ CAUTION

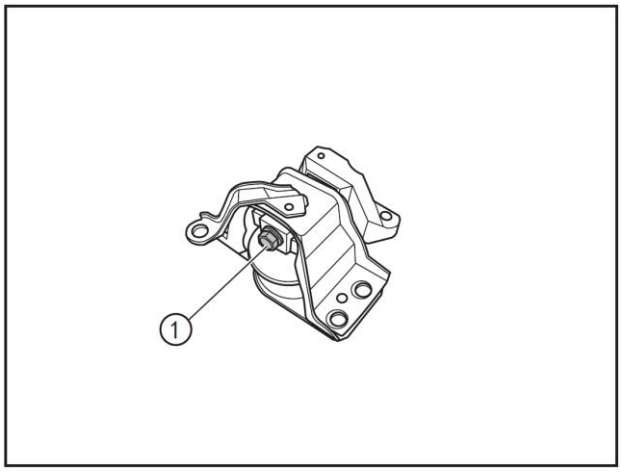
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch.
- Lift the vehicle as appropriate, and use the lift to support the bottom of the motor.
- Use the 16mm socket to remove the 3 connecting bolts (1) (M12 × 55) for connecting the motor right upper bracket and the motor.



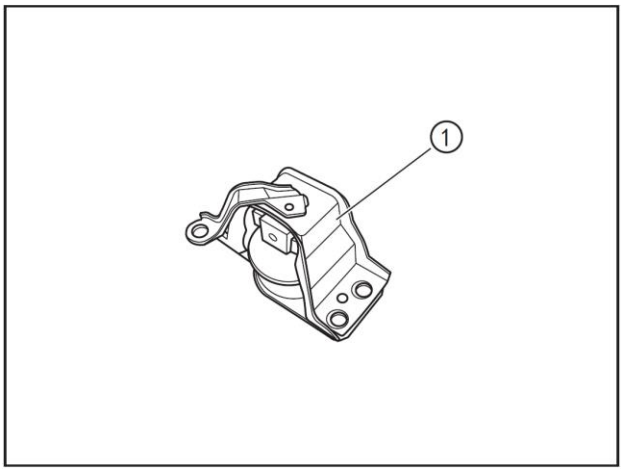
- Remove the expansion tank (1) from the clip (A), and place it at a position without interference.



- Use the 19mm socket to loosen the connecting bolt (1) for connecting the motor right elastic bracket and the motor right upper bracket.
- Use the 16mm socket to remove the 4 bolts (2) (M10 × 26) for connecting the motor right elastic bracket to the vehicle body.
- Remove the motor right elastic bracket & motor upper right bracket assembly (3).

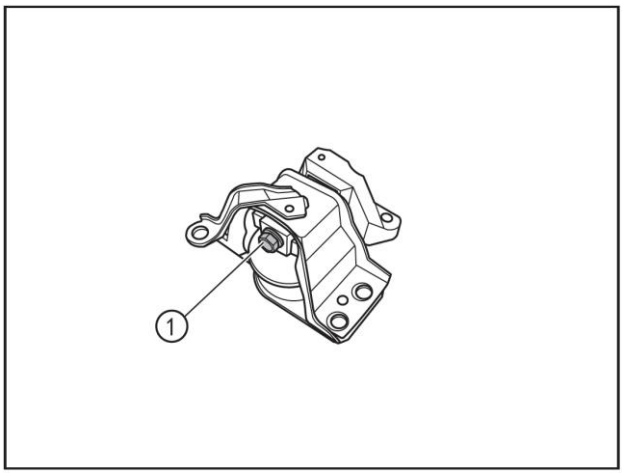


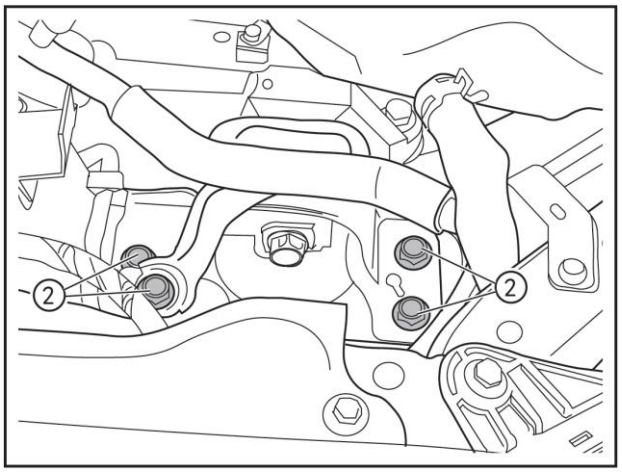
- Use the 19mm socket to remove the connecting bolt (1) (M14 × 105) for connecting the motor right elastic bracket and the motor right upper bracket.
- Separate the motor right elastic bracket from the motor right upper bracket.

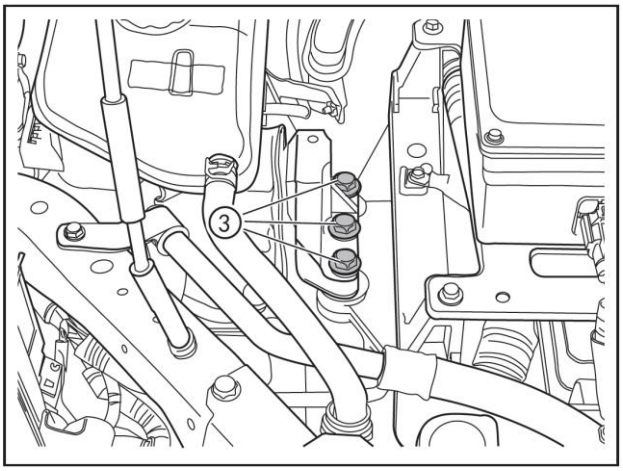


3 - Check

- Check the motor right elastic bracket (1) for damage and aging; if so, replace with a new motor right elastic bracket (1).

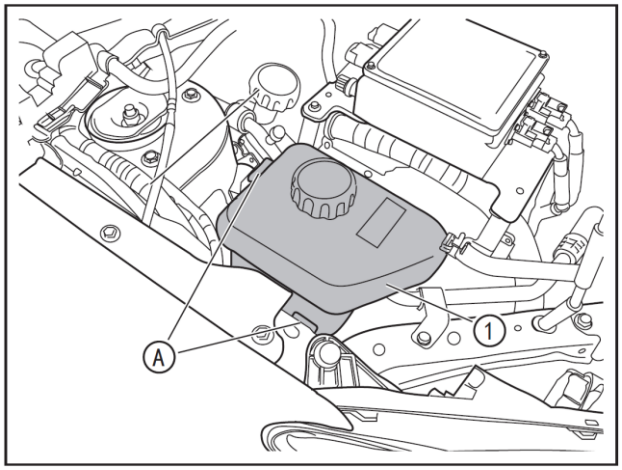




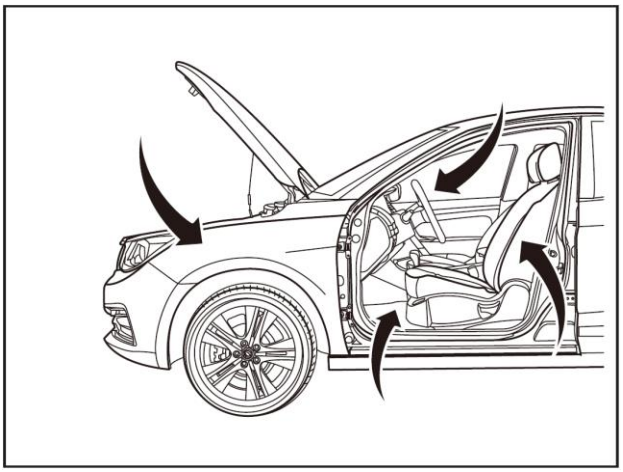


4- Refitting

- Refit the motor right elastic bracket to the motor upper right bracket after alignment, install the connecting bolt (1) and pre-tighten it with the 19mm socket.
- Refit the motor upper right elastic bracket & motor upper right bracket assembly to the vehicle body with mounting holes aligned, and then install fixing bolts (2) and (3).
- Tighten all fixing bolts with the 16mm socket and the 19mm socket.



- Install the expansion tank (1) into position with the clip (A) aligned, and be sure to clamp the clip in place.

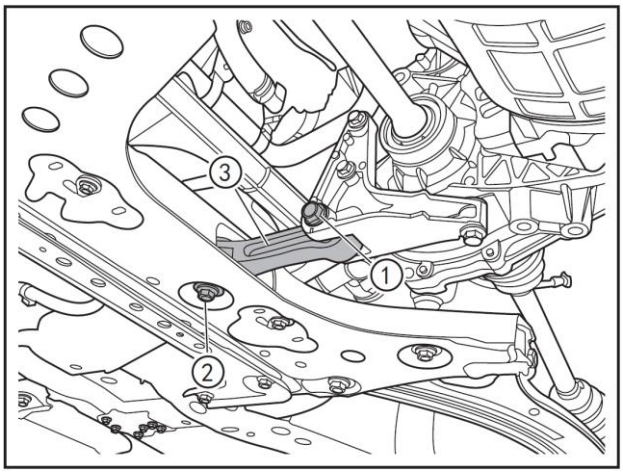


Removal and Refitting of Torsion Link Assembly

1 - Protection

Place protective pads at following locations:

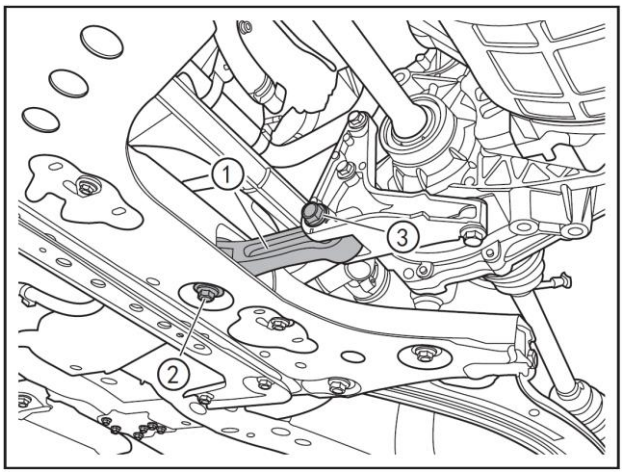
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 – Removal

CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Remove the front fixing bolt (1) (M12 × 65) of torsion link assembly with the 16mm socket.
- Remove the rear fixing bolt (2) (M12 × 85) of torsion link assembly with the 18mm socket.
- Remove the torsion link assembly (3).



3- Refitting

- Refit the torsion link assembly (1) and install its fixing bolts (2) and (3).
- Tighten the rear fixing bolt of torsion link assembly with the 18mm socket.
- Tighten the front fixing bolt of torsion link assembly with the 16mm socket.

August 2018

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

4.2

Motor Cooling System

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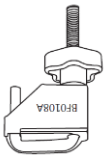
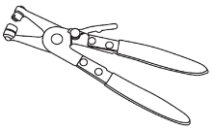
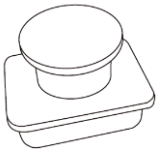
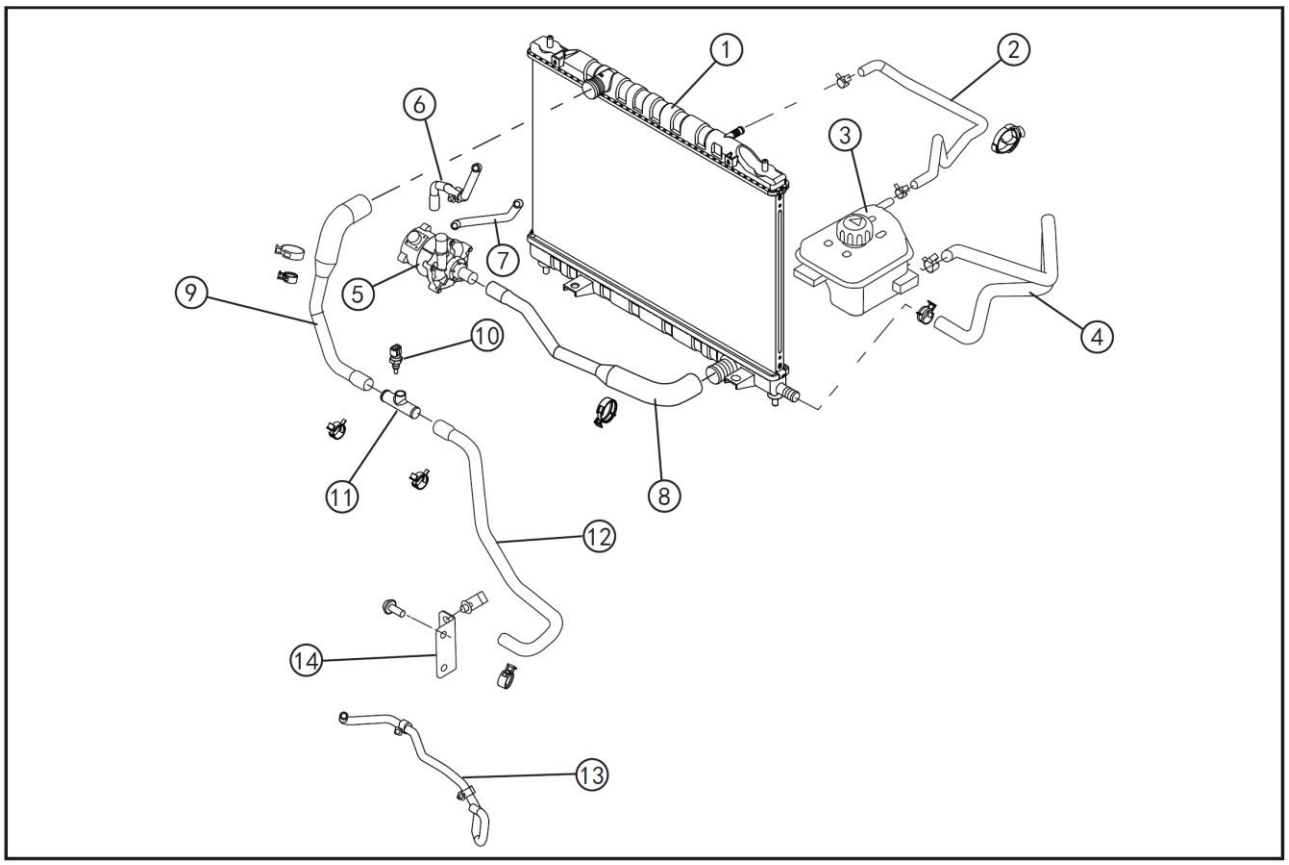
- The normal operating temperature range of the motor is -40°C~85°C. Operating the motor at an atmospheric temperature outside the normal operating temperature range will cause performance degradation and shorter service life of motor!
- When the temperature of the coolant in the motor water inlet pipe is 65°C~90°C, it will cause performance degradation and shorter service life of motor!

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF0108A	Hose pincers		For clamping flexible hose
BF0109	Water hose clamp removal and refitting pliers		For removing and refitting the hose clamp
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
BF0104	Coolant filling barrel		For filling coolant

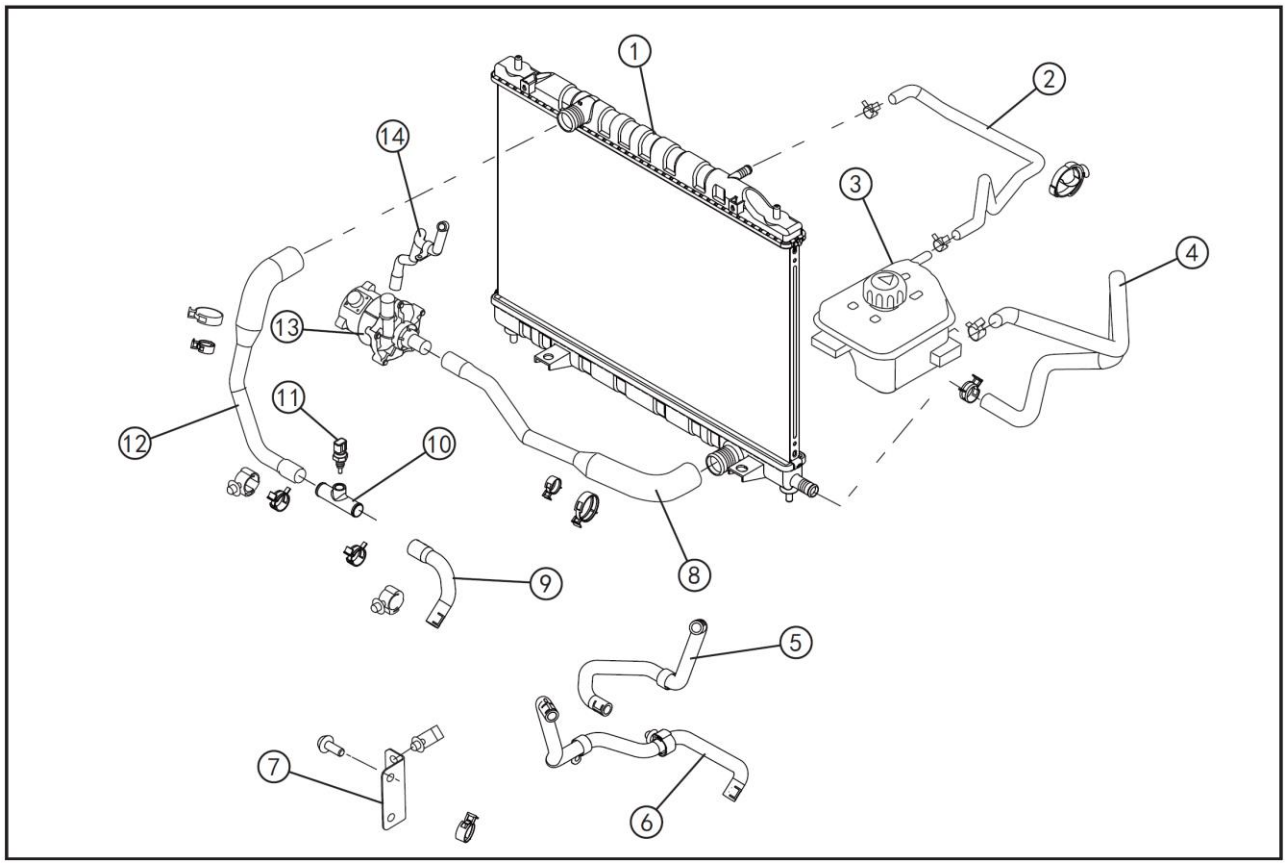
Structure and Features

Cooling System (Continental Motor)

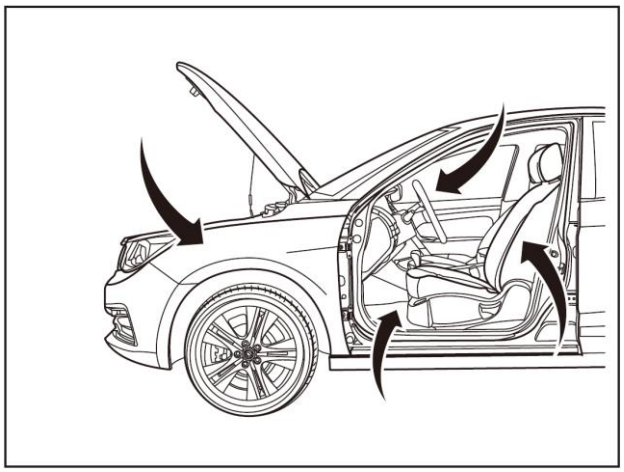


1. Radiator assembly	6. Hose	11. Water temperature sensor fixed steel pipe
2. Expansion tank water outlet pipe	7. Hose	12. Hose
3. Expansion tank	8. Hose	13. Hose
4. Expansion tank water return pipe	9. Hose	14. Water pipe bracket
5. Water pump	10. Water temperature sensor	

Cooling System (Independent Motor)



1. Radiator assembly	6. Hose	11. Water temperature sensor
2. Expansion tank water outlet pipe	7. Water pipe bracket	12. Hose
3. Expansion tank	8. Hose	13. Water pump
4. Expansion tank water return pipe	9. Hose	14. Hose
5. Hose	10. Water temperature sensor fixed steel pipe	

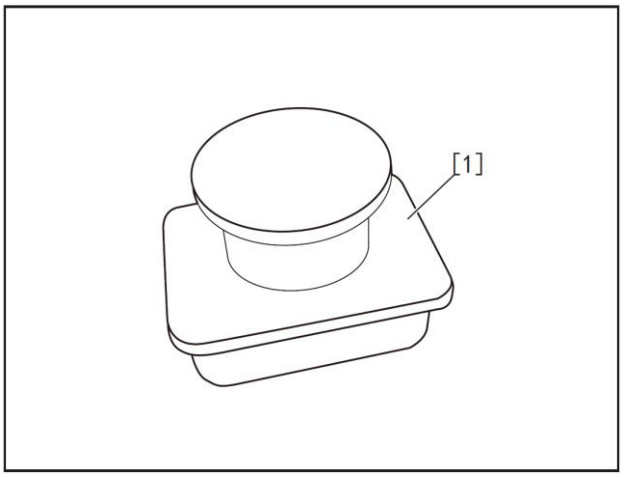


Change of Motor Coolant

1 - Protection

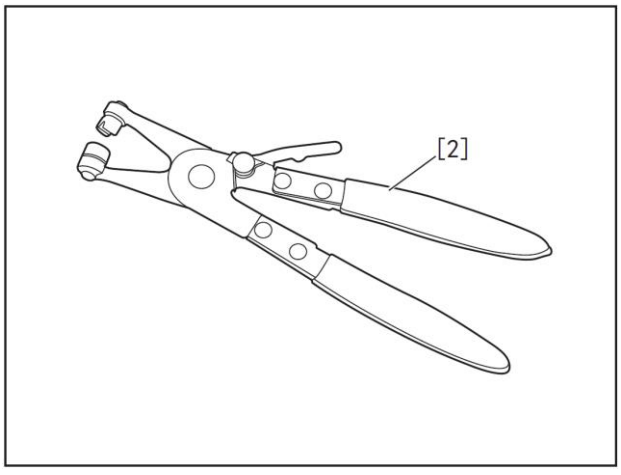
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

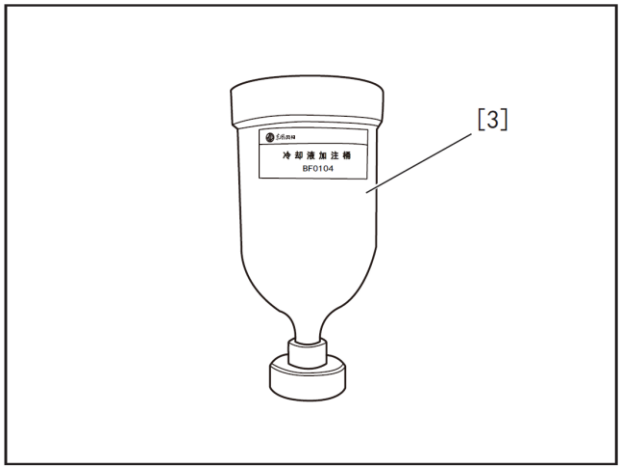


2 - Special tools

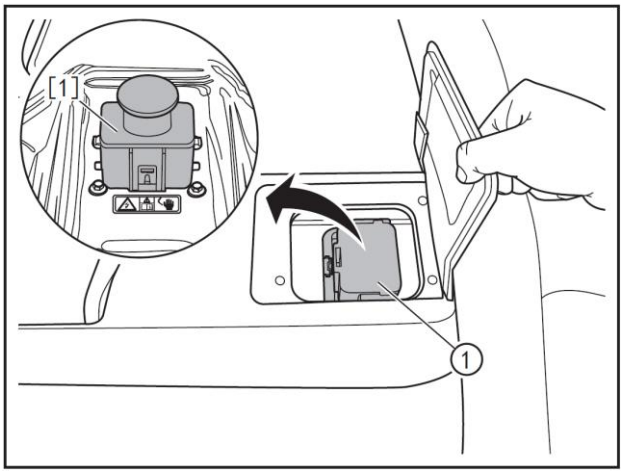
- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



- Coolant filling barrel (BF0104) [3].



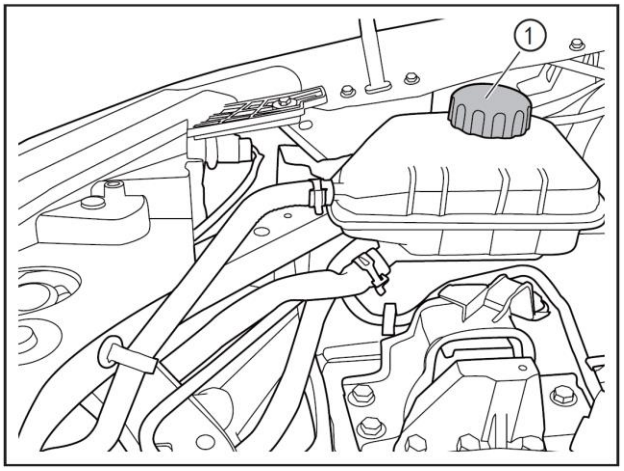
3 - Removal

⚠ CAUTION

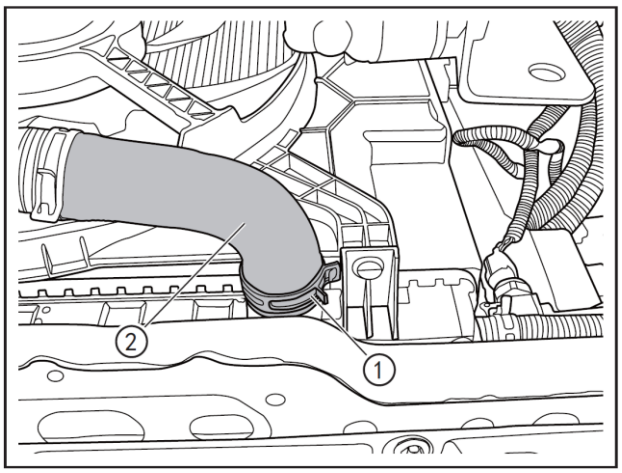
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in D.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

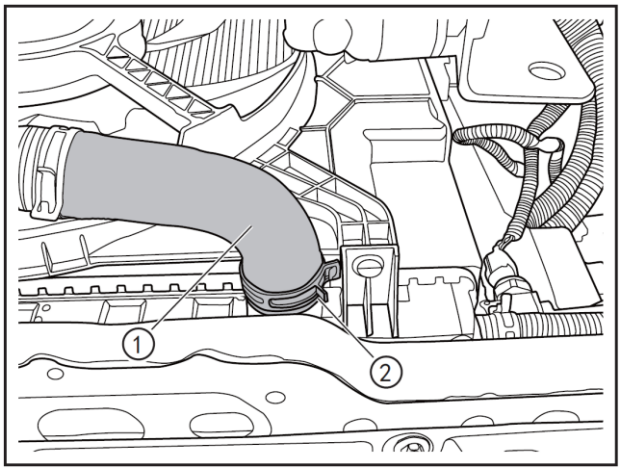
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Open the expansion tank cap (1).



- Lift the car.
- Place a container below the radiator water outlet pipe.
- Move back the radiator water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the radiator water outlet pipe (2), and discharge the coolant.

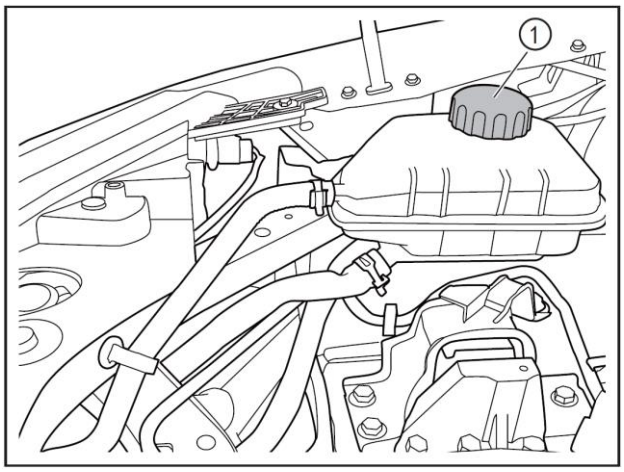


4- Refitting

- Refit the radiator water outlet pipe (1) onto the radiator in place.
- Snap the radiator water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).

⚠ CAUTION

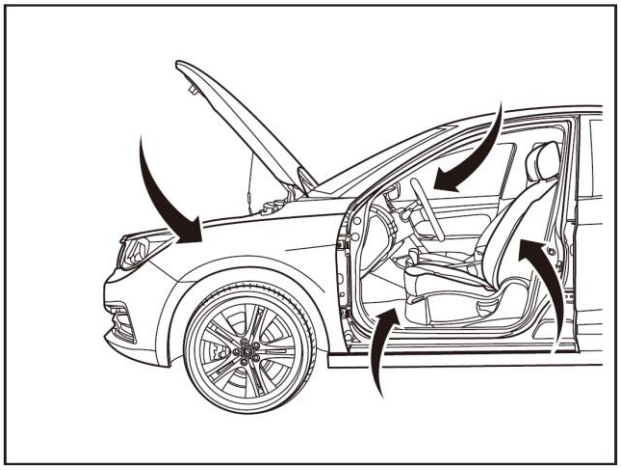
- Upon drainage of coolant, wipe off the residual liquid around the radiator water outlet pipe with a cleaning cloth, in order to check coolant for leakage again.



- Install the coolant filling barrel (BF0104) and add the motor coolant to the level between MAX and MIN marks of the expansion tank.
- Squeeze the radiator water outlet pipe, and when the level is stabilized, keep adding coolant to the level between the MAX and MIN marks of expansion tank.
- Refit the expansion tank cap (1).

⚠ CAUTION

- **Always use the genuine motor coolant specified by Dongfeng Passenger Vehicle Company. Usage of coolant which is not specified by Dongfeng Passenger Vehicle Company will cause corrosion, thus resulting in fault or failure of the coolant system.**
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

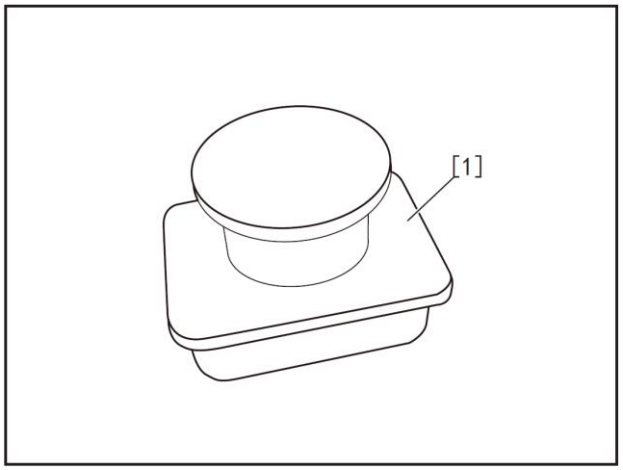


Removal and Refitting of Expansion Tank Water Inlet Pipe

1 - Protection

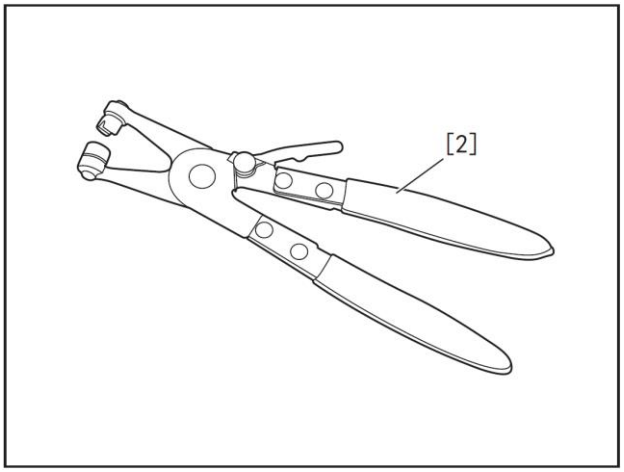
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

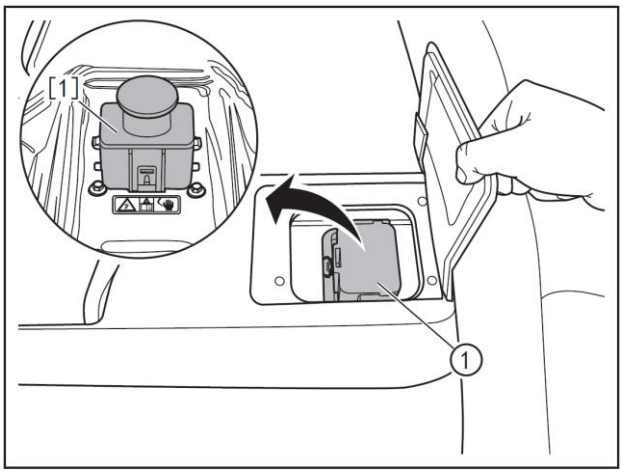


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



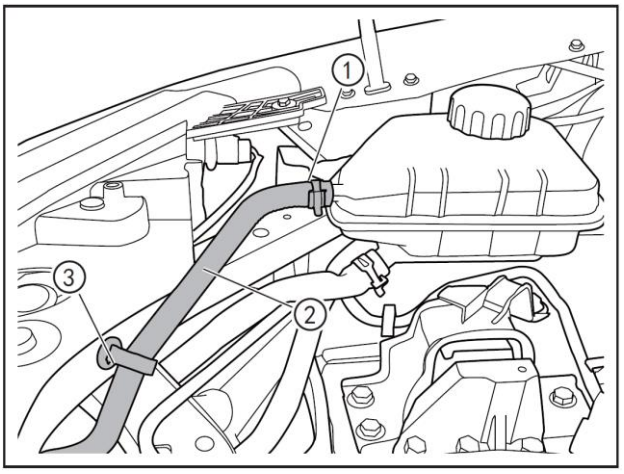
3 - Removal

⚠ CAUTION

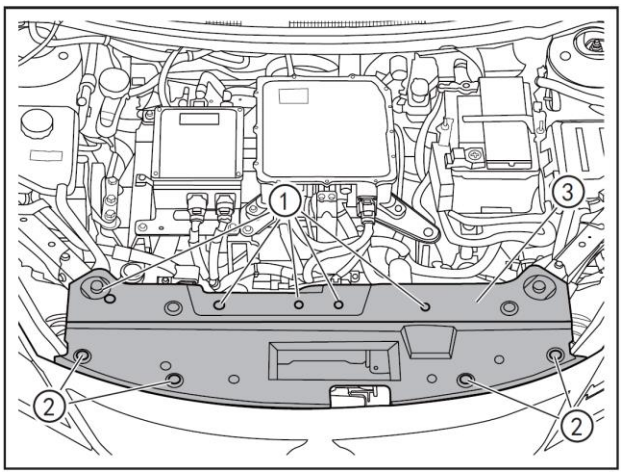
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in D.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

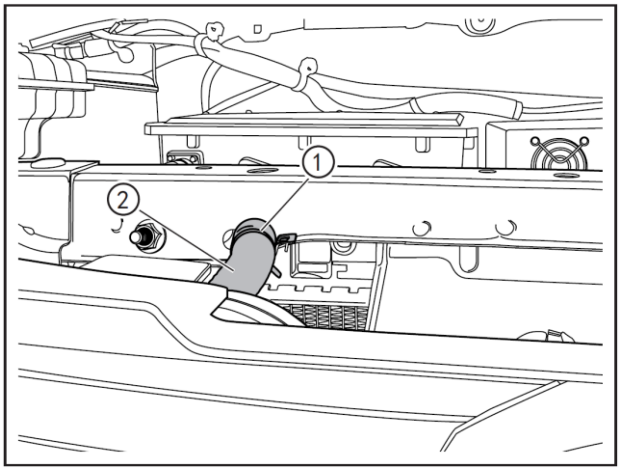
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



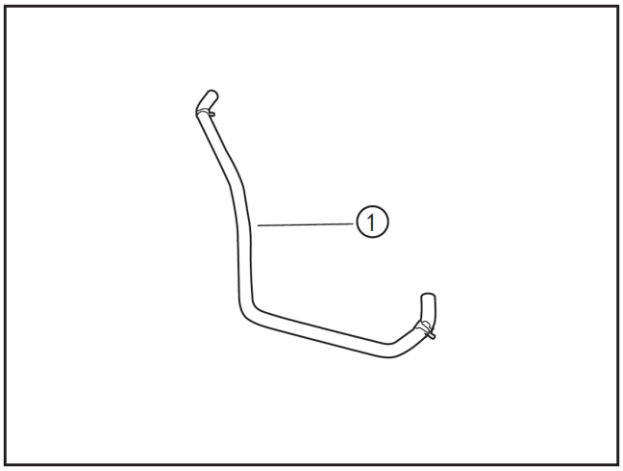
- Drain the coolant. (Refer to "Change of Motor Coolant" in this section)
- Move back the expansion tank water inlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water inlet pipe (2) from the connecting joint on the expansion tank.
- Detach the expansion tank water inlet pipe from the expansion tank water inlet pipe bracket (3).



- Remove the 5 fixing clips (1) of cooling fan with the interior trim removal tool (BF1102).
- Remove the 4 fixing bolts (2) of cooling fan upper protective plate with the 10mm socket.
- Take off the fan upper protective plate (3).

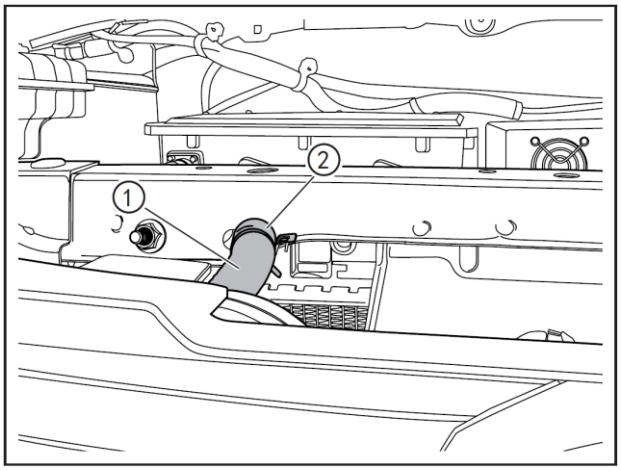


- Stretch the long-nose pliers into the groove of the upper beam and disengage the expansion tank water inlet clamp (1) backwards.
- Rotate the expansion tank water inlet pipe (2) leftwards and rightwards to loosen and then remove it.



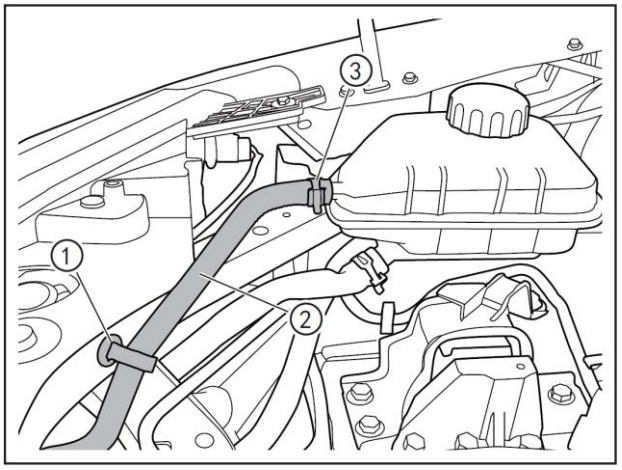
4 - Check

- Check the expansion tank water inlet pipe (1) for corrosion, breakage, aging, and if any, replace it.

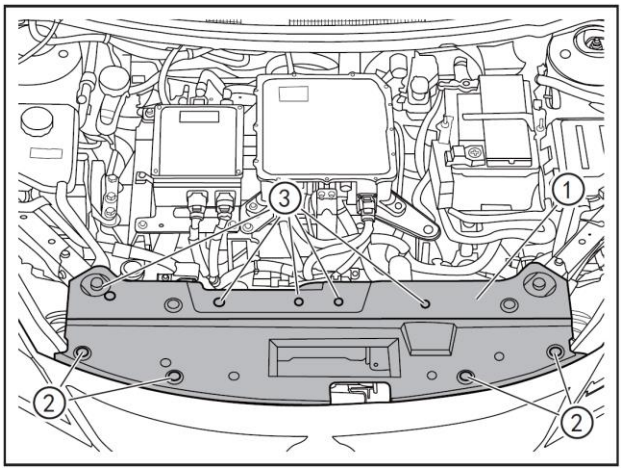


5- Refitting

- Install the end of expansion tank water inlet pipe (1) to the radiator in place.
- Stretch the long-nose pliers into the groove of the upper beam and snap the expansion tank water inlet clamp (2) into position.

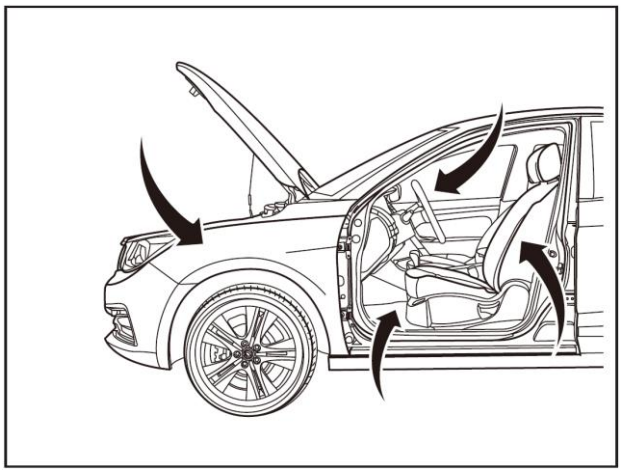


- Refit the expansion tank water inlet pipe in the bracket (1).
- Refit the expansion tank water inlet pipe (2) onto the expansion tank.
- Refit the expansion tank water inlet pipe clamp (3) with the water hose clamp removal and refitting pliers BF0109.



- Refit the fan upper protective plate (1).
- Refit the 4 fixing bolts (2) of the cooling fan upper protective plate and tighten them with the 10 mm socket.
- Refit the 5 fixing clips (3) of the cooling fan upper protective plate in place.

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

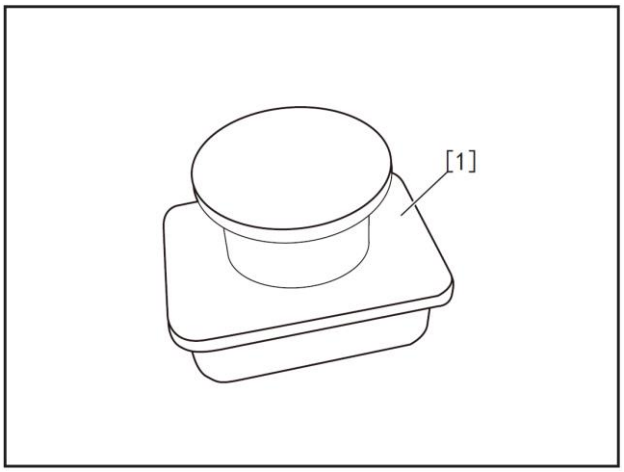


Removal and Refitting of Expansion Tank Water Outlet Pipe

1 - Protection

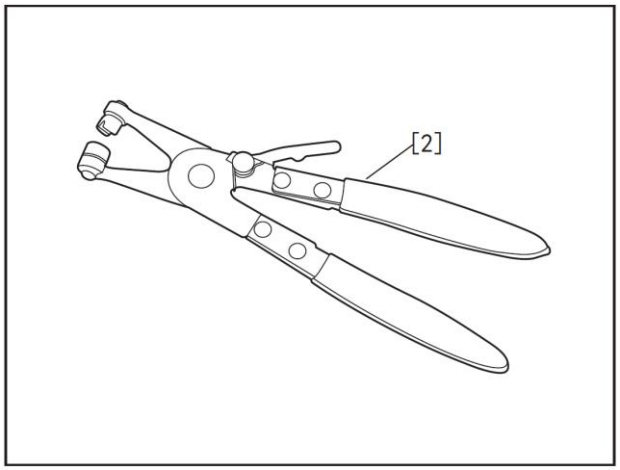
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

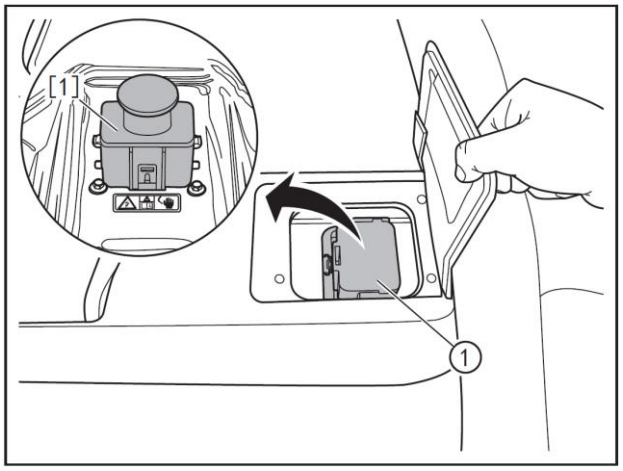


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



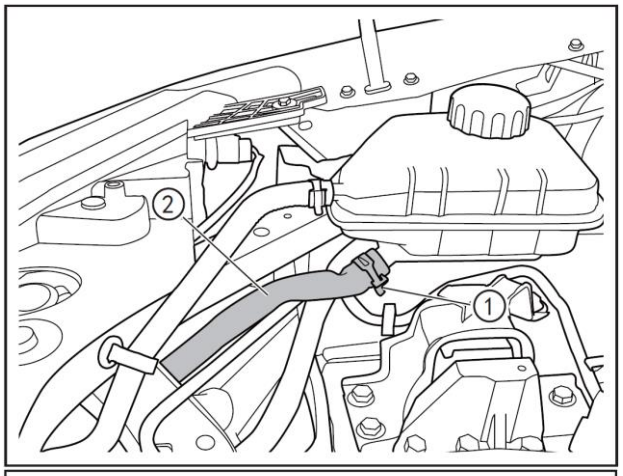
3 - Removal

⚠ CAUTION

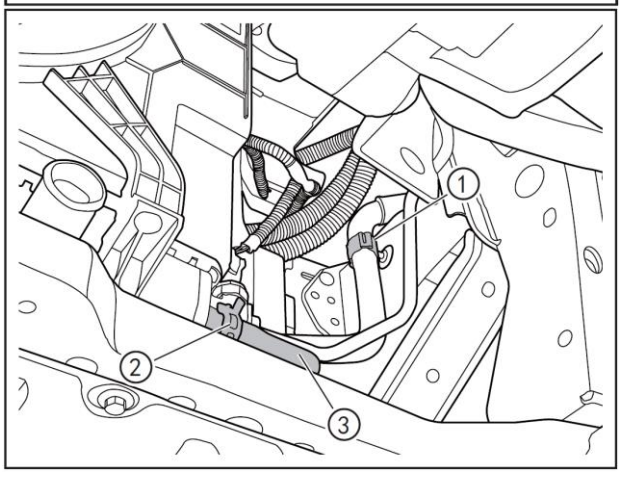
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

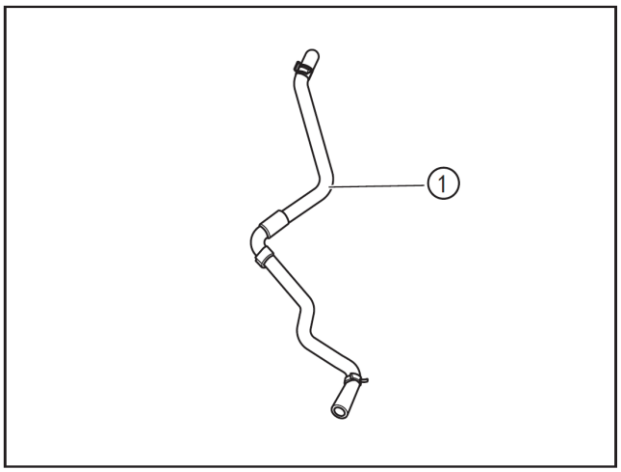
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Move back the expansion tank water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water outlet pipe (2) from the connecting joint on the expansion tank.

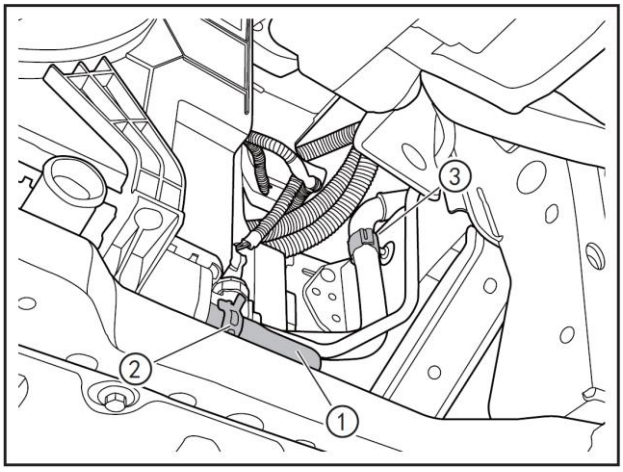


- Detach the expansion tank water outlet pipe from the expansion tank water outlet pipe clamp (1).
- Detach the expansion tank water outlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water outlet pipe (3).



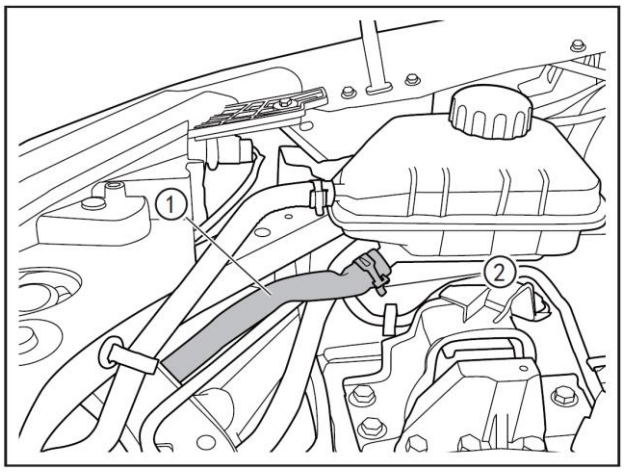
4 - Check

- Check the expansion tank water outlet pipe (1) for corrosion, breakage, aging, and if any, replace it.

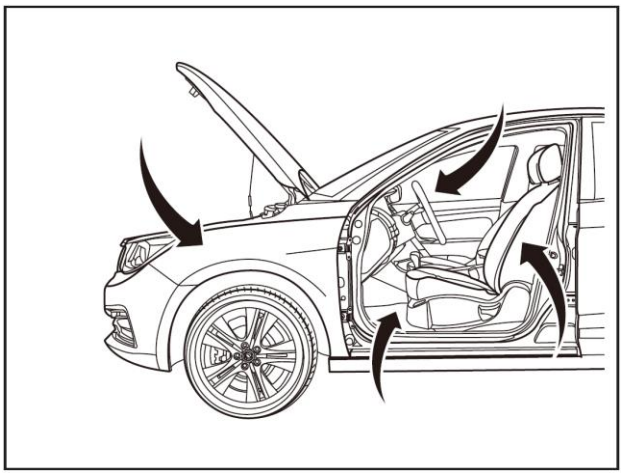


5- Refitting

- Refit one end of expansion tank water outlet pipe (1) to the radiator in place.
- Snap the expansion tank water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the expansion tank water outlet pipe into the expansion tank water outlet pipe clamp (3), and fix it firmly.



- Refit the other end of expansion tank water outlet pipe (1) to the expansion tank in place.
- Snap the expansion tank water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).
- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

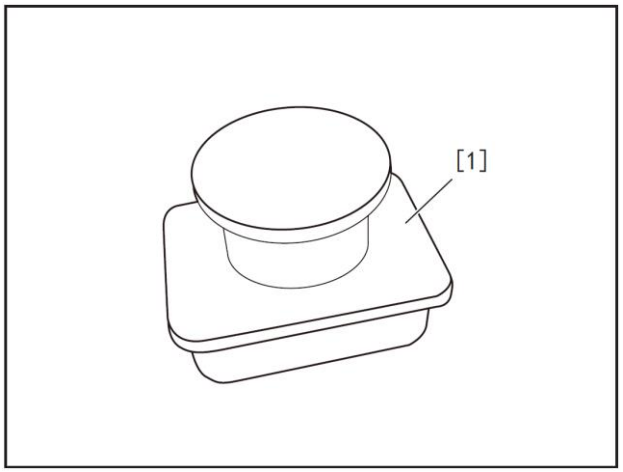


Removal and Refitting of Expansion Tank

1 - Protection

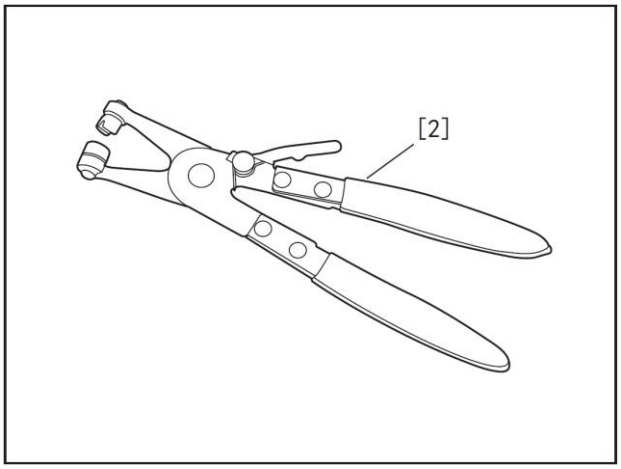
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

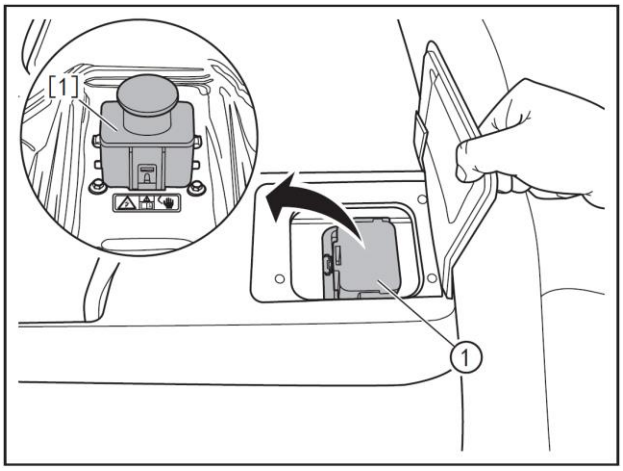


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



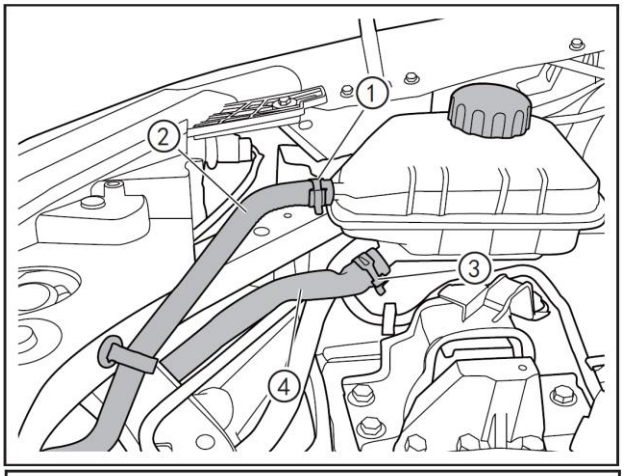
3 - Removal

⚠ CAUTION

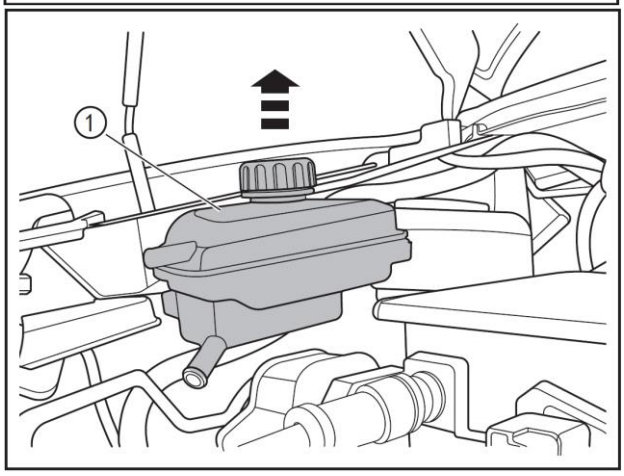
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

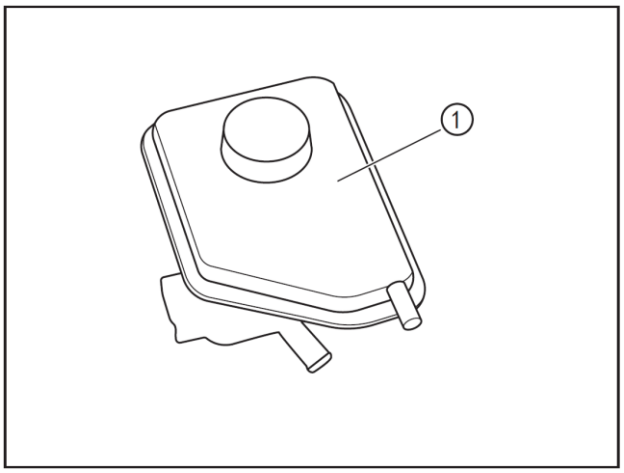
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Move back the expansion tank water inlet pipe clamp (1) at the expansion tank end with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water inlet pipe (2) from the connecting joint on the expansion tank.
- Move back the expansion tank water outlet pipe clamp (3) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water outlet pipe (4) from the connecting joint on the expansion tank.

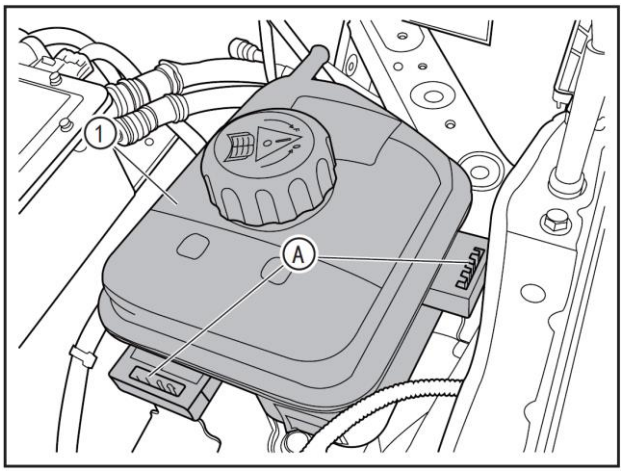


- Remove the expansion tank (1) upwards.



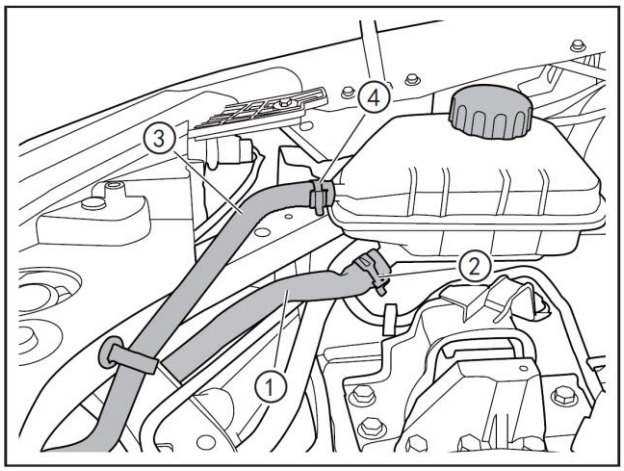
4 - Check

- Check the expansion tank (1) for cracks and breakage, and if any, replace it.



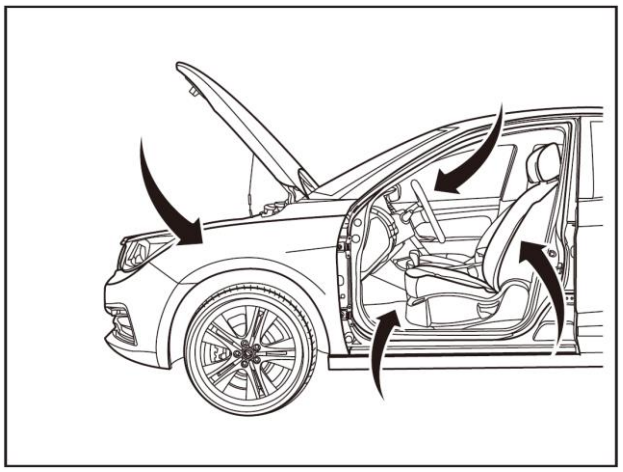
5- Refitting

- Refit the expansion tank (1) to the bracket (A) after alignment, and fix it firmly.



- Refit the other end of expansion tank water outlet pipe (1) to the expansion tank in place.
- Snap the expansion tank water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the end of expansion tank water inlet pipe (3) to the expansion tank in place.
- Snap the expansion tank water inlet pipe clamp (4) into position with the water hose clamp removal and refitting pliers (BF0109).

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

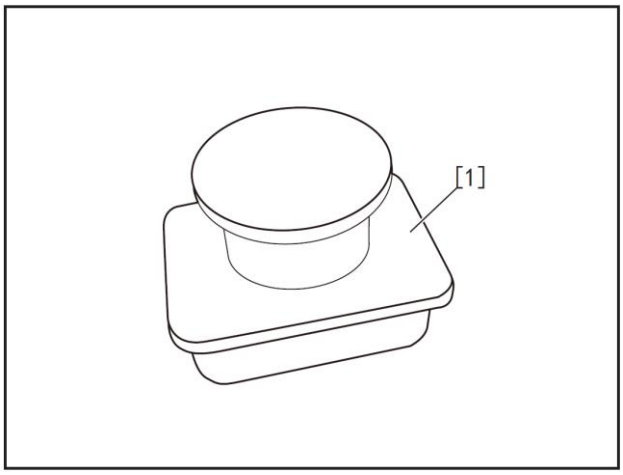


Removal and Refitting of Radiator Water Inlet Pipe

1 - Protection

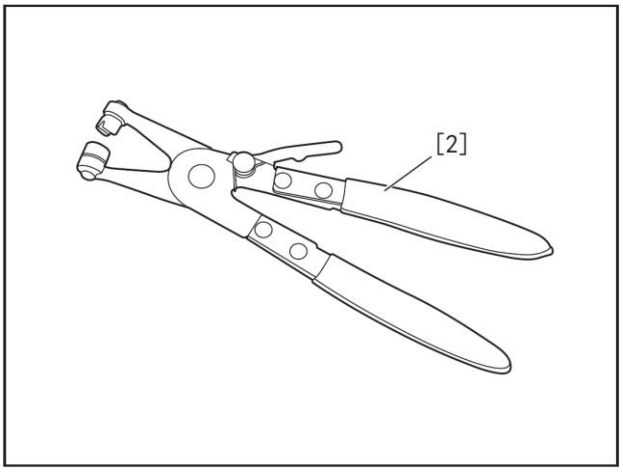
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

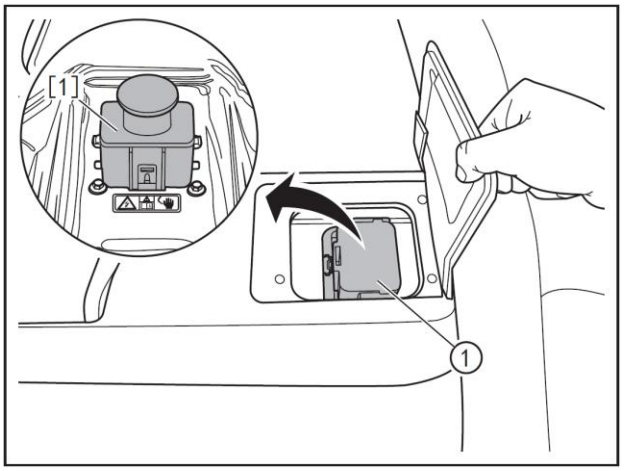


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



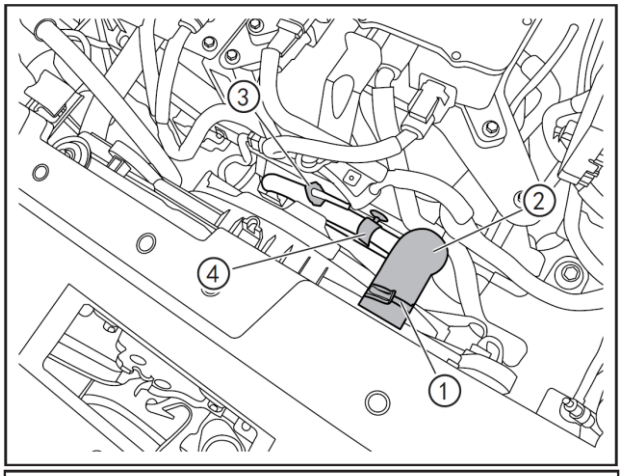
3 - Removal

⚠ CAUTION

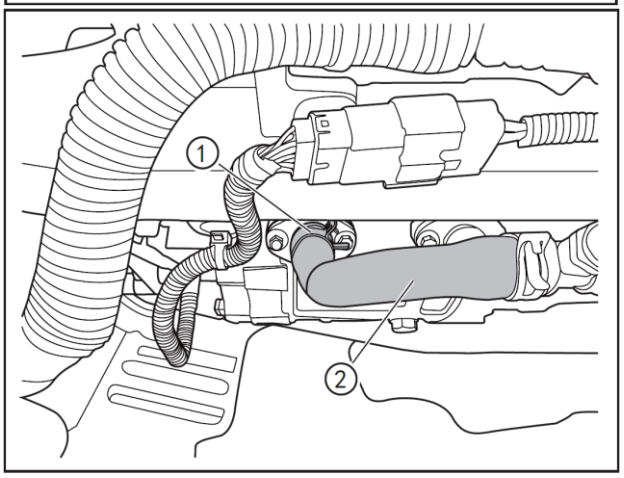
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

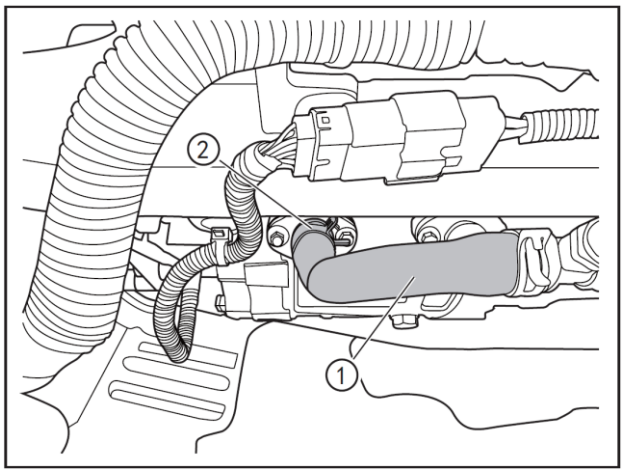
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Move back the radiator water inlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the radiator water inlet pipe (2) from the connecting joint on the radiator.
- Press the water temperature sensor connector locking clip and disengage the water temperature sensor connector (3).
- Detach the radiator water inlet pipe from the radiator water inlet pipe bracket (4).

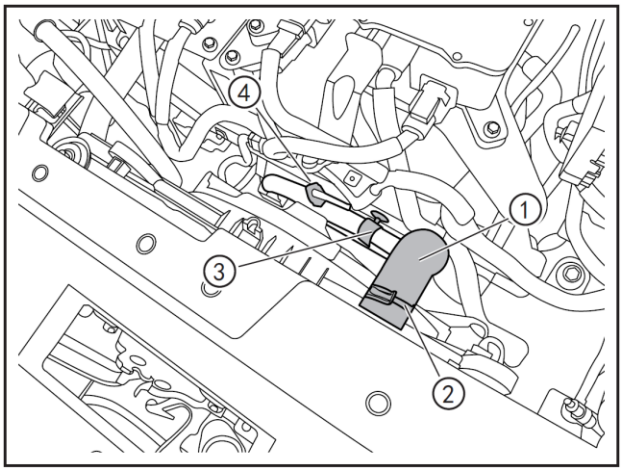


- Move back the radiator water inlet pipe clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the radiator water inlet pipe (2) from the connecting joint on the motor.



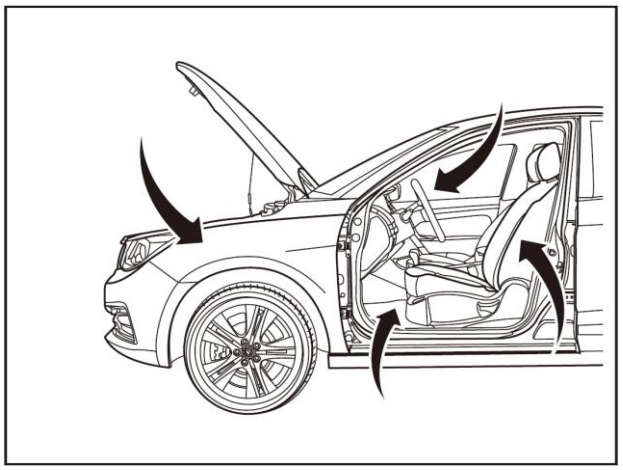
4- Refitting

- Refit the end of radiator water outlet pipe (1) to the motor in place.
- Snap the radiator water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).



- Refit the end of radiator water inlet pipe (1) to the radiator in place.
- Snap the radiator water inlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the radiator water inlet pipe into the radiator water inlet pipe bracket (3) and fix it firmly.
- Connect the water temperature sensor connector (4) in place.

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

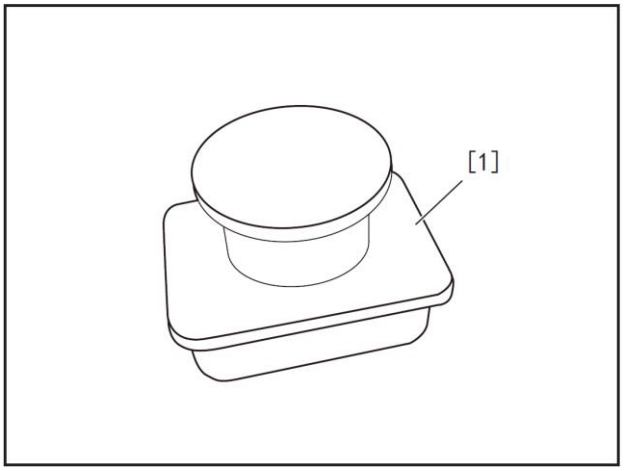


Removal and Refitting of Radiator Water Outlet Pipe

1 - Protection

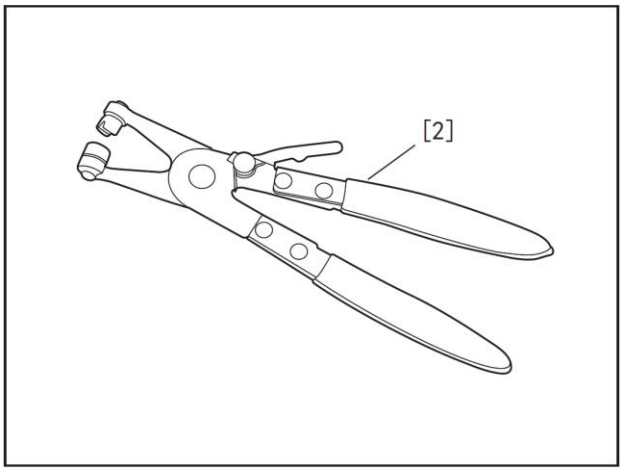
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

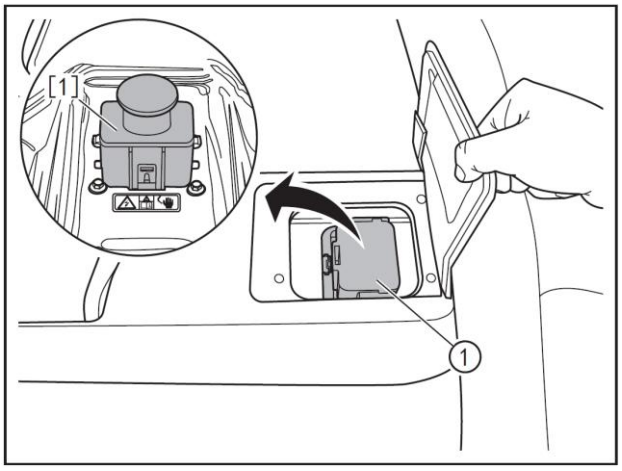


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



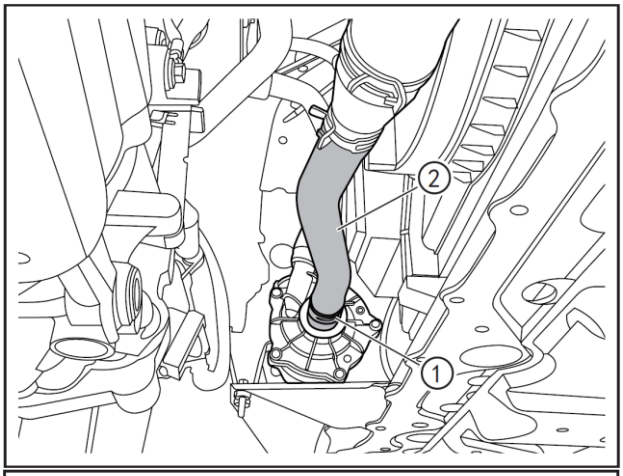
3 - Removal

⚠ CAUTION

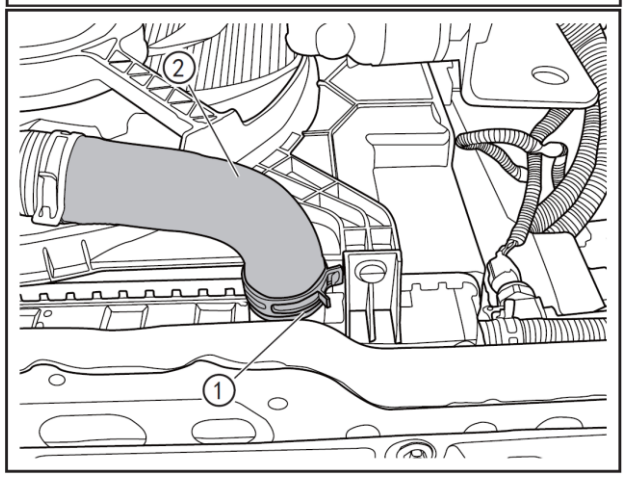
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

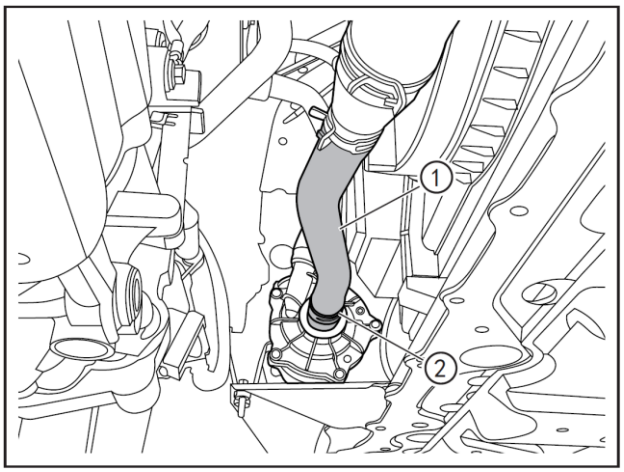
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Move back the radiator water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the radiator water outlet pipe (2) from the connecting joint on the water pump.

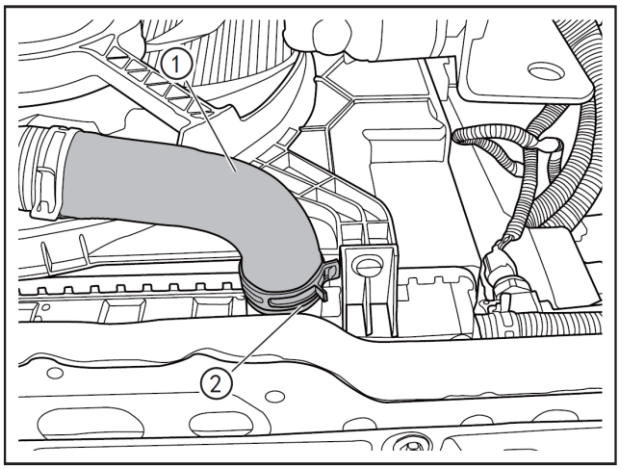


- Move back the radiator water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the radiator water outlet pipe (2) from the connecting joint on the radiator.



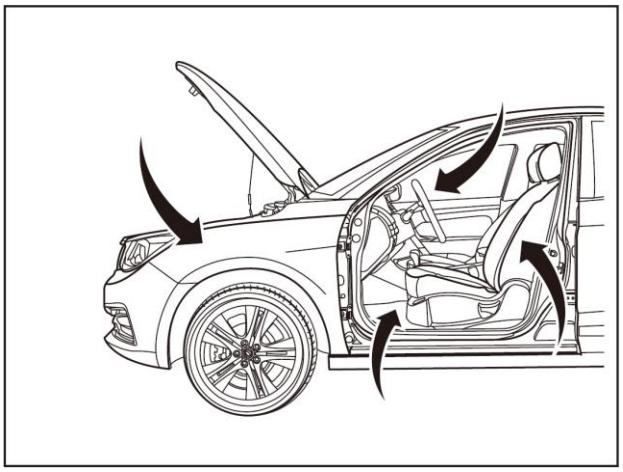
4- Refitting

- Insert the end of radiator water outlet pipe (1) at the water pump side to the water pump.
- Refit the radiator water outlet pipe clamp (2) for connecting to the water pump into position with the water hose clamp removal and refitting pliers (BF0109).



- Refit the end of radiator water outlet pipe (1) to the radiator in place.
- Snap the radiator water outlet pipe clamp (2) into position with the water hose clamp removal and refitting pliers (BF0109).

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

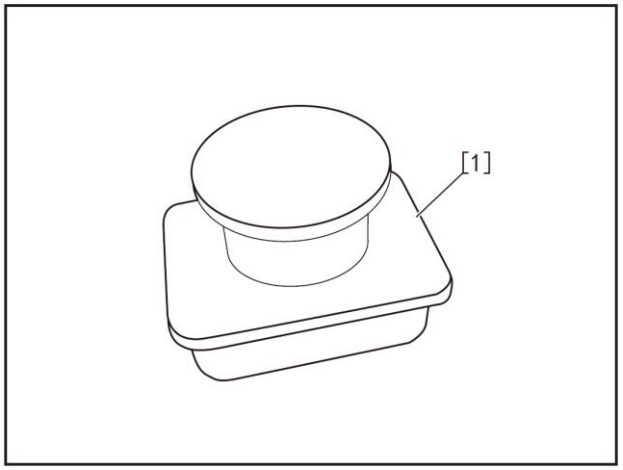


Removal and Refitting of On-board Charger Water Inlet Pipe

1 - Protection

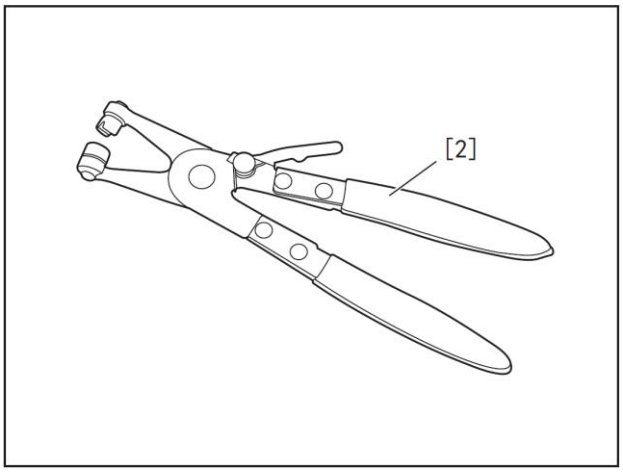
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

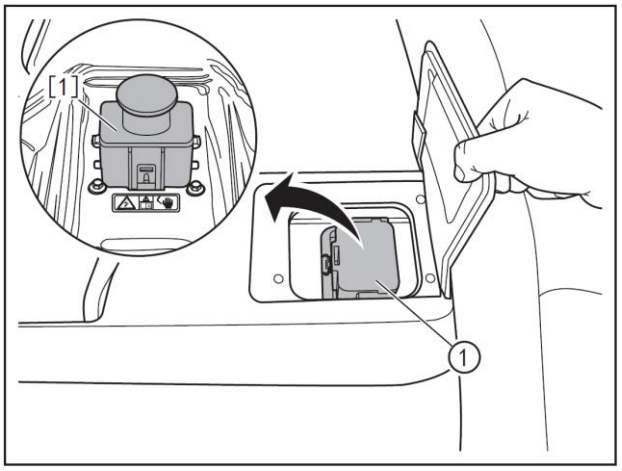


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



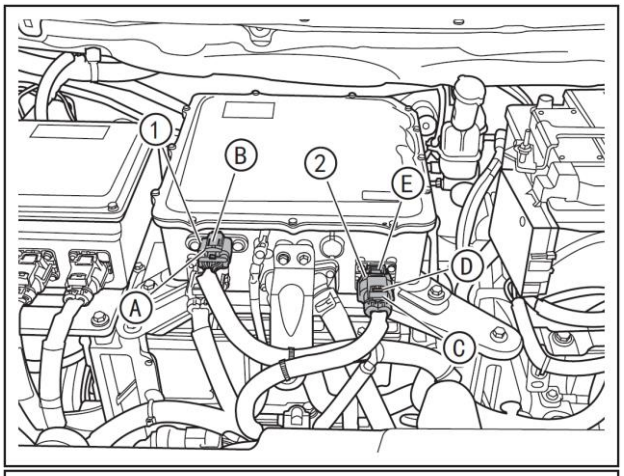
3 - Removal

⚠ CAUTION

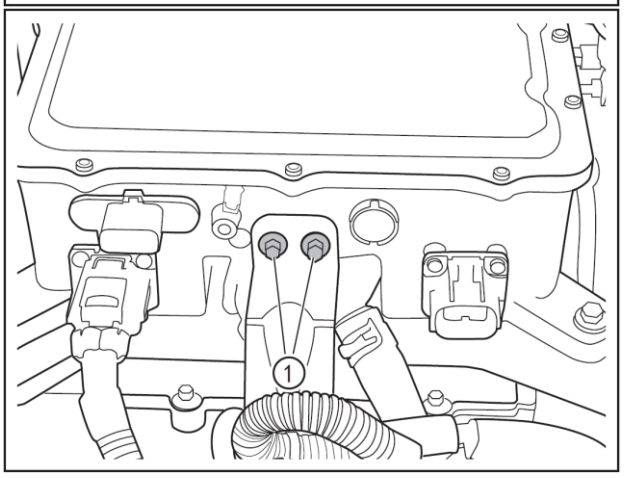
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

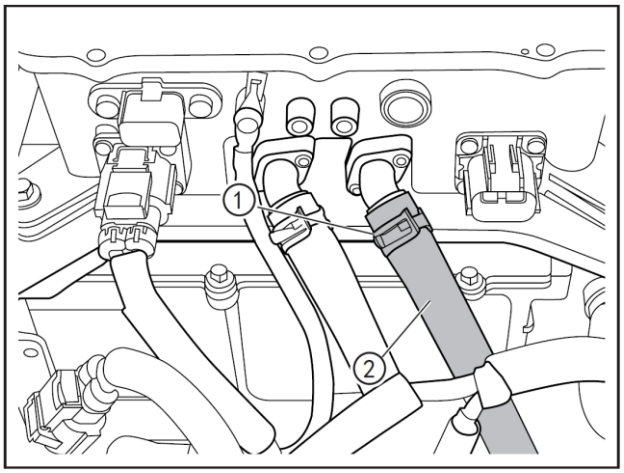
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



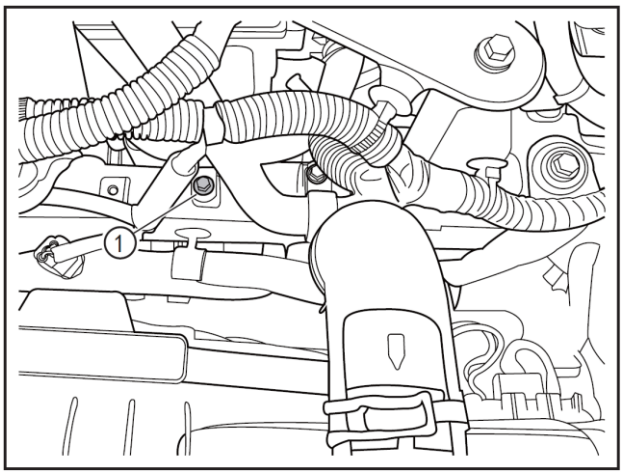
- Unlock the clip (A) of on-board charger connector (1) backwards, and then press down the clip (B) to disconnect the on-board charger connector (1).
- Unlock the clip (C) of on-board charger connector (2) outwards, and then press down the clip (D) to unlock backwards, and then press down the clip (E) to disconnect the on-board charger connector (2).



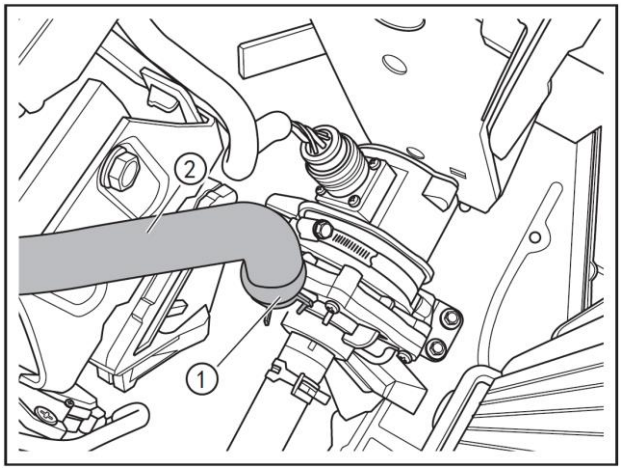
- Use the 8mm socket to remove the 2 fixing bolts (1) (M6 × 10) of the wire harness bracket, and detach the bracket and place it in a position involving no interference.



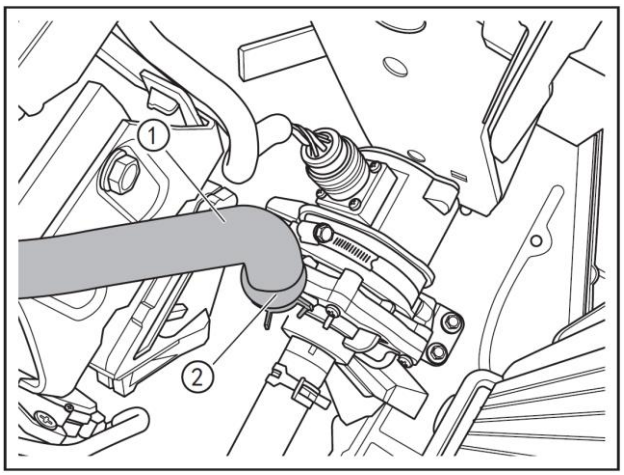
- Remove the on-board charger water inlet pipe clamp (1) for connecting the water pump with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the on-board charger water inlet pipe (2).



- Remove the fixing bolts (1) (M6×10) of the on-board charger water inlet pipe bracket with the 8mm socket.
- Detach the on-board charger water inlet pipe from the bracket.

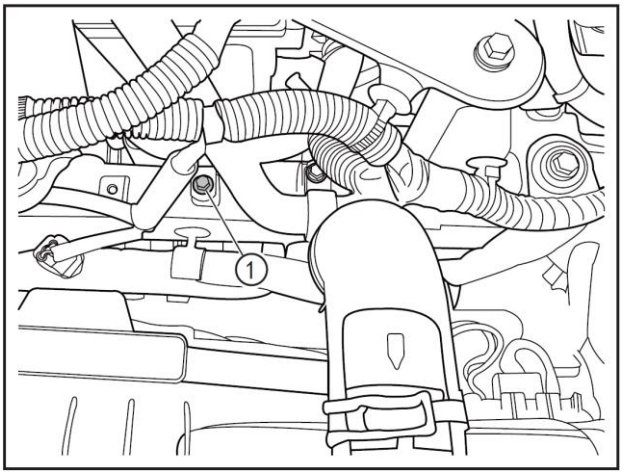


- Remove the on-board charger water inlet pipe clamp (1) for connecting the water pump with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect and remove the on-board charger water inlet pipe (2).

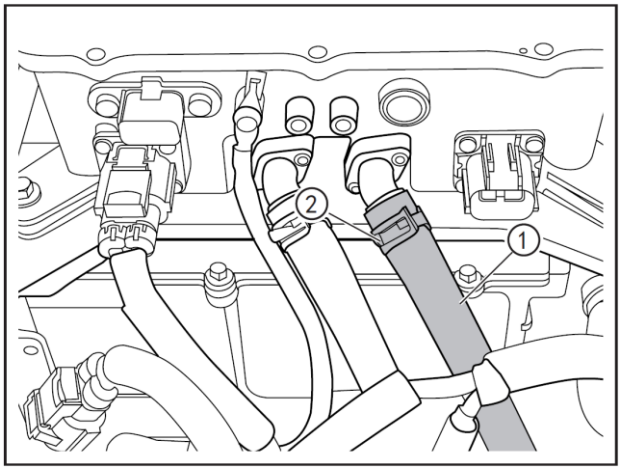


4- Refitting

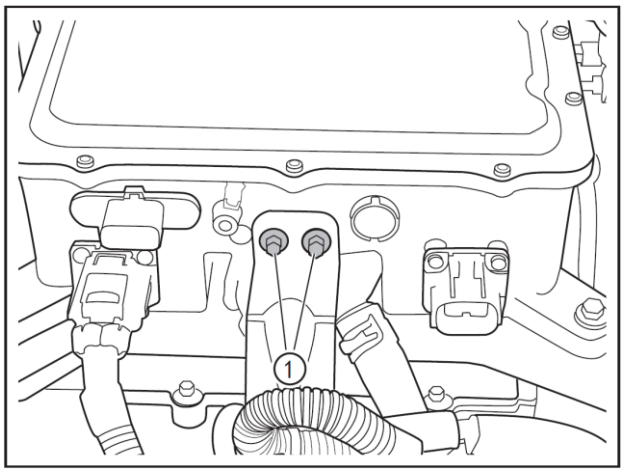
- Refit the on-board charger water inlet pipe (1) to the joint on the water pump.
- Refit the on-board charger water inlet pipe clamp (2) for connecting the water pump in place with the water hose clamp removal and refitting pliers (BF0109).



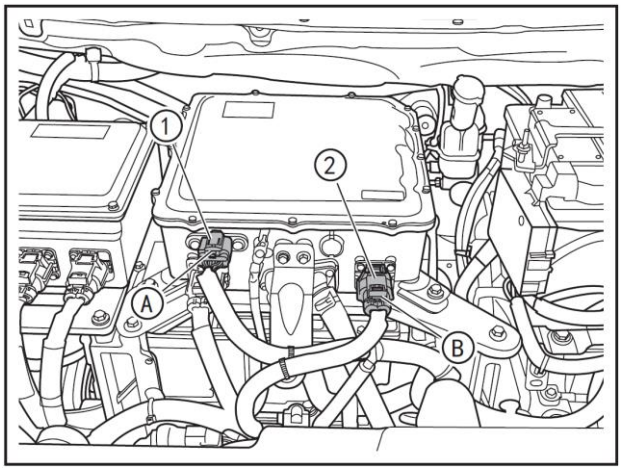
- Refit the fixing bolts (1) (M6 × 10) of the on-board charger water inlet pipe bracket.
- Tighten the fixing bolts with the 8mm socket.



- Refit the on-board charger water inlet pipe (1) to the joint on on-board charger after alignment.
- Refit the on-board charger water inlet pipe clamp (2) for connecting the on-board charger in place with the water hose clamp removal and refitting pliers (BF0109).

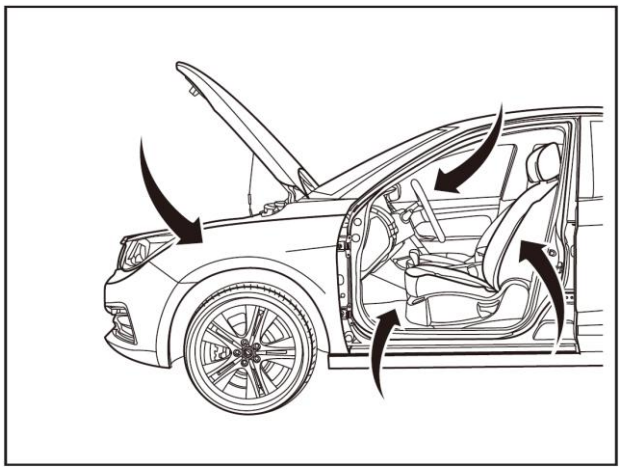


- Refit the wire harness bracket in place, install the 2 fixing bolts (1) (M6 × 10) of the wire harness brackets, and tighten them with the 8 mm socket.



- Refit the on-board charger connector (1) until a "click" is heard, and snap the clip (A) into position.
- Refit the on-board charger connector (2) until a "click" is heard, and snap the clip (B) into position.

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

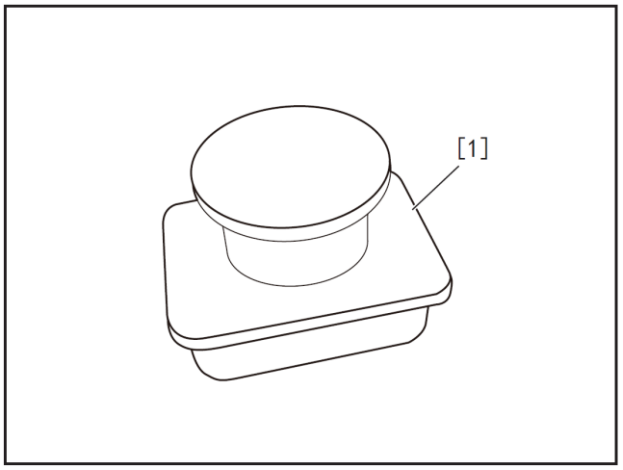


Removal and Refitting of On-board Charger Water Outlet Pipe

1 - Protection

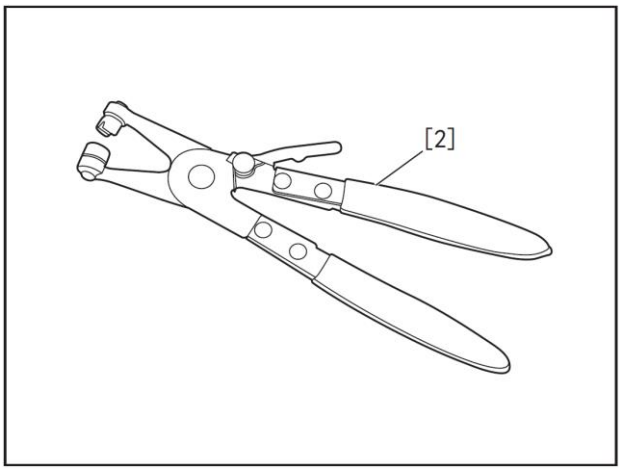
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

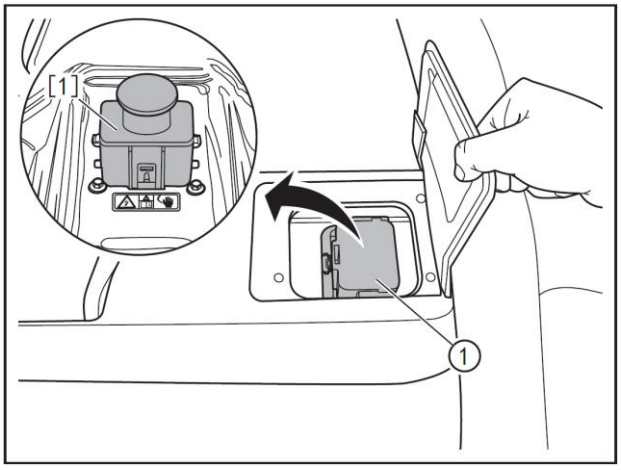


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



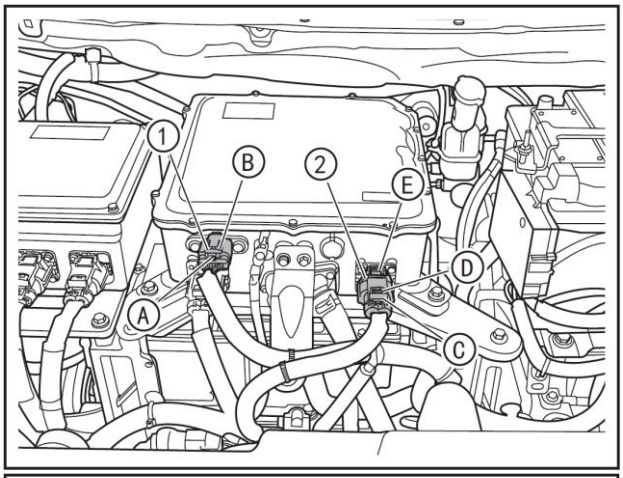
3 - Removal

⚠ CAUTION

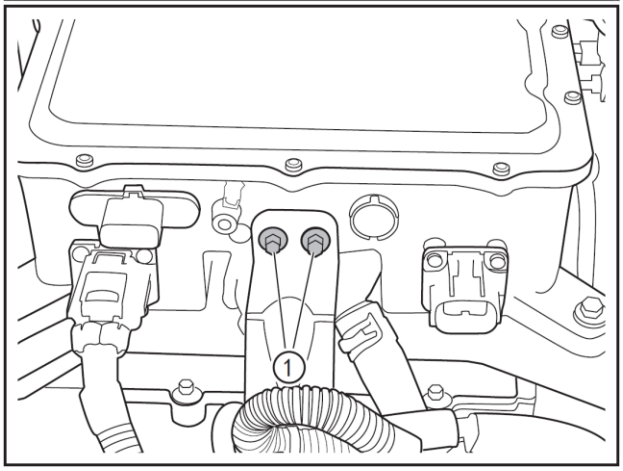
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

⚠ CAUTION

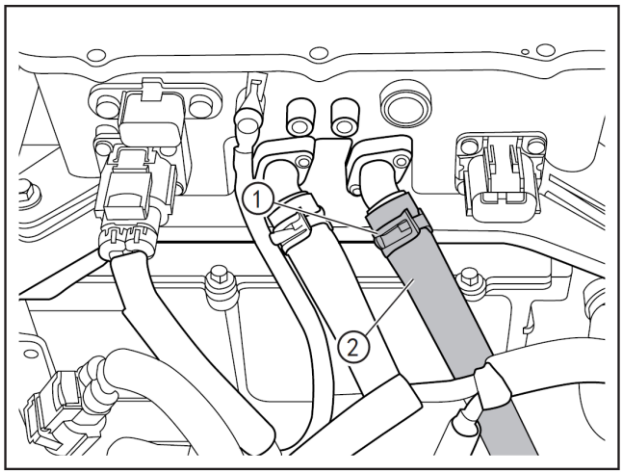
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



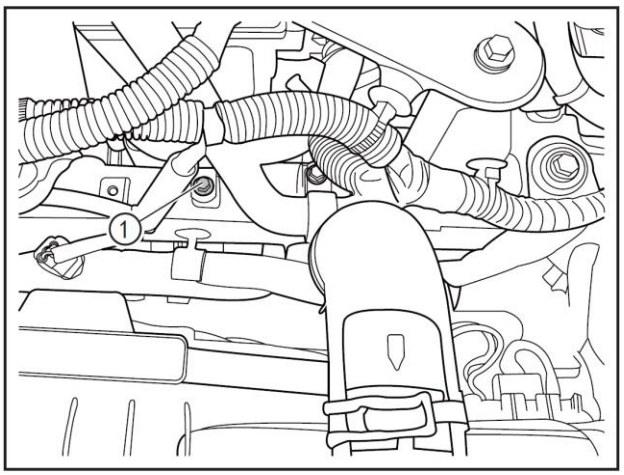
- Unlock the clip (A) of on-board charger connector (1) backwards, and then press down the clip (B) to disconnect the on-board charger connector (1).
- Unlock the clip (C) of on-board charger connector (2) outwards, and then press down the clip (D) to unlock backwards, and then press down the clip (E) to disconnect the on-board charger connector (2).



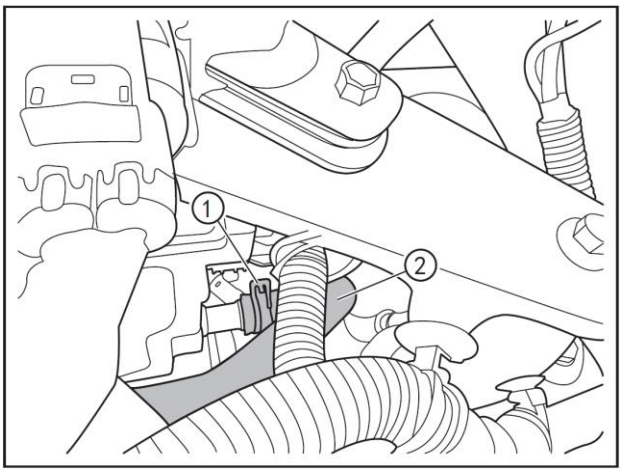
- Use the 8mm socket to remove the 2 fixing bolts (1) (M6 × 10) of the wire harness bracket, and detach the bracket and place it in a position involving no interference.



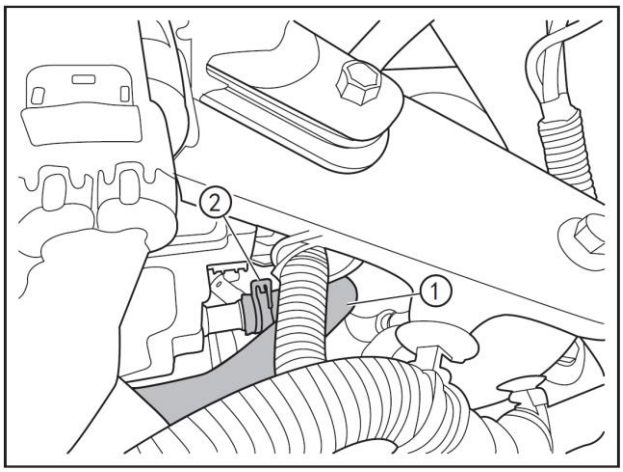
- Remove the on-board charger water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the on-board charger water outlet pipe (2).



- Remove the fixing bolt (1) (M6×10) of the on-board charger water outlet pipe bracket with the 8mm socket.
- Detach the on-board charger water outlet pipe from the bracket.

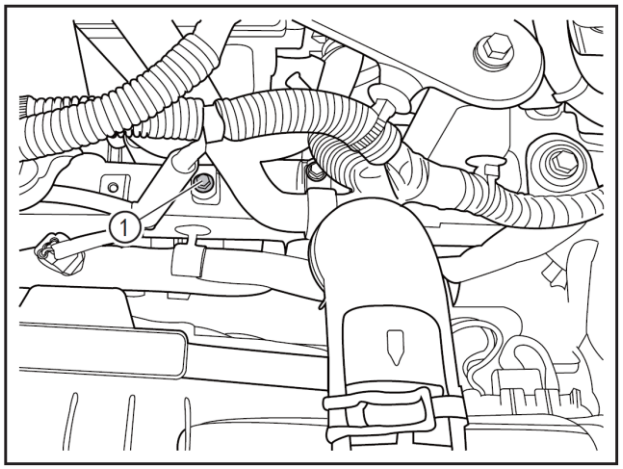


- Remove the on-board charger water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect and remove the on-board charger water outlet pipe (2).

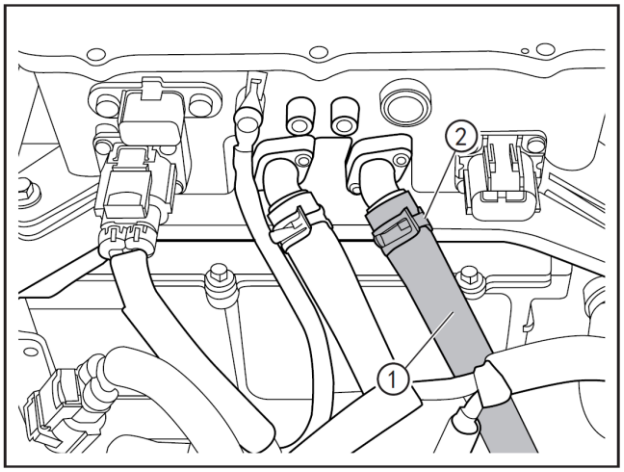


4- Refitting

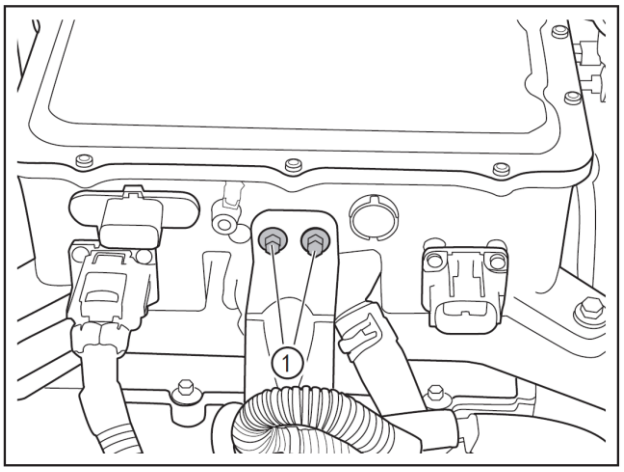
- Refit the on-board charger water outlet pipe (1) to the joint on motor after alignment.
- Refit the on-board charger water outlet pipe clamp (2) for connecting the motor in place with the water hose clamp removal and refitting pliers (BF0109).



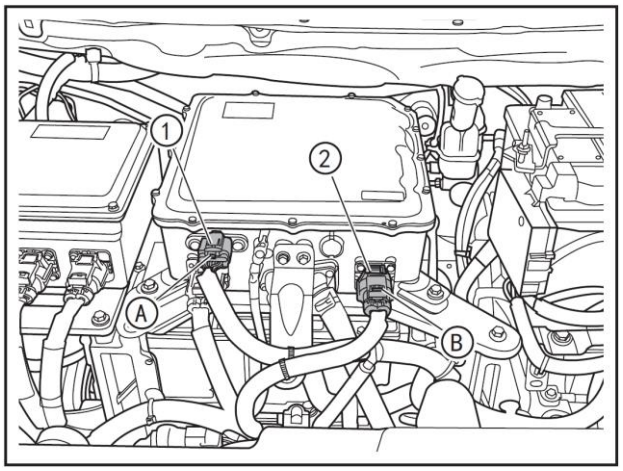
- Refit the fixing bolt (1) (M6 × 10) of the on-board charger water outlet pipe bracket.
- Tighten the fixing bolts with the 8mm socket.



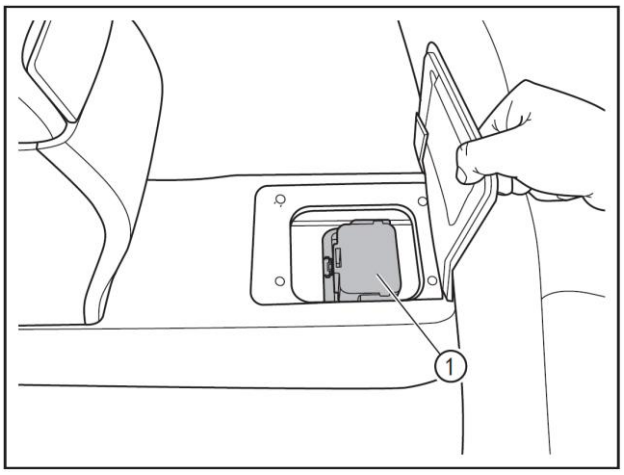
- Refit the on-board charger water outlet pipe (1) to the joint on on-board charger after alignment.
- Refit the on-board charger water outlet pipe clamp (2) for connecting the on-board charger in place with the water hose clamp removal and refitting pliers (BF0109).



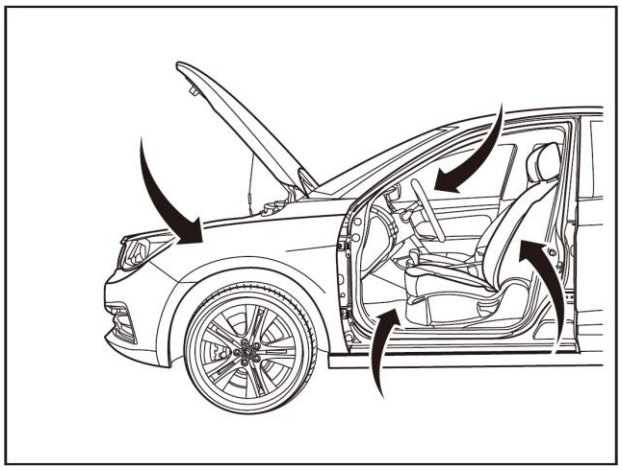
- Refit the wire harness bracket in place, install the 2 fixing bolts (1) (M6 × 10) of the wire harness brackets, and tighten them with the 8 mm socket.



- Refit the on-board charger connector (1) until a "click" is heard, and snap the clip (A) into position.
- Refit the on-board charger connector (2) until a "click" is heard, and snap the clip (B) into position.



- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

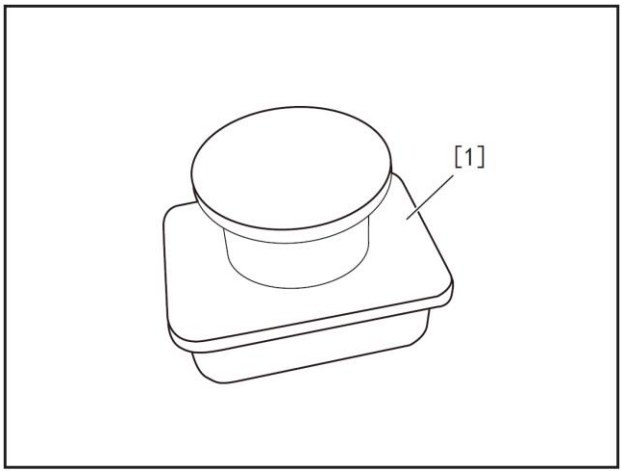


Removal and Refitting of Water Pump

1 - Protection

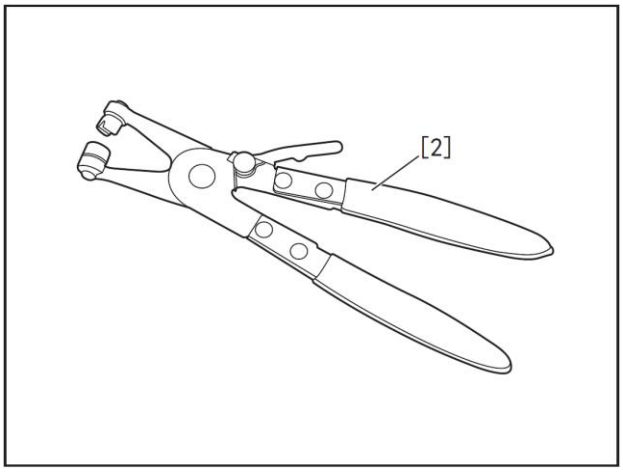
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

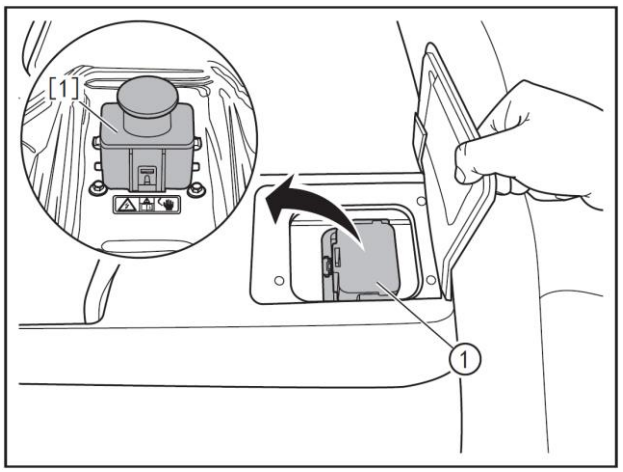


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



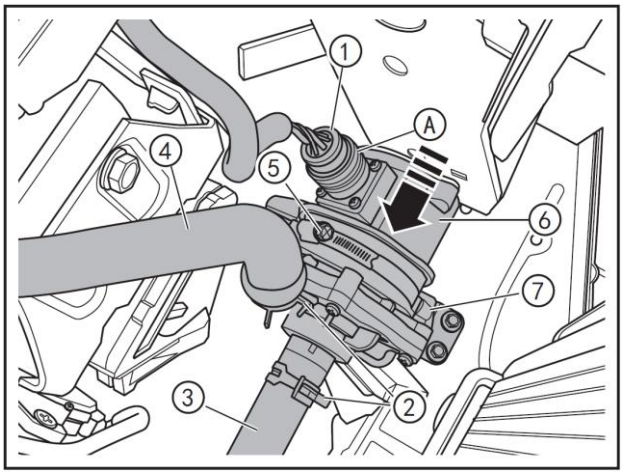
3 - Removal

CAUTION

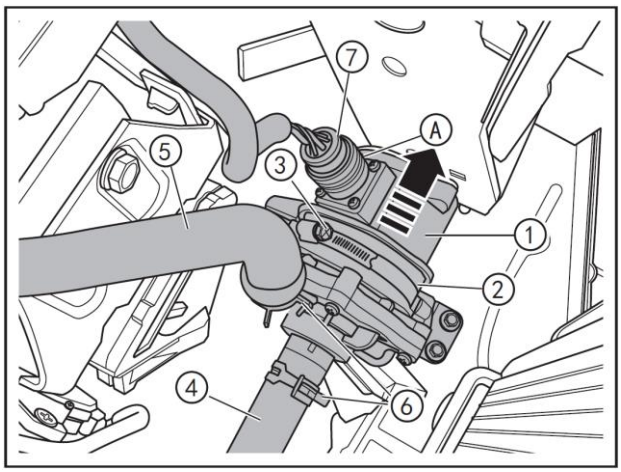
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

CAUTION

- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**

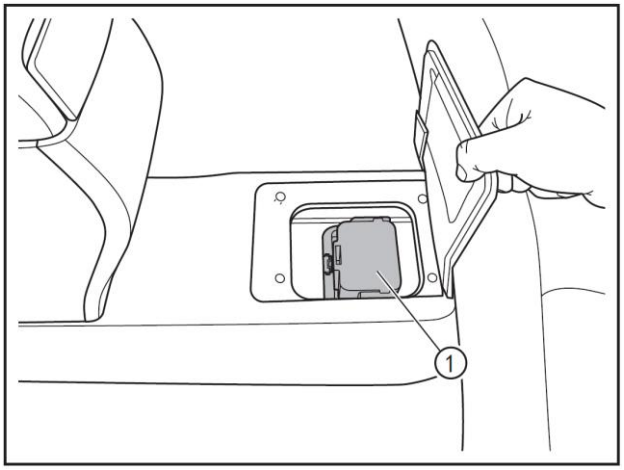


- Rotate the connector clip (A) counterclockwise to disconnect the pump connector (1).
- Remove the water pump water inlet/outlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the water inlet pipe (3) and the water outlet pipe (4) of water pump.
- Remove the fastening bolt (5) of water pump clamp with the slotted screwdriver.
- Take off the water pump (6) from the bracket (7).

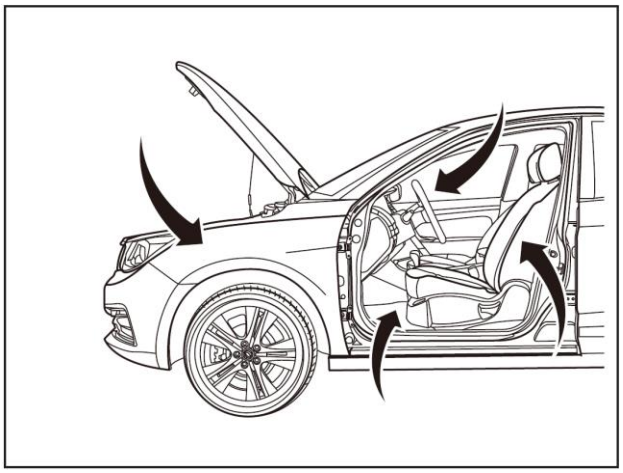


4- Refitting

- Refit the water pump (1), bracket (2) and clamp (3) onto the bracket.
- Refit the fastening bolt (3) of water pump clamp with the slotted screwdriver.
- Connect the water inlet pipe (4) and the water outlet pipe (5) of water pump to the water pump.
- Move the water inlet/outlet pipe clamp (6) to the mounting position with the water hose clamp removal and refitting pliers (BF0109).
- Rotate the connector clip (A) clockwise to tighten the water pump connector (7).



- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

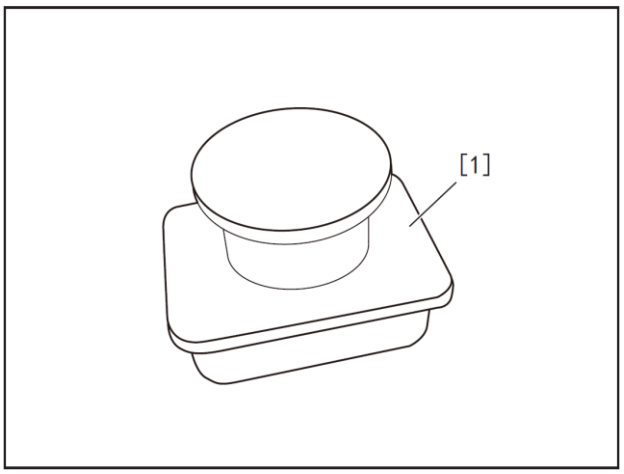


Removal and Refitting of Cooling Fan

1 - Protection

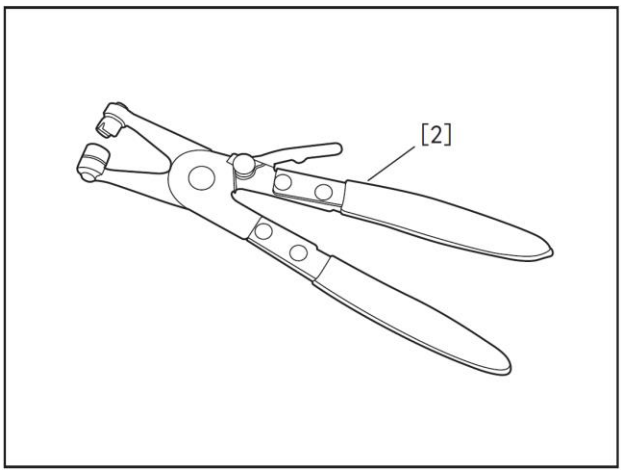
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

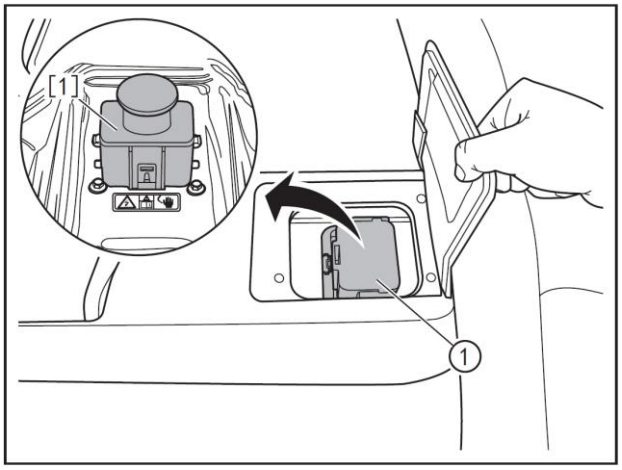


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



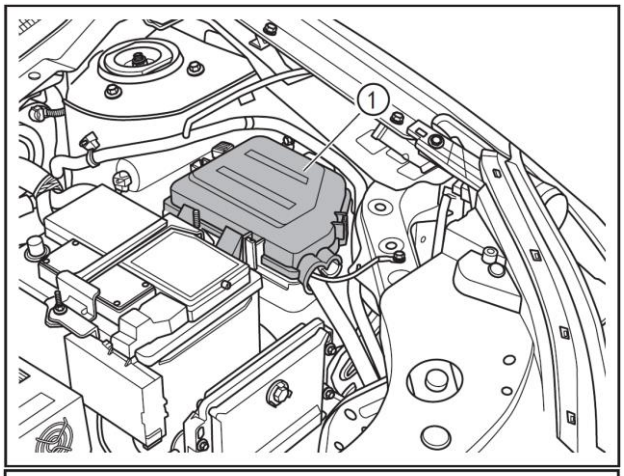
3 - Removal

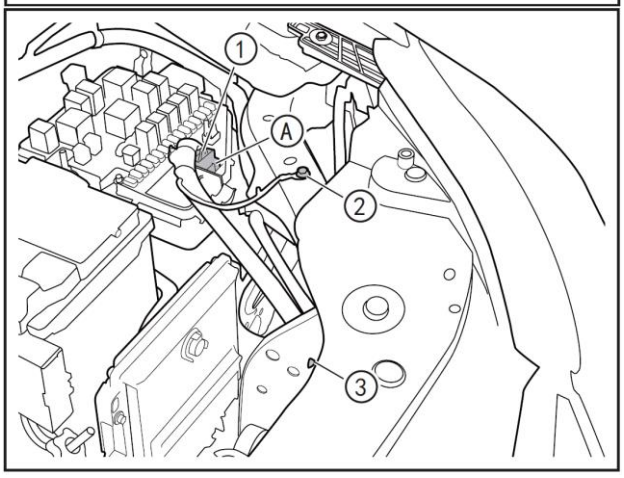
⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P. Turn off the ignition switch, and disconnect the battery negative cable. Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)

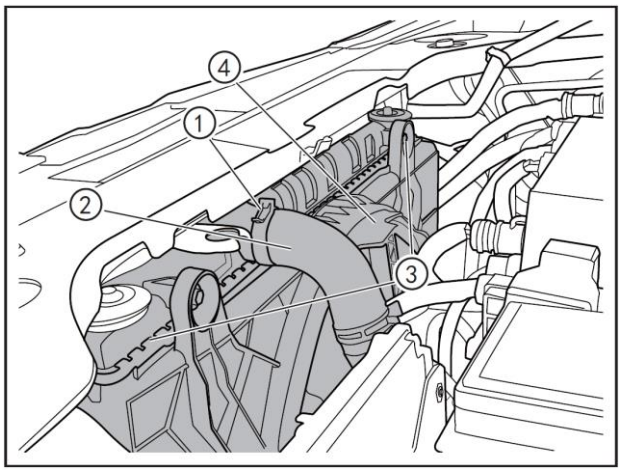
⚠ CAUTION

- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- Open the fuse box cover (1) in the motor compartment.





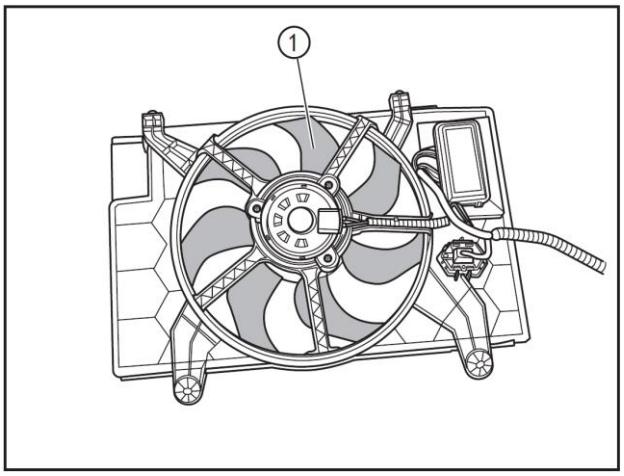
- Pull up the connector red clip (A), and press down the clip to disconnect the connector (1) of cooling fan wire harness assembly.
- Use the 10 mm socket to remove the fixing bolt (2) (M6×18) for body negative ground wire of cooling fan wire harness assembly.
- Detach the cooling fan wire harness assembly from bracket (3).



- Remove the radiator water inlet pipe clamp (1) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the radiator water inlet pipe (2) from the radiator.
- Use the 10 mm socket to remove the fixing bolts (3) (M6×18) of cooling fan.
- Remove the cooling fan (4).

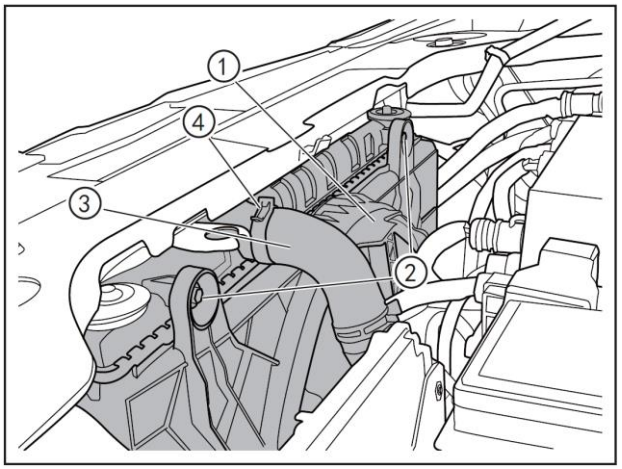
⚠ CAUTION

- **Remove the radiator water inlet pipe before taking out the cooling fan, so as to avoid scratching the radiator core.**



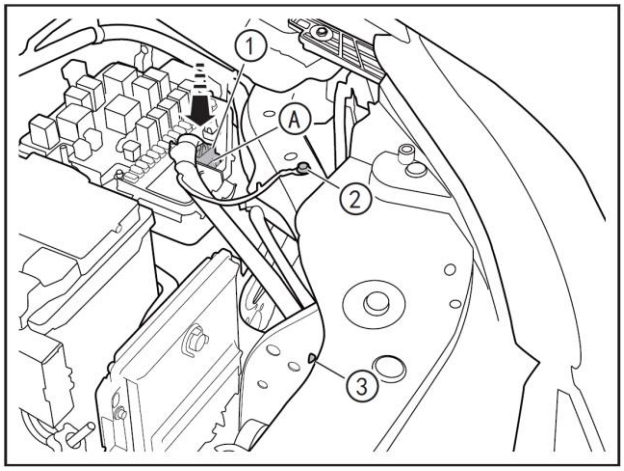
4 - Check

- Check the cooling fan blade (1) for damage, unusual noise and blockage.

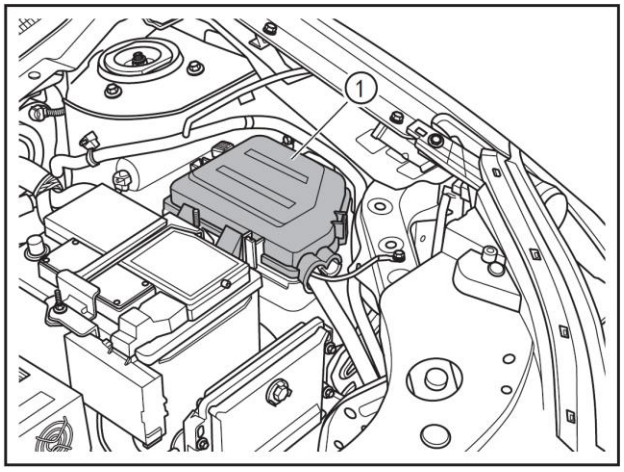


5- Refitting

- Refit the cooling fan (1).
- Tighten the fixing bolt (2) (M6 × 18) of cooling fan with the 10 mm socket.
- Insert the radiator water inlet pipe (3) into the radiator.
- Refit the radiator water inlet pipe clamp (4) with the water hose clamp removal and refitting pliers (BF0109).

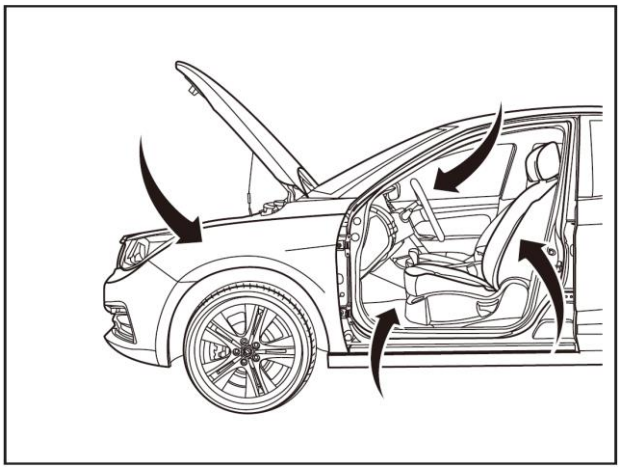


- Insert the connector (1) and press down the clip (A).
- Use the 10 mm socket to tighten the fixing bolt (2) (M6×18) for body negative ground wire of cooling fan wire harness assembly.
- Insert the clip (3) of cooling fan wire harness assembly into the bracket.



- Secure the fuse box cover (1) in the motor compartment.

- Add the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

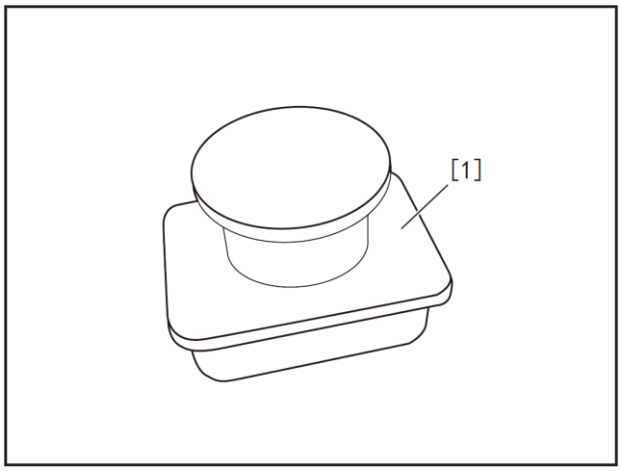


Removal and Refitting of Radiator

1 - Protection

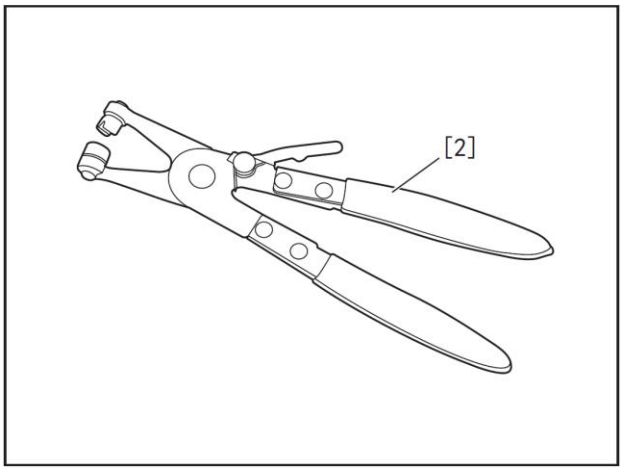
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

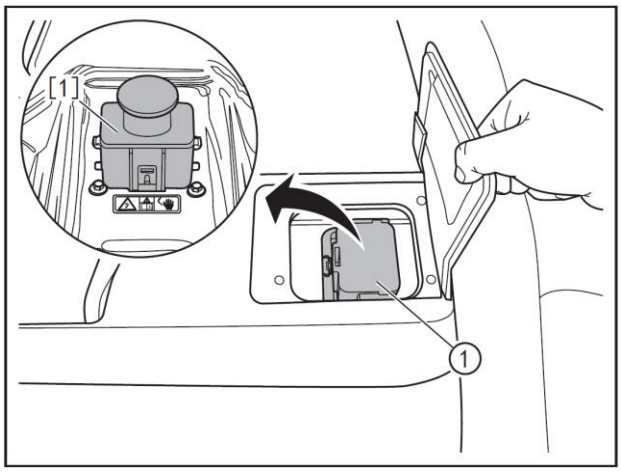


2 - Special tools

- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



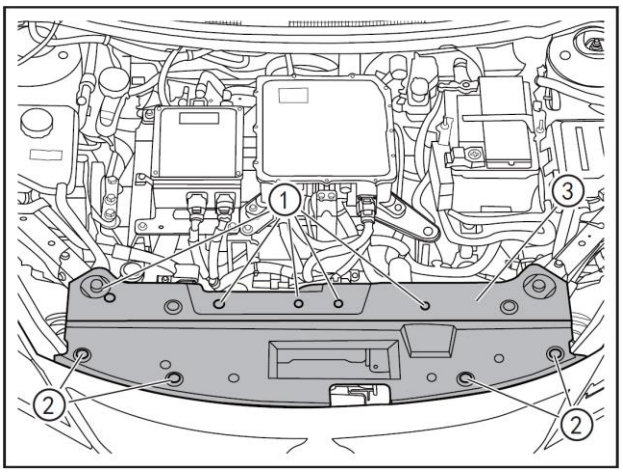
3 - Removal

⚠ CAUTION

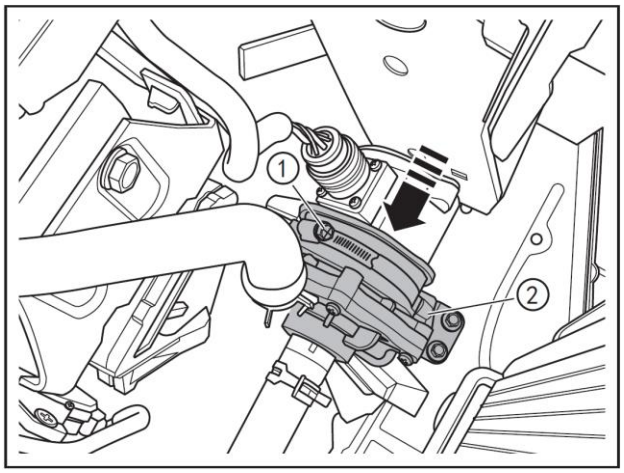
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Remove the cooling fan assembly. (Refer to "Removal and Refitting of Cooling Fan” in “Motor Cooling System")

⚠ CAUTION

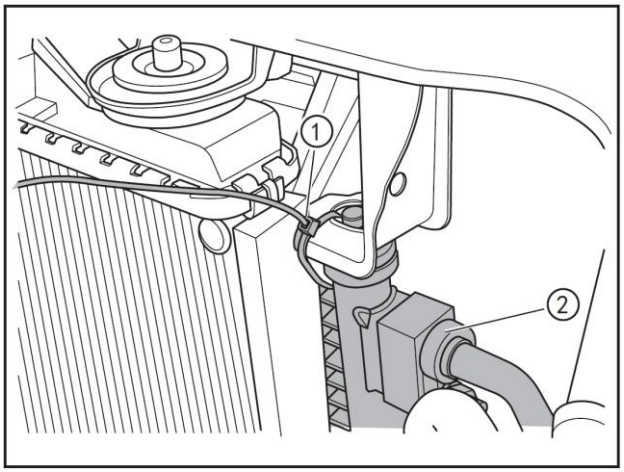
- **Do not touch the blade of cooling fan because the cooling fan can get started at any time when the motor is running, hot or just stopped; otherwise, you may be hurt.**
- **During the removal of cooling pipeline after the coolant has been drained, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



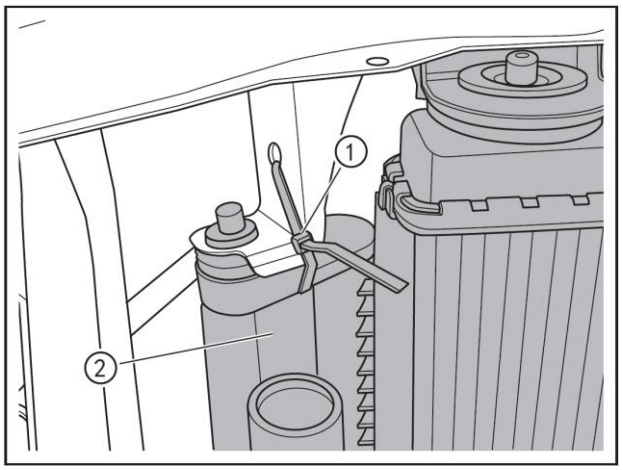
- Remove the 5 fixing clips (1) of cooling fan with the interior trim removal tool (BF1102).
- Remove the fixing bolt (2) of cooling fan upper protective plate with the 10mm socket.
- Take off the fan upper protective plate (3).



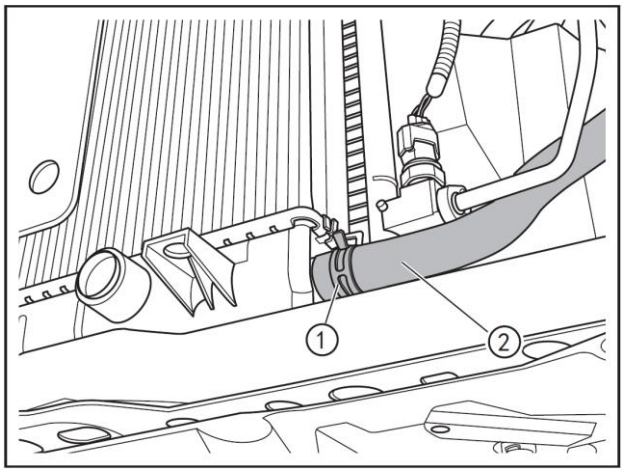
- Remove the cooling water pump clamp (1) with the slotted screwdriver.
- Detach the cooling water pump from the bracket (2).



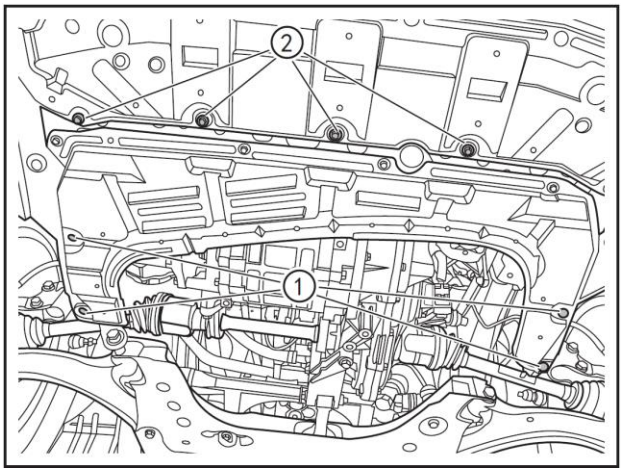
- Tie the right end of A/C condenser assembly (2) with a strap (1) to fix the A/C condenser assembly to the vehicle body.



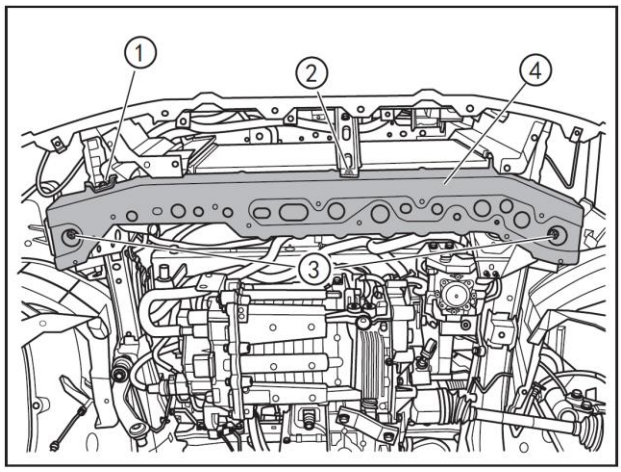
- Tie the left end of A/C condenser assembly (2) with a strap (1) to fix the A/C condenser assembly to the vehicle body.



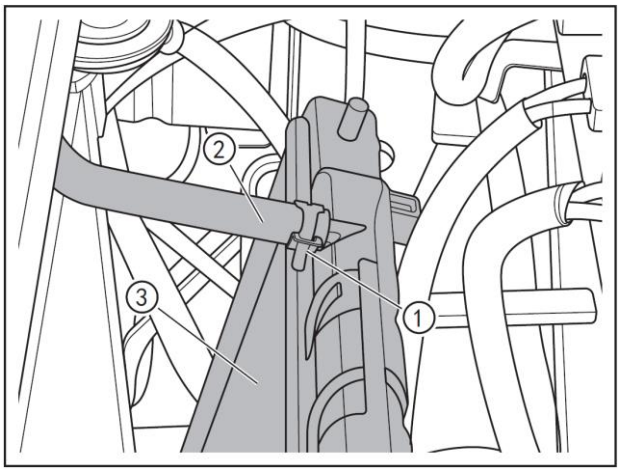
- Lift the car.
- Remove the expansion tank water outlet pipe clamp (1) with the water hose clamp removal and refitting pliers BF0109.
- Disconnect the expansion tank water outlet pipe (2).



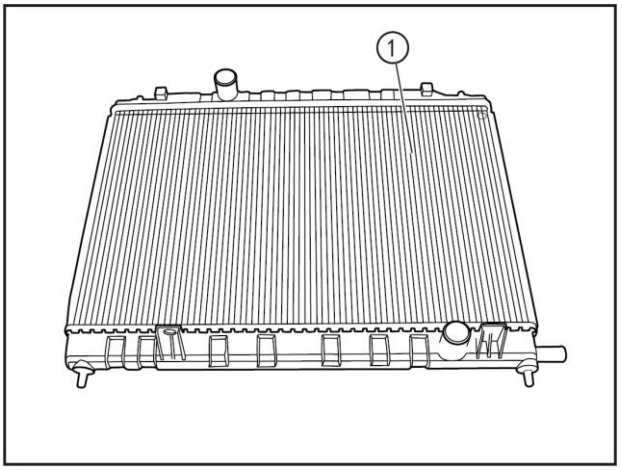
- Refit the clip (1) of front bumper lower protective plate.
- Remove the fixing bolt (2) (M6 × 20) of the front bumper lower protective plate with a 10 mm socket, and then take down the front bumper lower protective plate.



- Support the radiator lower beam assembly with the transmission jack.
- Remove the right front fixing bolt (1) (M10 × 32) of radiator lower beam assembly with the 15mm socket.
- Remove the middle fixing bolt (2) (M8 × 22) of radiator lower beam assembly with the 12mm socket.
- Remove the 2 fixing bolts (3) (M10 × 25) at the bottom of radiator lower beam assembly with the 17mm socket.
- Lower down the transmission jack and take out the radiator lower beam assembly (4).

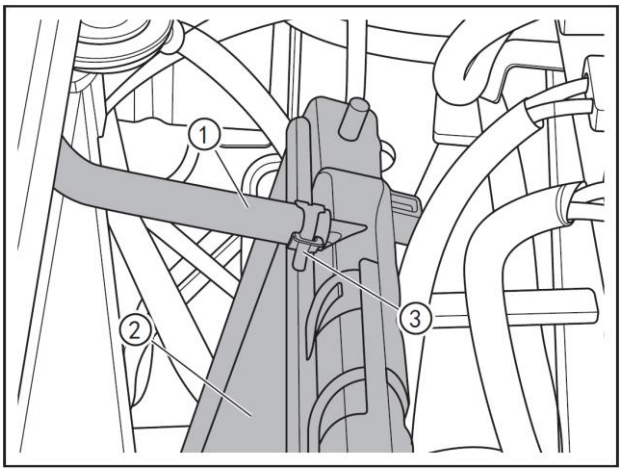


- Lower the vehicle.
- Remove the expansion tank water inlet pipe clamp (1) with the water hose clamp removal and refitting pliers BF0109.
- Disconnect the expansion tank water inlet pipe (2).
- Remove the radiator (3).



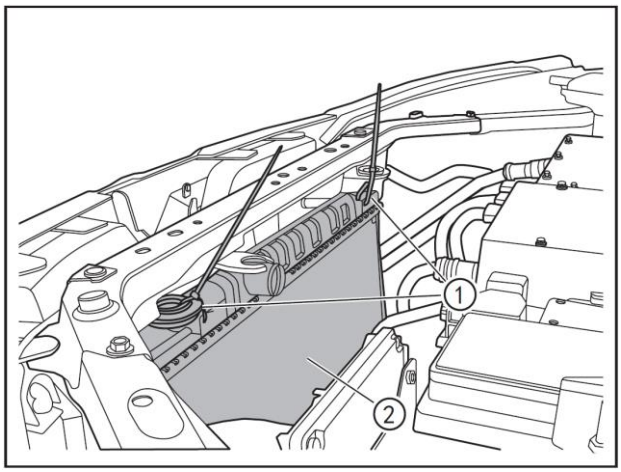
4 - Check

- Check the radiator for leakage or damage. If the radiator core (1) is slightly bent, correct it by using a small slotted screwdriver.
- If the radiator core (1) is seriously deformed, replace it with a new one.
- Use the high pressure air gun to clean the dust at the front of the radiator, etc.

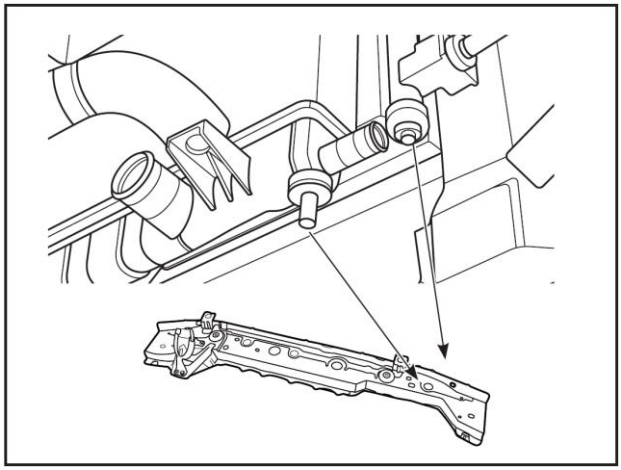


5- Refitting

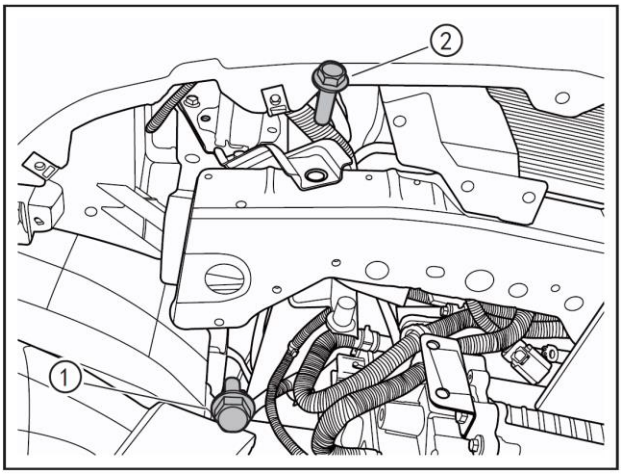
- Insert the expansion tank water inlet pipe (1) into the connection port of the radiator (2).
- Refit the expansion tank water inlet pipe clamp (3) with the water hose clamp removal and refitting pliers BF0109.



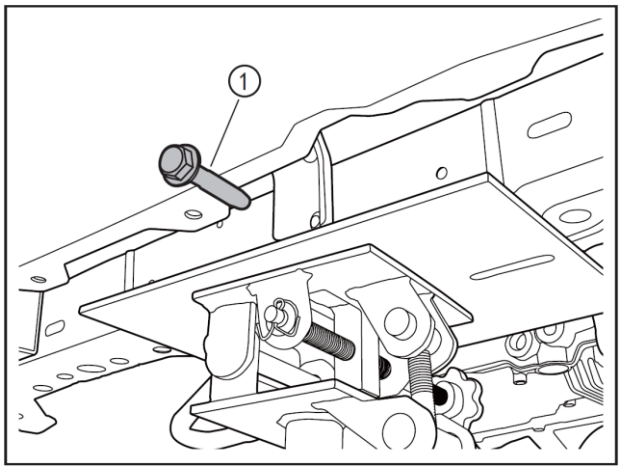
- Tie the radiator (2) to the vehicle body with the strap (1).



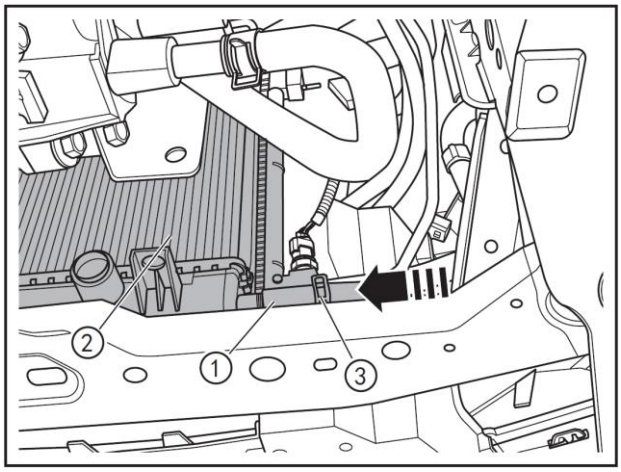
- Lift the car.
- Place the lower beam on the transmission jack.
- Refit the lower beam on the vehicle body with the mounting base on the lower beam aligned.



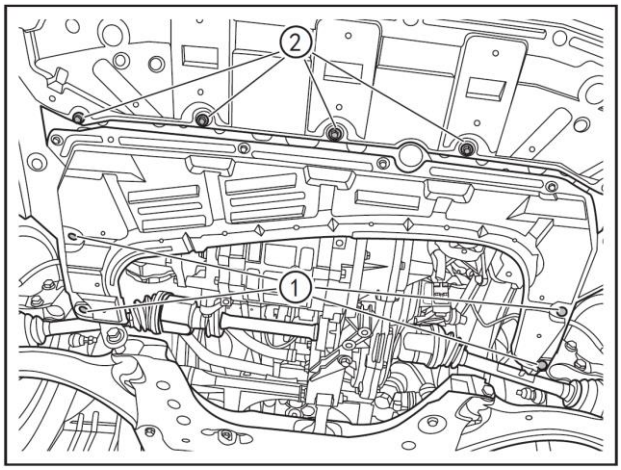
- Tighten the 2 fixing bolts (1) (M10 × 25) at the bottom of radiator lower beam assembly with the 17mm socket.
- Tighten the right front fixing bolt (2) (M10 × 32) of radiator lower beam assembly with the 15mm socket.



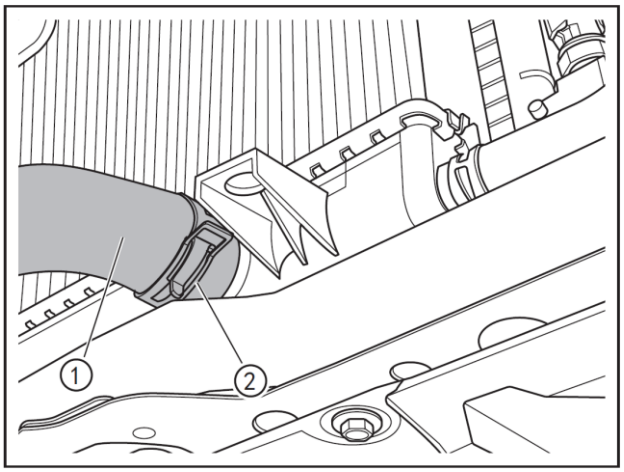
- Tighten the middle fixing bolt (1) (M8 × 22) of radiator lower beam assembly with the 12mm socket.



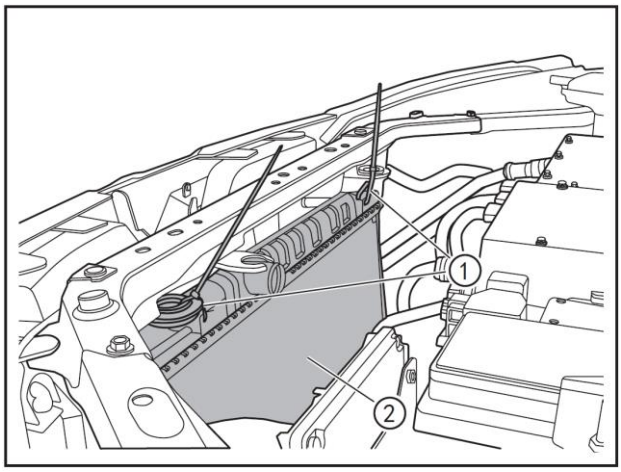
- Insert the expansion tank water outlet pipe (1) into the connection port of the radiator (2).
- Refit the expansion tank water outlet pipe clamp (3) into position with the water hose clamp removal and refitting pliers (BF0109).



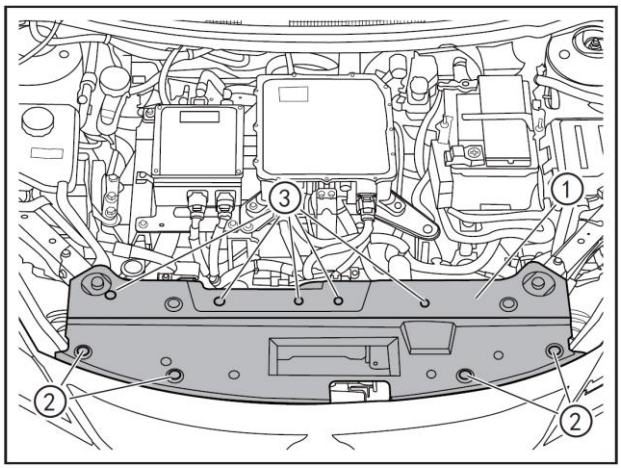
- Refit the fixing bolt (1) (M6 × 20) of front bumper lower protective plate, and tighten it with the 10mm socket.
- Refit the clip (2) of front bumper lower protective plate.



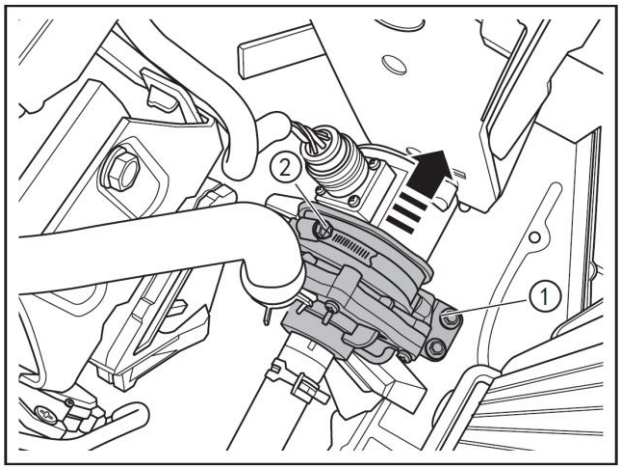
- Refit the radiator water outlet pipe (1) to the joint on the radiator.
- Refit the radiator water outlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109).



- Lower the vehicle.
- Cut off the strap (1) from the radiator (2).
- Align the mounting holes and refit the radiator (2).



- Refit the fan upper protective plate (1).
- Refit the fixing bolt (2) of fan upper protective plate, and tighten it with the 10mm socket.
- Refit the clips (3) of fan upper protective plate.



- Refit the cooling water pump onto the bracket (1).
- Tighten the cooling water pump clamp (2) with the slotted screwdriver.

- Refit the cooling fan. (Refer to "Removal and Refitting of Cooling Fan" in "Motor Cooling System")
- Add the coolant. (Refer to "Change of Motor Coolant" in "Motor Cooling System")
- Refit the service switch. (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")
- Connect the battery negative cable.

August 2018

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

4.3

Motor Control System

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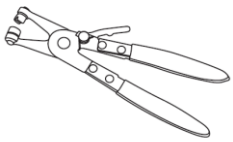
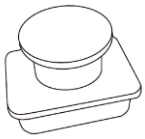
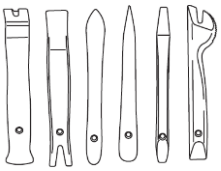
Removal and Refitting of MCU-integrated DC-DC Converter 4.3-18

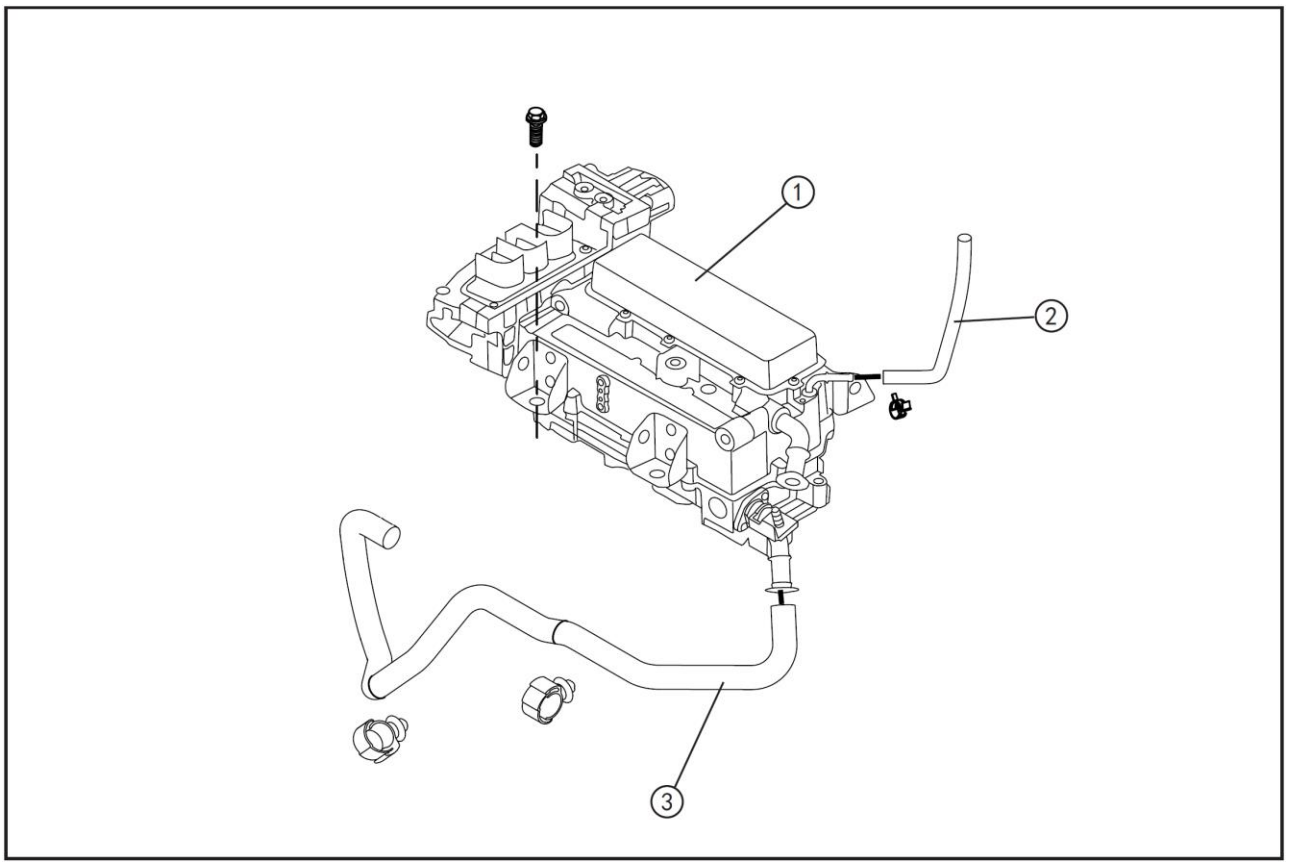
- Make sure all connecting cables are disconnected before removing the motor.
- Before removing the motor, ensure that a suitable safety transport equipment is prepared for the motor to prevent possible damage!
- Do not over-tilt when removing and placing the motor.
- The normal operating temperature range of the motor is -40°C~85°C. Operating the motor at an atmospheric temperature outside the normal operating temperature range will cause performance degradation and shorter service life of motor!
- When the temperature of the coolant in the motor water inlet pipe is 65°C~90°C, it will cause performance degradation and shorter service life of motor!
- When the coolant is so insufficient that the flow rate is 6~8 L/min, it will cause performance degradation of motor!
- Thoroughly clean the motor and drain the coolant before servicing.
- Place the motor on a level surface and protect it from turnover.
- Make sure that the motor is away from the cable so as to avoid the motor from deforming or damaging the cable.
- Before installing the motor, measure that the insulation resistance of the high-voltage interface electrode is greater than or equal to 20MΩ, otherwise, it is not allowed to install the motor.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF0109	Water hose clamp removal and refitting pliers		For removing and refitting the hose clamp
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
BF1102	Interior trim removal tool		For removing interior trims and wire harness clips, etc.
A60EV0104	Insulation resistance tester		For testing the insulation performance of high voltage components of traction battery, motor, motor control unit, high voltage distribution box, charger, heater, and electric compressor

Structure and Features

Motor control unit (Continental motor)



1. Motor control unit	2. Motor control unit water inlet pipe	3. Motor control unit water outlet pipe

DTCs of Vehicle Control Unit (Continental Motor)

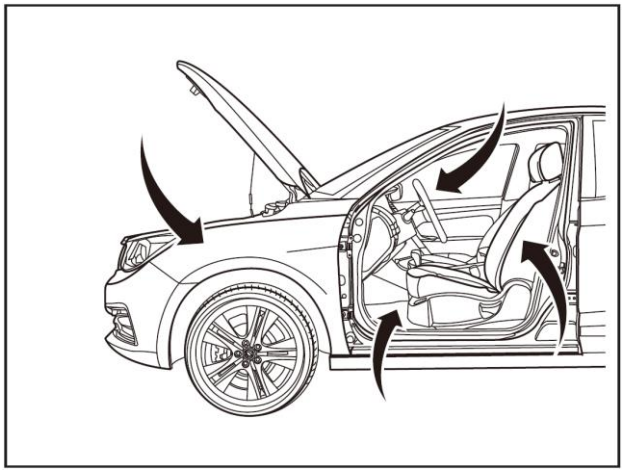
•Use a special scan tool to perform fault diagnosis.

DTC	Description	Possible causes	Recommended countermeasures
B1500	Ignition key position signal abnormal	Key switch sensor abnormal	Replace the key.
B1501	High accelerator pedal angle signal voltage	High accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1502	Low accelerator pedal angle signal voltage	Low accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1503	Brake pedal angle signal high voltage	Brake pedal angle signal high voltage	Replace the brake pedal assembly.
B1504	Brake pedal angle signal low voltage	Brake pedal angle signal low voltage	Replace the brake pedal assembly.
B1507	Vehicle POST failure	Motor or battery failed	Inspect the power system.
B1508	Power performance limited alarm	Low battery voltage or power system entering limp mode due to fault	Inspect the power system.
B1511	Motor precharging abnormal	Plug-in failure of service switch or fault of precharge circuit Fault	Check the service switch or pre-charge circuit
P2300	Motor system fault warning	Motor high level fault	Inspect the motor system.
P2301	Battery system fault warning	Battery high level fault	Inspect the battery system.
P2302	Shift level signal invalid	Circuit components damaged; gear mechanical switch worn or shifted and failure to be effectively closed	Replace shifter assembly
P2303	Atmospheric pressure sensor failure	Sensor short to ground Sensor short to power supply; Sensor open; Sensor signal not within the effective range	Replace the atmospheric pressure sensor.
P2304	Vacuum sensor failure	Sensor short to ground Sensor short to power supply; Sensor open; Sensor signal not within the effective range	Replace the vacuum sensor.
P2305	High vacuum pump end voltage	High ECU power voltage;	Inspect the power supply circuit of vacuum pump.
P2306	Low vacuum pump end voltage	Low ECU power voltage;	Inspect the power supply circuit of vacuum pump.
P2307	Vacuum pump overcurrent	Short circuit; Other faults cause high current.	Replace the vacuum pump assembly.
P2308	Vacuum pump relay sticking	Vacuum pump failure to be disconnected due to sticking	Replace the relay
P2309	Vacuum pump relay or vacuum pump open	Open circuit of relay; open circuit of vacuum pump	Replace the relay and inspect the power supply circuit of vacuum pump.
P2310	Vacuum pump pressure increases abnormally or slowly leaks	Abnormal performance degradation of vacuum pump; slow leakage of inlet pipe (between the electric vacuum pump and the check valve); slow leakage of booster (including inlet pipe from check valve to the booster\vacuum tank)	Replace the vacuum pump assembly.
P2314	PCAN bus failure	CAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2315	HCAN bus failure	HCAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2318	Master cylinder pressure sensor or circuit fault	Sensor or circuit failed	Replace the master cylinder pressure sensor and inspect the related wire harness.
P2319	Master cylinder pressure sensor signal abnormal	Sensor failed	Replace the master cylinder pressure sensor.
P2320	Brake lamp switch sensor or circuit failed	Sensor or circuit failed	Replace the brake lamp switch sensor and inspect the related wire harness.
P2322	PCU position sensor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly

DTC	Description	Possible causes	Recommended countermeasures
P2323	PCU actuator motor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2324	PCU lock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2325	PCU unlock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2326	PCU unknown state	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P0561	Battery voltage abnormal	Battery failure or loss of electricity	Replace the battery.
U0294	BMS communication loss	BMS fault or wire harness fault	Check wire harness and BMS
U0292	MCU communication loss	MCU fault or wire harness fault	Check wire harness and MCU
U0155	Instrument communication loss	Instrument failed or wire harness fault	Inspect the wire harness and the instrument.
U0116	A/C communication loss	A/C control unit failed or wire harness fault	Inspect the wire harness and A/C control unit.
U0121	ABS communication loss	ABS fault or wire harness fault	Check wire harness and ABS
U0140	BCM communication loss	BCM fault or wire harness fault	Check wire harness and BCM
U0131	EPS communication loss	EPS fault or wire harness fault	Check wire harness and EPS

DTCs of Motor Control Unit (Independent Motor)

DTC	Description	Possible causes	Recommended countermeasures
B1500	Ignition key position signal abnormal	Key switch sensor abnormal	Replace the key.
B1501	High accelerator pedal angle signal voltage	High accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1502	Low accelerator pedal angle signal voltage	Low accelerator pedal angle signal voltage	Replace the accelerator pedal assembly.
B1507	Vehicle POST failure	Motor or battery failed	Inspect the power system.
B1511	Motor precharging abnormal	Service switch not turned on in or precharging circuit failure	Check the service switch or pre-charge circuit
P2304	Vacuum sensor failure	Sensor short to ground Sensor short to power supply; Sensor open; Sensor signal not within the effective range	Replace the vacuum sensor.
P2310	Vacuum pump pressure increases abnormally or slowly leaks	Abnormal performance degradation of vacuum pump; slow leakage of inlet pipe (between the electric vacuum pump and the check valve); slow leakage of booster (including inlet pipe from check valve to the booster\vacuum tank)	Replace the vacuum pump assembly.
P2314	PCAN bus failure	CAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2315	HCAN bus failure	HCAN wire harness or connector terminal short to battery + or body ground	Inspect the wire harness or the connector to eliminate the short circuit.
P2318	Master cylinder pressure sensor or circuit fault	Sensor or circuit failed	Replace the master cylinder pressure sensor and inspect the related wire harness.
P2319	Master cylinder pressure sensor signal abnormal	Sensor failure Replace the master cylinder pressure sensor	
P2320	Brake lamp switch sensor or circuit failed	Sensor or circuit failed	Replace the brake lamp switch sensor and inspect the related wire harness.
P2322	PCU position sensor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2323	PCU actuator motor fault	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2324	PCU lock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2325	PCU unlock failure	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P2326	PCU unknown state	PCU reporting fault	Check if the p-gear engagement/disengagement can be recovered automatically; otherwise, replace the PCU assembly
P0561	Battery voltage abnormal	Battery failure or loss of electricity	Replace the battery.
U0294	BMS communication loss	BMS fault or wire harness fault	Check wire harness and BMS
U0292	MCU communication loss	MCU fault or wire harness fault	Check wire harness and MCU
U0155	Instrument communication loss	Instrument failed or wire harness fault	Inspect the wire harness and the instrument.
U0116	A/C communication loss	A/C control unit failed or wire harness fault	Inspect the wire harness and A/C control unit.
U0121	ABS communication loss	ABS fault or wire harness fault	Check wire harness and ABS
U0140	BCM communication loss	BCM fault or wire harness fault	Check wire harness and BCM
U0131	EPS communication loss	EPS fault or wire harness fault	Check wire harness and EPS

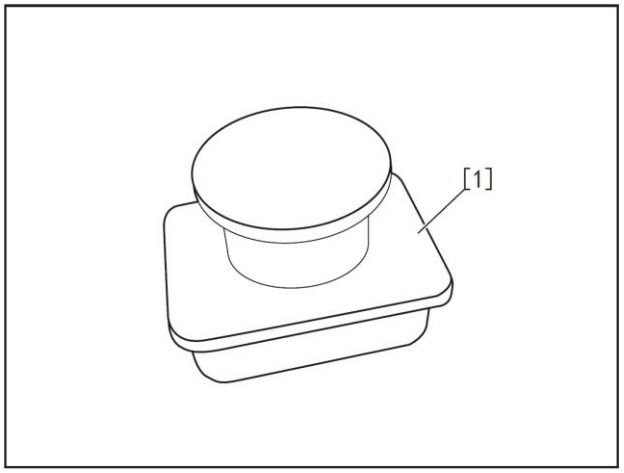


Removal and Refitting of Motor Control Unit (Continental Motor)

1 - Protection

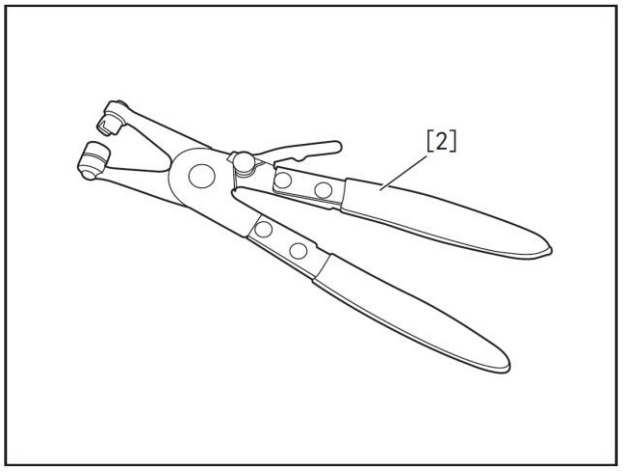
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

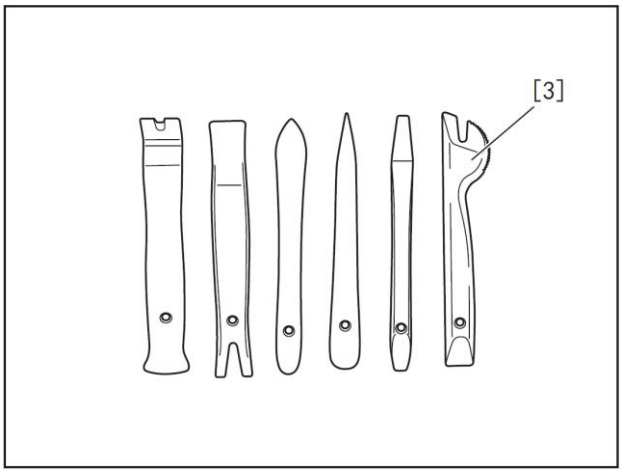


2 - Recommended tools

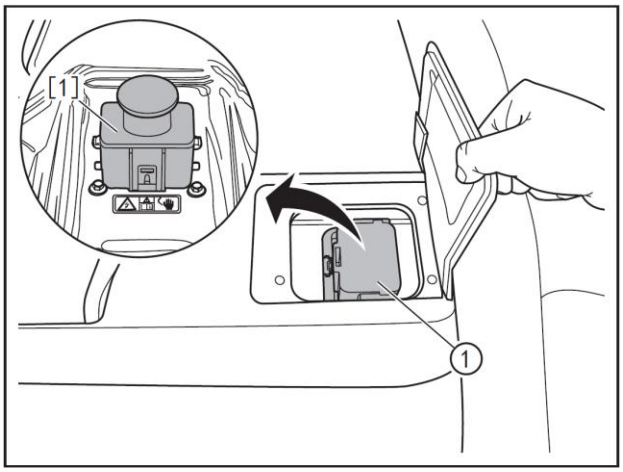
- Traction battery service switch plug (E700101)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



- Interior trim removal tool (BF1102) [3].



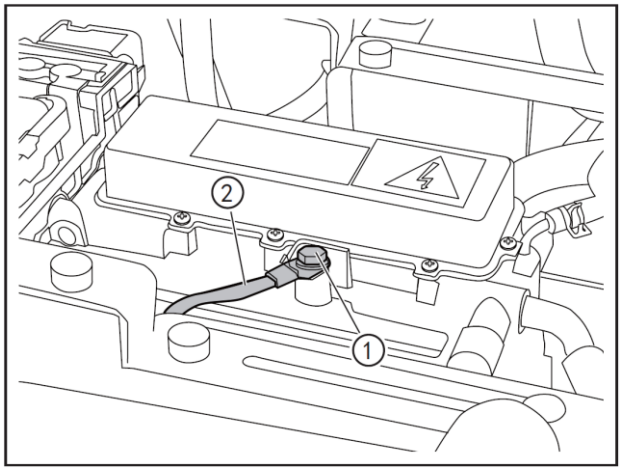
3 - Removal

⚠ CAUTION

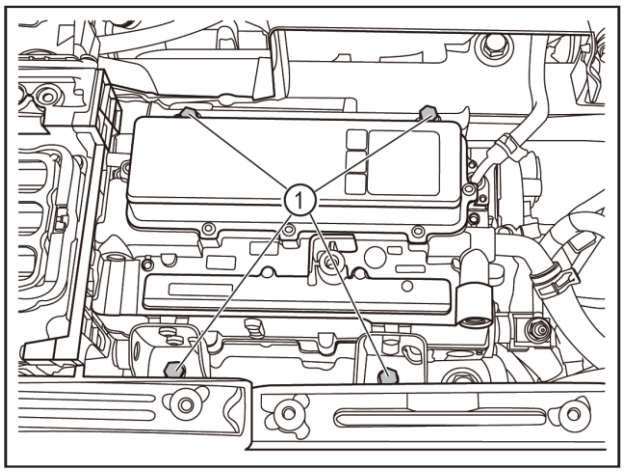
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



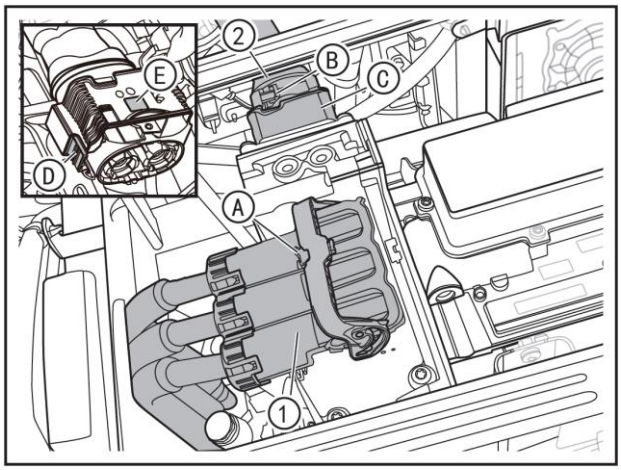
- Remove the charger. (Refer to "Removal and Refitting of Charger" in “Starting and Charging System”.)
- Remove the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")
- Remove the ground wire fixing bolts (1) of the motor control unit with the 13mm socket.
- Disconnect the ground wire (2) from the motor control unit.



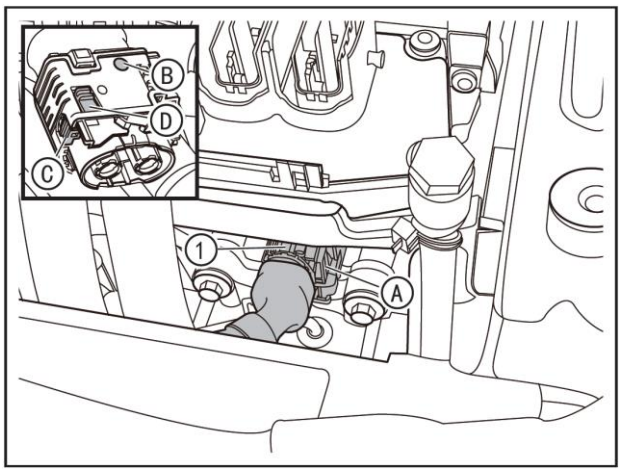
- Remove 4 fixing bolts (1) (M8×25) of the motor control unit with a 13mm socket.

⚠ CAUTION

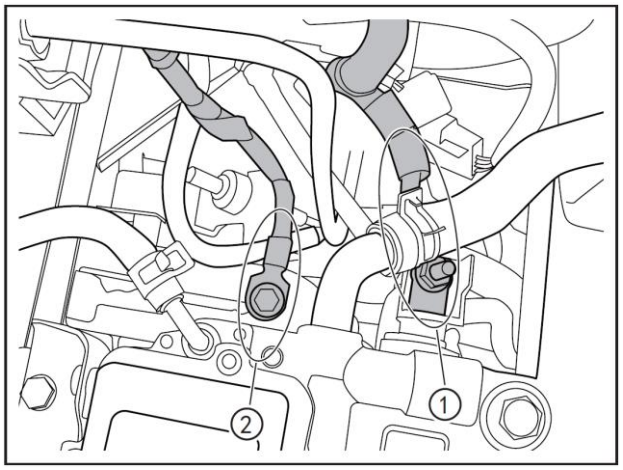
- **Remove the fixing bolts of the motor control unit at first, so that the motor control unit can be moved as demanded to remove the connector and water pipe.**



- Pull up the clip (A) of release handle for three-phase output cable connector of motor control unit.
- Turn the release handle and disconnect the three-phase output cable connector (1) of motor control unit.
- Unlock the clip (B) of connector opening switch.
- Press the button (D) and button (E) on the opening switch (C), and meanwhile move the opening switch (C), and then disconnect the connector (2).

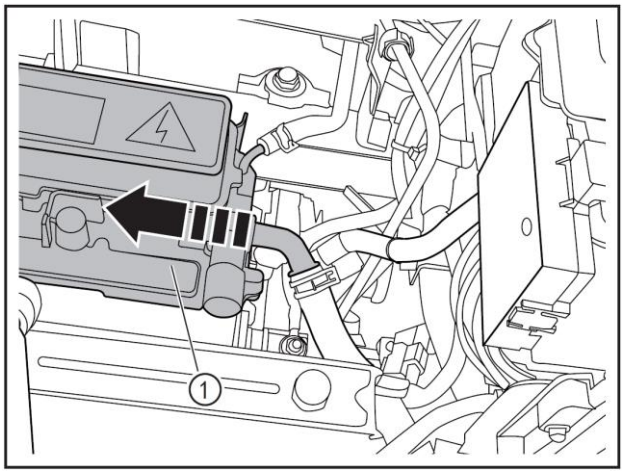


- Unlock the clip (A) of connector opening switch.
- Press the button (C) and button (D) on the opening switch (B), and meanwhile move the opening switch (B), and then disconnect the connector (1).

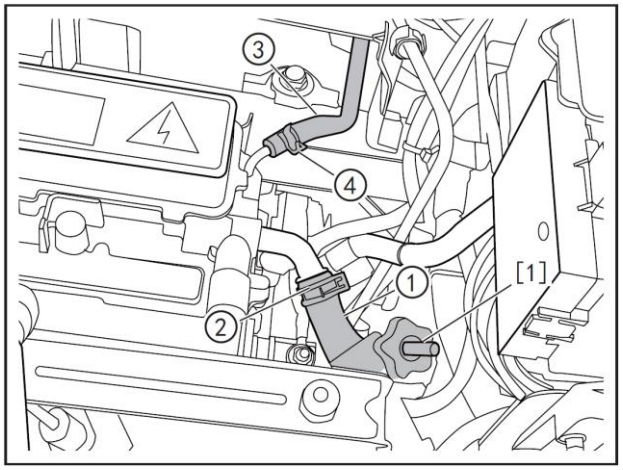


⚠ CAUTION

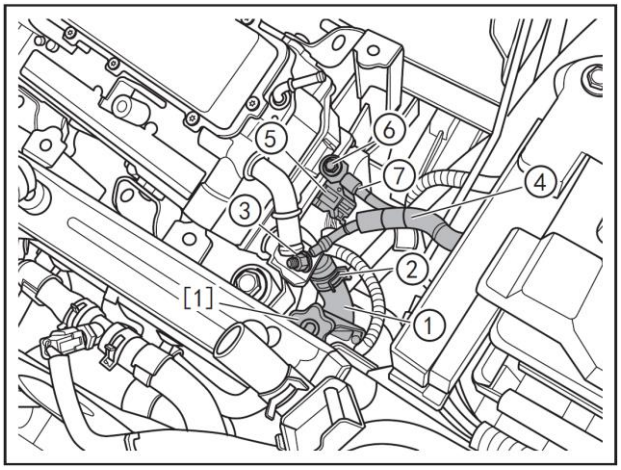
- **After removing the positive wire harness (1) and the negative wire harness (2), prevent the positive wire harness from contacting the negative ground, and for this purpose, it is recommended to wrap the joint with the insulating tape.**



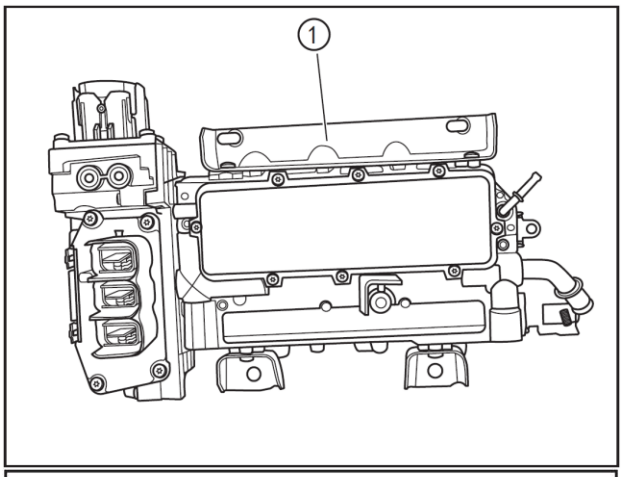
- Move the motor control unit (1) slightly to the left.
- Make room for the removal of pipes and connectors.



- Clamp the orifice of the motor control unit water outlet pipe (1) with the hose clamp pliers (BF0108A)[1].
- Remove the motor control unit water outlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the motor control unit water outlet pipe (1).
- Remove the clamp (4) of ventilation pipe (3) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the ventilation pipe (3).

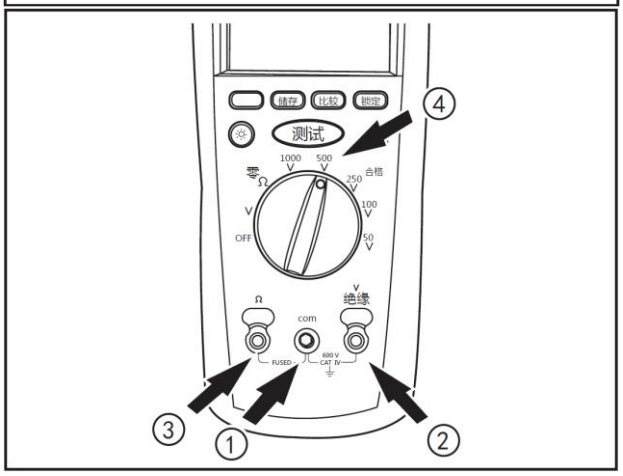


- Clamp the orifice of the motor control unit water inlet pipe (1) with the hose clamp pliers (BF0108A) [1].
- Remove the motor control unit water inlet pipe clamp (2) with the water hose clamp removal and refitting pliers (BF0109).
- Disconnect the motor control unit water inlet pipe (1).
- Remove the fixing nut (3) of ground wire harness of battery positive cable with the 13mm socket.
- Disconnect the battery positive cable ground wire (4).
- Disconnect the motor control unit connector (5).
- Remove the fixing nut (6) of ground wire harness of battery negative cable with the 10mm socket.
- Disconnect the ground wire harness (7) of negative cable.
- Remove the motor control unit (1).



CAUTION

- **Be careful not to scratch and damage the wire harness and pipes when taking out the motor control unit.**
- **Pay attention to draining the coolant from the water pipe of the motor control unit before taking out the control unit, so as to prevent the coolant from leaking into the motor control unit.**

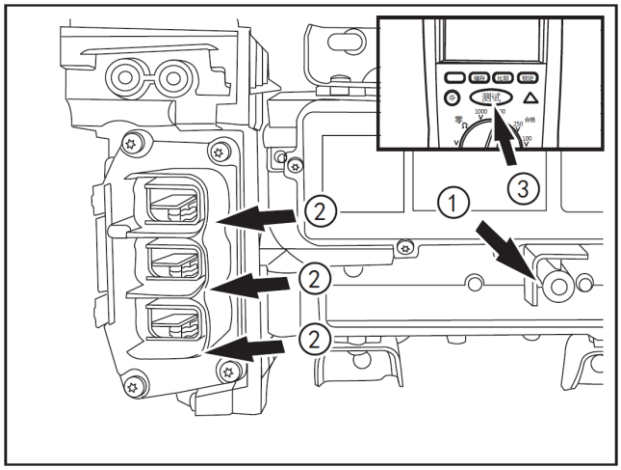


4 - Check

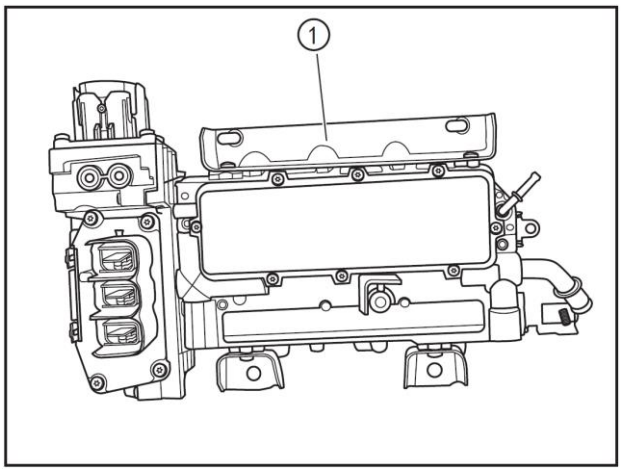
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**



- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the resistance of 3 electrodes (2) of the 3 illustrated connectors to housing with the red probe in sequence.
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

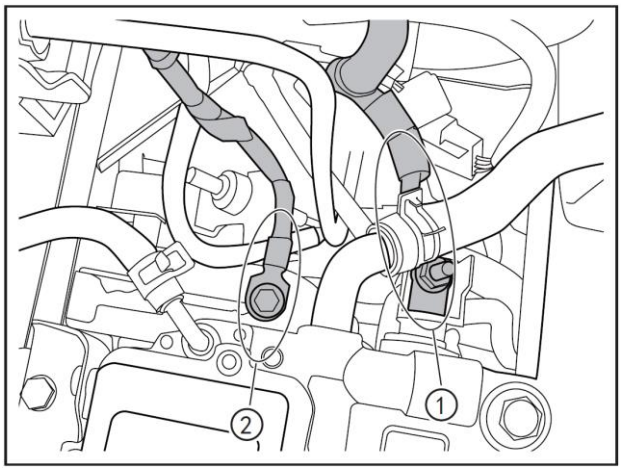


5- Refitting

- Place the motor control unit (1) on the mounting bracket.

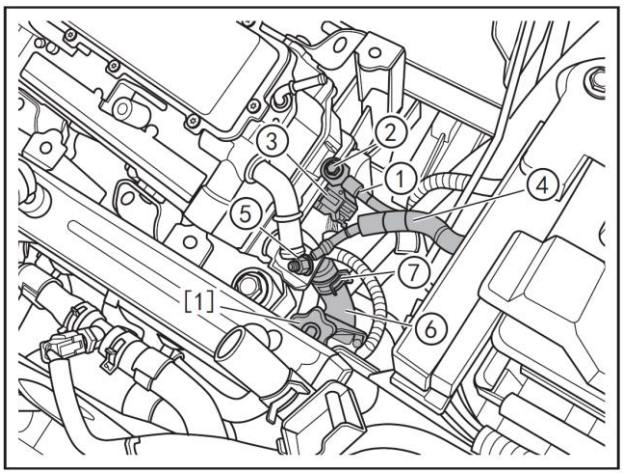
⚠ CAUTION

- **Be careful not to interfere with the wire harness and pipe when placing the motor control unit, so as to avoid damaging the wire harness and pipes during installation.**

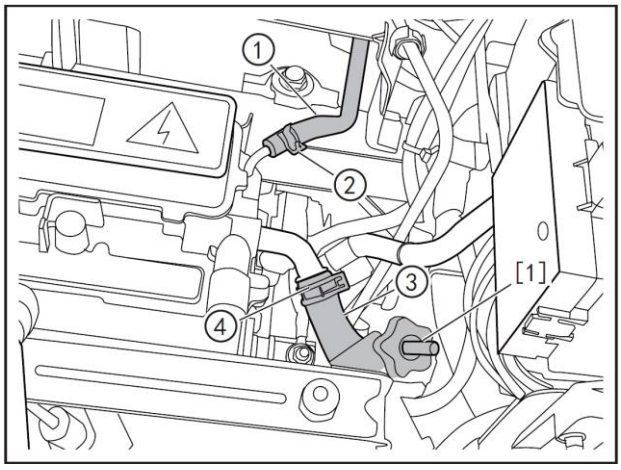


⚠ CAUTION

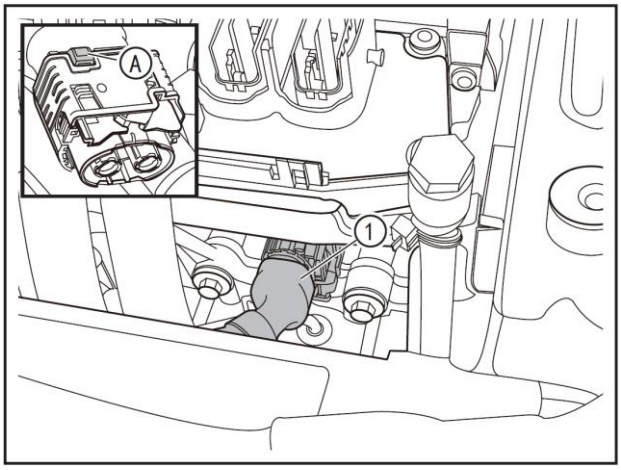
- **It is easy to confuse the positive wire harness (1) with the negative wire harness (2). Therefore, observe the routing path of the wire harnesses before installation; or, you can mark the positive wire harness and negative wire harness with red and black insulating tapes respectively for distinguishing.**



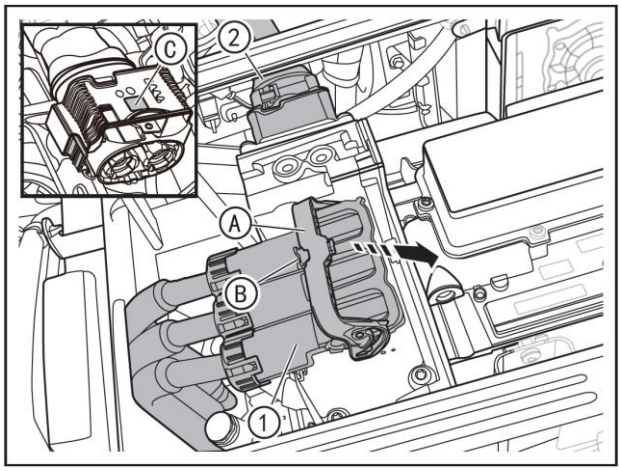
- Refit the ground wire harness (1) of negative cable.
- Tighten the fixing nut (2) of ground wire harness of battery negative cable with the 10mm socket to 21N·m.
- Connect the motor control unit connector (3).
- Refit the ground wire harness (4) of battery positive cable.
- Tighten the fixing nut (5) of ground wire harness of battery positive cable with the 13mm socket to 21N·m.
- Insert the motor control unit water inlet pipe (6) into the joint on the motor control unit.
- Refit the motor control unit water inlet pipe clamp (7) in place with the water hose clamp removal and refitting pliers (BF0109).
- Take down the hose clamp pliers (BF0108A) [1].



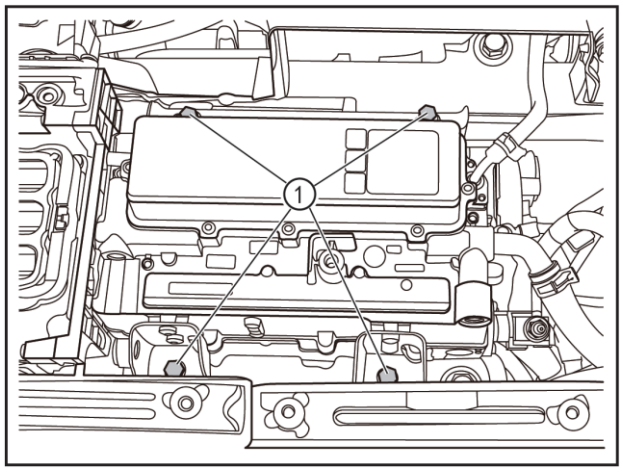
- Refit the ventilation pipe (1) onto the motor control unit vent.
- Refit the clamp (2) of ventilation pipe (1) in place with the water hose clamp removal and refitting pliers (BF0109).
- Refit the motor control unit water outlet pipe (3) into the joint on the motor control unit.
- Refit the clamp (4) of motor control unit water outlet pipe (3) in place with the water hose clamp removal and refitting pliers (BF0109).
- Take down the hose clamp pliers (BF0108A) [1].



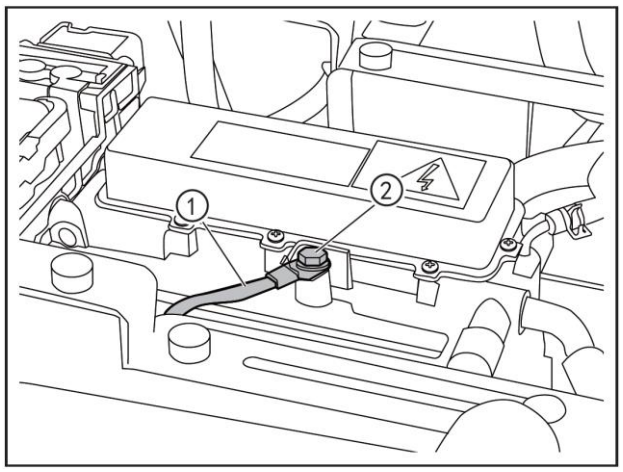
- Connect the connector (1) to the motor control unit with mounting holes aligned, and move the clip (A) to lock the connector.



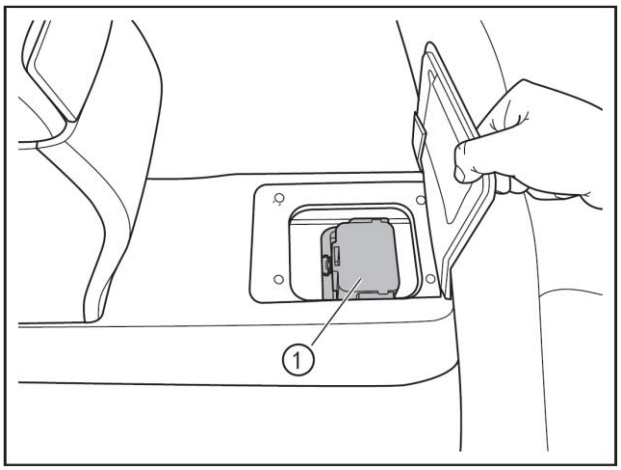
- Turn the release handle (A) for three-phase output cable connector of motor control unit following the direction as shown to lock the connector (1).
- Press down the clip (B) of opening switch for three-phase output cable connector of motor control unit.
- Push the opening switch (C) of connector (2) to lock the connector.



- Tighten 4 fixing bolts (1) (M8×25) of the motor control unit with a 13mm socket to the specified torque of 25±1.25N·m.



- Refit the ground wire harness (1) on the motor control unit.
- Tighten ground wire fixing bolts (2) of the motor control unit with a 13mm socket to the specified torque of 25N·m.
- Refit the charger. (Refer to "Removal and Refitting of Charger" in “Starting and Charging System”.)
- Refit the high voltage distribution box. (Refer to "Removal and Refitting of High Voltage Distribution Box” in "High Voltage Distribution Box")
- Add appropriate coolant.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

Removal and Refitting of MCU-integrated DC-DC Converter

1 - Protection

Place protective pads at following locations:

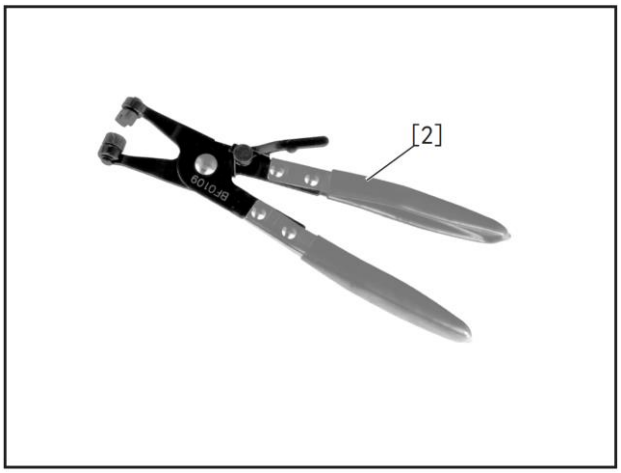
- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

⚠ CAUTION

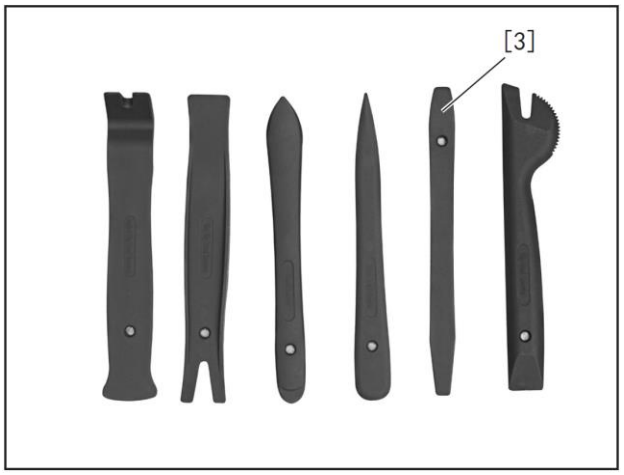
- **Always wear insulated gloves and use insulated tools for all operations.**

2 - Recommended tools

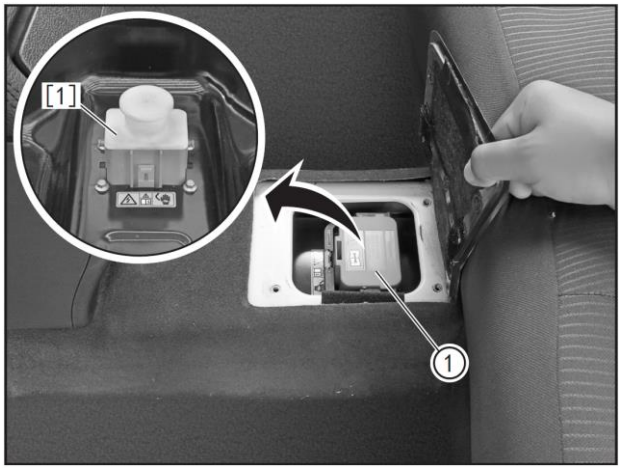
- Traction battery service switch plug (E700102)[1].



- Water hose clamp removal and refitting pliers (BF0109) [2].



- Interior trim removal tool (BF1102) [3].

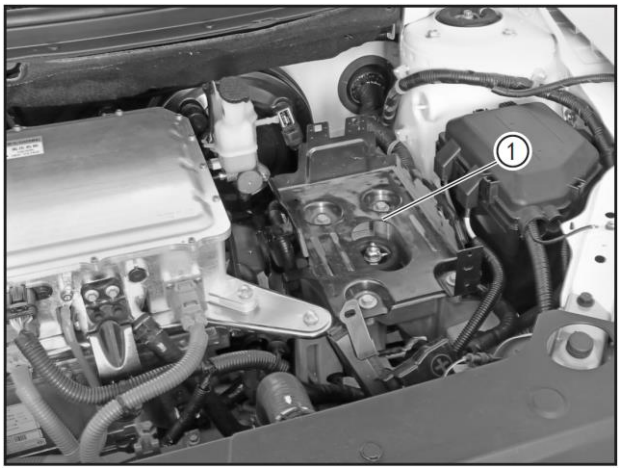


3 - Removal

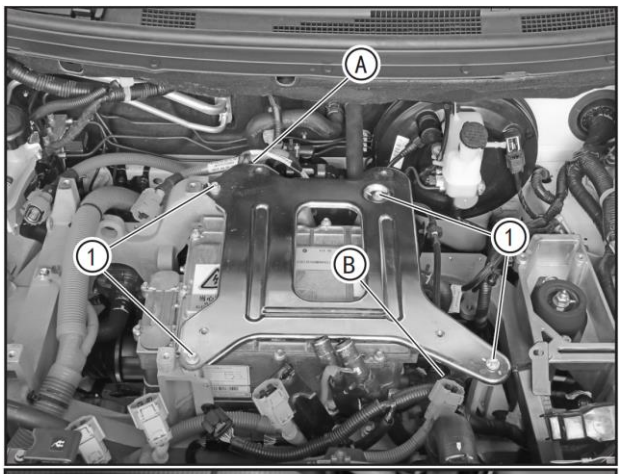
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

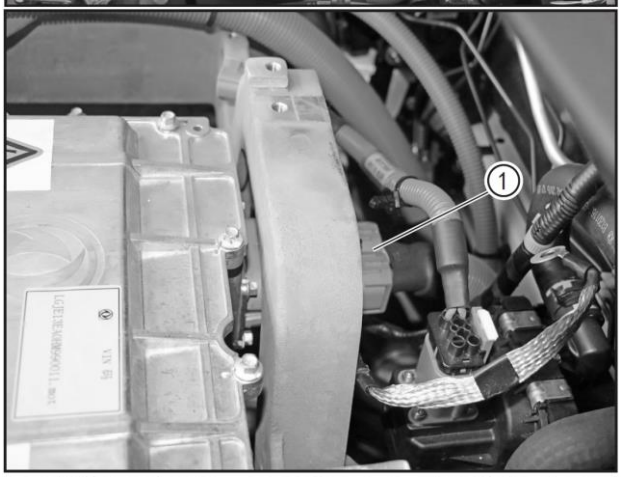
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



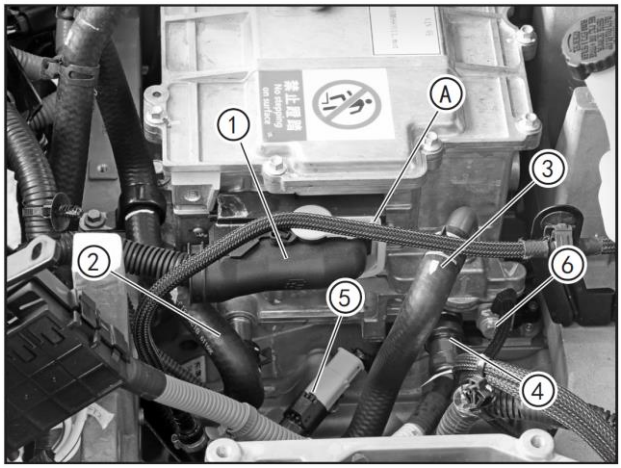
- Drain the coolant. (Refer to "Change of Motor Coolant" in “Motor Cooling System”)
- Remove the battery. (Refer to "Removal and Refitting of Battery" in “Starting and Charging System”.)
- Remove the battery bracket (1). (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")



- Remove the high voltage distribution box. (Refer to "Removal and Refitting of Battery" in this section).
- Remove the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in this section).
- Use the interior trim removal tool (BF1102) [3] to pry the wire harness clip (A) open.
- Use the interior trim removal tool (BF1102) [3] to pry the wire harness connector (B) open.
- Remove the fixing bolt (3) of the on-board charger bracket with the 10mm socket.



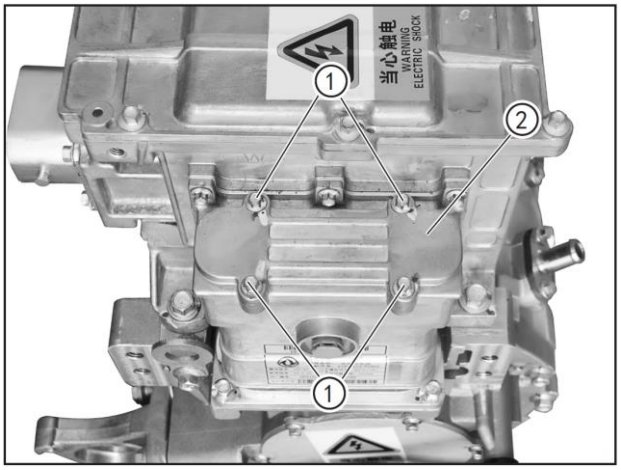
- Disconnect the DC high voltage connector (1) at the back of the motor control unit.



- Press the locking clip of MCU signal connector, and open the connection clip (A) outwards to release the connector (1). Remove the MCU-integrated DC-DC converter water inlet pipe clamp with the water hose clamp removal and refitting pliers (BF0109), and disconnect the water inlet pipe (2).
- Remove the MCU-integrated DC-DC converter water outlet pipe clamp with the water hose clamp removal and refitting pliers (BF0109), and disconnect the water inlet pipe (3).
- Rotate counterclockwise to disconnect the connecting cable (4) from the MCU-integrated DC-DC converter.
- Open the locking clip of connector (5) and disconnect the connector.
- Use the 13mm socket to remove the fixing bolt (6) (M8 × 16) of the motor control unit ground wire harness.

⚠ CAUTION

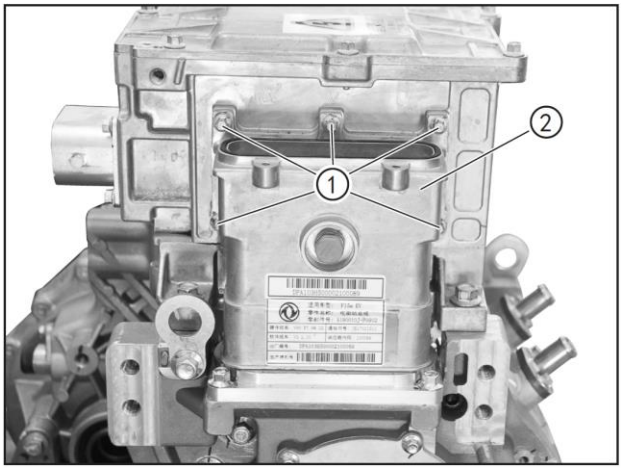
- **Pull out the motor control unit connector (4) after the water inlet pipe and water outlet pipe are disconnected, so as to prevent the coolant from leaking into the motor control unit.**



- Use the 7mm socket to remove the 4 fixing bolts (1) (M5 × 12) of upper protective cover of MCU-integrated DC-DC converter, and then take down the upper protective cover (2).

⚠ CAUTION

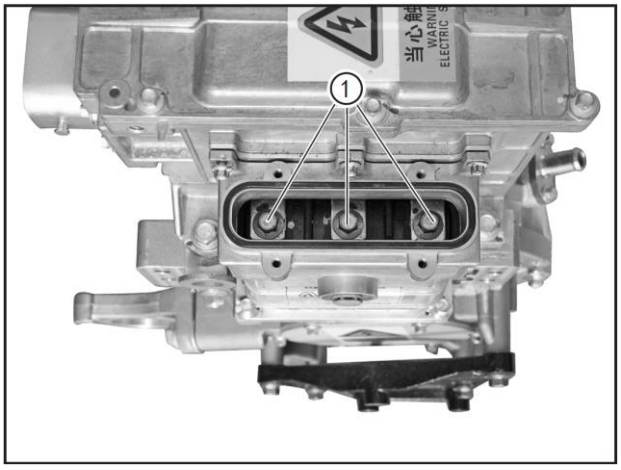
- **Discard the old seal and replace it with a new one.**



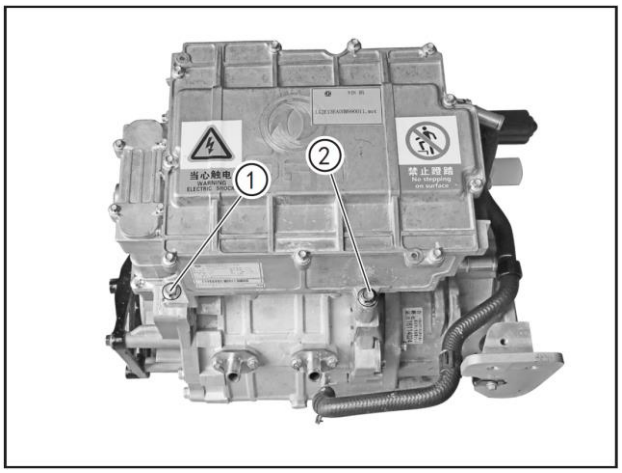
- Use the 7mm socket to remove the 5 fixing bolts (1) (M5 × 16) of protective cover of MCU-integrated DC-DC converter.
- Take down the protective cover (2).

⚠ CAUTION

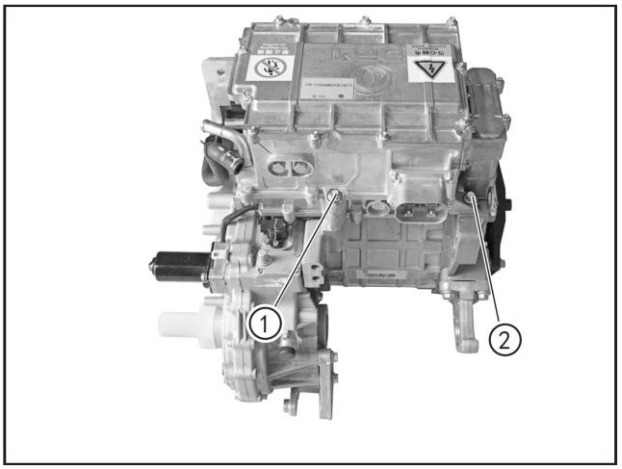
- **Discard the old seal and replace it with a new one.**



- Remove the fixing bolts (1) (M8×16) of the connecting wire between the MCU-integrated DC-DC converter and the motor with the 10mm socket.



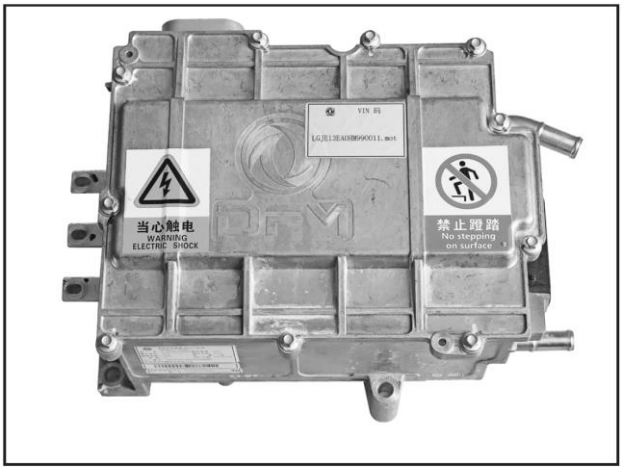
- Remove the front fixing bolt (1) (M10 × 35) and fixing bolt (2) (M10 × 75) of the MCU-integrated DC-DC converter with the 13mm socket.



- Remove the fixing bolt (1) (M10×75) and fixing bolt (2) (M10×35) of motor with the 13mm socket, and lift up the MCU-integrated DC-DC converter (2) and then pull it out.

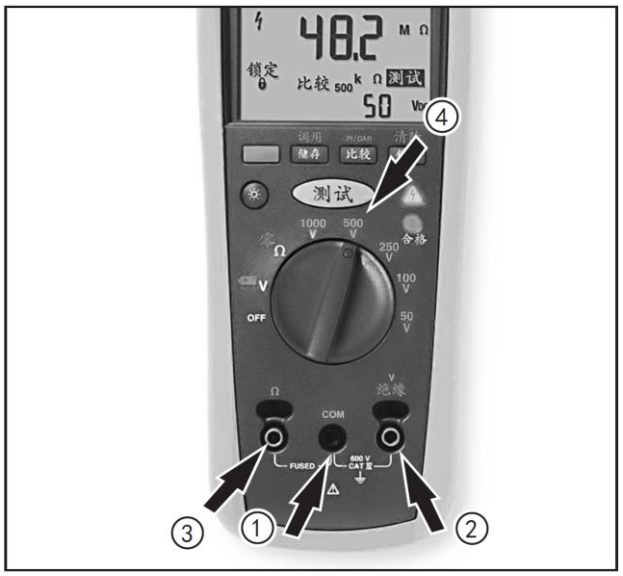
⚠ CAUTION

- **Handle the MCU-integrated DC-DC converter gently when taking it out and place it in a dry and well-ventilated place, otherwise the motor control unit will be damaged.**



4-Appearance check

- Check the appearance of the MCU-integrated DC-DC converter for damage and reliable component sealing.

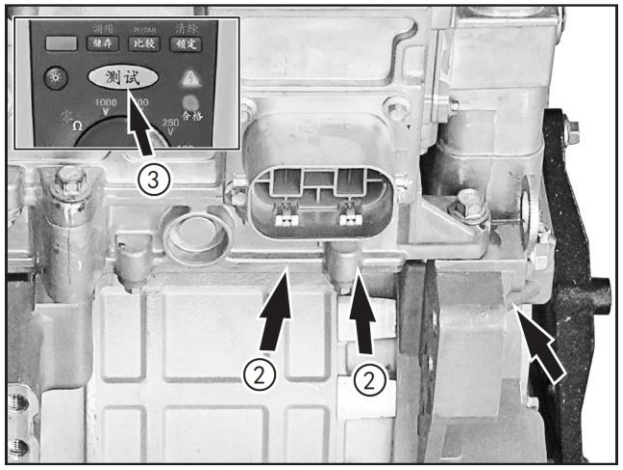


5- Insulation inspection

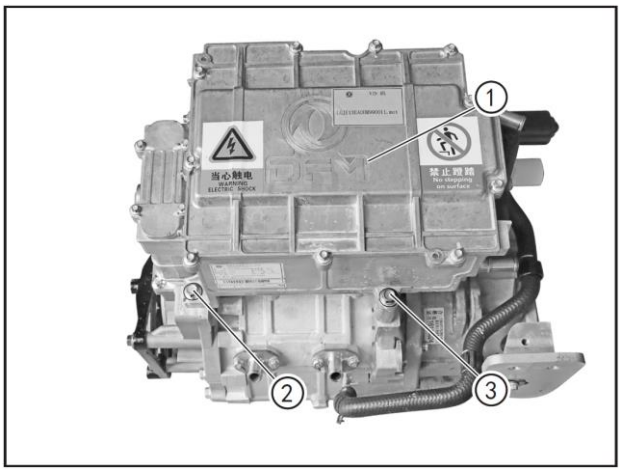
- Use the insulation resistance tester, connect the black probe to COM end (1) of the insulation resistance tester, one red probe to the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**

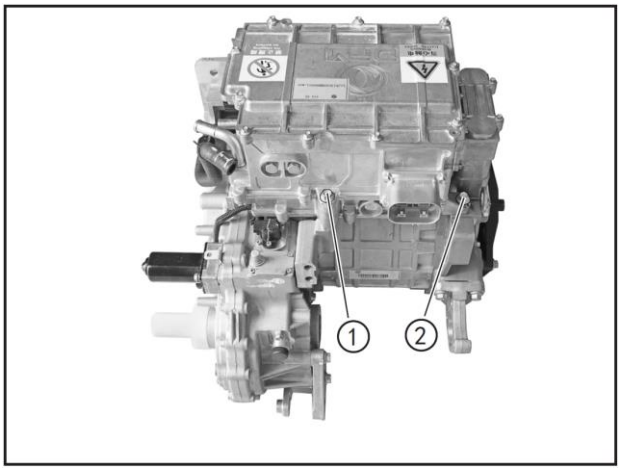


- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the resistance of 2 electrodes (2) of the 2 illustrated connectors to housing with the red probe in sequence.
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

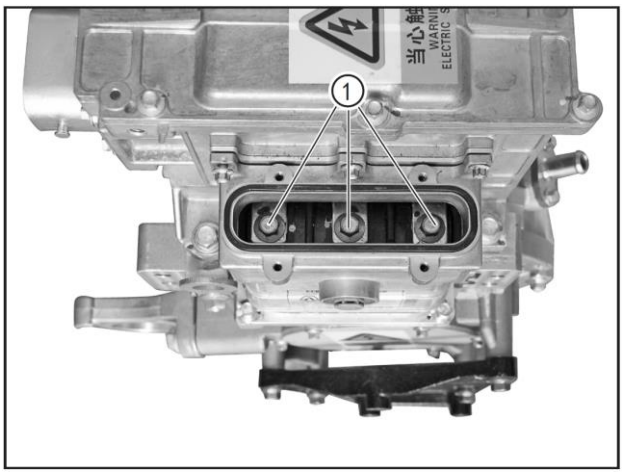


6- Refitting

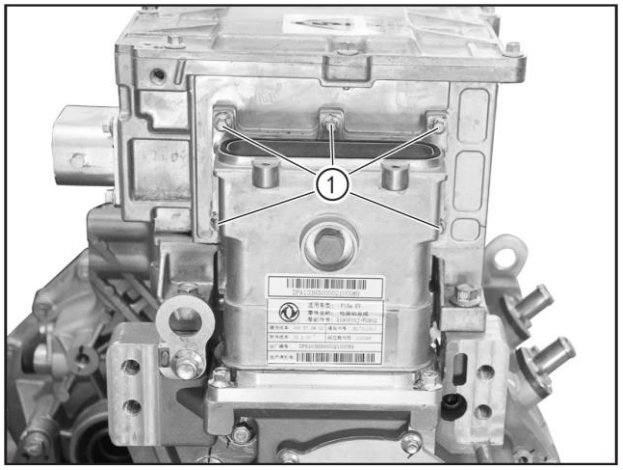
- Install the MCU-integrated DC-DC converter (1) in place after alignment, refit the 4 fixing bolts, and then use the 13mm socket to tighten the front fixing bolts (2) (M10 × 35) and (3) (M10 × 75) to 44.5N·m, and the make mark with a marker.



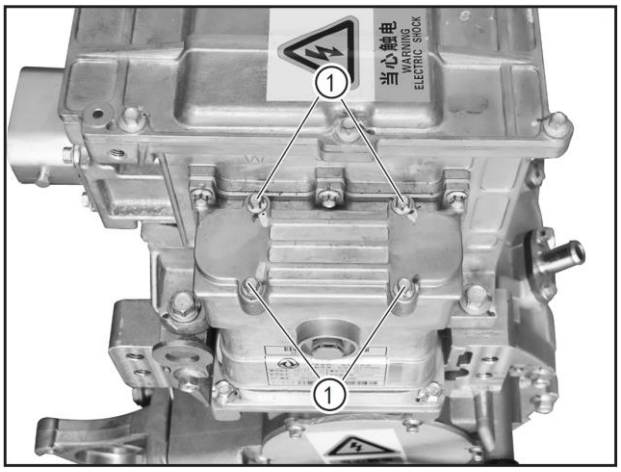
- Use the 13mm socket to tighten the fixing bolts (1) (M10 × 75) and (2) (M10 × 35) to 44.5N·m, and the make mark with a marker.



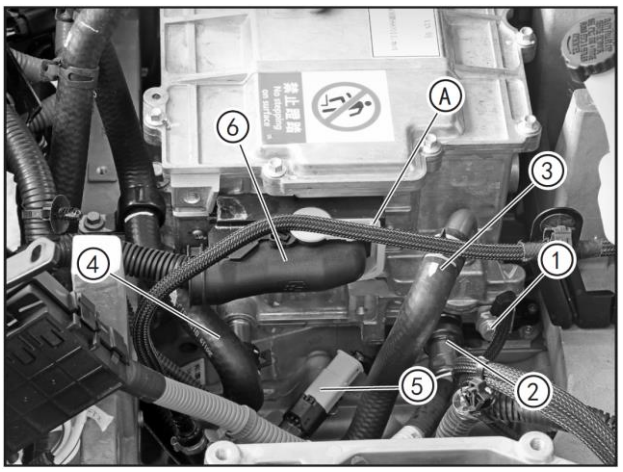
- Refit the fixing bolt (1) (M8 × 16) of the connecting cable between the motor and the MCU-integrated DC-DC converter, and tighten it with the 10mm socket to 25 ± 3N·m.



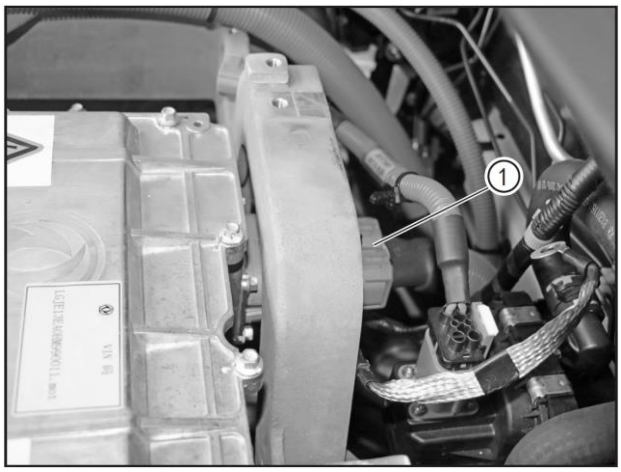
- Refit the fixing bolt (1) (M5×12) of upper protective cover of MCU-integrated DC-DC converter, and then tighten it with the 7mm socket to 5.6N·m.



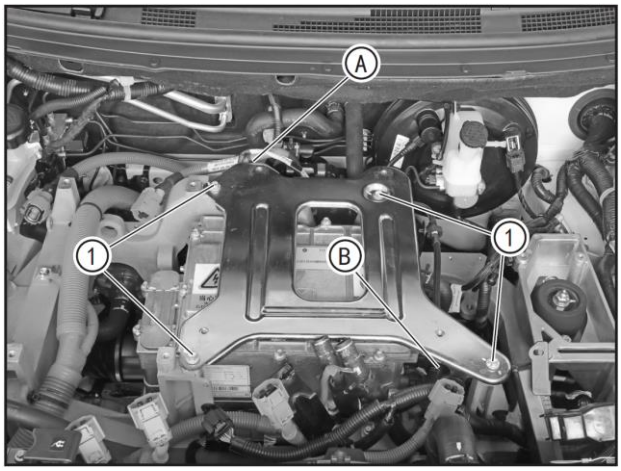
- Refit the side fixing bolts (1) (M5 × 16) of MCU-integrated DC-DC converter protective cover with the 7mm socket to 5.6N·m.



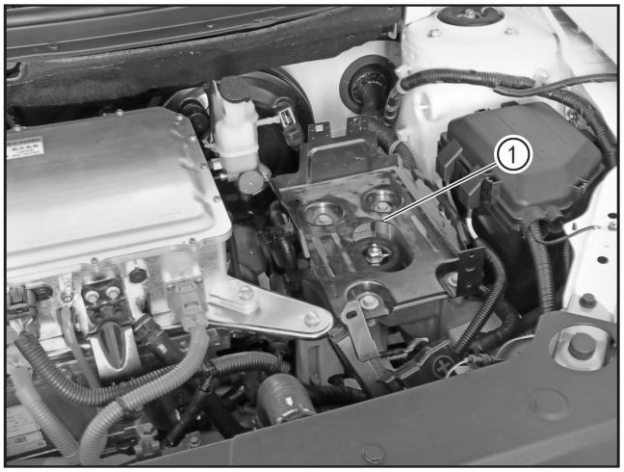
- Refit the fixing bolt (1) of the ground wire harness of motor control unit, and tighten it with the 13mm socket to 20 ± 3N·m.
- Align the end of the MCU-integrated DC-DC converter connecting wire harness (2) with the motor end, and tighten the end clockwise.
- Refit the MCU-integrated DC-DC converter water outlet pipe (3), and then move the clamp to the mounting position with the water hose clamp removal and refitting pliers (BF0109) [2].
- Refit the MCU-integrated DC-DC converter water inlet pipe (4), and then move the clamp to the mounting position with the water hose clamp removal and refitting pliers (BF0109) [2].
- Refit the connector (5) and clamp it firmly.
- Refit the connector (6), and turn the clip (A) to lock the connector.



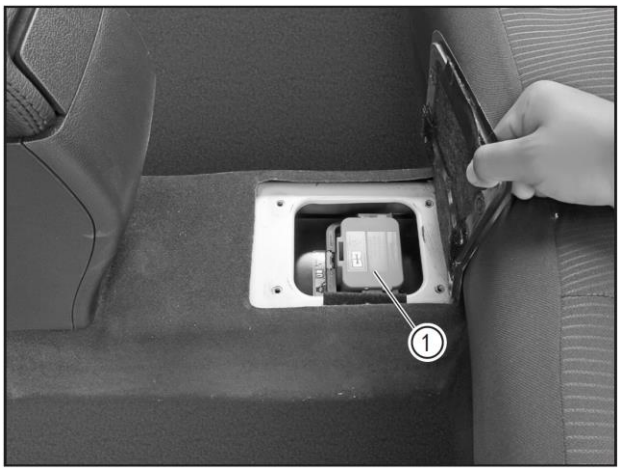
- Refit the connector (1) at the back of the MCU-integrated DC-DC converter.



- Align the on-board charger bracket with the mounting holes, refit the fixing bolt (1) (M8 × 25), and tighten it with the 10mm socket.
- Refit the wire harness clip (A).
- Refit the wire harness connector (B).
- Refit the high voltage distribution box. (Refer to "Removal and Refitting of Battery" in this section).
- Refit the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in this section).



- Refit the battery bracket (1). (Refer to "Removal and Refitting of Battery Bracket" in "Starting and Charging System")
- Install the battery. (Refer to "Removal and Refitting of Battery" in "Starting and Charging System".)
- Add the coolant. (Refer to "Change of Motor Coolant" in "Motor Cooling System")



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

August 2018

4. Powertrain
4.1 Motor Makeup
4.2 Motor Cooling System
4.3 Motor Control System
4.4 Transmission Makeup
4

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

4.4

Transmission Makeup

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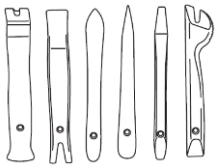
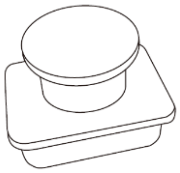
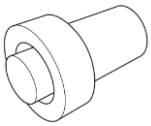
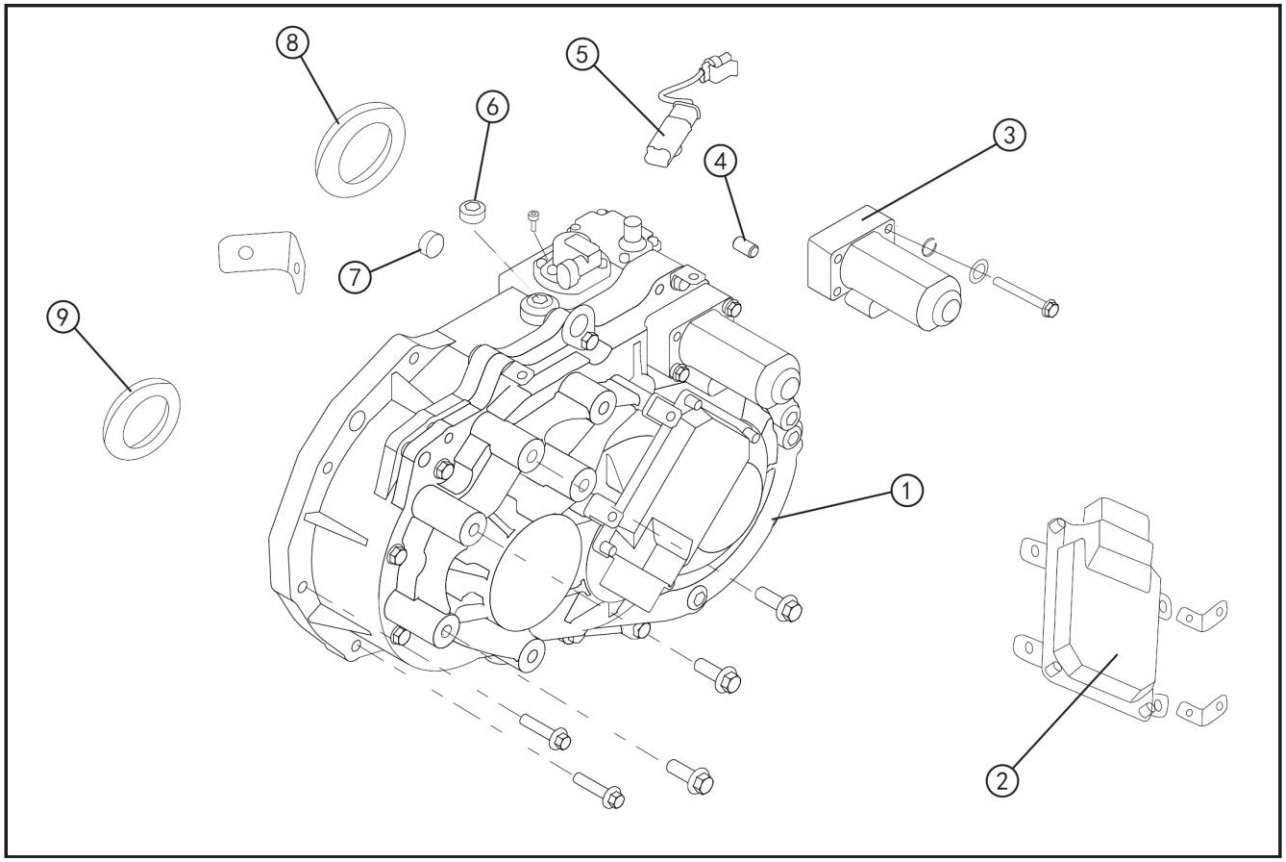
- Before removing the shift cable & shift control mechanism assembly, always place the shift lever in P for the convenience to align the mark on the gear selector switch during installation.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF1102	Interior trim removal tool		For removing interior trims and wire harness clips, etc.
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
E700421	Transmission input shaft oil seal refitting tool		For refitting the transmission input shaft

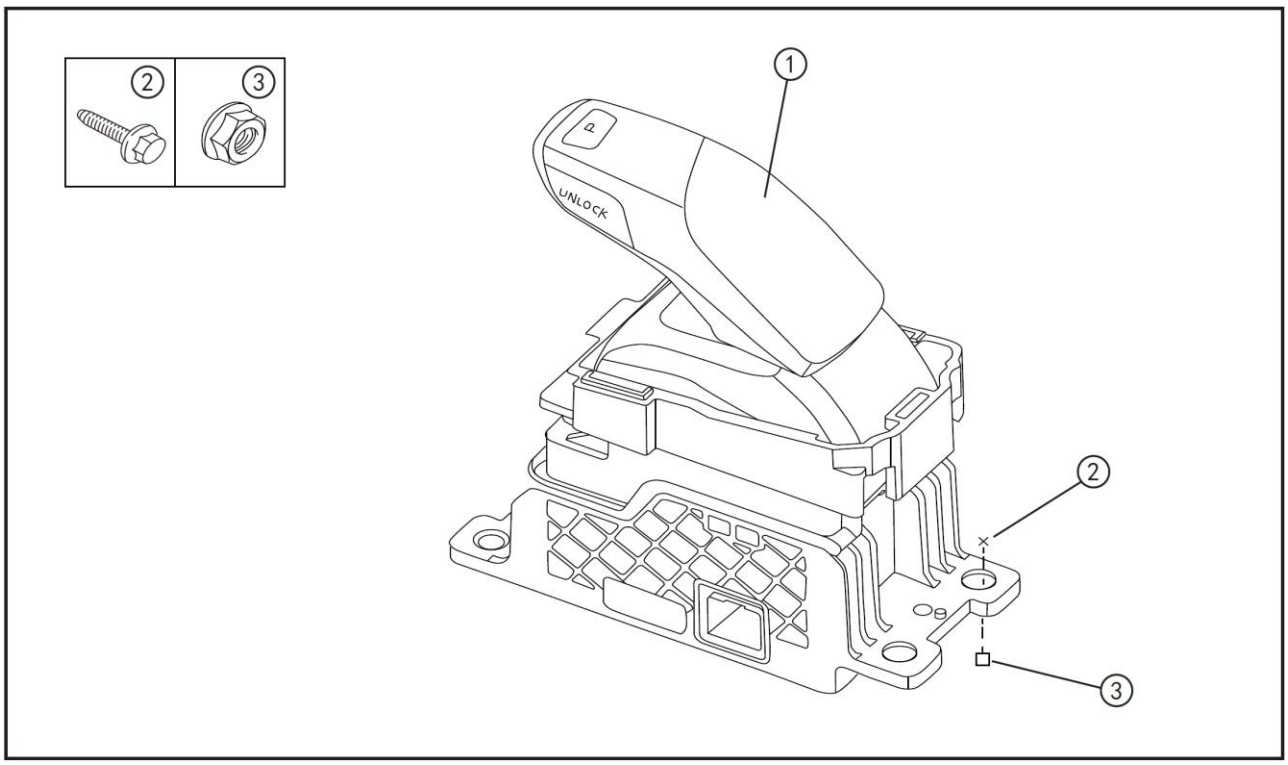
Structure and Features

Transmission Assembly (Independent Motor)



1.	Transmission assembly	4.	Dowel pin	7.	Drain plug
2.	PCU	5.	Transmission wire harness	8.	Differential oil seal
3.	PCU motor	6.	Oil level plug	9.	Input shaft oil seal

Shift Lever Assembly (Independent Motor)



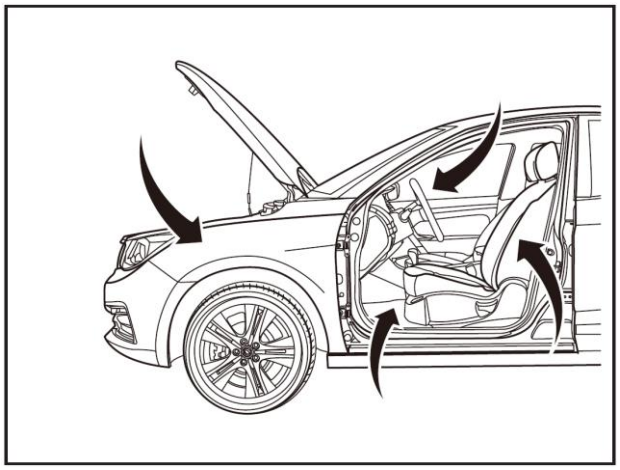
1. Shifter assembly	2. Bolt with spring washer	3. Locking nut

DTCs of Electronic Shift Lever

DTC	Description	Possible causes	Recommended countermeasures
U0073	CAN bus	Sent error counts equal to or greater than 255	-
U0074	All nodes are lost.	Improper wire harness contact, or CAN bus short to power/ground	Measuring the circuit on and off.
U0293	VCU fault	VCU disconnected, or VCU fault	Repair VCU
U0121	ABS/ESC fault	ABS/ESP disconnected or ABS/ESP fault	Repair ABS/ESP
U0011	Sensor failed	Sensor is damaged or its circuit is short/ / open circuit	Replace the sensor or repair its circuit.
U0012	P-gear button blocking	Button blocking, or button damage	Replace the shift lever assembly.
U0013	Unlock button sticking	Button blocking, or button damage	Replace the shift lever assembly.
U0014	Power supply voltage	Battery feed or power supply line fault	Overhaul the power supply line.
U0015	Power supply undervoltage	Battery feed or power supply line fault	Overhaul the power supply line.
U0016	Inconsistent brake signal of bus and hardwire	Signal circuit fault	Overhaul the signal circuit.

Transmission Control Unit Data Stream

Name of data flow	Value	Units
PCU rated voltage	12	V
PCU operating voltage range	6～18	V
P- gear controller operating current (no load)	≤500	mA

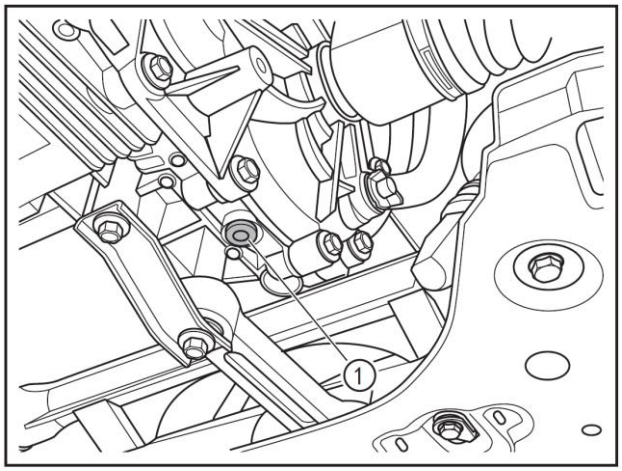


Draining and Adding of Transmission Oil (Continental Motor)

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



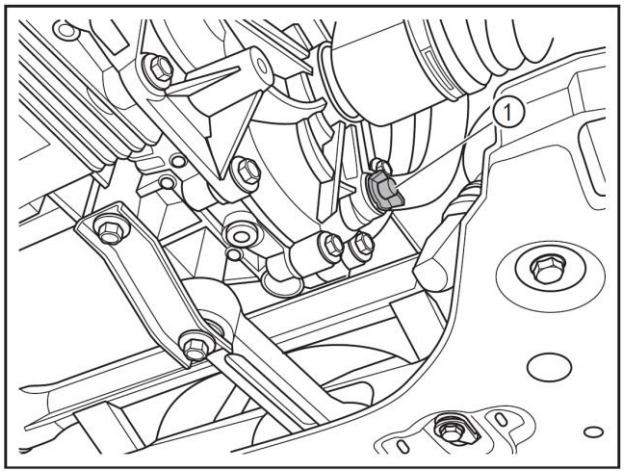
2-Draining

⚠ CAUTION

- **Always wear insulated protection equipment for all operations.**
- **Lift the vehicle, confirm that it is in a level condition, and place a collecting basin under it.**
- **Remove the transmission drain bolt (1) with 8mm Allen wrench, and then drain off the transmission oil until the oil drops out.**
- **Refit the drain bolt (1).**

⚠ CAUTION

- **Before changing the transmission oil, check the transmission for obvious leakage first, and if any, repair the leaking part first.**

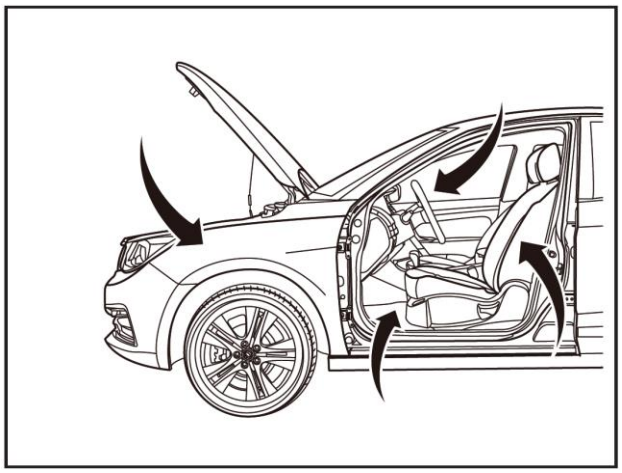


3-Filling

- Unscrew the filler plug (1) counterclockwise.
- Fill the transmission with new oil through the hand-pressed oil filler (filling amount: 0.6±0.02L).
- After oiling, tighten the filler plug, and check for transmission oil leakage.

⚠ CAUTION

- **When adding transmission oil, insert the funnel into the transmission filler tube such that a small clearance is retained to guarantee outflow of air.**
- **Always use the transmission oil specified by Dongfeng Passenger Vehicle Company.**

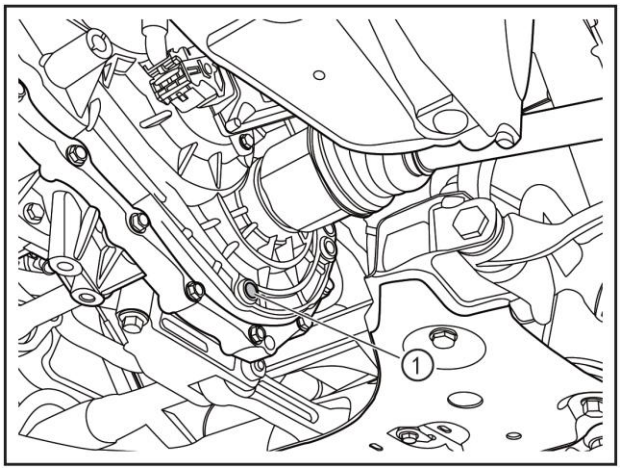


Draining and Adding of Transmission Oil (Independent Motor)

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



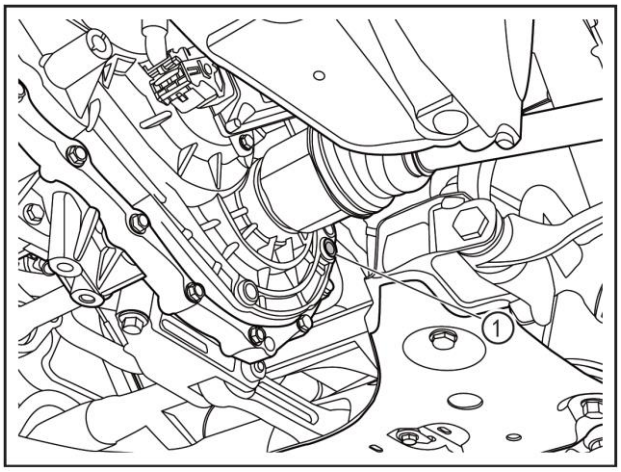
2-Draining

⚠ CAUTION

- Always wear insulated protection equipment for all operations.
- Lift the vehicle, confirm that it is in a level condition, and place a collecting basin under it.
- Remove the transmission drain bolt (1) with the 10mm Allen wrench, and then drain off the transmission oil until the oil drops out.
- Refit the drain bolt (1).

⚠ CAUTION

- **Before changing the transmission oil, check the transmission for obvious leakage first, and if any, repair the leaking part first.**

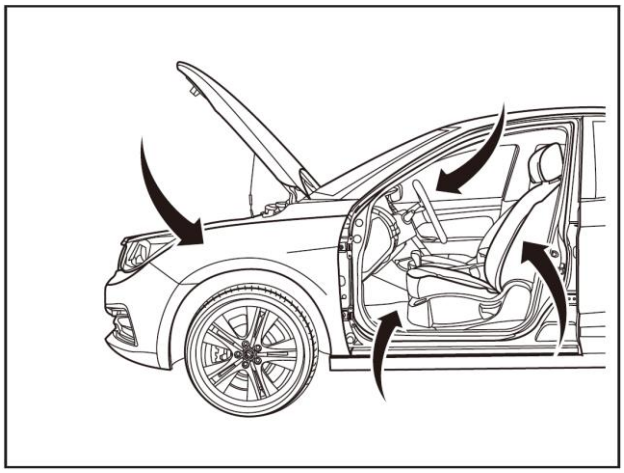


3-Filling

- Undo the drain plug (1) with 10mm Allen wrench.
- Fill the transmission with new oil through the hand-pressed oil filler (filling amount: 1±0.1L).
- After oiling, tighten the filler plug, and check for transmission oil leakage.

⚠ CAUTION

- **When adding transmission oil, insert the funnel into the transmission filler tube such that a small clearance is retained to guarantee outflow of air.**
- **Always use the transmission oil specified by Dongfeng Passenger Vehicle Company.**

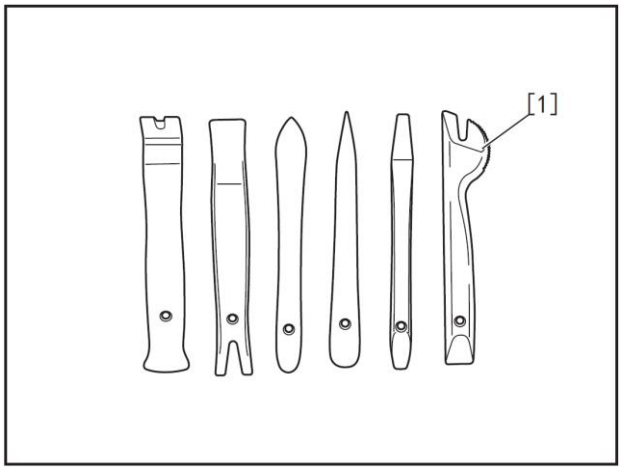


Removal and Refitting of Shift Panel 1

1 - Protection

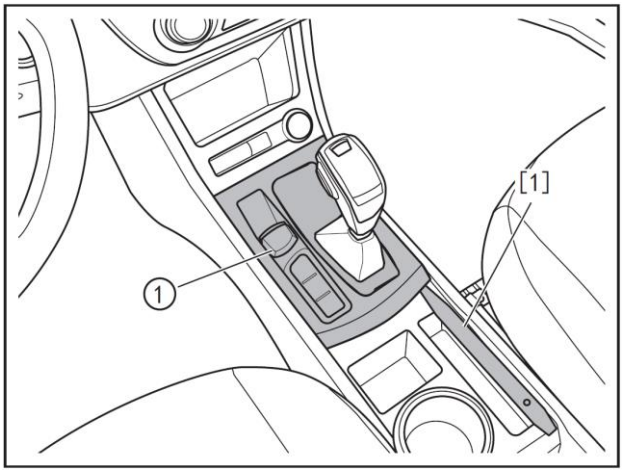
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

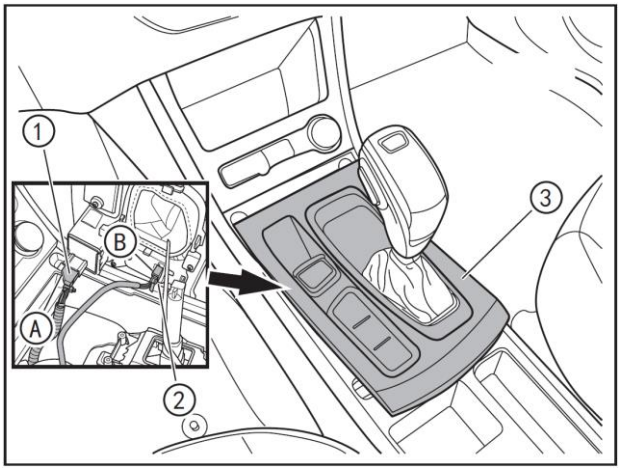


3 - Removal

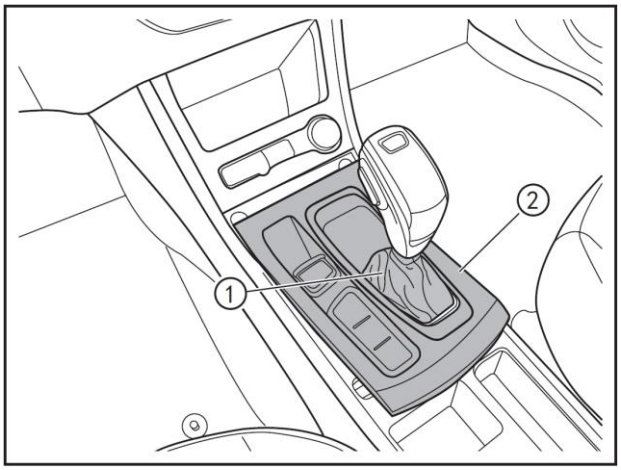
- Turn off the ignition switch, and disconnect battery negative cable.
- Use the interior trim removal tool (BF1102) [1] pry the 4 corners of the shifter cover (1).

⚠ CAUTION

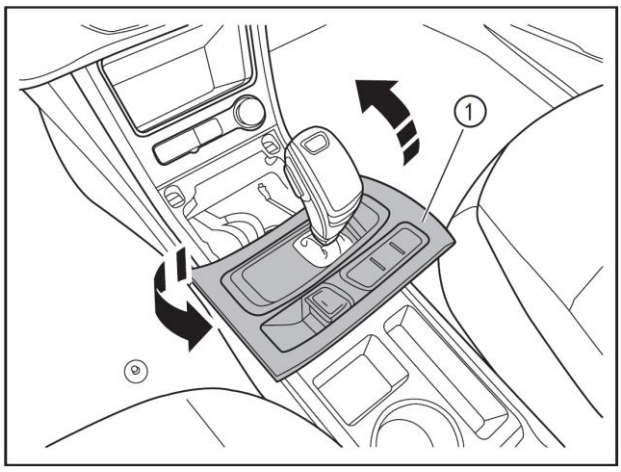
- **When removing and refitting the shift panel, prevent pulling the connecting cable between the shift lever and the shifter. Otherwise, the cable will be broken, making the shifter out of service.**



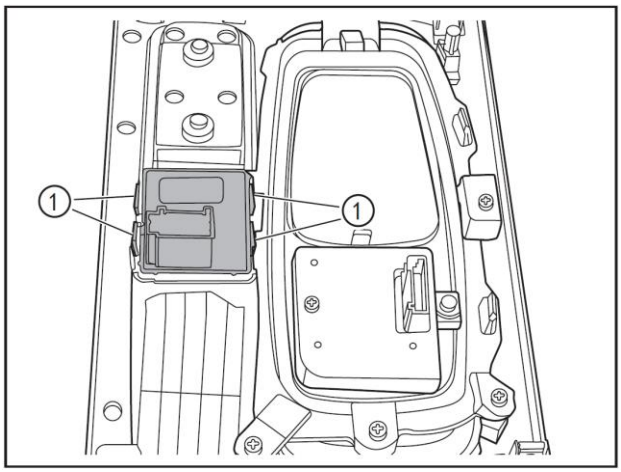
- Press the clip (A) of EPB switch connector and then disconnect the connector (1).
- Lift the clip (B) of shift mechanism connector with the small slotted screwdriver, and then disconnect the connector (2).
- Pull up the shifter cover (3).



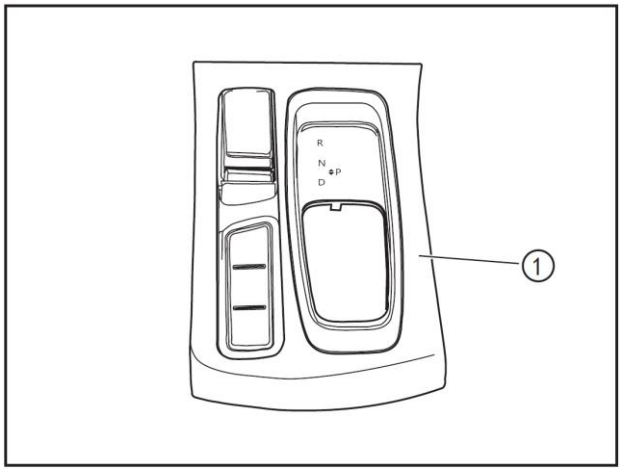
- Detach the shift panel dust cover (1) from the shift panel (2).



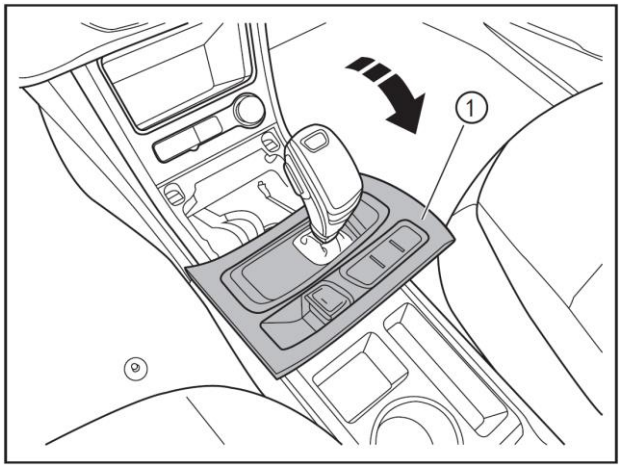
- Rotate the shift panel (1) by 90° and then remove the shift panel by turning it as indicated by the arrow.



- Pry the 4 clips (1) of the EPB switch with the small slotted screwdriver, and then take out the EPB switch.

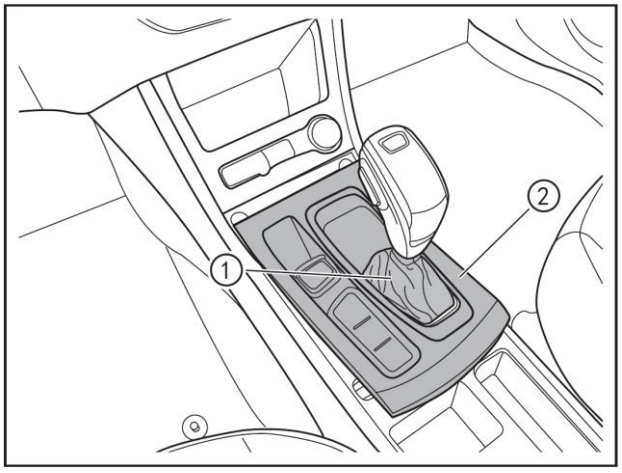


- Remove the shift panel (1).

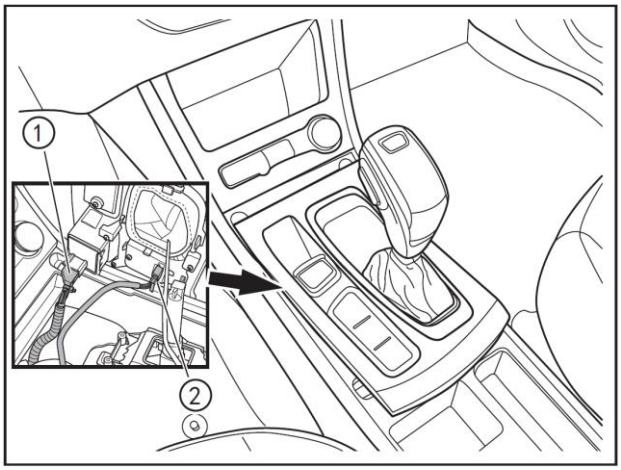


4- Refitting

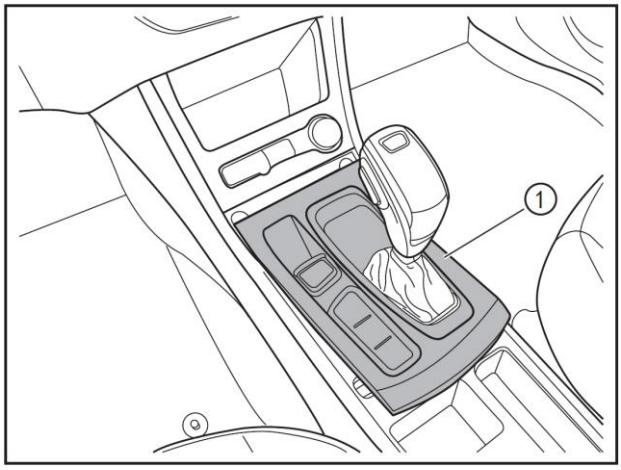
- Place the shift panel (1) by turning it as indicated by the arrow.



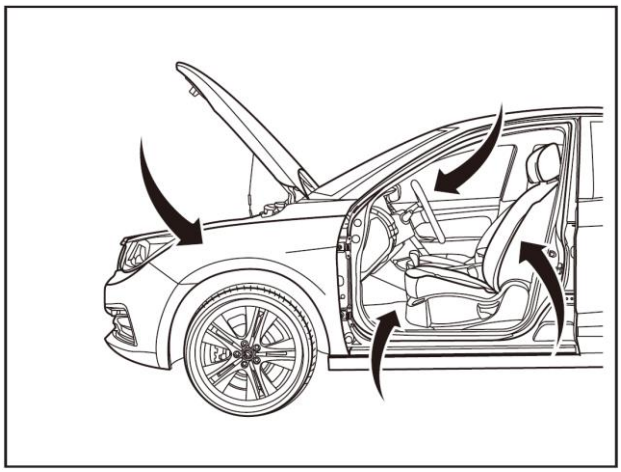
- Snap the dust cover (1) into the 3 grooves on the shift panel (2) securely.



- Refit the EPB switch connector (1), until a “click” which indicates in-place installation is heard.
- Refit the shift mechanism connector (2), until a “click” which indicates in-place installation is heard.



- Refit the shift panel (1) and clamp it securely.

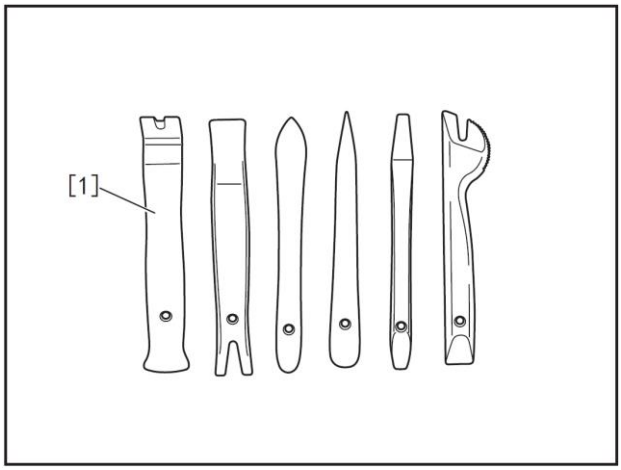


Removal and Refitting of Shift Panel (Premium Version)

1 - Protection

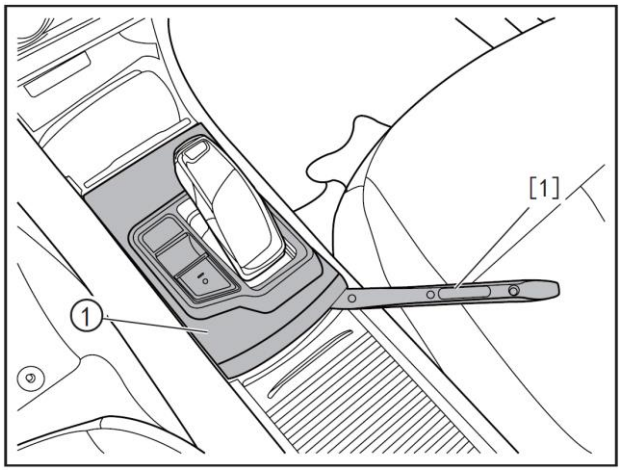
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



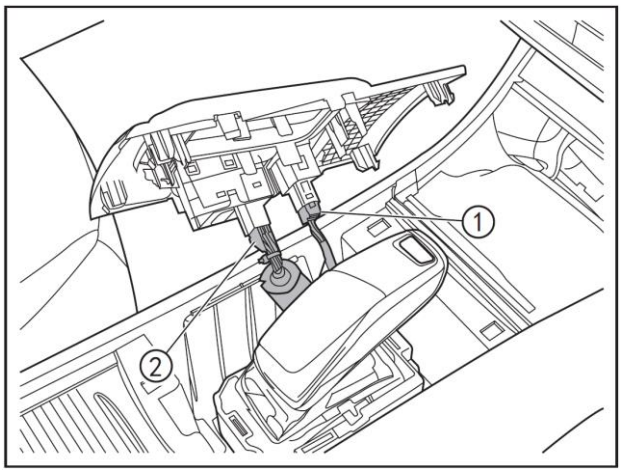
2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

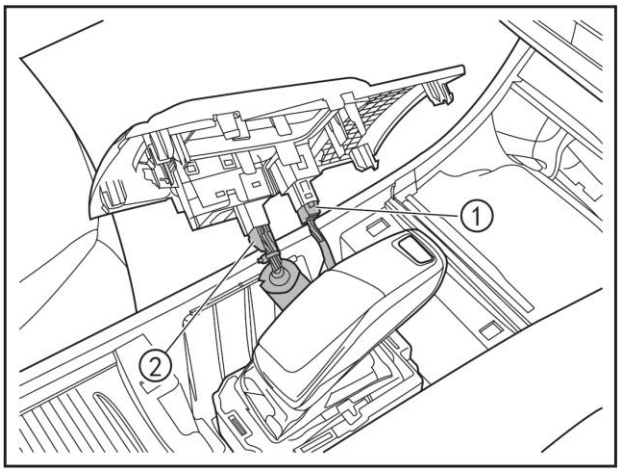


3 - Removal

- Turn the ignition switch to "OFF", and disconnect the battery negative cable.
- Remove the shift panel (1) with the interior trim removal tool (BF1102) [1].

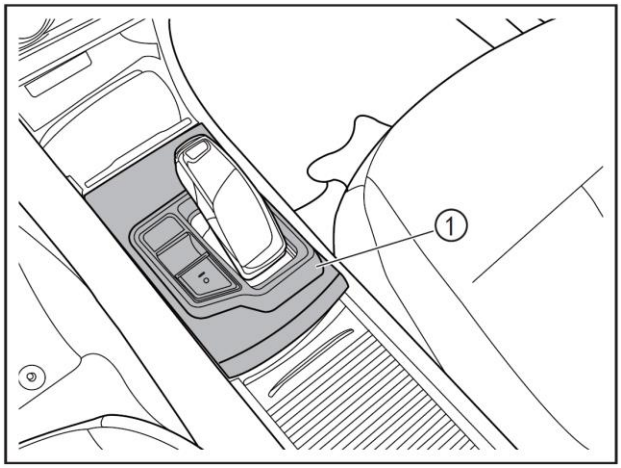


- Press the clips on both ends of the “S”-mode connector and disconnect the “S”-mode connector (1).
- Press the clip of connector and disconnect the EPB connector (2).



4- Refitting

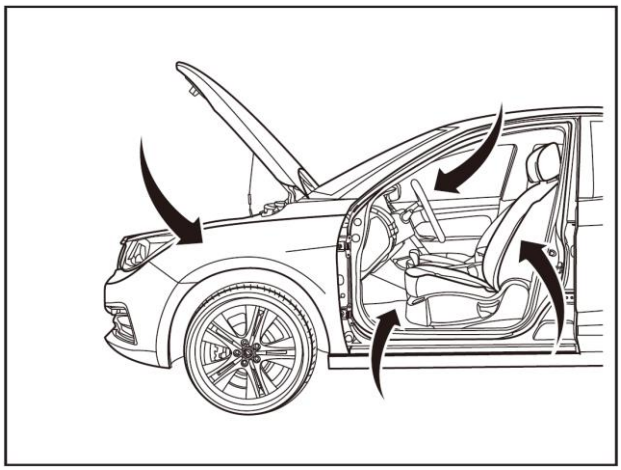
- Connect the shift panel connectors (1) and (2).



- Refit the shift panel (1) to the console.

⚠ CAUTION

- **After the installation is completed, connect the battery negative cable, turn the ignition switch to ON, operate the shift lever assembly, and check that the shift panel display is normal.**

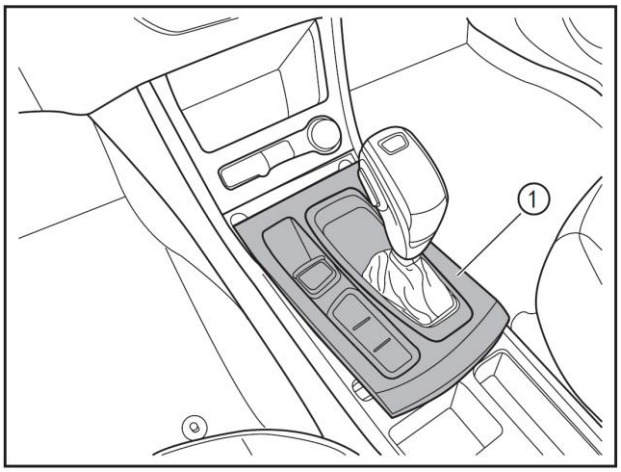


Removal and Refitting of Shift Lever 1

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

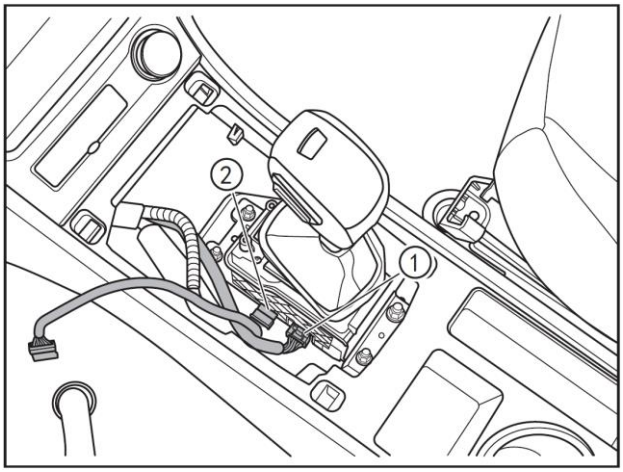


2 - Removal

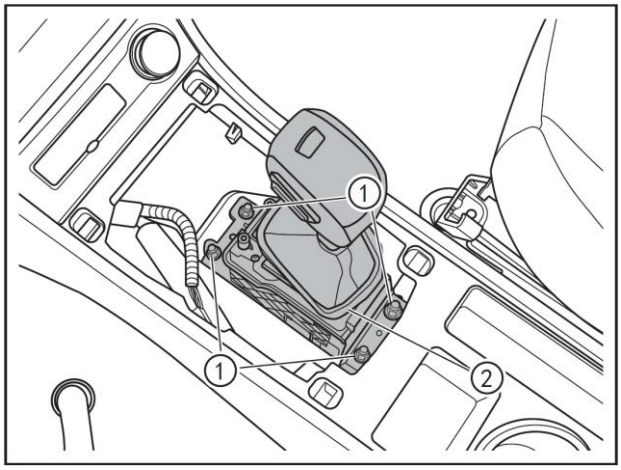
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the shift panel (1). (Refer to "Removal and Refitting of Shift Panel" in this section).

⚠ CAUTION

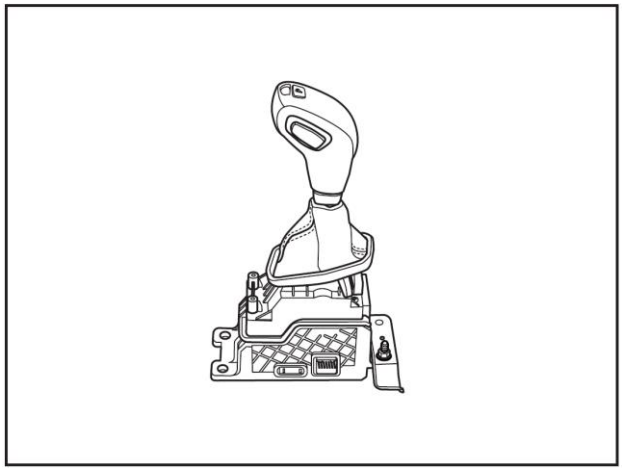
- **When removing and refitting the shift panel, prevent pulling the connecting cable between the shift lever and the shifter. Otherwise, the cable will be broken, making the shifter out of service.**



- Disconnect the shifter connector (1).
- Disconnect the shifter connector (2).

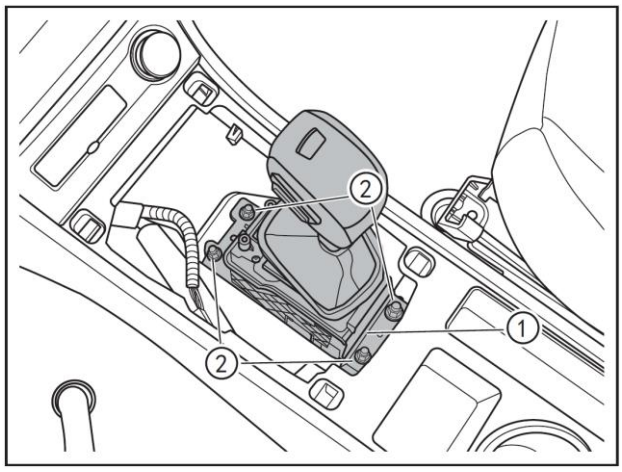


- Remove the fixing nut (1) of shifter assembly with the 10mm socket, and then remove the shifter assembly (2).



3 - Check

- Check if the shifter assembly works flexibly, and if the P-gear button is blocked.

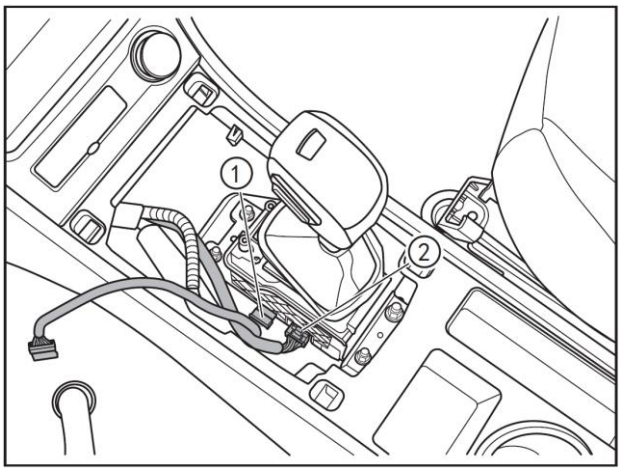


4- Refitting

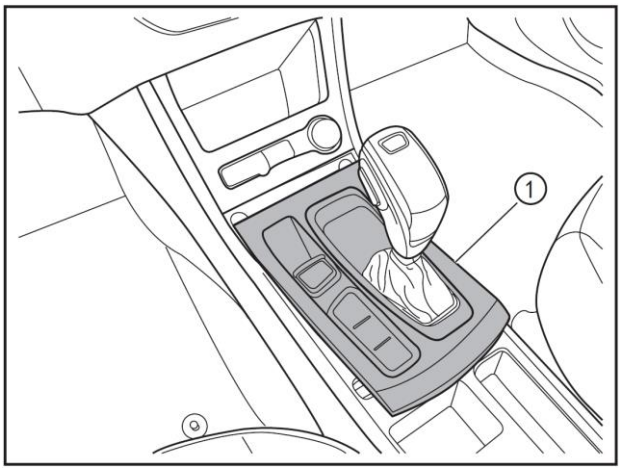
- Align the shifter (1) with the mounting stud, install the fixing nut (2), and tighten the fixing nut with the 10 mm socket.

⚠ CAUTION

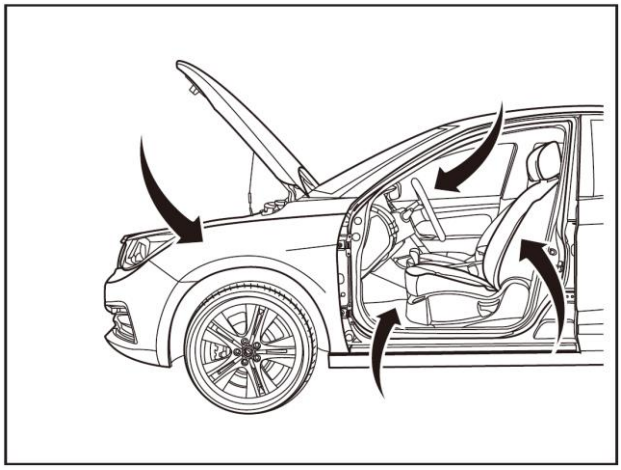
- **Before installing the shifter assembly, move away the wire harness to prevent the wire harness from being pressed during installation, as this may cause damage of wire harness and shifter.**



- Refit the wire harness connector (1) and clamp it firmly.
- Refit the wire harness connector (2) until a click is heard.



- Refit the shift panel (1) and clamp it securely.
- After refitting, connect the battery negative cable.

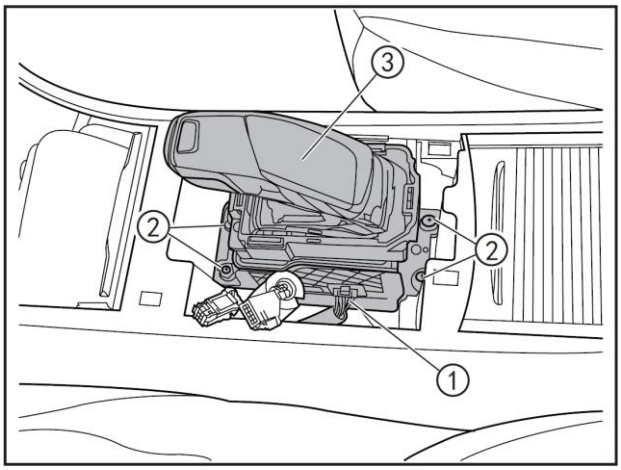


Removal and Refitting of Shift Lever 2

1 - Protection

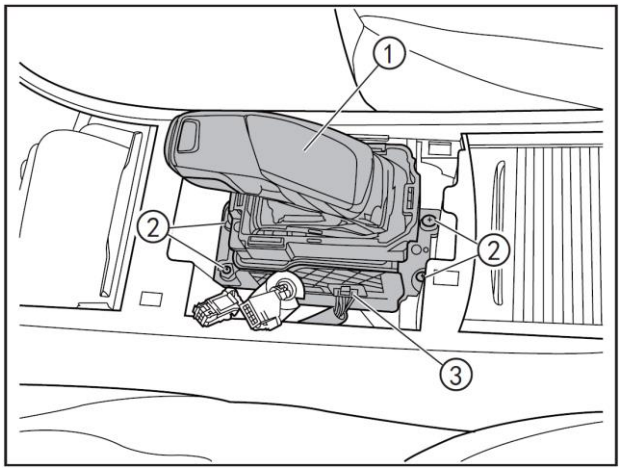
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Removal

- Turn the ignition switch to "OFF", and disconnect the battery negative cable.
- Remove the shift panel (premium version). (Refer to “Removal and Refitting of Shift Panel (Premium Version)” in “Transmission Makeup”)
- Press the connector clip with the slotted screwdriver and then disconnect the connector (1) of shift lever assembly.
- Use the 10mm socket extension rod to remove the 4 fixing bolts (2) (M6 × 15) of the shift lever assembly, and then remove the shift lever assembly (3).

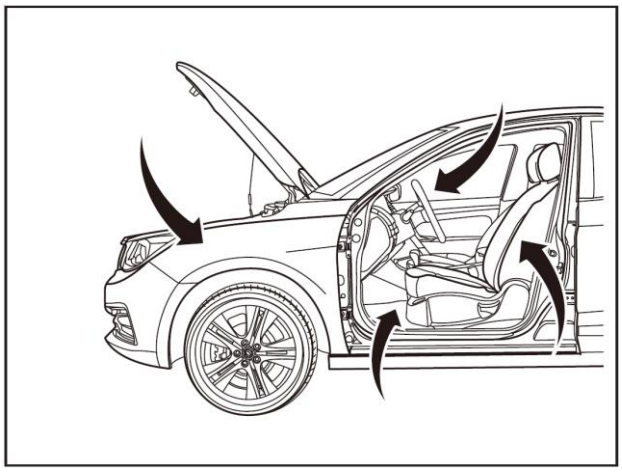


3- Refitting

- Refit the shift lever assembly (1), and tighten the fixing bolts (2) of the shift lever assembly with the 10mm socket.
- Connect the shift lever assembly connector (3).
- Refit the shift panel (premium version). (Refer to “Removal and Refitting of Shift Panel (Premium Version)” in “Transmission Makeup”)

⚠ CAUTION

- **After the installation is completed, connect the battery negative cable, turn the ignition switch to ON, operate the shift lever assembly, and check that the shift function is normal.**

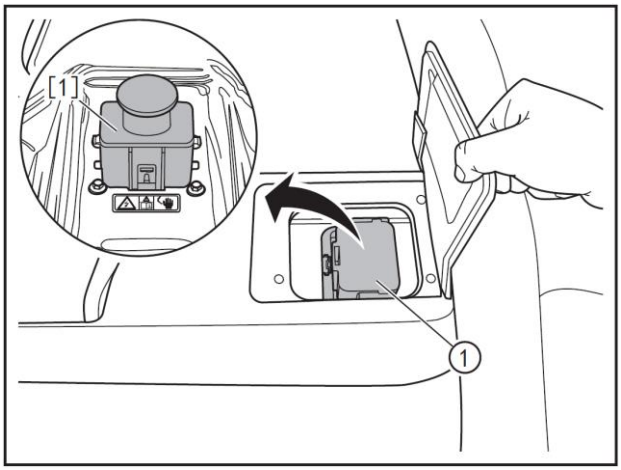


Removal and Refitting of PCU

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



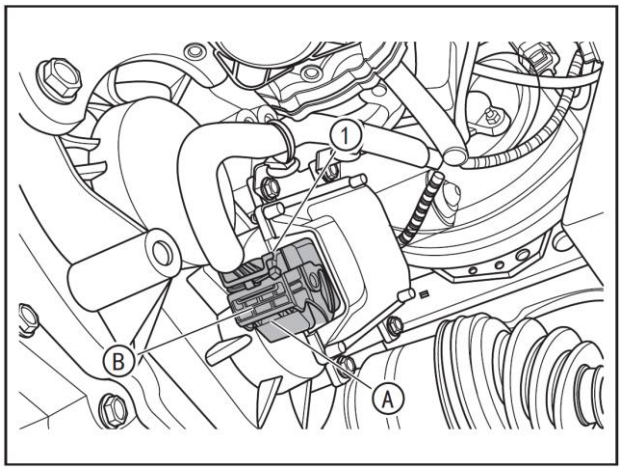
2 - Removal

⚠ CAUTION

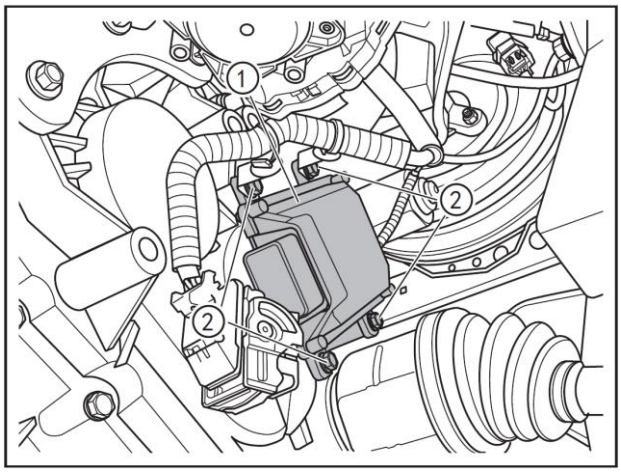
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")

⚠ CAUTION

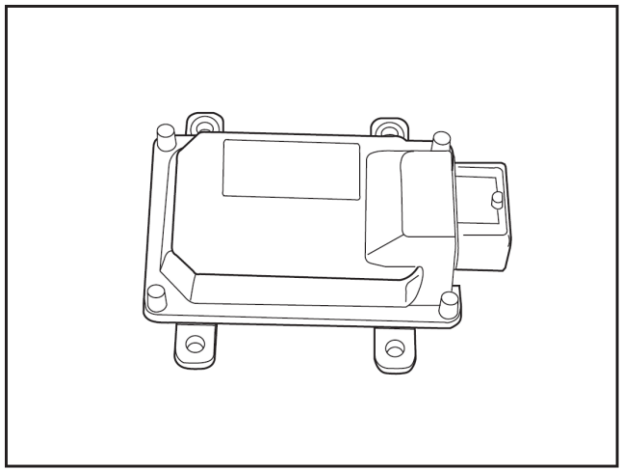
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Press the connector clip (A), turn over the clip (B) completely, and then disconnect the PCU connector (1).

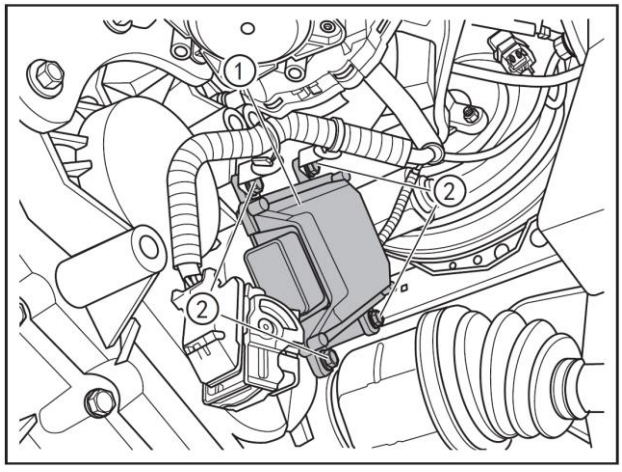


- Remove the 4 fixing bolts (2) (M6 × 16) of the PCU (1) with the 10mm socket, and then take off the PCU.



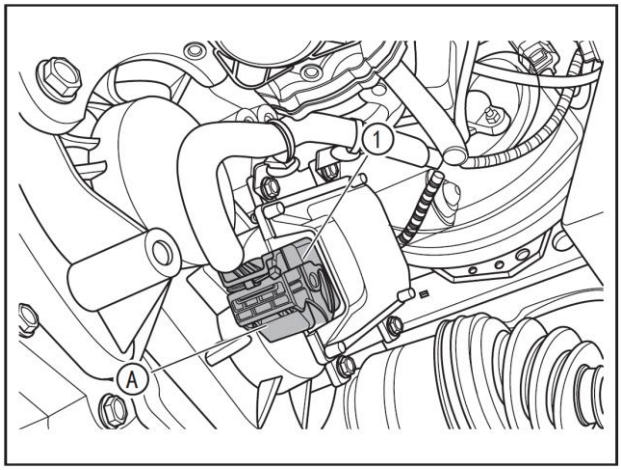
3 - Check

- Check the P- gear controller for damage; if so, replace the PCU assembly.

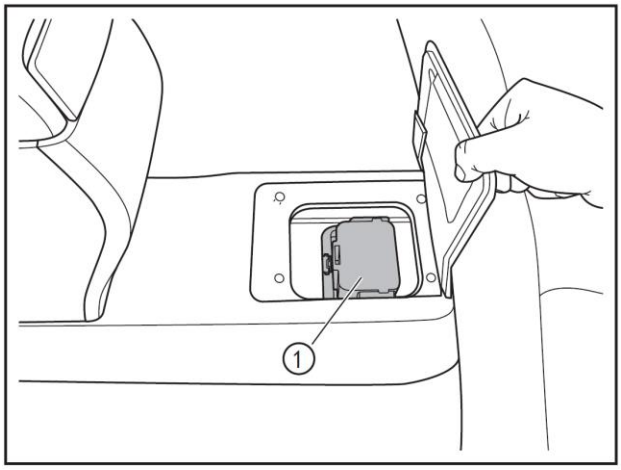


4- Refitting

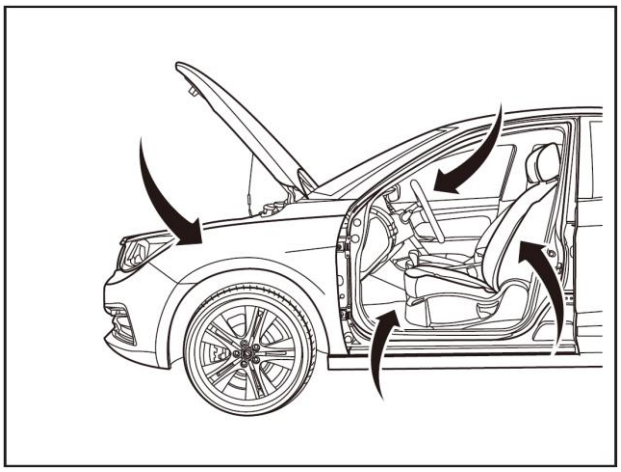
- Refit the PCU (1) in place and install all the fixing bolts.
- Tighten the fixing bolts (2) (M6 × 16) of PCU with the 10mm socket.



- Refit the PCU connector (1) in place, and snap the clip (A) into position.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.
- Connect the scan tool, and read and clear DTCs.

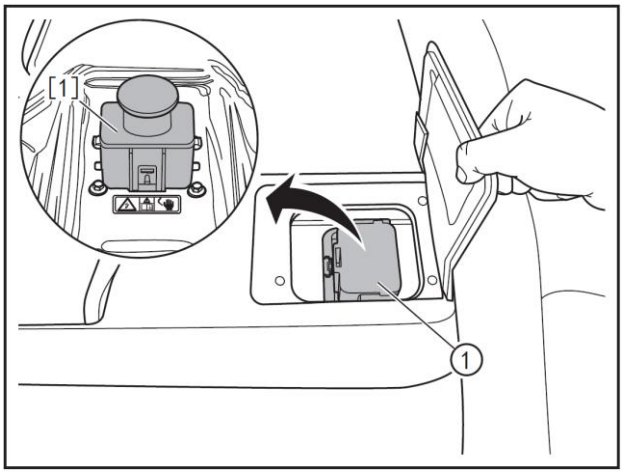


Removal and Refitting of PCU Motor

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



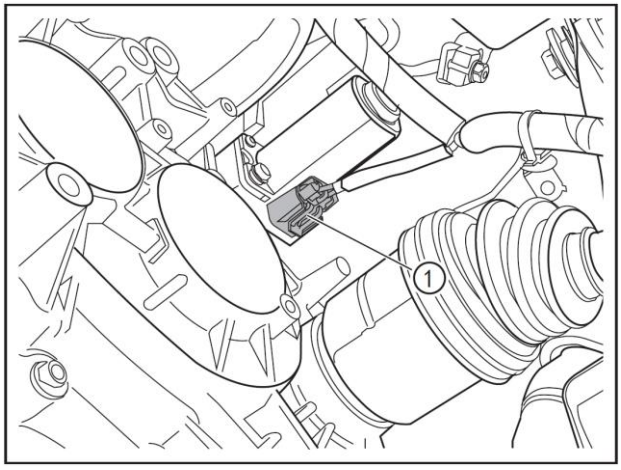
2 - Removal

⚠ CAUTION

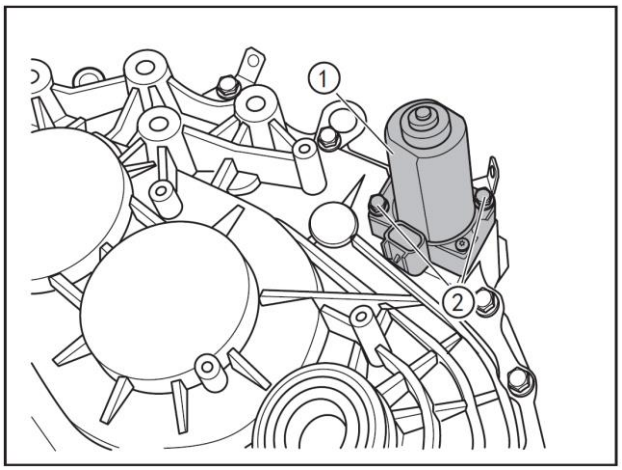
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

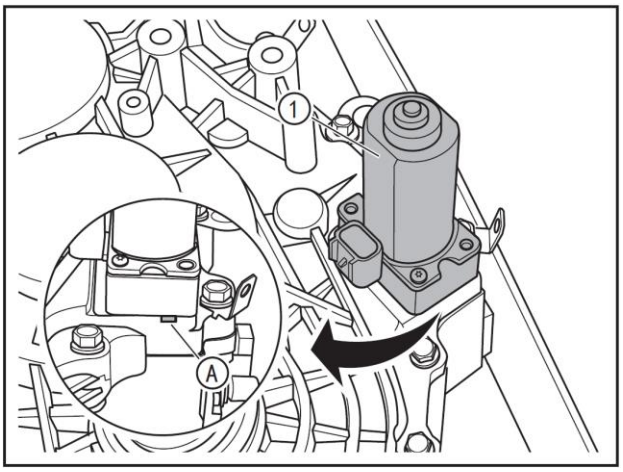
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



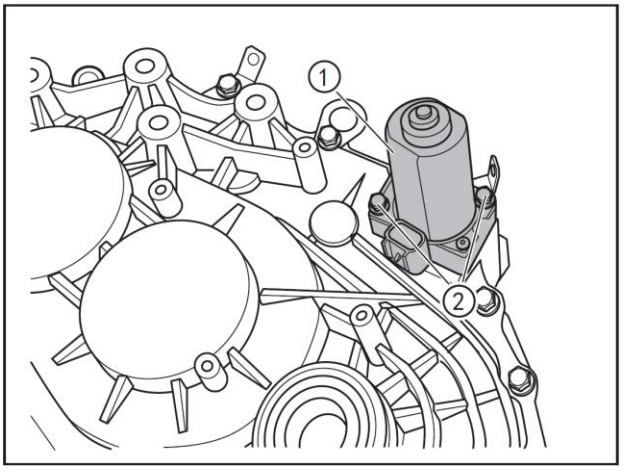
- Press the connector clip, and then disconnect the PCU motor connector (1).



- Remove the 2 fixing bolts (2) (M6 × 40) of the PCU motor (1) with the 10mm socket.

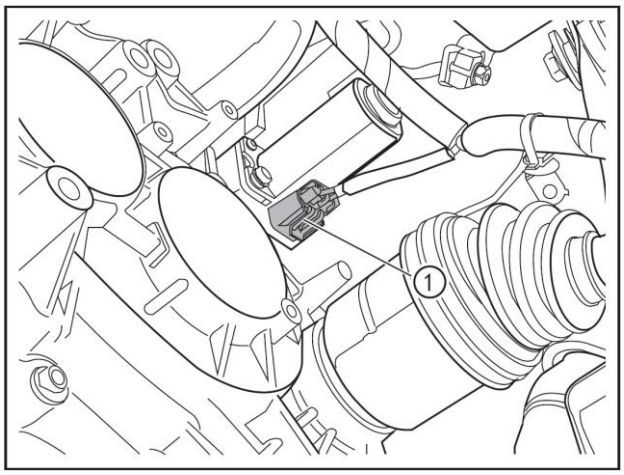


- Use the small slotted screwdriver to pry at position A of motor, and then take off the PCU motor (1).

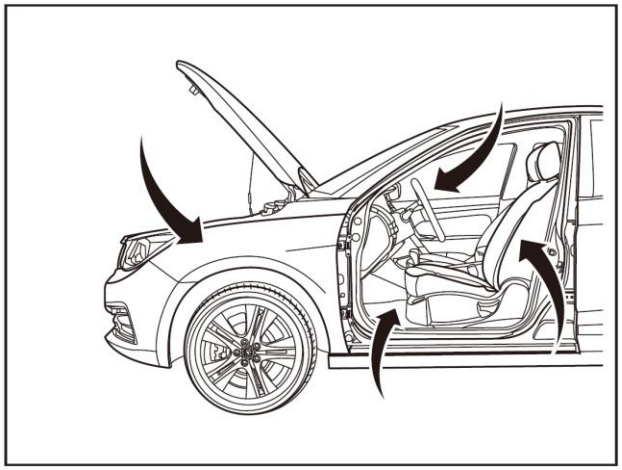


3- Refitting

- Apply a proper amount of sealant along the outer perimeter of the PCU motor (1), and install it on the right end cover of the transmission.
- Tighten the 2 fixing bolts (2) (M6 × 40) of the PCU motor with the 10mm socket.



- Refit the PCU motor connector (1) securely.
- After the installation is completed, power up to check if the PCU motor works normally.



Removal and Refitting of PCU Sensor

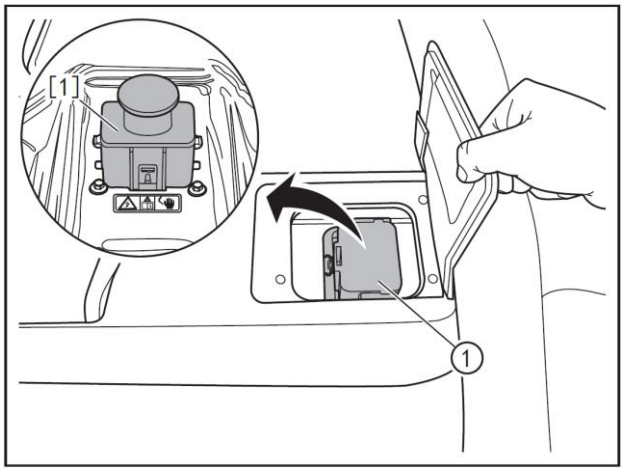
1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**

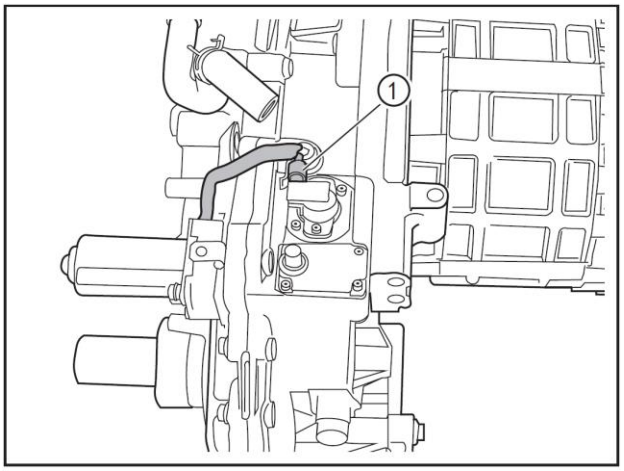


2 - Removal

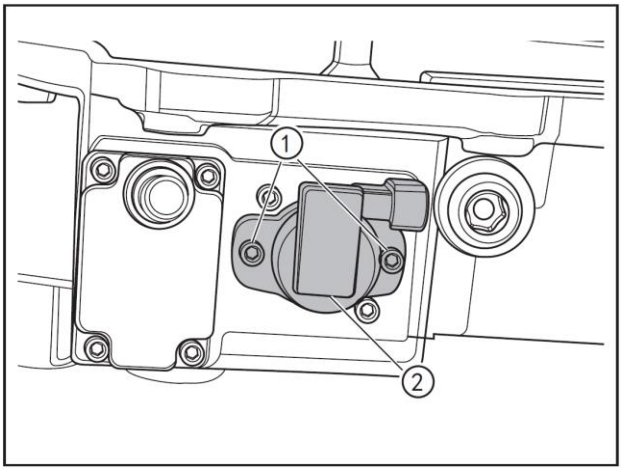
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")

⚠ CAUTION

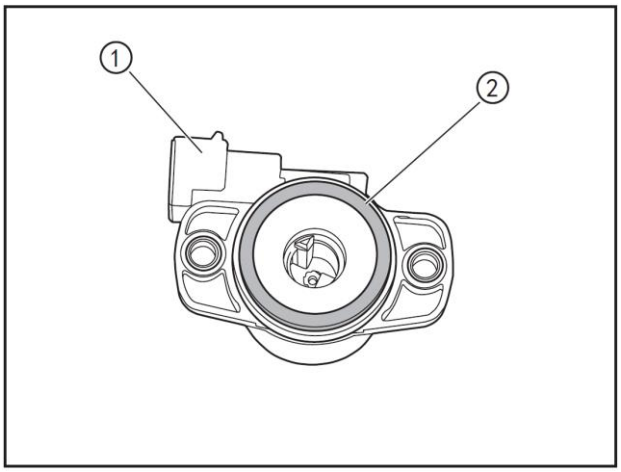
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Open the connector clip outward and disconnect the PCU sensor connector (1).



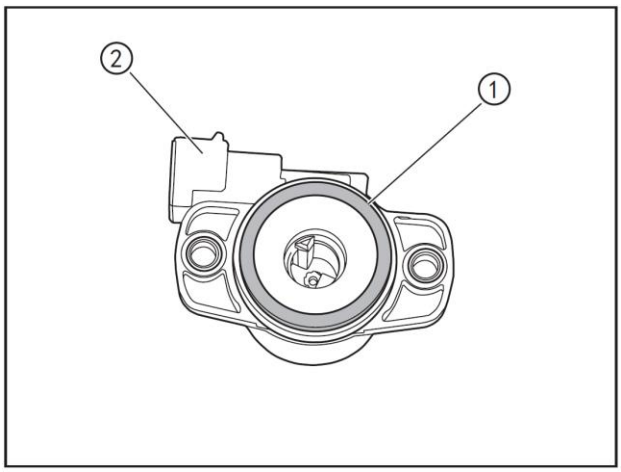
- Remove the fixing bolt (1) (M4 × 16) of the PCU sensor with the 3mm socket, and then take off the PCU sensor (2).



- Remove the O-ring (2) from the PCU sensor (1).

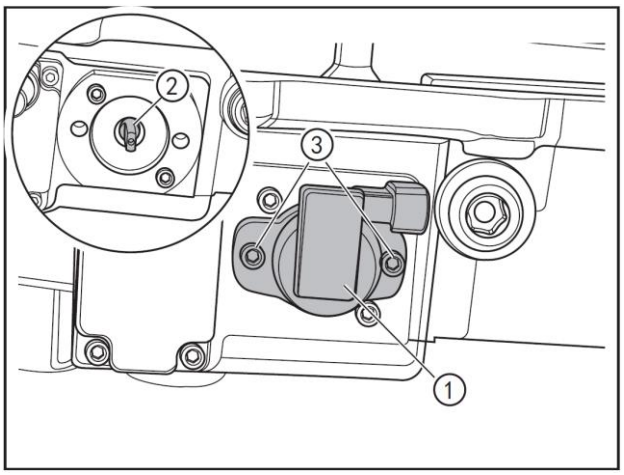
⚠ CAUTION

- **The O-ring is disposable, and shall be replaced with a new one after each removal.**

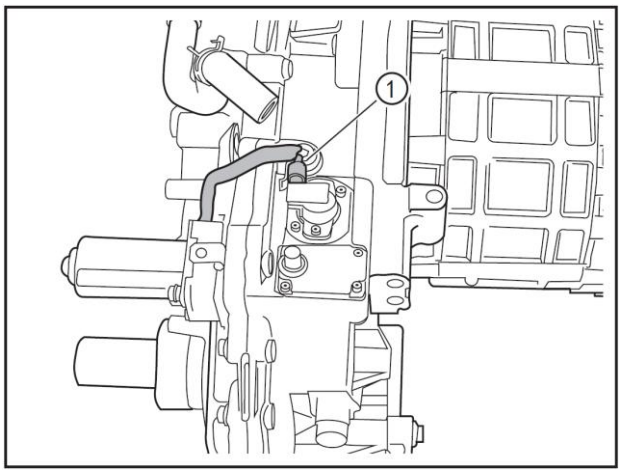


3- Refitting

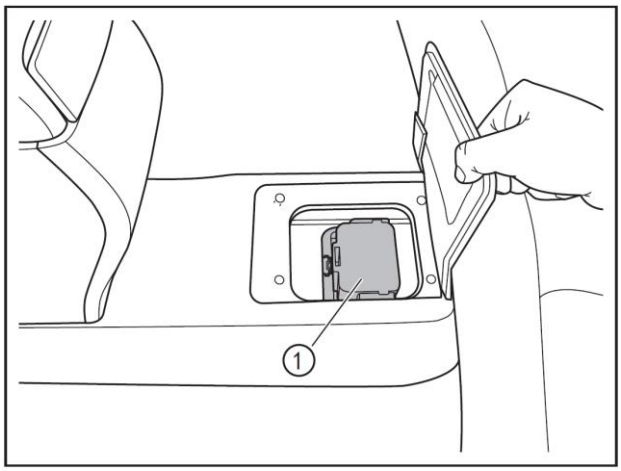
- Replace with the new O -ring (1), apply a proper amount of grease to the joint surface and place it on the PCU sensor (2).



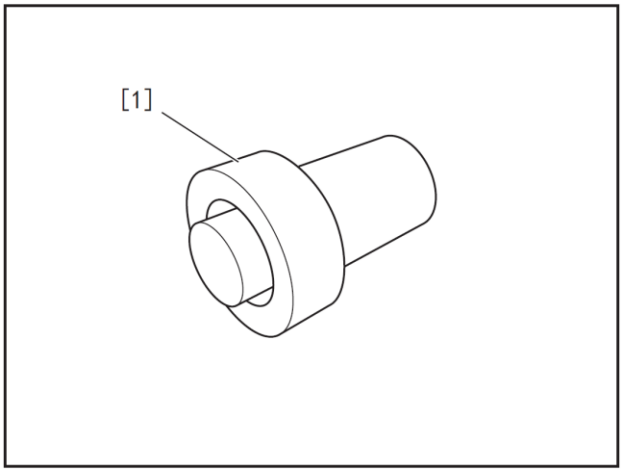
- Install the PCU sensor (1) on the transmission after alignment, and ensure that the sensor is snapped into the sensor gear shaft (2).
- Apply a proper amount of thread-locking adhesive to the fixing bolt of PCU sensor, and then screw the fixing bolt into the threaded hole on the PCU sensor.
- Tighten the fixing bolt (3) of PCU sensor with the 3mm socket.



- Refit the PCU sensor connector (1) and clamp it in place.



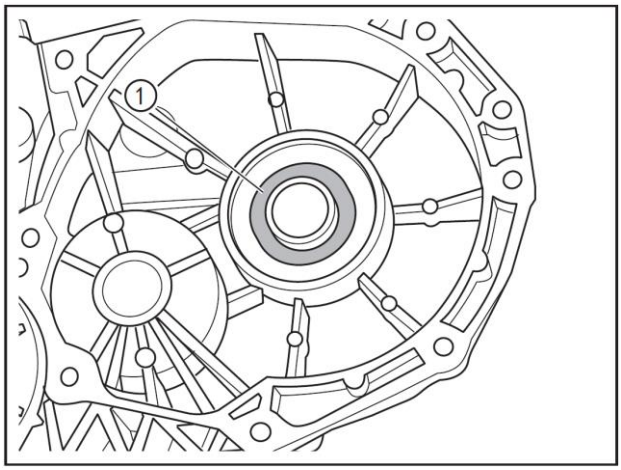
- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.



Removal and Refitting of Transmission Input Shaft Oil Seal (Independent Motor)

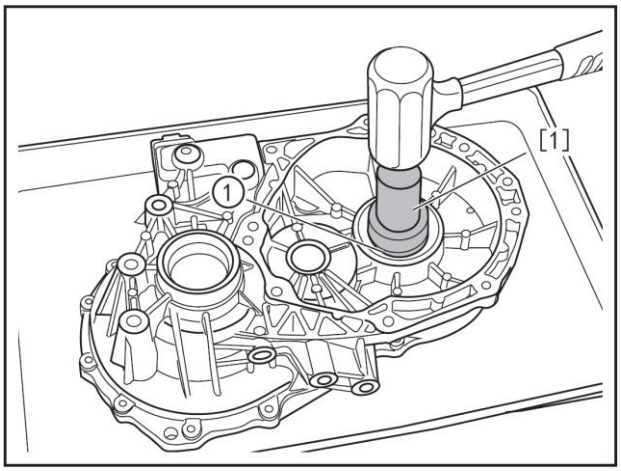
1 - Recommended tools

- Transmission input shaft oil seal refitting tool (E700421) [1].



2 - Removal

- Remove powertrain (independent motor). (Refer to “Removal and Refitting of Powertrain (Independent Motor)” in “Transmission Makeup”)
- Disassemble motor & transmission assembly (independent motor). (Refer to “Disassembly of Motor & Transmission Assembly (Independent Motor)” in “Transmission Makeup”)
- Use the oil seal removal tool to remove the transmission input shaft oil seal (1).



3- Refitting

- Sleeve the transmission input shaft oil seal (1) on the transmission.
- Install the transmission input shaft oil seal refitting tool (E700421) [1].
- Tap the transmission input shaft oil seal refitting tool (E700421) [1] with the rubber hammer to install the transmission input shaft oil seal (1) in place.
- Assemble motor & transmission assembly (independent motor). (Refer to “Disassembly of Motor & Transmission Assembly (Independent Motor)” in “Transmission Makeup”)
- Refit powertrain (independent motor) (Refer to “Removal and Refitting of Powertrain (Independent Motor)” in “Transmission Makeup”)

August 2018

5. Energy Storage and Power Supply
5.1 Traction battery
5.2 Starting and Charging System
5.3 High voltage distribution box
5

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

5.1

Traction battery

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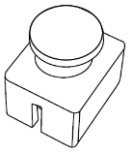
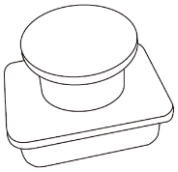
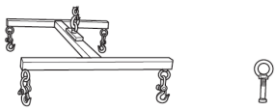
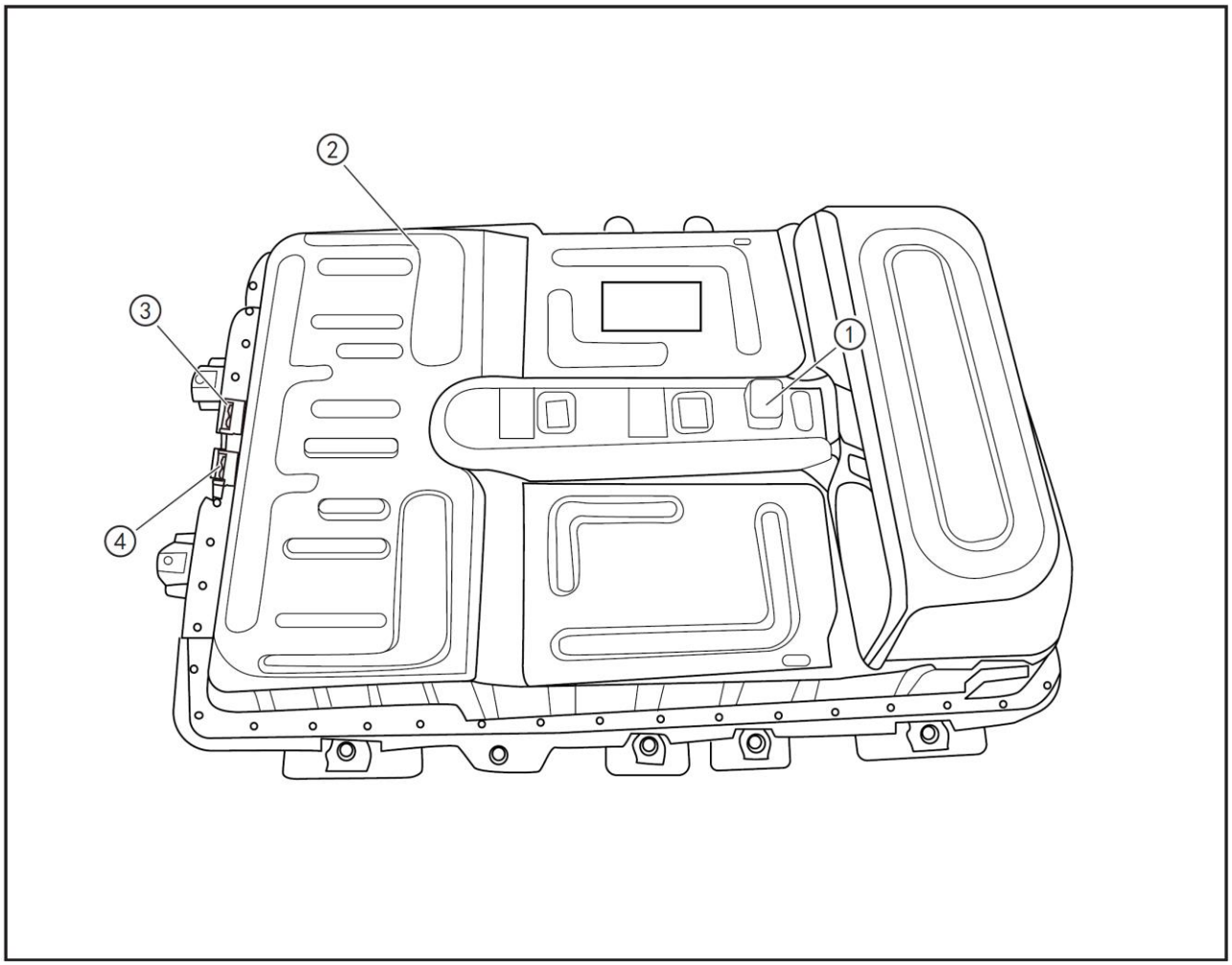
Traction battery

- Before installing the traction battery, measure that the insulation resistance of the high-voltage interface electrode is greater than or equal to 20MΩ, otherwise, it is not allowed to install the traction battery.
- Keep the traction battery away from sparking objects, flame or spark.
- Never flush the high-voltage components and traction battery at the bottom of the vehicle with water, so as to avoid damage to the high-voltage components and traction battery.

Special tools

Tool No.	Tool Name	Tool Picture	Description
E700102	Traction battery high voltage connector jacket plug		Block the jackets of traction battery high voltage connector and fast charging high voltage connector to prevent electric shock and dust ingress
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
E700509A/B	Traction battery hanger/hook		Lift traction battery
A60EV0105	Manual hydraulic lift		Support traction battery
A60EV0104	Insulation resistance tester		For testing the insulation performance of high voltage components of traction battery, motor, motor control unit, high voltage distribution box, charger, heater, and electric compressor

Structure and Features



Sequence number	Name	Sequence number	Name
1	Service Switch	3	High voltage connector
2	Traction battery	4	Fast-charge high voltage connector

Recycling Specifications and Inspection Method for Traction Battery

Recycling Specifications

- When the remaining capacity of the traction battery is less than 70%, it needs to be scrapped and recycled.

Inspection Method

1. Charging

- At room temperature, first discharge the battery module with a current of $1I_5$ (A) until the voltage of any single cell reaches the final discharging voltage (2.8V). Set it aside for 1h, and then charge as described below:
  - Charge at the constant current of $1I_5$ (A), and when the final charging voltage (4.2V) is reached, change to constant-voltage charging, and after the charging current drops to $0.05I_5$(A), stop the charging. If the voltage of any single cell rises above 2.7V during charging, stop charging, and set it aside for 1h.

2. Testing of discharge capacity at room temperature

- Test the discharge capacity at room temperature as follows:
  a. Charge the battery module according to the charging method 1;
  b. At room temperature, first discharge the battery module with a current of 1I5 (A) until the voltage of any single cell reaches the final discharging voltage (2.8V).
  c. Calculate the discharge capacity (Ah) and discharge specific energy (Wh/kg);
  d. Repeat steps a~c 5 times. When the difference of the results of the consecutive 3 tests is less than 3% of the rated capacity, the test can be terminated early, and the average of the last 3 test results is taken;
  e. The average/initial capacity (140Ah) is the remaining energy value of battery pack.

3. Testing of discharge capacity at low temperature

- Test the discharge capacity at low temperature as follows:
  a. Charge the battery module according to the charging method 1;
  b. Condition the battery module at a temperature of -20℃±2℃ for 24h;
  b. At a temperature of -20℃±2℃, first discharge the battery module with a current of 1I5 (A) until the voltage of any single cell reaches the final discharging voltage (2.8V).
  d. Calculate the discharge capacity (Ah);
  e. The test/initial capacity (140Ah) is the remaining energy value of battery pack.

4. Testing of discharge capacity at high temperature

- Test the discharge capacity at high temperature as follows:
  a. Charge the battery module according to the charging method 1;
  b. Condition the battery module at a temperature of 55℃±2℃ for 5h;
  b. At a temperature of 55℃±2℃, first discharge the battery module with a current of 1I5 (A) until the voltage of any single cell reaches the final discharging voltage (2.8V).
  d. Calculate the discharge capacity (Ah);
  e. The test/initial capacity (140Ah) is the remaining energy value of battery pack.

Toxic and Hazardous Components in Traction Battery

- The toxic and hazardous substances contained in this product (traction battery) meets the specifications in GB/T30512-2014 Requirements for prohibited substances on automobiles: lead (Pb) and its compound: ＜0.1% (1000mg/kg); cadmium (Cd) and its compound: ＜0.01% (100mg/kg); mercury (Hg) and its compound: ＜0.1% (1000mg/kg); hexavalent chromium (Cr^6+): ＜0.1% (1000mg/kg); polybrominated biphenyls (PBBs): ＜0.1% (1000mg/kg); poly brominated diphenyl ethers (PBDEs): ＜0.1%.

Storage Requirements for Traction Battery

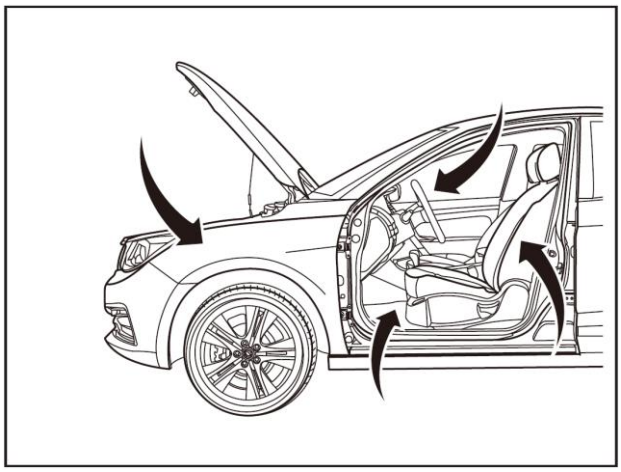
- Traction battery products are usually stored under incomplete state of charge, typically within 40% - 60%. Storage requirements of the product are described as follows:
  - Storage temperature: -10℃～40℃; recommended storage temperature: 5℃～30℃ (normal temperature);
  - Storage humidity: ≤ 95% RH; recommended humidity: 10% - 85%RH;
  - Storage environment: The product should be stored in a clean, well-ventilated and cool environment, without exposure to direct sunlight, high temperature, corrosive gas, severe vibration, mechanical shock and heavy pressure and away from heat source; the altitude should be less than 1500m, and the atmospheric pressure should be 86kPa~ 106kPa.
- It can be stored for 3 months in a dry and ventilated environment. If it is to be stored for more than 3 months, it is recommended to carry out charging every 3 months during storage; if it is not charged in time for more than 6 months, the battery may be damaged. The maintenance test methods during storage are as follows:
  - Under normal temperature conditions, do charging and discharging every 3 months at a current ≤1C, and then adjust the SOC to 40%~60% after the charging is completed.

DTCs of Battery Management System

- Use a special scan tool to perform fault diagnosis.

Sequence number	DTC	Description
1	P1E6D	High cell voltage
2	P1E1A	High cell voltage
3	P1E6E	High cell voltage
4	P1E11	Low cell voltage
5	P1E1B	Single cell voltage overlow exception
6	P1E70	Single cell voltage overlow fault
7	P1EDB	Cell voltage ununiform
8	P0AFD	High total voltage
9	P0AFC	Low total voltage
10	P1E80	Outer voltage higher than inner voltage (before high voltage)
11	P1E81	High module temperature
12	P1E82	High module temperature
13	P1E83	High module temperature
14	P1E0E	High discharging current during driving
15	P1E1E	High discharging current during driving
16	P1E1C	High discharging current during driving
17	P1E8C	High driving feed current
18	P1E8D	High driving feed current
19	P1E8E	High driving feed current
20	P0A7D	High charging current
21	P1E90	High charging current
22	P1E1D	High charging current
23	P1E54	DC insulation (contactor closed)
24	P1E55	DC insulation (contactor opened)
25	P0A0C	High voltage interlock circuit failed
26	P1E4E	Main positive and precharging contactor sticking
27	P1E4F	Main positive contactor failed to be ON
28	P1E50	Main negative contactor sticking
29	P1E51	Precharging contactor failed to be ON
30	P1E52	Quick charger contactor sticking
31	P1E53	Quick charger contactor failed to be ON
32	P0562	Low battery voltage
33	P0563	High battery voltage
34	U0293	VCU message loss
35	U0073	Busoff (vehicle ACAN)
36	P1EB1	Precharging circuit short
37	P1EB2	Precharging overcurrent
38	P1EB3	Precharging reverse current
39	P1EB4	Precharging timeout
40	P1EB5	Pre-charge failure (three attempts)
41	P1EB7	BMS unexpected power-off
42	P1EB8	OBC failure
43	P1EB9	Non-OBC failed
44	P1E84	Thermal management failure: high water outlet temperature in heating mode
45	P1E85	Thermal management failure: low water inlet temperature in heating mode

Sequence number	DTC	Description
46	P1E86	Thermal management failure: water outlet temperature sensor failed
47	P1E26	Irreversible collision signal generation (CAN signal)
48	P1E27	Irreversible collision signal generation (PWM hardwire)
49	U1E01	SCAN bus failure
50	P1E18	Current sensor failed
51	P1E19	High voltage circuit open
52	P1E88	Battery aging: battery health status overlow (alarm level)
53	P1E89	Battery aging: battery health status overlow (fault level)
54	P1E06	Battery temperature sensor abnormal
55	P1E07	Insulation measurement failure
56	P1E16	Total voltage sensor failed
57	P0A9B	Temperature sensor fault (serious)
58	P1E8A	Balance stop reason: balance circuit failed
59	P1E8B	Balance stop reason: passive balance temperature above the upper limit
60	P1E8C	Unreasonable SOC
61	U0290	S_CAN current message loss
62	P1EBA	Charging failure
63	P1E8D	CSU sampling abnormality
64	P1EBB	VCU request for stopping charging
65	P1EBC	VCU level-6 fault response timeout
66	P1E87	Thermal management failure: water outlet temperature sensor failed

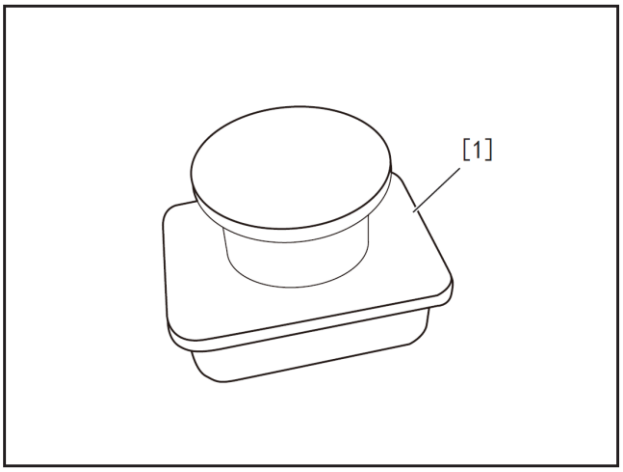


Removal and Refitting of Service Switch

1 - Protection

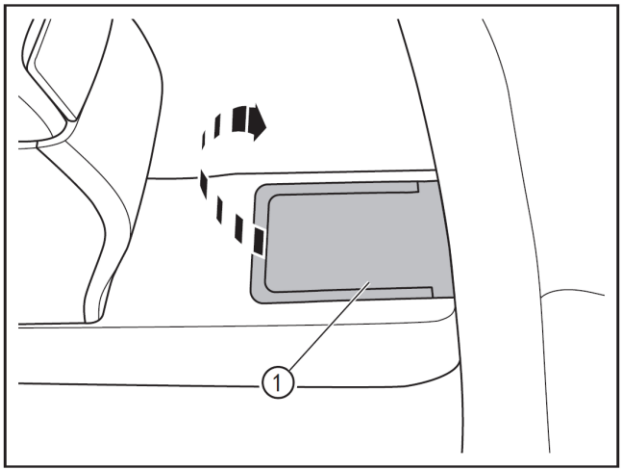
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

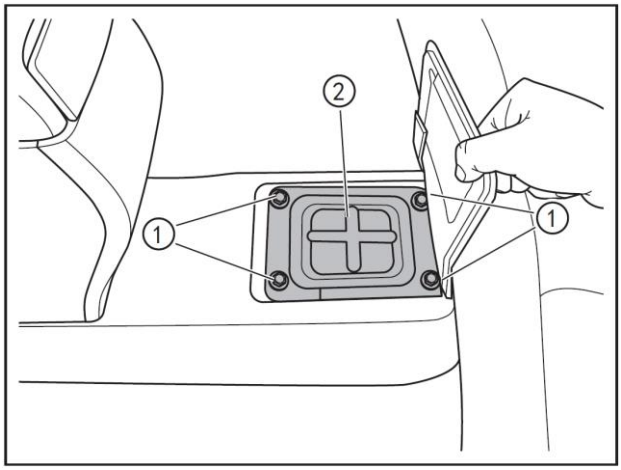
- Traction battery service switch plug (E700101)[1].



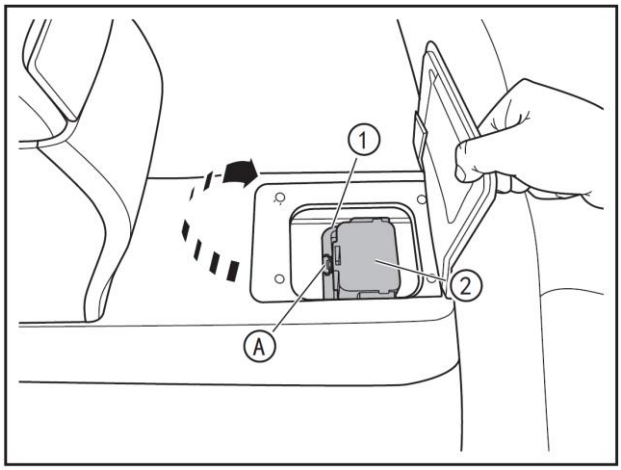
3 - Removal

⚠ CAUTION

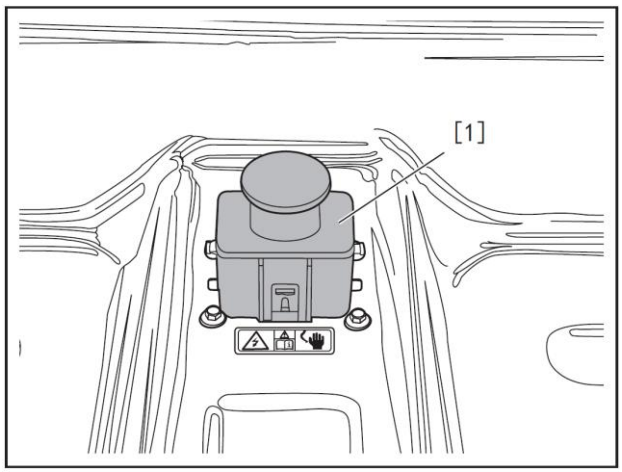
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect the battery negative cable.
- Lift up the protective cover (1) on the middle carpet in the rear row.



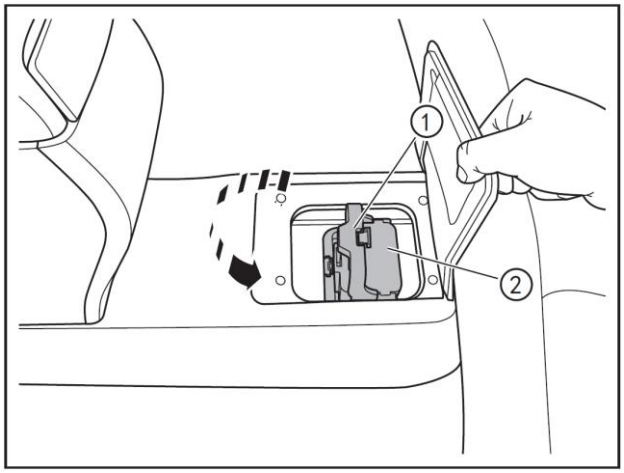
- Remove the 4 fixing bolts (1) (M6 × 15) of service switch protective cover with the 10mm socket;
- Remove the service switch protective cover (2).



- Pull up the clip A of the service switch release handle.
- Turn the service switch release handle (1), press the front middle clip of the service switch, and lift the service switch (2).

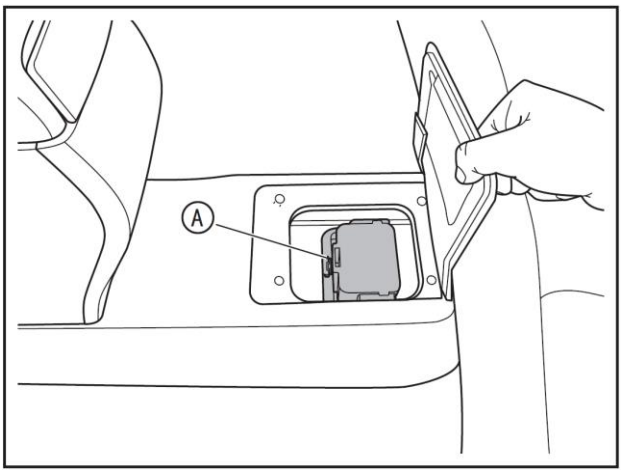


- Block the service switch mounting hole with the service switch plug (E700101) [1].

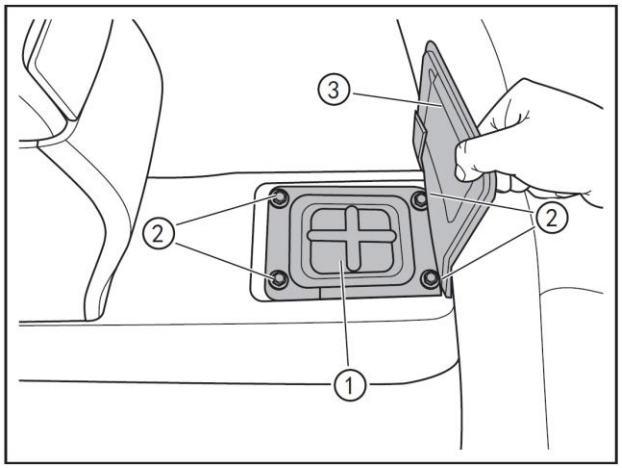


4- Refitting

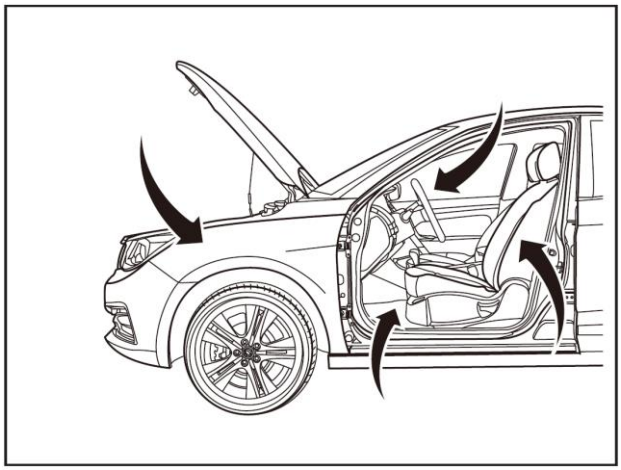
- Turn the service switch release handle (1) and refit the service switch (2).



- Press down the clip (A) of service switch release handle.



- Refit the service switch protective cover (1).
- Tighten the fixing bolts (2) (M6 × 15) of service switch protective cover with the 10mm socket;
- Put down the protective cover (3) on the middle carpet in the rear row.
- Connect the battery negative cable.

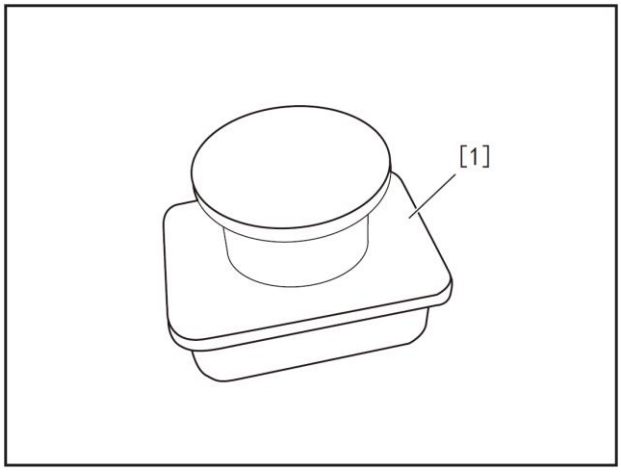


Removal and Refitting of Traction Battery

1 - Protection

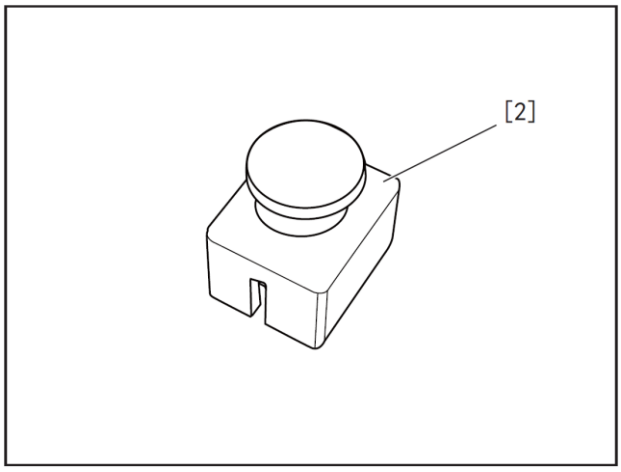
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

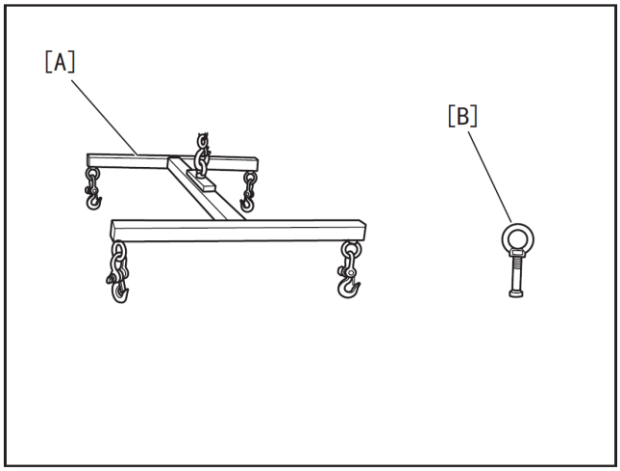


2 - Recommended tools

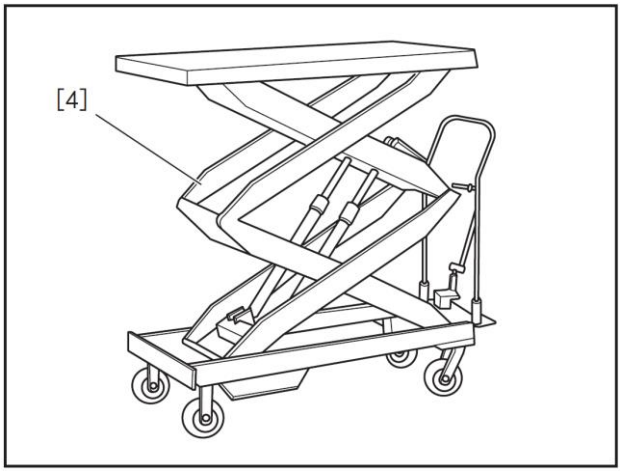
- Traction battery service switch plug (E700101)[1].



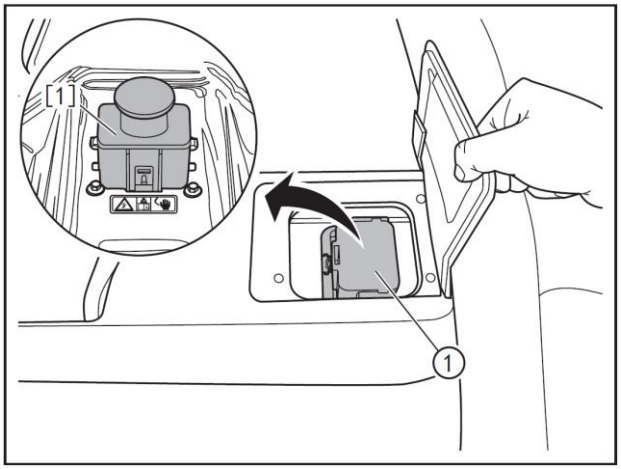
- Traction battery high voltage connector jacket plug (E700102) [2].



- Traction battery hanger/hook (E700509A/B) [3].



- Manual hydraulic lift (A60EV0105) [4].



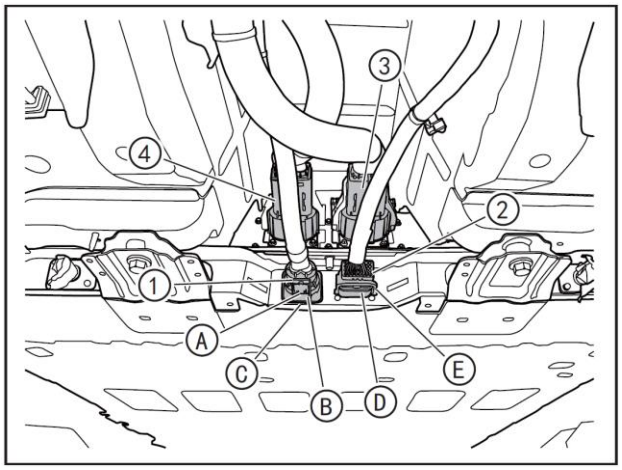
3 - Removal

⚠ CAUTION

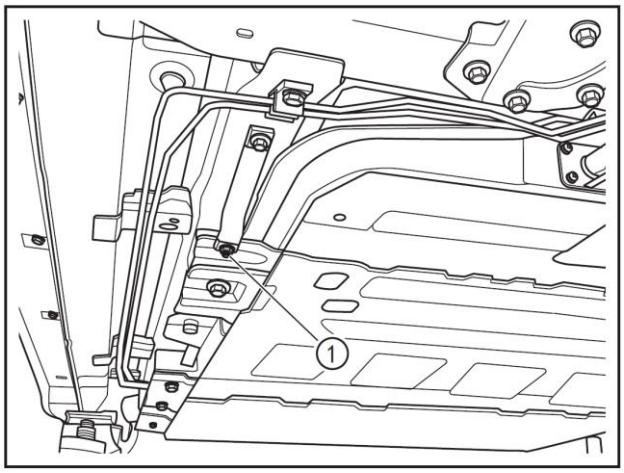
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

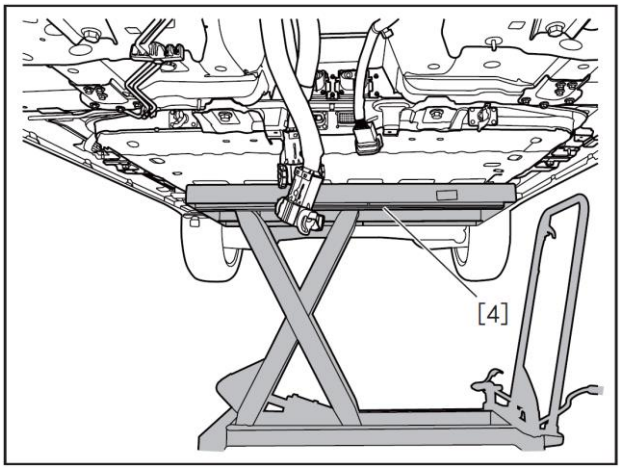
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



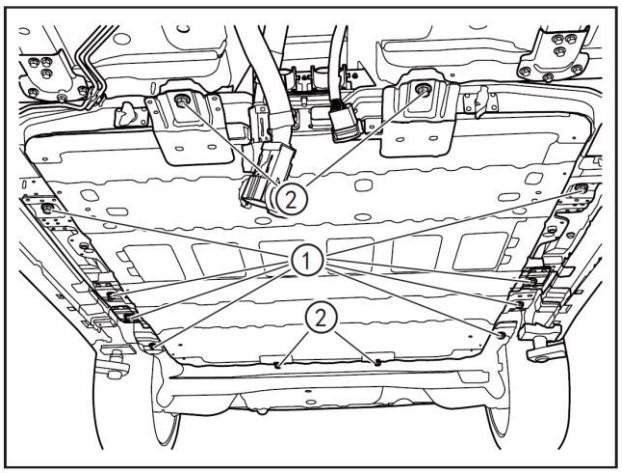
- Unlock the locking clip A of the accessory high voltage wire harness of the traction battery, and then press the locking clip (B), and finally press the locking clip (C) to disconnect the accessory high voltage wire harness connector (1) of the traction battery.
- Unlock the locking clip (D) of vehicle low voltage wire harness of traction battery, open the clip (E), and then disconnect the vehicle low voltage wire harness connector (2) of traction battery.
- Unlock the locking clip of fast-charge high voltage wire harness of traction battery, open the retaining clip, and then disconnect the fast-charge high voltage wire harness connector (3) of traction battery.
- Unlock the locking clip of high voltage wire harness of traction battery, open the retaining clip, and then disconnect the high voltage wire harness connector (4) of traction battery.



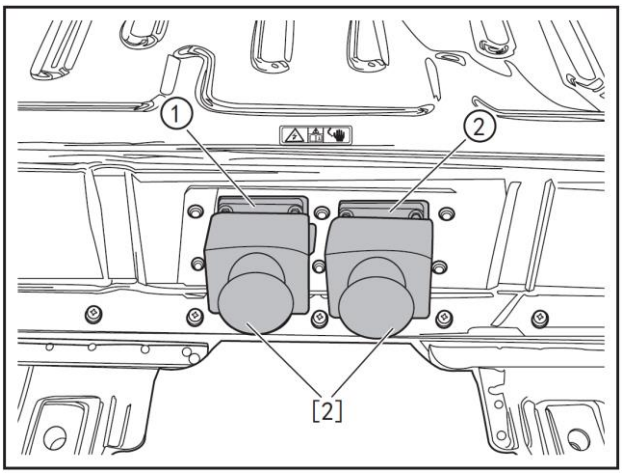
- Remove the fixing nut (1) of right ground wire harness of traction battery with the 10mm socket.
- Remove the fixing nut of left ground wire harness of traction battery following the same method.



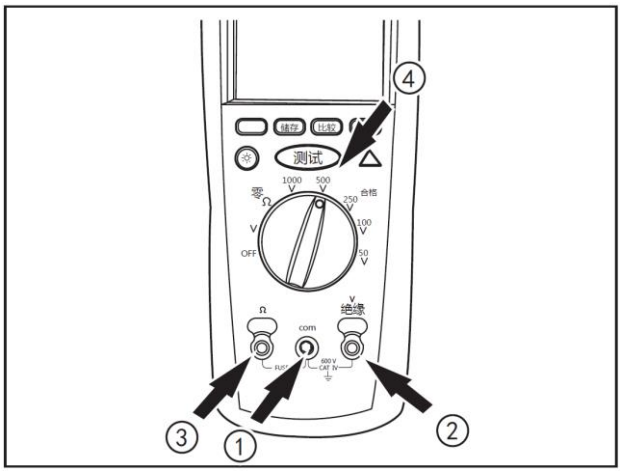
- Support the traction battery with the manual hydraulic lift (A60EV0105) [4].



- Remove the left and right fixing bolts (1) (M12×80) and the front and rear fixing bolts (2) (M12×60) of traction battery with the 16mm socket, slowly lower the lift and remove the traction battery assembly.



- Protect the traction battery wire harness jackets (1) and (2) with the traction battery wire harness jacket plug (E700102) [2].
- Place the traction battery in the designated position.

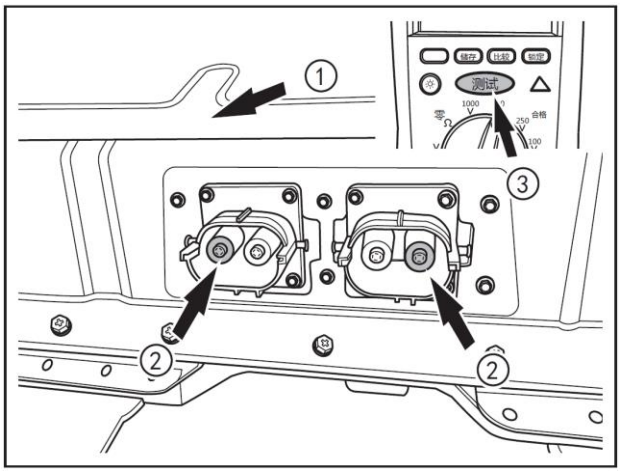


4 - Check

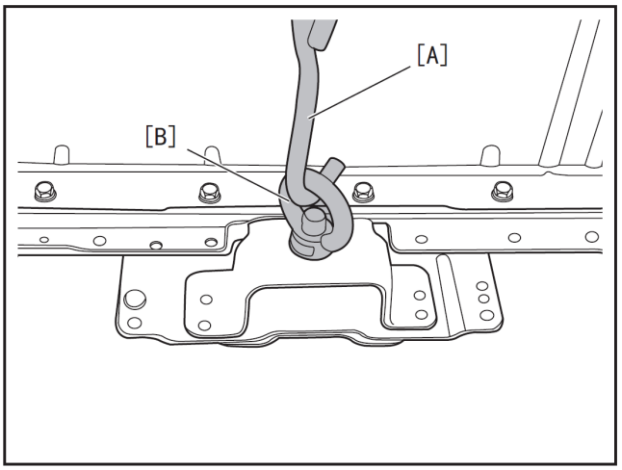
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**

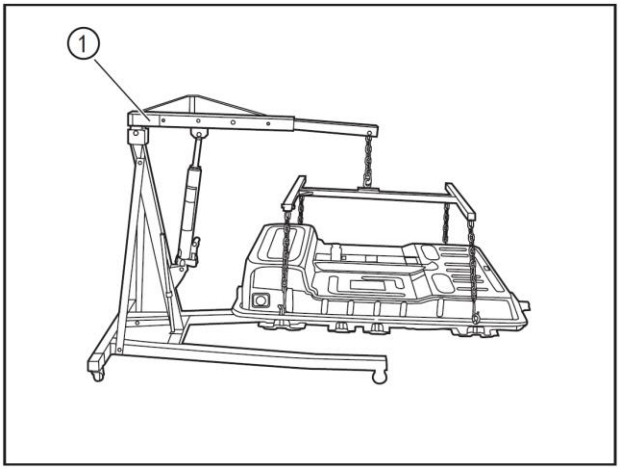


- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the resistance of 2 electrodes (2) of the illustrated connector to housing with the red probe,
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

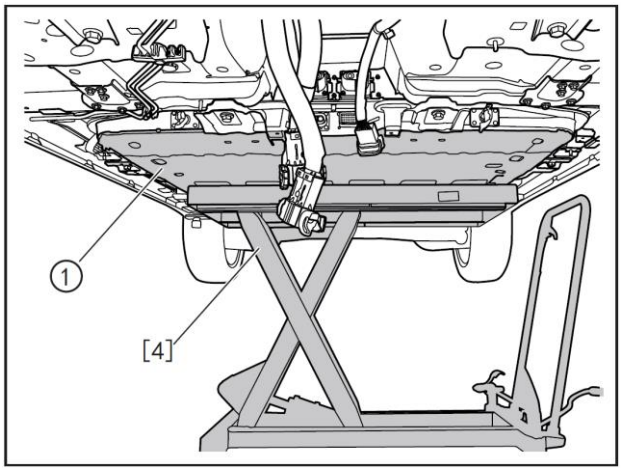


5- Movement

- Attach the traction battery hook (E700509) [B] to the threaded holes in the 4 corners of the traction battery.
- Attach the traction battery hanger (E700509) [A] to the motor hanger, and then attach the 4 hangers of the traction battery to the traction battery hook.

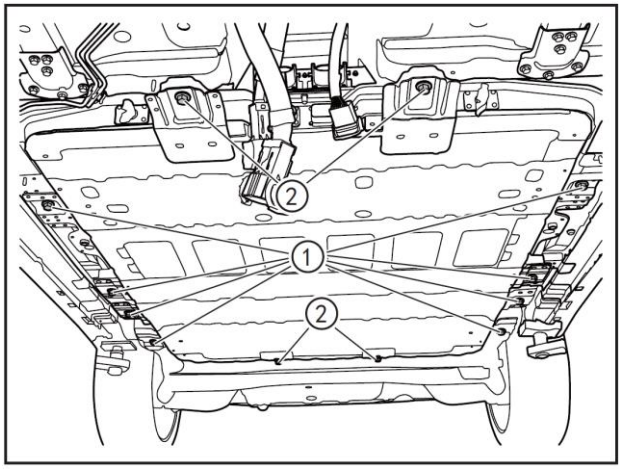


- Lift the motor hanger (1) until the hinge is straightened, and check if the connection is secure. Lift the engine hanger again and move the traction battery to the work bench.

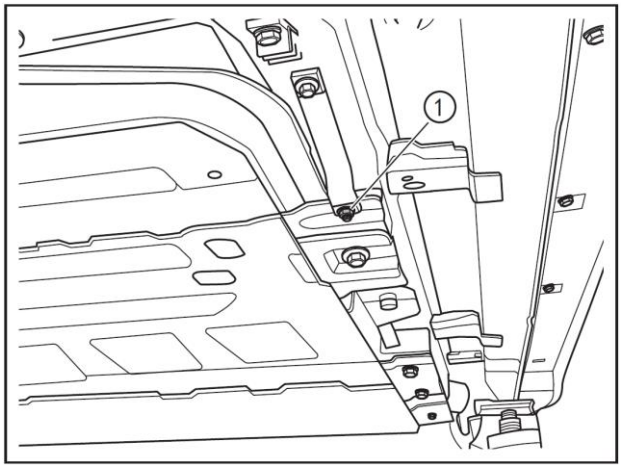


6- Refitting

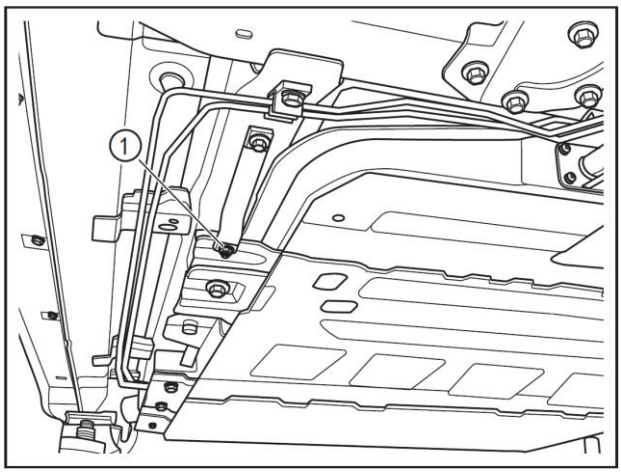
- Lift the vehicle about 1m.
- Move the manual hydraulic lift (A60EV0105) [4] until the dowel pin and mounting hole are basically aligned.
- Lift the traction battery (1) with the manual hydraulic lift (A60EV0105) [4].
- Check if the dowel pin and mounting hole are aligned while lifting the traction battery.



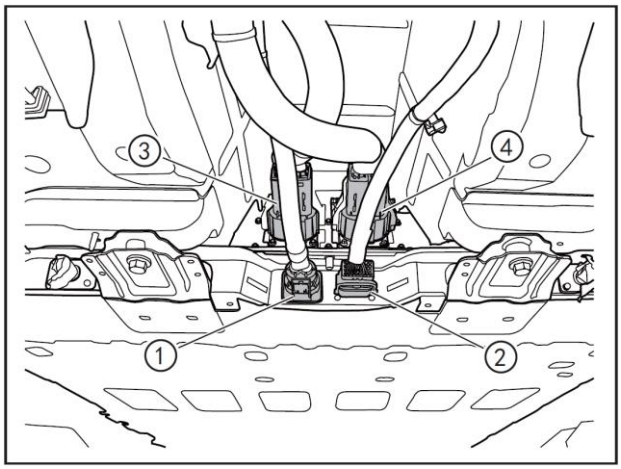
- Refit the left and right fixing bolts (1) of the traction battery and pre-tighten them with the 16mm socket.
- Refit the front and rear fixing bolts (2) of the traction battery, and tighten them with the 16mm socket to 90-110N·m.
- Tighten the left and right fixing bolts to 90-110N·m.



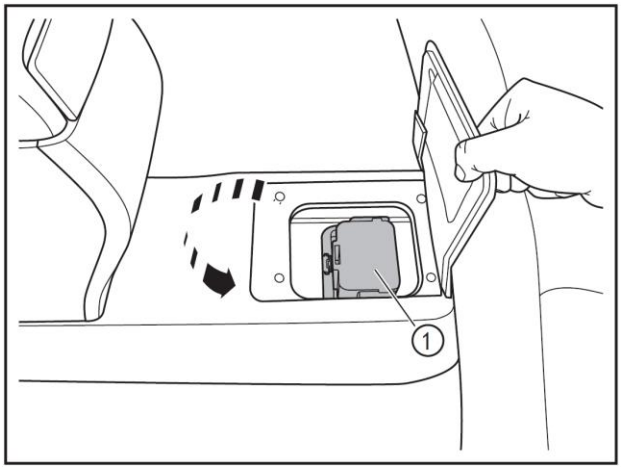
- Align the left ground wire harness of traction battery with the mounting stud, install the fixing nut (1), and tighten the fixing nut with the 10 mm socket to 9.5N·m.



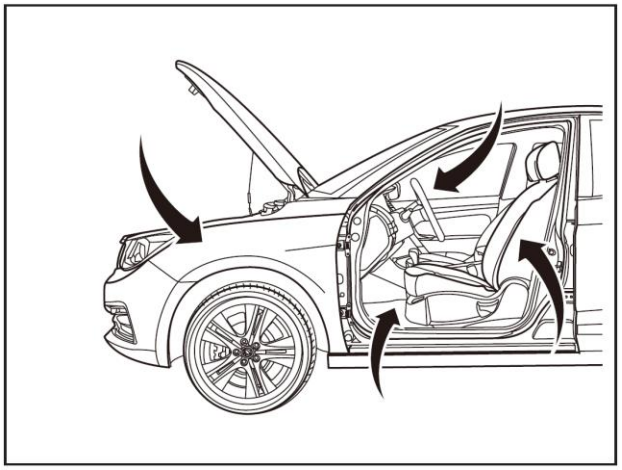
- Align the right ground wire harness of traction battery with the mounting stud, install the fixing nut (1), and tighten the fixing nut with the 10 mm socket to 9.5N·m.



- Refit the accessory high voltage wire harness connector (1) of traction battery until it is locked reliably.
- Refit the vehicle low voltage wire harness connector (2) of traction battery until it is locked reliably.
- Refit the high voltage wire harness connector (3) of traction battery until it is locked reliably.
- Refit the fast-charge high voltage wire harness connector (4) of traction battery until it is locked reliably.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

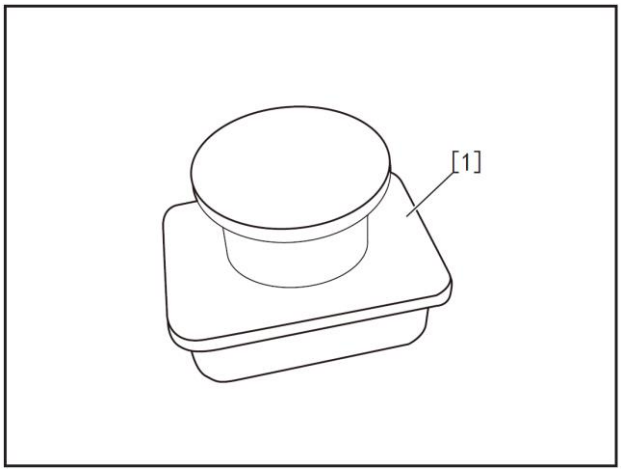


Replacement of Traction Battery Coolant

1 - Protection

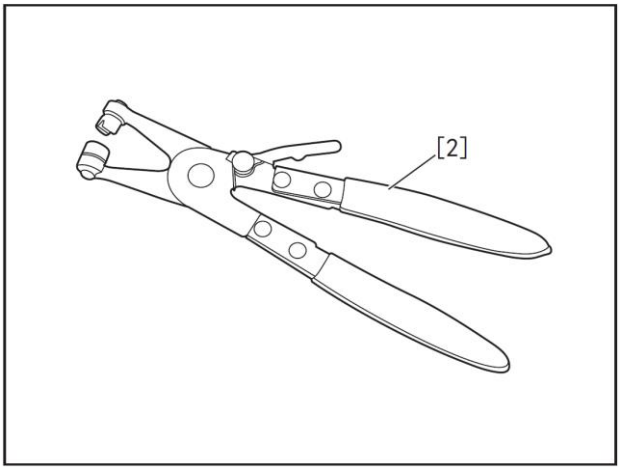
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

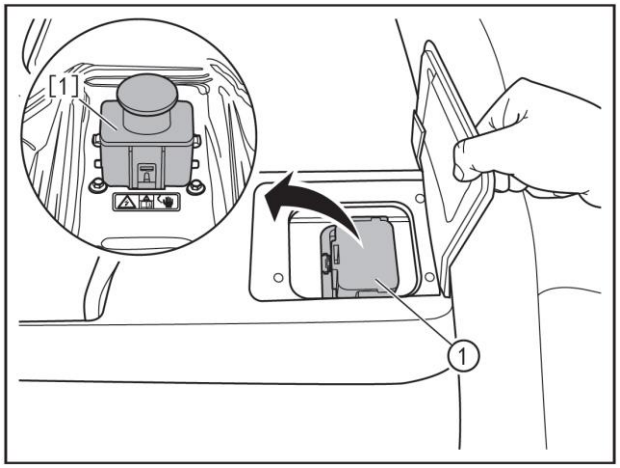


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



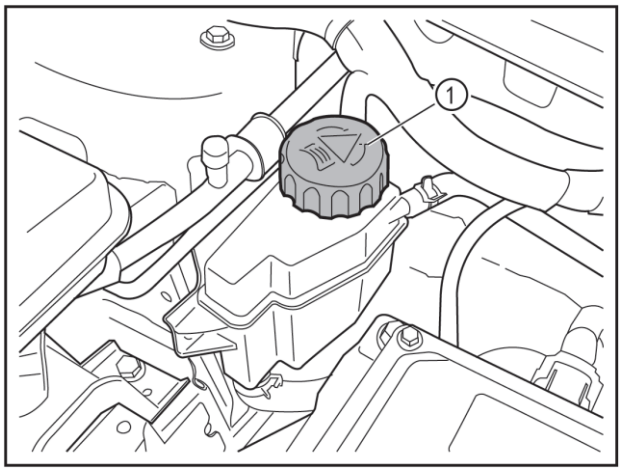
3 - Removal

⚠ CAUTION

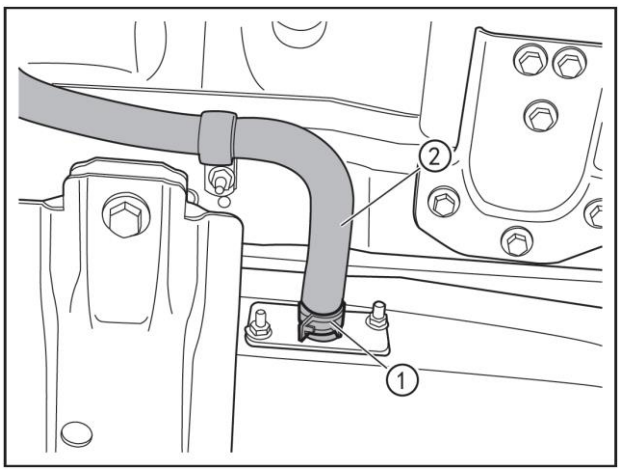
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- **During the removal of cooling pipeline, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**



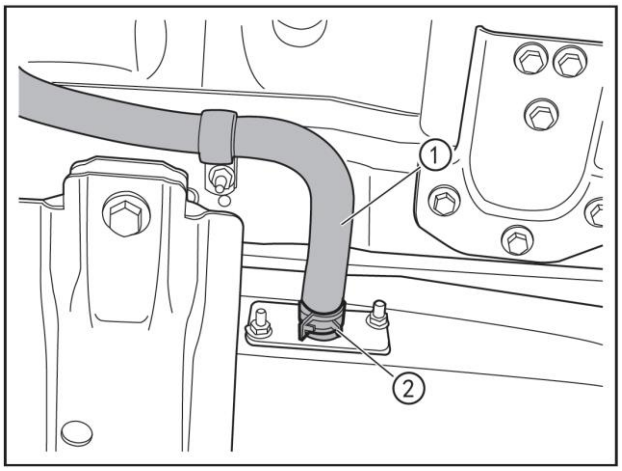
- Open the expansion tank cover (1) of thermal management system.



- Lift the vehicle as appropriate.
- Place a container under the water inlet of traction battery.
- Move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water inlet pipe (2) from the connecting joint on the traction battery.
- Drain the traction battery coolant.

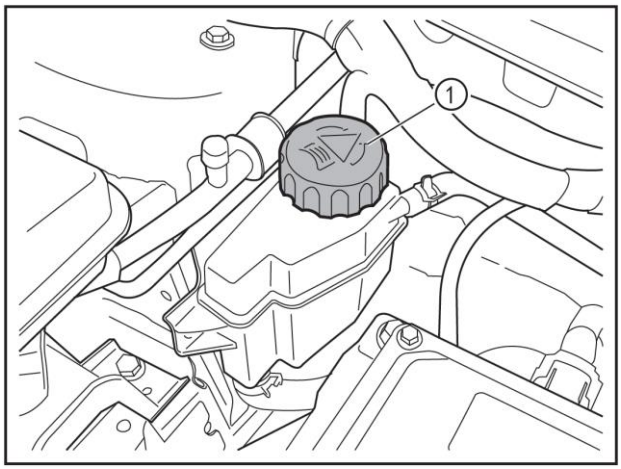
⚠ CAUTION

- **After draining the coolant, wipe off the residual liquid around the traction batter water inlet pipe with a cleaning cloth, in order to check coolant for leakage again.**



4- Refitting

- Refit the end of traction battery water inlet pipe (1) to the traction battery in place.
- Move the traction battery water inlet pipe clamp (2) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).

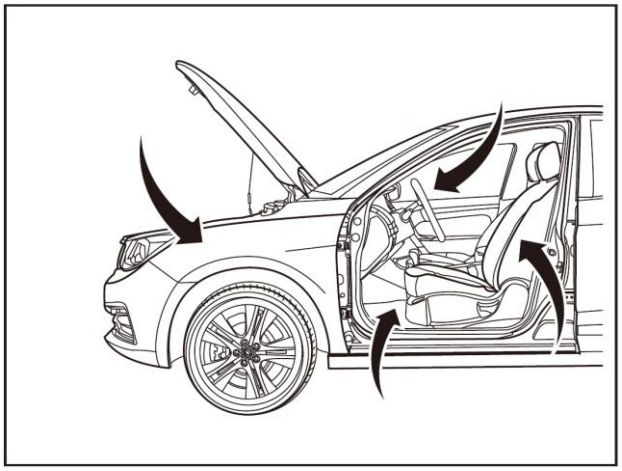


- Lower the vehicle, install the coolant filling barrel (BF0104) and add the coolant to the level between MAX and MIN marks of the expansion tank.
- Remove the coolant filling barrel (BF0104) and tighten the expansion tank cover (1).

⚠ CAUTION

- **After the coolant filling is completed, check the coolant pipeline for leakage; if so, remove and refit the pipeline.**

- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

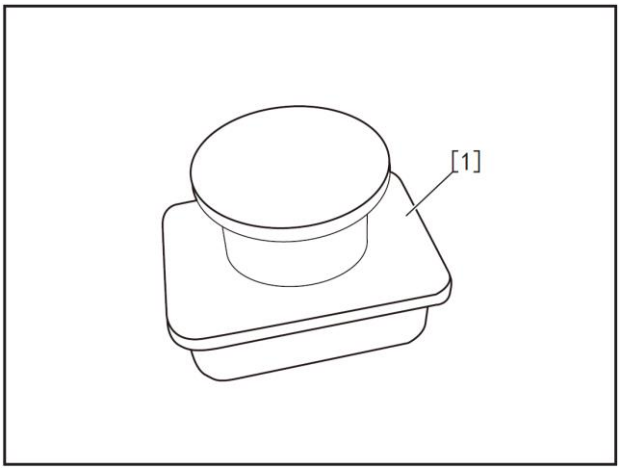


Removal and Refitting of Traction Battery Water Pump

1 - Protection

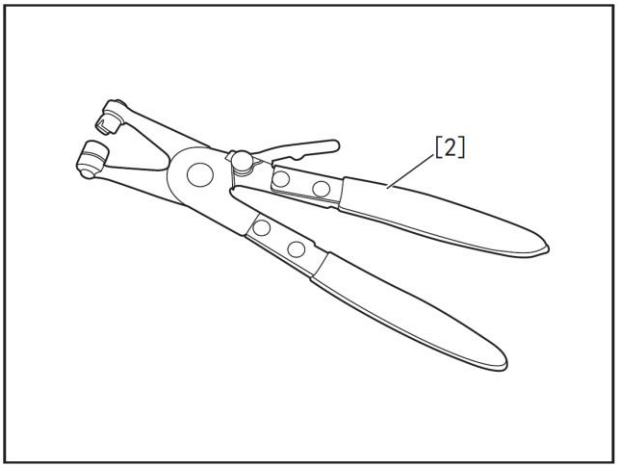
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

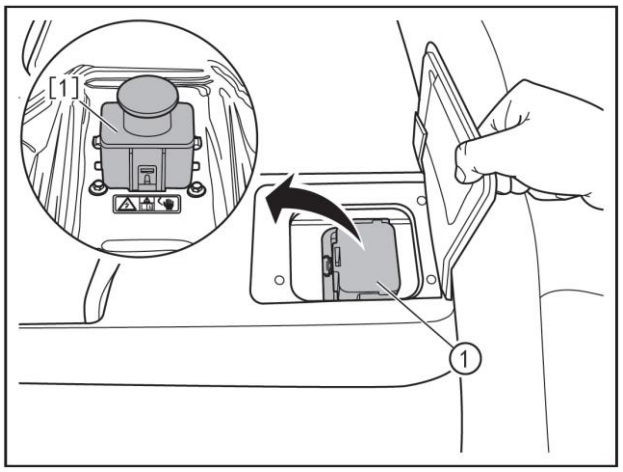


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



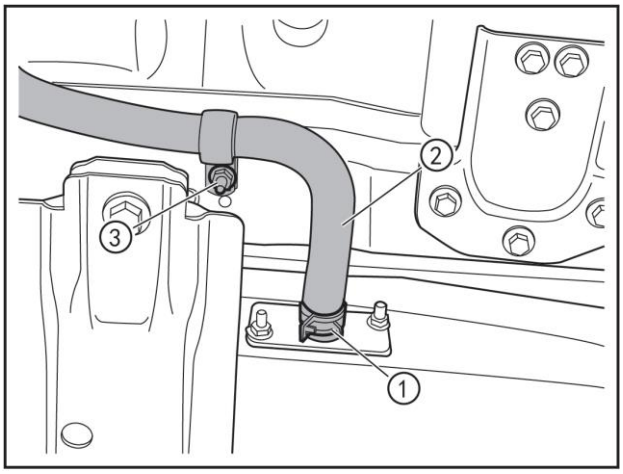
3 - Removal

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

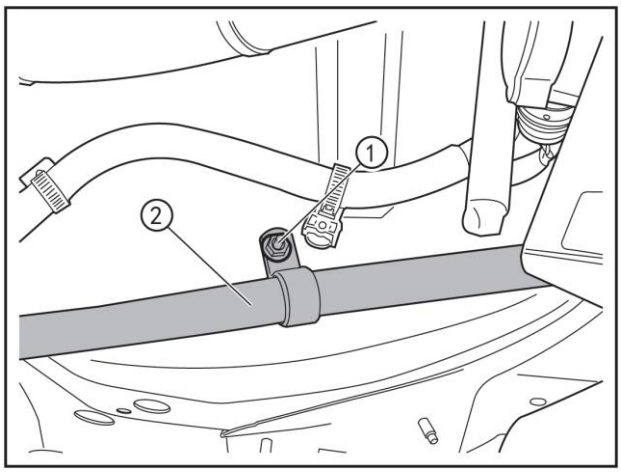
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- **During the removal of cooling pipeline, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**



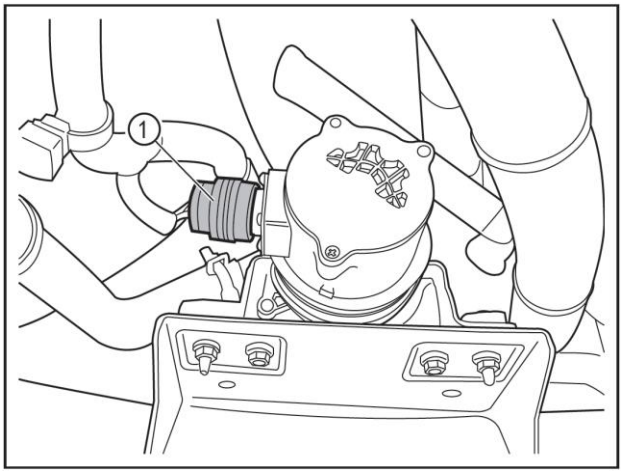
- Lift the vehicle as appropriate.
- Place a container under the water inlet of traction battery.
- Move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water inlet pipe (2) from the connecting joint on the traction battery.
- Drain the traction battery coolant.
- Remove the fixing nut (3) of traction battery water inlet pipe with the 10mm socket.

⚠ CAUTION

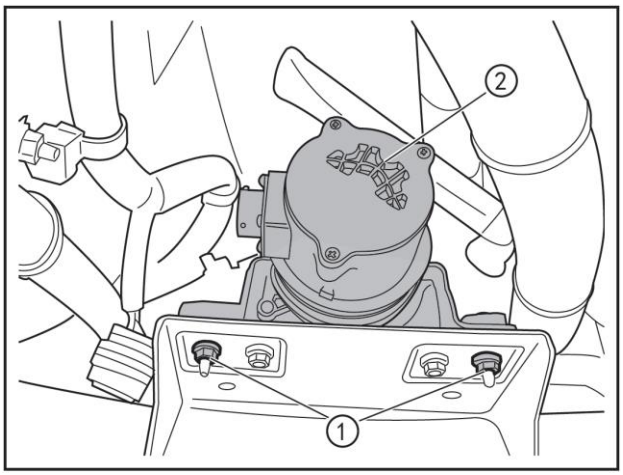
- **After draining the coolant, wipe off the residual liquid around the traction batter water inlet pipe with a cleaning cloth, in order to check coolant for leakage again.**



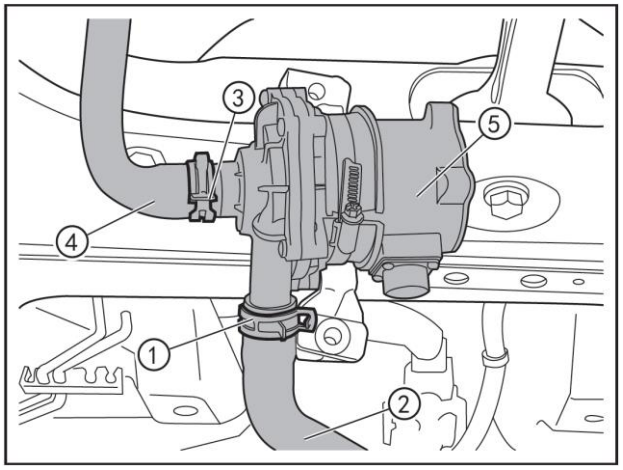
- Remove the fixing nut (1) of traction battery water inlet pipe with the 10mm socket.
- Disconnect the traction battery water inlet pipe (2) bracket from the vehicle body.



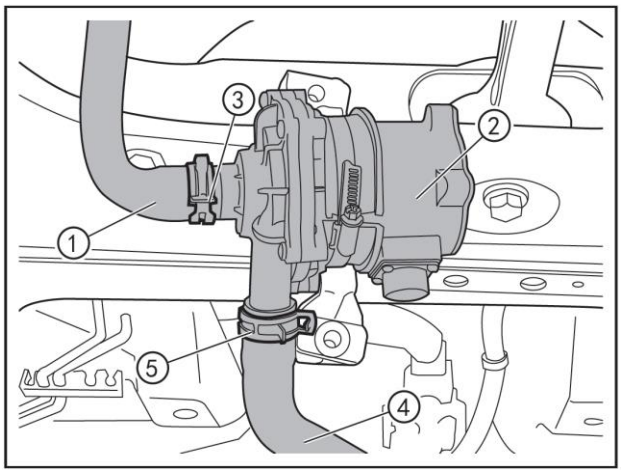
- Rotate the traction battery water pump connector (1) counterclockwise to disconnect it.



- Remove the 2 fixing bolts (1) (M6 × 30) of traction battery water pump with the 10 mm socket;
- Detach the traction battery water pump (2) from the bracket.

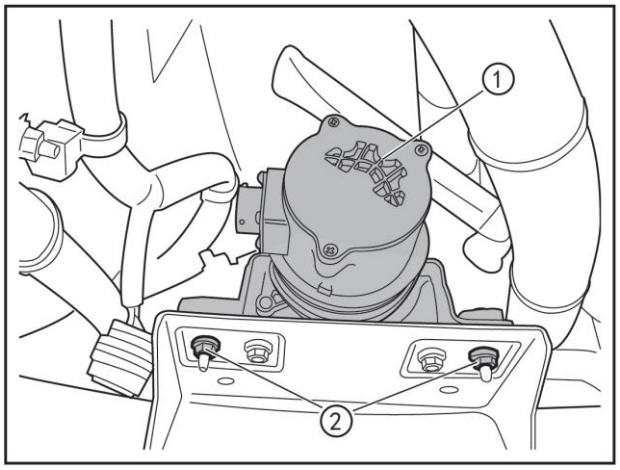


- Move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water inlet pipe (2) from the connecting joint on the traction battery water pump, and then take off the traction battery water inlet pipe.
- Move back the clamp (3) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water pump water inlet pipe (4) from the connecting joint on the traction battery water pump.
- Take off the traction battery water pump (5).

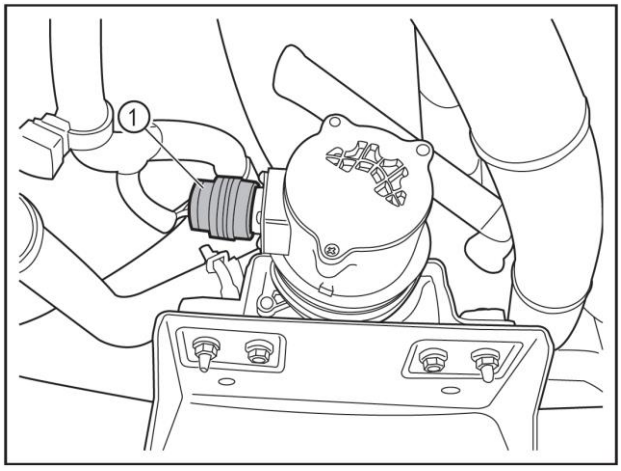


4- Refitting

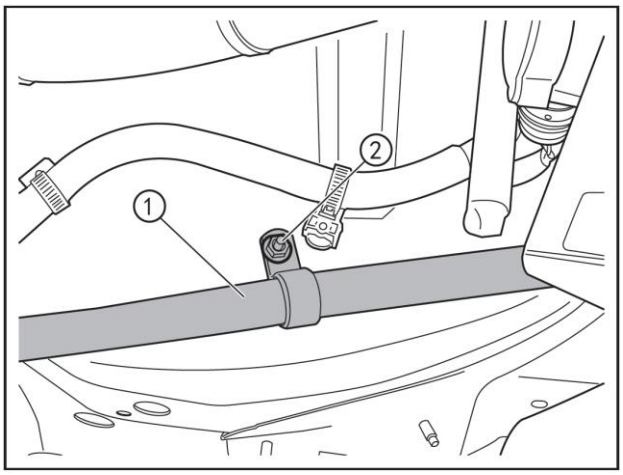
- Refit the end of traction battery water pump water inlet pipe (1) to the traction battery water pump (2) in place.
- Move the traction battery water pump water inlet pipe clamp (3) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).
- Refit the end of traction battery water inlet pipe (4) to the traction battery water pump in place.
- Move the traction battery water inlet pipe clamp (5) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).



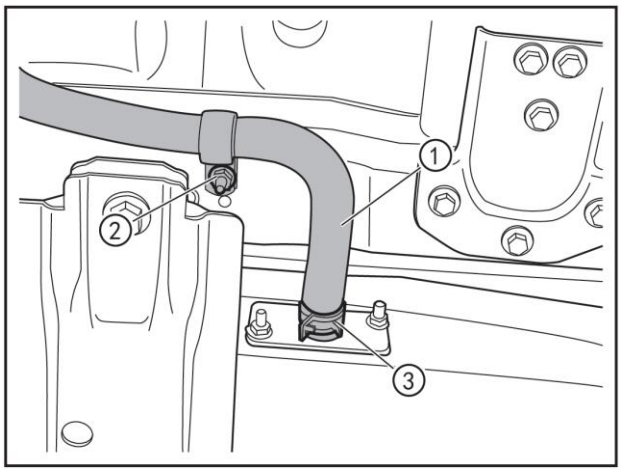
- Refit the traction battery water pump (1) onto the bracket and install its fixing bolt (2).
- Tighten the fixing bolt (2) (M6 × 30) of the traction battery water pump with the 10mm socket.



- Rotate the traction battery water pump connector (1) clockwise to connect it.



- Sleeve the bracket of traction battery water inlet pipe (1) onto the body stud.
- Tighten the fixing nut (2) of the traction battery water inlet pipe with the 10mm socket.

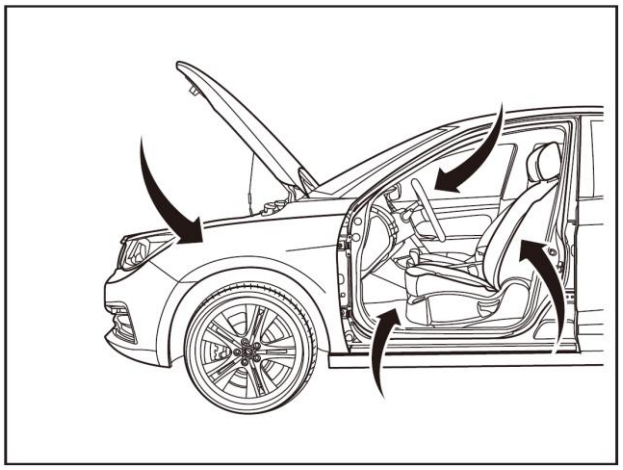


- Sleeve the bracket of traction battery water inlet pipe (1) onto the body stud.
- Tighten the fixing nut (2) of the traction battery water inlet pipe with the 10mm socket.
- Refit the end of traction battery water inlet pipe to the traction battery in place.
- Move the traction battery water inlet pipe clamp (3) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).

- Lower the vehicle and add the coolant. (Refer to "Change of Traction Battery Coolant" in this section)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

Removal and Refitting of Traction Battery Water Inlet Pipe

- Refer to “Removal and Refitting of Traction Battery Water Pump” in this section

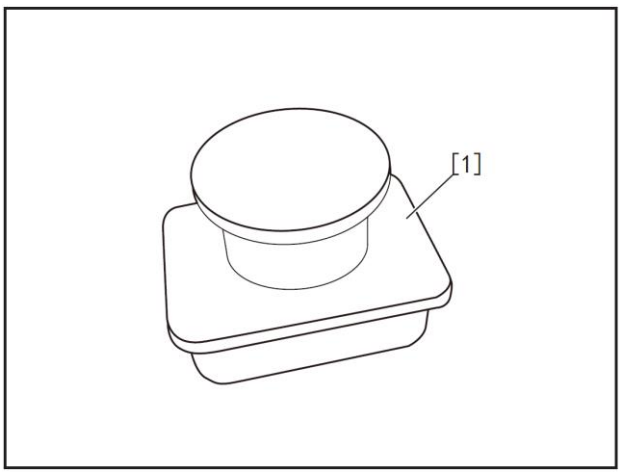


Removal and Refitting of Traction Battery Water Outlet Pipe

1 - Protection

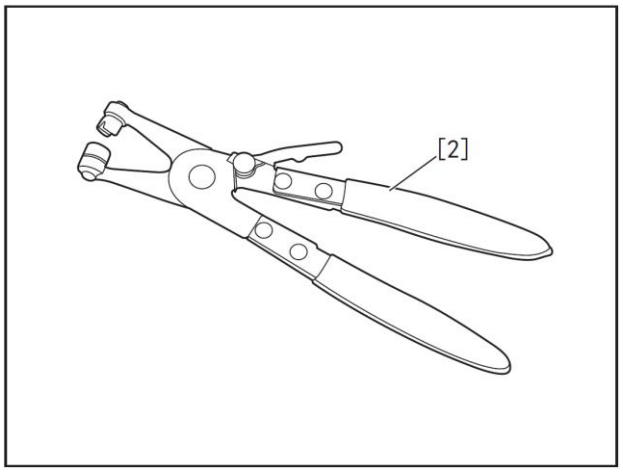
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

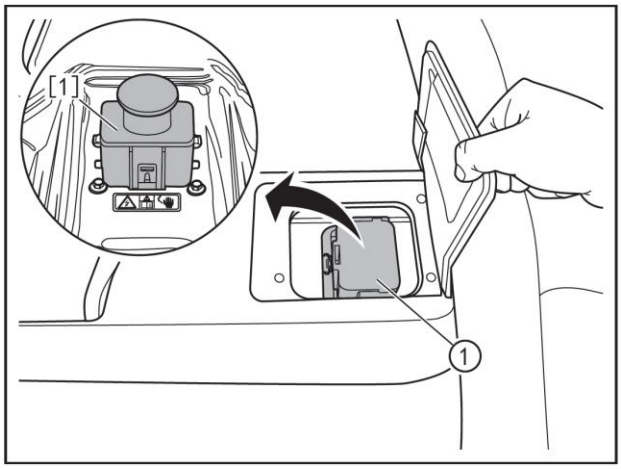


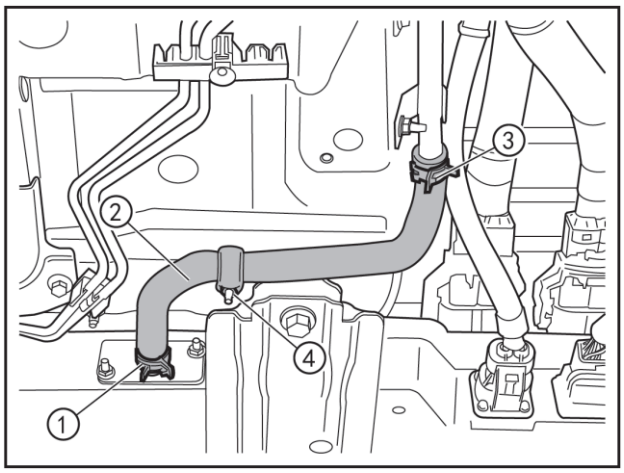
2 - Special tools

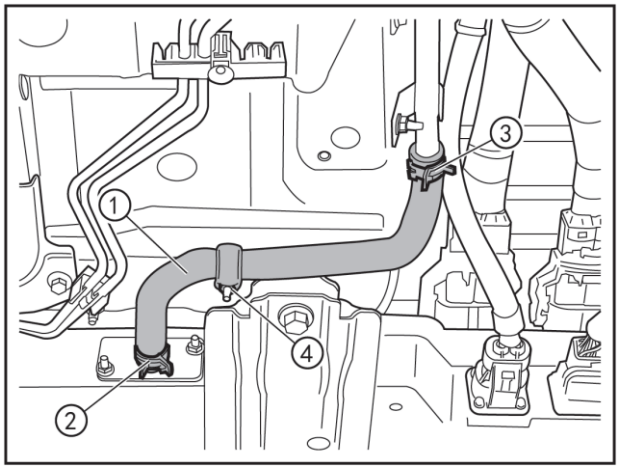
- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].







3 - Removal

⚠ CAUTION

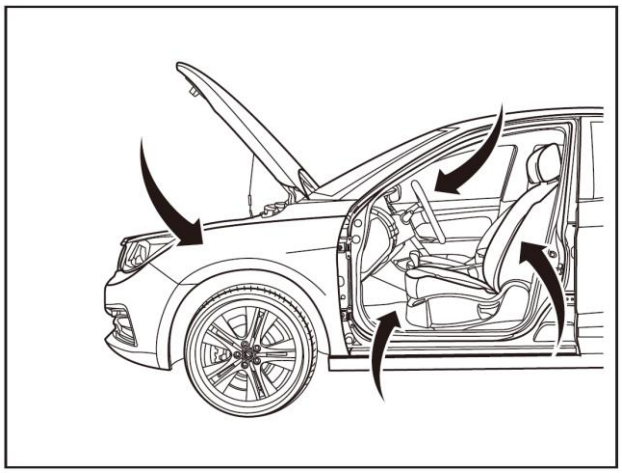
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- **During the removal of cooling pipeline, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**
- Lift the vehicle as appropriate.
- Place a container under the water outlet of traction battery.
- Move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water outlet pipe (2) from the connecting joint on the traction battery.
- Drain the traction battery coolant.
- Move back the clamp (3) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water outlet pipe from the connecting joint of traction battery water outlet steel pipe.
- Tighten the fixing nut (4) of traction battery water outlet pipe with the 10mm socket.
- Take off the traction battery water outlet pipe.

4- Refitting

- Install the two ends of the traction battery water outlet pipe (1) onto the traction battery and the traction battery water outlet steel pipe in place.
- Move the traction battery water outlet pipe clamps (2) and (3) to the white area and snap them into position with the water hose clamp removal and refitting pliers (BF0109).
- Sleeve the traction battery water outlet pipe bracket onto the body stud.
- Tighten the fixing nut (4) of the traction battery water outlet pipe with the 10mm socket.
- Lower the vehicle and add the coolant. (Refer to "Change of Traction Battery Coolant" in this section)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

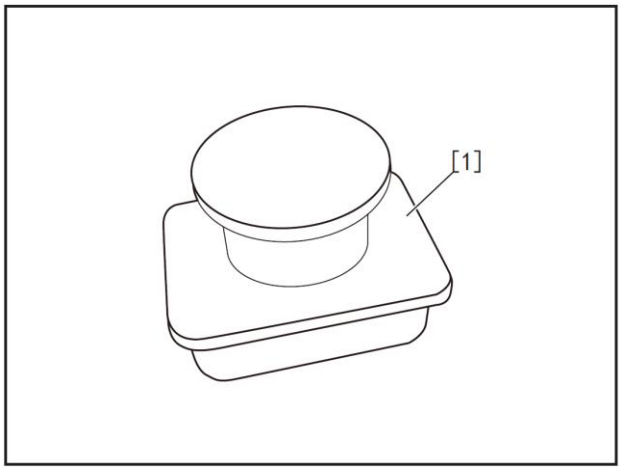


Removal and Refitting of Traction Battery Water Pump Water Inlet Pipe

1 - Protection

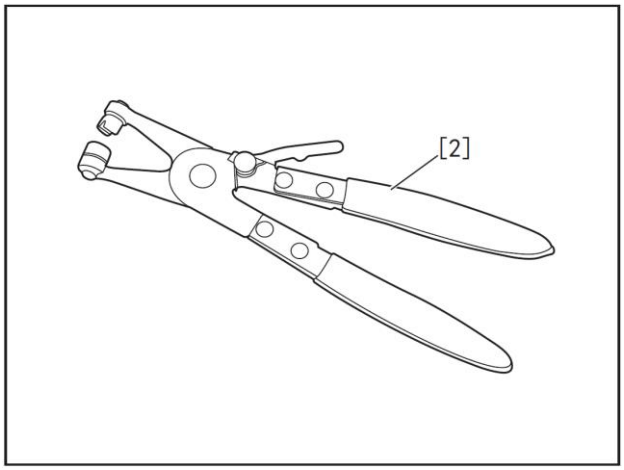
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

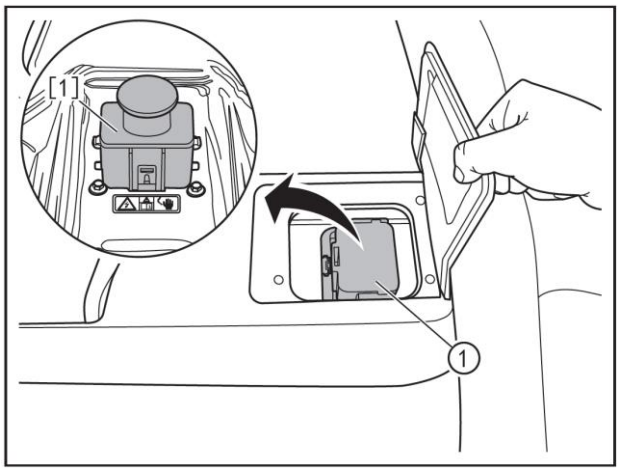


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



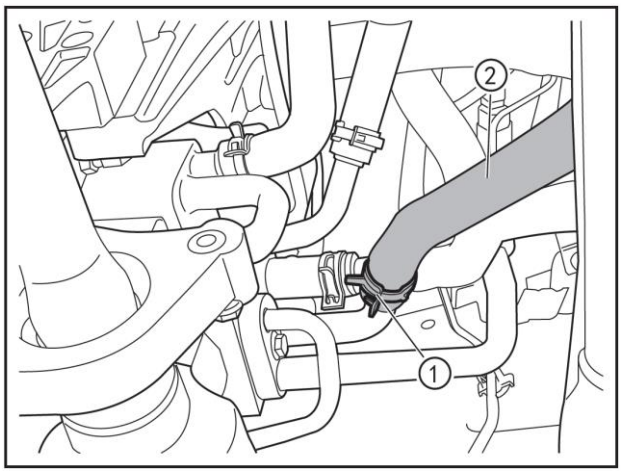
3 - Removal

⚠ CAUTION

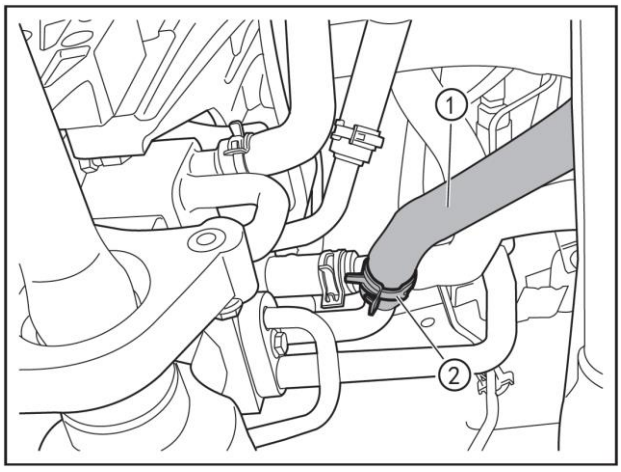
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

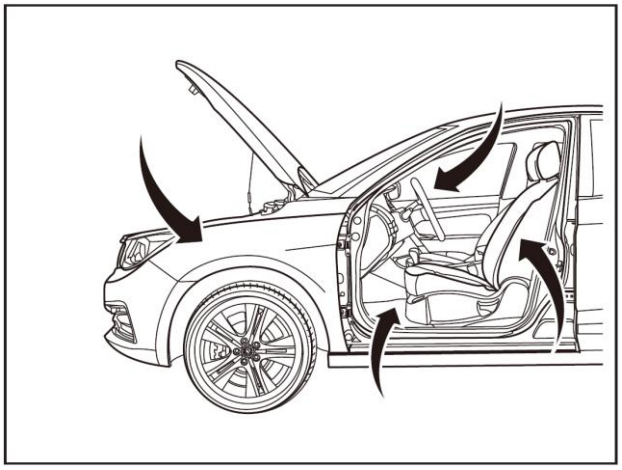
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- **During the removal of cooling pipeline, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**



- Remove the traction battery water pump. (Refer to “Removal and Refitting of Traction Battery Water Pump” in this section)
- Move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the traction battery water inlet pipe (2) from the connecting joint on the plate heat exchanger.
- Take off the traction battery water inlet pipe (2).



- Install the end of traction battery water inlet pipe (1) to the plate heat exchanger in place.
- Move the traction battery water pump water inlet pipe clamp (2) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).
- Lower the vehicle and add the coolant. (Refer to "Change of Traction Battery Coolant" in this section)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

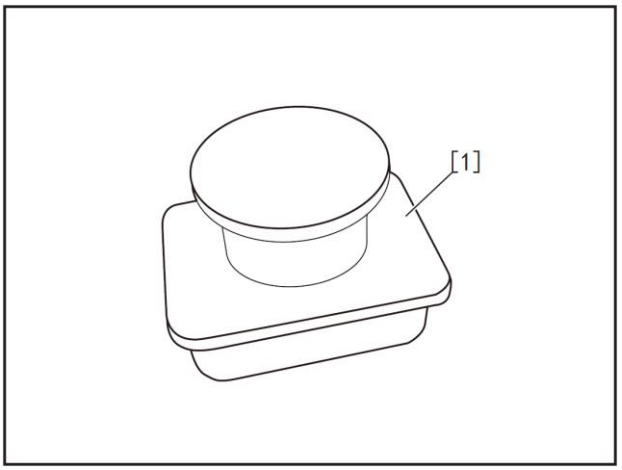


Removal and Refitting of Thermal Management System Expansion Tank

1 - Protection

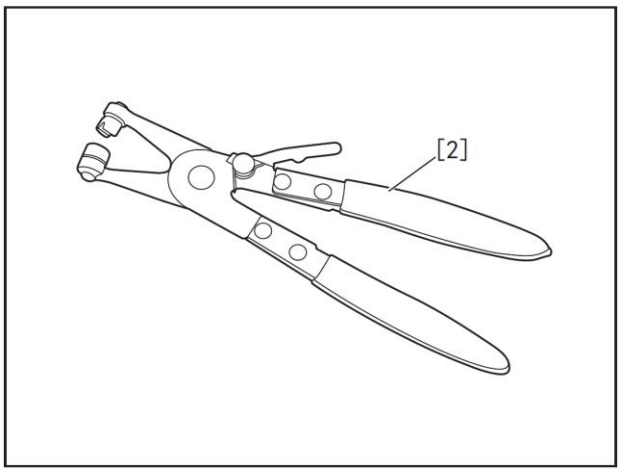
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

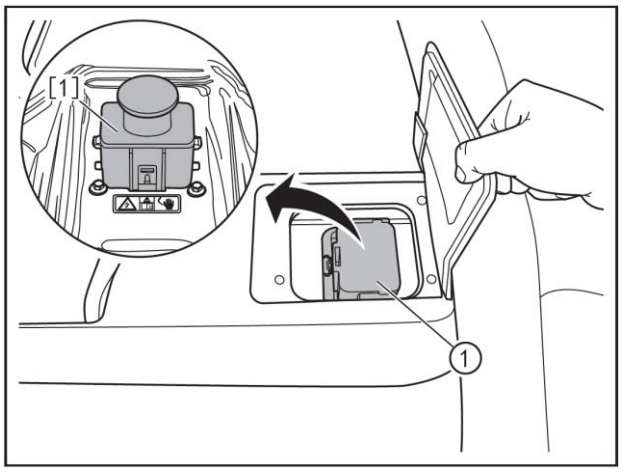


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



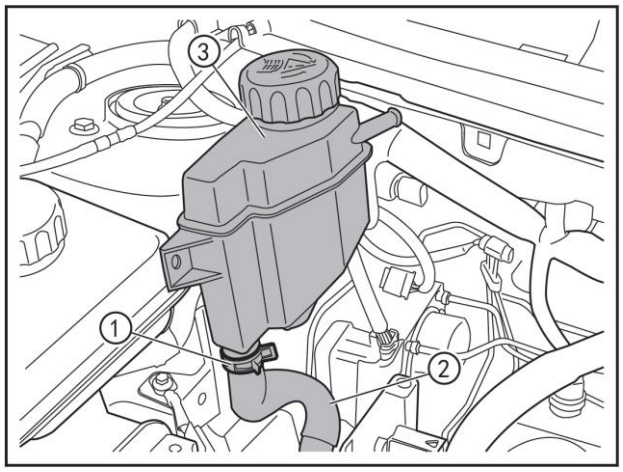
3 - Removal

⚠ CAUTION

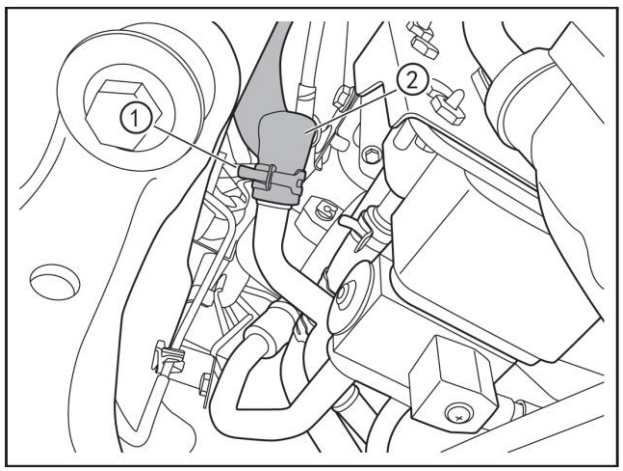
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

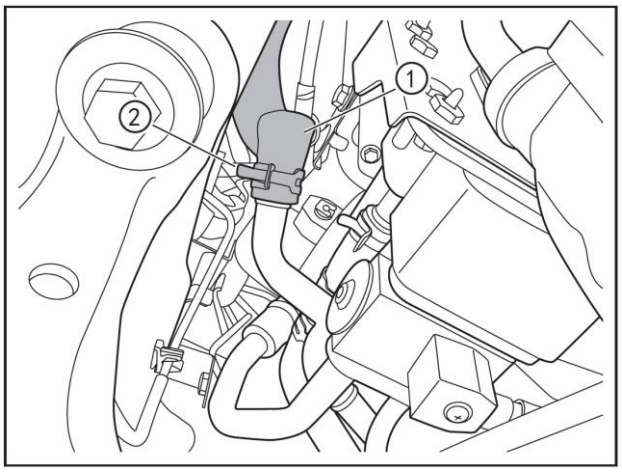
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**
- **During the removal of cooling pipeline, a few coolant will flow out. Before disconnecting the pipe, use a rag to wrap the joint to be removed to avoid pollution.**



- Drain the traction battery coolant. (Refer to "Change of Traction Battery Coolant" in this section)
- Move back the clamp (1) with the water hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water outlet pipe (2) from the connecting joint on the expansion tank (3).
- Remove the expansion tank (3).

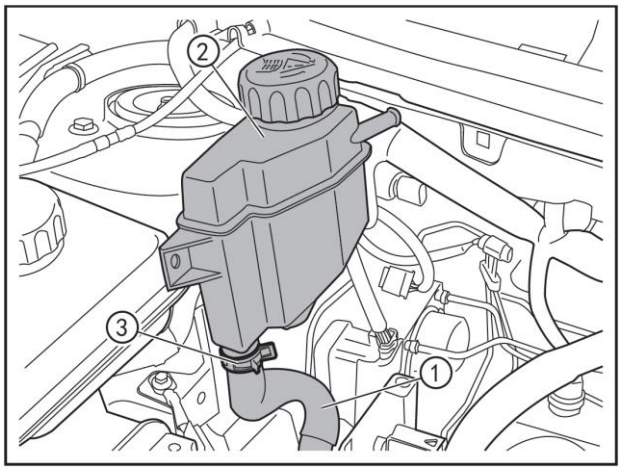


- Lift the vehicle, move back the clamp (1) with the hose clamp removal and refitting pliers (BF0109), and disconnect the expansion tank water outlet pipe (2) from the connecting joint on the plate heat exchanger.
- Take down the expansion tank water outlet pipe (2).



4- Refitting

- Install one end of expansion tank water outlet pipe (1) to the plate heat exchanger in place.
- Move the expansion tank water outlet pipe clamp (3) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).



- Lower the vehicle, and install the other end of expansion tank water outlet pipe (1) to the expansion tank (2) in place.
- Move the expansion tank water outlet pipe clamp (3) to the white area and snap it into position with the water hose clamp removal and refitting pliers (BF0109).

- Add the coolant. (Refer to "Change of Traction Battery Coolant" in this section)
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

August 2018

5. Energy Storage and Power Supply

5.1 Traction battery

5.2 Starting and Charging System

5.3 High voltage distribution box

5

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company

After-sales Service Technical Document

5.2

Starting and Charging System

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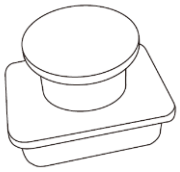
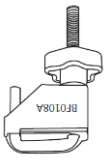
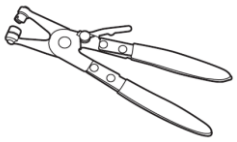
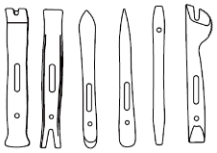
Removal and Refitting of Charging Switch 5.2-24

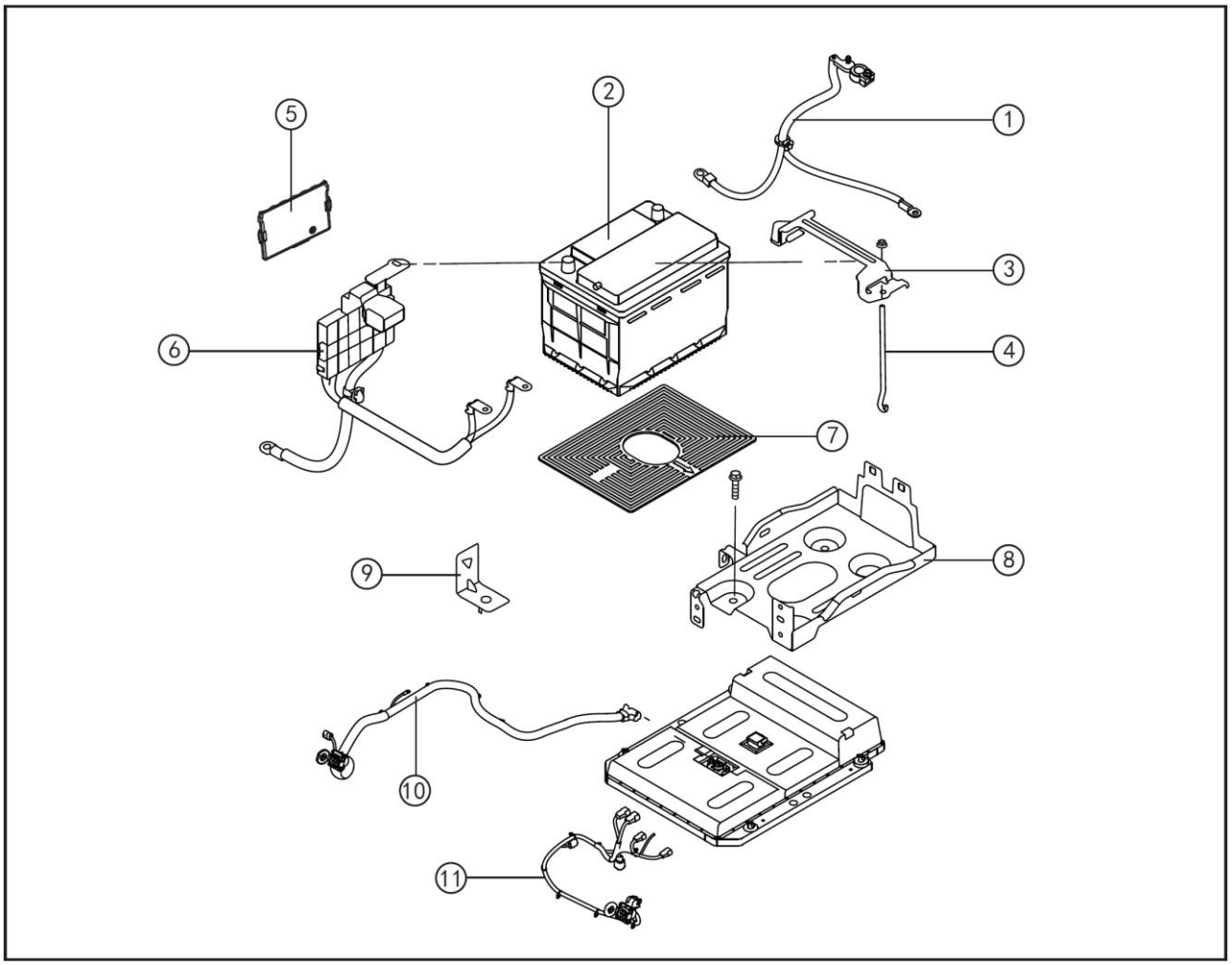
- Before installing the on-board charger, measure that the insulation resistance of the high-voltage interface electrode is greater than or equal to 20MΩ, otherwise, it is not allowed to install the on-board charger.

Special tools

Tool No.	Tool Name	Tool Picture	Description
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
BF0108A/B	Hose pincers		For clamping the hose to prevent leakage
BF0109	Water hose clamp removal and refitting pliers		For removing and refitting hose clamps
BF1102	Interior trim removal tool		For removing interior trims and wire harness clips, etc.
A60EV0104	Insulation resistance tester		For testing the insulation performance of high voltage components pf traction battery, motor, motor control unit, high voltage distribution box, charger, heater, and electric compressor

Structure and Features

Battery Components

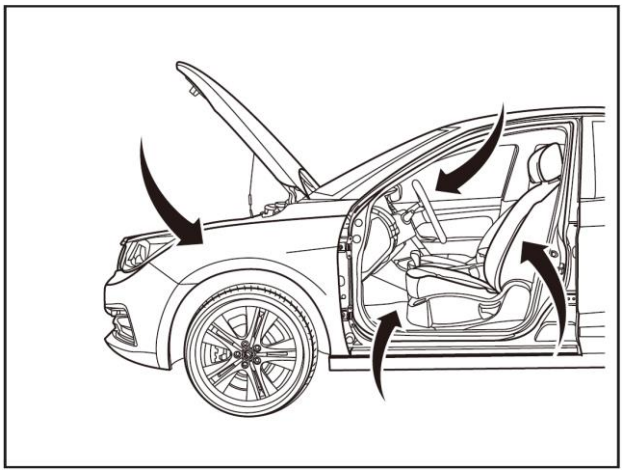


1. Negative power cable of battery	5. Fuse box cover	9. Battery cable fixing bracket
2. Battery	6. Positive power cable of battery	10. Fast charging cable
3. Battery upper pressure plate	7. Battery cushion	11. Slow charging input cable
4. Battery fixing rod	8. Battery box	

DTCs of On-board Charger (OBC)

- Use a special scan tool to perform fault diagnosis.

DTC	Description	Possible causes	Recommended countermeasures
P1C00	Hardware malfunction	MCU hardware damage	Replace the charger.
P1C01	Charger reduction in rated parameters	Charger failure; water-cooling circulation system fault; poor ventilation.	Replace the charger; check the water-cooling circulation system; move to a well ventilated area.
U0111	Communication fault	CAN receiver module fault; No BMS message or VCU message received.	Replace the charger; Check the CAN bus message.
P1C04	Input undervoltage	Grid power supply abnormality; inspection circuit abnormality.	Test the grid voltage; replace the charger.
P1C05	Input overvoltage	Grid power supply abnormality; inspection circuit abnormality.	Test the grid voltage; replace the charger.
P1C06	PFC overvoltage	PFC circuit abnormality	Inspect PFC circuit
P1C07	PFC undervoltage	PFC circuit abnormality	Inspect PFC circuit
P1C08	Output overcurrent	External circuit shorted; battery relay closed instantly.	Inspect the output circuit; inspect the relay of the traction battery.
P1C09	Output undervoltage	Traction battery abnormality; high voltage circuit fault; inspection circuit abnormality.	Inspect the traction battery; inspect the charger output circuit; replace the charger.
P1COC	Output overvoltage	Traction battery abnormality; high voltage circuit abnormality; inspection circuit abnormality.	Inspect the traction battery; inspect the charger output circuit; replace the charger.
P1C0D	Output circuit short during charging	Charger output DC high voltage short circuit; the battery relay closed instantly	Inspect the charger output circuit; inspect the status of the external relay.
P1C0E	Charger overtemperature	Charger failure; water-cooling circulation system fault; poor ventilation.	Replace the charger; check the water-cooling circulation system; move to a well ventilated area.
P1C0F	Temperature sensor fault	L/N terminal temperature sensor not installed, damaged or short circuited	Inspect the temperature sensor.
P0A0C	High voltage interlock circuit failed	High voltage connector disconnected; high voltage connector not connected in place.	Check the connection status of connector
P1C10	Electronic lock failed	Wrong connection of related wire harness of electronic lock on vehicle socket; mismatch of electronic lock with the vehicle socket, or the not-in-place installation or fault of electronic lock.	Check the electronic lock wire harness; check the electronic lock body.
P1C11	CP fault	Charging pile output control guiding CP signal fault; charging cable or charging gun head hardware fault.	Check the charging pile control guiding CP signal waveform; check the charging cable or the vehicle socket of charging gun.
P1C12	CC fault	Charging gun head hardware failed	Inspect the charging gun plug.
P1C12	HVAC AC input timeout	Manual operation timed out for 3min; charging pile fault.	Perform charging again; check the charging pile.
U1355	BMS charging command timeout	The BMS charging command timed out for 15s; CAN receiver module fault.	Check the BMS ; replace the charger.
P1C13	Internal communication fault	Charger internal communication hardware fault, and communication chip and signal path failure.	Replace the charger.

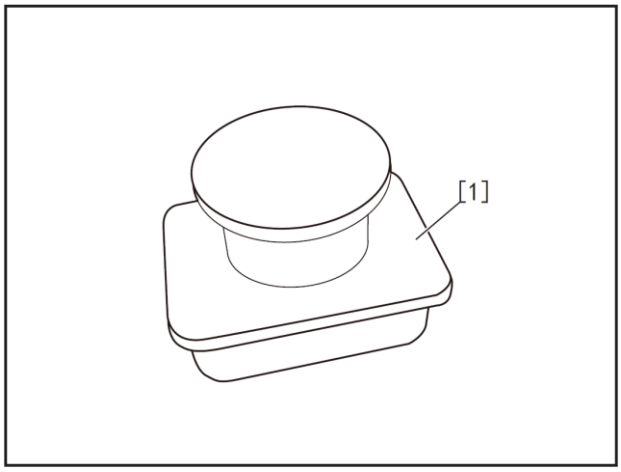


Removal and Refitting of On-board Charger

1 - Protection

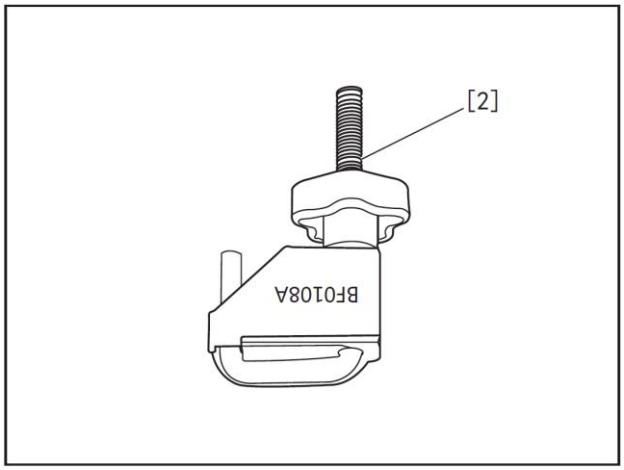
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

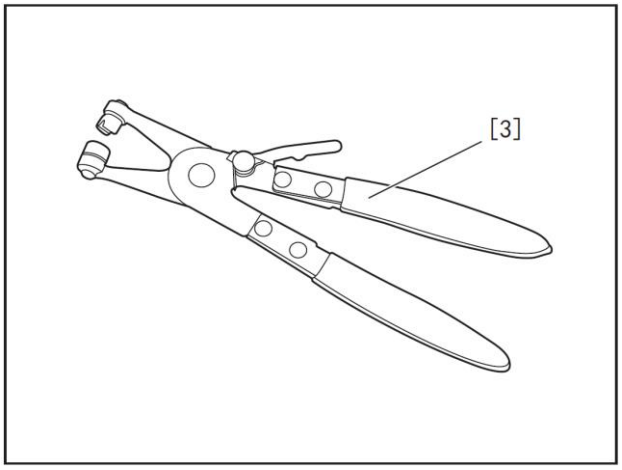


2 - Recommended tools

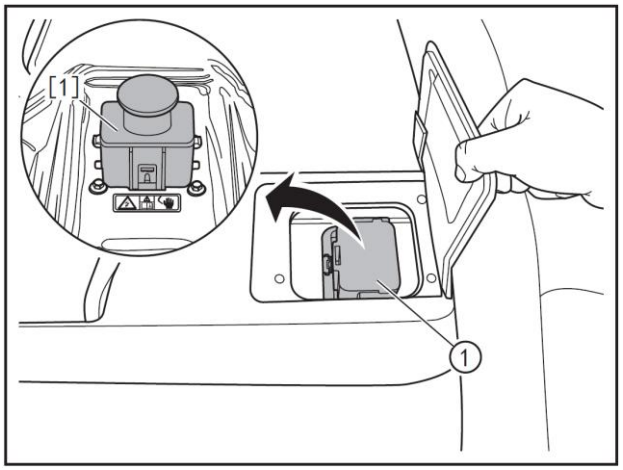
- Traction battery service switch plug (E700101) [1].



- Hose pincers (BF0108A) [2].



- Water hose clamp removal and refitting pliers (BF0109) [3].



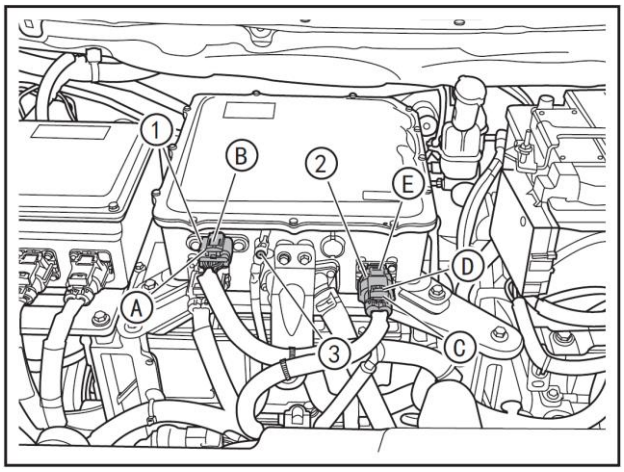
3 - Removal

⚠ CAUTION

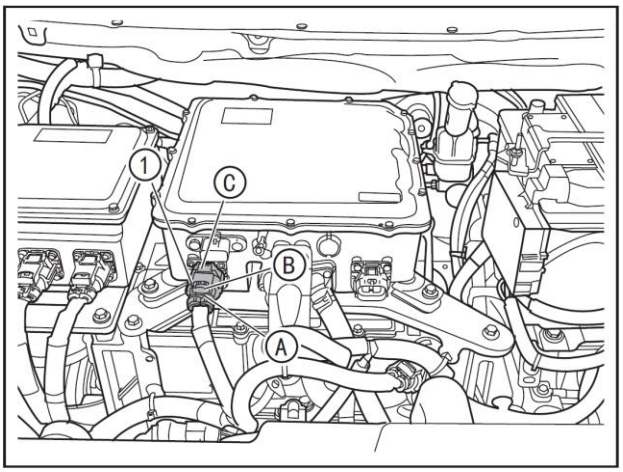
- **Always wear insulated gloves and use insulated tools for all operations.**
- **The inside of the on-board charger is at high voltage. Do not disassemble or repair it by yourself, otherwise electric shock may occur.**
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

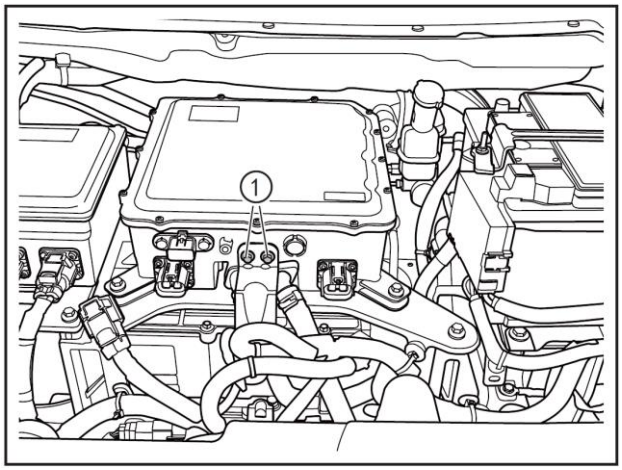
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



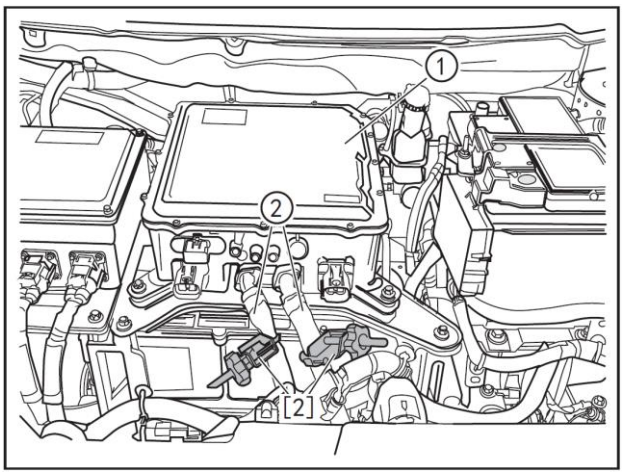
- Unlock the clip (A) of on-board charger connector (1) backwards, and then press down the clip (B) to disconnect the on-board charger connector (1).
- Unlock the clip (C) of on-board charger connector (2) outwards, and then press down the clip (D) to unlock backwards, and then press down the clip (E) to disconnect the on-board charger connector (2).
- Use the 10mm socket to remove the on-board charger ground bolts (3) (M6 × 12).



- Unlock the clip (A) of on-board charger connector (1) outwards, and then press down the clip (B) to unlock backwards, and then press down the clip (C) to disconnect the on-board charger connector (1).



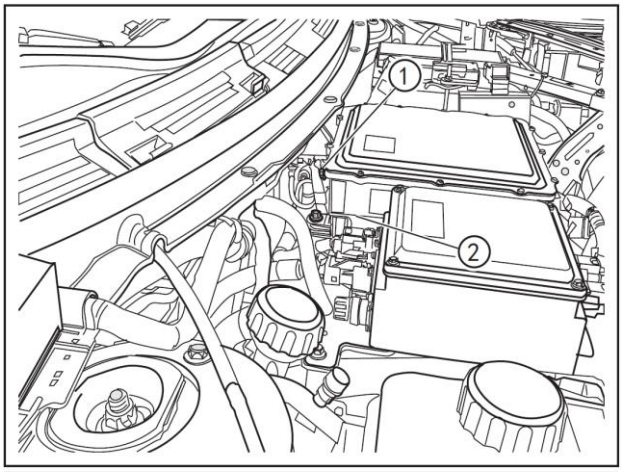
- Use the 8mm socket to remove the 2 fixing bolts (1) (M6 × 10) of the wire harness bracket, and detach the bracket and place it in a position involving no interference.



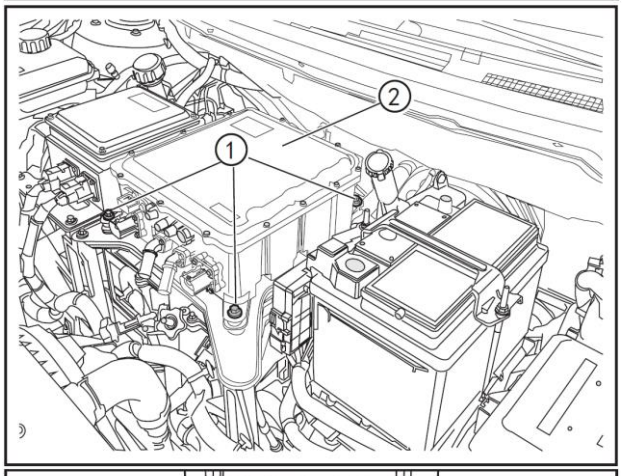
- Use the hose clamp pliers (BF0108A/B) [2] to clamp the coolant pipe (2) of on-board charger (1).
- Remove the on-board charger coolant pipe clamp with the water hose clamp removal and refitting pliers (BF0109), and then disconnect the coolant pipe.

⚠ CAUTION

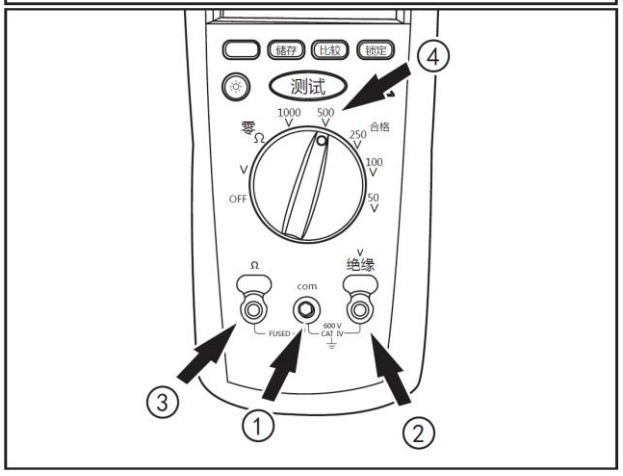
- **Before disconnecting the coolant pipe, move the connector to a proper position to prevent the coolant from falling into the connector and causing circuit failure.**
- **After removing the coolant pipe, wipe off the residual liquid around the pipe.**



- Use the 8mm socket to remove the fixing bolts (1) (M6×12) of on-board charger ground wire harness.
- Use a 10mm socket to remove the on-board charger fixing bolts (2) (M8×25).



- Use a 10mm socket to remove the on-board charger fixing bolts (1) (M8×25).
- Take off the on-board charger (2).

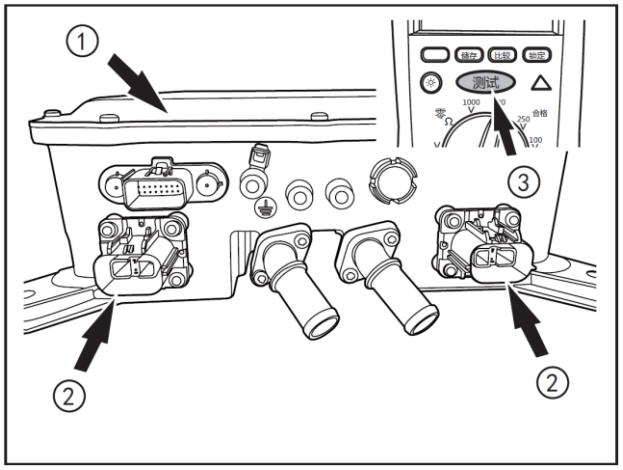


4 - Check

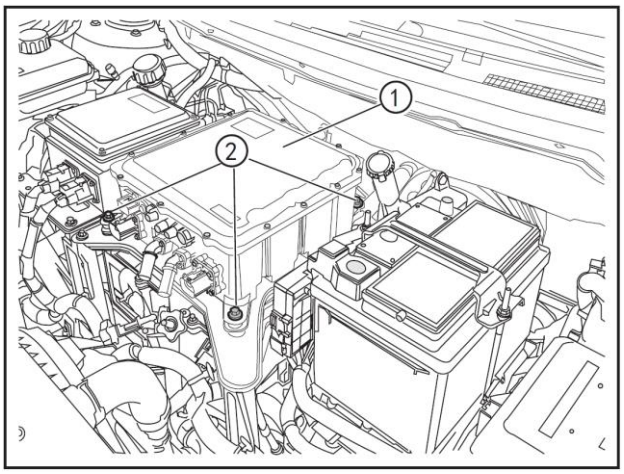
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe to the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**

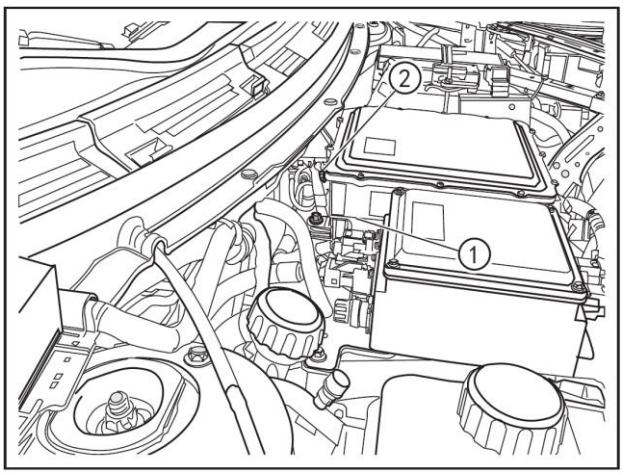


- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the insulation resistance of 4 electrodes (2) of the illustrated 2 connectors to housing with the red probe.
- Press and hold the test button (3) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

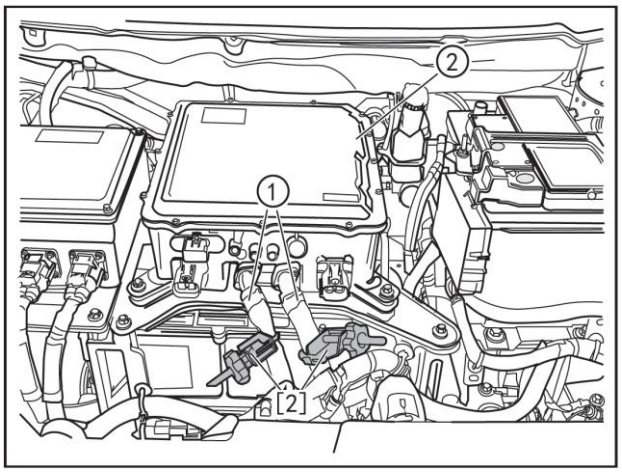


5- Refitting

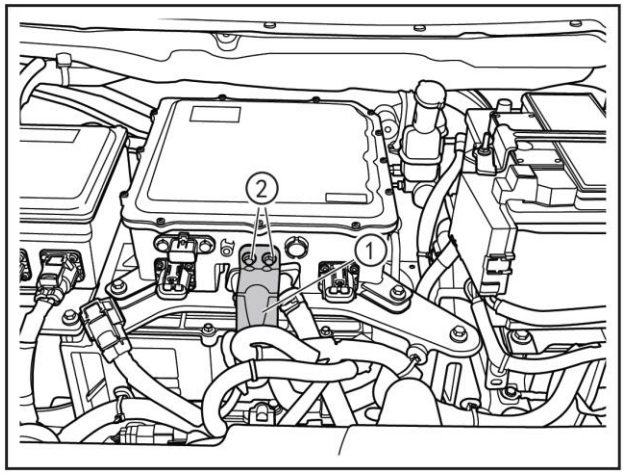
- Refit the on-board charger (1) in place, install the fixing bolts (2) (M8 × 25) of on-board charger, and pre-tighten them with the 10mm socket.



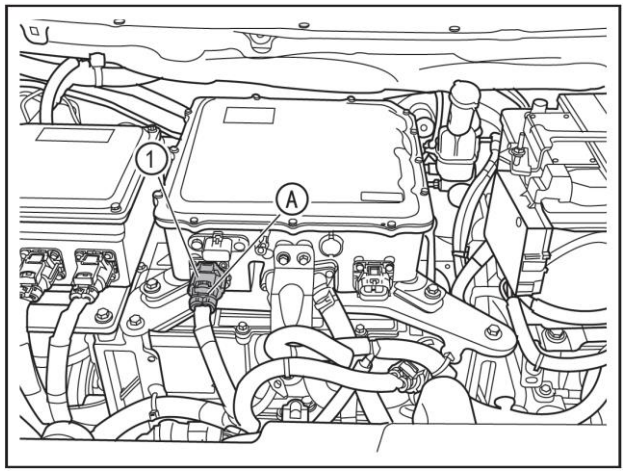
- Install the fixing bolts (1) (M8 × 25) of on-board charger and tighten all the fixing bolts of the on-board charger with the 10 mm socket to 14N·m.
- Refit the on-board charger ground wire harness in place, install the fixing bolts (2) (M6 × 12) of ground wire harness and tighten them with the 8mm socket to 14N·m.



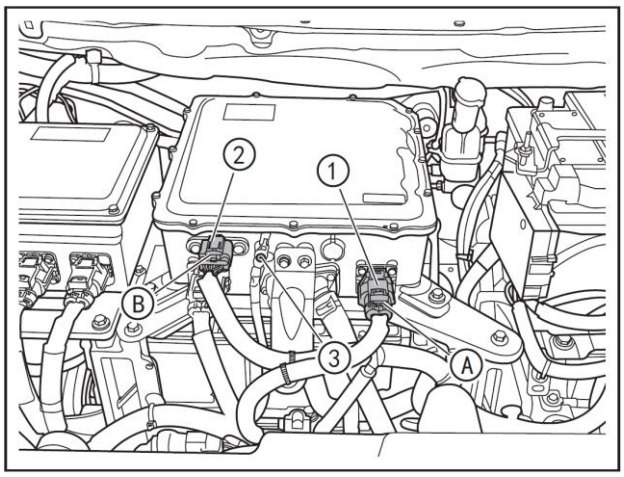
- Refit the on-board charger coolant pipe (1) to the end on on-board charger (2) in place after alignment, and then move the pipe clamp to the mounting position with the water hose clamp removal and refitting pliers (BF0109).
- Remove and take off the hose clamp pliers (BF0108A/B) [2].



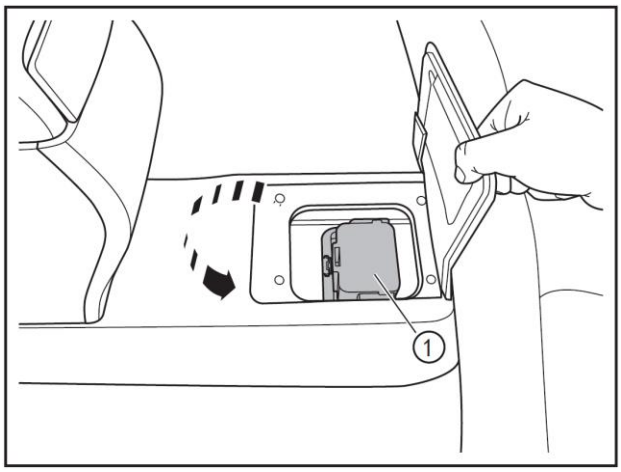
- Refit the wire harness bracket (1) in place, install the 2 fixing bolts (2) (M6 × 10) of the wire harness brackets, and tighten them with the 8 mm socket.



- Refit the on-board charger connector (1) until a "click" is heard, and snap the clip (A) into position.



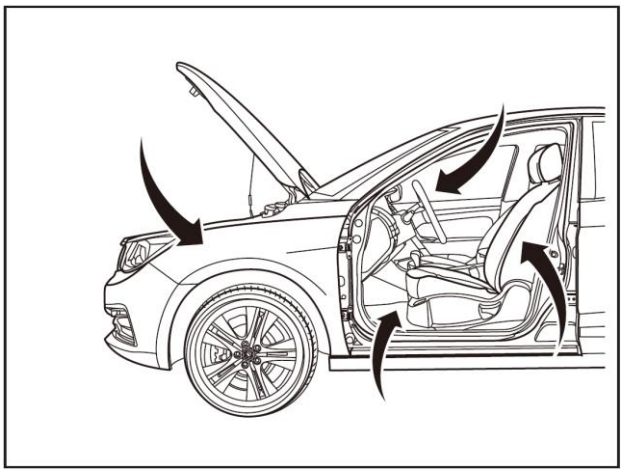
- Refit the on-board charger connector (1) until a "click" is heard, and snap the clip (A) into position.
- Refit the on-board charger connector (2) until a "click" is heard, and snap the clip (B) into position.
- Refit the on-board charger ground wire harness in place, install the fixing bolts (3) (M6 × 12) of ground wire harness and tighten them with the 10mm socket.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After the installation is completed, check the coolant level and add the coolant as appropriate.**

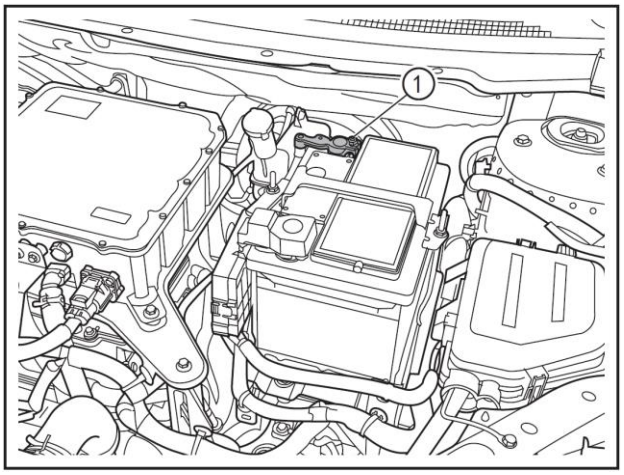


Removal and Refitting of Battery

1 - Protection

Place protective pads at following locations:

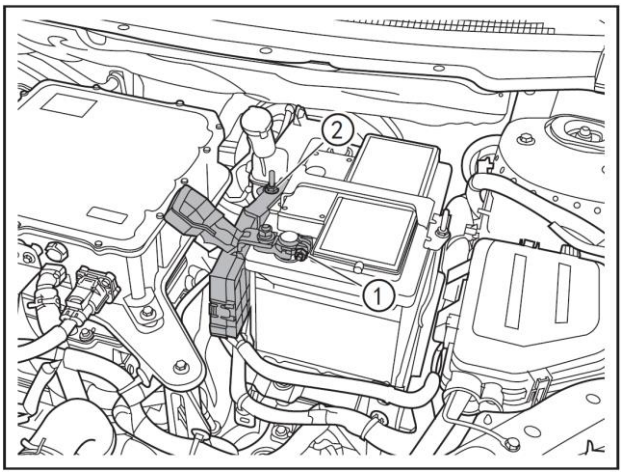
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



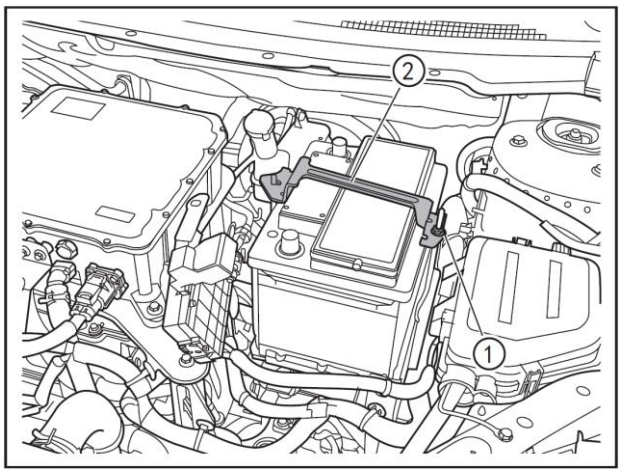
2 - Removal

⚠ CAUTION

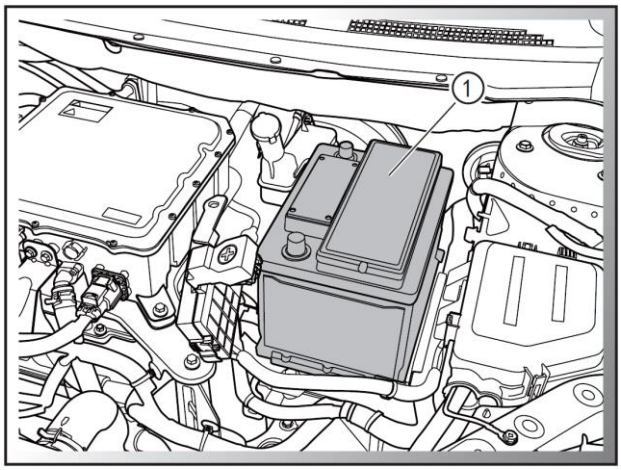
- **Always wear insulated gloves and use insulated tools for all operations.**
- **Never place any tool on the battery, for fear of short circuit.**
- Turn off the ignition switch.
- Remove the fixing nut (1) of battery negative cable with the 10mm wrench, and then disconnect the battery negative cable.



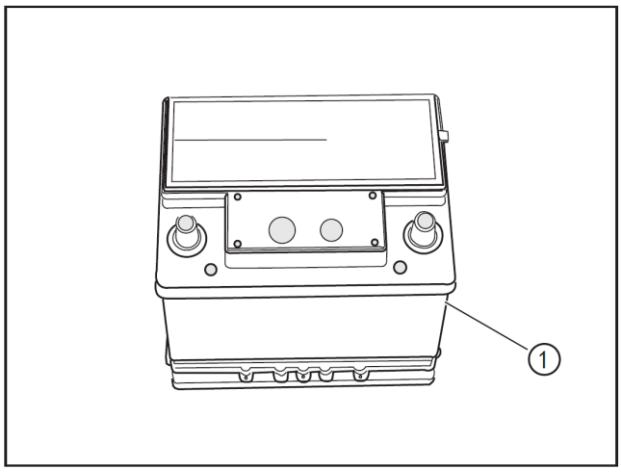
- Remove the fixing nut (1) of battery positive cable with the 10mm wrench.
- Remove the right fixing nut (2) of battery upper pressure plate with the 10mm long socket, and then take out the battery positive cable upwards.



- Remove the left fixing nut (1) of battery upper pressure plate with the 10mm long socket.
- Take down the battery upper pressure plate (2).

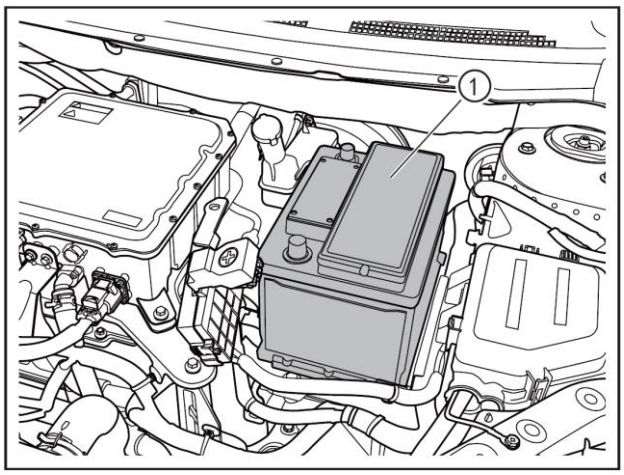


- Take down the battery (1).



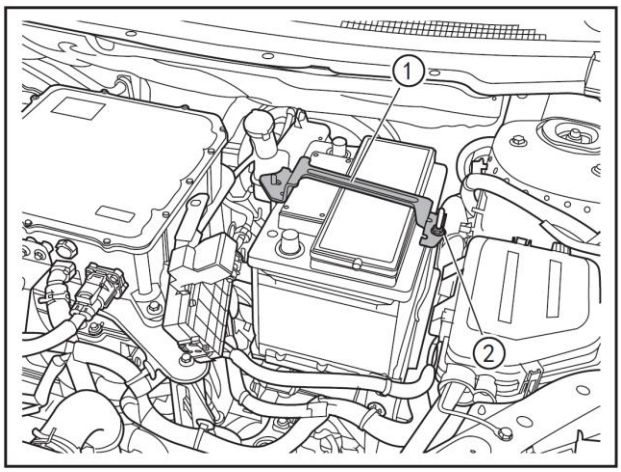
3 - Check

- Check the battery (1) for any visible damage, such as damaged battery casing that may cause electrolyte leakage. If any such damage is found, replace the battery and find the cause.

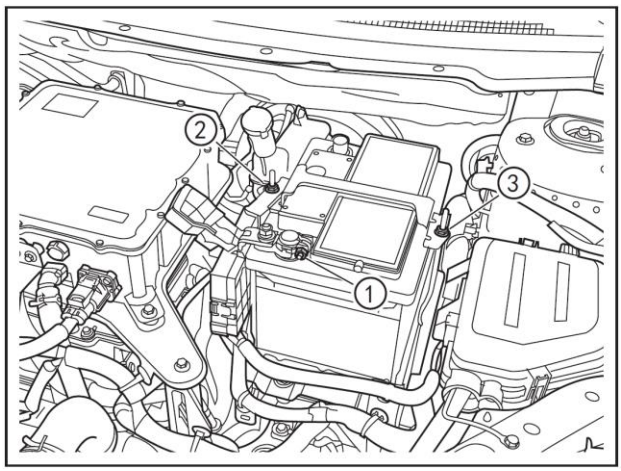


4- Refitting

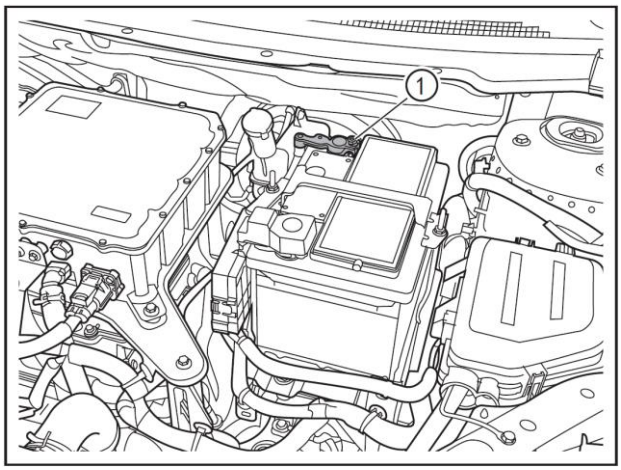
- Place the battery (1) in the battery frame.



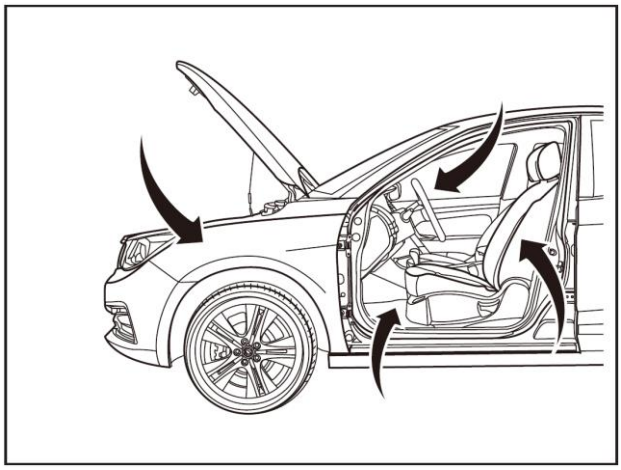
- Refit the battery upper pressure plate (1).
- Refit the left fixing nut (2) of the battery upper pressure plate, and then pre-tighten it with the 10 mm long socket.



- Refit the battery positive cable, and use the 10 mm socket to tighten the fastening nuts (1) of battery positive cable.
- Refit the right fixing nut (2) of the battery upper pressure plate, and then tighten the left fixing nut (3) of the battery upper pressure plate with the 10 mm long socket.



- Connect the battery negative cable and tighten fixing nut (1) of the battery negative cable with the 10mm wrench .

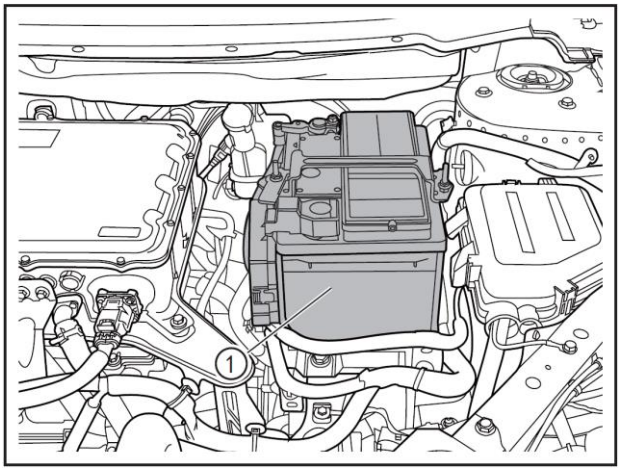


Removal and Refitting of Battery Bracket

1 - Protection

Place protective pads at following locations:

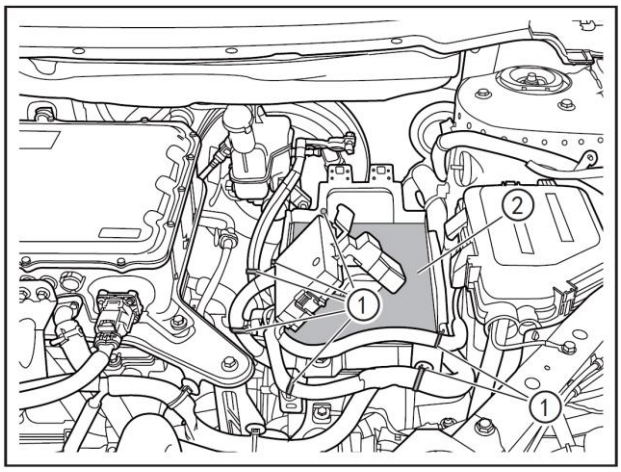
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



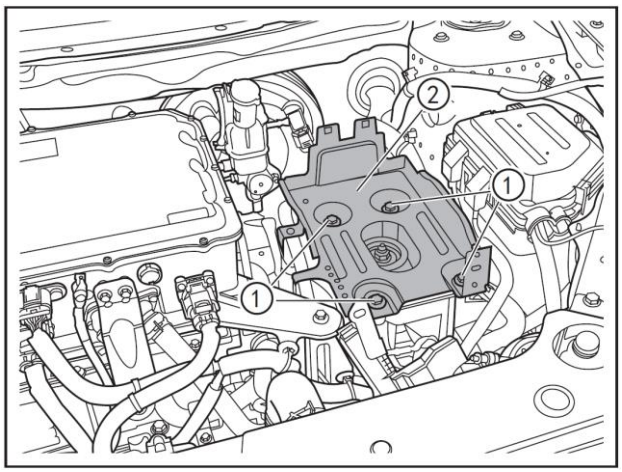
2 - Removal

⚠ CAUTION

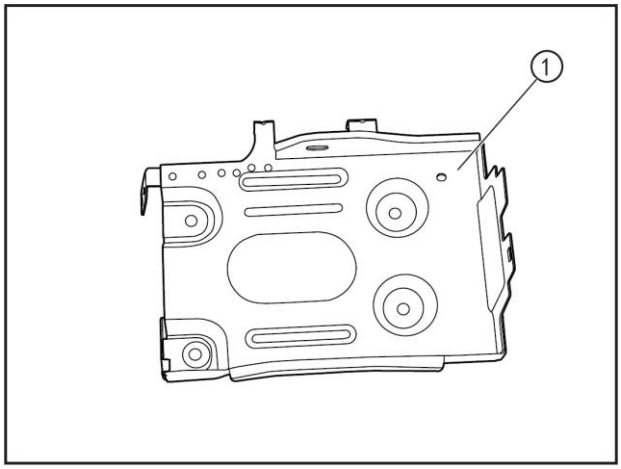
- **Always wear insulated gloves and use insulated tools for all operations.**
- **Never place any tool on the battery, for fear of short circuit.**
- Remove the battery (1). (Refer to Removal, Inspection and Refitting of Battery)



- Detach the wire harness clip (1) from the bracket.
- Remove the battery mat (2).

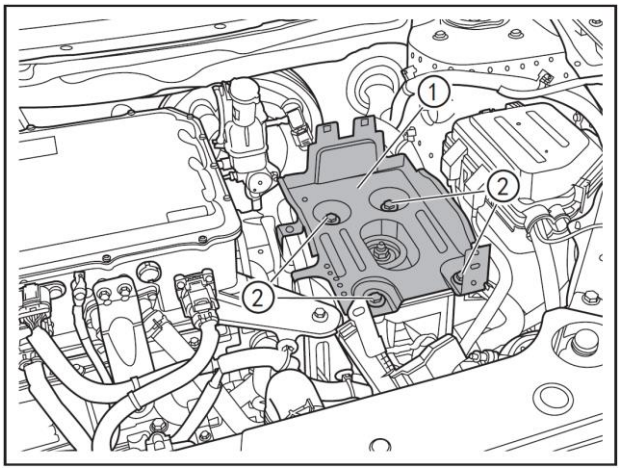


- Remove the 4 fixing bolts (1) (M8×25) of the battery bracket with a 13 mm socket.
- Remove the battery bracket (2).



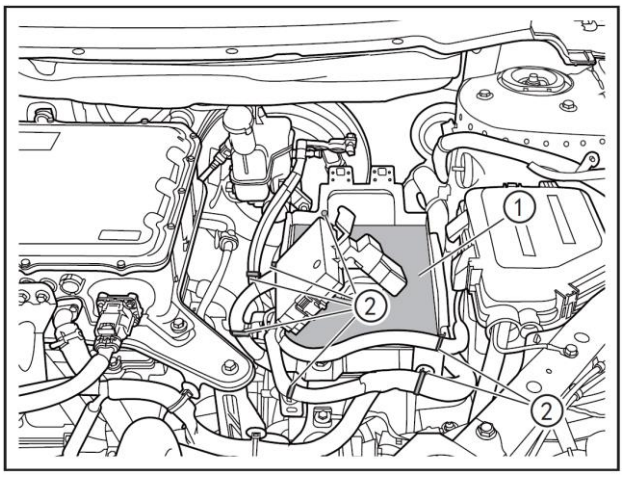
3 - Check

- Check if the battery tray (1) and the wire harness bracket are deformed.

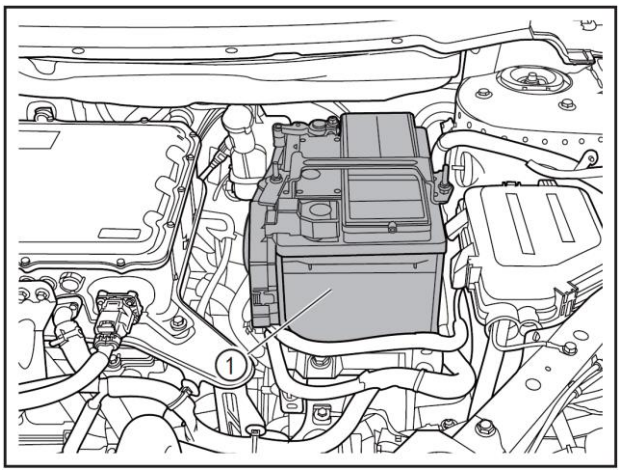


4- Refitting

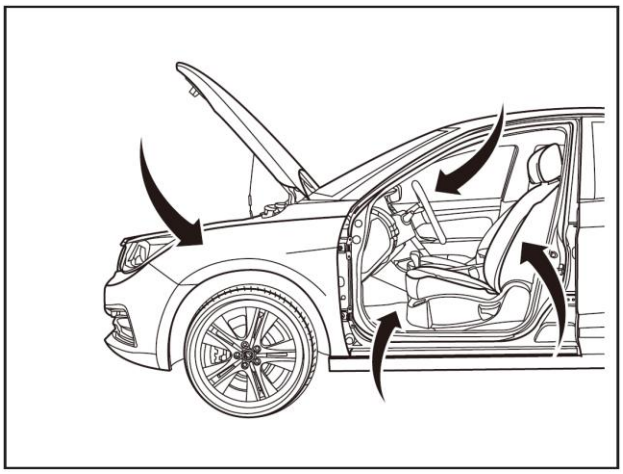
- Refit the battery tray (1) into the mounting holes.
- Tighten the 4 fixing bolts (2) (M8 × 25) of the battery tray with the 13mm socket.



- Refit the battery mat (1).
- Refit the wire harness clip (2) to the bracket.



- Refit the battery (1). (Refer to "Removal and Refitting of Battery").

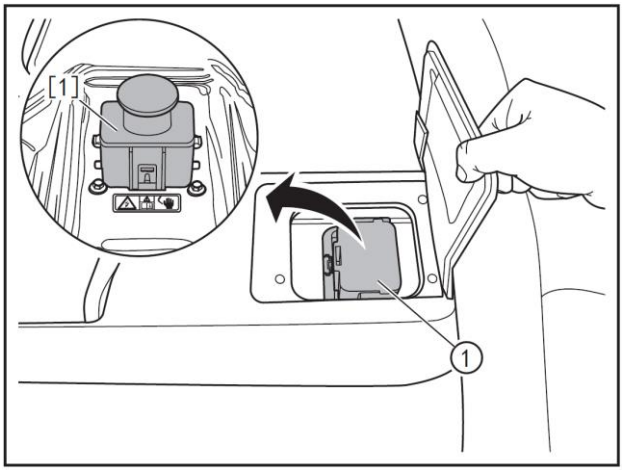


Removal and Refitting of DC Charging Harness

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



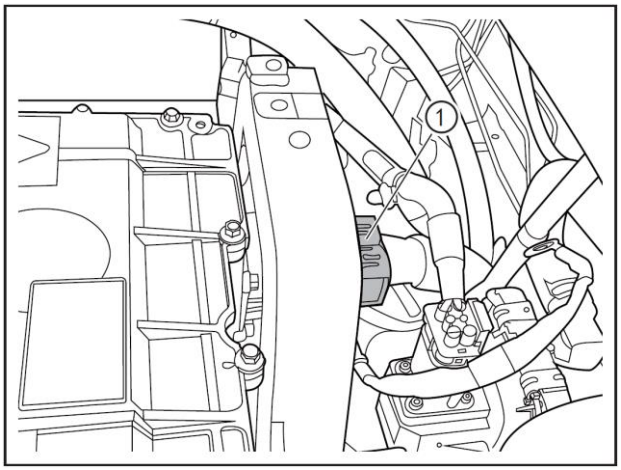
2 - Removal

⚠ CAUTION

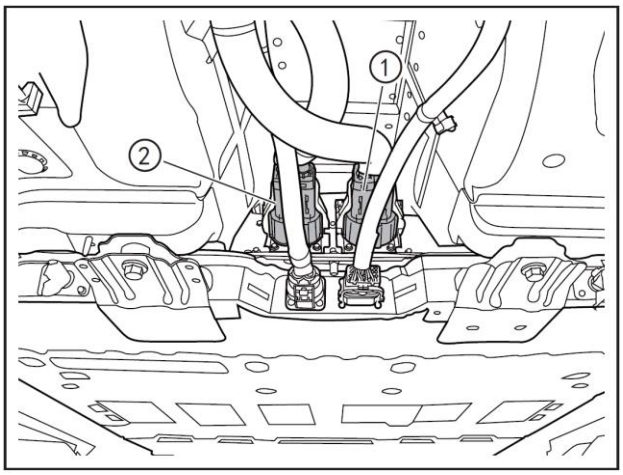
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")

⚠ CAUTION

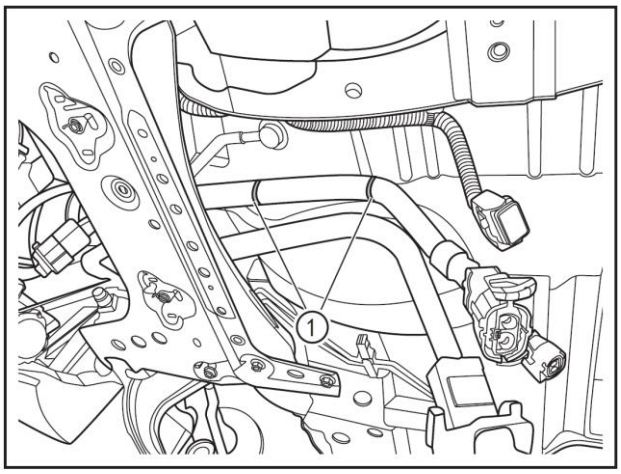
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



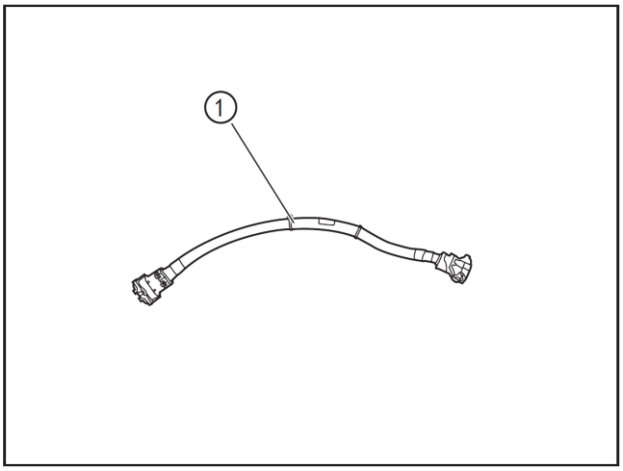
- Disconnect the motor control unit rear connector (1).



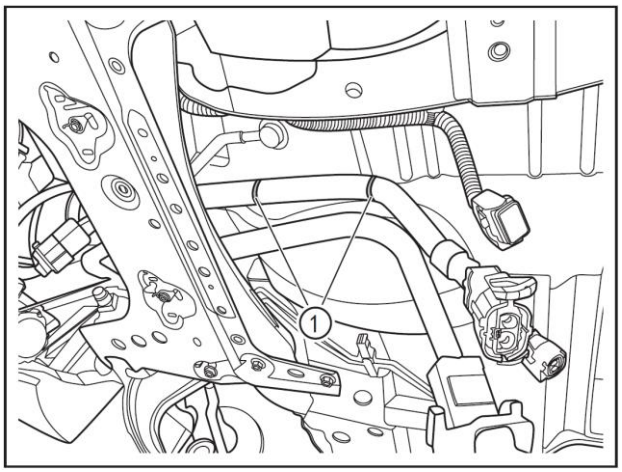
- Unlock the locking clip of fast-charge high voltage wire harness of traction battery, open the retaining clip, and then disconnect the fast-charge high voltage wire harness connector (1) of traction battery.
- Unlock the locking clip of high voltage wire harness of traction battery, open the retaining clip, and then disconnect the high voltage wire harness connector (2) of traction battery.



- Lift the vehicle as appropriate.
- Pry the wire harness clip (1) open.

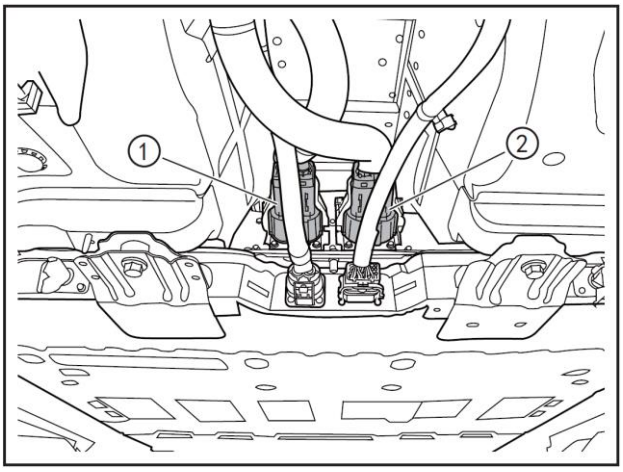


- Remove the DC charging harness (1).

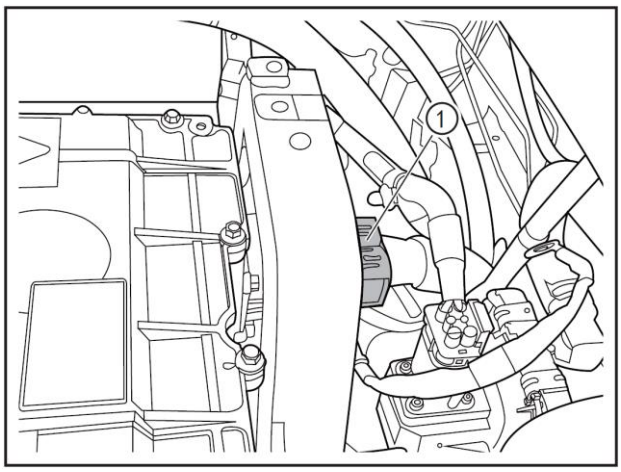


3- Refitting

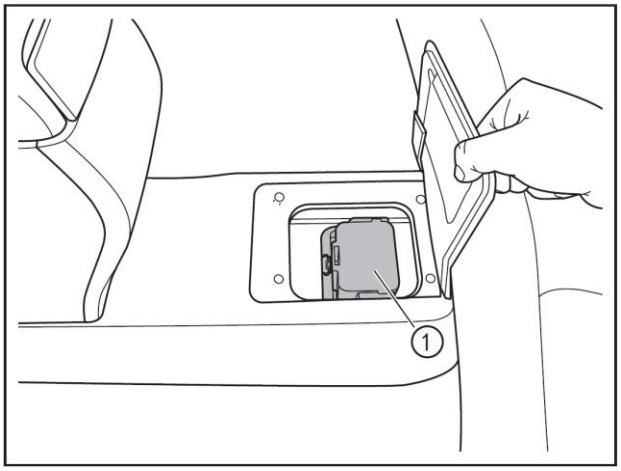
- Tighten the wire harness clip (1).



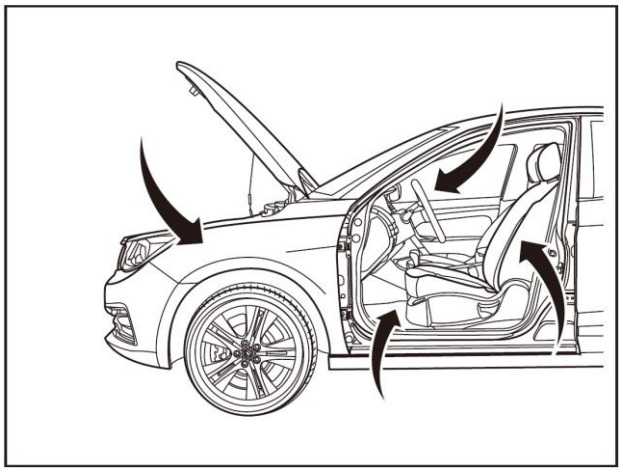
- Refit the high voltage wire harness connector (1) of traction battery until it is locked reliably.
- Refit the fast-charge high voltage wire harness connector (2) of traction battery until it is locked reliably.



- Refit the motor control unit rear connector (1).



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

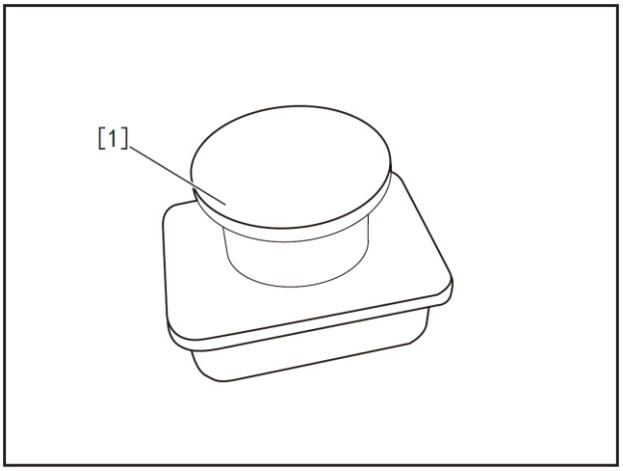


Removal and Refitting of Charging Switch

1 - Protection

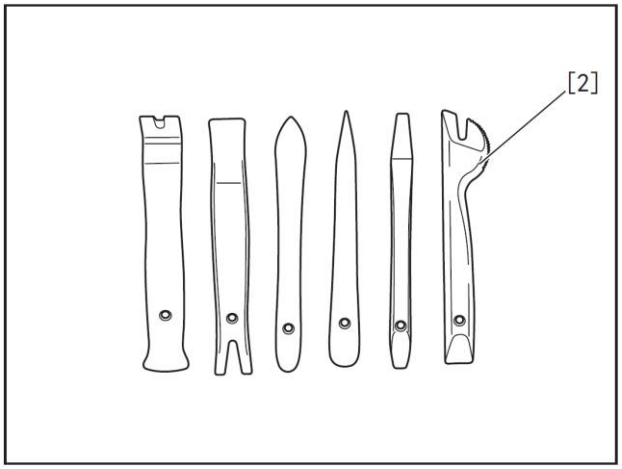
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

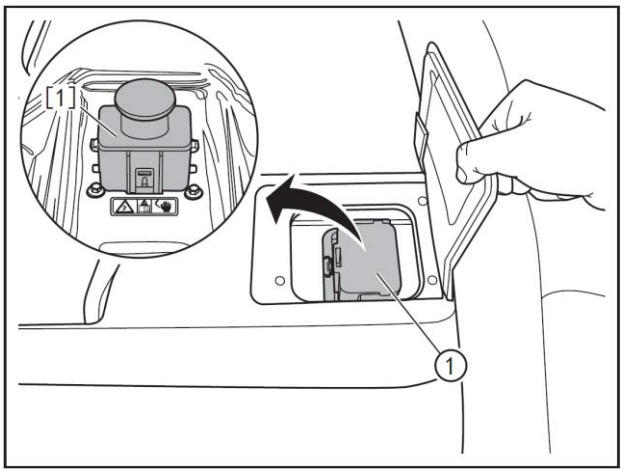


2 - Recommended tools

- Traction battery service switch plug (E700101) [1].



- Interior trim removal tool (BF1102) [2].



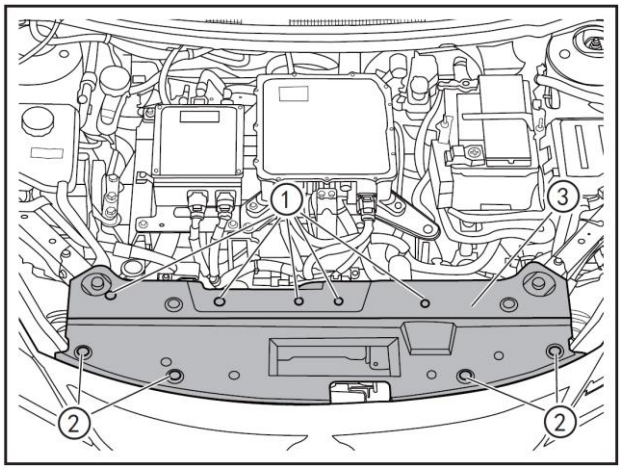
3 - Removal

⚠ CAUTION

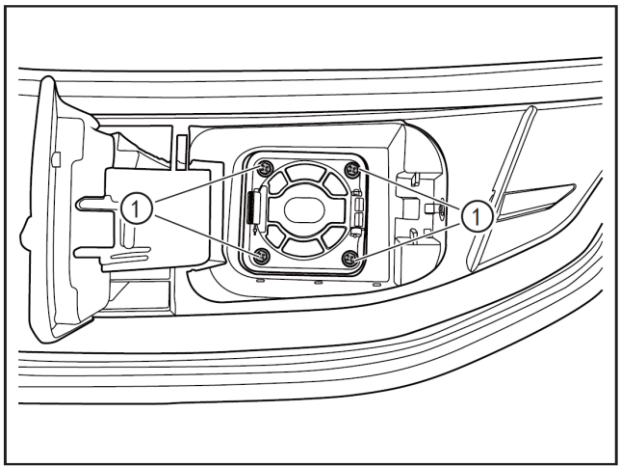
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

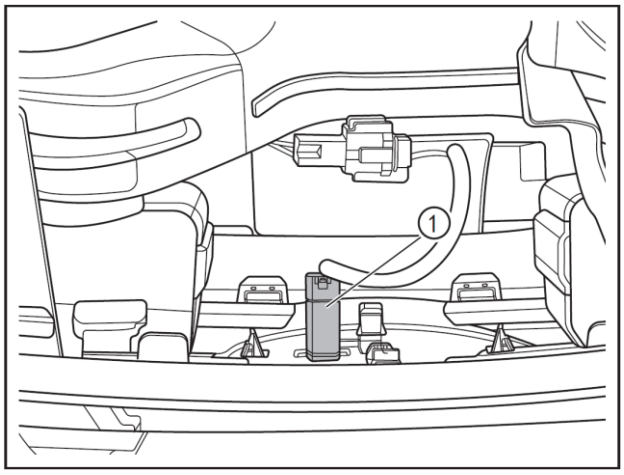
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



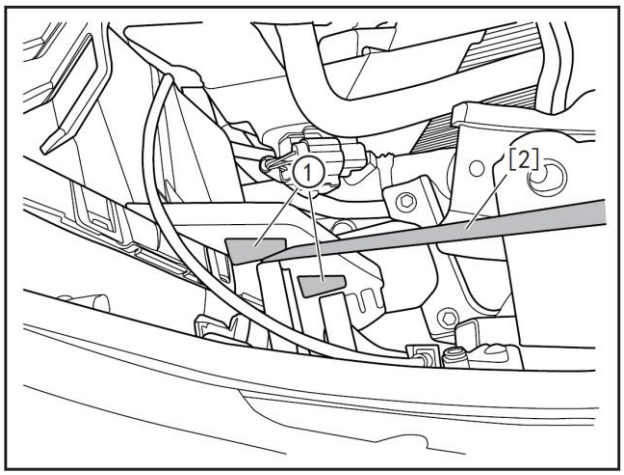
- Remove the 5 fixing clips (1) of cooling fan with the interior trim removal tool (BF1102).
- Remove the 4 fixing bolts (2) of cooling fan upper protective plate with the 10mm socket.
- Take off the cooling fan upper protective plate (3).



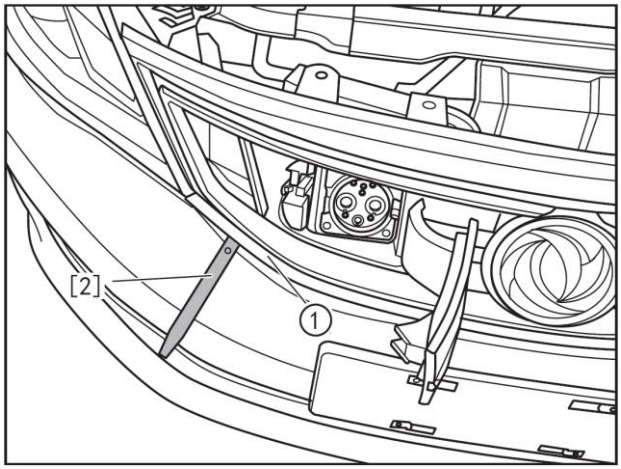
- Open the left charging port cover.
- Remove the fixing bolt (1) (M5×25) of the left charging port with the 7mm socket.



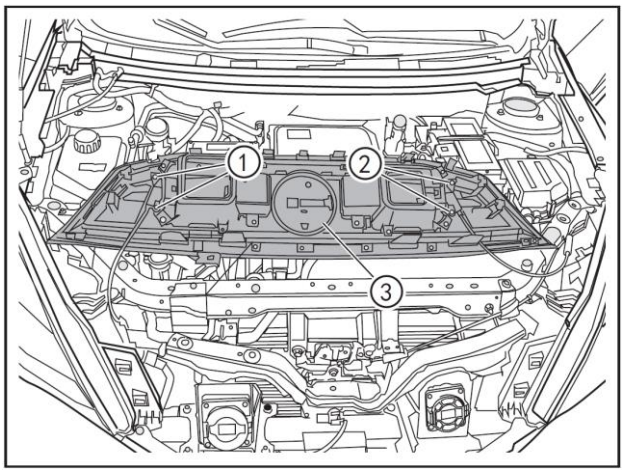
- Unlock the locking clip of outdoor temperature sensor connector and then disconnect the outdoor temperature sensor connector (1).



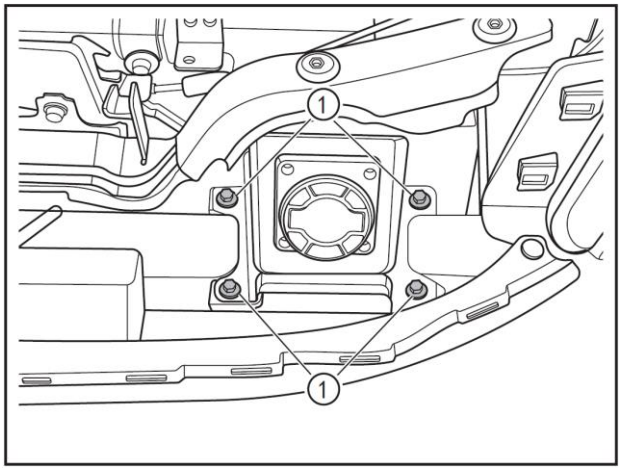
- Use the interior trim removal tool (BF1102) [2] to remove the right clip (1) of front grille assembly.
- Remove the left clip of the front grille assembly in the same method.



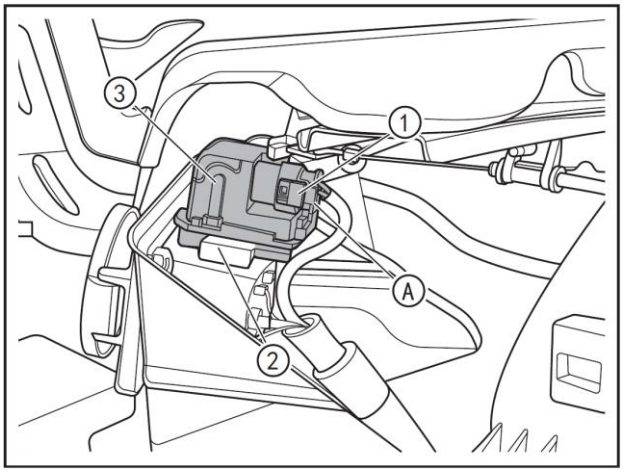
- Use the interior trim removal tool (BF1102) [2] to pry the clips at the bottom from right to left along the lower edge of the front grille assembly.
- Turn to open the front grille assembly (1).



- Remove the fixing screw (1) of right charging switch cover release cable with the cross screwdriver, and place the cable in the position involving no interference.
- Remove the fixing screw (2) of left charging switch cover release cable with the cross screwdriver, and place the cable in the position involving no interference.
- Take off the front grille assembly (3).



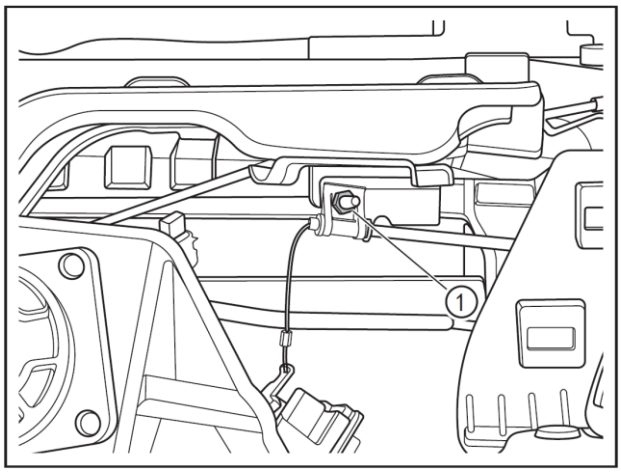
- Use the 10mm socket to remove the fixing bolt (1) (M8 × 20) of left charging switch bracket, and place the bracket and switch in a position convenient for operation.



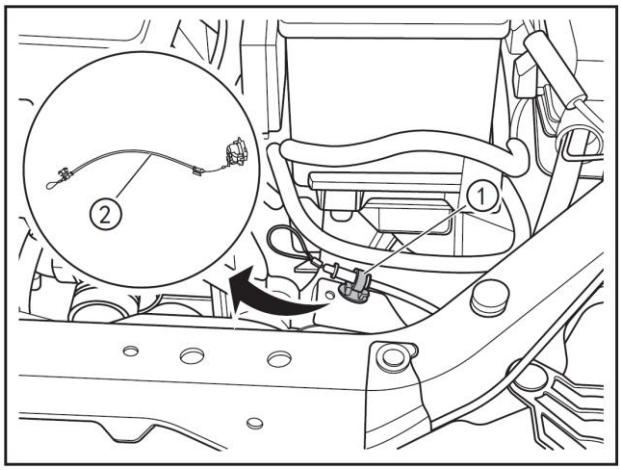
- Press the charging switch connector clip (A), and then disconnect the charging switch connector (1).
- Press the charging switch clip (2) with the small slotted screwdriver, and disconnect the charging switch (3) backwards .

⚠ CAUTION

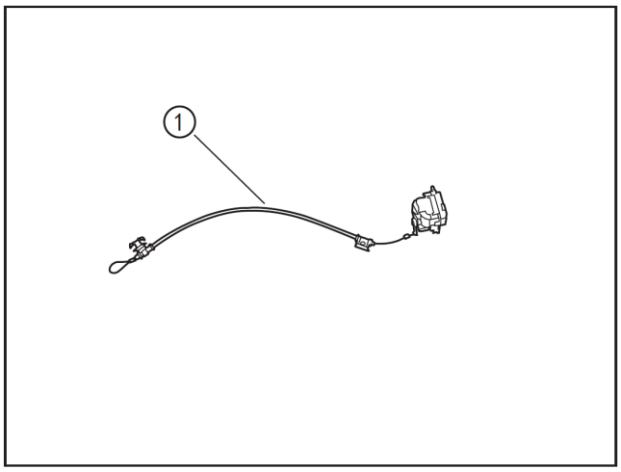
- **The charging switch is provided with 1 clip on each side, and only after the clips on both sides are unlocked can the charging switched be pulled out backwards; otherwise, the charging switch clip will break.**



- Remove the fixing nut (1) of charging switch cable with the 10 mm socket.

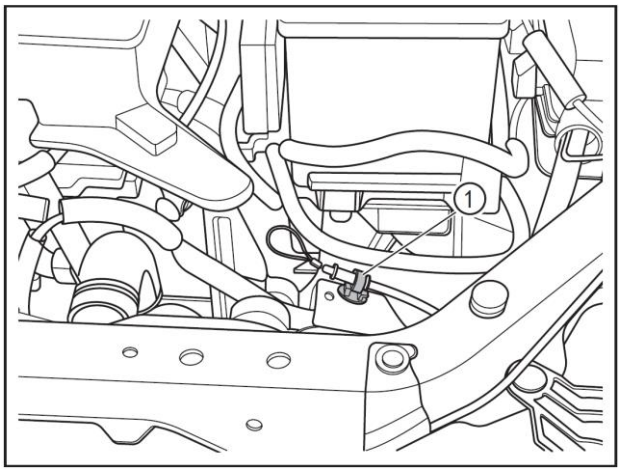


- Use the interior trim removal tool (BF1102) to remove the clip (1) of charging switch cable, and then take off the charging switch & cable assembly (2).



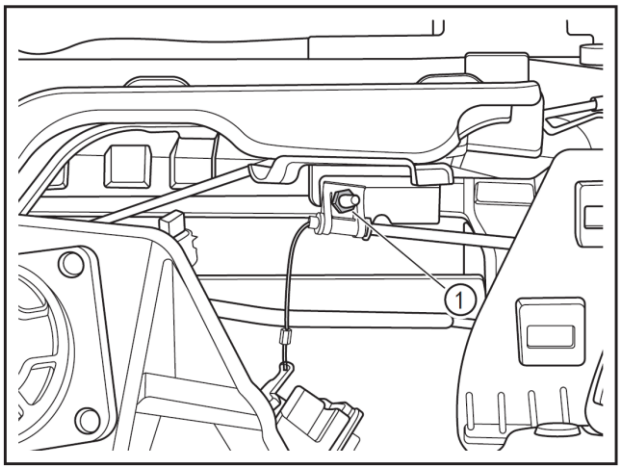
4 - Check

- Check the charging switch (1) for breakage, damage or lock pin seizure, and if this occurs, replace with a new charging switch.

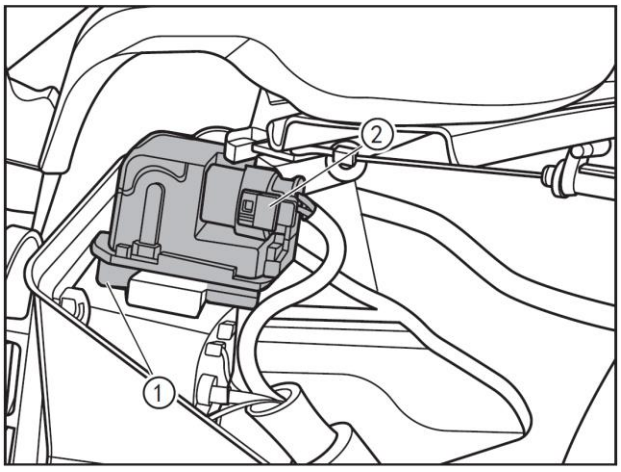


5- Refitting

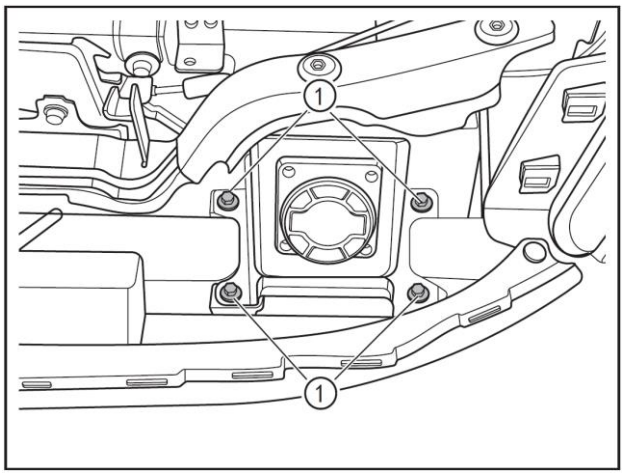
- Refit and secure the clip (1) of charging switch cable.



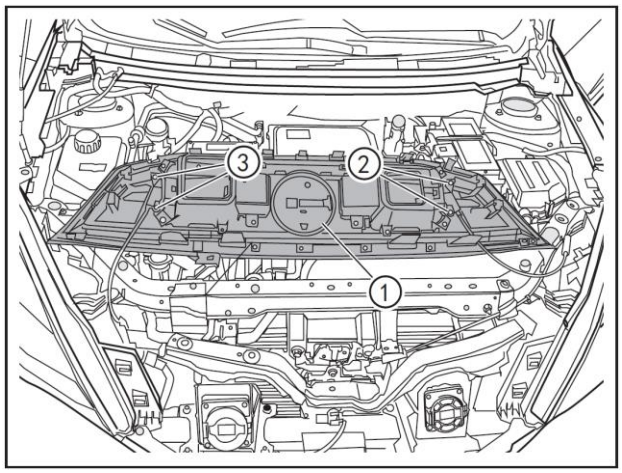
- Refit the fixing nut (1) of the charging switch cable, and tighten it with the 10mm socket.



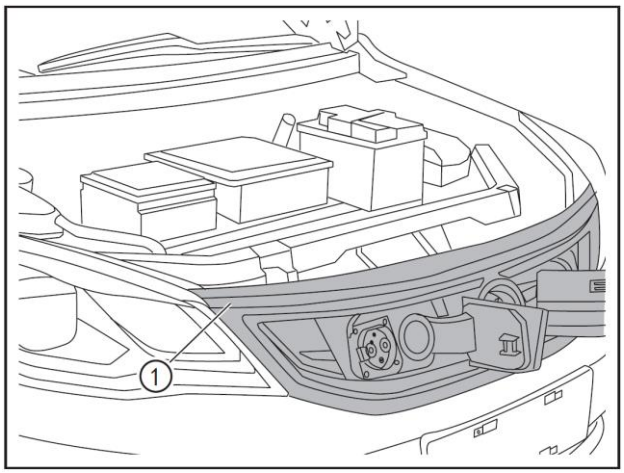
- Refit the charging switch clip (1) into the corresponding groove in place after alignment, and clamp it securely.
- Refit the charging switch connector (2) until a click is heard.



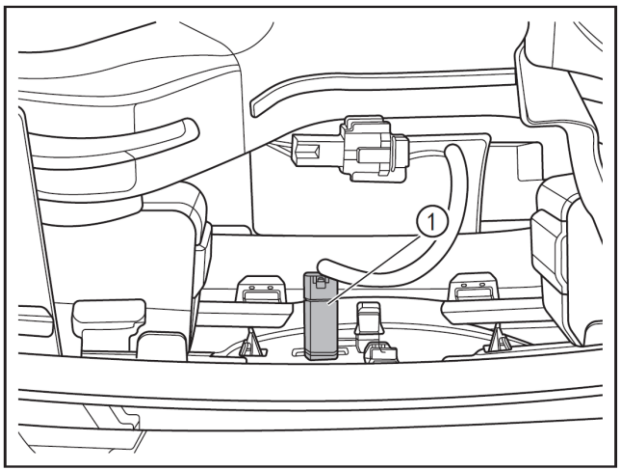
- Refit the fixing bolt (1) (M8 × 20) of the left charging switch bracket, and tighten it with the 10mm socket.



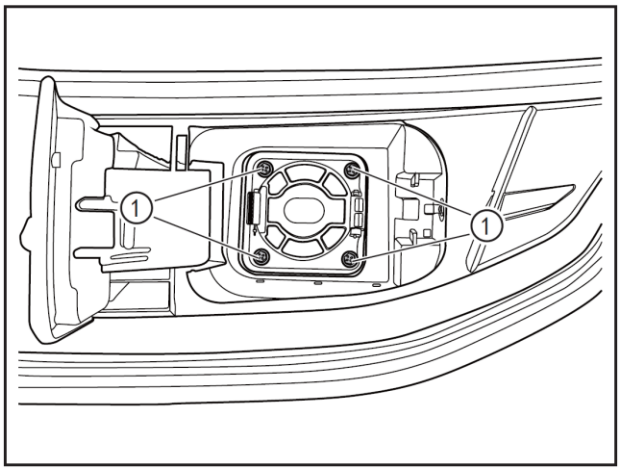
- Refit the front grille assembly (1).
- Refit the left charging switch cover release cable, and tighten its fixing screw (2) with the cross screwdriver.
- Refit the right charging switch cover release cable, and tighten its fixing screw (3) with the cross screwdriver.



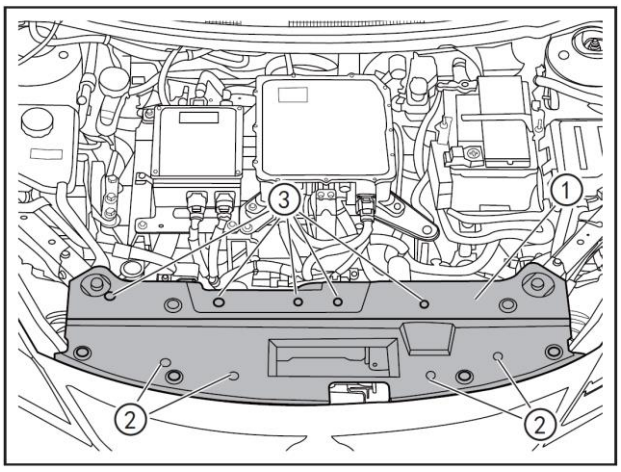
- Align the clips of front grille assembly (1) with the fixing holes, and press the front grille assembly until all the clips are installed in place.



- Connect the outdoor temperature sensor connector (1) until a click is heard.



- Install the fixing bolt (1) (M5 × 25) of left charging port and tighten it with the 7mm socket.
- Close the left charging port cover.



- Refit the cooling fan upper protective plate (1).
- Refit the 4 fixing bolts (2) of the cooling fan upper protective plate and tighten them with the 10mm socket.
- Refit the 5 fixing clips (3) of the cooling fan upper protective plate in place.
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

August 2018

5. Energy Storage and Power Supply

5.1 Traction battery

5.2 Starting and Charging System

5.3 High voltage distribution box

5

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After-sales Service Technical Document

5.3

High voltage distribution box

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Special tools 5.3-4

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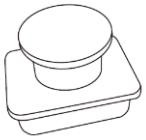
Structure and Features 5.3-5

High voltage distribution box **5.3-6**

Removal and Refitting of High Voltage Distribution Box 5.3-6

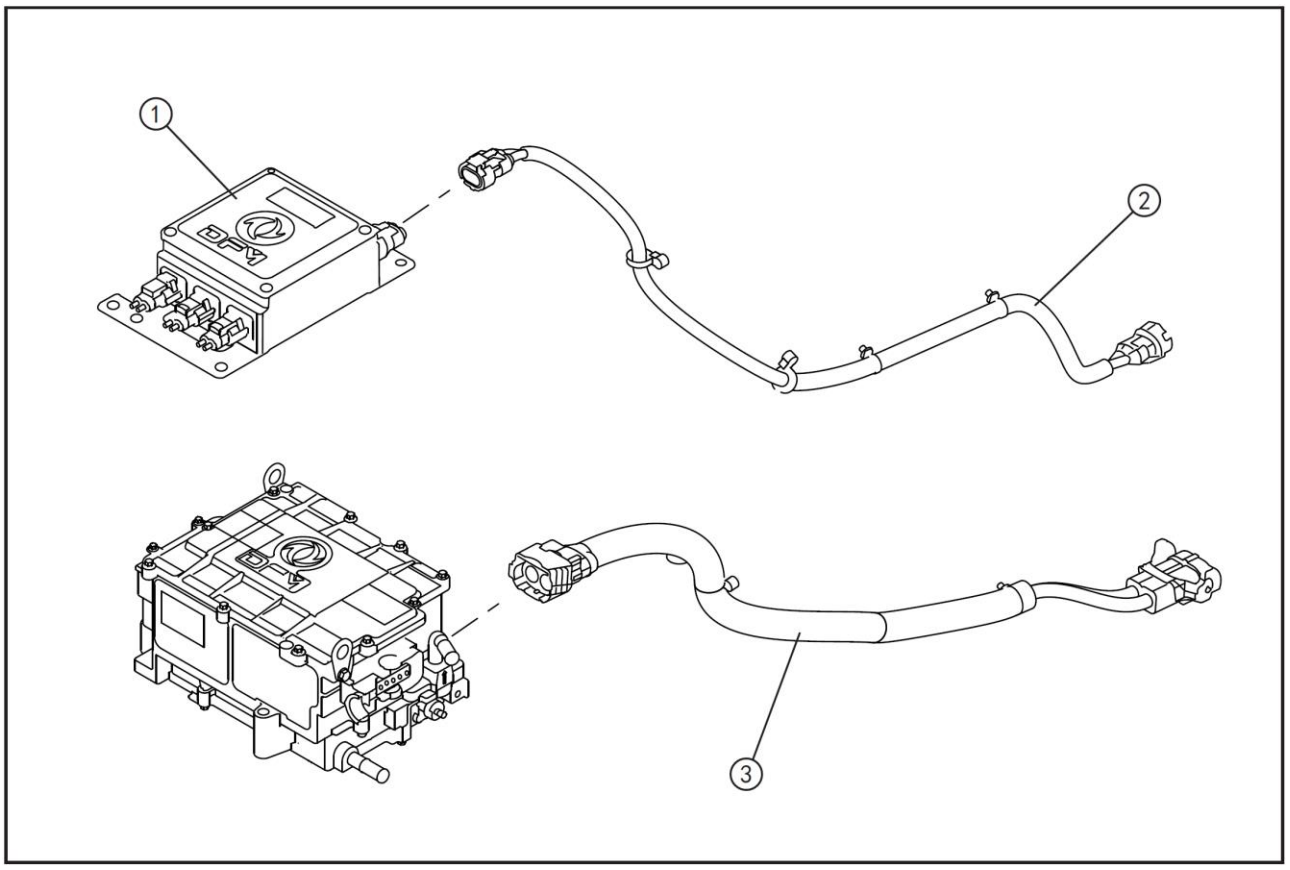
- It is strictly forbidden to disassemble and modify the on-board high voltage distribution box for repair or debugging without permission.
- Verify that the casing is intact before installation, and if the high voltage distribution box will not be used for a long time, please pack it properly.
- Keep the plugs firmly connected to the sockets, and in case of any damage or looseness, replace immediately.
- For AC power, select three-core cable with a ground wire.
- If the high voltage distribution box produces unusual noise or odor during working, please unplug the power plug.
- Keep the battery under charging away from fire and inflammable and explosive materials.
- Do not charge the battery that is damaged or non-rechargeable.
- Do not block the air inlet and outlet of the high voltage distribution box to prevent overheating.
- Avoid scratching, squeezing, pulling, twisting, or shaking the charging cable.
- Avoid charging in a harsh or rainy environment.
- Before installing the high voltage distribution box, measure that the insulation resistance of the high-voltage interface electrode is greater than or equal to 20MΩ, otherwise, it is not allowed to install the high voltage distribution box.

Special tools

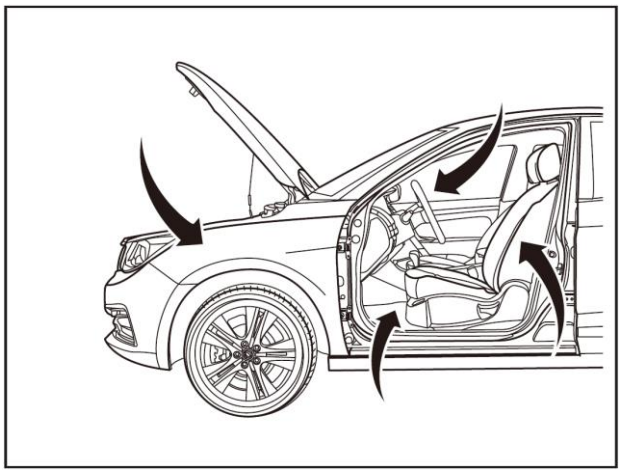
Tool No.	Tool Name	Tool Picture	Description
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress
A60EV0104	Insulation resistance tester		For testing the insulation performance of high voltage components pf traction battery, motor, motor control unit, high voltage distribution box, charger, heater, and electric compressor

Structure and Features

High voltage distribution box



1. Multi-function high voltage distribution box	2. High voltage relay box positive cable	3. Motor control unit DC input cable

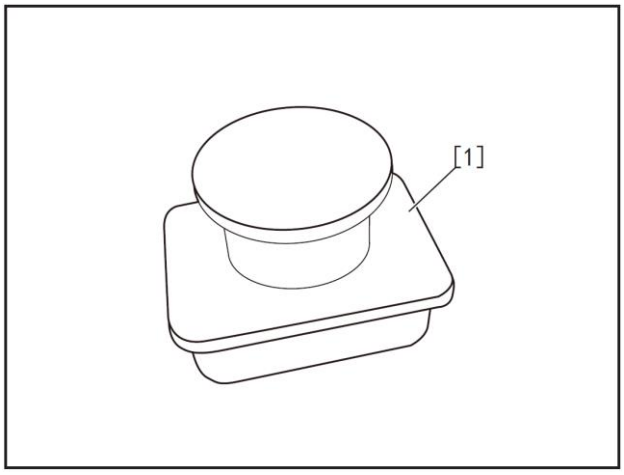


Removal and Refitting of High Voltage Distribution Box

1 - Protection

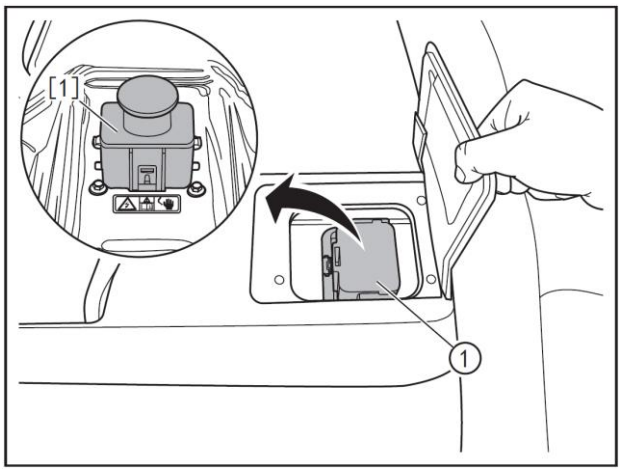
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Traction battery service switch plug (E700101) [1].



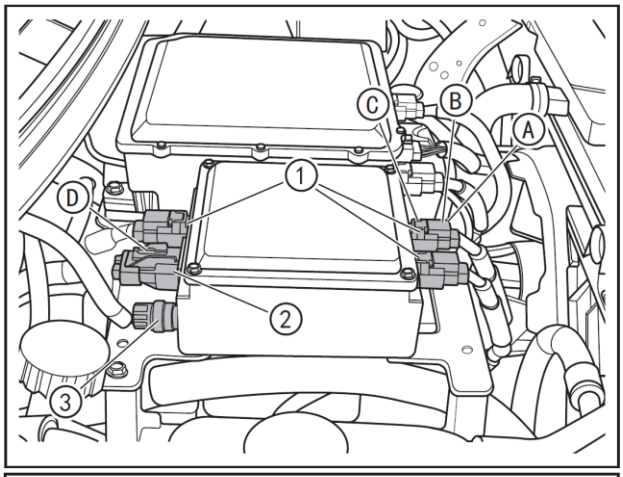
3 - Removal

⚠ CAUTION

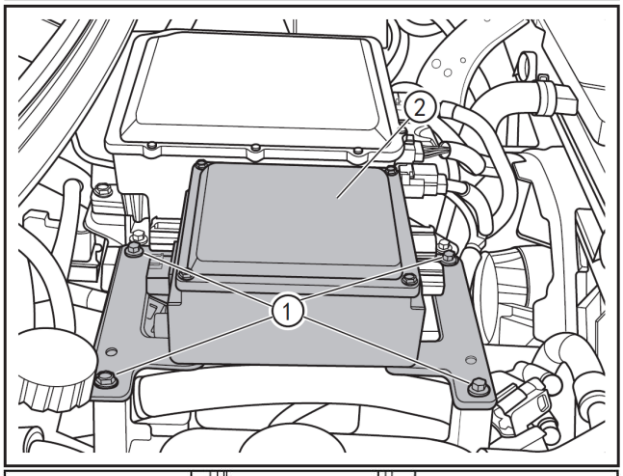
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")

⚠ CAUTION

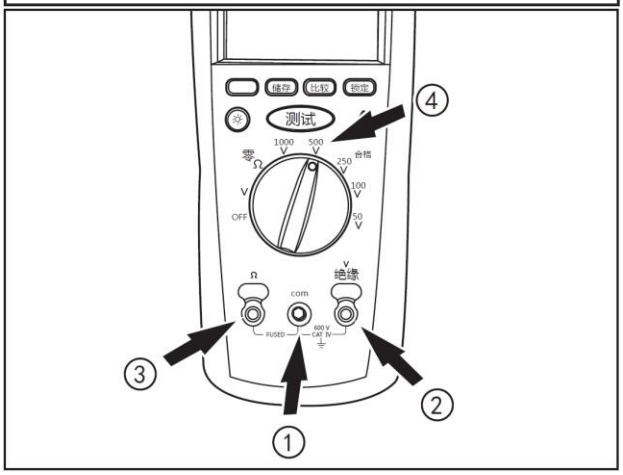
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Unlock the clip (A) of high voltage distribution box connector (1) outwards, and then press down the clip (B) to unlock backwards, and then press down the clip (C) to disconnect the high voltage distribution box connector (1).
- Press down the clip (D) of high voltage distribution box connector (2), and then disconnect the high voltage distribution box connector (2) backwards.
- Rotate the high voltage distribution box connector (3) counterclockwise to disconnect the high voltage distribution box cable from the high voltage distribution box.



- Remove the 4 fixing bolts (1) (M8×20) of the high voltage distribution box with the 10mm socket, and take off the high voltage distribution box (2).

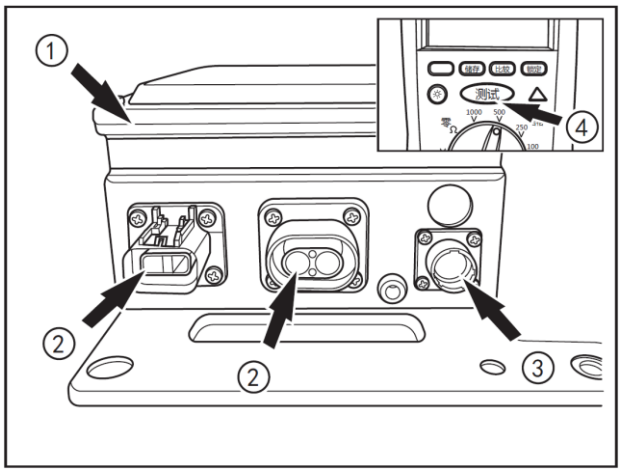


4 - Check

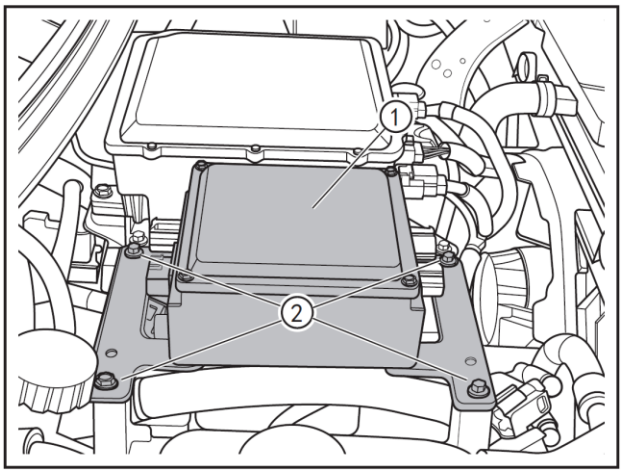
- Use the insulation resistance tester (A60EV0104), connect the black probe to COM end (1) of the insulation resistance tester, one red probe to the insulation resistance testing end (2) and the other red probe to ground end (3) and clamp the ground; and select 500V insulation resistance test position (4).

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- **Do not touch the testing end of probe with your hand.**
- **Confirm that the object under test is dead and safely grounded before measurement.**
- **Do not touch the object under test; otherwise, electric shock by high voltage may ensue.**
- **Keep one hand out of contact with other objects while measuring, which will reduce the chance of current flowing through the chest and heart.**
- **Always stand on an insulated mat for measurement.**

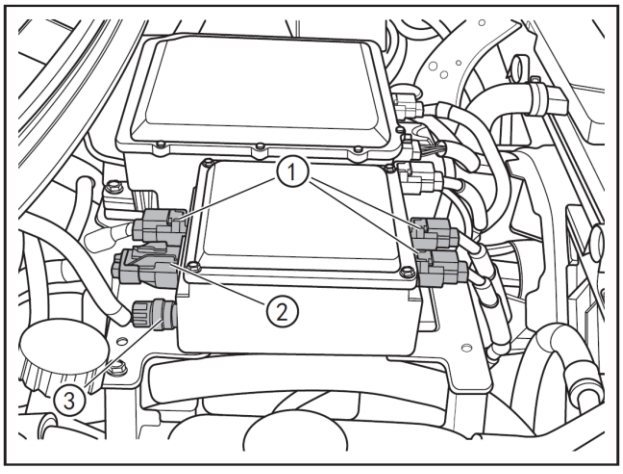


- Clamp one end of the black probe to the position (1) on the housing as shown.
- Measure the insulation resistance of 4 electrodes (2) and connecting cable terminal (3) of the 2 illustrated connectors to housing with the red probe. (2 on the opposite side)
- Press and hold the test button (4) for 2s, and when the indication is stabilized, make reading.
- Record the test results of each connector end, which should be ≥20MΩ in normal case.
- If any abnormality is found such that the installation becomes impossible, find the cause as soon as possible or replace it with a new one.

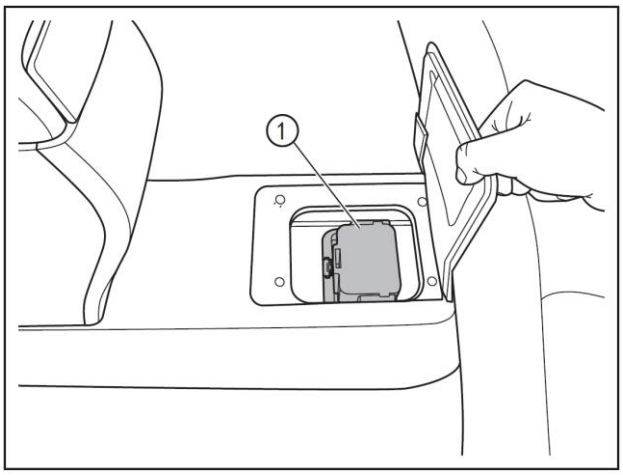


5- Refitting

- Refit the high voltage distribution box (1) in place and install 4 fixing bolts (2) (M8 × 20) of the high voltage distribution box.
- Tighten the fixing bolts with the 10mm socket.



- Refit the high voltage distribution box connector (1) until it is locked reliably.
- Refit the high voltage distribution box connector (2) until it is locked reliably.
- Refit the high voltage distribution box cable connector (3) and turn it clockwise to lock it securely.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

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6. Axle and Suspension
6.1 Front Axle and Front Suspension
6.2 Rear Axle and Rear Suspension
6.3 Wheels
6

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6.1

Front Axle and Front Suspension

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Axle shaft 6.1-56

Removal and Refitting of Right Axle Shaft (Continental Motor) 6.1-56

Removal and Refitting of Right Axle Shaft (Independent Motor) 6.1-62

Removal and Refitting of Left Axle Shaft (Continental Motor) 6.1-63

Removal and Refitting of Left Axle Shaft (Independent Motor) 6.1-69
Removal and Refitting of Left Axle Shaft Oil Seal (Continental Motor) 6.1-70
Removal and Refitting of Right Axle Shaft Oil Seal (Continental Motor) 6.1-72
Removal and Refitting of Left Axle Shaft Oil Seal (Independent Motor) 6.1-74
Removal and Refitting of Right Axle Shaft Oil Seal (Independent Motor) 6.1-76
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Removal and Refitting of Axle Shaft Bearing 6.1-81
Replacement of Right Axle Shaft Tripod Joint 6.1-84

Precautions for service

- While refitting the suspension fixing bolt, ensure that the bolt is refitted in the same direction for the removal.
- At the completion of servicing suspension system, ensure that the displaced, removed wire harness and pipeline return to their initial positions.
- Abide by the following precautions during disassembly and service of the front axle shaft:

– The joint subassembly (a wheel side connecting part) is not an overhaul part, and shall not be removed.

– Please conduct operation at a dust-free place as far as possible.

– Before disassembly and service, please clean the outer surface of parts.

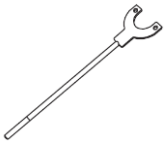
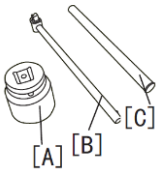
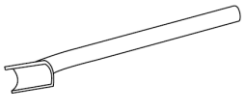
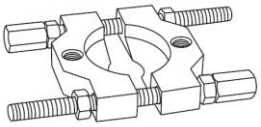
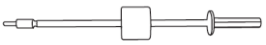
– During disassembly of service parts, you must note that the foreign matter is not allowed.

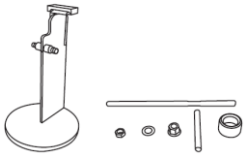
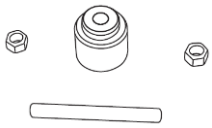
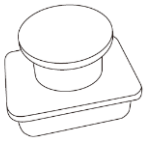
– The disassembled parts must be reassembled carefully in correct order. If the work is interrupted, please use a clean shade to cover the parts.

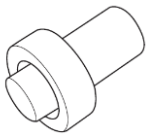
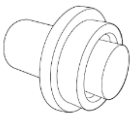
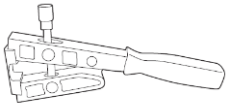
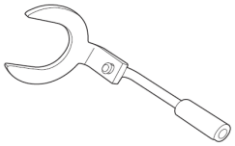
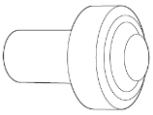
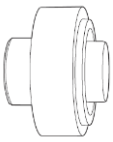
– Always use the non-woven cloth. Never use the woven fabric, otherwise the rag dust will attach on the parts.

– You shall use the kerosene to clean the disassembled parts (excluding the rubber parts), and blow or wipe them dry with non-woven cloth.

Special tools

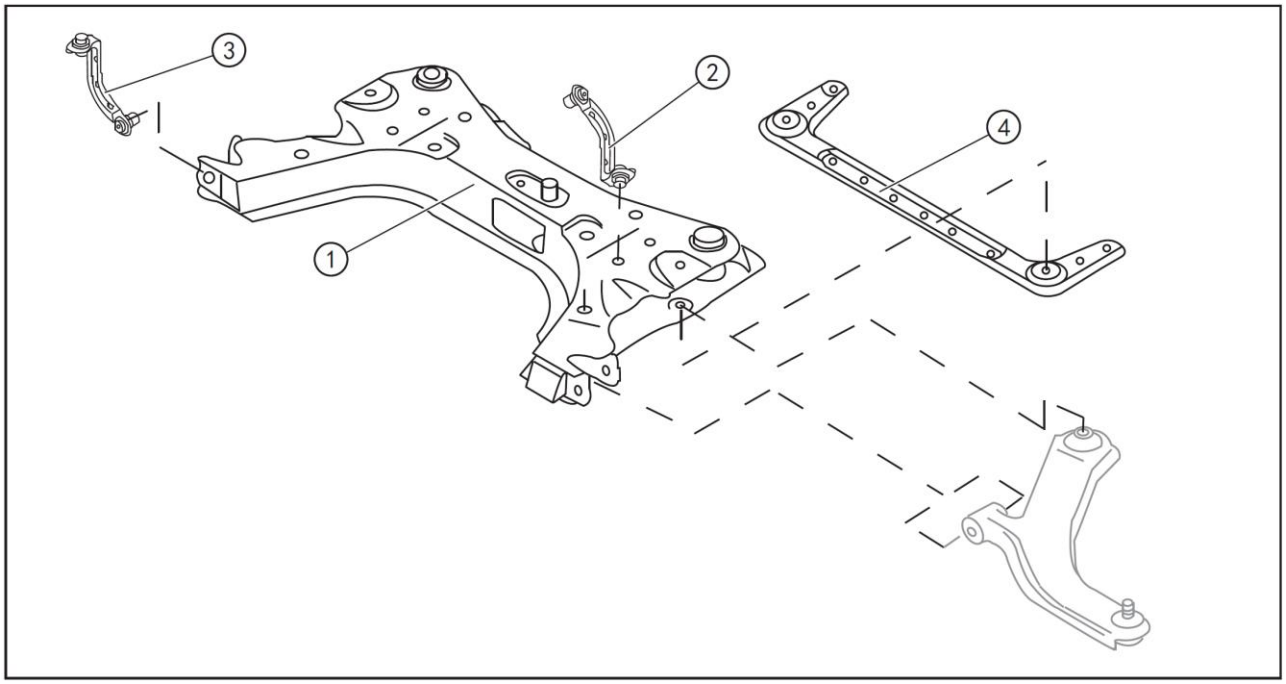
Tool No.	Tool Name	Tool Picture	Description
BF0504	Pull rod		For holding the triangular arm ball joint when removing it
AX70802	Ball pin removal tool		For positioning the ball pin when removing it
BF0503	Hub fixing tool		For fixing hubs to prevent the brake disc from rotating
BF0502A/B/C	Front axle shaft nut removal tool kit		For increasing removal torques to facilitate the removal of front axle shaft nut
A600423	Right front axle shaft removal tool		For removing the right front axle shaft
BF0410A	Bearing extractor		For fixing bearings to prevent the bearing from rotating
BF0601	Inertia puller		For removing and refitting front axle shaft CV joints
BF0422	Bearing threaded release sleeve		For removing and refitting front axle shaft CV joints

Tool No.	Tool Name	Tool Picture	Description
A60EV0424	Front axle shaft mounting tool		For positioning installation to avoid parts damage
BF0425	Axle shaft clamp removal and refitting pliers		For removing the clamp when replacing the axle shaft dust cover
BF1102	Interior trim removal tool		For removing interior trims
A600510A/B/C/D	Triangular arm rear elastic hinge removal tool		For removing and refitting triangular arm center bush
A600510E	Triangular arm rear elastic hinge refitting and returning tool		For making the improperly refitted center bush return
A600409A/B/C	Triangular arm rear elastic articulation removal assembly		For removing and refitting the triangular arm rear elastic articulation
A600408A/B/C/D	Triangular arm ball joint removal & refitting tool		For removing and refitting triangular arm ball joint
E700101	Traction battery service switch plug		For blocking the traction battery service switch jacket to prevent electric shock and dust ingress

Tool No.	Tool Name	Tool Picture	Description
A60EV0419	Left axle shaft oil seal refitting tool		For refitting left axle shaft oil seals
A60EV0420	Right axle shaft oil seal refitting tool		For refitting right axle shaft oil seals
A60EV0414	Right axle shaft collar refitting tool		For installing the aright axle shaft collar
AX70426	Dust cover clamp refitting pliers		For installing the dust cover clamp
A600416	Left axle shaft removal tool		For removing the left axle shaft
E700419	Left axle shaft oil seal refitting tool		For refitting left axle shaft oil seals (Continental motor)
E700420	Right axle shaft oil seal refitting tool		For refitting right axle shaft oil seals (Continental motor)
AX70703	Shock absorber spring compression tool		For compressing the shock absorber spring

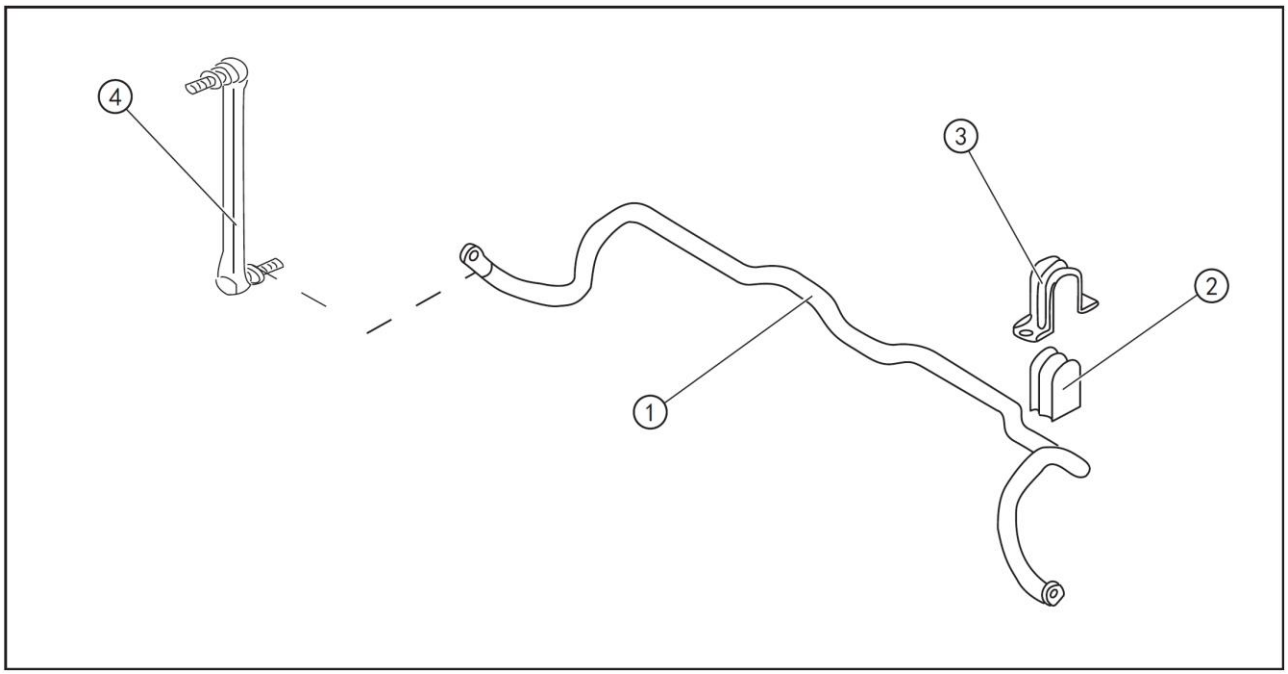
Tool No.	Tool Name	Tool Picture	Description
BF0701	Shock absorber removal and refitting socket		For removing the fixing nut of the shock absorber

Motor Bracket Assembly Components



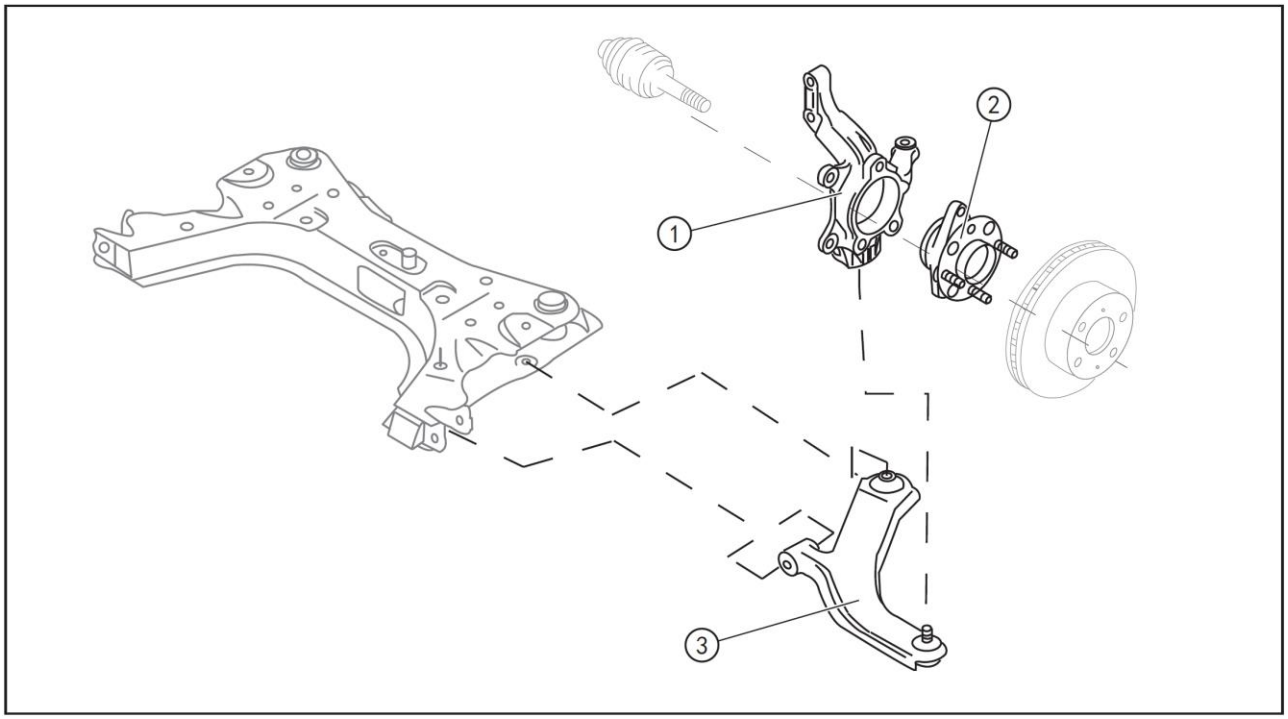
1.	Motor bracket assembly	3.	Right front mounting arm		
2.	Left front mounting arm	4.	Bracket rear reinforcement plate		

Front Stabilizer Bar Assembly Components



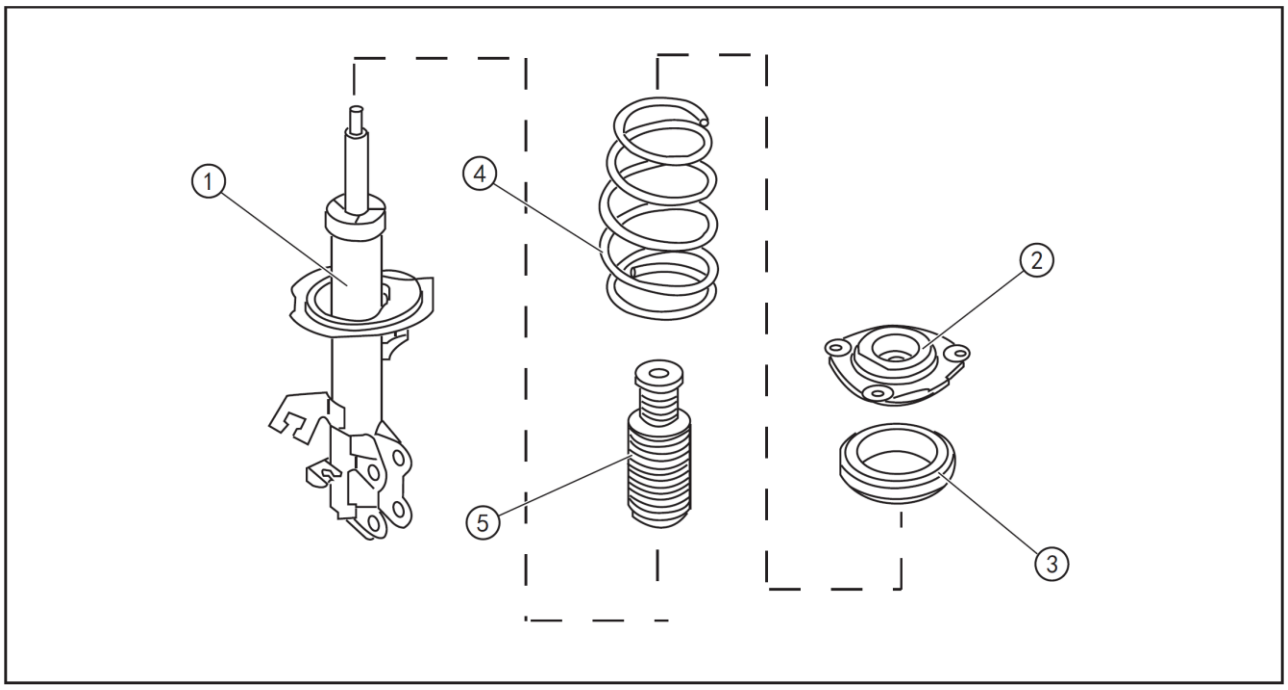
1.	Front stabilizer bar	3.	Stabilizer bar rubber bush cover plate		
2.	Stabilizer bar rubber bush	4.	Stabilizer bar link		

Front Suspension Arm Assembly Components



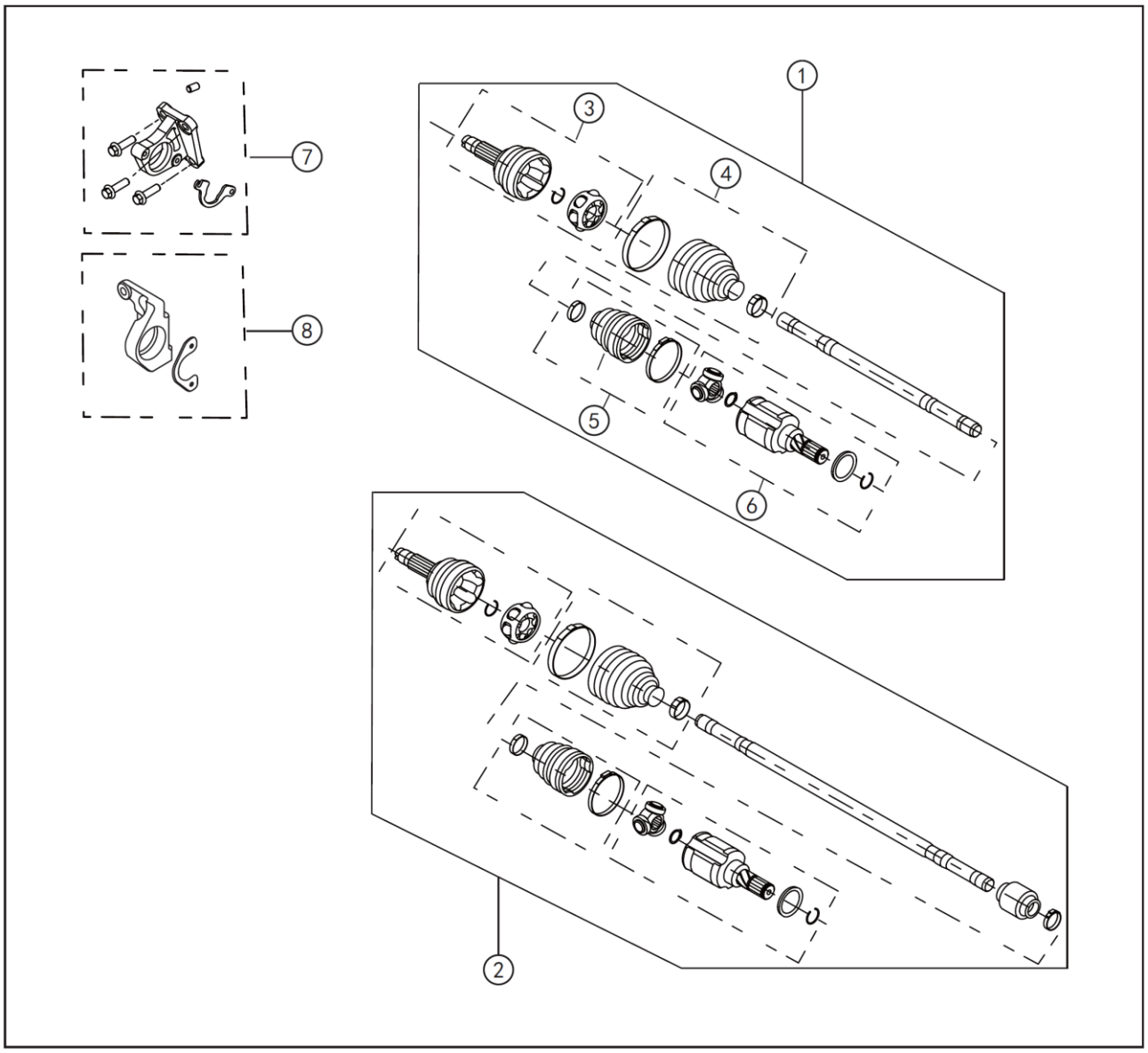
1. Steering knuckle	2. Front hub and bearing	3. Front suspension triangular arm

Front Shock Absorber Assembly Components



1. Front shock absorber	3. Thrust ball bearing	5. Front elastic stopper
2. Front shock absorber upper bracket	4. Front suspension spring	

Axle Shaft Assembly Components



1. Left front axle shaft	4. Outer CV joint dust cover assembly	7. Right front axle shaft bracket (independent motor)
2. Right front axle shaft	5. Inner CV joint dust cover assembly	8. Right front axle shaft bracket (Continental Motor)
3. Front axle shaft outer CV joint	6. Left axle shaft inner CV joint	

Common fault troubleshooting

1. Tire eccentric wire

Symptom: The inside or outside tread of a tire is obviously over-worn.	
Fault analysis	**Countermeasures**
(1) Steering knuckle deformation	(1) Replace steering knuckle
(2) Motor bracket deformation	(2) Replace or adjust motor bracket
(3) Front stabilizer bar deformation	(3) Replace front stabilizer bar
(4) Incorrect front wheel alignment	(4) Adjust front wheel alignment value

2. Foliated wear on tire

Symptom: The tire tread has foliated eccentric wear.	
Fault analysis	**Countermeasures**
(1) Incorrect toe-in	(1) Adjust the toe-in
(2) Steering knuckle deformation	(2) Replace steering knuckle

3. The body jitters abnormally during traveling

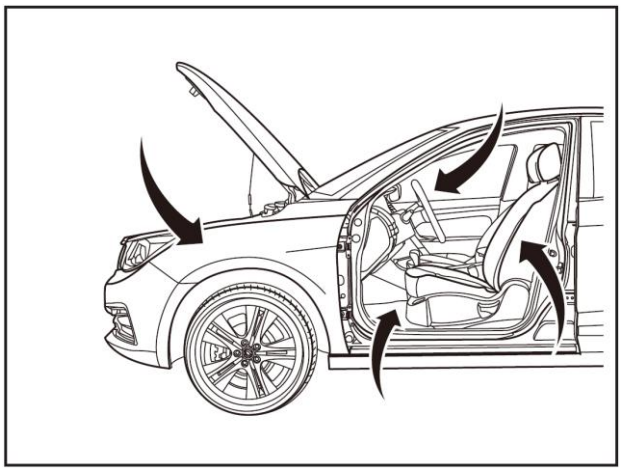
Symptom: During traveling, the vehicle has continuous abnormal jitter phenomenon.	
Fault analysis	**Countermeasures**
(1) Incorrect tire model	(1) Always use the tire of designated grade and model
(2) Front shock absorber failure	(2) Replace front shock absorber
(3) Coil spring failure	(3) Replace coil spring
(4) Front suspension elastic articulation damage	(4) Check and replace front suspension elastic articulation

4. Tire abnormal wear

Symptom: The tire has eccentric wear or left/right and front/rear tire has inconsistent wear.	
Fault analysis	**Countermeasures**
(1) Under-inflated or over-inflated tire	(1) Adjust the tire pressure to the specified value
(2) Vehicle overload	(2) Overload is prohibited
(3) Incorrect front wheel toe-in	(3) Adjust front wheel toe-in
(4) Poor tire dynamic balance	(4) Do tire dynamic balance again
(5) Hub bearing looseness	(5) Replace hub bearing
(6) Rim deformation	(6) Replace rim
(7) Lower support arm elastic articulation damage	(7) Replace the lower support arm elastic articulation
(8) Motor bracket deformation	(8) Replace or adjust motor bracket
(9) Rear axle swing arm needle bearing looseness	(9) Replace rear axle swing arm needle bearing
(10) Rear axle displacement	(10) Replace rear axle shaft tube or self-tracking system

5. Abnormal noise from driving system

Symptom: During traveling, the vehicle incurs unusual noise.	
Fault analysis	**Countermeasures**
(1) Front axle shaft deformation or looseness	(1) Replace front axle shaft
(2) Hub bearing wear or looseness	(2) Replace hub bearing
(3) Rear axle tube needle bearing looseness	(3) Replace rear axle tube needle bearing
(4) Looseness of driving system connecting bolt	(4) Tighten the connecting bolt of driving system
(5) Infirm connection or fixation of lower protective plate	(5) Tighten the motor lower protective plate connecting bolt
(6) Stabilizer bar link damage	(6) Replace the stabilizer bar link
(7) Lower support arm elastic articulation damage	(7) Replace the lower support arm elastic articulation

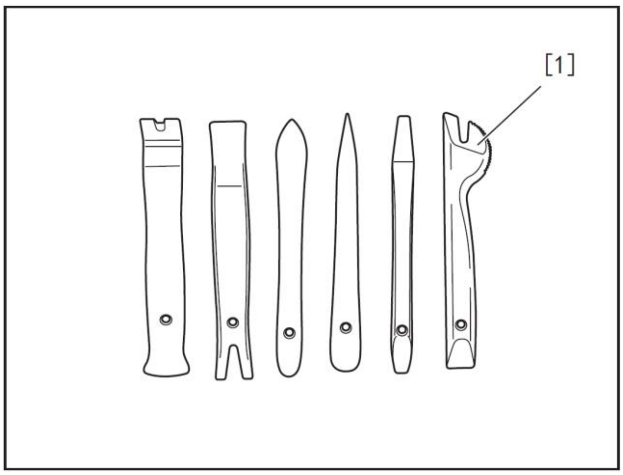


Removal and Refitting of Bracket

1 - Protection

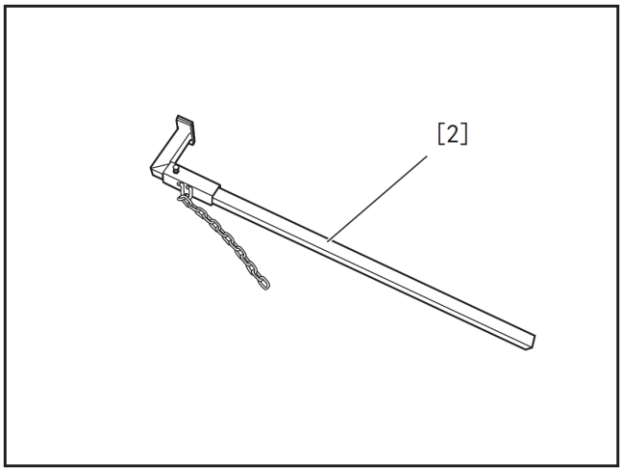
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

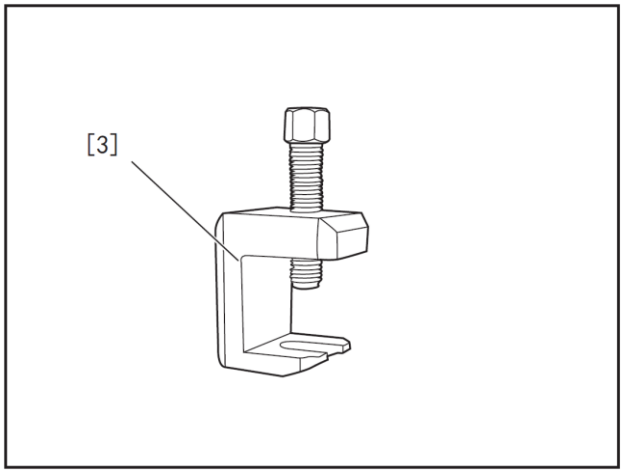


2 - Recommended tools

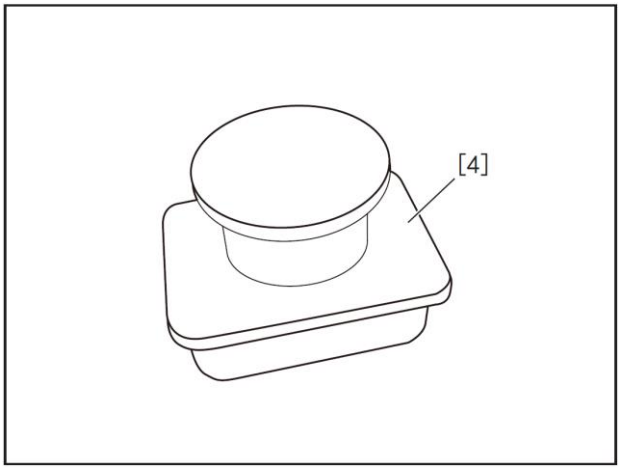
- Interior trim removal tool (BF1102) [1].



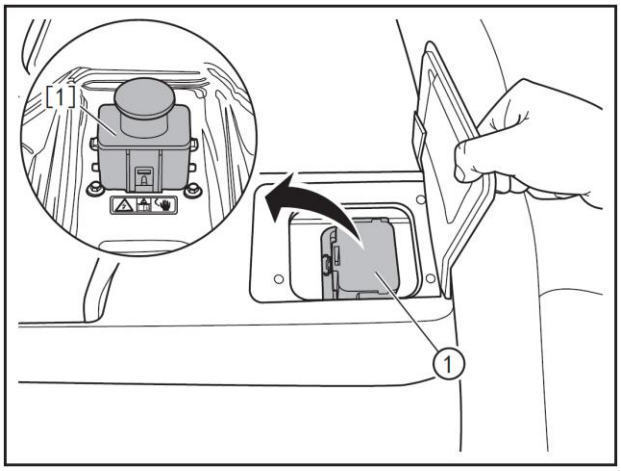
- Pull rod BF0504 [2].



- Steering tie rod ball pin removal tool (AX70802) [3].



- Traction battery service switch plug (E700101) [4].



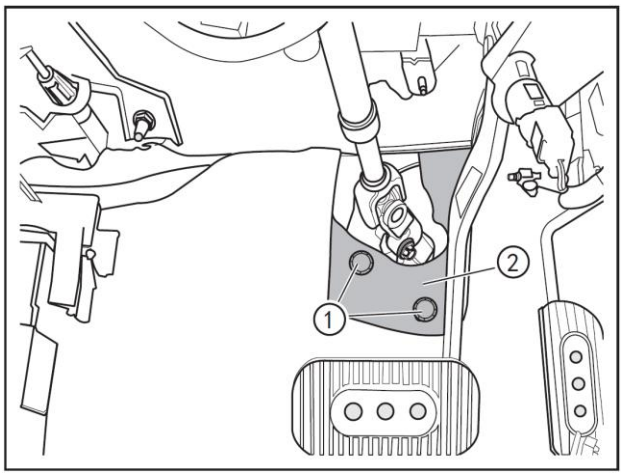
3 - Removal

⚠ CAUTION

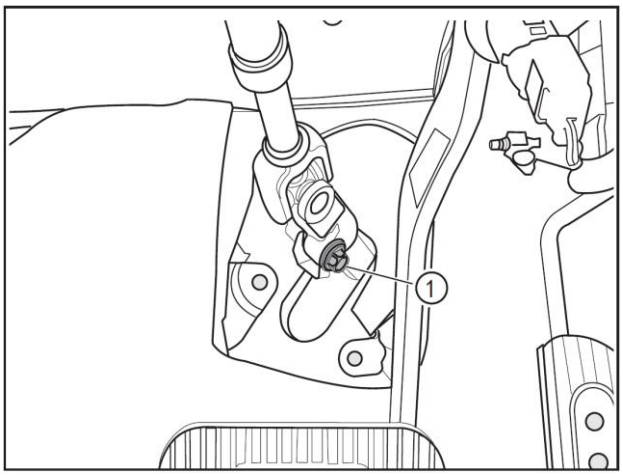
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



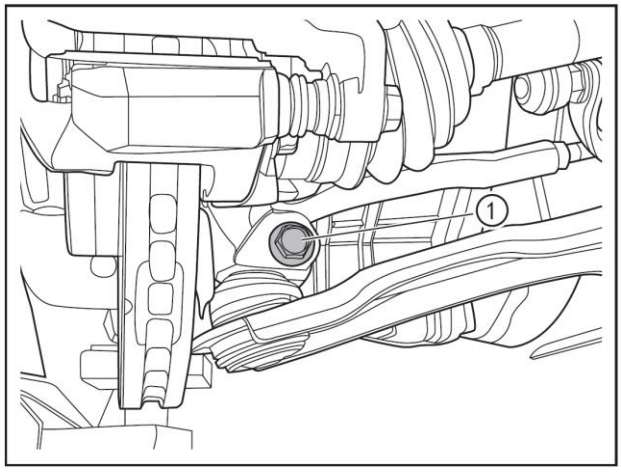
- Remove the 2 clips (1) of lower steering column with the interior trim removal tool (BF1102).
- Take down the steering column shroud (2).



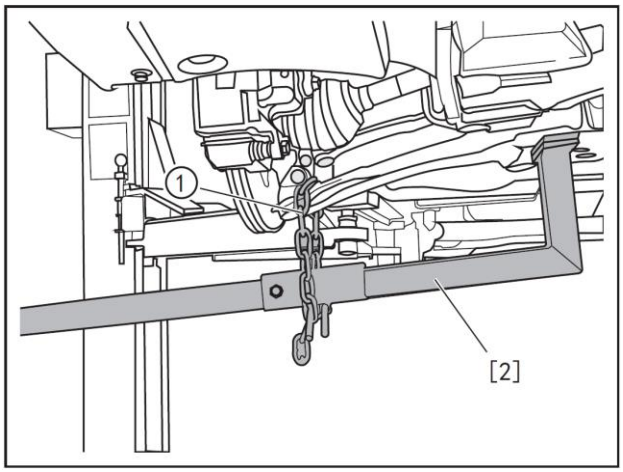
- Rotate the steering wheel to a proper position, and use a 12 mm socket wrench to remove the fixing bolt (1) for lower steering column and steering gear.

⚠ CAUTION

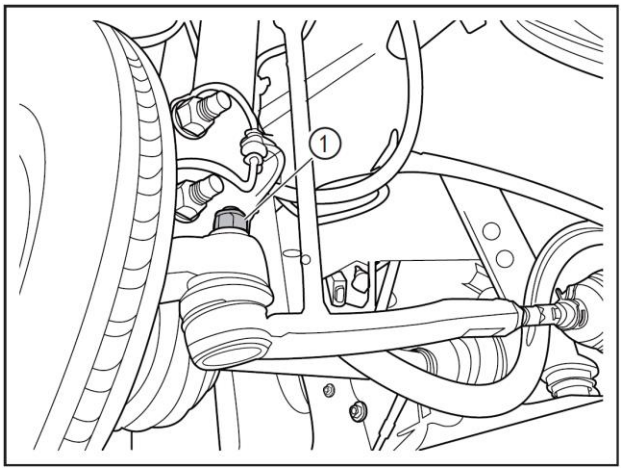
- **To facilitate refitting, before disassembling the lower steering column & steering gear assembly, return the steering wheel to the center and make the two front wheels straight forward.**
- **After disconnecting the lower steering column & steering gear assembly, lock the steering wheel.**



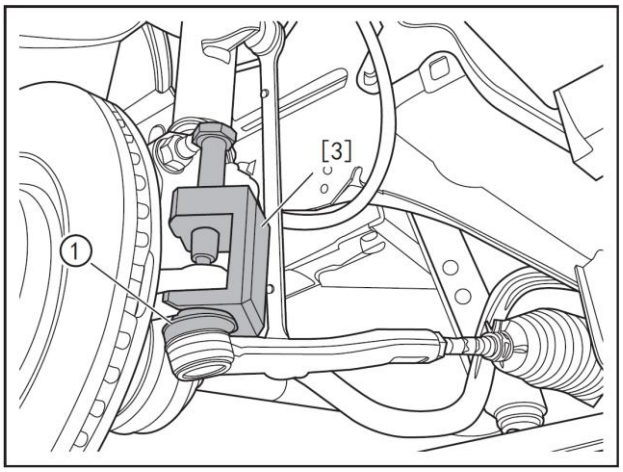
- Lift the vehicle up and remove the front wheels. (Refer to “Removal and Refitting of Wheels”)
- Use 14 mm socket wrench to hold the connecting nut of triangular arm and steering knuckle, and use the 14mm socket to remove the connecting bolt (1) (M10X56).



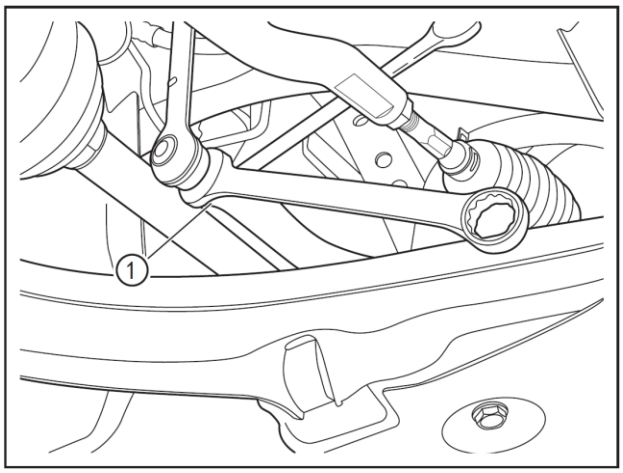
- Detach the triangular arm ball joint (2) from the steering knuckle by using a pull rod [1].



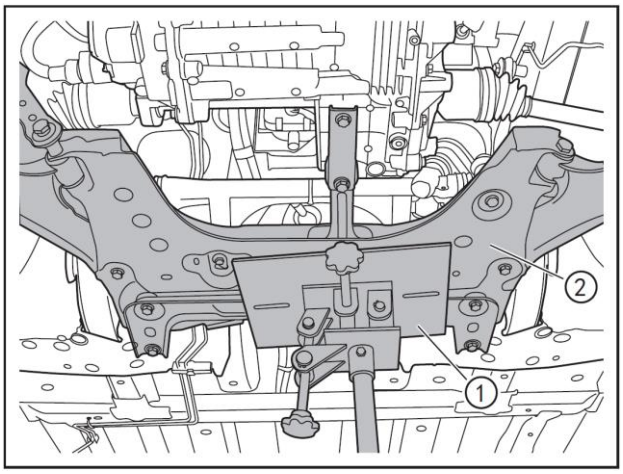
- Hold the part with the T30 screwdriver bit, and remove the steering tie rod ball pin fixing nut (1) with the 14mm wrench.



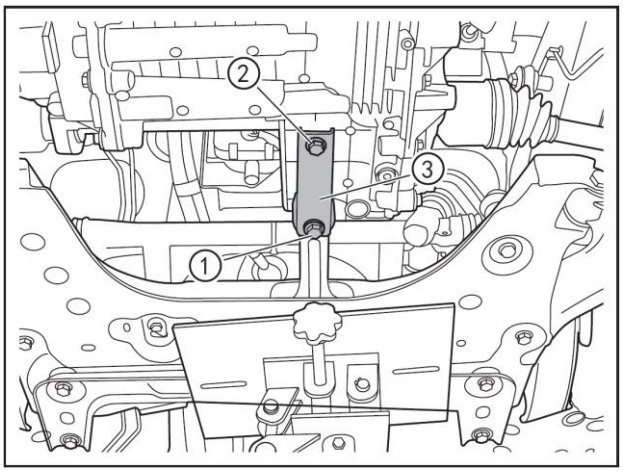
- Install the ball pin removal tool [3] in position with its slot pressed against the bottom of steering knuckle arm and the bolt on it aligned with the screw of tie rod ball pin, and then use the 24mm wrench to tighten the bolt on the tool until the tie rod ball pin (1) is forced out from steering knuckle.



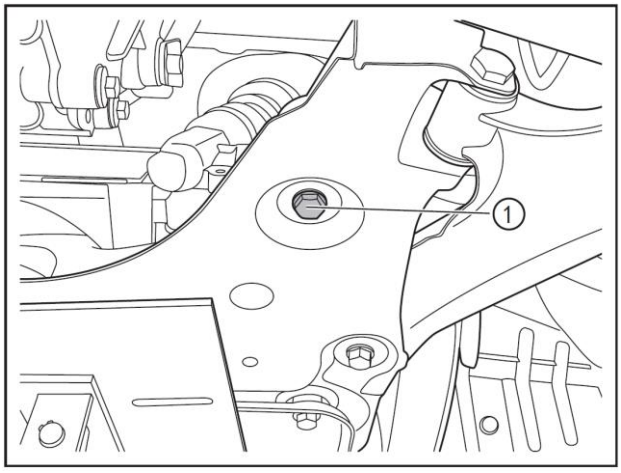
- Hold down with the 17mm wrench and remove the fixing nut (1) of stabilizer bar link with 14mm wrench.



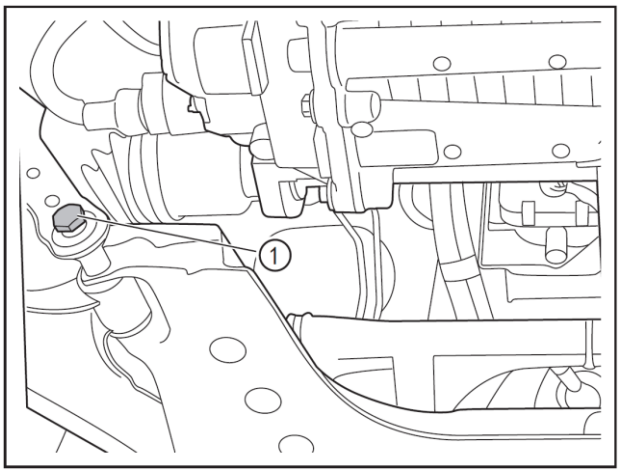
- Lift the vehicle as appropriate, and support the powertrain bracket (2) with the transmission jack (1).



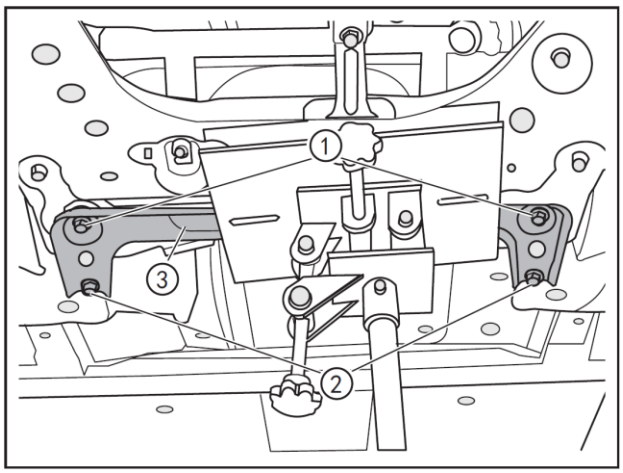
- Remove the fixing bolt (1) (M12X65) of the torsion connection piece with the 16mm socket, and loosen the fixing bolt (2) with the 15mm socket.
- Turn the torsion connection piece (3) so that it will not cause interference with the removal of the bracket.



- Remove the fixing bolt (1) (M12X94) at the lower part with a 17mm socket.



- Remove the fixing bolt (1) (M12X135) with a 12mm socket.



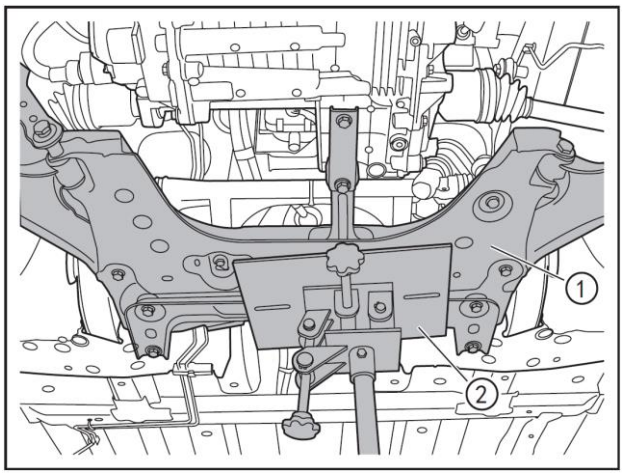
- Use the 17 mm socket to remove the fixing bolts (1) (M12X105) at the front part of bracket rear reinforcement plate.
- Use the 17 mm socket to remove the fixing bolts (2) (M12X28) at the rear part of bracket rear reinforcement plate.
- Remove the bracket rear reinforcement plate (3).

⚠ CAUTION

- **When removing the bolts of bracket rear reinforcement plate, please hold the bracket rear reinforcement plate to prevent it from falling off accidentally.**
- Ask another operator to assist in taking off the bracket assembly.

⚠ CAUTION

- **When lowering the bracket assembly with the transmission jack, please hold the bracket assembly to prevent it from falling off accidentally.**

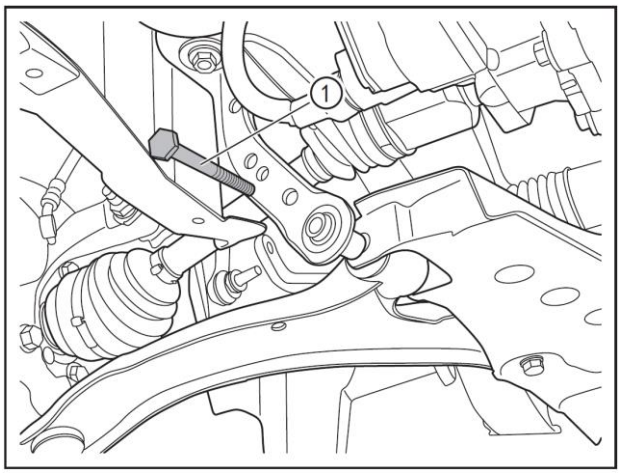


4- Refitting

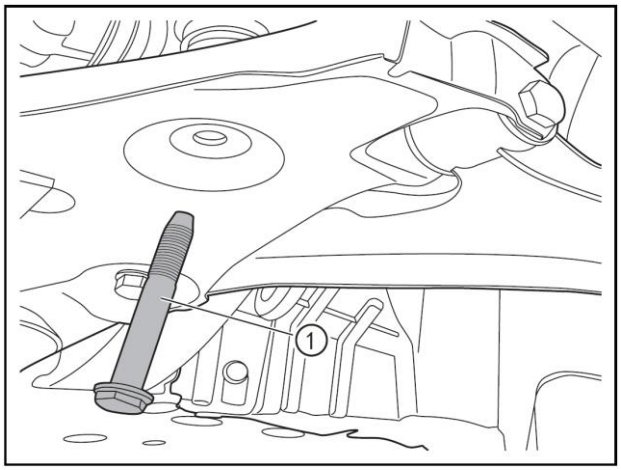
- One person holds the bracket assembly (1) and the other lifts the transmission jack (2) as appropriate.

⚠ CAUTION

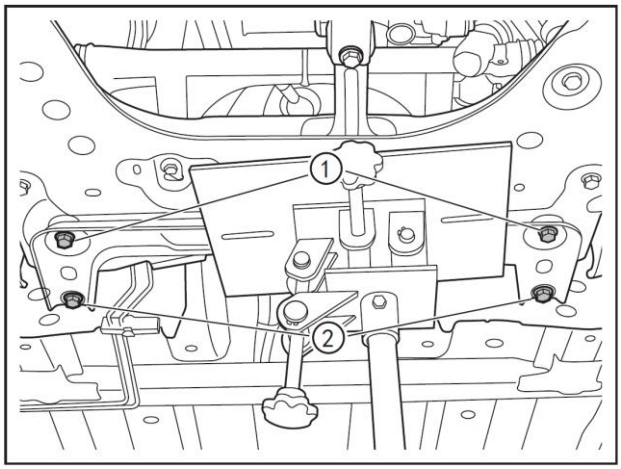
- **The ground of work site shall be flat and solid, and when moving the bracket for alignment, always hold the bracket securely; otherwise, the transmission jack may collapse.**



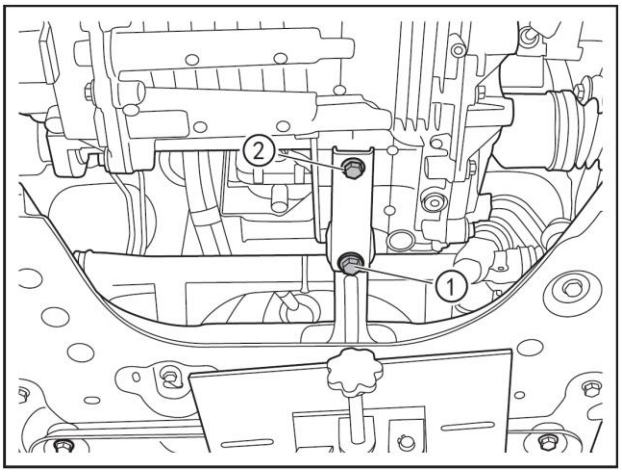
- Install and tighten the fixing bolts (1) to 119N·m in the direction shown.



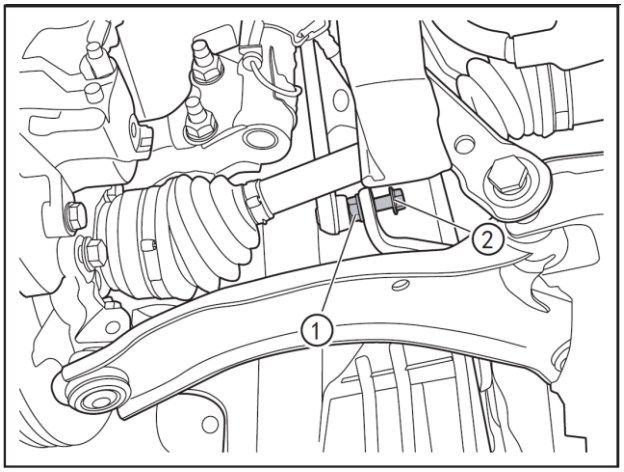
- Install and tighten the fixing bolts (1) to 112.5N·m in the direction shown.



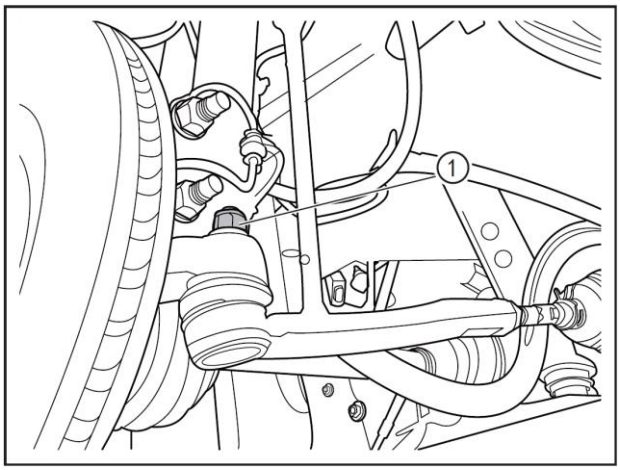
- Place the bracket rear reinforcement plate on the bracket with the bolt holes aligned.
- Use the 17 mm socket to refit the fixing bolts (1) (M12X105) at the front part of bracket rear reinforcement plate.
- Use the 17 mm socket to refit the fixing bolts (2) (M12X28) at the rear part of bracket rear reinforcement plate.



- Refit the fixing bolt (1) (M12X65) of the torsion connection piece with the 16mm socket, and tighten the fixing bolt (2) with the 15mm socket.



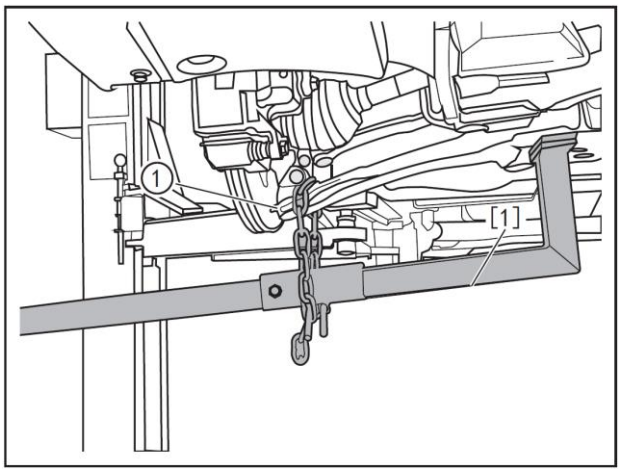
- Hold the fixing bolt (1) with the 17mm wrench, and refit and tighten the fixing nut (2) of front stabilizer bar link to 34.4N·m with the 14mm wrench.



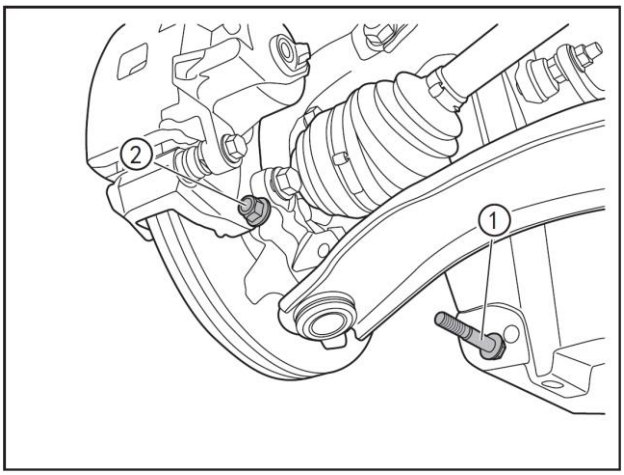
- Hold down the part with the T30 socket, and tighten the fixing nut (1) of tie rod ball pin to 63.2N·m with the 14mm socket.

⚠ CAUTION

- **The fixing nut for tie rod ball pin is disposable and should be replaced with a new one after each removal.**



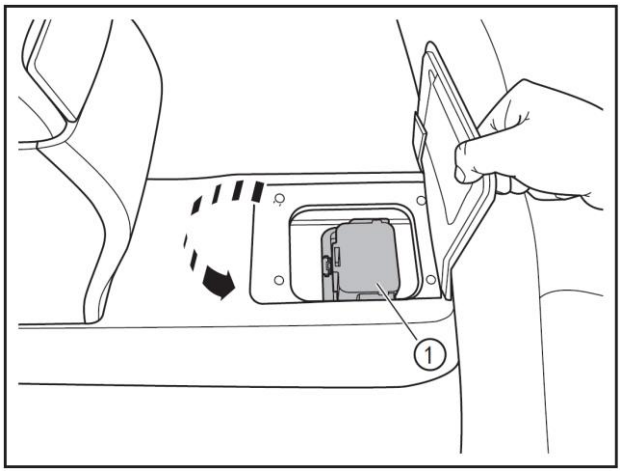
- Refit the triangular arm ball joint (1) into the steering knuckle by using the pull rod [1].



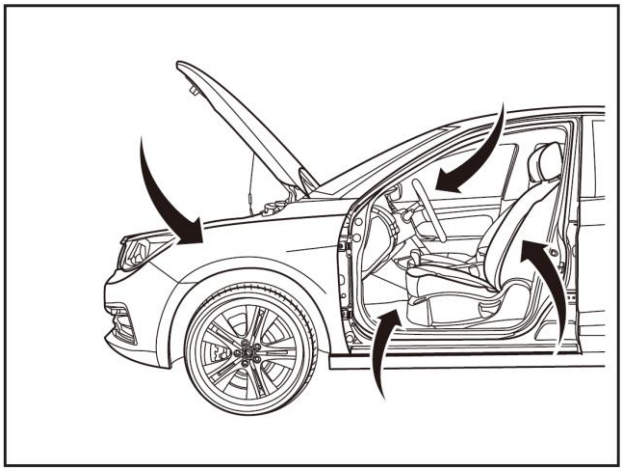
- Use the 14 mm wrench to hold the connecting bolt (1) (M10X56), and use the 14mm socket to tighten the connecting nut (2) for connecting the triangular arm and steering knuckle to 55N·m.
- Refit the wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- **The connecting bolt is disposable and should be replaced with a new one after each removal.**



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

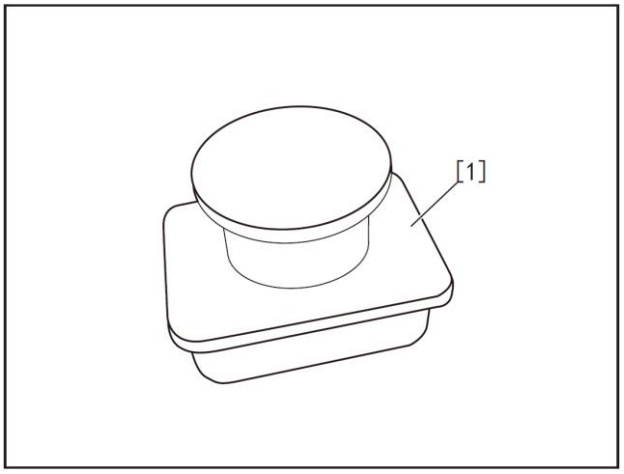


Removal and Refitting of Front Stabilizer Bar Link

1 - Protection

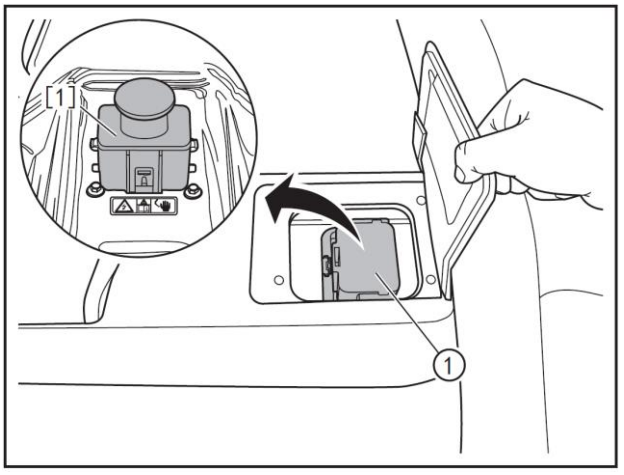
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Traction battery service switch plug (E700101) [1].



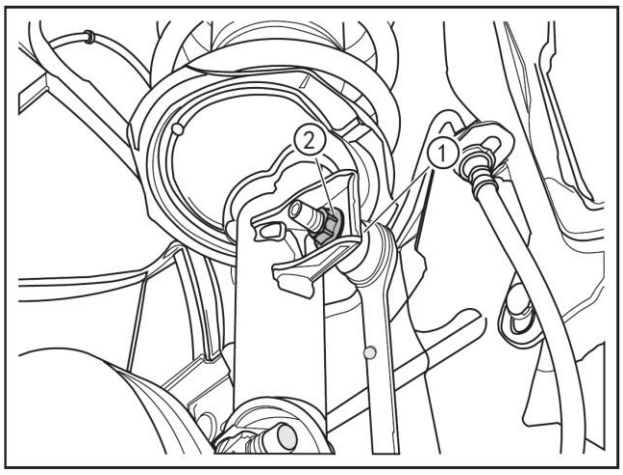
3 - Removal

⚠ CAUTION

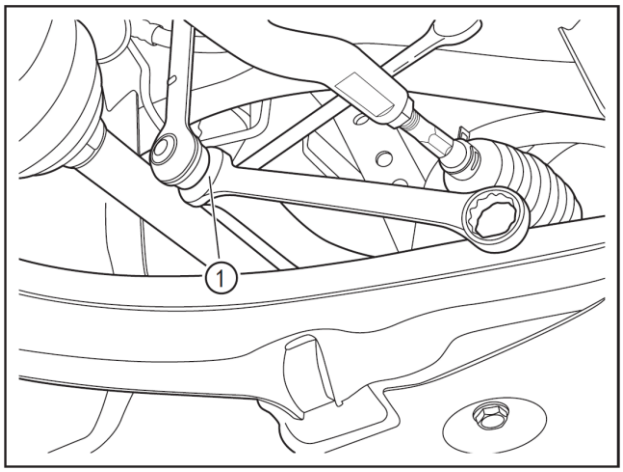
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

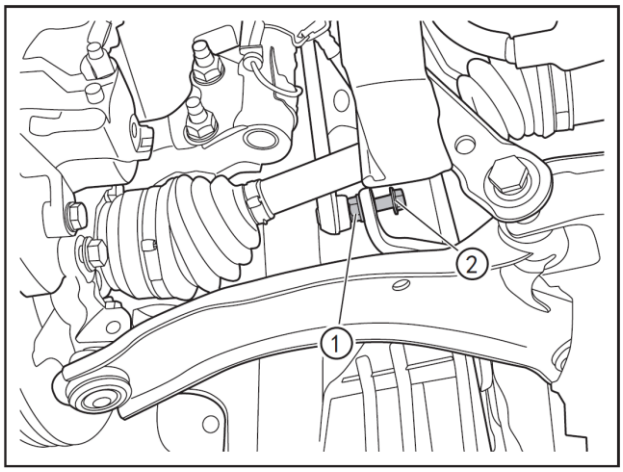
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Lift the vehicle up and remove the front wheels. (Refer to “Removal and Refitting of Wheels”)
- Hold the nut (1) with the 17mm wrench, and remove the fixing nut (2) of front stabilizer bar link with the 14mm socket.



- Hold the nut (1) with the 17mm wrench, and remove the lower fixing nut of front stabilizer bar link with the 14mm socket.

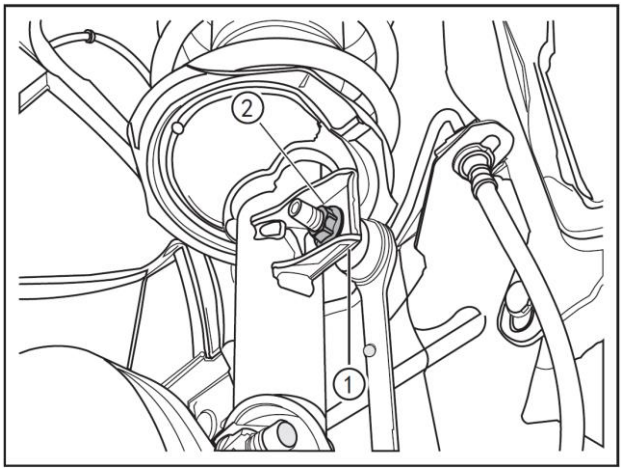


4- Refitting

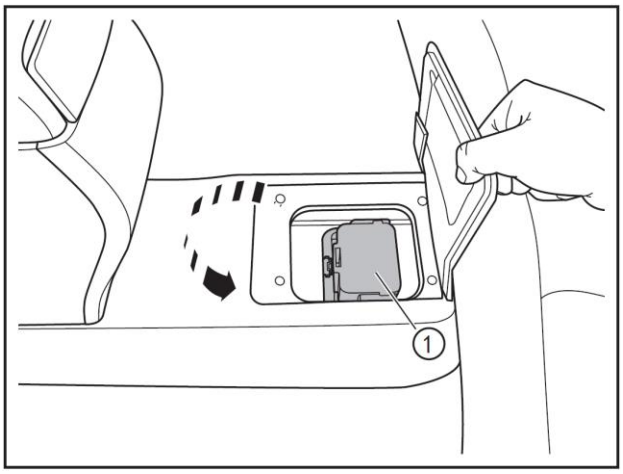
- Hold the nut (1) with the 17mm wrench, and tighten the lower fixing nut (2) of front stabilizer bar link with the 14mm socket to 34.4N·m.

⚠ CAUTION

- **The stabilizer bar link ball joint is subject to high working stress and is likely to loosen or wear excessively; therefore, check the link ball joint before refitting, and replace with a new one when necessary.**



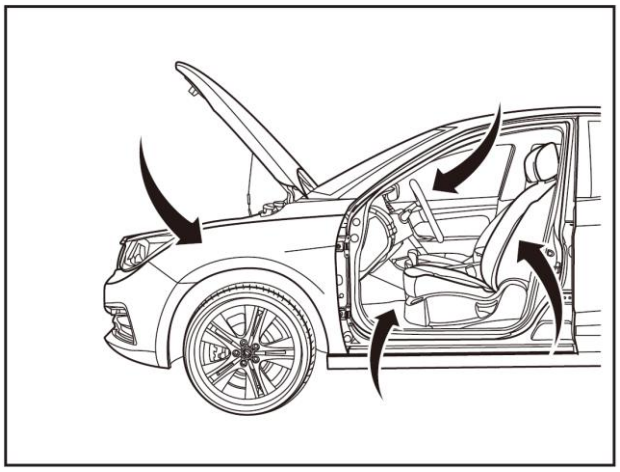
- Hold the nut (1) with the 17mm wrench, and tighten the upper fixing nut (2) of front stabilizer bar link with the 14mm socket to 34.4N·m.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

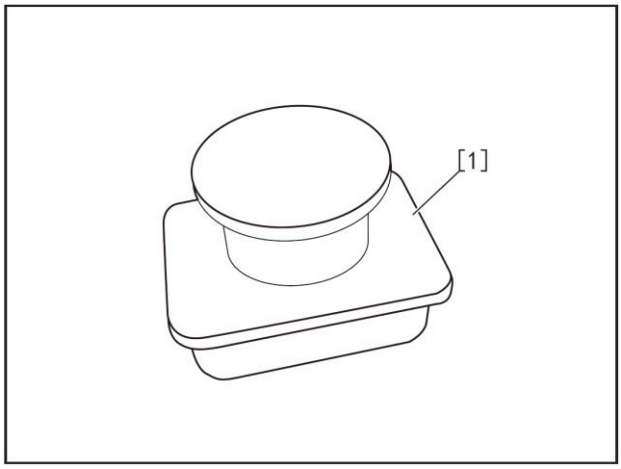


Removal and Refitting of Front Stabilizer Bar

1 - Protection

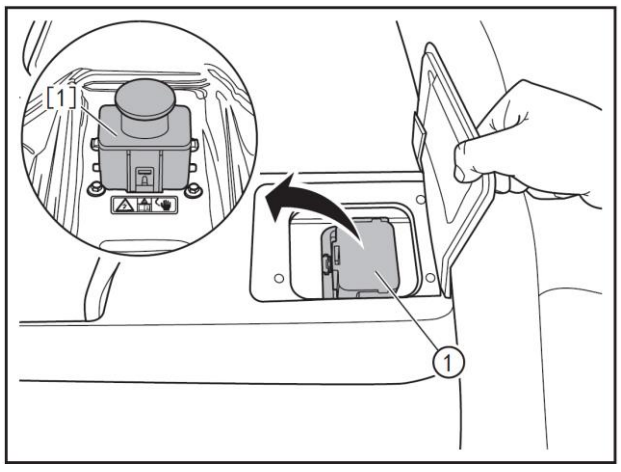
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Traction battery service switch plug (E700101) [1].



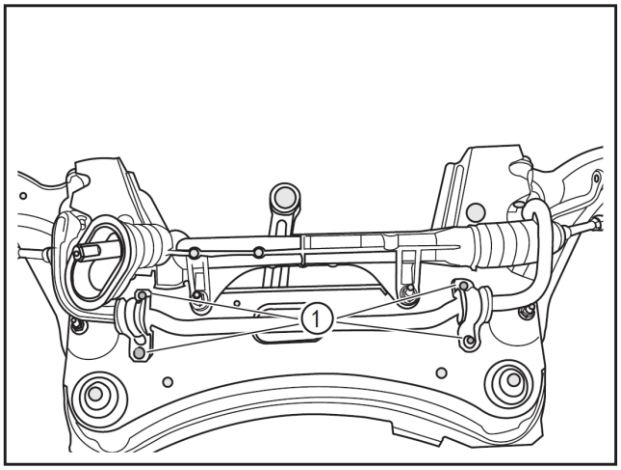
3 - Removal

⚠ CAUTION

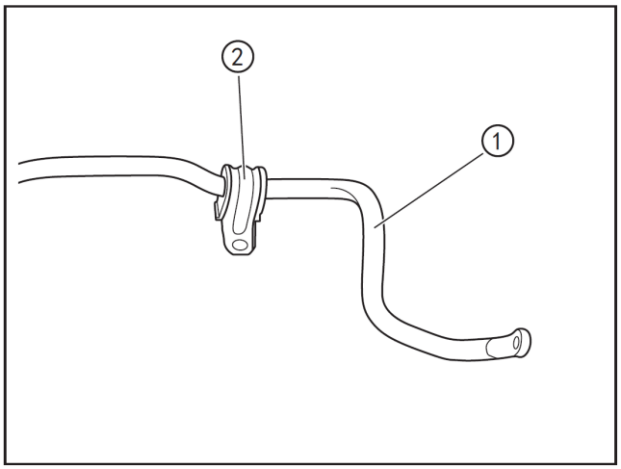
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to "Removal and Refitting of Service Switch" in "Traction Battery")

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



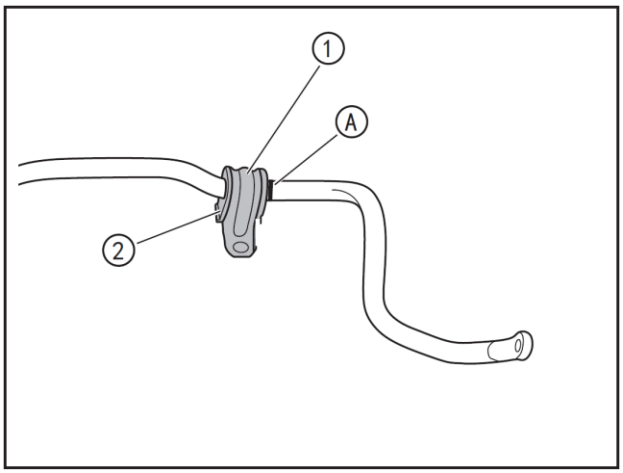
- Remove the motor bracket assembly. (Refer to “Removal and Refitting of Motor Bracket Assembly”)
- Remove the 4 fixing bolts (1) (M8X30 of stabilizer bar rubber bush cover plate with the 12mm socket.



- Dismount front stabilizer bar assembly (1).
- Remove the fixing support (2) of front stabilizer bar.

⚠ CAUTION

- **Check the stabilizer bar rubber bush, and replace it with a new one if any wear is found.**

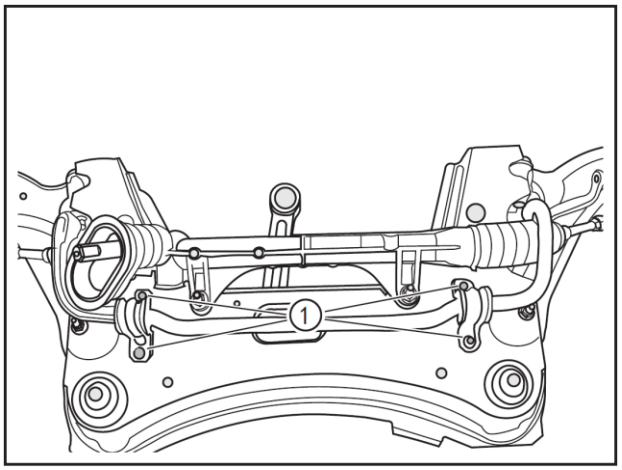


4- Refitting

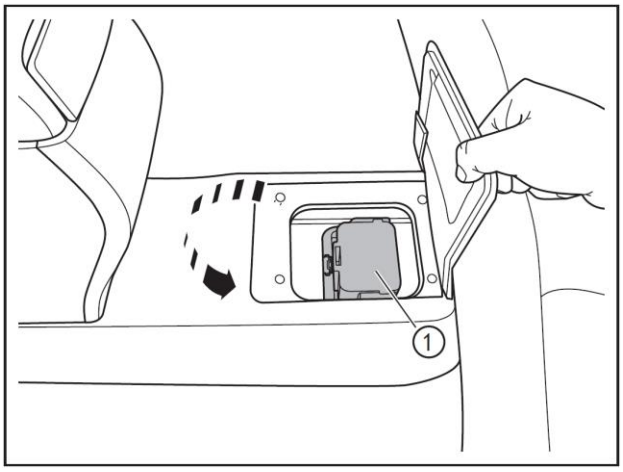
- Refit the stabilizer bar rubber bush cover (1) and the stabilizer bar rubber bush (2) on the front stabilizer bar.

⚠ CAUTION

- **When installing the stabilizer bar fixed support, the limit line A of stabilizer bar should be at the inside of stabilizer bar rubber bush cover plate. Always align the limit line during installation.**



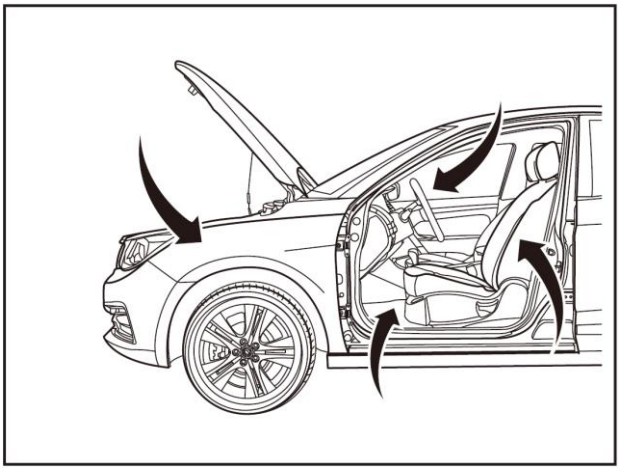
- Use the 12 mm socket to tighten the 4 fixing bolts (1) of stabilizer bar rubber bush cover plate to 28N·m.



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

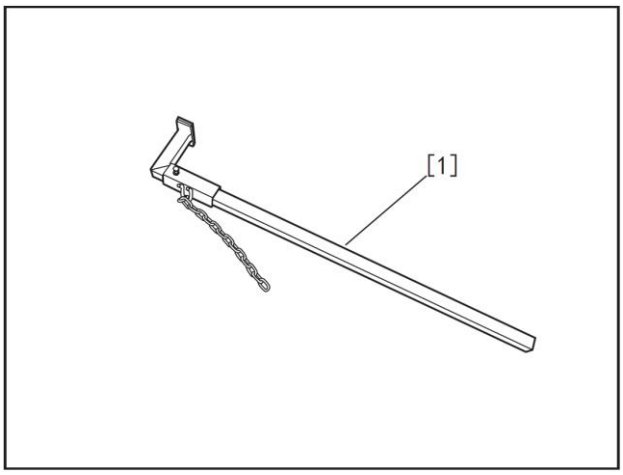


Removal and Refitting of Triangular Arm

1 - Protection

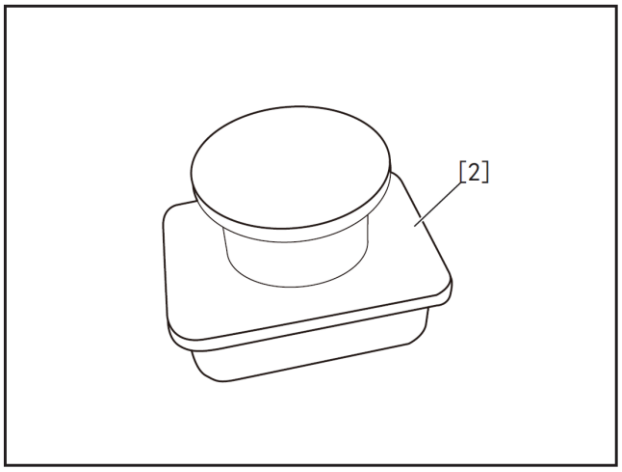
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

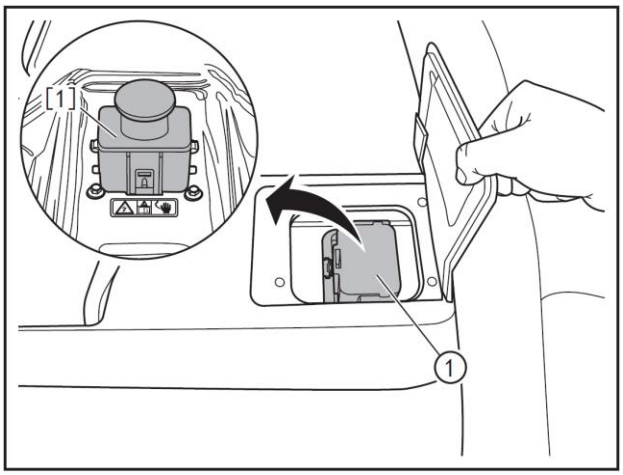


2 - Recommended tools

- Pull rod BF0504 [1].



- Traction battery service switch plug (E700101) [2].



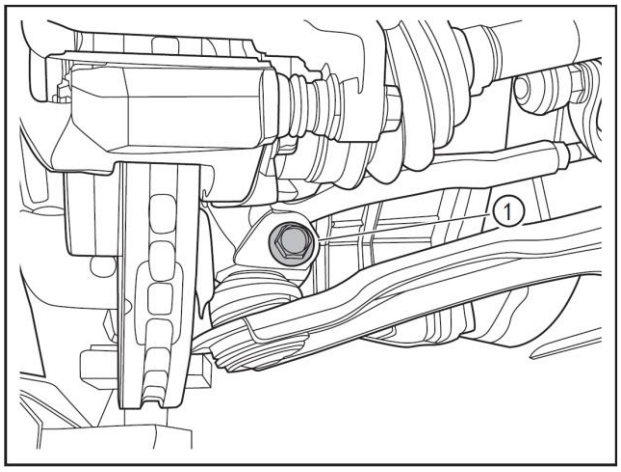
3 - Removal

⚠ CAUTION

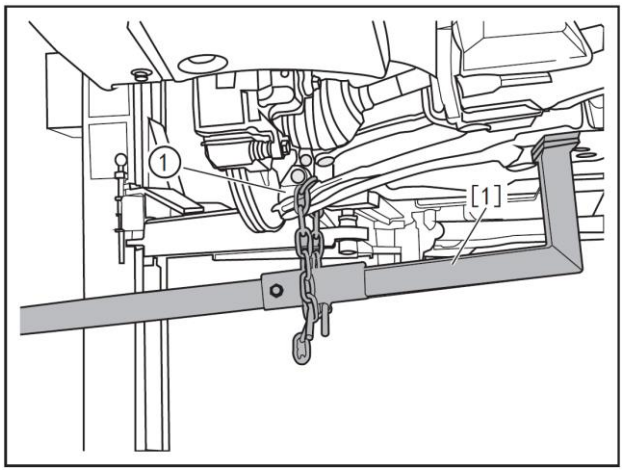
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

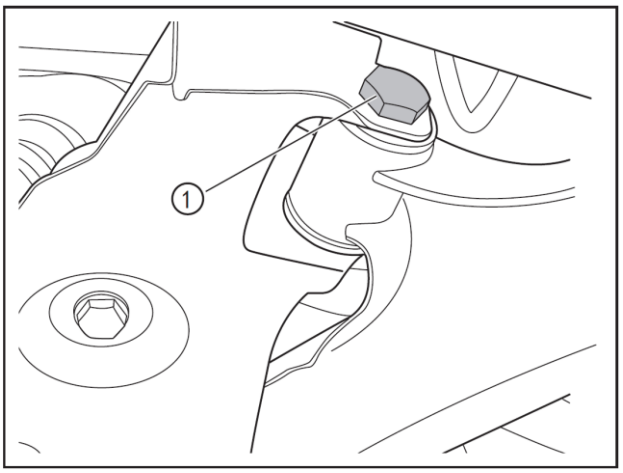
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



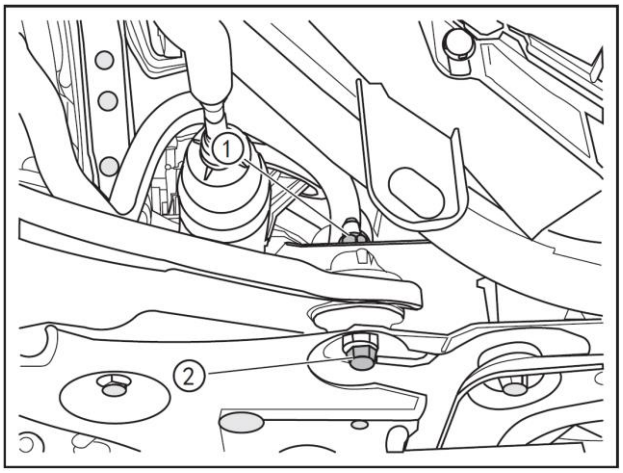
- Lift the vehicle up and remove the front wheels. (Refer to “Removal and Refitting of Wheels”)
- Use the 14 mm wrench to hold the connecting nut of triangular arm and steering knuckle, and use the 14mm socket to remove the connecting bolt (1) (M10X56).



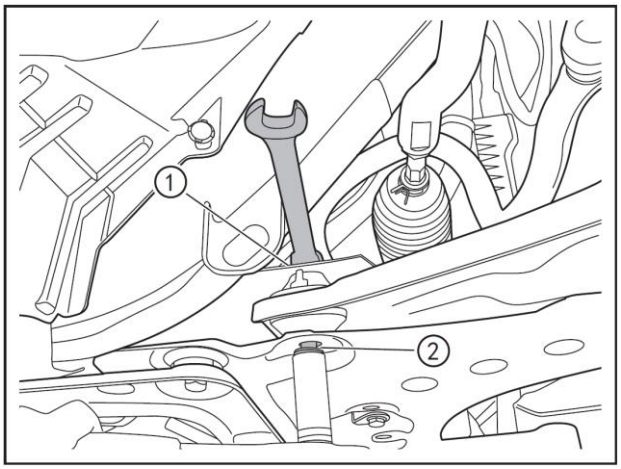
- Refit the triangular arm ball joint (1) into the steering knuckle by using the pull rod [1].



- Use the 22mm socket to remove the front fixing bolt (1) (M12X135) of triangular arm.

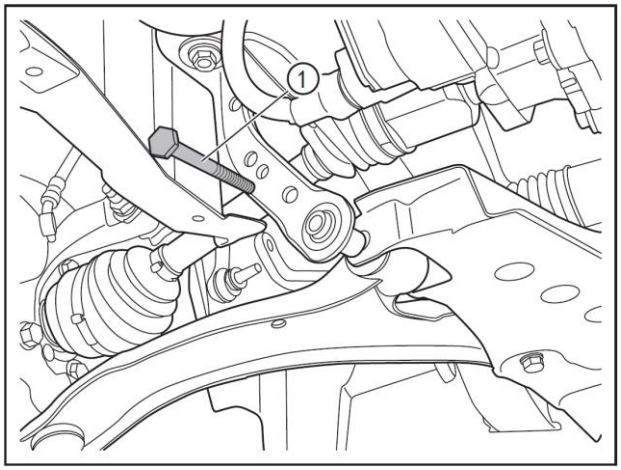


- Hold the fixing nut (1) with the 17mm wrench, and remove the fixing bolt (2) (M12X80) of triangular arm with the 17mm socket.
- Take out the triangular arm.

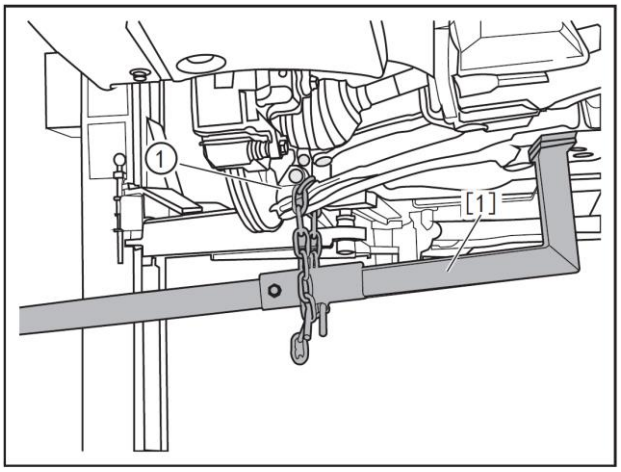


4- Refitting

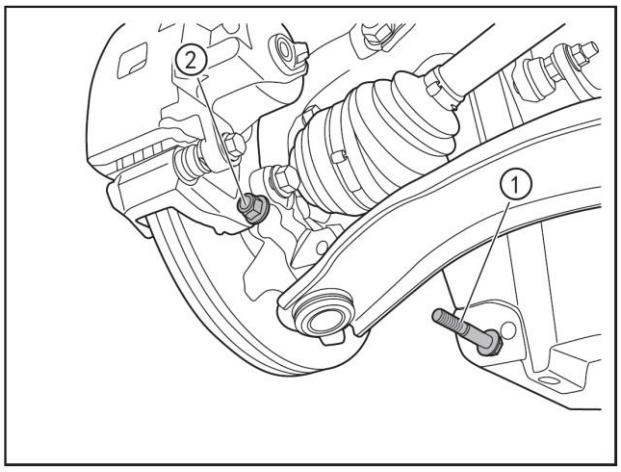
- Refit the triangular arm, and as shown, hold the fixing nut (1) with the 17mm wrench, and tighten the fixing bolt (2) (M12X80) of triangular arm with the 17mm socket to 112.5N·m.



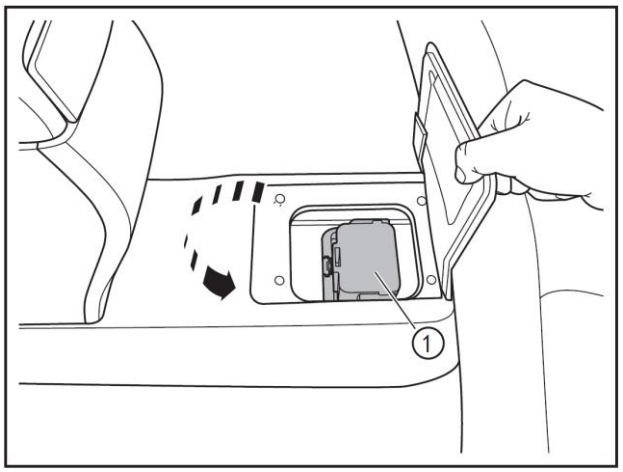
- Install and tighten the fixing bolts (1) to 119N·m in the direction shown.



- Refit the triangular arm ball joint (1) into the steering knuckle by using the pull rod [1].



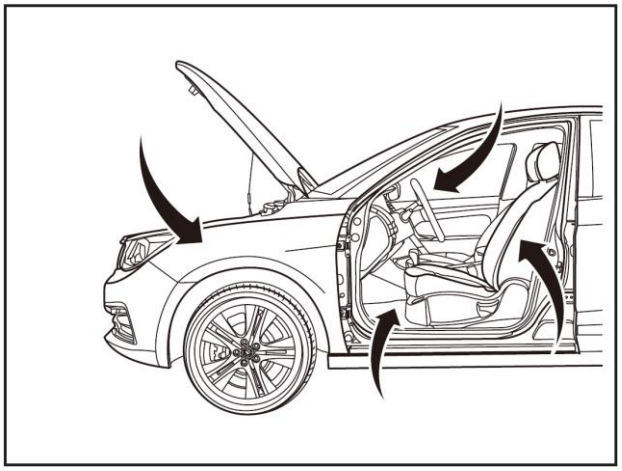
- Use the 14 mm wrench to hold the connecting bolt (1) (M10X56), and use the 14mm socket to tighten the connecting nut (2) for connecting the triangular arm and steering knuckle to 55N·m.
- Refit the wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

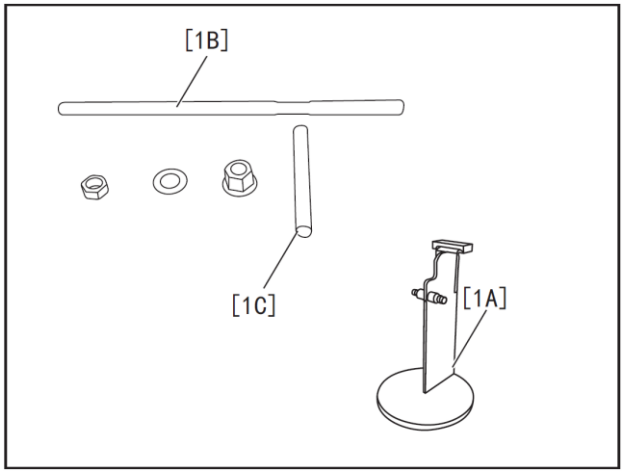


Removal and Refitting of Triangular Arm Center Bush

1 - Protection

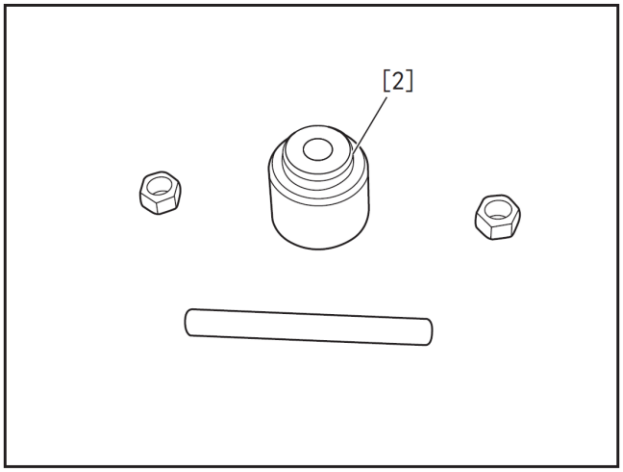
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

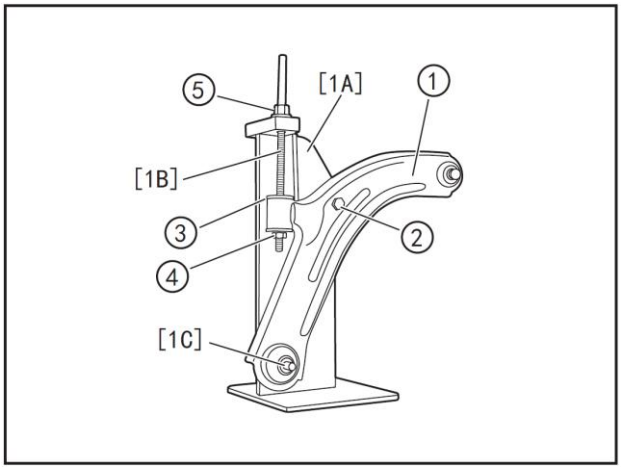


2 - Recommended tools

- Triangular arm rear elastic bush articulation removal tool (A600510) [1A].
- Triangular arm rear elastic bush articulation removal tool (A600510) [1B].
- Triangular arm rear elastic bush articulation removal tool (A600510) [1C].



- Triangular arm rear elastic bush articulation refitting tool (A600510E) [2].

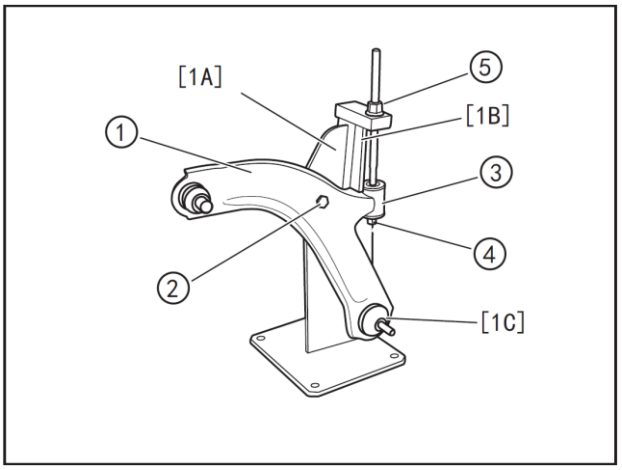


3 - Removal

- Remove the triangular arm. (Refer to “Removal and Refitting of Triangular Arm”)
- Keep the large slot of triangular arm (1) towards tool bracket [1A], thread the dowel pin [1C] through the hole for triangular arm rear elastic articulation, and insert it into locating hole of tool bracket. Install the upper fixing bolt (2), and use 17 mm socket wrench to tighten it.
- Thread the pull rod [1B] from the upside of tool bracket, and insert it into the thread hole for triangular arm center bush (3). Screw the lower nut (4), and keep the screw cap in line with pull rod.
- Lift the pull rod so that the lower nut fits with center bush, and screw in the upper nut (5) until it fits with tool bracket.
- Use the 19mm wrench to hold the lower nut (4), use the 19mm wrench to screw in the upper nut (5) clockwise, and pull out the triangular arm center bush (3) from top.
- Remove the pull rod [1B], and take out the triangular arm center bush.

⚠ CAUTION

- **This operation needs cooperation of two personnel, with one operating the press, and the other holding the tool and parts. The installation can be carried out on a work bench with threaded holes.**

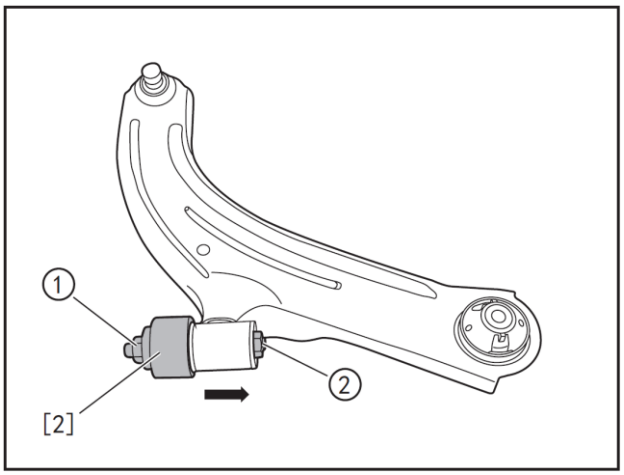


4- Refitting

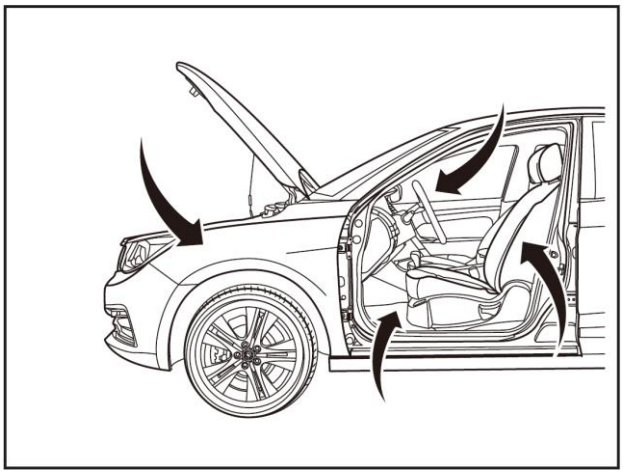
- Keep the large slot of triangular arm (1) towards tool bracket [1A], thread the dowel pin [1C] through the hole for triangular arm rear elastic articulation, and insert it into locating hole of tool bracket. Install the upper fixing bolt (2), and use 17 mm socket wrench to tighten it.
- Insert the pull rod [1B], screw in the lower nut (4), and keep the screw cap in line with pull rod.
- Screw in the upper nut (5) by hand until it fits with tool bracket.
- Hold the lower nut (4) with the 19mm wrench, and screw in the upper nut (5) clockwise with the 21mm wrench, and refit the triangular arm center bush (3) onto the triangular arm.

⚠ CAUTION

- **Always apply some grease to the mounting surface for ease of the refitting.**
- **While tightening the nuts, apply even force to avoid part damage.**



- If the center bush has not reached the mounting position during refitting, always conduct returning.
- Install the triangular arm center bush returning tool [2] to the over-tightened end of center bush.
- Use the 19 mm wrench to fix the nut (1), and use the 19 mm socket to tighten the nut (2), and press the center bush back to the mounting position.

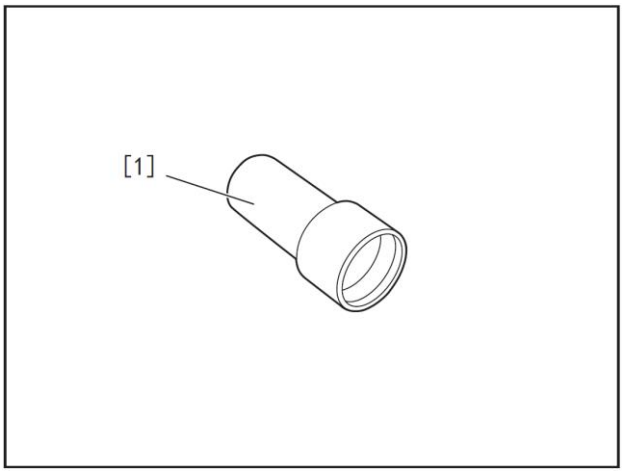


Removal and Refitting of Triangular Arm Rear Elastic Articulation

1 - Protection

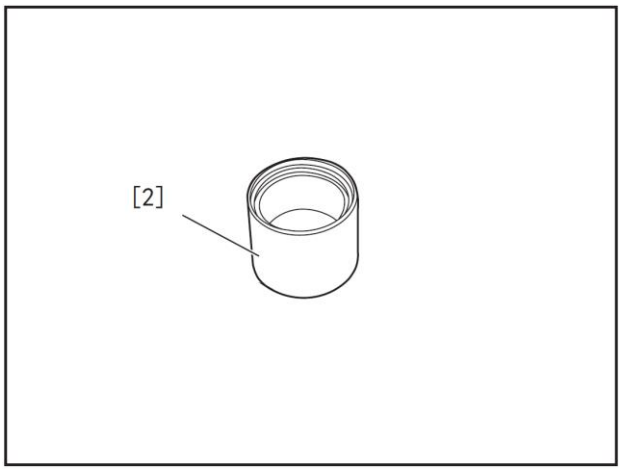
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

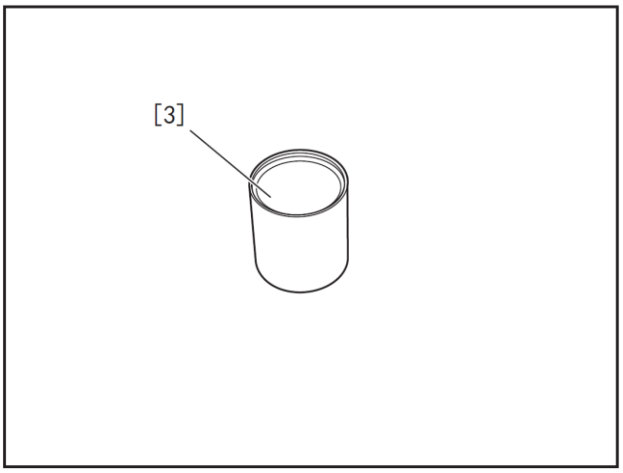


2 - Recommended tools

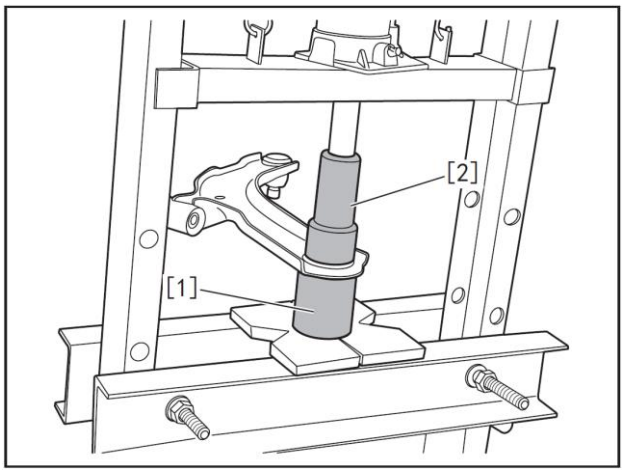
- Rear elastic articulation removing and refitting tool (A600409A) [1].



- Rear elastic articulation removing tool (A600409B) [2].



- Rear elastic articulation removing and refitting tool (A600409C) [3].

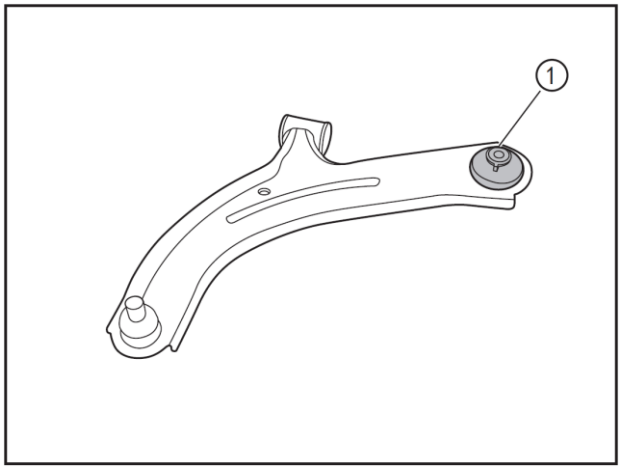


3 - Removal

- Remove the triangular arm. (Refer to “Removal and Refitting of Triangular Arm”)
- Place the removing support (A600409B) [1] on the press.
- Place the rear elastic articulation of triangular arm onto the removing support.
- Install the removal & refitting press head (A600409A) [2] on the triangular arm rear elastic articulation after alignment.
- Operate the press to press out the triangular arm rear elastic articulation.

⚠ CAUTION

- **Before the removal, observe the assembly angle of elastic articulation, and mark the two small holes for the ease of refitting and positioning.**

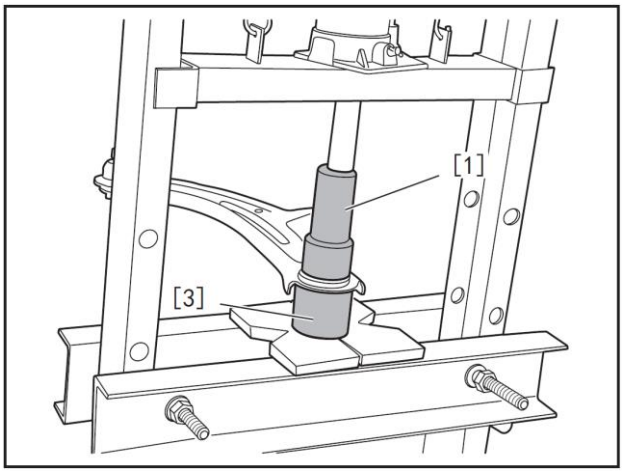


4- Refitting

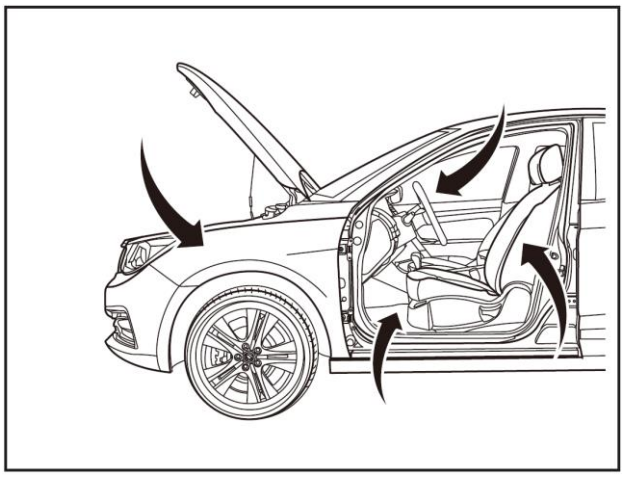
- Apply some grease to the mounting surface of new triangular arm rear elastic articulation (1).

⚠ CAUTION

- **Adjust the angle of elastic articulation so that the two small holes are on the axis of center bush. Refit the elastic articulation in triangular arm hole, and use a rubber hammer to gently knock it until its front part is pressed into mounting hole and kept vertical.**



- Place the refitting support [3] on the press.
- Place the rear elastic articulation of triangular arm onto the support.
- Install the press head [1] onto the triangular arm rear elastic articulation after alignment.
- Operate the press, and press the triangular arm rear elastic articulation in place.

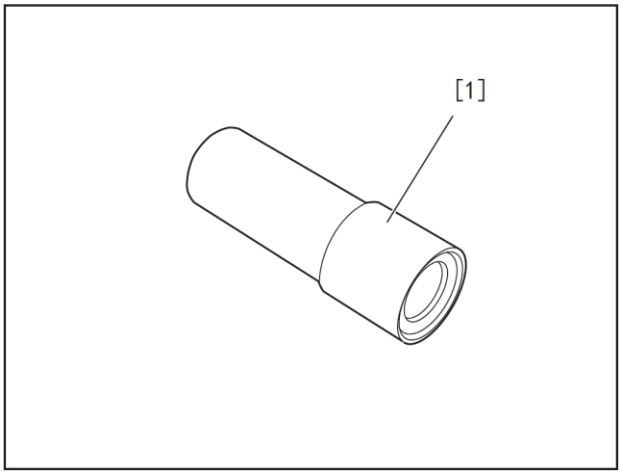


Removal and Refitting of Triangular Arm Lower Ball Joint

1 - Protection

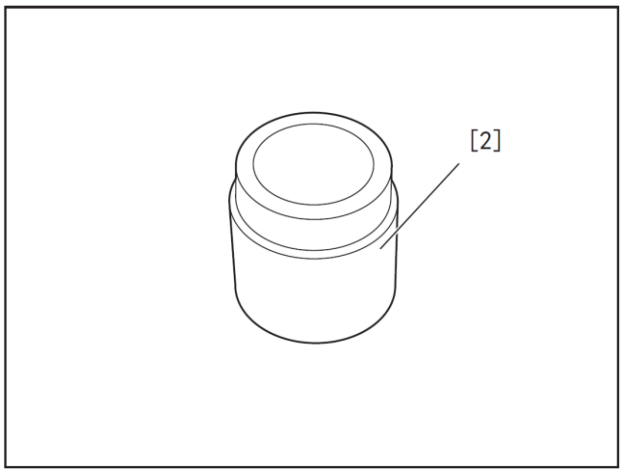
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

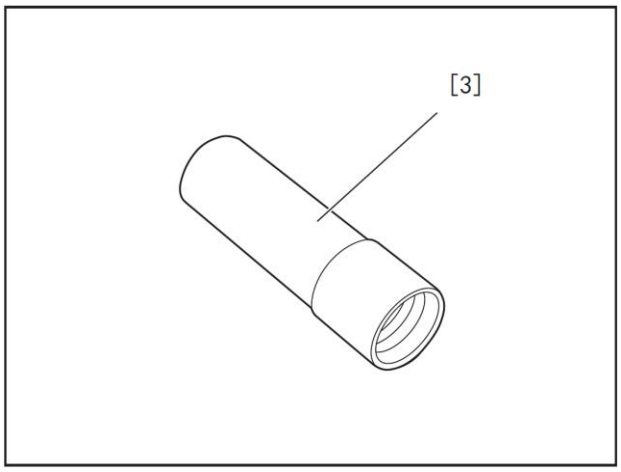


2 - Recommended tools

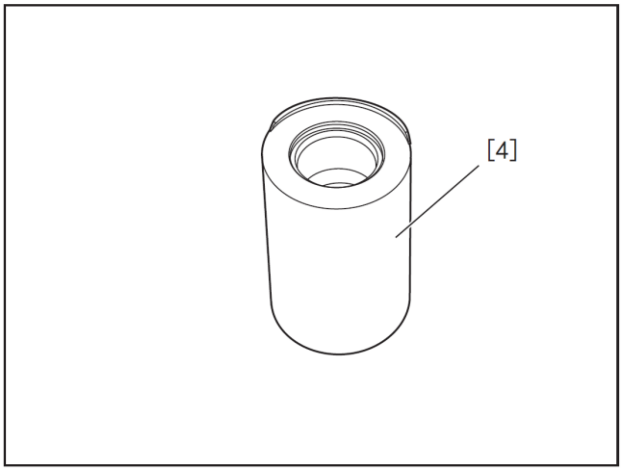
- Triangular arm lower ball joint removal press head (A600408A) [1].



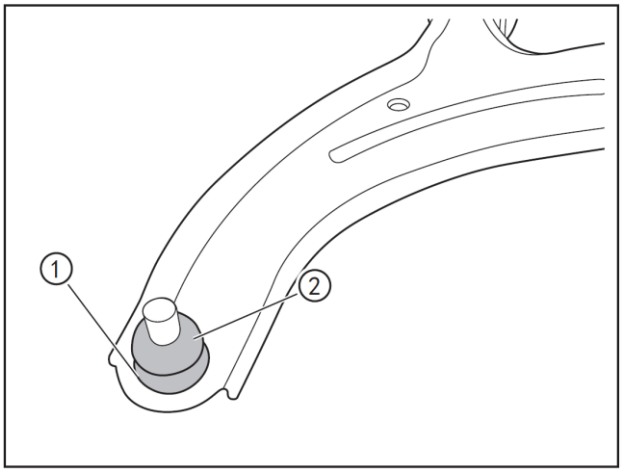
- Triangular arm lower ball joint removal support (A600408A) [2].



- Triangular arm lower ball joint refitting press head (A600408C) [3].

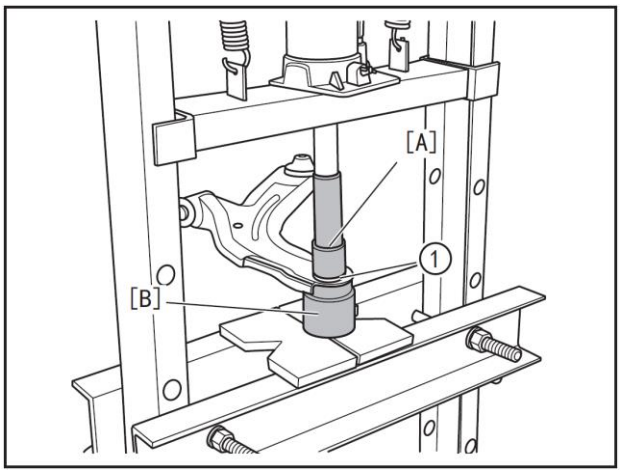


- Triangular arm lower ball joint refitting support (A600408C) [4].



3 - Removal

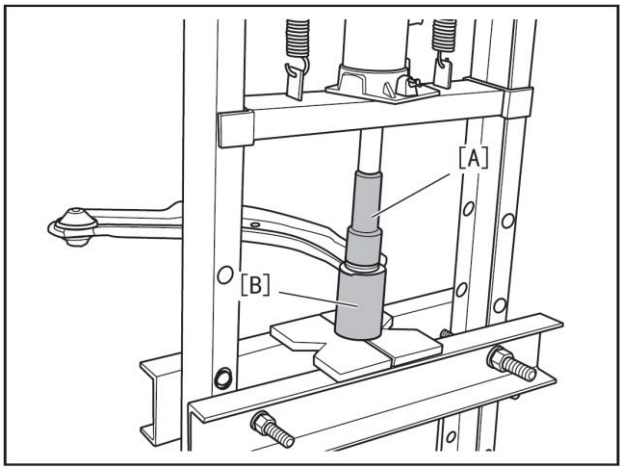
- Remove the snap spring (1) and dust cover (2) of ball joint.



- Place the removing support [B] on the press.
- Install the triangular arm lower ball joint on the support [B] after alignment.
- Install the removal press head [A] on the ball joint after alignment.
- Operate the press to press out the triangular arm lower ball joint (1).

⚠ CAUTION

- **Before removal, observe the direction of the ball joint, and mark it in order to ensure the correct inserting direction when refitting new ball joint;**

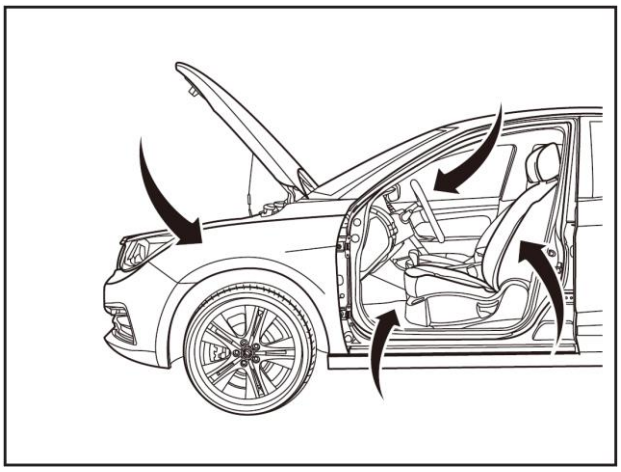


4- Refitting

- Apply a little amount of lubricating grease onto the mounting surface of new triangular arm lower ball joint.
- Keep the large slot of triangular arm upward, insert the lower ball joint into mounting hole, and use a rubber hammer to gently knock the base of lower ball joint until its front part is pressed into mounting hole and kept vertical.
- Place the triangular arm lower ball joint refitting support [B] on the press.
- Place the triangular arm lower ball joint onto support.
- Install the refitting press head [C] on the triangular arm lower ball joint base after alignment.
- Operate the press to press and fit the triangular arm lower ball joint properly.
- Install snap spring and dust cover.

⚠ CAUTION

- **When the triangular arm lower ball joint is about to be pressed in place, do not apply too much force to avoid part and tool damage.**

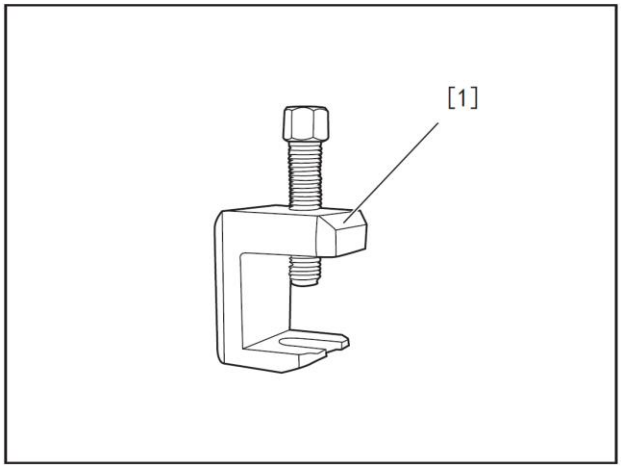


Removal and Refitting of Steering Knuckle

1 - Protection

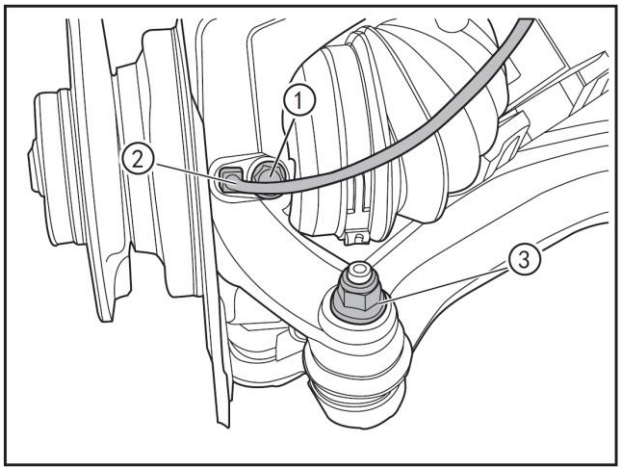
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



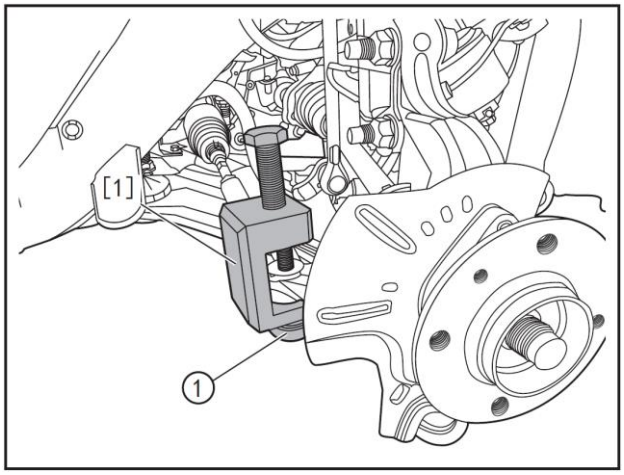
2 - Recommended tools

- Steering tie rod ball pin removal tool (AX70802) [1].

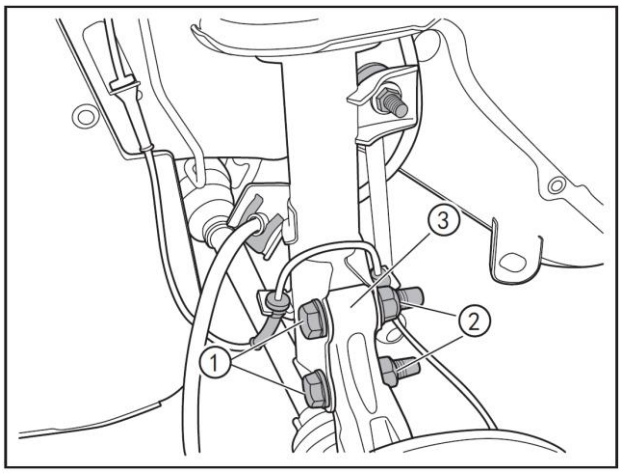


3 - Removal

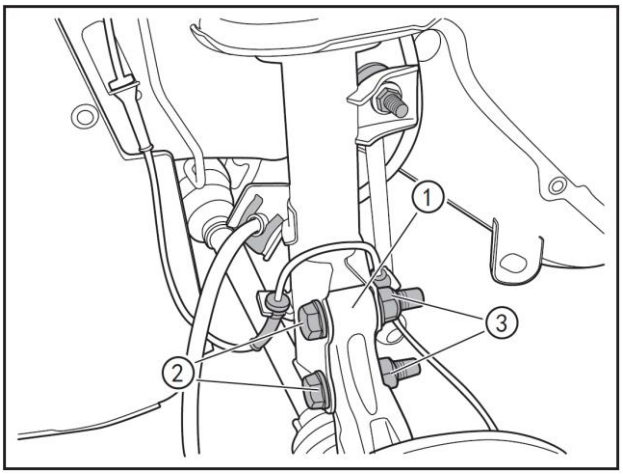
- Remove the front brake disc. (Refer to "Replacement of Front Brake Disc" in "Brake System”)
- Remove the wheel speed sensor fixing bolt (1) with the 12mm socket, and remove the wheel speed sensor (2).
- Use the 14 mm socket wrench to remove the fixing nuts (3) of the tie rod ball joint



- Install the ball pin removal tool [1] in position with its slot pressed against the bottom of steering knuckle arm and the bolt on it aligned with the screw of tie rod ball pin, and then use wrench to tighten the bolt on the tool until the tie rod ball pin (1) is forced out from steering knuckle.

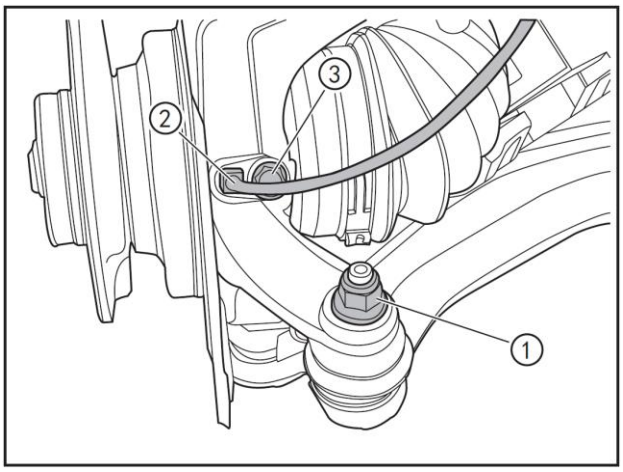


- Remove the front axle shaft. (Refer to "Removal and Refitting of Front Axle Shaft" in "Front Axle and Front Suspension")
- Use the 21 mm wrench to hold the fixing bolt (1) of steering knuckle, and use the 21 mm socket to loosen the fixing nut (2) of steering knuckle.
- Remove the steering knuckle (3).



4- Refitting

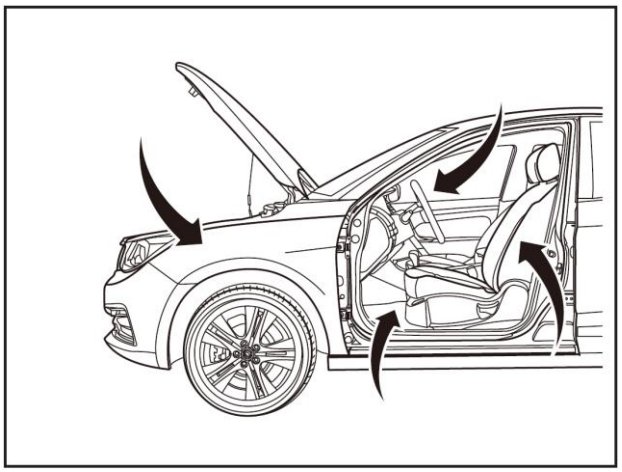
- Refit the steering knuckle (1).
- Use the 21 mm wrench to hold the fixing bolt (2) of steering knuckle, and use the 21 mm socket to tighten the fixing nut (3) of steering knuckle to 165N·m.



- Refit the fixing nut (1) of tie rod ball joint with the 14mm socket.
- Refit wheel speed sensor (2).
- Tighten the fixing bolts (3) of wheel speed sensor with the 12mm socket.
- Refit the front brake disc. (Refer to "Replacement of Front Brake Disc" in "Brake System")

⚠ CAUTION

- **The fixing nut of tie rod ball joint is disposable and shall be replaced with a new one after each removal.**

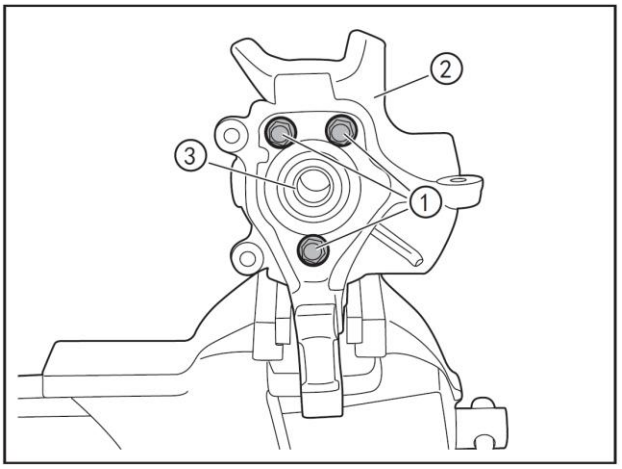


Removal and Refitting of Front Hub

1 - Protection

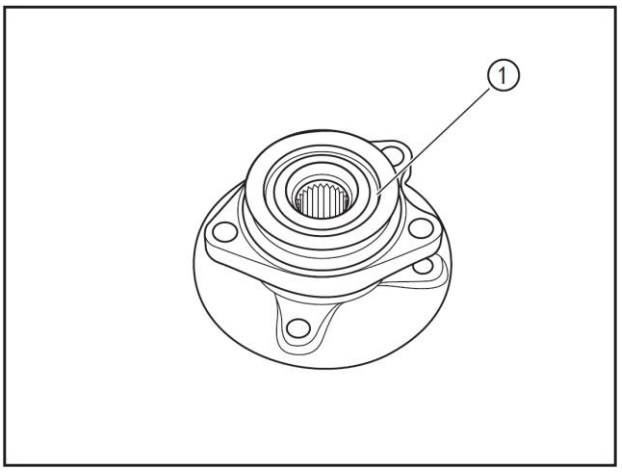
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



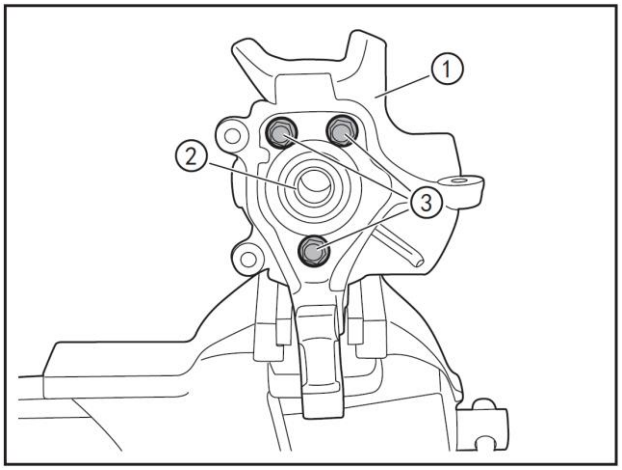
2 - Removal

- Remove the steering knuckle and front hub assembly. (Refer to the section "Removal and Refitting of Steering Knuckle and Front Hub Assembly" in “Front Axle and Front Suspension”)
- Use the 17 mm socket to remove the 3 fixing bolts (1) (M12×35) of front hub, and hold the front brake disc protective shield (2) and the front hub (3).



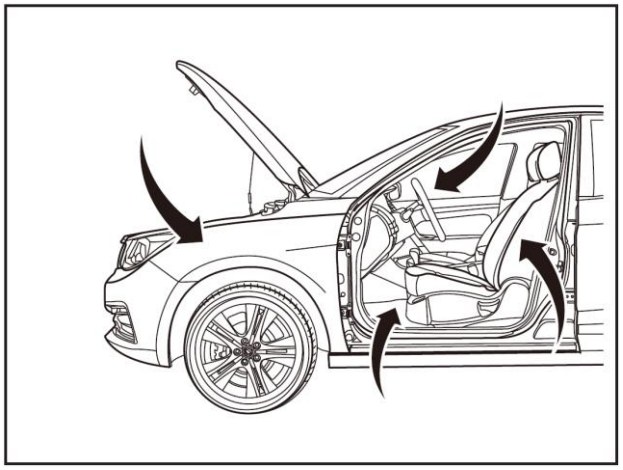
3 - Check

- Check the front hub (1) for crack, deformation and damage. If any, replace with a new one.



4- Refitting

- Hold the front brake disc protective shield (1) and the front hub (2) with hand. Use the 17mm socket to refit and tighten the 3 fixing bolts (3) (M12X35) of front hub to 94N·m.
- Refit the steering knuckle and front hub assembly. (Refer to the section "Removal and Refitting of Steering Knuckle and Front Hub Assembly" in “Front Axle and Front Suspension”)

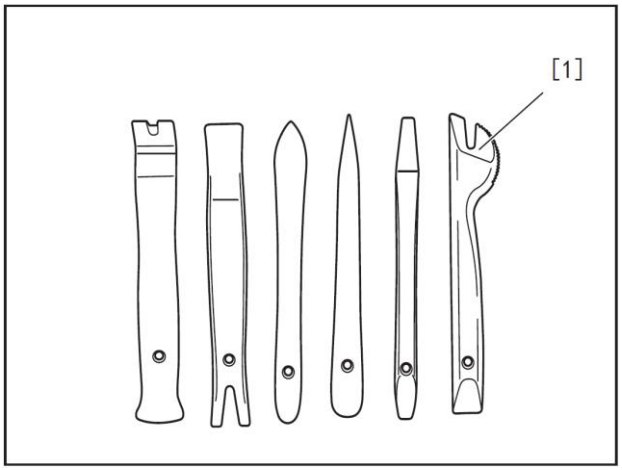


Removal and Refitting of Front Shock Absorber

1 - Protection

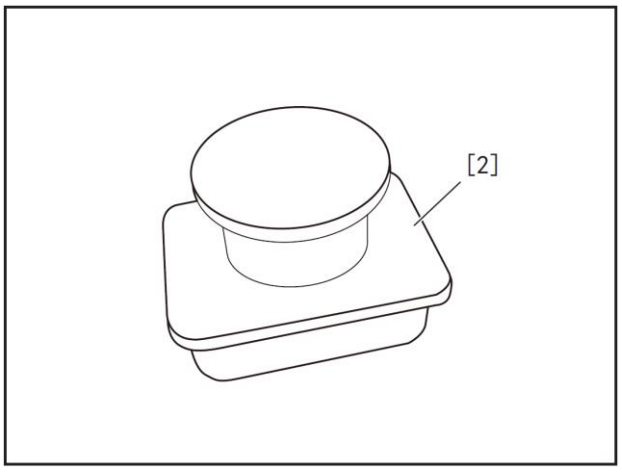
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

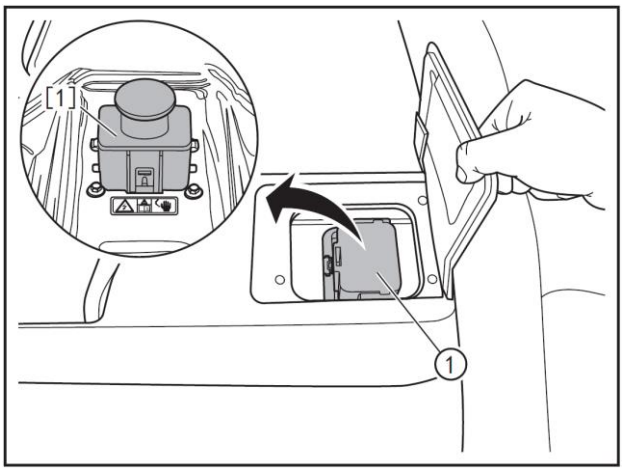


2 - Recommended tools

- Interior trim removal tool (BF1102) [1].



- Traction battery service switch plug (E700101) [2].



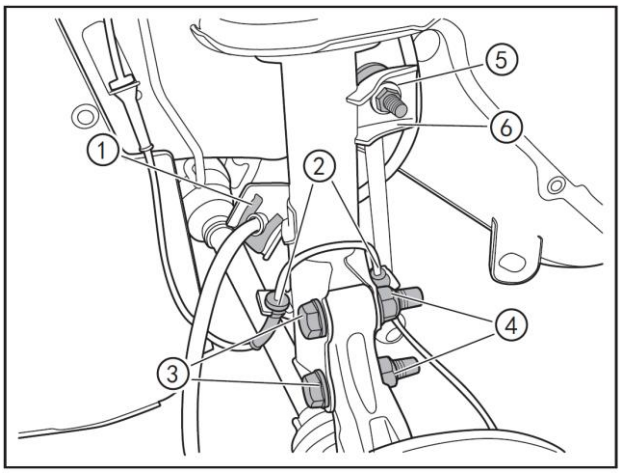
3 - Removal

⚠ CAUTION

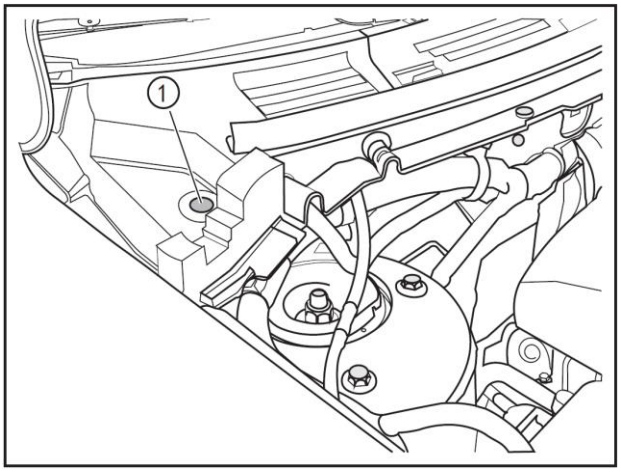
- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

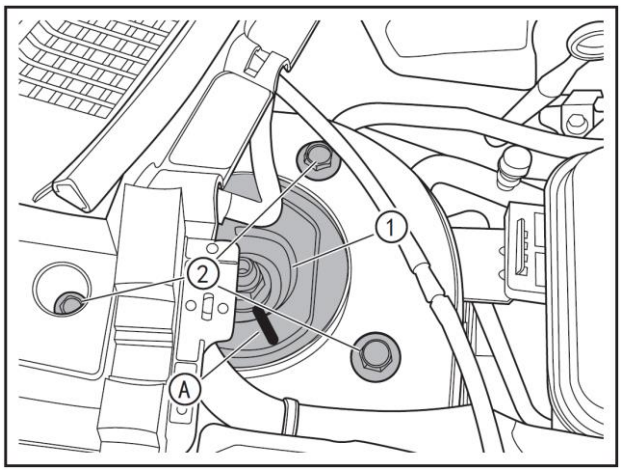
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



- Remove the front wheels. (Refer to “Removal and Refitting of Front Wheels”)
- Detach the brake pipe clamp (1) and sensor wire harness bracket (2) from the shock absorber.
- Use the 21 mm wrench to remove 2 fixing bolts (3) and nuts (4) connecting the steering knuckle and shock absorber.
- Remove the fixing nut (5) of the stabilizer bar link with the 14 mm socket, and detach the stabilizer bar link from the fixing support (6).



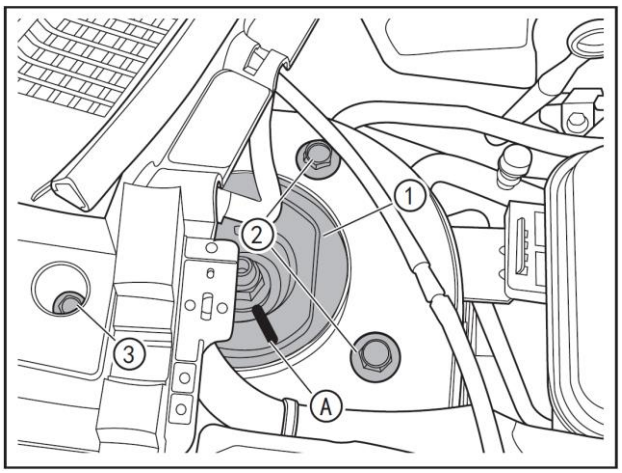
- Remove the trim cover (1) with the interior trim removal tool (BF1102).



- Ask another worker to assist in holding the shock absorber assembly (1), and use the 13mm wrench to remove the 3 fixing bolts (2) of shock absorber.

⚠ CAUTION

- **Before removing the shock absorber, make a mark A thereon for alignment during refitting.**

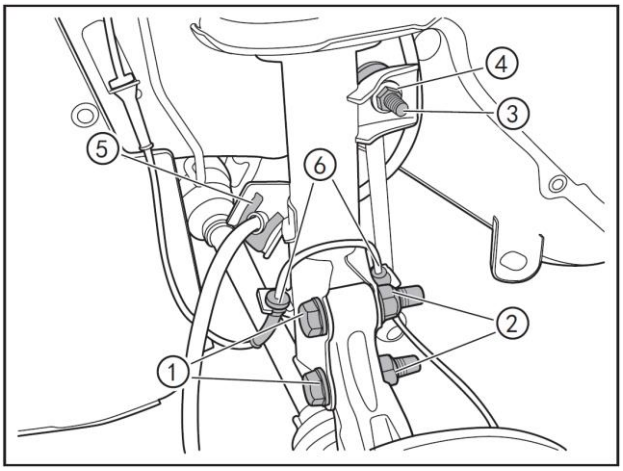


4- Refitting

- One person holds the shock absorber (1), and the other person installs and tightens the 3 bolts (2) and (3) with the 13mm socket to 15.5N·m.
- Refit the trim cover.

⚠ CAUTION

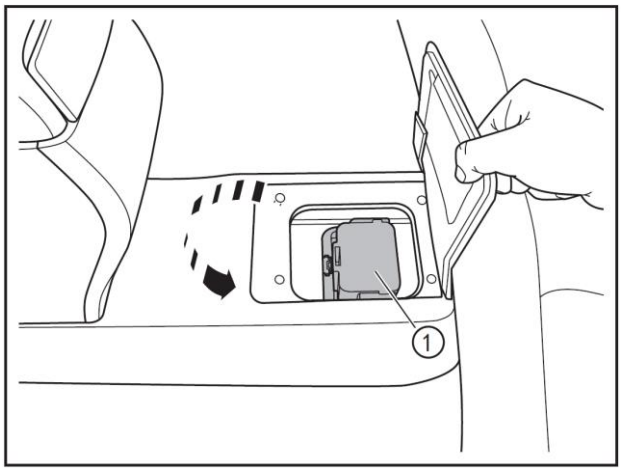
- **Be careful when installing the inner bolts (3) of the trim to prevent the bolts from falling into the interior of the body.**
- **Pay attention to aligning the installation direction A of the suspension during installation.**



- Use the 21 mm wrench to tighten the 2 fixing bolts (1) and fixing nuts (2) fir connecting the steering knuckle and shock absorber to 165N·m.
- Refit the stabilizer bar link (3) onto the shock absorber bracket.
- Tighten the fixing nut (4) of the stabilizer bar link with the 14mm socket.
- Refit the brake pipe clamp (5) and wheel speed sensor wire harness clip (6) on the shock absorber.

⚠ CAUTION

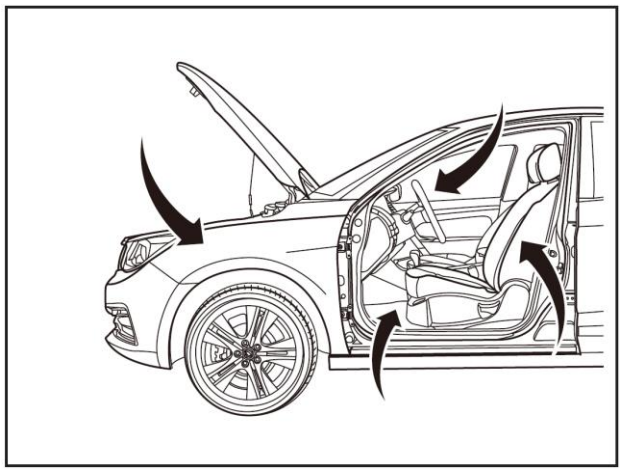
- **Check the clip (5) and replace it if damaged.**
- **After refitting, conduct four-wheel alignment.**



- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

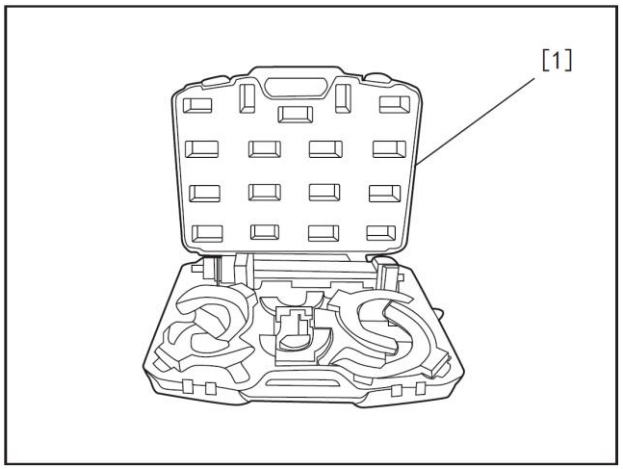


Disassembly of Front Shock Absorber Assembly

1 - Protection

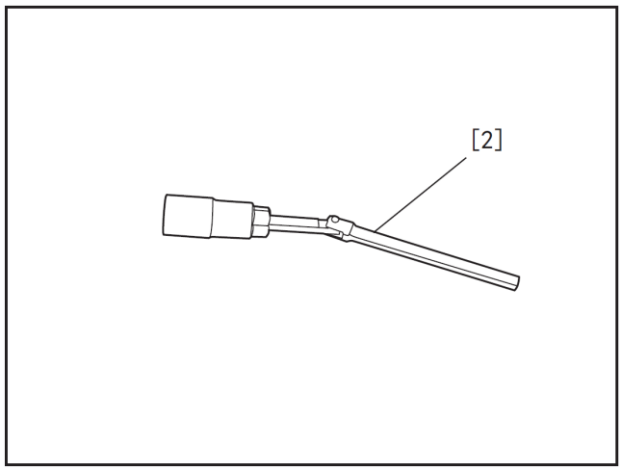
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

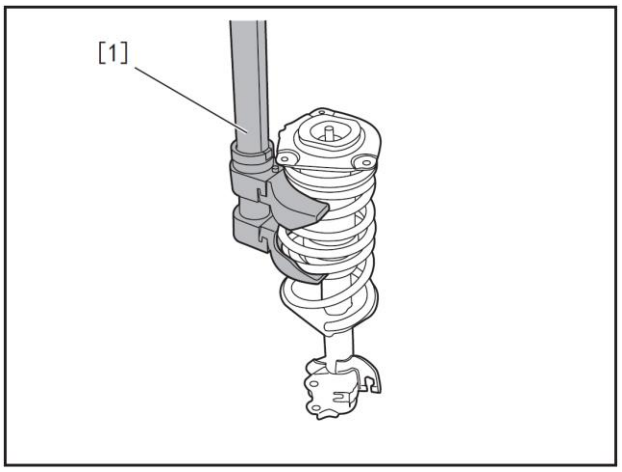


2 - Recommended tools

- Shock absorber spring compression tool (AX70703) [1].



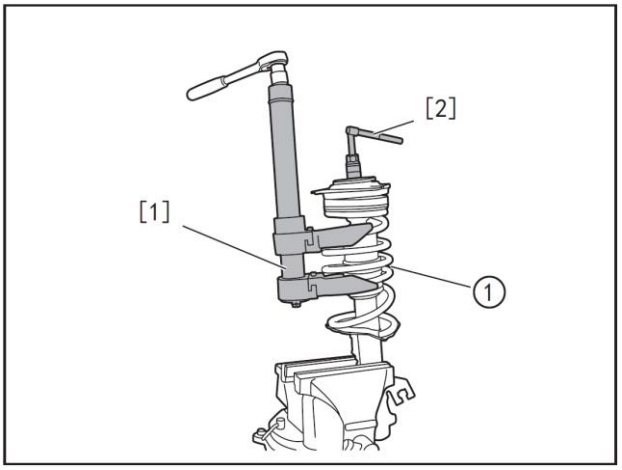
- Shock absorber removal and refitting socket (BF0701) [2]



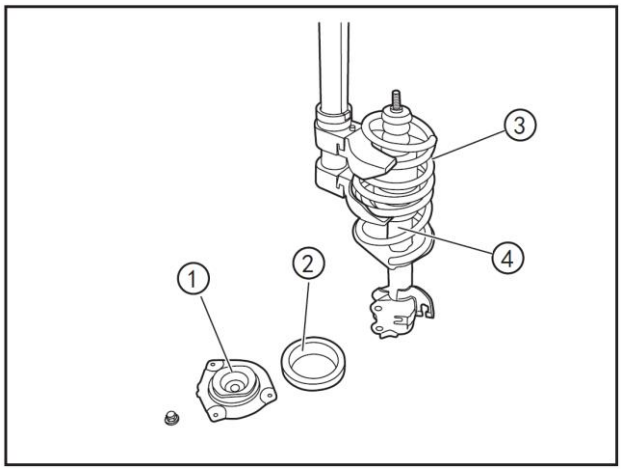
3 - Removal

⚠ CAUTION

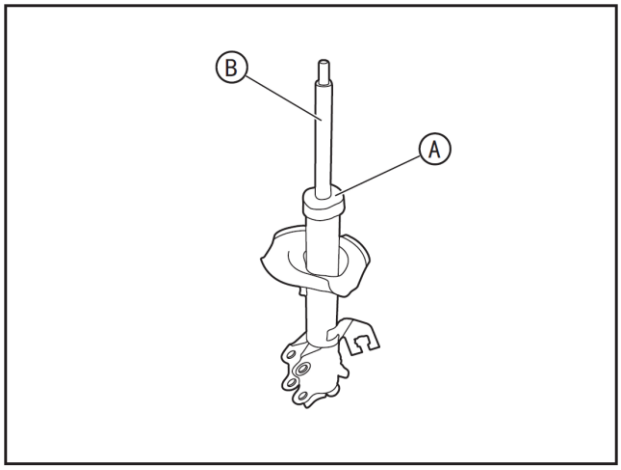
- **To avoid unnecessary part damage and personal injury, the disassembly of front shock absorber shall be done by two personnel for cooperation.**
- Remove the front shock absorber assembly. (Refer to “Removal and Refitting of Front Shock Absorber Assembly”)
- Install the shock absorber spring on the vise, and then install the shock absorber spring compression tool (AX70703) [1] to the shock absorber as shown.



- Turn the shock absorber spring compression tool (AX70703) [1] with the 22mm socket to compress the shock absorber spring (1).
- Use the shock absorber removal and refitting socket (BF0701) [2] to hold, and use the 21mm wrench to remove the fixing nut of suspension.

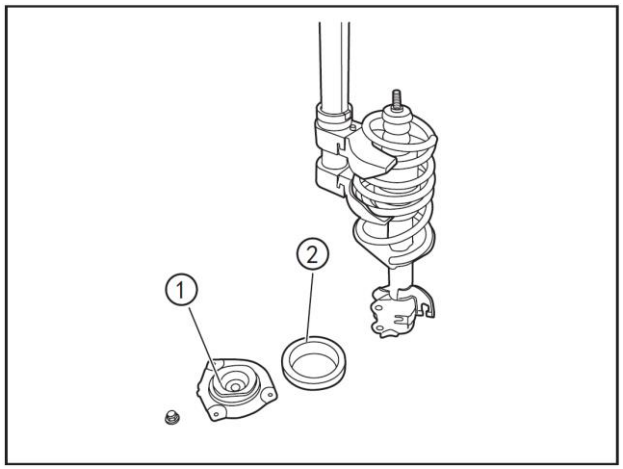


- Take off the front shock absorber support (1), thrust ball bearing (2), shock absorber spring (3) and front shock absorber dust cover (4).

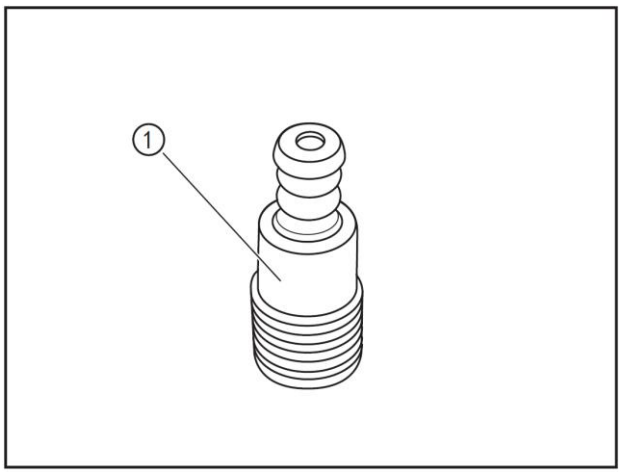


4 - Check

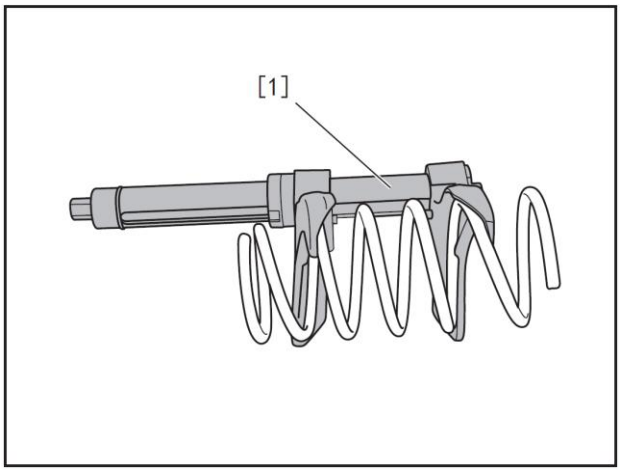
- Check front shock absorber at position A for oil leakage, and if any, replace the front shock absorber.
- Press down the front shock absorber boss (B) forcibly, and check whether the shock absorber can restore freely; if seizing or restoration failure is occurred, replace front shock absorber.



- Check the support (1) and thrust bearing (2) of shock absorber for damage, corrosion and deformation, and if any, replace.



- Check the front dust cover (1) of shock absorber for damage, corrosion and deformation, and if any, replace.

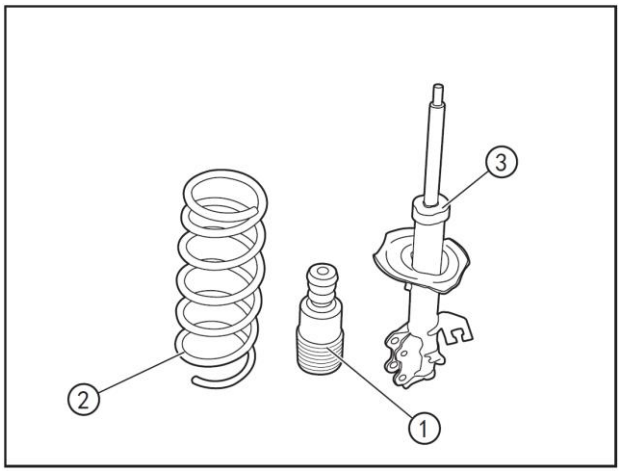


5- Refitting

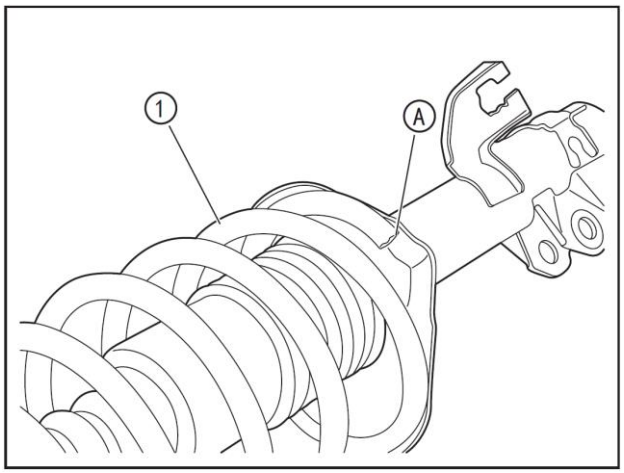
- Install the front shock absorber on the vise.
- Install the shock absorber spring compression tool (AX70703) [1] and compress the spring as shown.

⚠ CAUTION

- **When installing the shock absorber spring compression tool (AX70703) [1], pay attention to the direction of the spring for the convenience of installation in the future.**

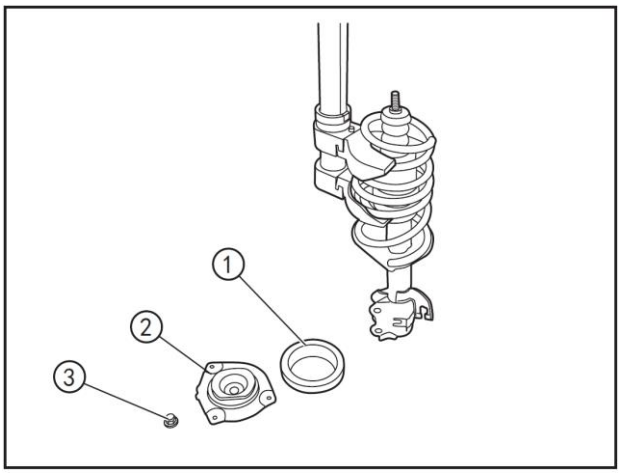


- Refit the dust cover (1) and shock absorber spring (2) on the front shock absorber (3) in sequence.



⚠ CAUTION

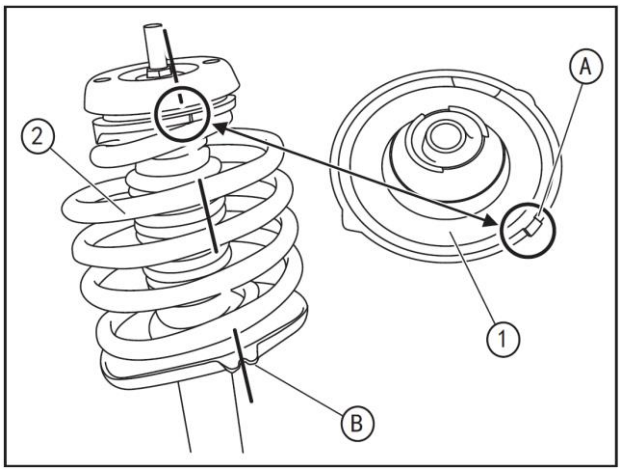
- **Before refitting the front shock absorber spring (1), ensure that the spring lower end fits well with the boss (A) of front shock absorber.**



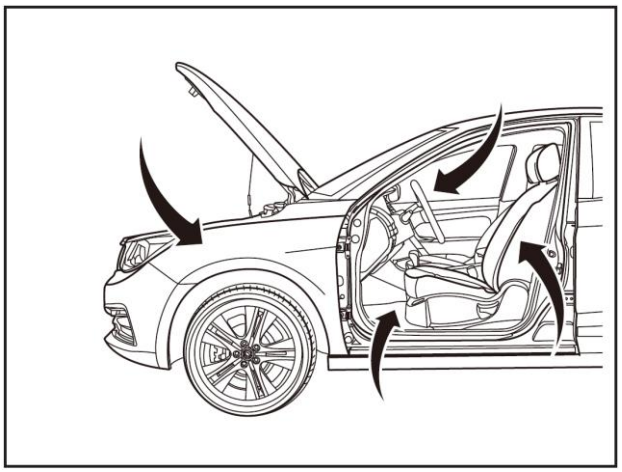
- Refit the thrust ball bearing (1), the front shock absorber support (2) and front shock absorber flange nut (3).

⚠ CAUTION

- **After the press fitting is completed, check the gap between the spring port and the front shock absorber support with a feeler gauge. If the gap is less than 5 mm, it is acceptable; if the clearance is greater than 5 mm, it is unacceptable and the press-fitting should be performed again.**



- After refitting, adjust the front shock absorber support (1) to make the boss (A) of front shock absorber support in line with the notch (B) on the shock absorber (2).

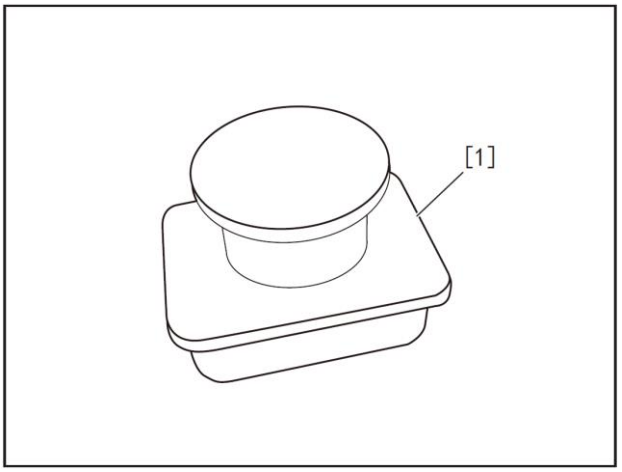


Removal and Refitting of Right Axle Shaft (Continental Motor)

1 - Protection

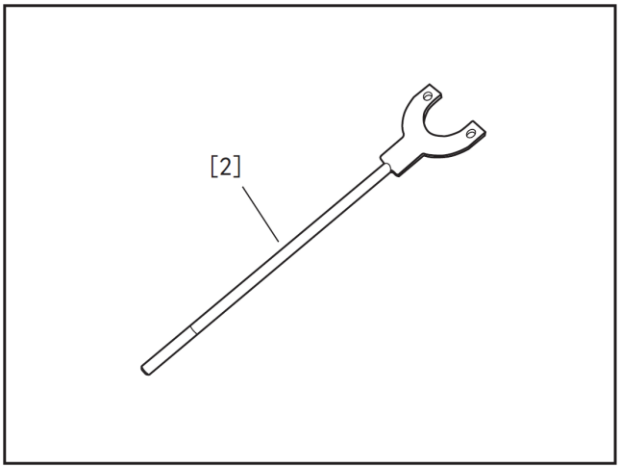
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

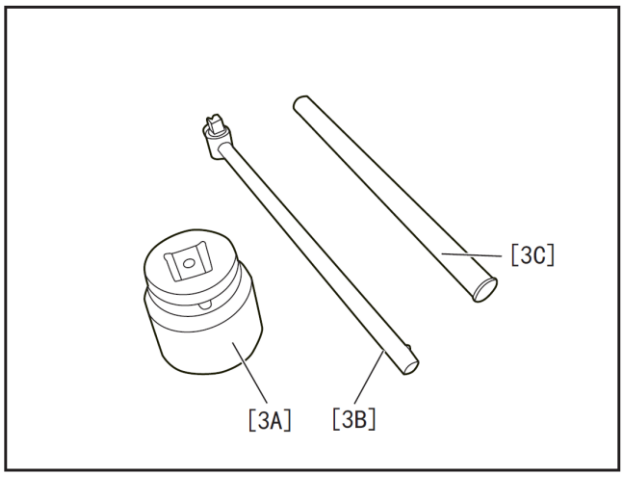


2 - Recommended tools

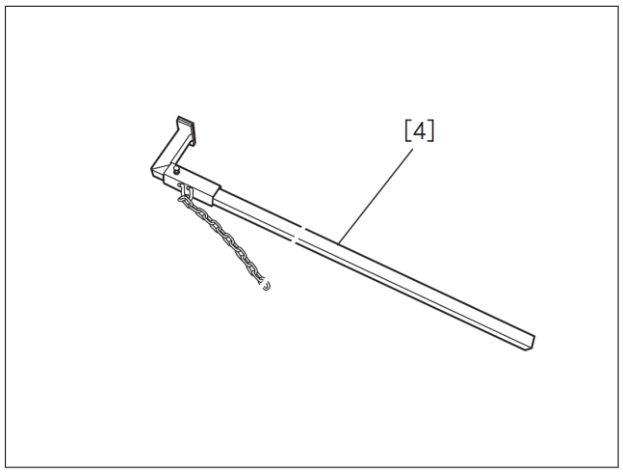
- Traction battery service switch plug (E700101) [1].



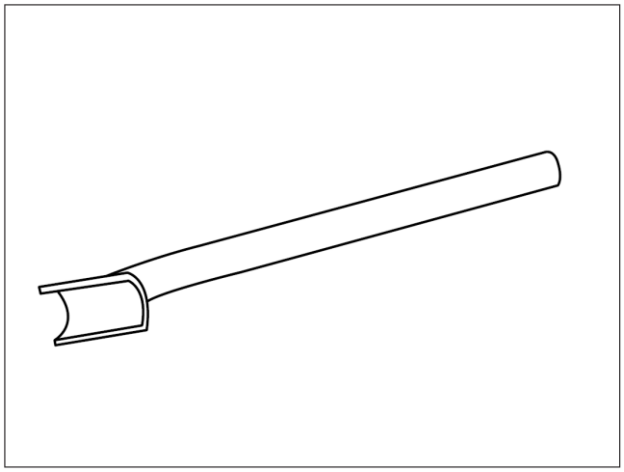
- Hub nut removal & tightening tool (BF0503)[2].



- Hub nut removal tool (BF0502A/B/C) [3A], [2B], [3C]:
  - [3A]: hub nut compression bar.
  - [3B]: hub nut removal socket.
    - [3C]: hub nut removal extension rod.



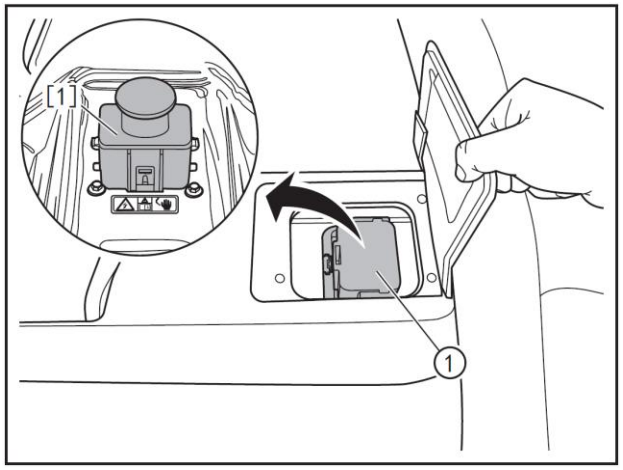
- Pull rod BF0504 [4].



- Right front axle shaft removal tool (A600423)[5].

3 - Check

- Turn off the ignition switch and apply the parking brake. Lift the car.
- Visually inspect the inner dust cover and outer dust cover on right axle shaft for crack or damage, the lubricating grease for leakage and dust cover clamp for looseness. If any defect is found, please replace the dust cover(s) and dust cover clamp.



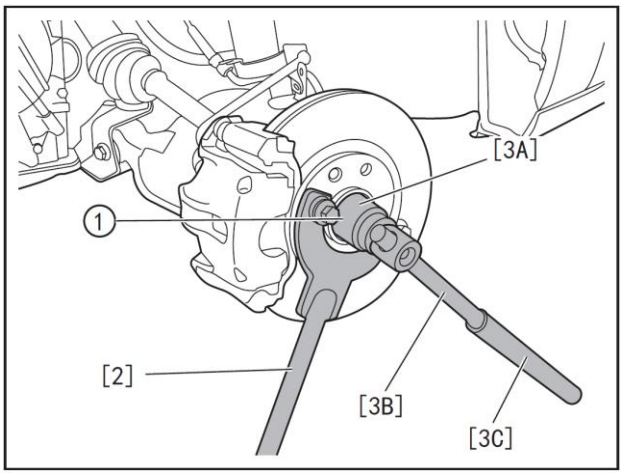
4 - Removal

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

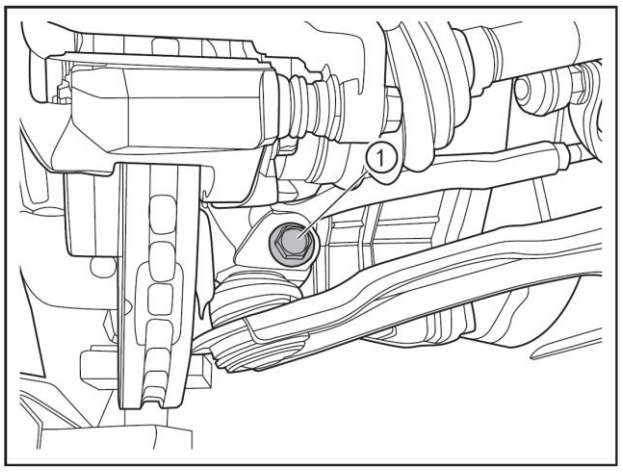
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



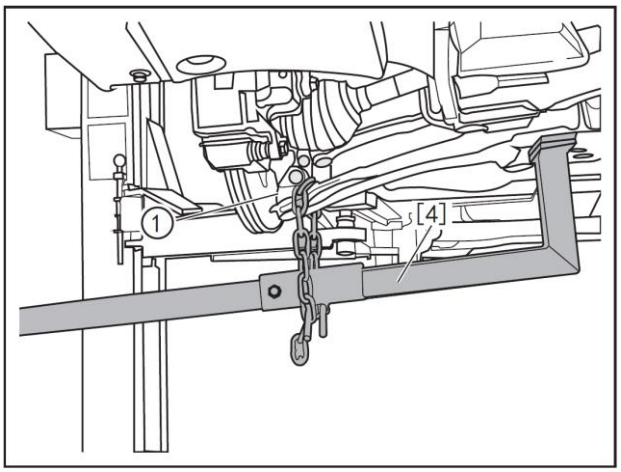
- Drain off the transmission oil. (Refer to "Draining and Adding of Transmission Oil")
- Remove the right front wheel. (Refer to “Removal and Refitting of Wheels”)
- Use the wheel bolts to tighten the hub fixing tool [2] onto brake disc and hold down the brake disc, install the front axle shaft nut removal tool [3A], sleeve the front axle shaft nut removal tool [3B] onto the front axle shaft nut removal tool [A], and use the front axle shaft nut removal tool [3C] to remove the locking nut (1) of front axle shaft.

⚠ CAUTION

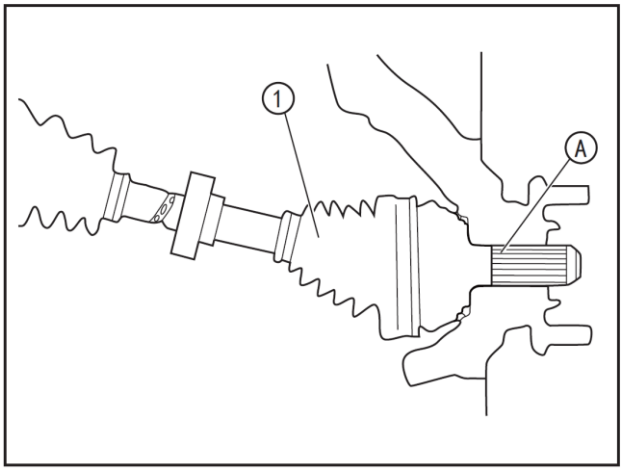
- **Never use the brake disc air duct and brake caliper for stopping.**



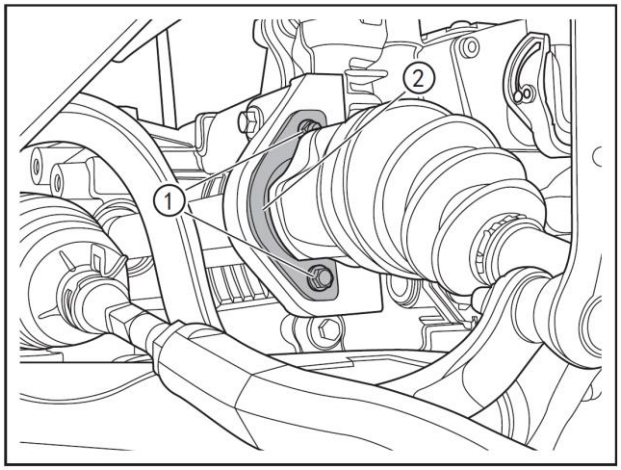
- Use the 14 mm wrench to hold the connecting nut of triangular arm and steering knuckle, and use the 14mm socket to remove the connecting bolt (1) (M10X56).



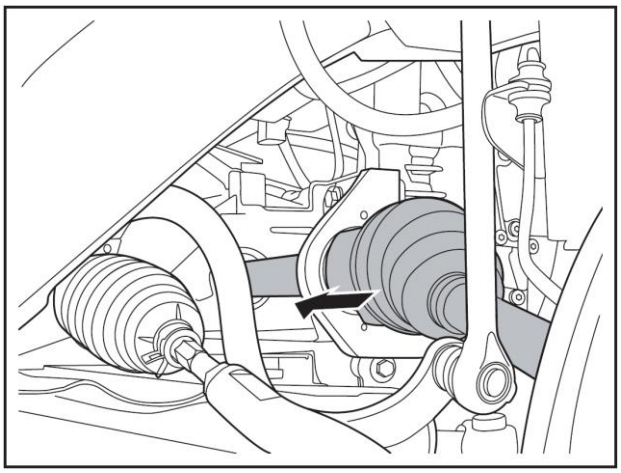
- Detach the triangular arm ball joint (1) from the steering gear by using the pull rod [4].



- Tap the outer end of front axle shaft (1) gently with copper hammer to loosen the spline A of front axle shaft.
- Hold the steering wheel with one hand and pull it outwards, and hold front axle shaft with the other hand and push it inward to detach the front axle shaft outer CV joint.

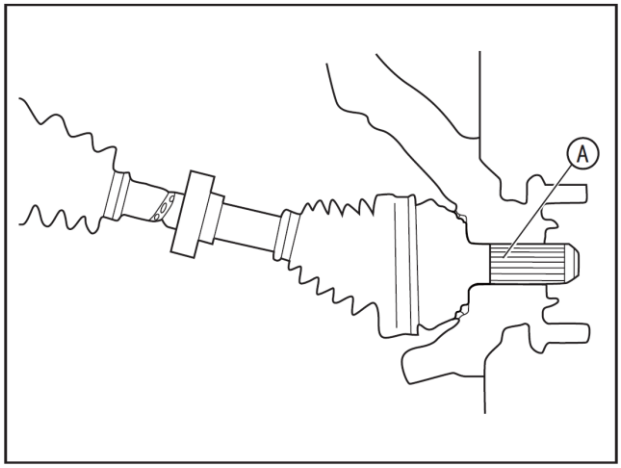


- Remove the 2 fixing bolts (1) (6MX25) of the right axle shaft stopper with the 10mm socket, and then remove the stopper (2).
- Press the right axle shaft removal tool (A600423) against the axle shaft bearing, tap the tail of the tool (A600423) with a hammer to separate the right axle shaft from the bearing bracket, and then take out the right axle shaft.

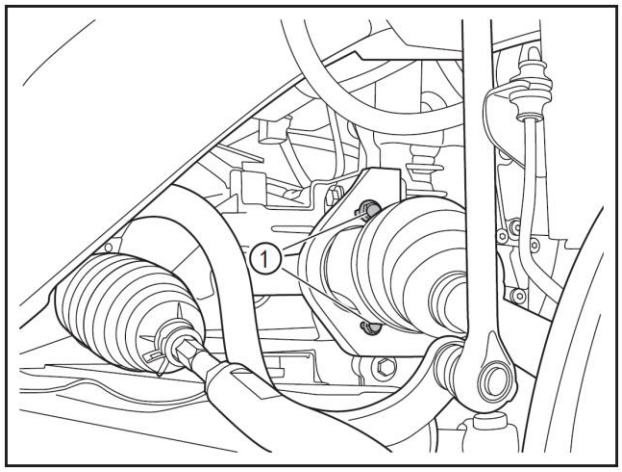


5- Refitting

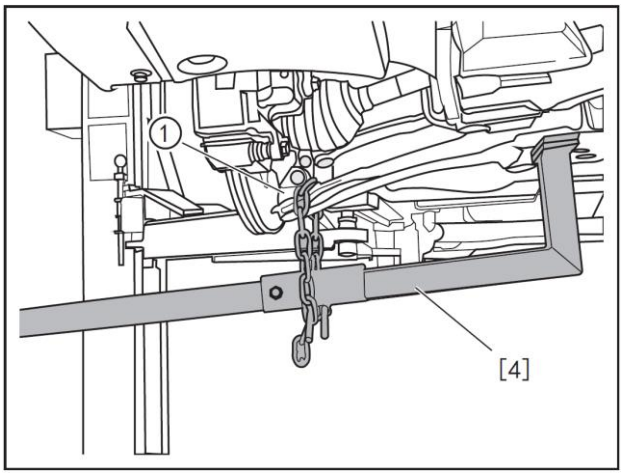
- Refit the right axle shaft through the holes to the powertrain in the direction indicated by the arrow.



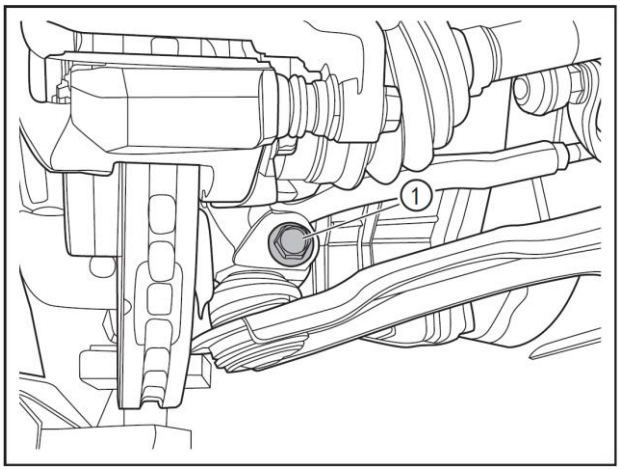
- Hold the steering knuckle with one hand and pull it outwards, and hold front axle shaft with the other hand and push it inward to insert the spline A into front axle shaft outer CV joint.



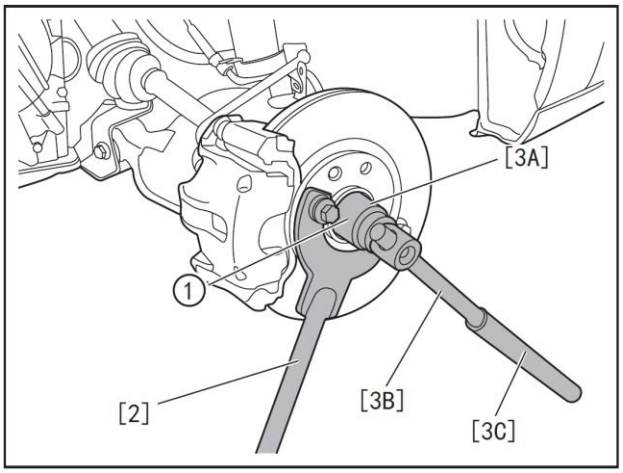
- Press the stopper and refit the 2 fixing bolts (1) (M6X25) of the right axle shaft stopper with the 10mm socket in the direction shown to 40N·m.



- Refit the triangular arm ball joint (1) into the steering knuckle by using the pull rod [4].



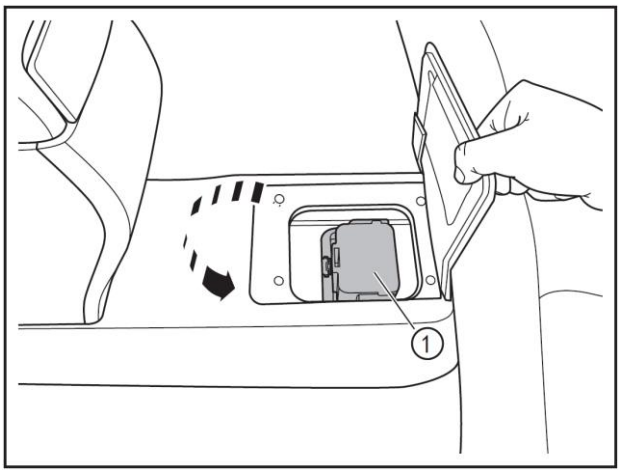
- Use the 14 mm wrench to hold the connecting bolt (1) (M10X56) of triangular arm and steering knuckle, and use the 14mm socket to tighten the connecting nut.



- Use the wheel bolts to tighten the hub fixing tool [2] onto brake disc and hold down the brake disc, install the front axle shaft nut removal tool [3A], sleeve the front axle shaft nut removal tool [3B] onto the front axle shaft nut removal tool [A], and use the front axle shaft nut removal tool [3C] to refit the locking nut (1) of front axle shaft.
- Install the right front wheel. (Refer to “Removal and Refitting of Wheels”)
- Add transmission oil. (Refer to "Draining and Adding of Transmission Oil")

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**



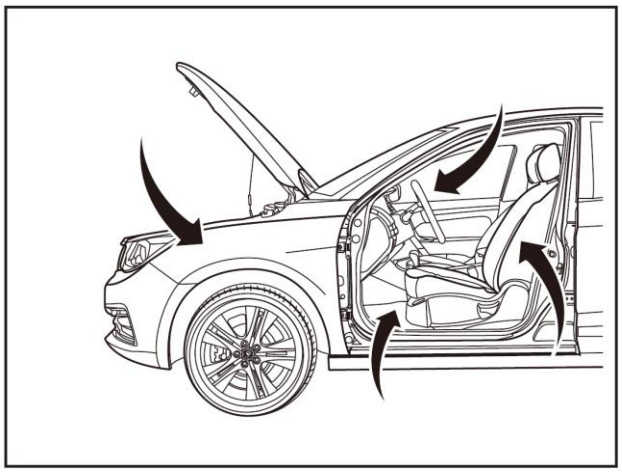
- Refit the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

Removal and Refitting of Right Axle Shaft (Independent Motor)

- Refer to “Removal and Refitting of Right Axle Shaft (Continental Motor)” in this section

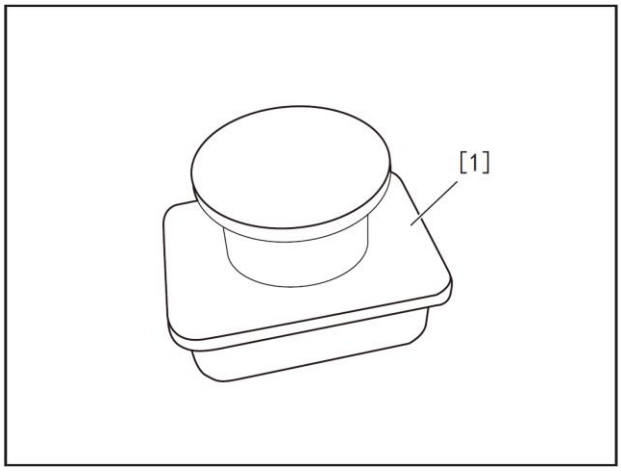


Removal and Refitting of Left Axle Shaft (Continental Motor)

1 - Protection

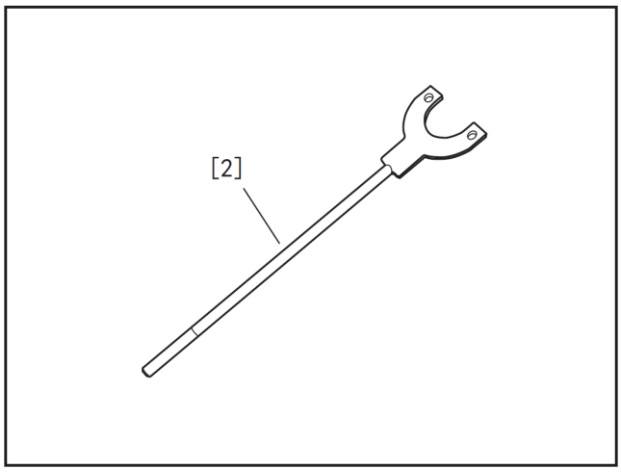
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

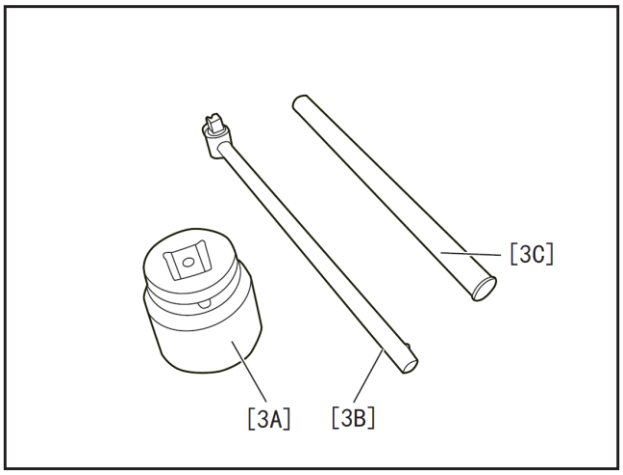


2 - Recommended tools

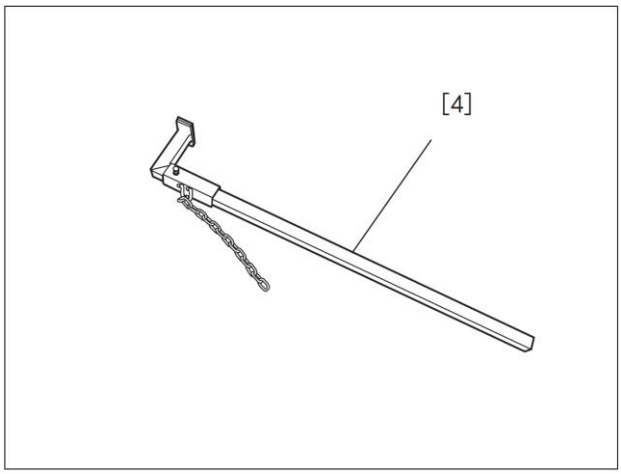
- Traction battery service switch plug (E700101) [1].



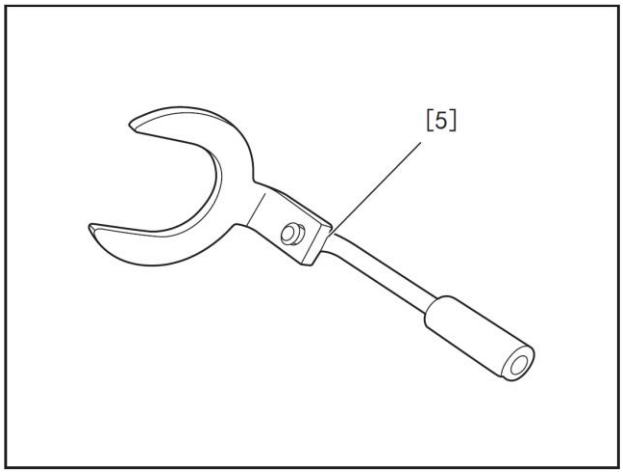
- Hub nut removal & tightening tool (BF0503)[2].



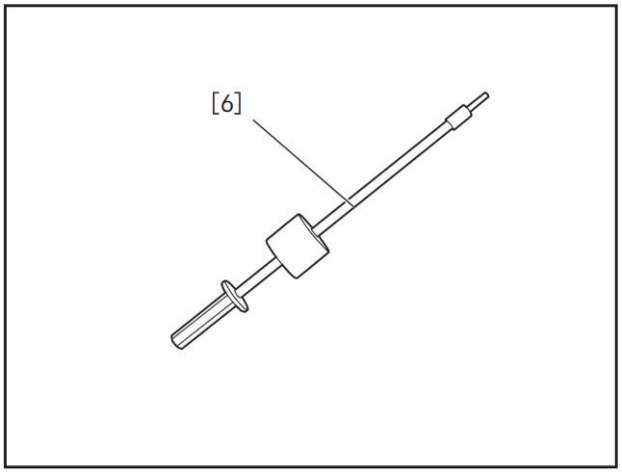
- Hub nut removal tool (BF0502A/B/C) [3A], [2B], [3C]:
  - [3A]: hub nut compression bar.
  - [3B]: hub nut removal socket.
  - [3C]: hub nut removal extension rod.



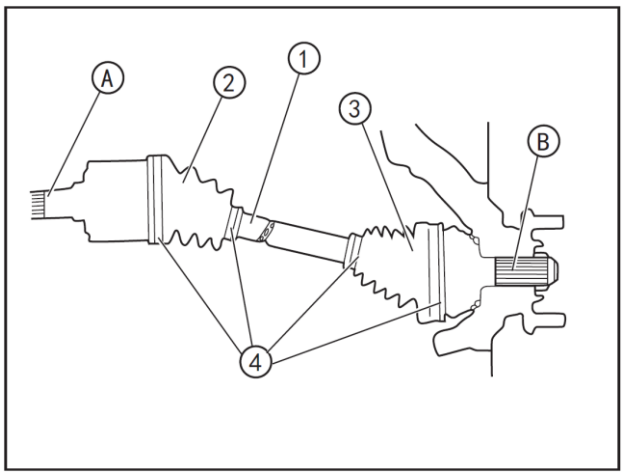
- Pull rod BF0504 [4].



- Left axle shaft removal tool (A600416) [5].

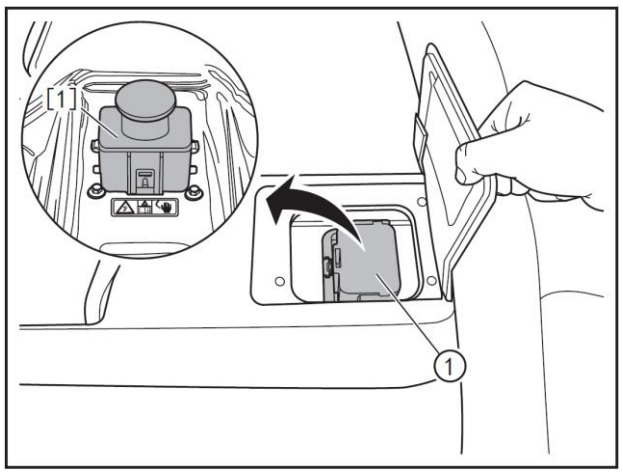


- Inertia puller (BF0601)[6].



3 - Check

- Turn off the ignition switch and apply the parking brake.
- Lift the car.
- Visually inspect the inner dust cover (2) and outer dust cover (3) on left axle shaft (1) for crack or damage, the lubricating grease for leakage and dust cover clamp (4) for looseness. If any defect is found, please replace the dust cover(s) and dust cover clamp.
- Turn the left axle shaft by hand to check that the splines and joints A and B of front axle shaft are secure.
- Check the left axle shaft for twist or crack; if any, replace the left axle shaft assembly.



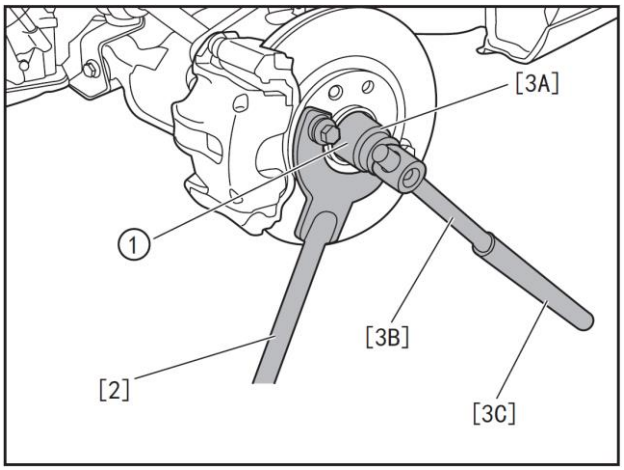
4 - Removal

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

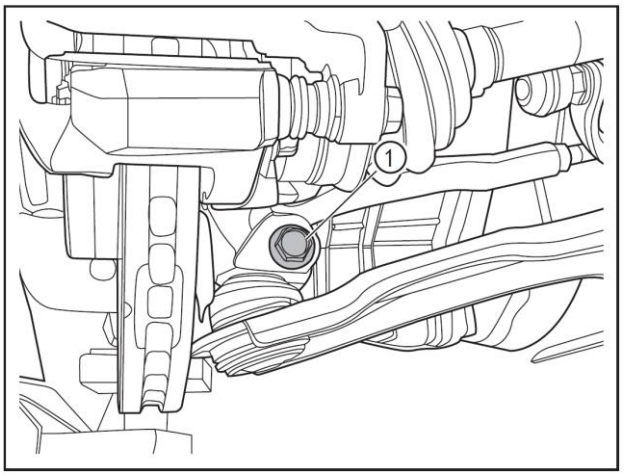
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700101) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



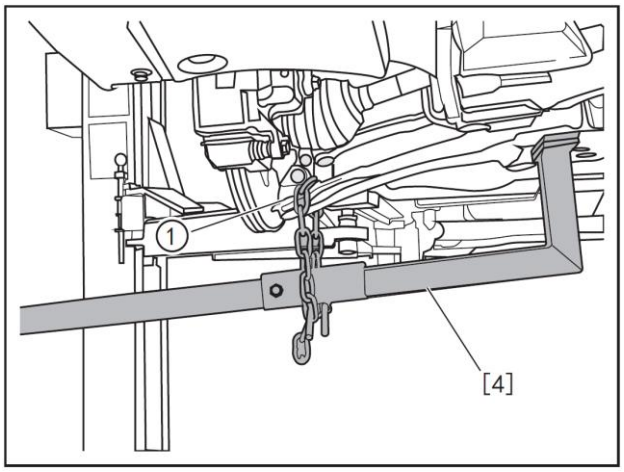
- Remove the right front wheel. (Refer to “Removal and Refitting of Wheels”)
- Use the wheel bolts to tighten the hub fixing tool [2] onto brake disc and hold down the brake disc, install the front axle shaft nut removal tool [3A], sleeve the front axle shaft nut removal tool [3B] onto the front axle shaft nut removal tool [3A], and use the front axle shaft nut removal tool [3C] to remove the locking nut (1) of front axle shaft.

⚠ CAUTION

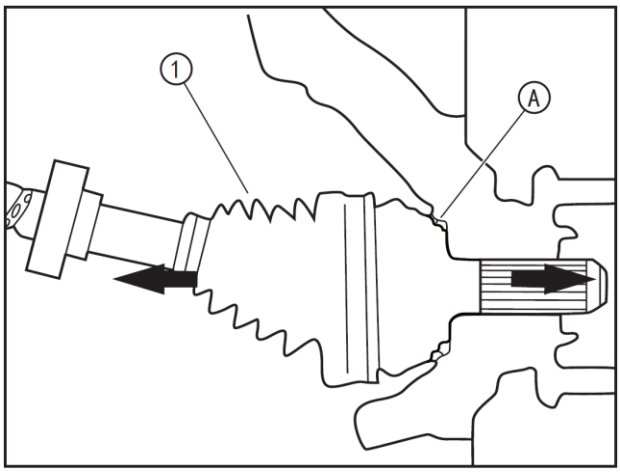
- **Never use the brake disc air duct and brake caliper for stopping.**



- Use the 14 mm wrench to hold the connecting nut of triangular arm and steering knuckle, and use the 14mm socket to remove the connecting bolt (1) (M10X56).



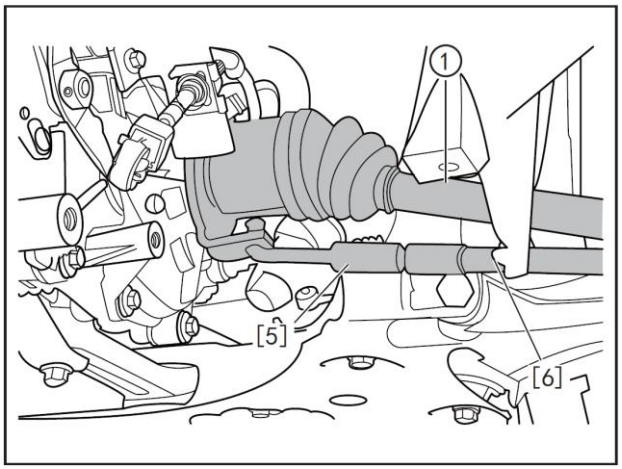
- Detach the triangular arm ball joint (1) from the steering gear by using the pull rod [4].



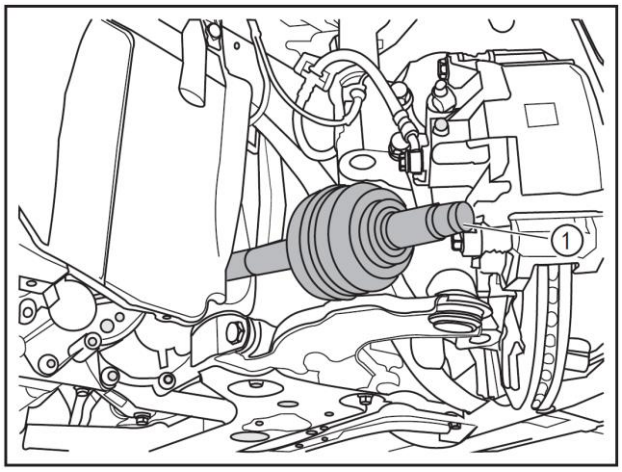
- Tap the outer end of front axle shaft (1) gently with copper hammer to loosen the spline A of front axle shaft.
- Hold the steering wheel with one hand and pull it outwards, and hold front axle shaft with the other hand and push it inward to detach the front axle shaft outer CV joint.

⚠ CAUTION

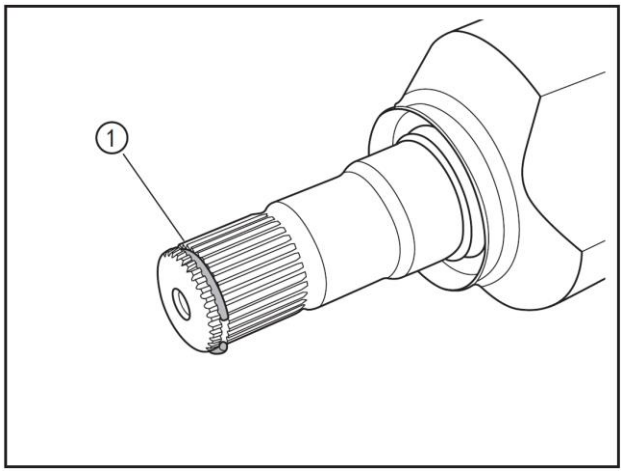
- **Do not pull the dust cover, so as to prevent the dust cover from being deformed or damaged.**



- Install the left axle shaft removal tool (A600416) [5] onto the inertia puller (BF0601) [6], one person holds the axle shaft by hand, and the other person pulls the left axle shaft (1) out of the clip using the inertial puller.



- Remove the left axle shaft (1).

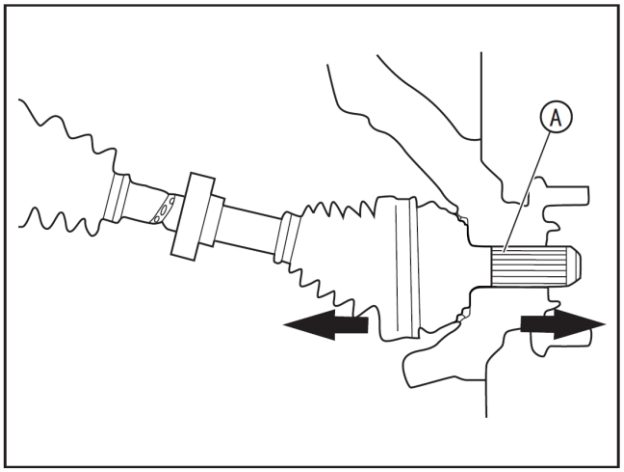


5- Refitting

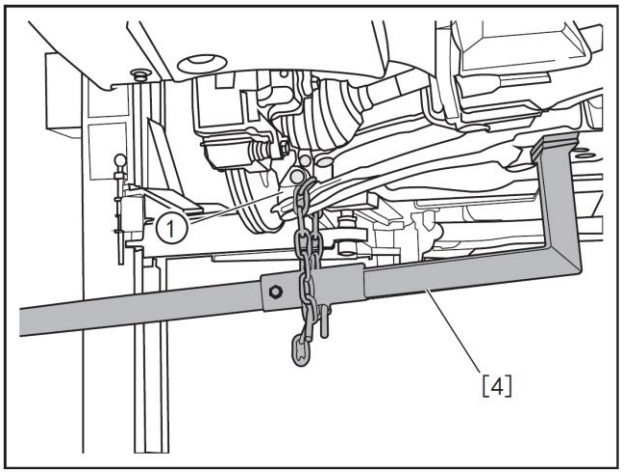
- Insert the end with the snap ring (1) horizontally into the final drive.

⚠ CAUTION

- **Replace with a new snap ring (1) each time the left axle shaft is installed.**



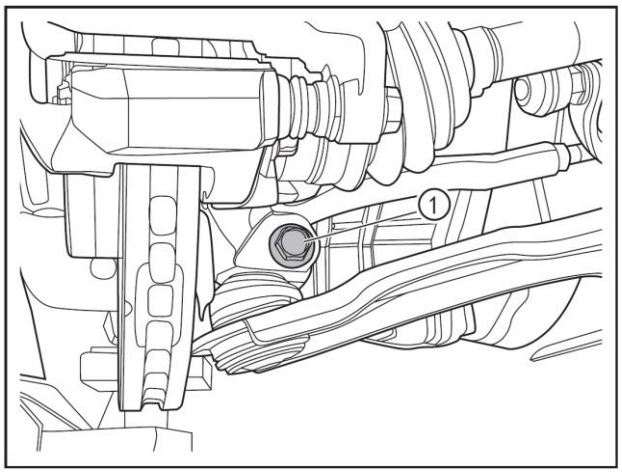
- Hold the steering knuckle with one hand and pull it outwards, and hold front axle shaft with the other hand and push it inward until the spline A is aligned.
- Move back and forth to align the spline, and then push the steering knuckle inwards to drive the axle shaft A into the steering knuckle completely.



- Refit the triangular arm ball joint (1) on the steering knuckle by a pull rod [4].

⚠ CAUTION

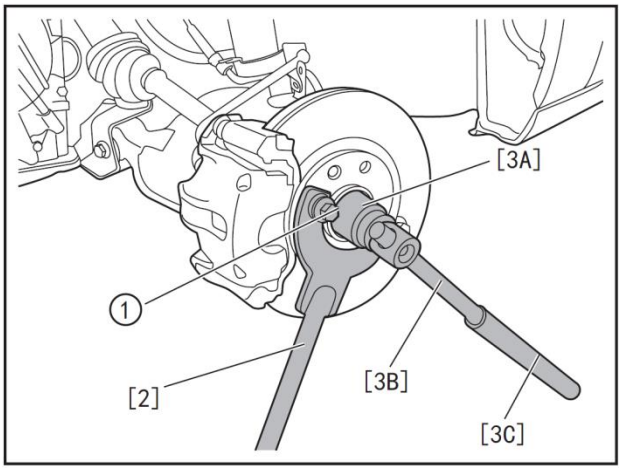
- **Hold the axle shaft by hand in this process, avoiding the axle shaft from falling off by accident.**



- Use the 14 mm wrench to hold the connecting bolt (1) (M10X56) of triangular arm and steering knuckle, and use the 14mm socket to tighten the connecting nut to 55N·m.

⚠ CAUTION

- **The connecting nut is disposable and shall be replaced with a new one after each removal.**



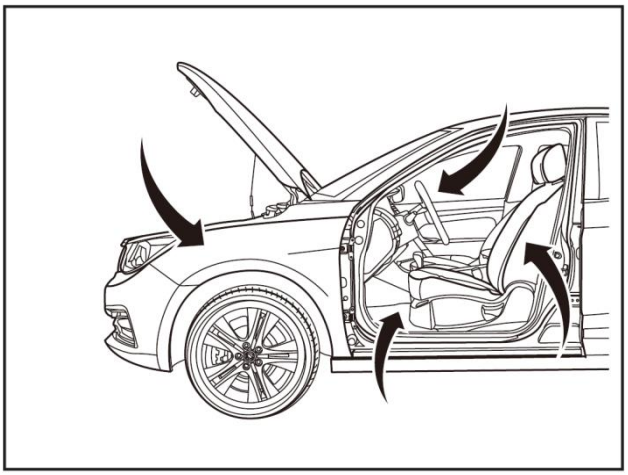
- Use the wheel bolts to tighten the hub fixing tool [2] onto brake disc and hold down the brake disc, install the front axle shaft nut removal tool [3A], sleeve the front axle shaft nut removal tool [3B] onto the front axle shaft nut removal tool [3A], and use the front axle shaft nut removal tool [3C] to refit the locking nut (1) of front axle shaft.
- Install the right front wheel. (Refer to “Removal and Refitting of Wheels”)

⚠ CAUTION

- **After refitting, conduct four-wheel alignment.**

Removal and Refitting of Left Axle Shaft (Independent Motor)

- Refer to “Removal and Refitting of Left Axle Shaft (Continental Motor)” in this section

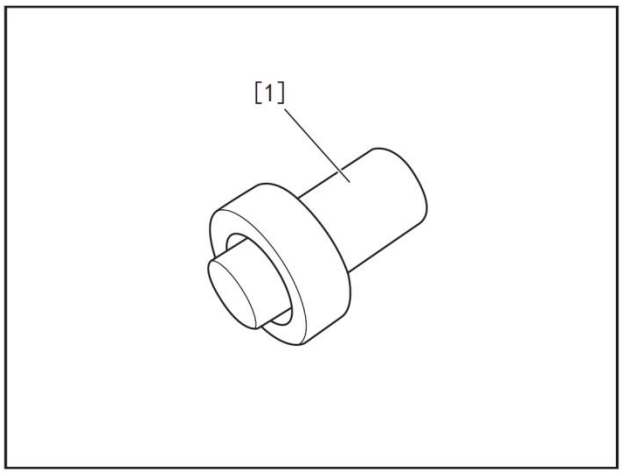


Removal and Refitting of Left Axle Shaft Oil Seal (Continental Motor)

1 - Protection

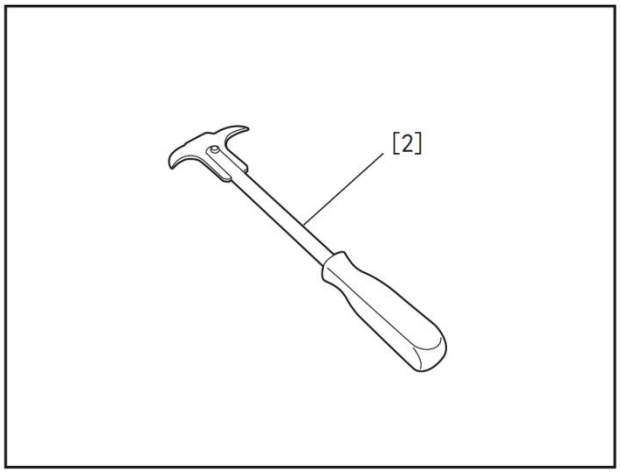
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

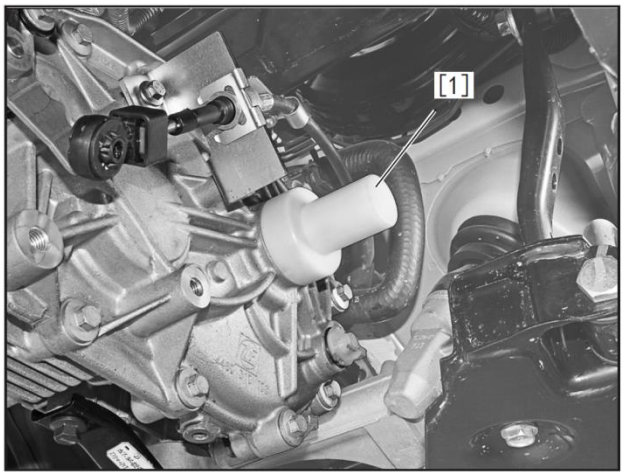
- Left axle shaft oil seal refitting tool (A60EV0419) [1].



- Transmission oil seal removal tool (BF0418) [2].

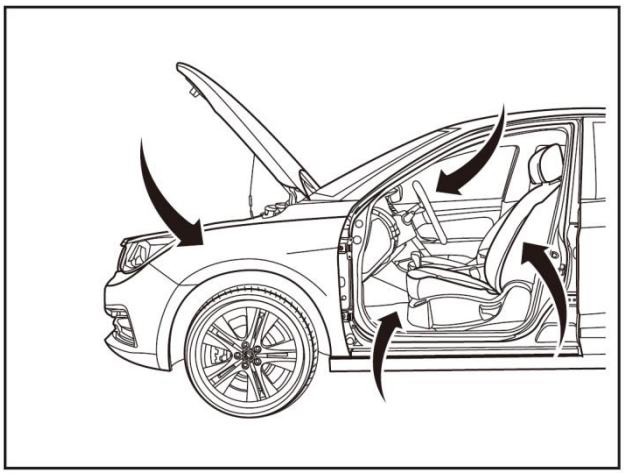
3 - Removal

- Turn off the ignition switch and apply the EPB.
- Lift the car.
- Remove the left front wheel. (Refer to “Removal and Refitting of Wheels”)
- Remove the left axle shaft. Refer to “Removal and Refitting of Left Axle Shaft (Continental Motor)” in this section
- Remove the left axle shaft oil seal with the transmission oil seal removal tool (BF0418).



4- Refitting

- Apply a small amount of transmission oil to the left axle shaft oil seal inner ring.
- Install the oil seal on the left axle shaft oil seal refitting tool (A60EV0419) [1].
- Press the left axle shaft oil seal into the mounting seat slightly after alignment.
- Evenly tap the bottom of the special tool with a hammer to install the left axle shaft oil seal in place.
- Refit the left axle shaft. Refer to “Removal and Refitting of Left Axle Shaft (Continental Motor)” in this section
- Refit the left front wheel. (Refer to “Removal and Refitting of Wheels”)

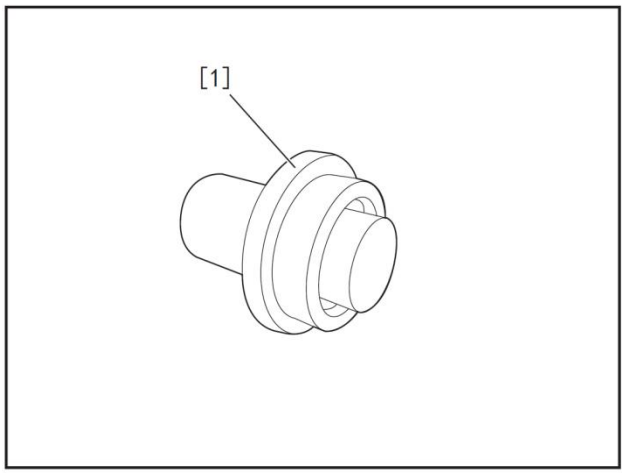


Removal and Refitting of Right Axle Shaft Oil Seal (Continental Motor)

1 - Protection

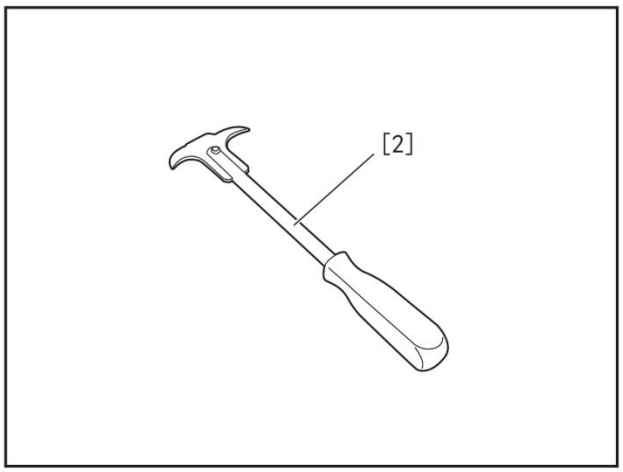
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

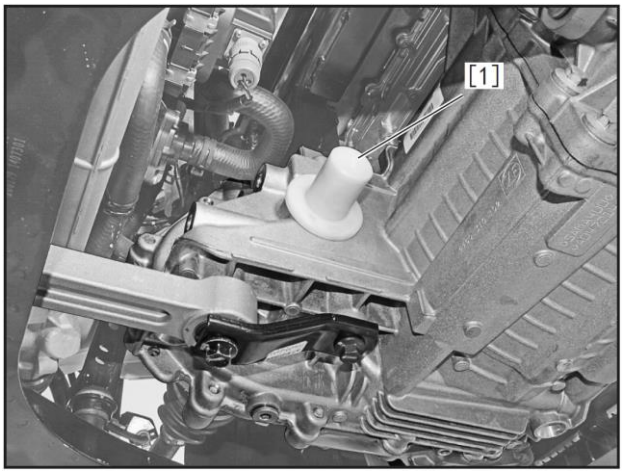
- Right axle shaft oil seal refitting tool (A60EV0420) [1].



- Transmission oil seal removal tool (BF0418) [2].

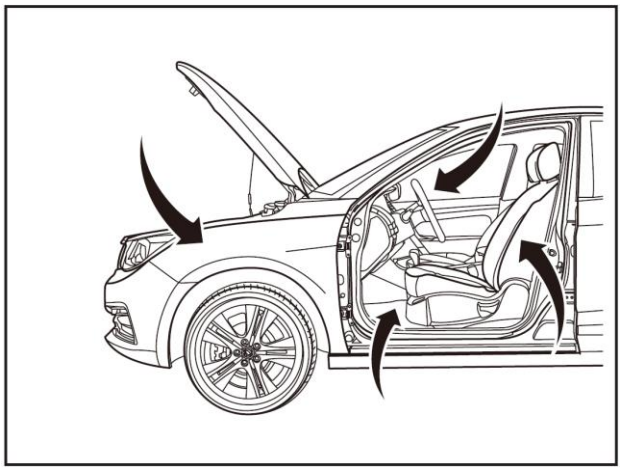
3 - Removal

- Turn off the ignition switch and apply the EPB.
- Lift the car.
- Remove the right front wheel. (Refer to “Removal and Refitting of Wheels”)
- Remove the right axle shaft. Refer to “Removal and Refitting of Left Axle Shaft (Continental Motor)” in this section
- Remove the right axle shaft oil seal with the transmission oil seal removal tool (BF0418).



4- Refitting

- Apply a small amount of transmission oil to the right axle shaft oil seal inner ring.
- Install the oil seal on the right axle shaft oil seal refitting tool (A60EV0420) [1].
- Press the right axle shaft oil seal into the mounting seat slightly after alignment.
- Evenly tap the bottom of the special tool with a hammer to install the right axle shaft oil seal in place.
- Refit the right axle shaft . Refer to “Removal and Refitting of Right Axle Shaft (Continental Motor)” in this section
- Install the right front wheel. (Refer to “Removal and Refitting of Wheels”)

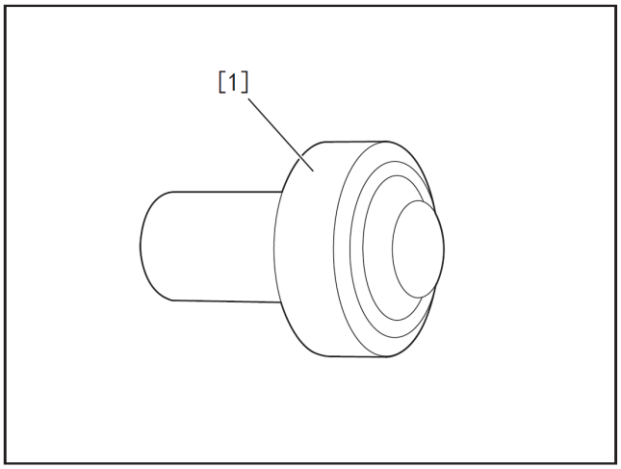


Removal and Refitting of Left Axle Shaft Oil Seal (Independent Motor)

1 - Protection

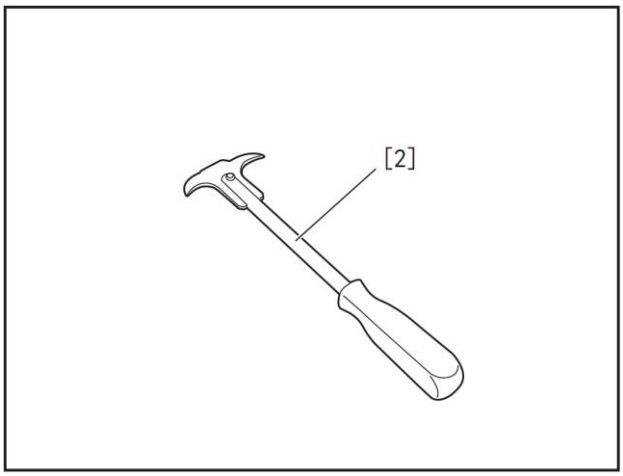
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

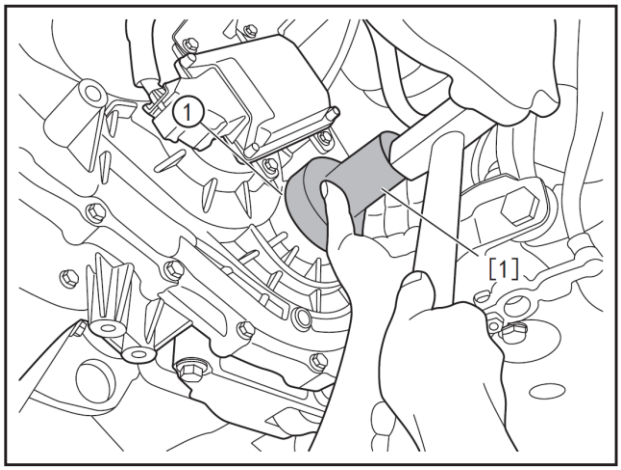
- Left axle shaft oil seal refitting tool (E700419) [1].



- Transmission oil seal removal tool (BF0418) [2].

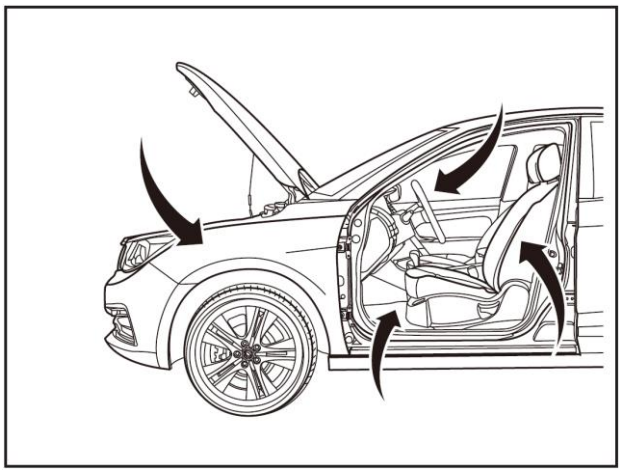
3 - Removal

- Turn off the ignition switch and apply the EPB.
- Lift the car.
- Remove the left front wheel. (Refer to “Removal and Refitting of Wheels”)
- Remove the left axle shaft. Refer to “Removal and Refitting of Left Axle Shaft (Independent Motor)” in this section
- Remove the left axle shaft oil seal with the transmission oil seal removal tool (BF0418).



4- Refitting

- Apply a small amount of transmission oil to the inner ring of left axle shaft oil seal (1).
- Install the oil seal on the left axle shaft oil seal refitting tool (E700419) [1].
- Press the left axle shaft oil seal into the mounting seat slightly after alignment.
- Evenly tap the bottom of the special tool with a hammer to install the left axle shaft oil seal in place.
- Refit the left axle shaft. Refer to “Removal and Refitting of Left Axle Shaft (Independent Motor)” in this section
- Refit the left front wheel. (Refer to “Removal and Refitting of Wheels”)

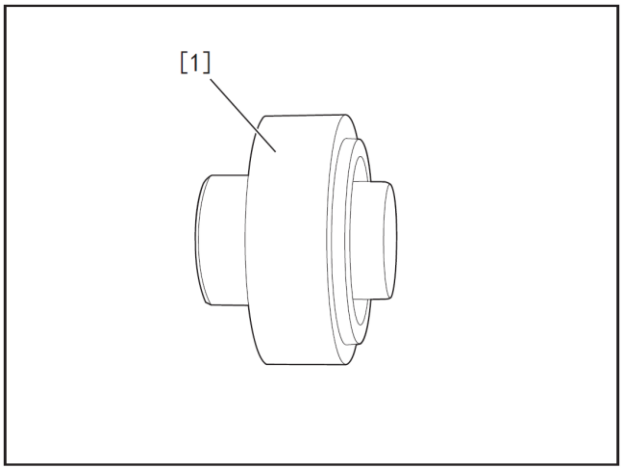


Removal and Refitting of Right Axle Shaft Oil Seal (Independent Motor)

1 - Protection

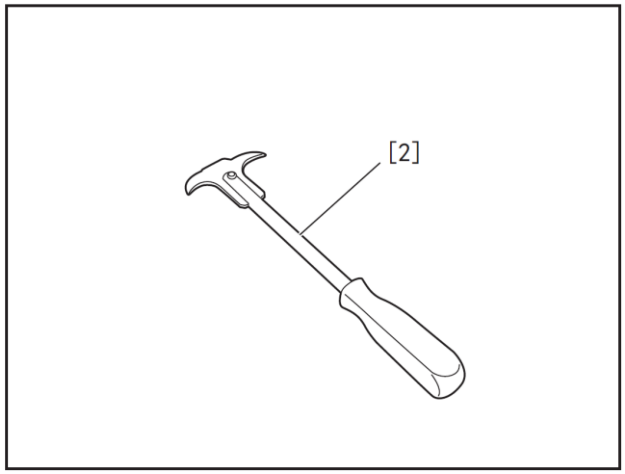
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

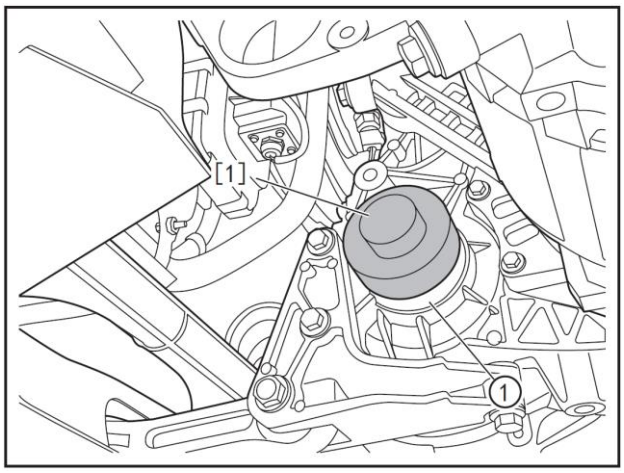
- Right axle shaft oil seal refitting tool (E700420) [1].



- Transmission oil seal removal tool (BF0418) [2].

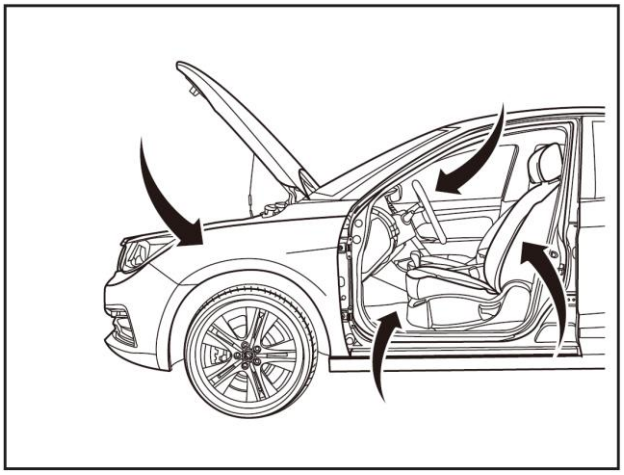
3 - Removal

- Turn off the ignition switch and apply the EPB.
- Lift the car.
- Remove the right front wheel. (Refer to “Removal and Refitting of Wheels”)
- Remove the right axle shaft. Refer to “Removal and Refitting of Right Axle Shaft (Independent Motor)” in this section
- Remove the right axle shaft oil seal with the transmission oil seal removal tool (BF0418).



4- Refitting

- Apply a small amount of transmission oil to the inner ring of right axle shaft oil seal (1).
- Install the oil seal on the right axle shaft oil seal refitting tool (E700420) [1].
- Press the right axle shaft oil seal into the mounting seat slightly after alignment.
- Evenly tap the bottom of the special tool with a hammer to install the right axle shaft oil seal in place.
- Refit the right axle shaft . Refer to “Removal and Refitting of Right Axle Shaft (Independent Motor)” in this section
- Install the right front wheel. (Refer to “Removal and Refitting of Wheels”)

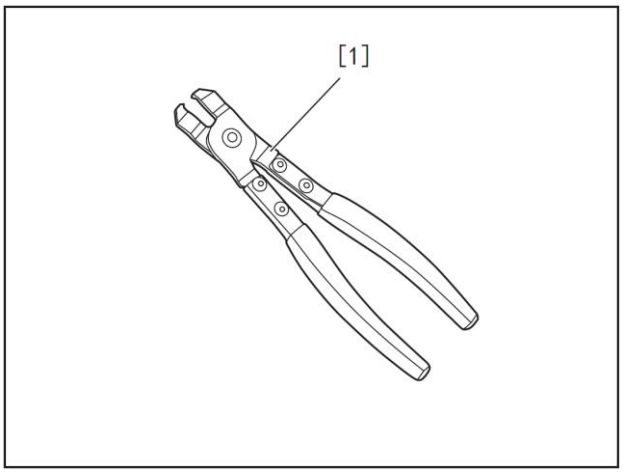


Replacement of Left Axle Shaft Tripod Joint

1 - Protection

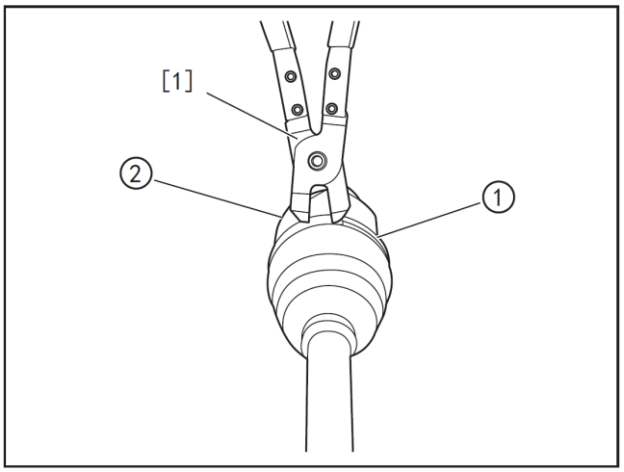
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Axle shaft clamp removal and refitting pliers (BF0425) [1].

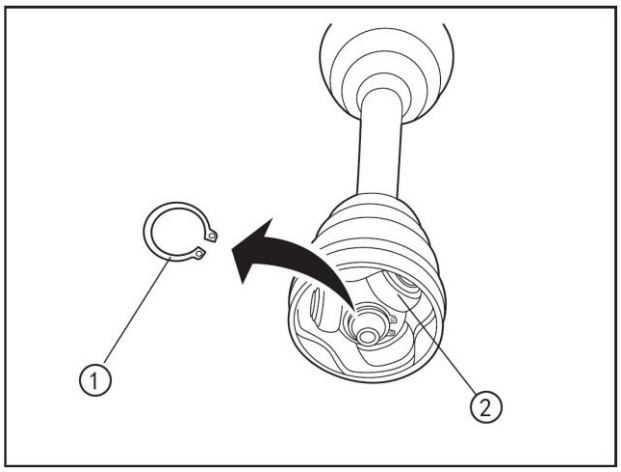


3 - Removal

- Remove inner CV joint dust cover clamp (1) with the axle shaft clamp removal and refitting pliers [1].
- Disconnect the inner CV joint housing (2) of right front axle shaft.

⚠ CAUTION

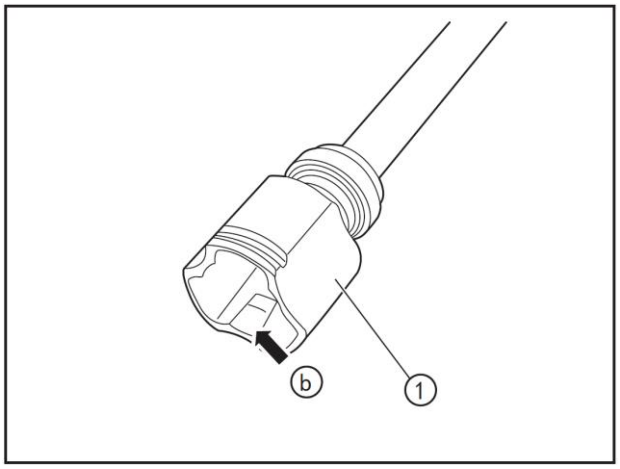
- **The two long noses of axle shaft clamp removal pliers can only be used for fixing, and no force should be applied to them; otherwise, the long noses will be liable to be damaged.**
- **Observe the distance between the two clamps of dust cover for re-assembly.**



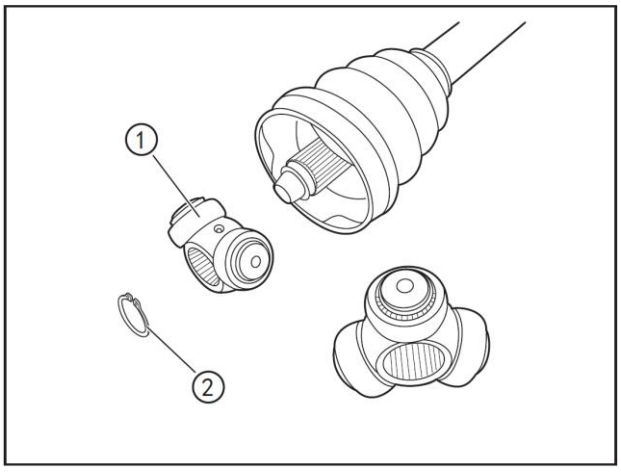
- Dismount the snap spring (1) with spring pliers and remove the tripod joint (2).

⚠ CAUTION

- **Always replace the snap spring with a new one after removal each time.**



- Check point b inside the tripod joint fork for abnormal wear; if it is worn seriously, replace the whole tripod joint assembly (1).

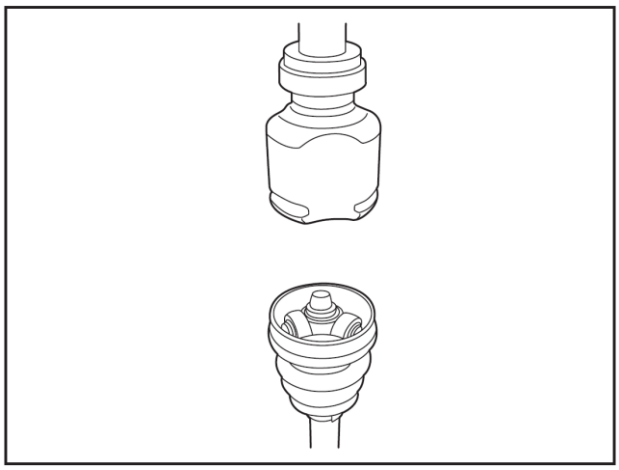


4- Refitting

- Refit the tripod joint (1) onto the axle shaft, and use spring pliers to install a new snap ring (2) onto tripod joint.

⚠ CAUTION

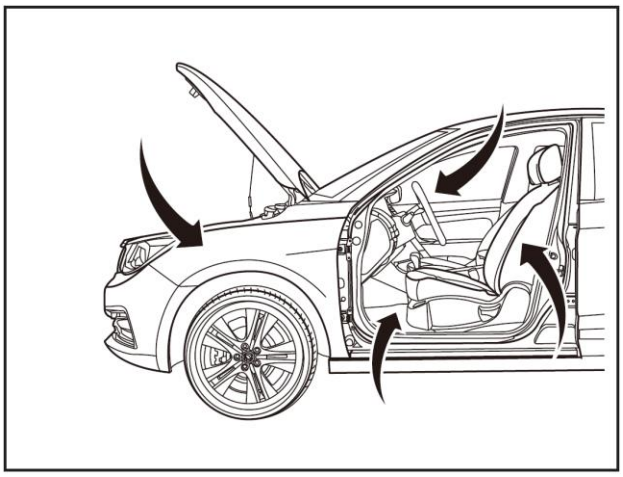
- **The end C of tripod joint with notch should face inwards.**



- Install the tripod joint yoke, and install the new dust cover clamp with the axle shaft clamp removal and refitting pliers.

⚠ CAUTION

- **Maintain the installation position of tripod joint relative to tripod joint fork, and reserve the fit gap.**

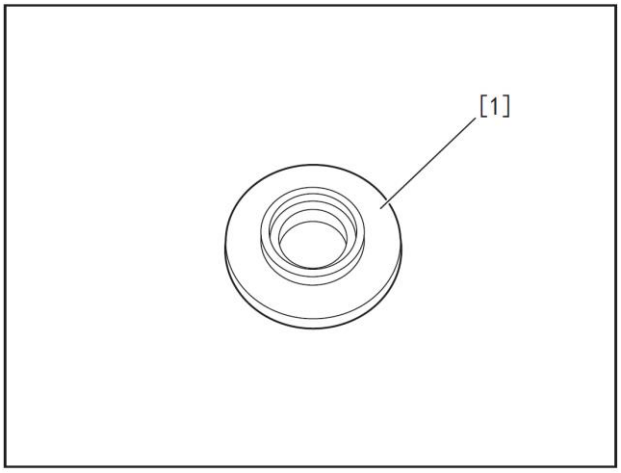


Removal and Refitting of Axle Shaft Bearing

1 - Protection

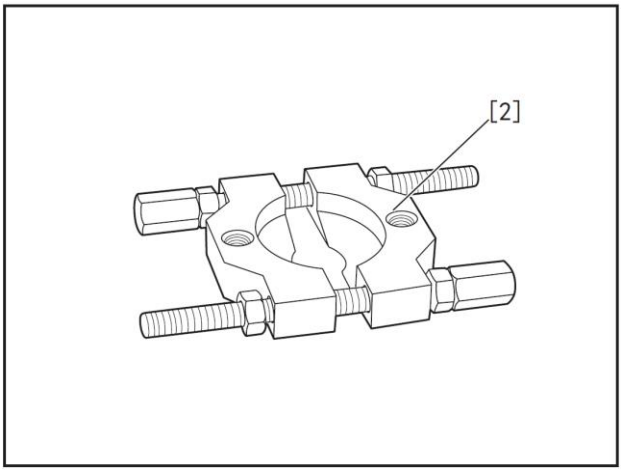
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

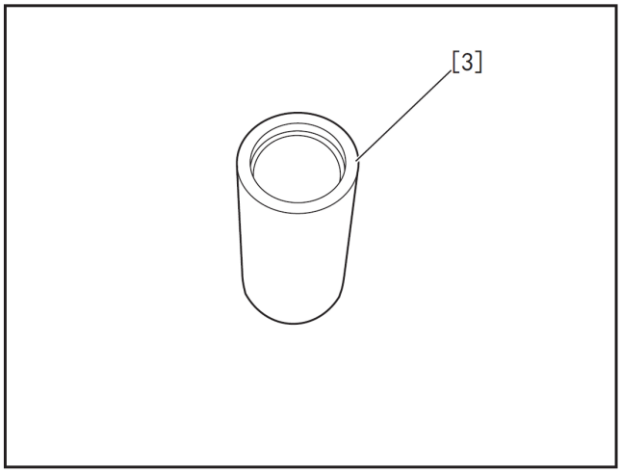


2 - Recommended tools

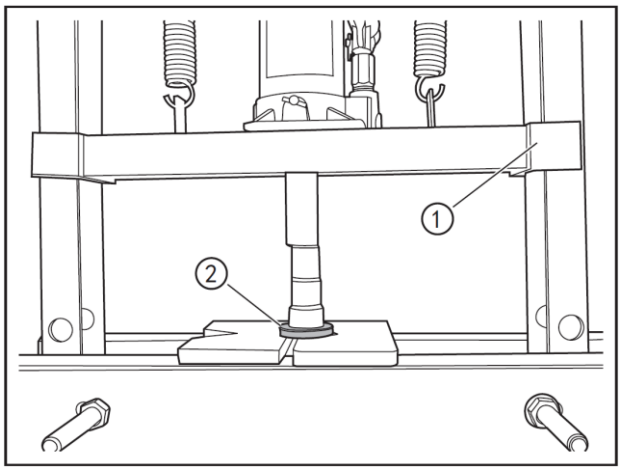
- Front axle shaft bearing refitting tool (A60EV0424) [1].



- Bearing puller (BF0410A) [2].



- Right axle shaft collar refitting tool (A60EV0414) [3].

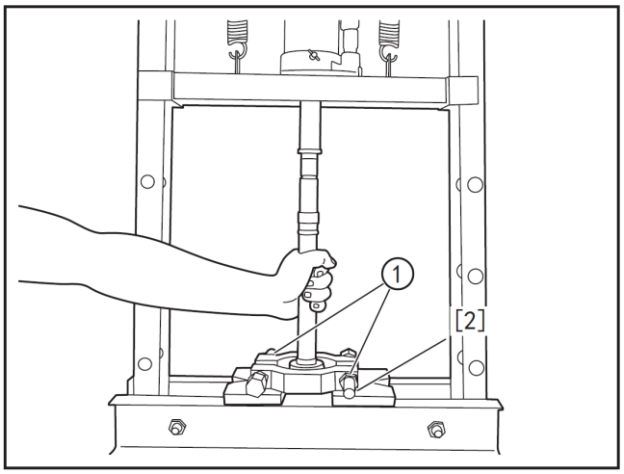


3 - Removal

- Operate press (1) to remove right axle shaft collar (2).

⚠ CAUTION

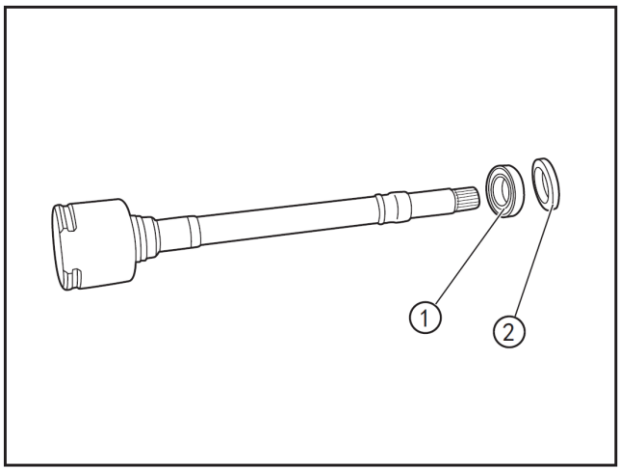
- **Always replace with a new right axle shaft collar after removal each time.**
- **Before removal, mark the collar mounting position on the axle shaft to ensure that the new collar will be installed in place. Do not damage the new collar.**



- Fix the tripod joint fork to bearing puller BF0410A[2].
- Install the bearing puller (BF0401A) [2] together with axle shaft tripod joint fork to the press, and detach the axle shaft bearing with the press.

⚠ CAUTION

- **The fastening nut (1) on the bearing puller must be tightened.**
- **While detaching the bearing with the press, always hold the bearing to prevent the tripod joint yoke from falling off suddenly and being damaged therefrom.**

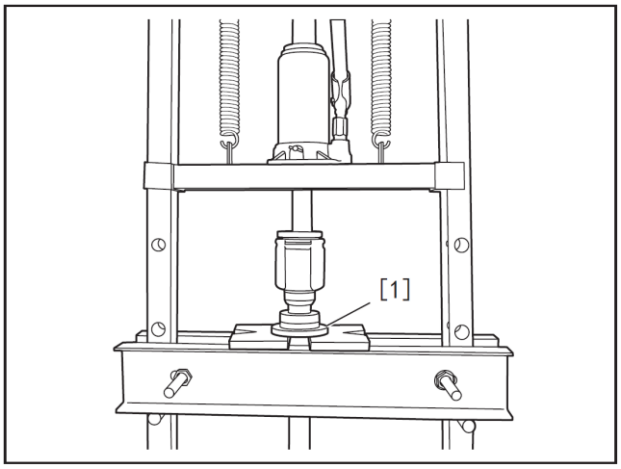


4- Refitting

- Refit the axle shaft bearing (1) and collar (2) in the sequence shown above.

⚠ CAUTION

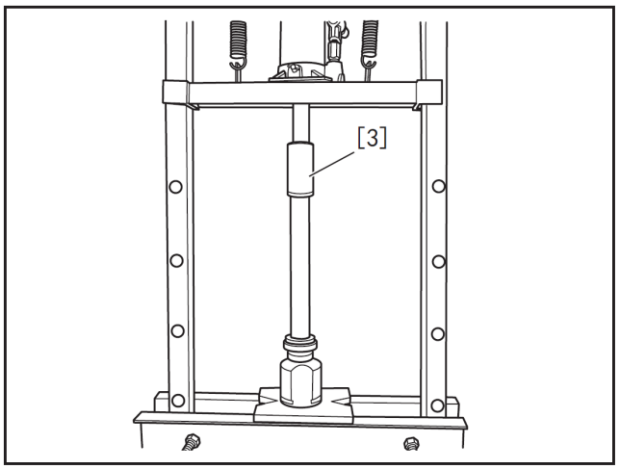
- **During refitting, the side with small flange of axle shaft collar should be pressed towards axle shaft bearing, and all parts must be cleaned to ensure they are free of abnormal wear; otherwise the axle shaft assembly should be replaced.**



- Install the axle shaft bearing refitting tool (A60EV0424) [1] to the press, and press in the axle shaft bearing.

⚠ CAUTION

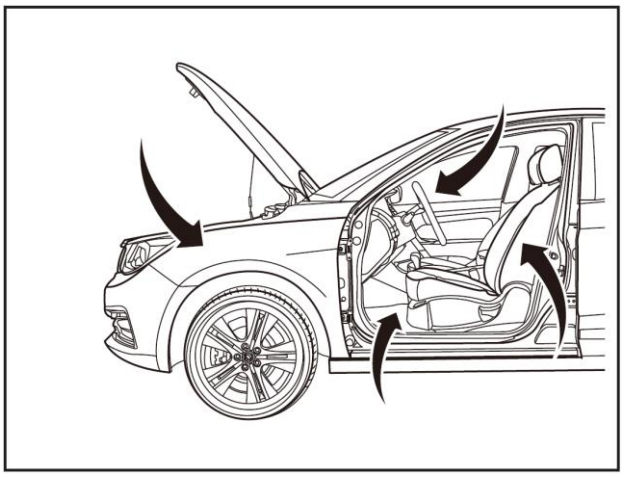
- **Be careful not to damage the tripod joint fork during operation.**



- Use the right axle shaft collar refitting tool (A60EV0414) [3] to refit the right axle shaft collar.

⚠ CAUTION

- **During refitting, keep the right axle shaft collar horizontally mounted to avoid deflection.**

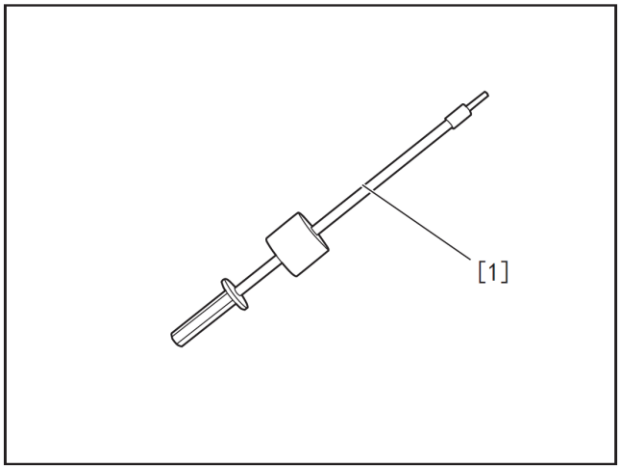


Replacement of Right Axle Shaft Tripod Joint

1 - Protection

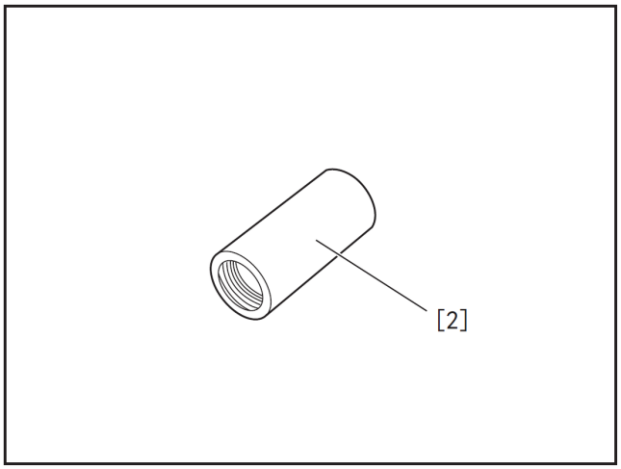
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

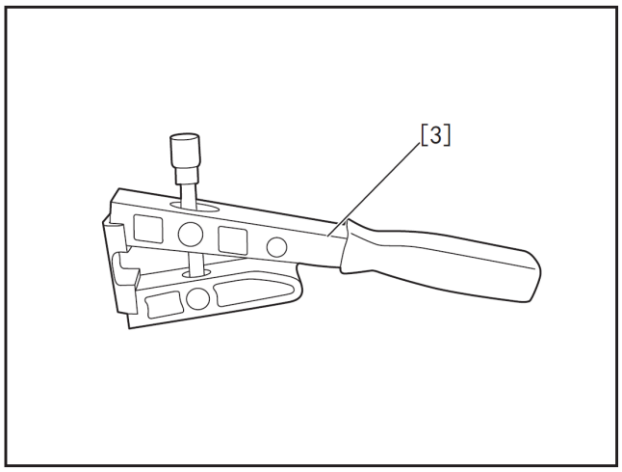


2 - Recommended tools

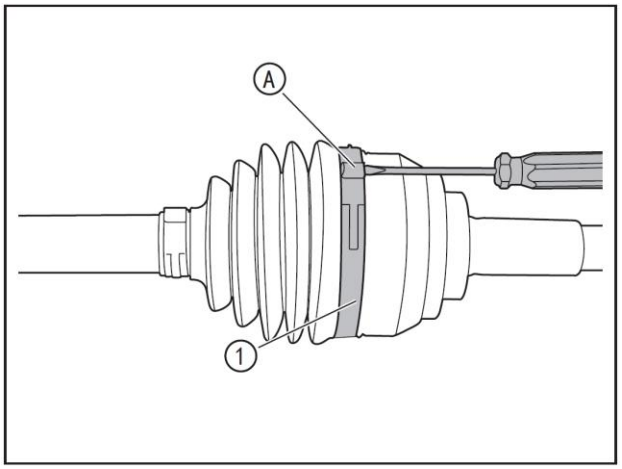
- Inertia puller (BF0601)[1].



- Axle head threaded release sleeve (A600422) [2].

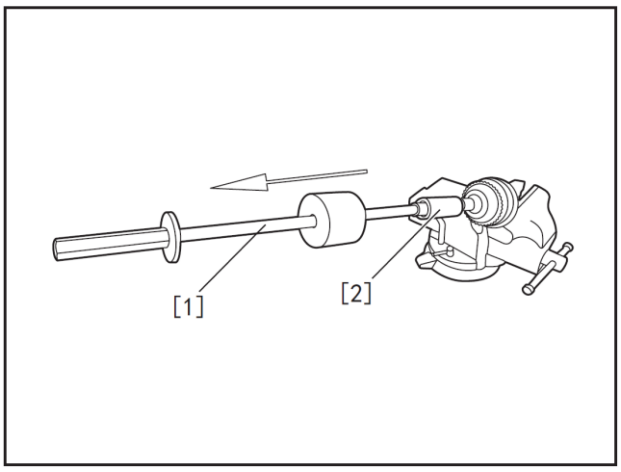


- Dust cover clamp refitting pliers (AX70426) [3].

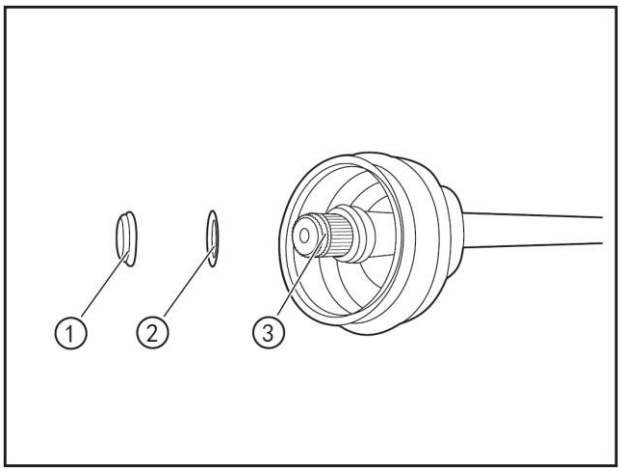


3 - Removal

- Pry point A with slotted screwdriver to detach the clamp from the fixing position, and dismount the axle shaft CV joint clamp (1).



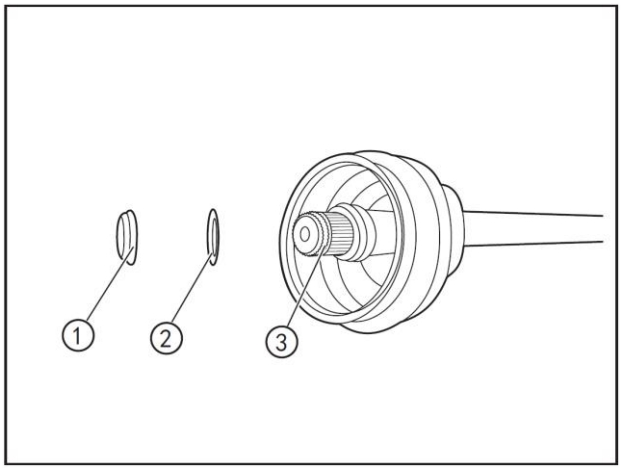
- Screw the axle head threaded release sleeve (A600422) [2] into the threaded end of axle shaft.
- Connect the inertia puller (BF0601) [1] to the thread hole of axle head threaded release sleeve.
- Operate the inertia puller (BF0601) [2] outwards forcibly as indicated by the arrow to remove the axle shaft CV joints.



- Take out washer (1), elastic washer (2) and elastic collar (3) to check for abnormal wear.
- Remove the clamp with the axle shaft clamp removal and refitting pliers and dismount the wheel side dust cover.

⚠ CAUTION

- **Check the axle shaft CV joint(s) for abnormal wear; if it is worn seriously, replace the whole axle shaft CV joint assembly.**

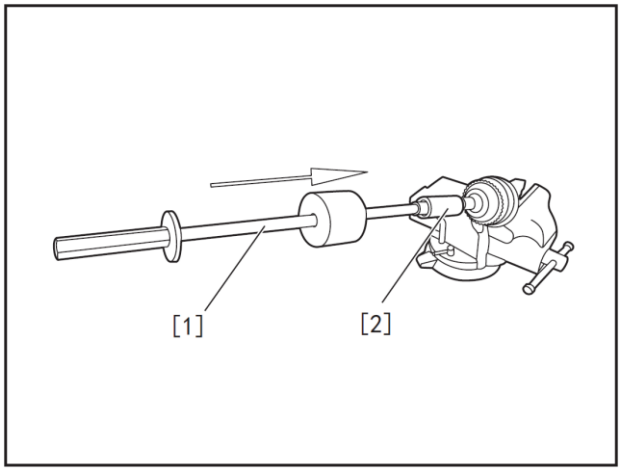


4- Refitting

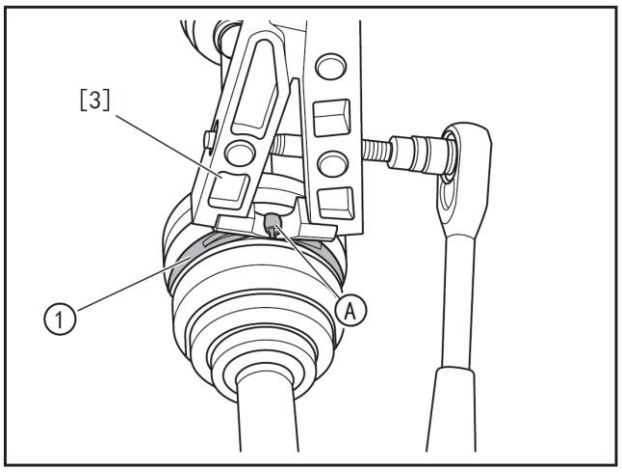
- When installing the dust cover, wash the parts to ensure they have no abnormal wear and lubricate the parts with specified grease.

⚠ CAUTION

- **Pay attention to the installation order and orientation of washer (1), elastic washer (2) and elastic collar (3), and ensure that front axle shaft CV joint ring gear is completely engaged.**



- Screw the axle head threaded release sleeve (A600422) [2] into the threaded end of axle shaft.
- Connect the inertia puller (BF0601) [1] to the thread hole of axle head threaded release sleeve.
- Operate the inertia puller (BF0601) [1] outwards forcibly as indicated by the arrow to refit the axle shaft CV joints.



- Fix the axle shaft CV joint clamp (1) securely with the dust cover clamp refitting pliers (AX70426) [3].

⚠ CAUTION

- **The axle shaft CV joint clamp is disposable, and shall be replaced after each removal.**
- **The clamps should be tightened with the dust cover clamp refitting pliers (AX70426)[3] until the points A come into contact with each other.**

6. Axle and Suspension
6.1 Front Axle and Front Suspension
6.2 Rear Axle and Rear Suspension
6.3 Wheels
6

E70

Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

6.2

Rear Axle and Rear Suspension

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Precautions for service 6.2-3
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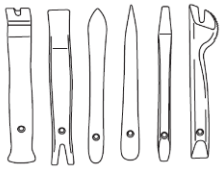
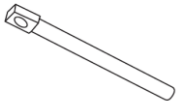
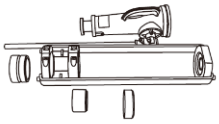
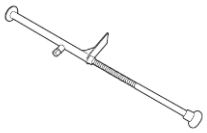
Precautions for service

- As to refitting of the rubber bush of swing arm, the rubber bush cannot be finally tightened unless the tires have touched the ground and the vehicle is under no load. The oil sprayed onto the rubber bush should be wiped up; otherwise, its service life will be shortened.
- No load condition means that:

- The motor is filled with coolant and lubricant.
- Spare wheel, jack, hand tool and foot mat are at their specified locations.

- After repairing the suspension system, be sure to check the wheel alignment.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF1102	Interior trim removal tool		For removing interior trims
A600705	Rear shock absorber removal and refitting tool		For fixing shaft of rear shock absorber
A60EV0495A/B A300495A/C/D/F A60EV0495C	Rear suspension arm bush removal and refitting tool assembly		For positioning, removing and refitting rear suspension arm bush
AX70903	Brake pedal suppressor		For holding down the brake pedal

Tightening Torque

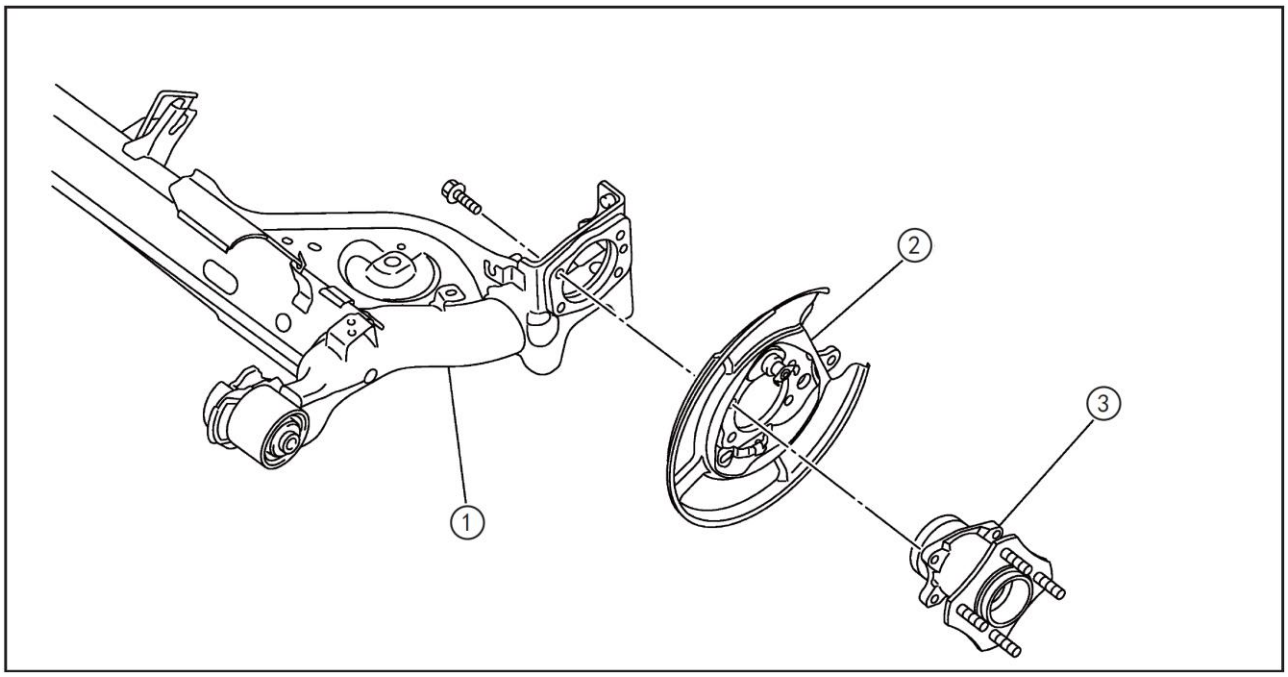
Sequence number	Items	Torque (N·m)
1	Rear hub fixing bolt	94
2	Shock absorber lower fixing bolt	124
3	Brake hose bracket fixing bolt	16.7
4	Rear suspension bracket and rear suspension connecting bolt and nut	61
5	Rear suspension bracket and body connecting bolt	100
6	Shock absorber upper fixing bolt	20

Technical Parameters

Name	Items	Parameters
Rear Suspension	Rear overhang (mm)	1045
	Camber angle (°)	Front: -0°05'±45' Rear: -1°30'±30'
	Toe-in (mm)	Front: IN1 Rear: IN3.5

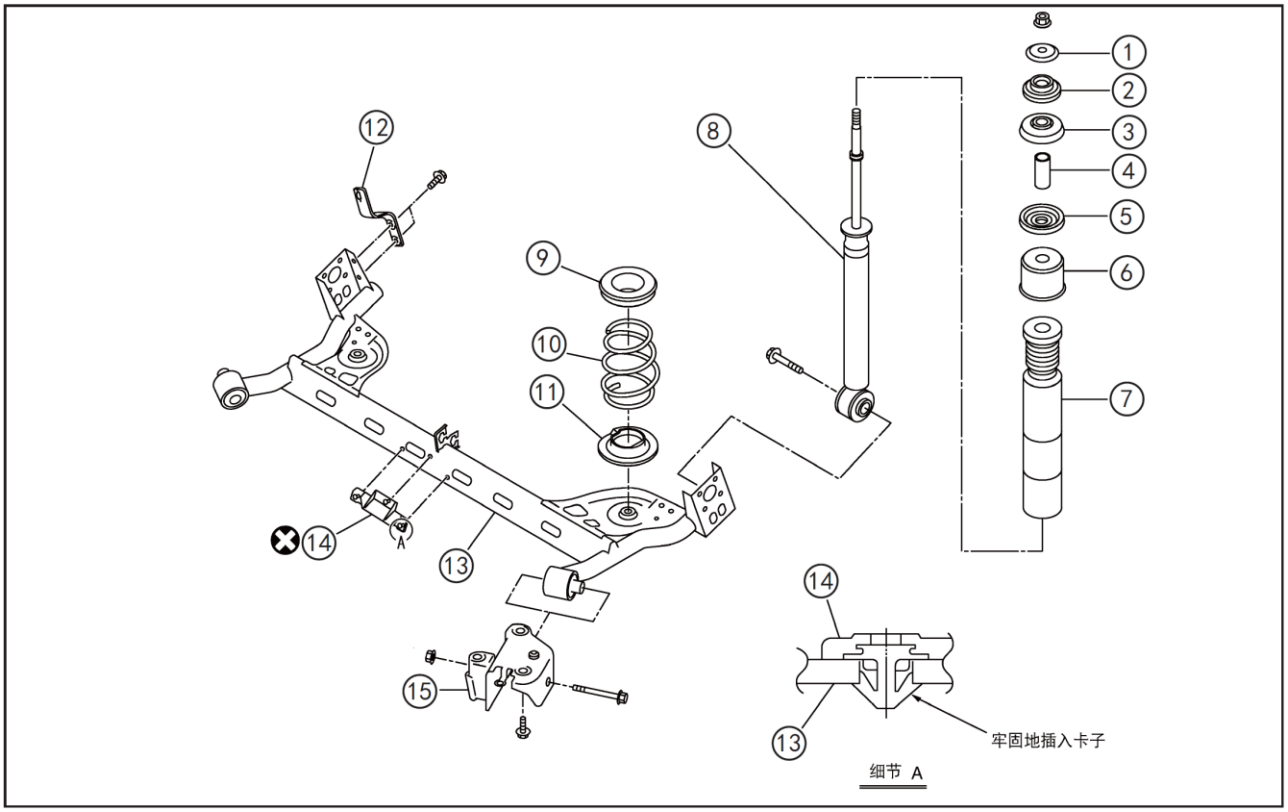
Structure and features

Rear Hub



1. Rear suspension arm	2. Brake bottom plate	3. Hub and bearing assembly

Structure of Rear Axle



1. Washer (upper)	6. Jitter buffer cover	11. Rear spring rubber holder (lower)
2. Bush (upper)	7. Jitter buffer	12. (Disc) brake hose bracket
3. Bush (lower)	8. Shock absorber	13. Rear suspension arm
4. Spacing sleeve	9. Rear spring rubber holder (upper)	14. Brake pipe protective device
5. Washer (lower)	10. Coil spring	15. Rear suspension arm bracket

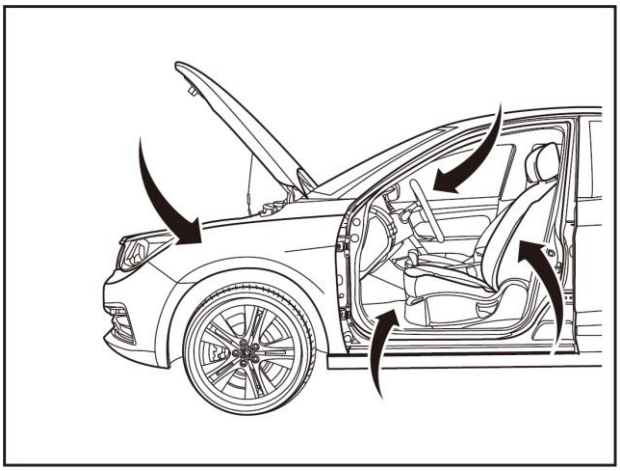
Common fault troubleshooting

1. Tire abnormal wear

Symptom: The tire has eccentric wear or left/right and front/rear tire has inconsistent wear.	
Fault analysis	**Countermeasures**
(1) Under-inflated or over-inflated tire	(1) Adjust tire pressure to the specified value
(2) Vehicle overload	(2) Overload is prohibited
(3) Poor tire dynamic balance	(3) Re-inspect the tire dynamic balance
(4) Hub bearing is loosened	(4) Replace hub bearing
(5) Rim deformation	(5) Replace rim
(6) Local deformation of rear swing arm	(6) Overhaul rear swing arm assembly
(7) Rear axle swing arm needle bearing looseness	(7) Replace rear axle swing arm needle bearing
(8) Rear axle displacement	(8) Replace rear axle shaft tube or self-tracking system

2. Abnormal noise from driving system

Symptom: During traveling, the vehicle incurs unusual noise.	
Fault analysis	**Countermeasures**
(1) Axle shaft is deformed or loosened	(1) Replace axle shaft
(2) Hub bearing is worn or loosened	(2) Replace hub bearing
(3) Rear axle tube needle bearing looseness	(3) Replace rear axle tube needle bearing
(4) The connecting bolt of driving system is loosened	(4) Tighten connecting bolt of driving system
(5) Rear shock absorber failure	(5) Replace rear shock absorber

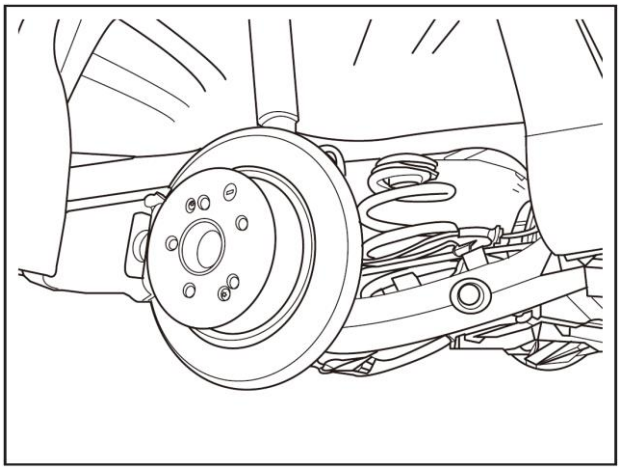


Removal and Refitting of Rear Hub

1 - Protection

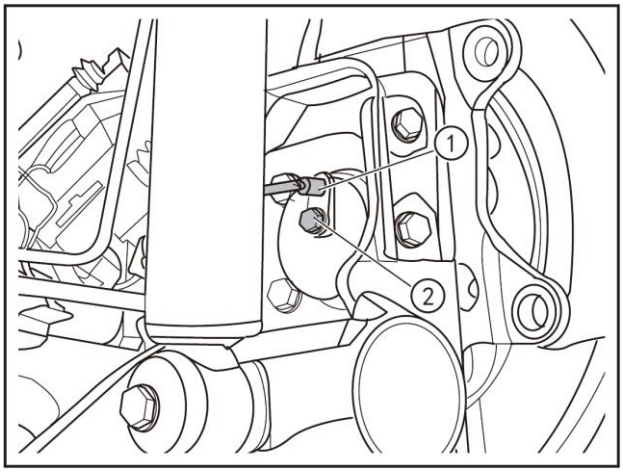
Place protective pads at following locations:

- Front fender;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

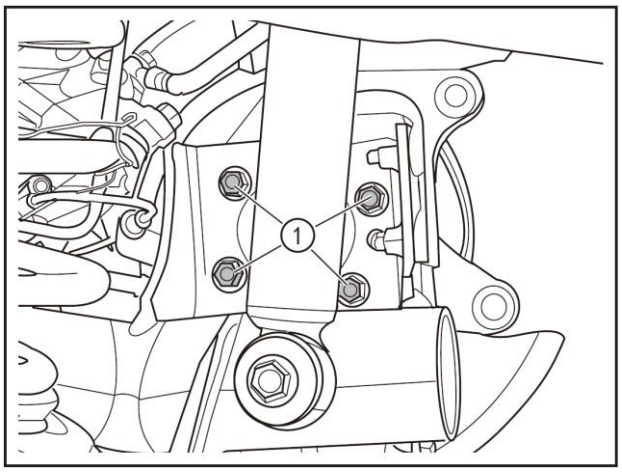


2 - Removal

- Lift the vehicle and remove the rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Remove rear brake disc. (Refer to "Removal and Refitting of Rear Brake Disc" in "Brake System”).



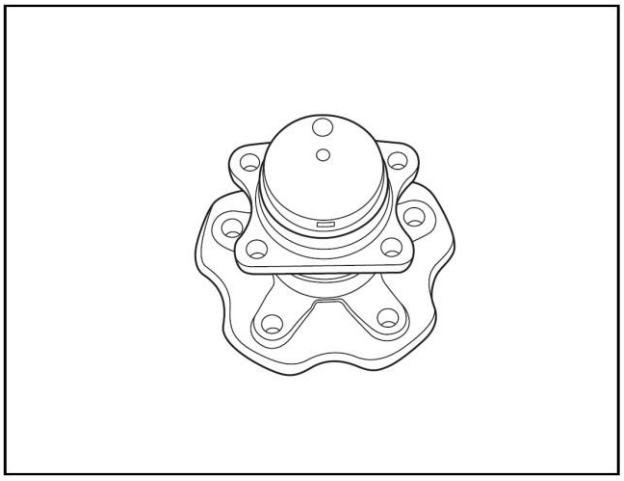
- Use the 10 mm socket to remove the fixing bolt (2) of wheel speed sensor (1), draw out the wheel speed sensor, and disconnect the sensor wire harness from rear axle (1 fixing clip).



- Use the 14 mm socket to remove the 4 fixing bolts (1) (M10X35) of rear hub, and take down the rear hub.

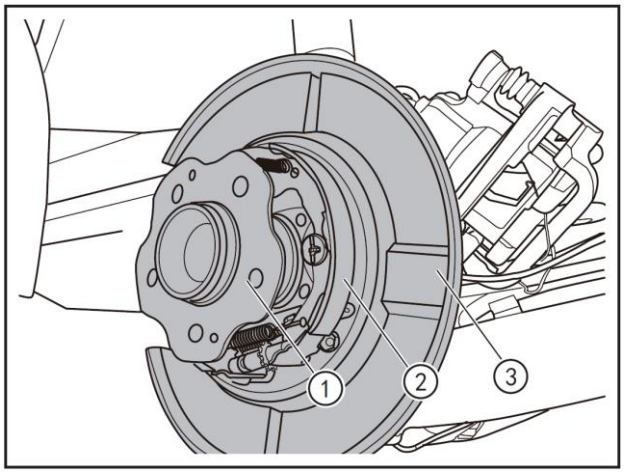
⚠ CAUTION

- **While taking down the rear hub, use the thin wires to fix the rear brake bottom plate and parking brake shoe firmly to the rear axle.**



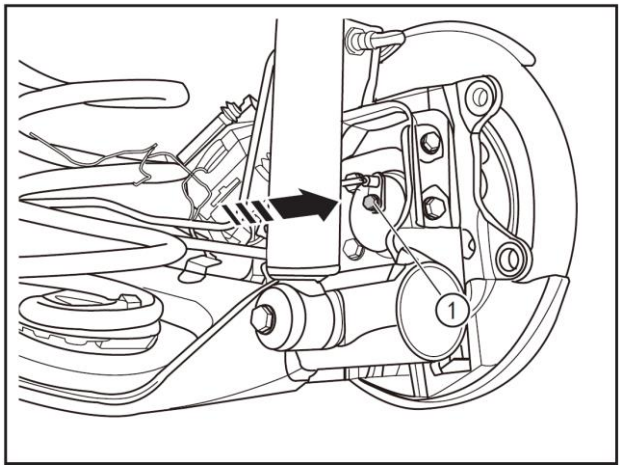
3- Check before refitting

- Clean up the disassembled parts, making sure that the surface of moving parts is free from impurities.

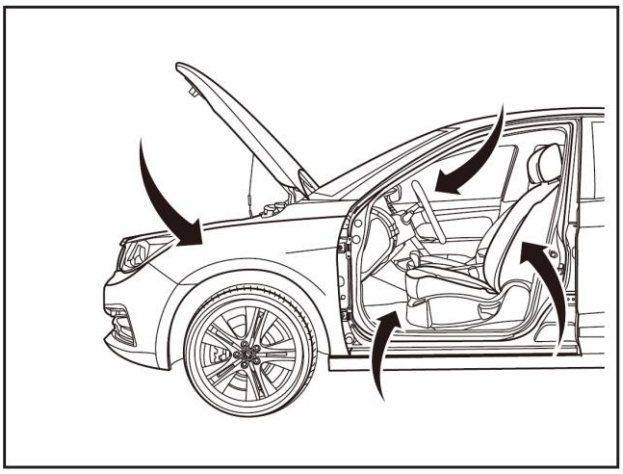


4- Refitting

- Fix the hub assembly (1), rear brake bottom plate (3) and parking brake shoe (2) in sequence on the rear suspension.



- Refit the fixing bolt (1) of the wheel speed sensor with the 10mm socket, and clip the sensor wire harness onto the rear suspension.
- Refit the rear brake disc (Refer to "Removal and Refitting of Rear Brake Disc" in "Brake System").
- Refit the rear wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

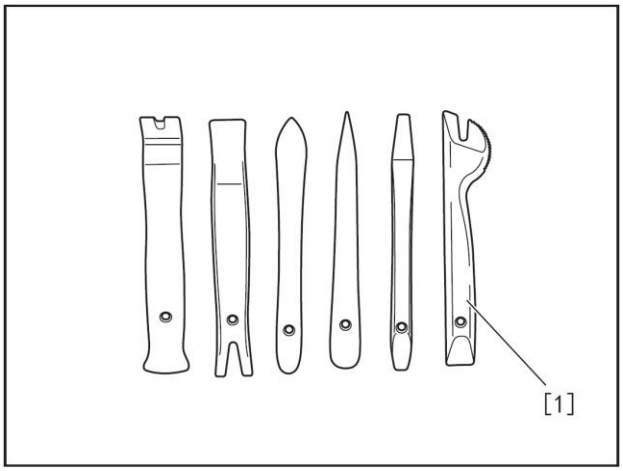


Removal and Refitting of Rear Shock Absorber

1 - Protection

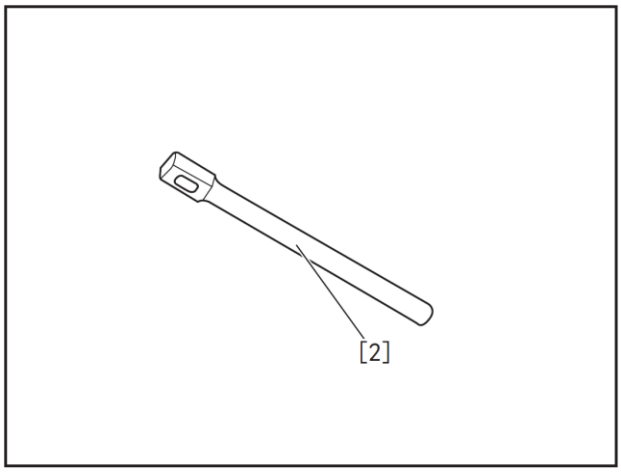
Place protective pads at following locations:

- Front fender;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

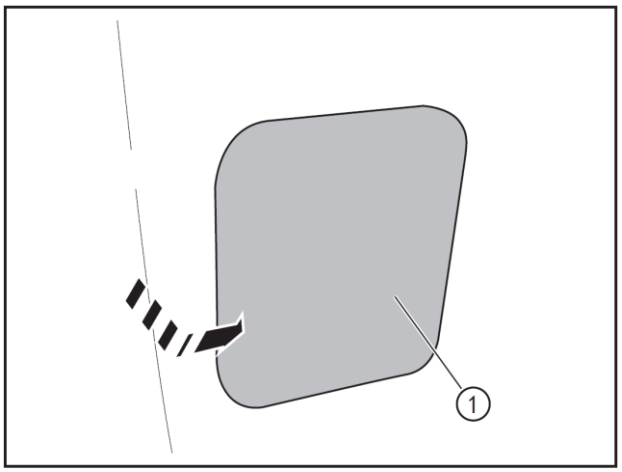


2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

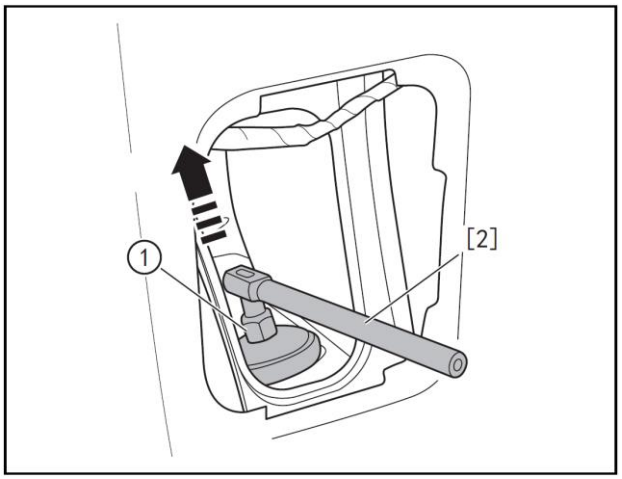


- Rear shock absorber removal and refitting tool (A600705)[2].

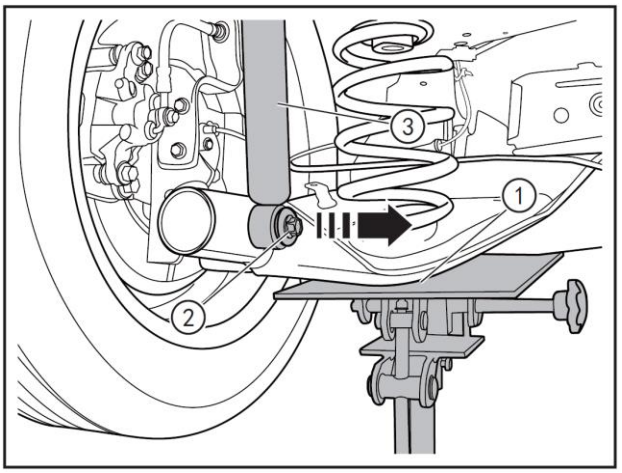


3 - Removal

- Stop the vehicle in the station and apply the parking brake.
- Open the trunk lid, and remove the fixing bolt trim cover (1) of rear shock absorber by using the interior trim removal tool (BF1102).



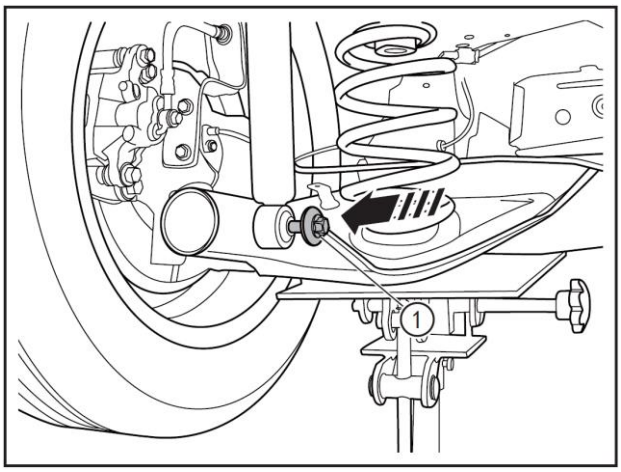
- Use the rear shock absorber removal tool (A600705) [2] to hold down the shock absorber shaft, and use the 14mm wrench to remove the upper fixing nut (1) of rear shock absorber.



- Lift the vehicle to a proper height.
- Use the transmission jack (1) to support under rear suspension, and use the 17mm socket to loosen the lower fixing bolt (2) of shock absorber.
- Take down the rear shock absorber (3).

⚠ CAUTION

- **When the upper fixing nut of the rear damper has been loosened, it is necessary to use the transmission jack for protection when applying force to the lower fixing bolt.**
- **The replacement of the rear shock absorber on the other side should be carried out after the replacement on the opposite side has been completed.**
- **Always be careful when removing the bolt.**

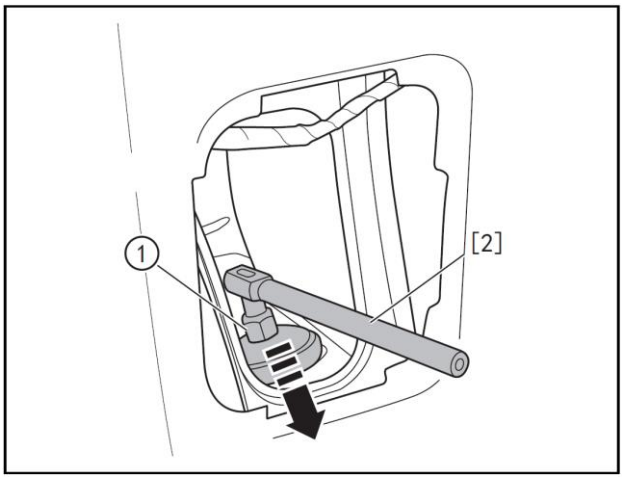


4- Refitting

- Install the new rear shock absorber on the rear axle and tighten the lower bolt (1) to 124N·m.

⚠ CAUTION

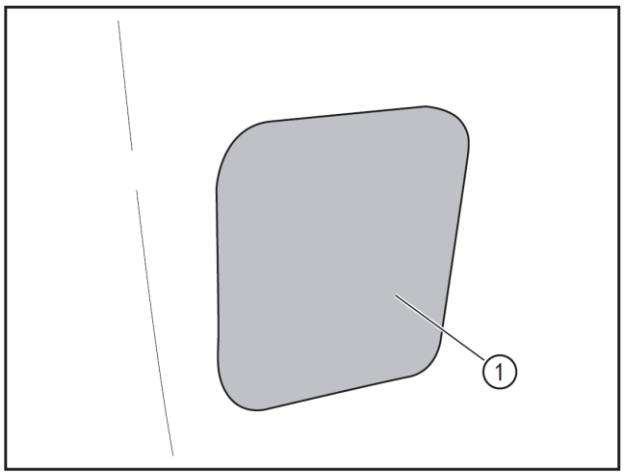
- **During refitting, adjust the height of transmission jack to align the bolt hole.**



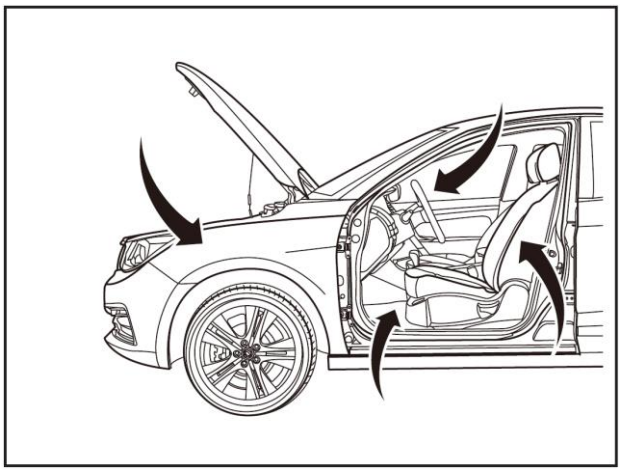
- Move away the transmission jack, slowly lower the vehicle, and after the wheels touch the ground, continue to lower the vehicle. At this time, the assistant worker should align the rear shock absorber with the upper bolt holes.
- Use the rear shock absorber removal tool (A600705) [2] to hold down the shock absorber shaft, and use the 14mm wrench to tighten the upper fixing nut (1) of rear shock absorber to 20N·m.

⚠ CAUTION

- **Pay attention to the state of the spring when slowly lowering the transmission jack.**
- **Keep the rubber block between the 2 washers during installation.**



- Secure the trim cover (1) of the rear shock absorber fixing nut.

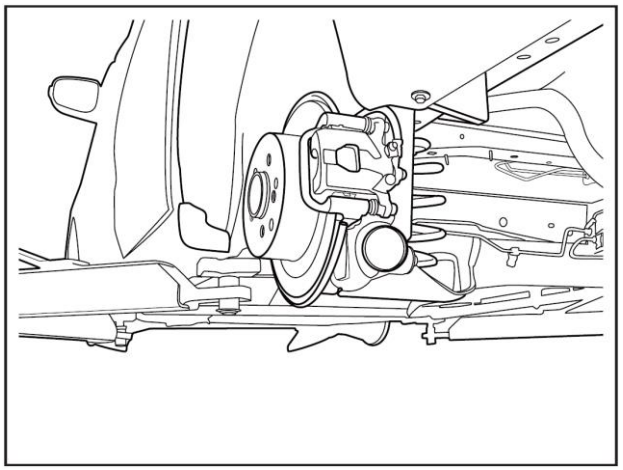


Removal and Refitting of Rear Coil Spring

1 - Protection

Place protective pads at following locations:

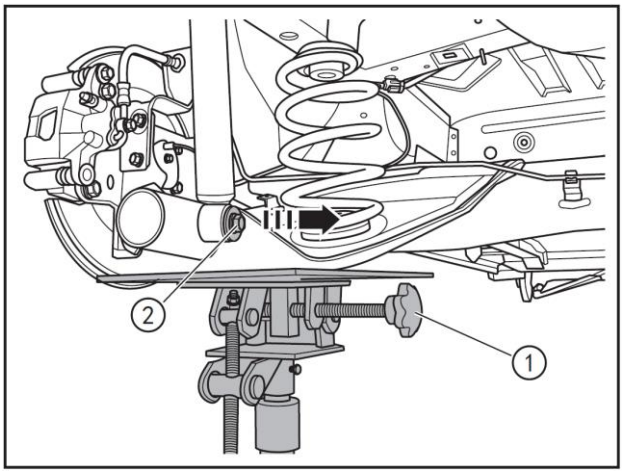
- Front fender;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



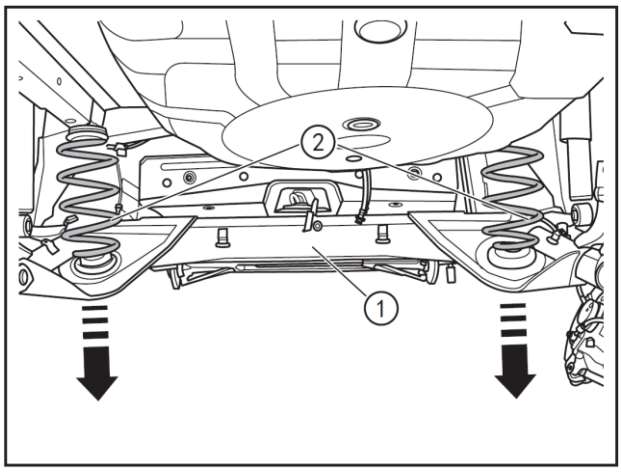
2 - Removal

CAUTION

- **The suspension spring shall be removed by two personnels; otherwise personnel injury and parts damage may occur.**
- Lift the vehicle as appropriate.
- Remove the rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)



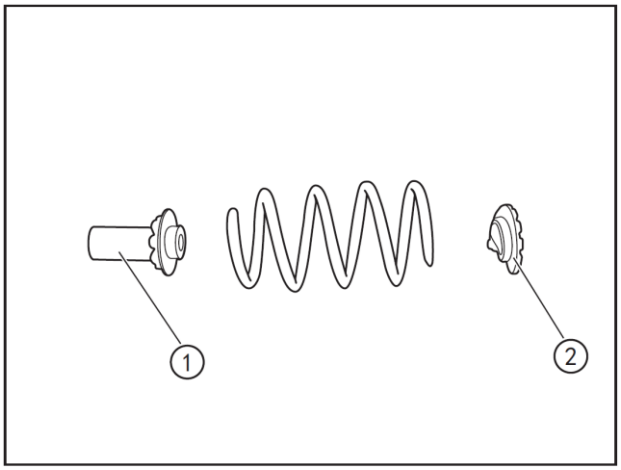
- Use the transmission jack (1) to support below the rear coil spring.
- Remove the lower fixing bolt (2) (M12X95) of shock absorber with the 17mm socket, and detach the shock absorber from the rear suspension.
- Lower down the transmission jack slowly, and remove the shock absorber fixing bolt on the other side following the same method.



- Ask another personnel for assistance, press both sides at the rear part of the rear suspension (1) downwards, and take off the rear shock absorber spring (2).

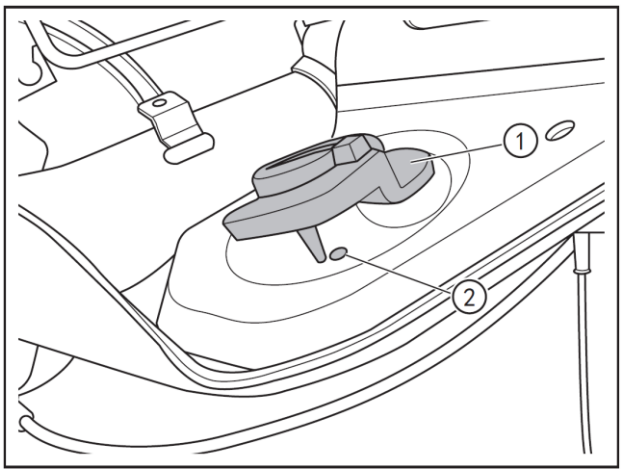
⚠ CAUTION

- **Always be careful when removing the spring.**
- **Remove the spring holder together with the spring to avoid the impact from the sudden release of spring force.**



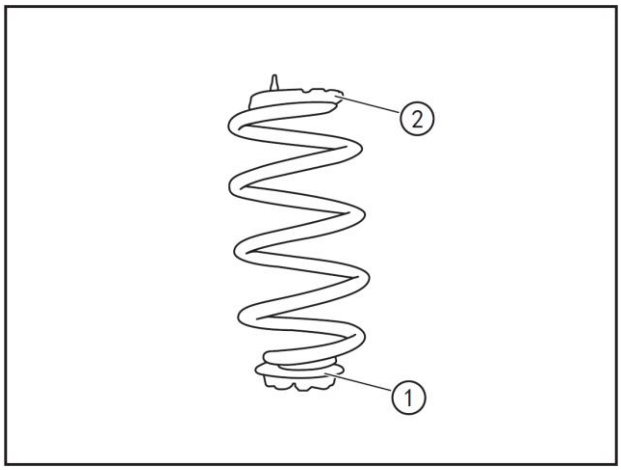
3- Check before refitting

- Check the upper holder (1) and lower holder (2) of rear shock absorber spring for any damage or corrosion signs; if any, replace it.

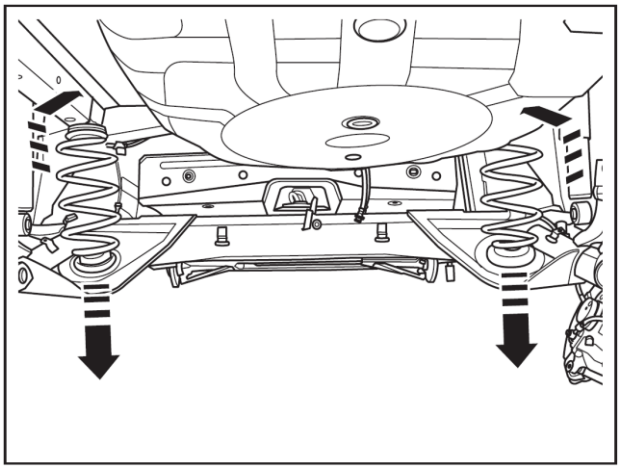


4- Refitting

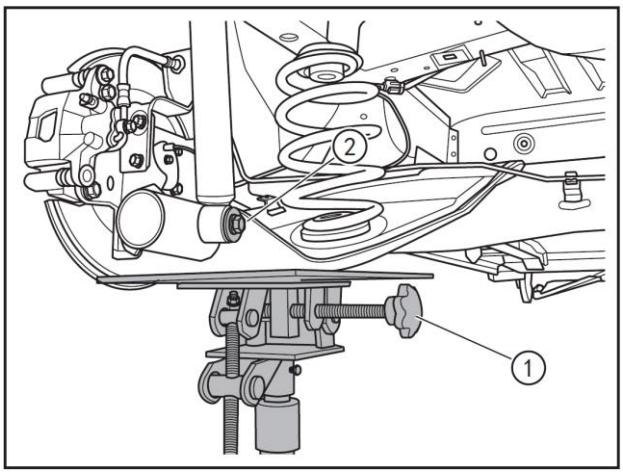
- Align the coil spring lower holder (1) with the locating hole (2) and refit it in place.



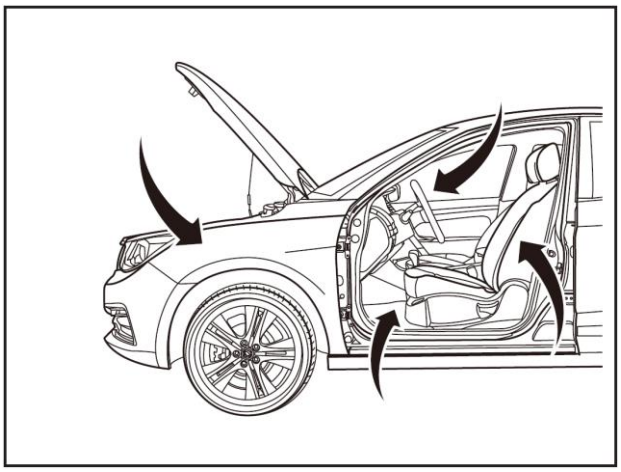
- Align the lower end (1) of the coil spring with the lower holder.
- Refit the coil spring upper holder (2) on the coil spring.



- Ask another personnel for assistance, press down the rear suspension and refit the rear coil spring in place. Ensure that the upper and lower holders are seated in the locating holes, and shake to check if it is installed firmly.



- Use the transmission jack (1) to support below the rear coil spring.
- Tighten the lower fixing bolt (2) (M12X95) of shock absorber with the 17mm socket. (One for left/right side)
- Refit the rear wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

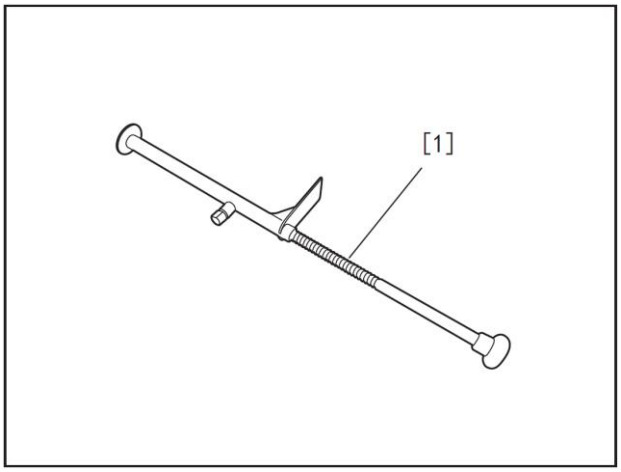


Removal and Refitting of Rear Suspension

1 - Protection

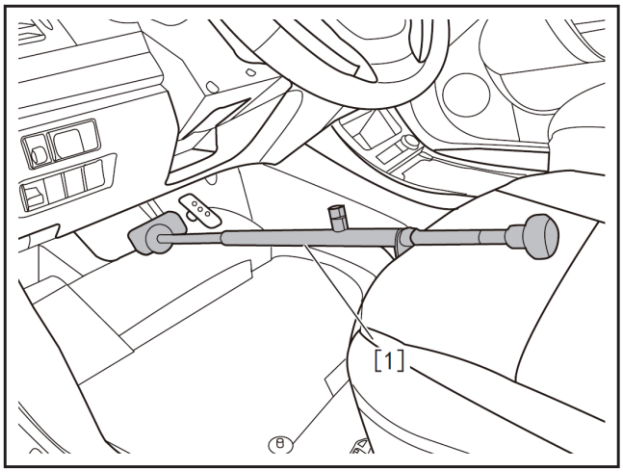
Place protective pads at following locations:

- Front fender;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



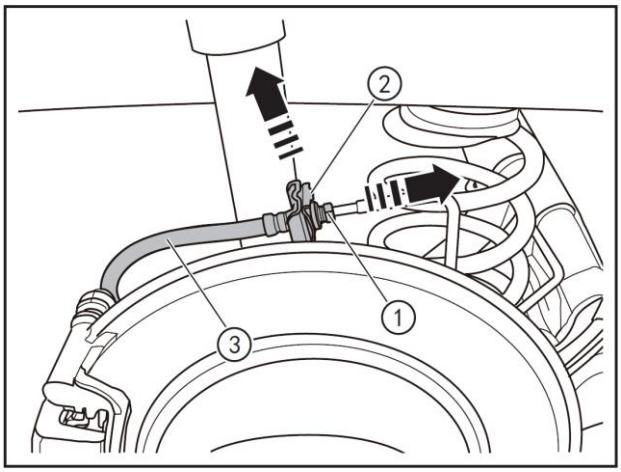
2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].



3 - Removal

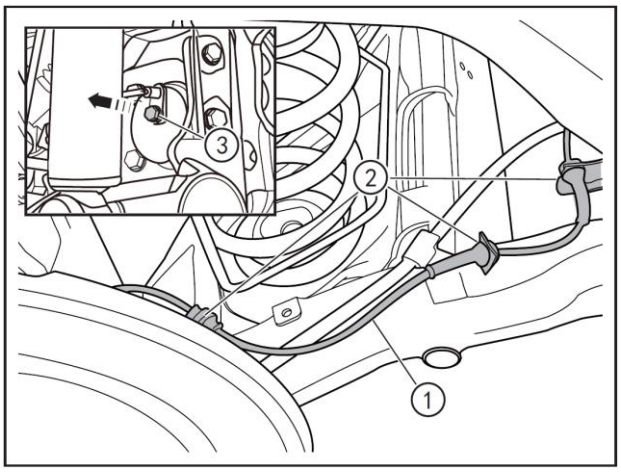
- Remove the rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].
- Lift the vehicle as appropriate.



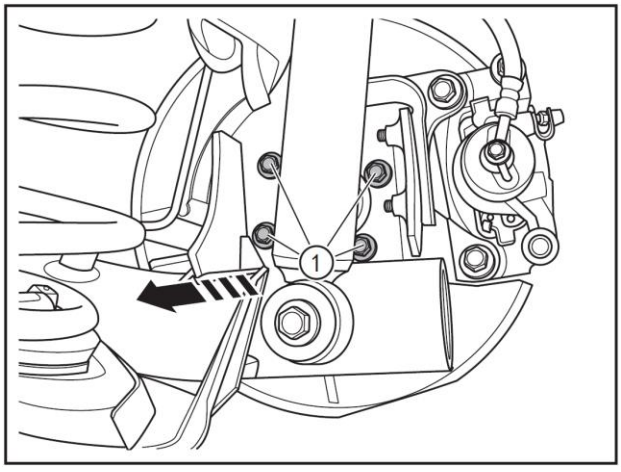
- Remove the nut (1) of the brake pipe with the 10mm pipe wrench. (One for left/right side)
- Remove the pipe clamp (2) with the long-nose pliers, and pull the brake hose (3) out of the bracket. (One for left/right side)

⚠ CAUTION

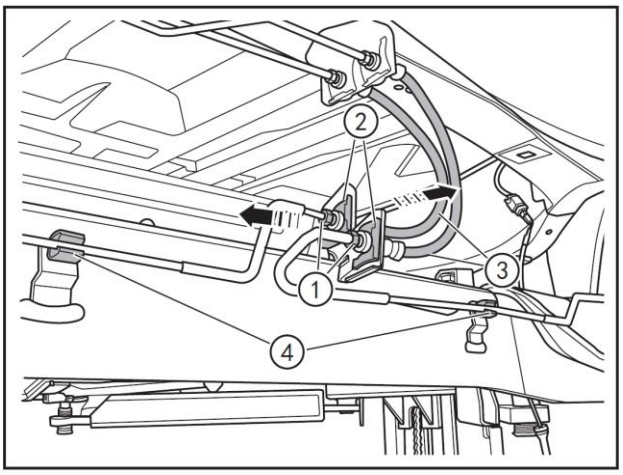
- **Before removing the connecting bolts for connecting the rear brake hose and the rear brake cylinder, clear the foreign matter and dust around the connecting bolt.**
- **When removing the pipe nut, put a clean cloth below it, so as to prevent the brake fluid from dropping onto the body or the ground, and after the removal is finished, wrap the brake pipe.**
- **If the brake fluid drops onto the painted surface, clean it immediately.**



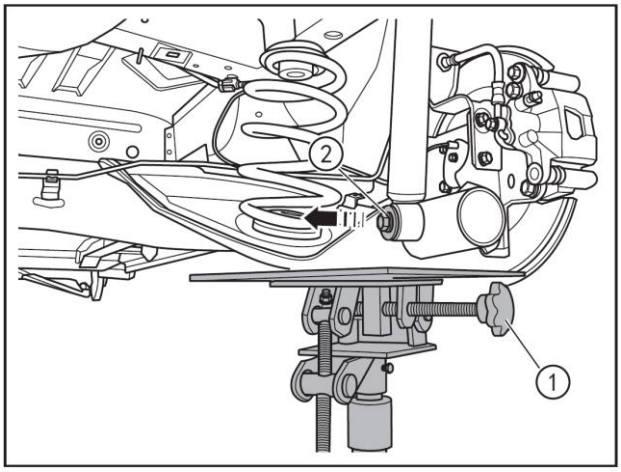
- Detach the wheel speed sensor wire harness (1) out of the 3 clips (2) on the rear suspension. (One for left/right side)
- Remove the fixing bolt (3) of rear wheel speed sensor with the 10mm socket. (One for left/right side)



- Remove the 4 fixing screws (1) (M10X35) of the rear hub, and hang it together with the brake disc and the brake caliper on the frame. (One for left/right side)



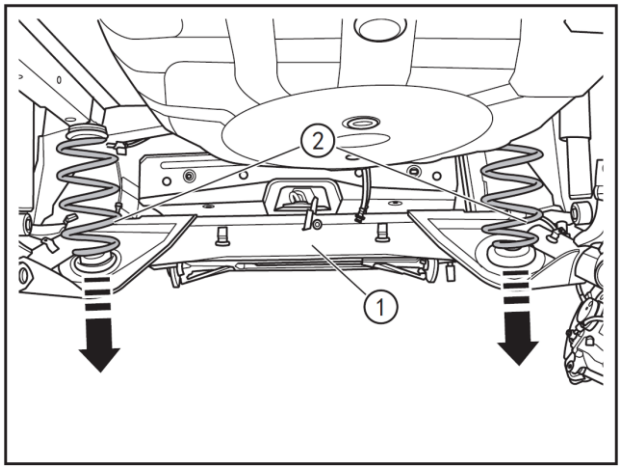
- Remove the nut (1) of the brake pipe with the 10mm pipe wrench.
- Remove the pipe clamp (2) with the long-nose pliers, and pull the brake hose (3) out of the bracket.
- Detach the pipe from the rear suspension clamp (4), and remove the pipe.



- Use the transmission jack (1) to support the rear suspension under the rear shock absorber.
- Use the 17mm socket wrench to remove the fixing bolt (2) of rear suspension and shock absorber.
- Remove the bolt on the other side in the same way.

⚠ CAUTION

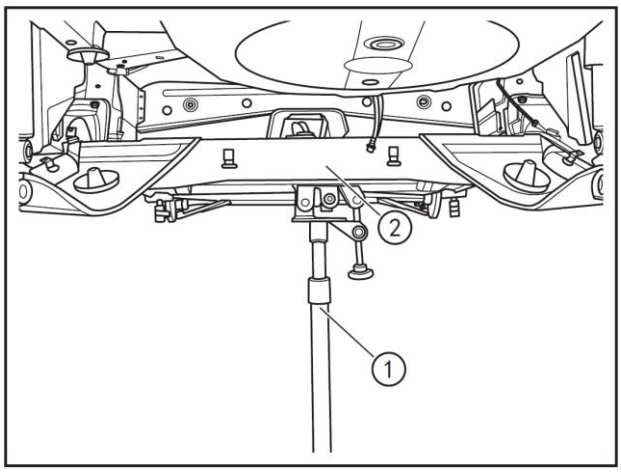
- **Always be careful when removing the bolt, so as to avoid the impact from sudden release of spring force.**



- Ask another personnel for assistance, press both sides at the rear part of the rear suspension (1) downwards, and take off the rear shock absorber spring (2).

⚠ CAUTION

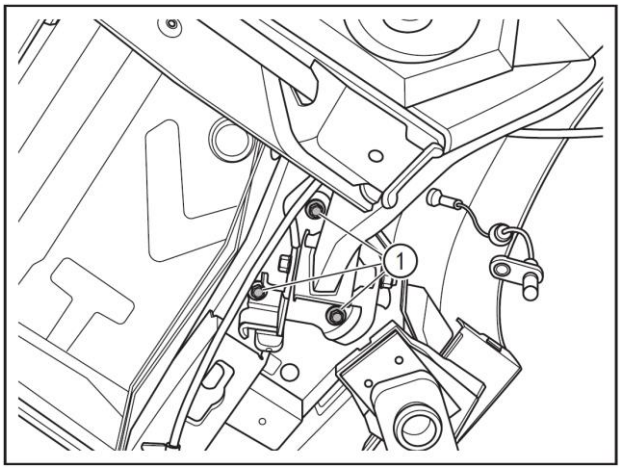
- **Always be careful when removing the spring.**
- **Remove the spring holder together with the spring to avoid the impact from the sudden release of spring force.**



- Support the rear suspension (2) with the transmission jack (1) at its middle.

⚠ CAUTION

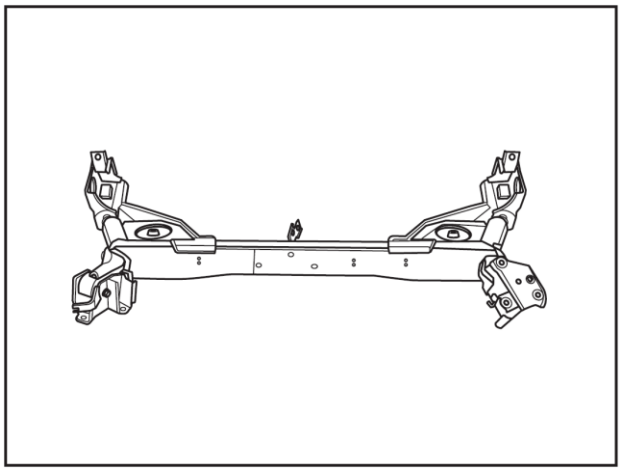
- **The transmission jack only serves as an auxiliary support. Two operators are required to cooperate to support the two sides of the rear suspension. The middle position of the rear suspension only bears its own gravity. Excessive application of lifting force may deform the rear axle.**



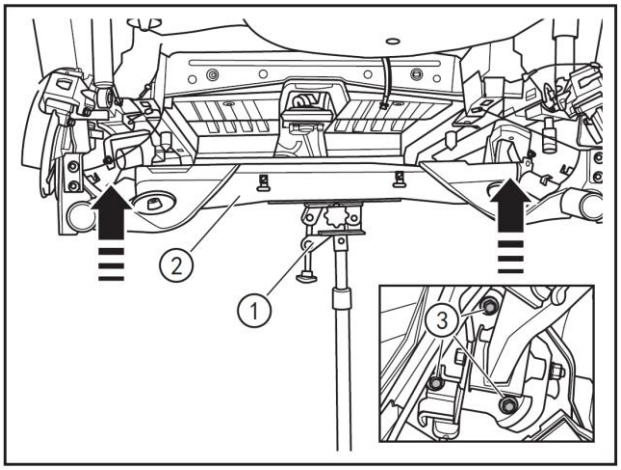
- Use the 17mm socket wrench to remove the 3 fixing bolt (1) (M10X25) of rear suspension and chassis.
- Remove the 3 fixing bolts on the other side in the same way.

⚠ CAUTION

- **The transmission jack only serves as an auxiliary support. Two operators are required to cooperate to support the two sides of the rear suspension.**
- **Always be careful when removing the rear suspension to prevent high level overturning due to instability.**



- Carry down the rear suspension assembly with two operators cooperating with each other.

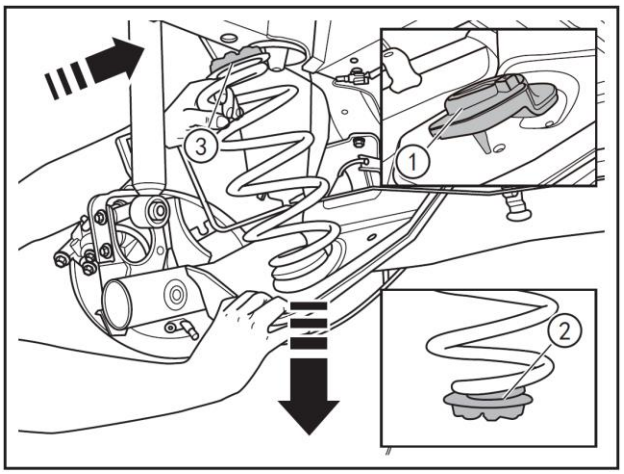


4- Refitting

- Support the rear suspension (2) with the transmission jack (1) at its middle, and the lift the rear suspension (2) to the mounting height with two operators cooperating with each other.
- Use the 17mm socket wrench to install and tighten the 3 fixing bolt (3) (M10X25) of rear suspension and chassis to 100N·m.
- Install the brake hose and brake pipe at the middle of rear suspension.

⚠ CAUTION

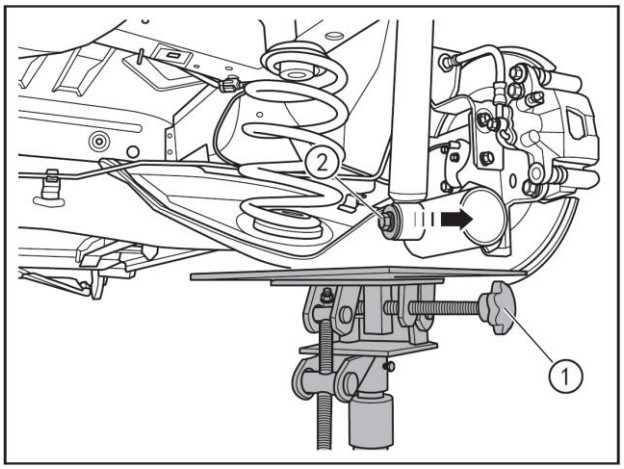
- **The transmission jack only serves as an auxiliary support. Two operators are required to cooperate to support the two sides of the rear suspension.**
- **Keep the parking brake cable above the rear suspension during installation.**
- **Always be careful when removing the rear suspension to prevent overturning.**



- Align the coil spring lower holder (1) with the locating hole and refit it in place,
- Align the lower end (2) of the coil spring with the lower holder.
- Refit the coil spring upper holder (3) on the coil spring.
- Ask another personnel for assistance, press down the swing arm of rear suspension with force to make room for installation of coil spring, and then refit the rear coil spring together with its holder in place.

⚠ CAUTION

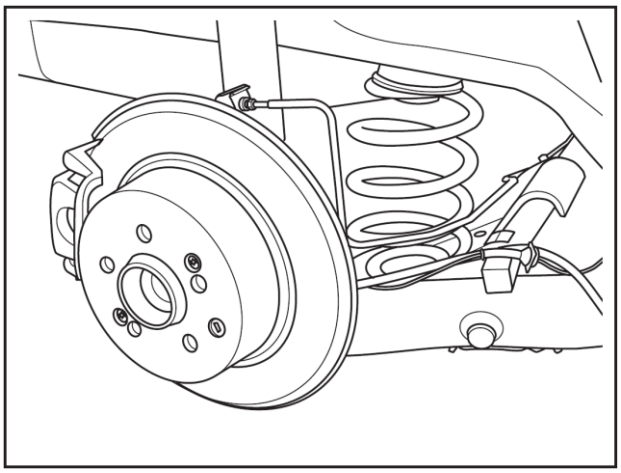
- **Always be careful when removing the rear suspension to prevent high level body overturning due to instability.**



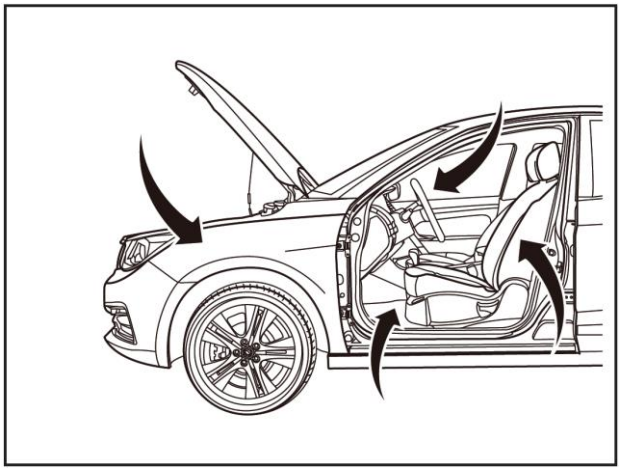
- Use the transmission jack (1) to support below the rear coil spring, and install and tighten the lower fixing bolt (2) (M12X95) of rear shock absorber to 124N·m.
- Refit the bolt on the other side in the same way.

⚠ CAUTION

- **The transmission jack only serves as an auxiliary support. Two operators are required to cooperate to support the two sides of the rear suspension.**
- **Always be careful when removing the rear suspension to prevent high level body overturning due to instability.**



- Install the brake hose and brake pipe at the rear wheel.
- Bleed the brake system. (Refer to "Change of Brake Fluid" in "Brake System")
- Refit the rear hub. (Refer to “Removal and Refitting of Rear Hub" in this section)
- Refit the wheels. (Refer to "Removal and Refitting of Wheels" in "Wheels")

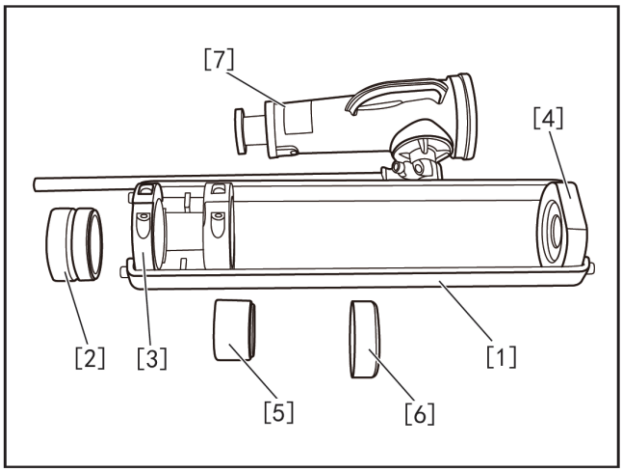


Replacement of Rear Suspension Arm Bush

1 - Protection

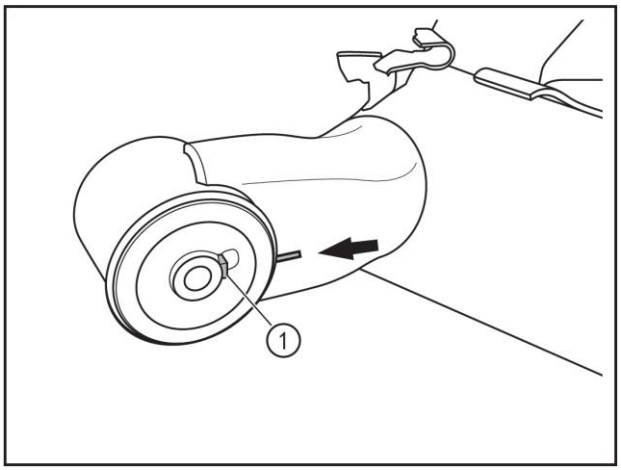
Place protective pads at following locations:

- Front fender;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Rear suspension arm bush removal and refitting tool (A300495A) [1].
- Rear suspension arm bush removal and refitting tool (A60EV0495B) [2].
- Rear suspension arm bush removal and refitting tool (A60EV0495A) [3].
- Rear suspension arm bush removal and refitting tool (A300495C) [4].
- Rear suspension arm bush removal and refitting tool (A300495D) [5].
- Rear suspension arm bush removal and refitting tool (A60EV0495C) [6].
- Mechanical jack (A300495F) [7].

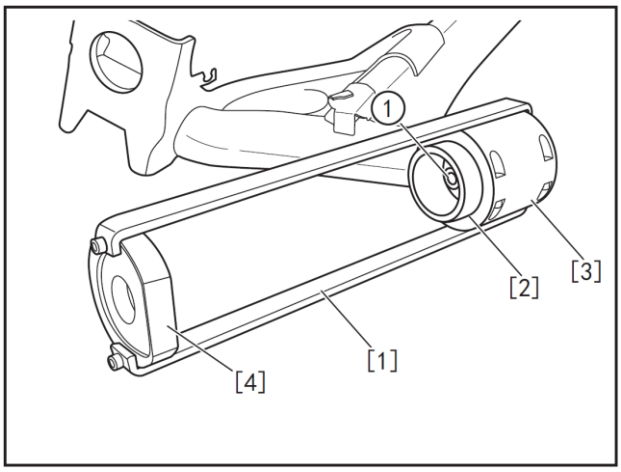


3 - Removal

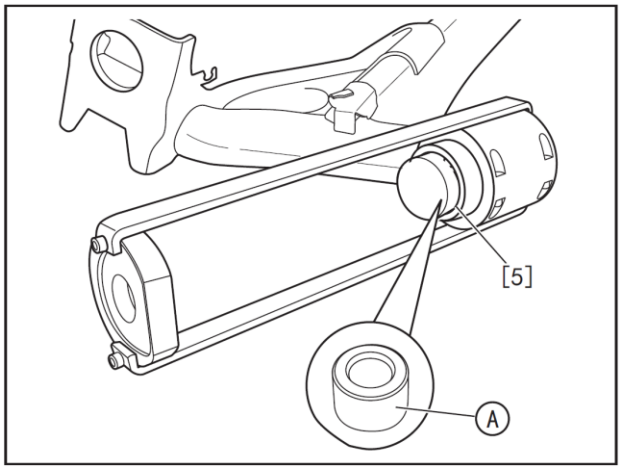
- Remove rear suspension. (Refer to "Removal and Refitting of Rear Suspension")
- Clean the surrounding of rear suspension arm bush, observe the convex (1) on the bush, and use a paint marker to make a position mark (as indicated by the arrow) on the rear suspension so as to select an appropriate installation angle during the installation of new rear suspension bush.

⚠ CAUTION

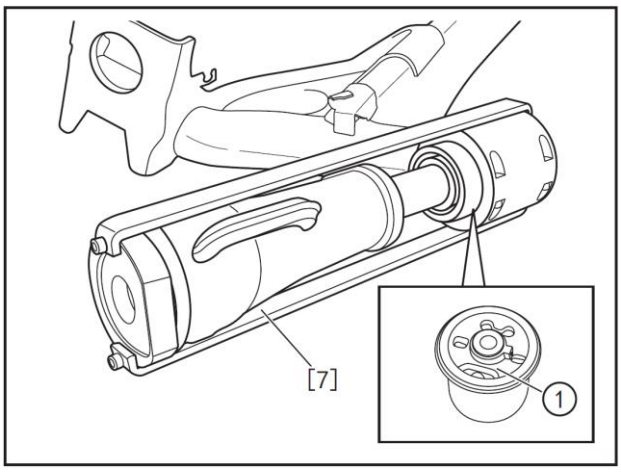
- **The mark shall be long enough so as not to be hidden by the rear suspension bush removal & refitting tool.**



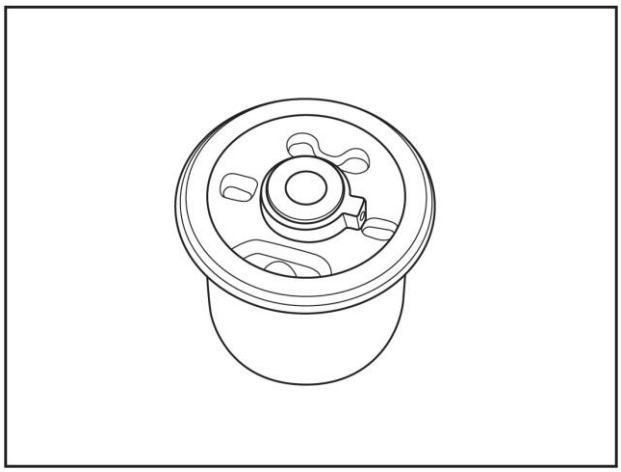
- Install the rear suspension bush removal and refitting tools [1], [2], [3] and [4] on the rear suspension arm bush (1).



- Install the rear suspension bush removal and refitting tool [5] in place with its side A towards the rear suspension arm bush.

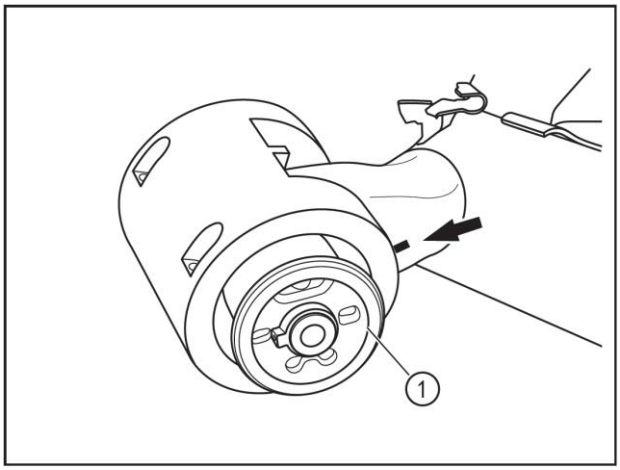


- Install the rear suspension bush removal and refitting tool [7], and use the jack to press out the rear bush (1).
- Release the jack and remove the bush (1) and tool.



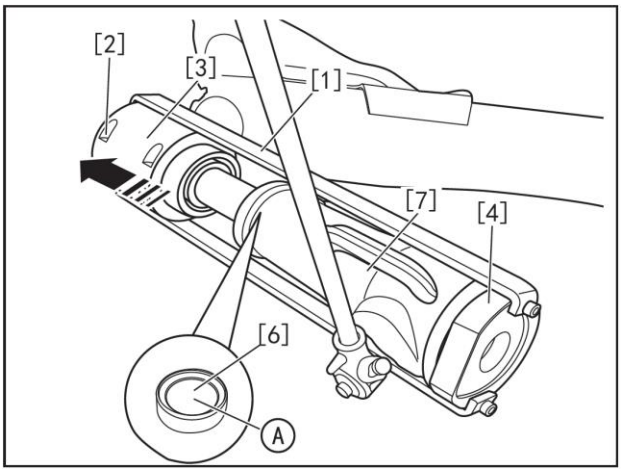
4- Check before refitting

- Check the surface of the newly-replaced rear suspension bush for crack, and if any, replace the bush.



5- Refitting

- Install the new rear suspension arm bush with the boss (1) aligned with the mark (indicated by the arrow).
- Apply a small amount of grease to the mating surface between the bush and the rear suspension.



- Install the rear suspension bush removal and refitting tools [1], [2], [3], [4], [6] and [7] on the rear suspension as shown.
- Install the rear suspension bush removal & refitting tool [6] in place with its side A towards mounting surface.
- Press in the rear suspension bush.
- Take off the refitting tool.

⚠ CAUTION

- **When the resistance increases a lot suddenly during press-fitting, it suggests that the bush is installed in place.**
- **After the bush is pressed to the end, do not apply too much force on the jack, so as to avoid damaging the bush.**

August 2018

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Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

6.3
Wheels

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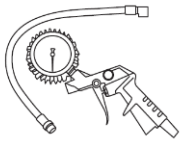
Precautions on Service of Wheel

- While refitting the wheels, tighten the wheel bolts diagonally in two to three steps for the avoidance of wheel distortion.
- While refitting tires, the small red dots on tire side wall shall be outwards.
- After tire repair or replacement, balance testing must be performed.
- In case of eccentric or irregular wear on tires, check the wheel alignment.
- Check tires for damage regularly and remove the foreign matters in tread patterns immediately to prevent the wheels from shaking at high-speed driving.
- Avoid rubbing the pits when pulling over as the side wall of tubeless tire is very thin.
- The spare wheel is different from others, therefore, it is not involved in tire transposition.

General Tools

Tool No.	Tool Name	Tool Picture	Description
	Tire pressure gauge		For measuring tire pressure and inflating the tire

Technical Parameters

Material of rim (16 × 6JJ)		Aluminum alloy	Steel rim (spare tire)
Max. radial offset limit	Lateral offset	＜0.3mm	＜0.8mm
	Vertical offset	＜0.3mm	＜0.5mm
Allowed max. unbalance	Dynamic (rim flange)	＜ 5 g (single side)	
	Static (rim flange)	＜ 20 g	

Tire size	Cold pressure (Kp)			
	Front	Rear		Spare wheel
195/60R1689H	230	210*1	230*2	280

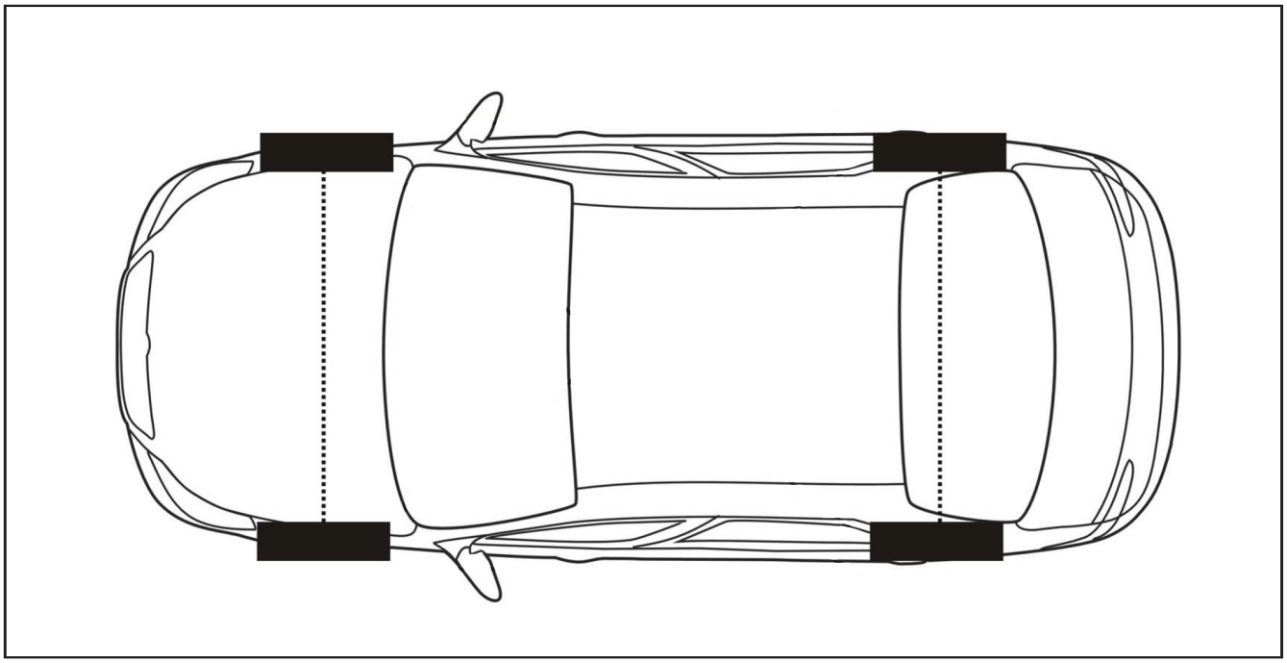
*1: The number of passengers is no more than 3.

*2: The number of passengers is no less than 4.

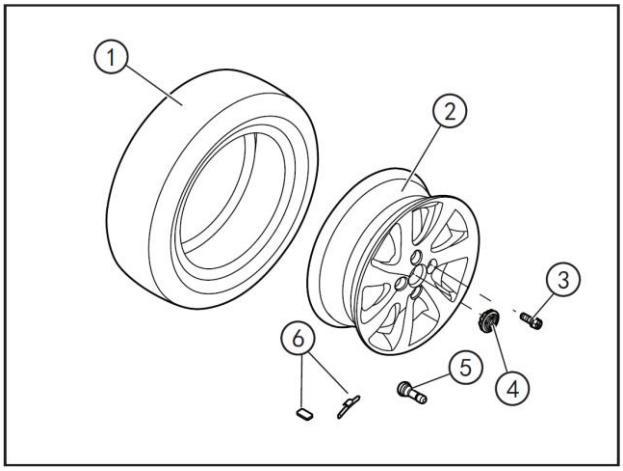
Tightening Torque

Sequence number	Items	Torque (N·m)	Remarks
1	Wheel fixing bolt	90±15	

Location



Wheel Structure and Features

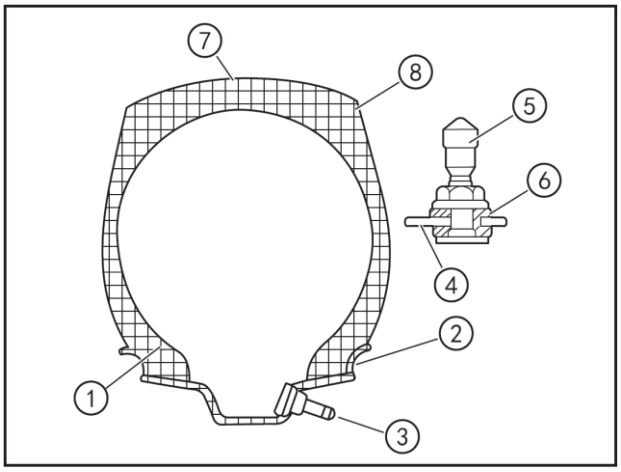


Structures and features

- The wheel assembly is composed of wheel rim and tire, among them the tire is refitted onto the wheel rim. The structure of wheel assembly is as shown on the right:

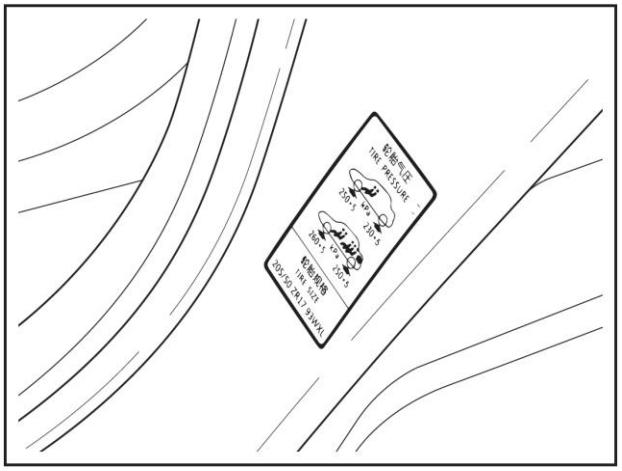
1. Tire	3. Wheel bolt	5. Wheel valve
2. Wheel rim	4. Wheel trim cover	6. Wheel balance weight

- Tubeless radial tire of low pressure series is adopted for this vehicle, which has the following advantages:
  - The inner wall of tubeless tire has a layer of inner liner formulated by special thick-layer rubber, thus the outstanding advantages of tubeless tire includes good safety, tire puncture resistance and low repair rate. When the tire is punctured by sharp objects, the inner liner can automatically wrap the piercing object closely while maintaining air tightness for a long time; even after pulling out the piercing object, the tire pressure can still be held temporarily due to the inner liner without influencing the vehicle traveling. However, when the tubed tire is punctured, the air in the inner tube will leak fast, making the vehicle unable to move.
  - The heat generated by tubeless tire during driving can be directly dissipated from wheel rim, and there is no heat generated by friction between inner and outer tubes; therefore the tire operating temperature is lower (lower than tubed tire by 20%~25%) , which is conductive to high-speed driving and prolonging tire wearing life.
  - Small rolling resistance - good economy; excellent buffer performance - good riding comfort; superior adhesion property - optimal skid resistance and better driving safety; small crown circumferential deformation - high driving speed, etc.



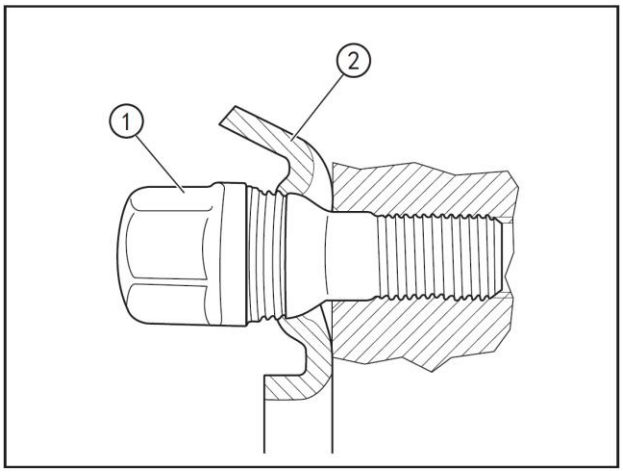
- Tire structure:

1. Inner liner	4. Rubber seal ring	7. Crown
2. Bead rubber inner liner	5. Valve cap	8. Tire shoulder
3. Valve	6. Wheel rim	



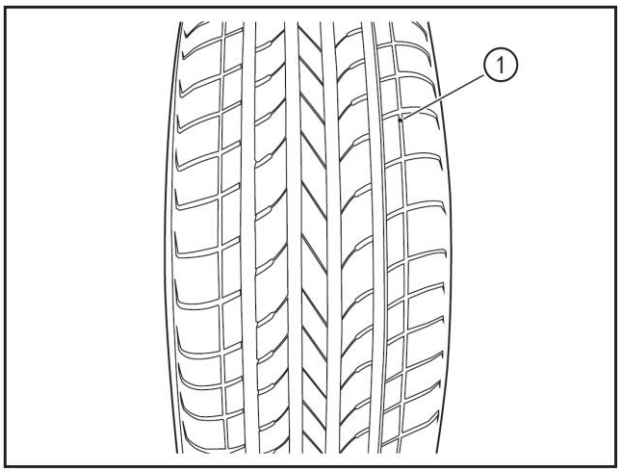
Inflation pressure

- The inflation pressure indication label is affixed to front door inner panel.



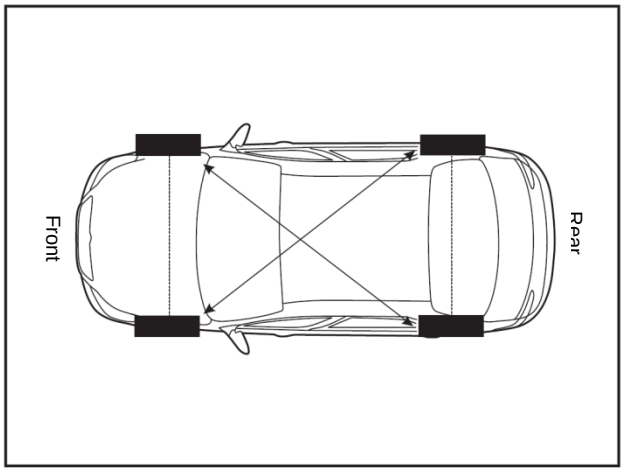
Wheel fastening bolts

- Tightening torque of wheel fastening bolt (1) is 90±15N • m.
- Aluminum wheel or steel spare wheel (2)



Tire wear limit

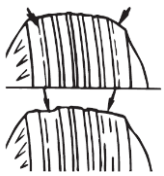
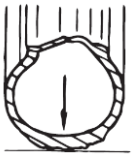
- Tire wear limit: Replace the tire when the tire is worn to the wear indicator (1), at which the tread depth is about 1.6 mm.



Tire Rotation

- When the vehicle is in running, the load, stress and function of front and rear tires will result in different tire wear. To keep even wear on the tires of the same vehicle and prolong and keep similar service lives, the tire rotation shall be conducted at regular interval.
- Tire rotation can be conducted as the cycle shown in the figure above.

Common fault troubleshooting

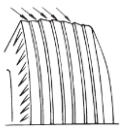
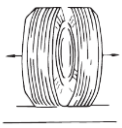
Abnormal tire pressure			
Fault	Accelerated wear of tire shoulder	Accelerated wear of the middle part of tire	Tread crack
Symptom			
Cause	Under-inflation or transposition shortage 	Over-inflation or transposition shortage 	Under-inflation or overspeed

Accelerated wear of tire shoulder or tread crack

Fault symptom:	Fault analysis	Countermeasures
Accelerated wear of two crown shoulders.	The insufficient tire pressure leads to the widened ground mark for crown.	Ensure to supplement tire pressure if it is insufficient or after long period driving.

Accelerated wear of crown middle part

Fault symptom:	Fault analysis	Countermeasures
Premature wear of crown middle part.	Excessive tire pressure will increase the load of unit ground contact area, and accelerate the wear to crown middle part. In addition, the ply cord withstands excessive tensile stress, leading to premature wear of tire.	Adjust the tire pressure to standard value if it is too high.

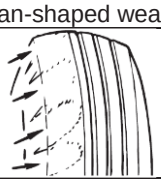
Sawtooth wear on crown		
Fault	Sawtooth wear on crown	
Symptom		
Cause	Incorrect toe-in	

Sawtooth wear on crown

Fault symptom:	Fault analysis	Countermeasures
The crown has sawtooth wear from outside to inside or reversely.	Such wear is related to improper adjustment of wheel toe-in, so this usually occurs to the steerable wheel. If the crown has sawtooth wear from outside to inside, the wheel toe-in is too large; if reversely, the wheel toe-in is too small.	The size of wheel toe-in will be changed if the suspension system is deformed or the joint is loosened. Therefore, eliminate the fault and adjust the excessive or small wheel toe-in to the specified value.

Crown outside or inside wear

Fault symptom:	Fault analysis	Countermeasures
Accelerated wear of tire outside or inside wall.	Accelerated wear of tire outside or inside wall is related to camber. If the outer side of the crown is worn, the camber is too large; if the inner side of the crown is worn abnormally, the camber is too small.	In this case, identify the causes of incorrect camber, and do troubleshooting accordingly to correct the camber.

Tire spots and fan-shaped wear		
Fault	Polished spot	Fan-shaped wear
Symptom		
Cause	Wheel dynamic imbalance	Transposition failure or improper suspension location

Local spot wear on tire

Fault symptom:	Fault analysis	Countermeasures
Local polished spots appear on tire tread, i.e.	This is likely to be caused by wheel dynamic imbalance. When the wheel has dynamic imbalance, wheel vibration will result in directional wear of tire, causing spot wear.	The wheel with spot wear is under dynamic imbalance condition, so dynamic balancing is required.

Fan-shaped wear on tire

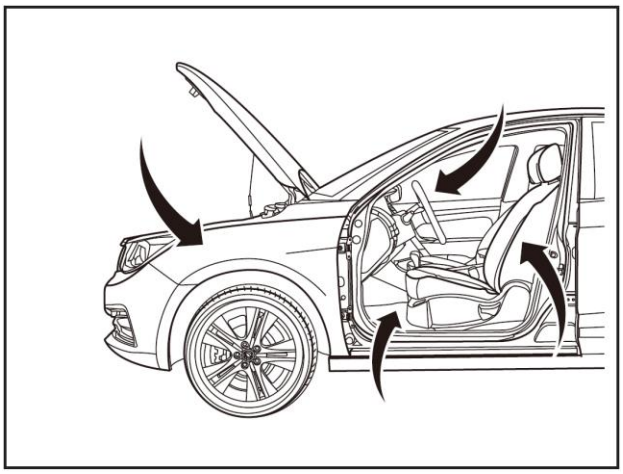
Fault symptom:	Fault analysis	Countermeasures
Fan-shaped wear occurred on one side of tire crown.	If the tire rotation is not performed for a long period or the suspension is located improperly, the fan-shaped wear will be liable to appear on the tire.	Do tire rotation regularly and eliminate suspension problems.

Excessive wear of individual tire

Fault symptom:	Fault analysis	Countermeasures
Wear of other tires on the same vehicle is small, while individual tire is worn severely.	Check the worn tire for suspension condition, wheel alignment, hub bearing clearance, wheel balance and rim deformation to find the cause for serious wear of individual tire; if the wear on individual tire of one side is excessive, it shows the wheel camber does not meet the standard. Large wheel camber will cause excessive wear on outside tire crown; small wheel camber will cause excessive wear on inside tire crown.	If improper alignment of individual wheel and excessive wheel load are caused due to abnormal suspension system of the over-worn tire and support deformation, check the independent suspension spring, shock absorber and wheel alignment to find the cause(s) and eliminate it. In case of excessive hub bearing clearance of the wheel, adjust or replace the hub bearing. If excessive wear is caused by too large dynamic load of individual tire due to wheel imbalance, then dynamic balancing should be conducted. If the wheel rim is deformed, replace it.

Tire bulge

Fault symptom:	Fault analysis	Countermeasures
Local bulging or projection on tire.	The tire pressure is high, and the cord is damaged due to local impact, causing tire bulge.	轮胎气压过高导致胎体应力过大或人 If tire bulge is caused by excessive stress in tire body due to extra-high tire pressure or by bead scratch during manual tire repair or tire disassembly, replace the tire. or tire disassembly, replace the tire. In addition, the countermeasure to eliminate or reduce tire bulge is to inflate the tire to the specified pressure and remove or refit the tire with the special tire changer.

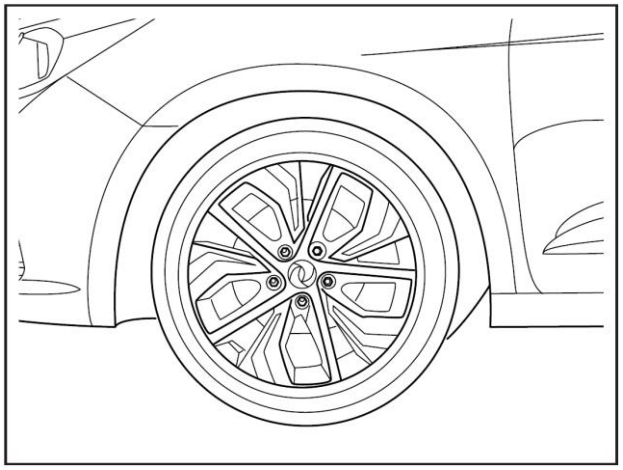


Removal and Refitting of Wheels

1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

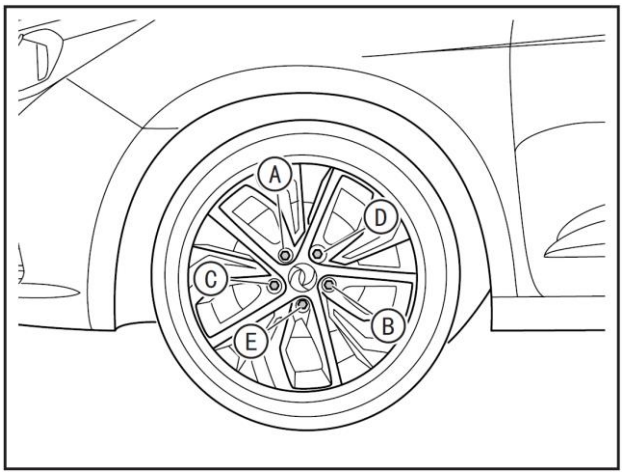


2 - Removal

- Turn off the ignition switch and apply the parking brake.

⚠ CAUTION

- **Never remove the secured wheel by heating; otherwise, the service life of wheel will be shortened due to heating and the wheel bearing will be damaged.**
- Use the 17mm socket to loosen the bolt by approximately 180° (half a turn).
- Lift the vehicle and remove the wheel.



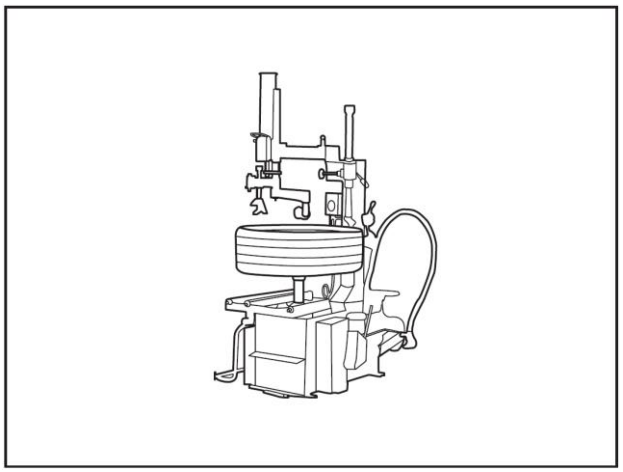
3- Refitting

- Refit the wheel and tighten the wheel nuts temporarily.
- Lower the vehicle.
- Tighten the wheel nuts to 90±15 N·m in order of "A"–"B"–"C"–"D".

⚠ CAUTION

- **Before refitting the wheel, ensure to wipe clean the corrosive substances from the mounting surfaces of wheel and brake drum or disc with a wire brush. If good contact between the metals on the mounting surface of wheel is not obtained during refitting, the wheel bolts will be liable to get loosened, consequently causing wheel falling off during future driving.**

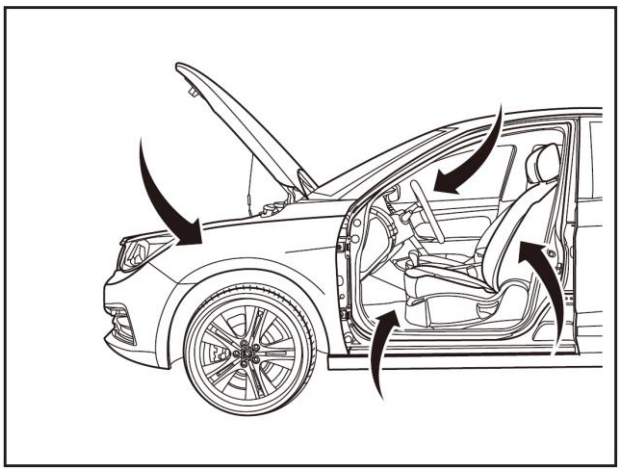
Removal and Refitting of Tires



- Remove or refit the tire with a tire changer. Please observe the manufacturer's instruction when operating the tire changer. Do not replace the tire with hand tool or tire removal & refitting pry bar only, as this will damage the tire edge or wheel rim.
- Ensure to remove the excessive lubricant from the rim and bead edge with a wire brush or thick steel wool and wipe clean the slight rust with a waste rubber. Always lubricate the tire edge properly with designated lubricant prior to tire removal or refitting.

⚠ WARNING

- **Do not over-inflate the tire. When the bead expands beyond the safety limit of wheel rim, it may crack and cause serious personnel injury.**
- **Never exceed the specified pressure when inflating. If the tire bead cannot be seated stably under the specified pressure, deflate, lubricate and inflate the tire again.**
- Over-inflation will cause bead crack and even serious personnel injury.
- After refitting the tire, refit the valve core, inflate the tire to the specified pressure and check the bead for full seating.

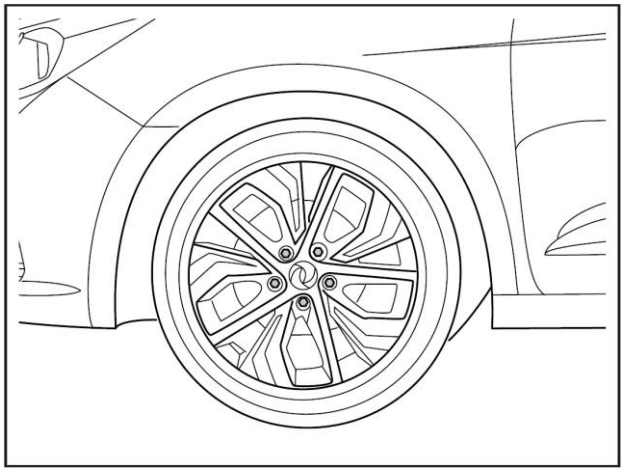


Wheel Alignment Procedure

1 - Protection

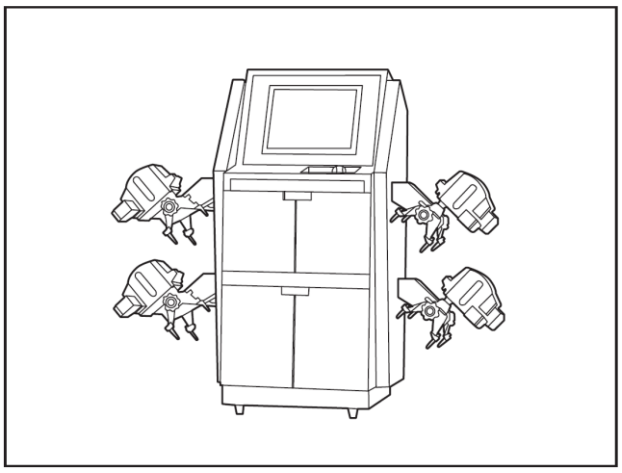
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



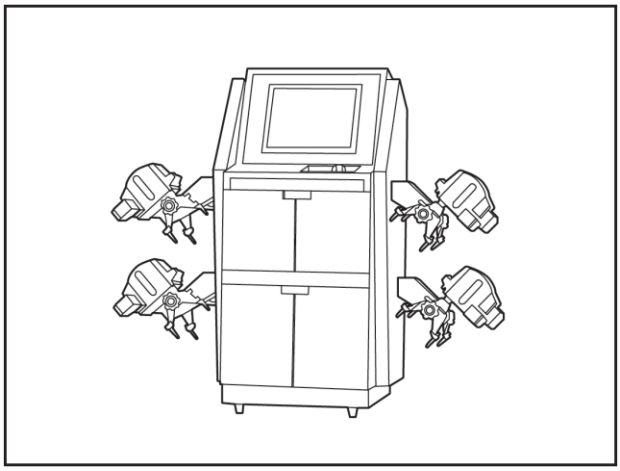
2- Checks before alignment

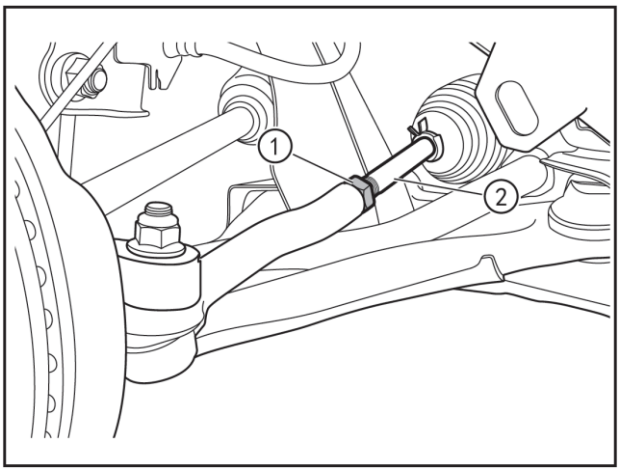
- Tire checks:
- Check the model of tires on the same axle;
- Check the pressure of tires on the same axle;
- Check if tires on the same axle are similarly worn;
- Check the dynamic balance and radial runout.
- Shock absorber checks:
- Check the shock absorber for oil leakage (by visual inspection or bounce test);
- Check if the upper support bearing of shock absorber incurs large clearance;
- Check bolts for looseness;
- Check rubber bush or damping block for damage.
- Wheel hub bearing checks:
- Check the bearing clearance (that is, check if the wheel incurs horizontal movement), and if any problem is found, replace or adjust.
- Checks of swing arm, bush and ball joint:
- Check swing arm for deflection;
- Check swing arm bush for wear and looseness;
- Check the ball joint for axial or radial displacement, and if any, replace. (For the purpose of this check, the vehicle has to be lifted)



3- Computer inspection

- Drive the vehicle onto the four-wheel alignment station, stop the vehicle between two turntables of the aligner, keep the vehicle in straight running posture, and pull up the parking brake lever.
- Press down the brake pedal using an appropriate tool, preventing the accuracy of measured data from being affected when the wheel moves during measurement.
- Make preparations, including installation of aligner, selection of vehicle, registration of customer information, and centering of steering wheel.
- Read data according to the computer operation sequence, and determine according to the magnitude of deviation to make adjustment or part replacement.





4- Service data

- The four-wheel alignment parameters at curb weight are listed below:

Name	Items	Parameters
Front suspension	Front overhang	935mm
	Camber angle	-0°05′±45′
	Kingpin inclination angle	9°50′±45′
	Kingpin caster angle	4°45′±45′
	Toe-in	IN1mm

Name	Items	Parameters
Rear Suspension	Rear overhang	1045mm
	Camber angle	-1°30′±30′
	Toe-in	IN3.5mm

5- Service and adjustment

- Determine to make adjustment or part replacement according to the deviation of alignment angle.
- The adjustment of alignment angle should be performed from rear to front, that is to say, the front wheel should be the last one for toe-in adjustment, because the alignment angle adjustment of the front wheel will cause the thrust angle coincide with the vehicle centerline and thus affect the toe-in of front wheel.
- Adjust the camber of rear wheel first as follows: install the camber adjusting tool on the shock absorber, and loosen or tighten the camber adjusting tool according to the alignment angle, so that the camber can be set as specified; after the standard camber is reached, tighten the nut of shock absorber.
- Adjust the toe-in of rear wheel as follows: increase and decrease the toe-in by adjusting the length of steering tie rod; use the 20mm open-end wrench to loosen the fixing nuts (1) on both ends of adjusting tube of steering tie rod, and then use the 13 mm open-end wrench to turn the adjusting tube (2) until the standard toe-in is reached, and then tighten the fixing nut (1). Pay attention that the toe-in of two wheels shall be the same.
- Adjust the toe-in of front wheel as follows: check before toe-in adjustment that the seal of steering gear rack is not deflected; with steering wheel held down, loosen the fixing screw of steering tie rod, and turn the steering tie rod until the standard toe-in is reached. Pay attention that the toe-in of two wheel shall be the same. Check if the end of the steering tie rod is at a right angle, and then tighten the fixing screw to 45N·m.

⚠ CAUTION

- **After the alignment angle described above are adjusted, do road test, and pay attention to the stability and maneuverability of the vehicle during the test.**

August 2018

E70 Service Manual

7. Brake

7.1 Braking System

7.2 Parking Brake System

7.3 Brake Control System

7

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After-sales Service Technical Document

7.1
Braking System

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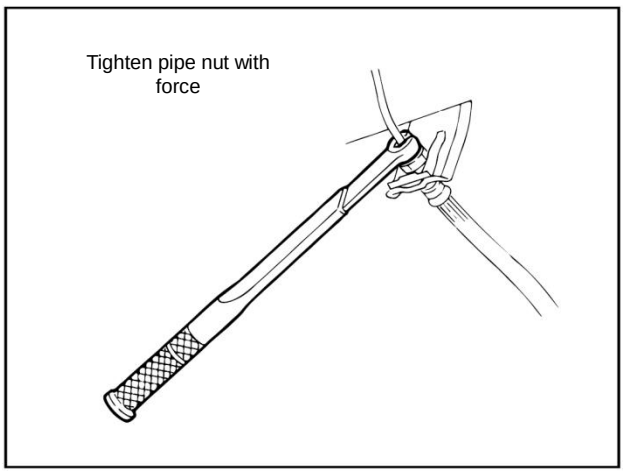
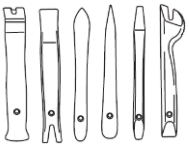
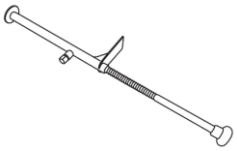
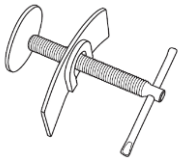


Precautions for service

- It is recommended to use brake fluid specified by Dongfeng Passenger Vehicle Company.
- Never reuse the discharged brake fluid during repair.
- Brake fluid is toxic and corrosive, so never spill it onto the body paint, or the paint will be damaged. If the brake fluid spills onto the paint, please wash it immediately with water and wipe it off. Prevent the brake fluid from contacting the skin, and always wear oil-proof gloves when servicing brake master cylinder, brake wheel cylinder and pipelines. If the brake fluid spills onto skin or eyes, please wash immediately with water and seek medical advice.
- Use new brake fluid to clean or wash all the parts of master cylinder, brake caliper and wheel cylinder.
- Never use gasoline, kerosene or other mineral oil. Otherwise, they will damage the rubber parts inside the hydraulic system.
- Use a pipe nut wrench for brake hose removal, and use an oil pipe nut torque wrench for refitting.
- Check the torque while refitting the brake pipe and hose.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF1102	Interior trim removal tool		For removing interior trim
AX70903	Brake pedal suppressor		For holding down the brake pedal
BF0901	Front brake caliper piston adjustment tool		For returning front brake caliper piston

Technical Parameters

Recommended Fluids

Position	Name	Grade	Consumption per vehicle
Braking System	Brake fluid	4606 (DOT4)	850ml

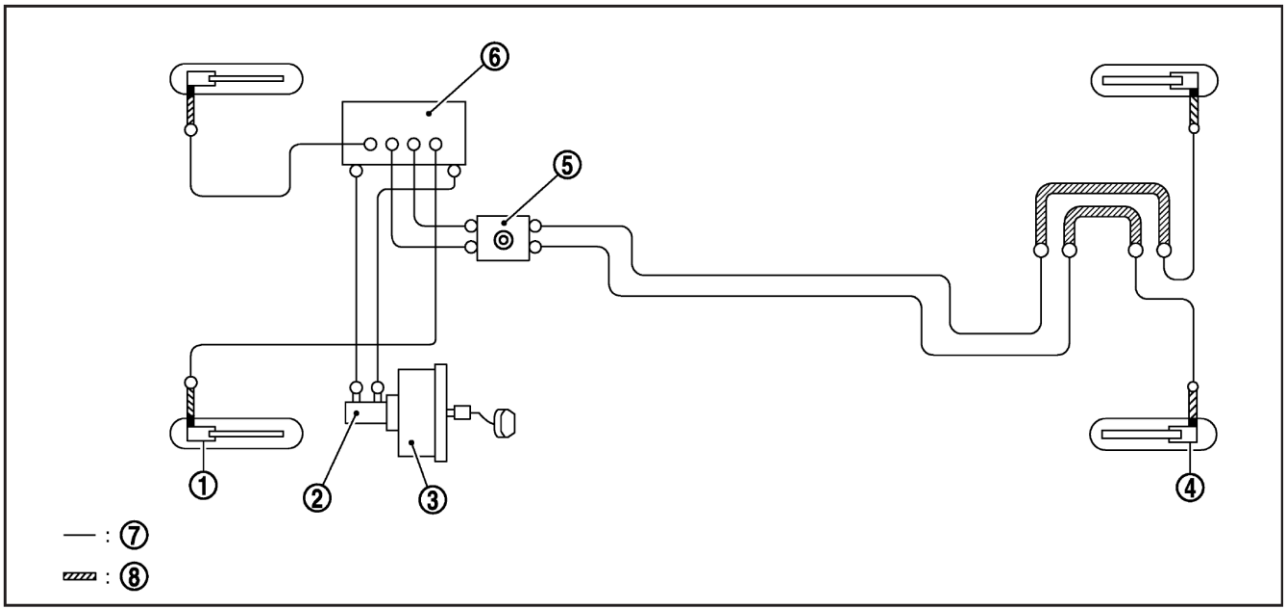
Service Parameters

Items	Measurement	Condition	Standard value	Limit value
Brake disc	Thickness (mm)	Front/rear	28.0/10.3	26/8.3
	Runout (mm)	Front/rear	-	0.035/0.010
Brake pad	Thickness (mm)	Front/rear	11.6/9	2.0/2.0

Tightening Torque

Sequence number	Items	Torque (N·m)
1	Bleed bolt	7.8
2	Brake master cylinder fixing nut	13.2
3	Connecting bolt of brake hose and brake master cylinder	16.2
4	Vacuum booster fixing nut	14.2
5	Front brake hose & front brake caliper connecting bolt	14.2
6	Front brake hose & brake steel tube connecting nut	18.2
7	Brake caliper fixing bolt	26.5
8	Front brake caliper bracket fixing bolt	84.3
9	Front brake disc fixing bolt	10
10	Rear brake hose connecting bolt	14.2
11	Rear brake caliper fixing bolt	43.1
12	Rear brake caliper bracket fixing bolt	84.3
13	Connecting bolt of rear brake hose and rear brake caliper	31.4

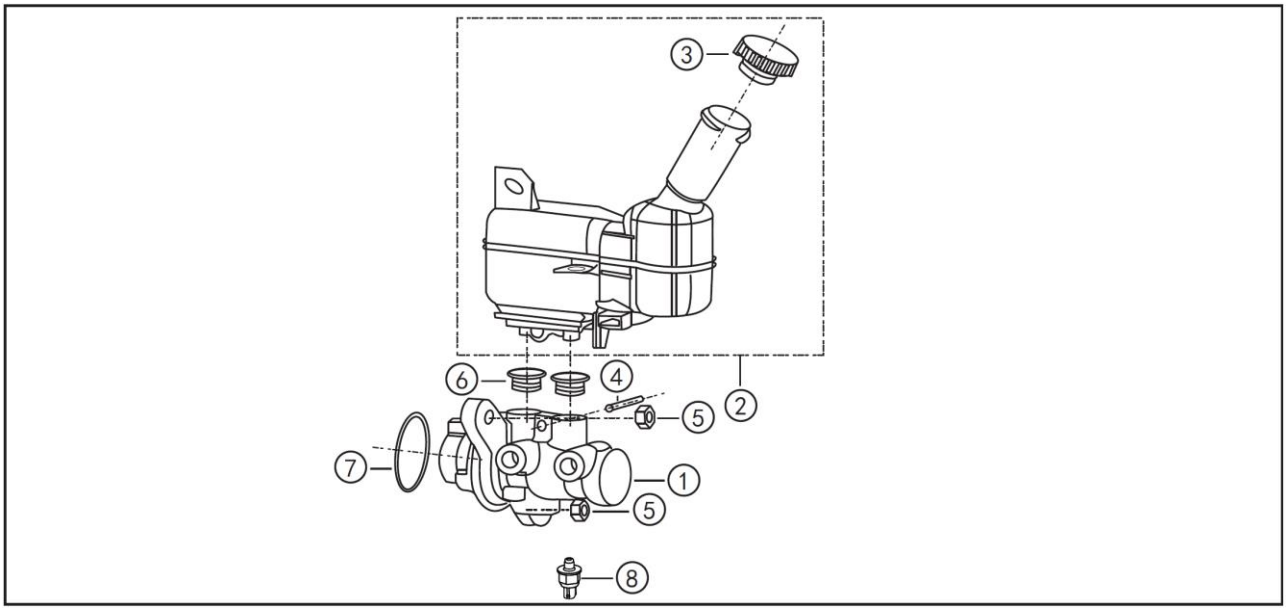
Introduction to Brake System



1. Front disc brake	4. Rear disc brake	7. Brake pipe
2. Brake master cylinder	5. Joint	8. Brake hose
3. Brake booster	6. ABS actuator & electrical unit (control unit)	

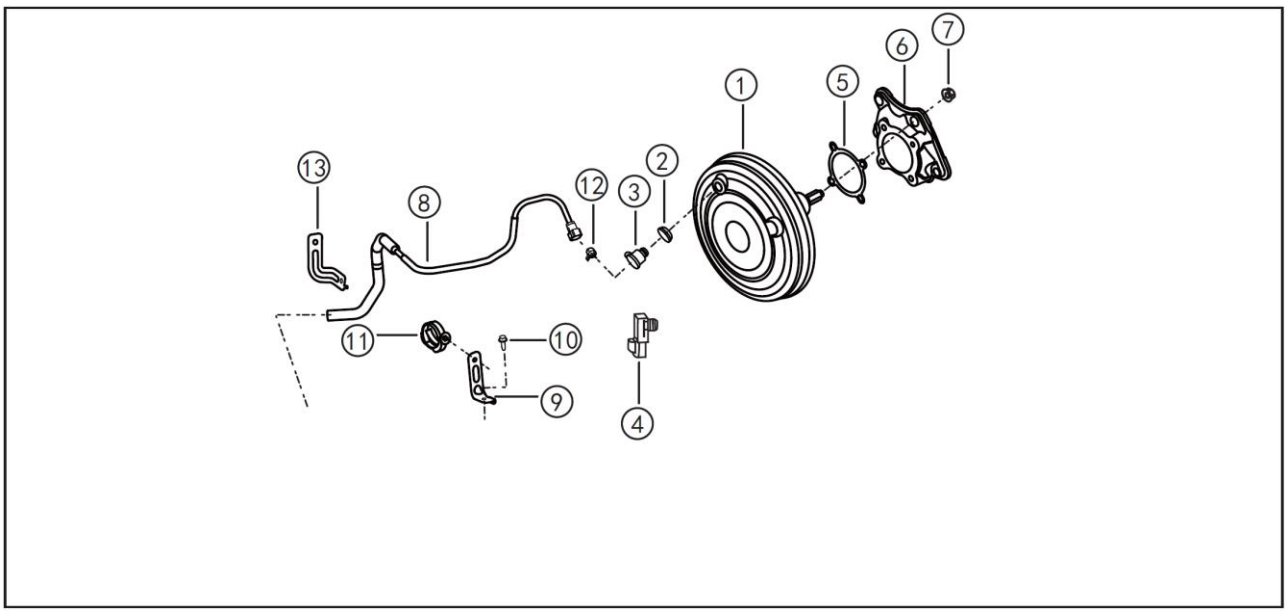
Structure and Features

Brake Master Cylinder Assembly



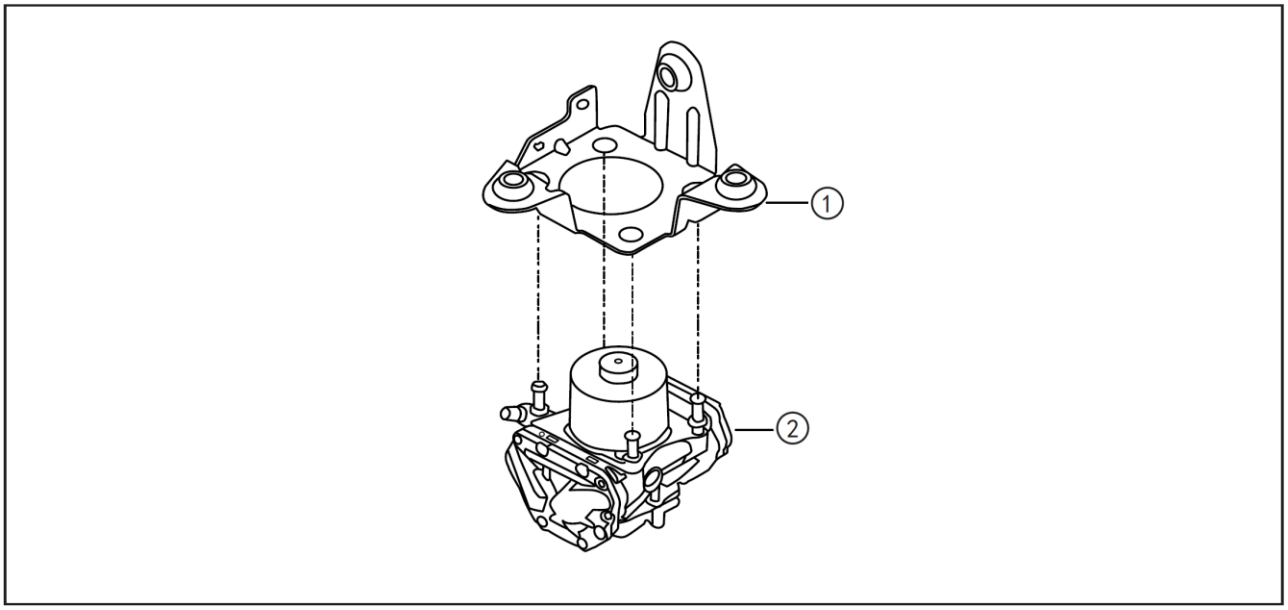
1. Brake master cylinder	4. Dowel pin	7. O-ring
2. Brake fluid reservoir	5. Locking nut	8. Level sensor
3. Brake fluid reservoir cap	6. Sealing seat	

Brake Booster Assembly



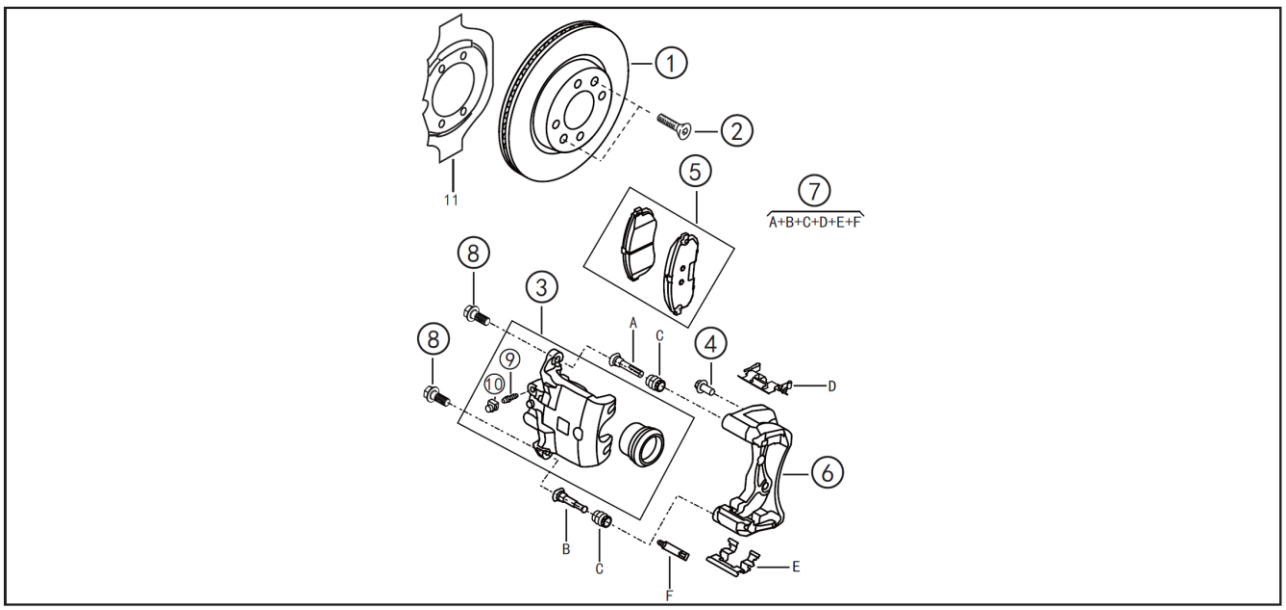
1. Vacuum booster assembly	6. Vacuum booster mounting bracket	11. Plastic support clip
2. Sealing ring	7. Nut	12. Pipe clamp
3. Check valve	8. Vacuum booster air inlet pipe	13. Brake vacuum inlet pipe bracket
4. Vacuum sensor	9. Bracket	
5. Vacuum booster gasket	10. Bolt	

Brake Vacuum Pump Assembly



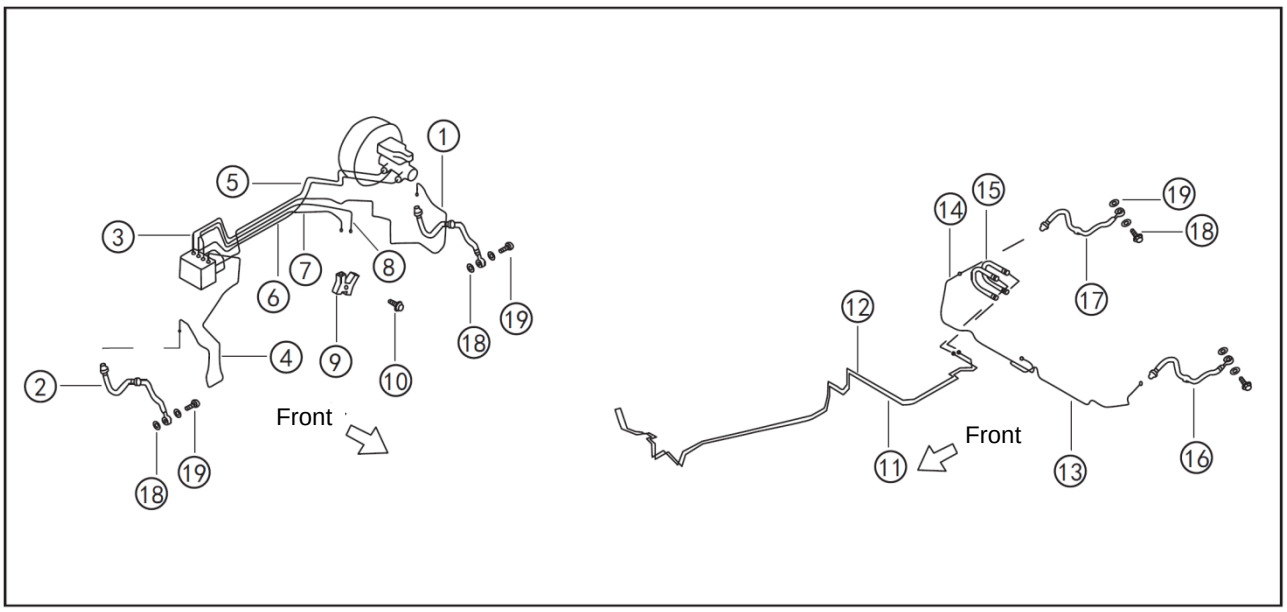
1. Vacuum pump bracket	2. Electric vacuum pump	

Front Brake Assembly



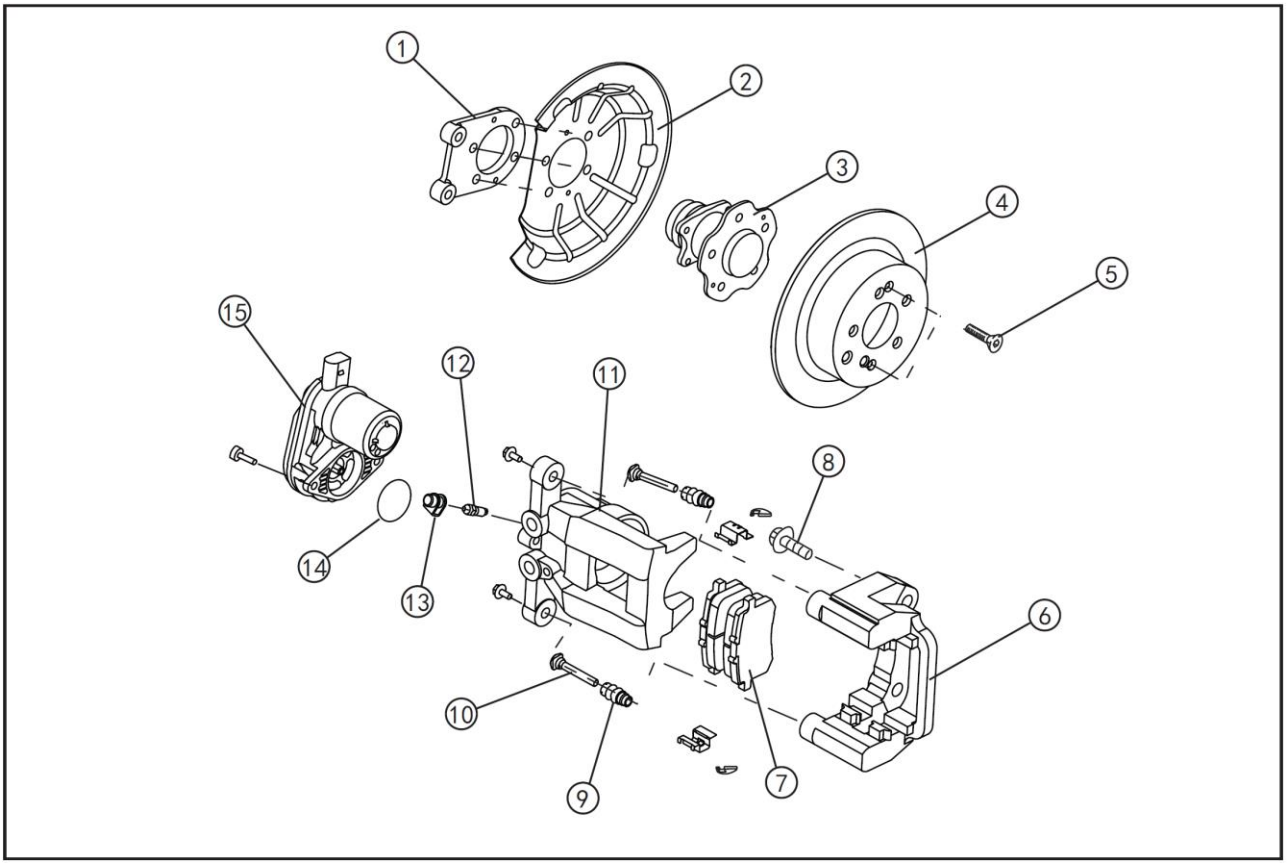
1. Front brake disc	5. Front brake lining	9. Bleed screw
2. Screw	6. Brake wheel cylinder bracket	10. Bleed screw cap
3. Front brake wheel cylinder	7. Front caliper repair kit	
4. Bolt	8. Bolt	

Brake Pipe Assembly



1. Front brake hose	8. Brake pipe	15. Rear brake middle hose
2. Front brake hose	9. Brake pipe connector	16. Rear brake hose
3. Brake pipe	10. Bolt	17. Rear brake hose
4. Brake pipe	11. Brake pipe	18. Gasket
5. Brake pipe	12. Brake pipe	19. Eye bolt
6. Brake pipe	13. Brake pipe	
7. Brake pipe	14. Brake pipe	

Rear Brake Assembly



1. Rear brake caliper bracket	6. Rear brake wheel cylinder bracket	11. Rear brake caliper
2. Rear brake disc cover	7. Rear brake lining	12. Bleed screw
3. Rear hub bearing	8. Bolt	13. Bleed screw cap
4. Rear brake disc	9. Guide pin dust cover	14. O-ring
5. Screw	10. Guide pin	15. Motor reducer

List of Fault Symptoms and Their Troubleshooting Methods

- The list below is helpful to find the symptoms and causes. If necessary, repair or replace these parts.

Possible causes & suspected parts			Brake lining damage	Uneven wear of brake lining	Damaged gasket	Brake disc unbalance	Brake disc damage	Brake disc runout	Brake disc deformation	Brake disc deviation	Brake disc rust	Thickness change in brake disc	Axle and Suspension	Tires	Wheels	Drive shaft	Steering
Symptoms	Brake	Noise	×	×	×								×	×	×	×	×
		Jitter				×							×	×	×	×	×
		Swing, offset				×	×	×	×	×	×	×	×	×	×		×

×: Applicable

Common fault troubleshooting

Fault symptom:	Possible causes	Countermeasures
Insufficient brake force	Brake pipeline leaking	Find out leaking position and repair it
	Brake disc or pad has oil stains	Clean or replace
	Brake overheating	Determine cause and repair it
	Severe wear of brake pad	Replacement
	Brake caliper damage	Repair or replace
	Brake caliper assembly damage	Repair or replace
	Air invaded in the system	Exhaust
	ABS fault	Check the system and please replace it if necessary
Uncoordinated brake force	Brake pad has oil stains or is wet	Replacement
	Brake disc is out of round	Replacement
	Different tire pressure	Inflate them to be the same pressure
	Brake caliper failure	Repair or replace
	Incorrect front wheel alignment	Adjust as specified
	Brake pipe or hose is blocked	Check if hose is softened or pipeline is damaged Replace with new hose and/or double-wall steel pipe
	Brake caliper fault	Check if the caliper moves freely, if the piston moves smoothly or if the brake caliper sliding pin is lubricated poorly
	Suspension assembly looseness	Check all suspension components
	Brake caliper looseness	Check and tighten with the specified torque
Noise (ragged sound before braking)	Front brake pad wear exceeds limit	Replace brake pad
	Brake disc wears to the limit	Replace brake pad
Excessive pedal travel	Partial brake system malfunction	Check brake system and repair if necessary
	Insufficient fluid in master cylinder reservoir	Check the warning indicator, and check the exhaust system (if equipped), for leakage or air ingress. Fill reservoir with the specified brake fluid
	Air invaded in the system (weakly when depressing pedal)	Exhaust
	Rear brake system unadjustable (automatic clearance adjusting mechanism fault)	Adjust rear brake. Repair automatic clearance adjusting mechanism
Brake locking (for vehicle equipped with ABS)	ABS fault	Refer to "ABS Check" for checking the system

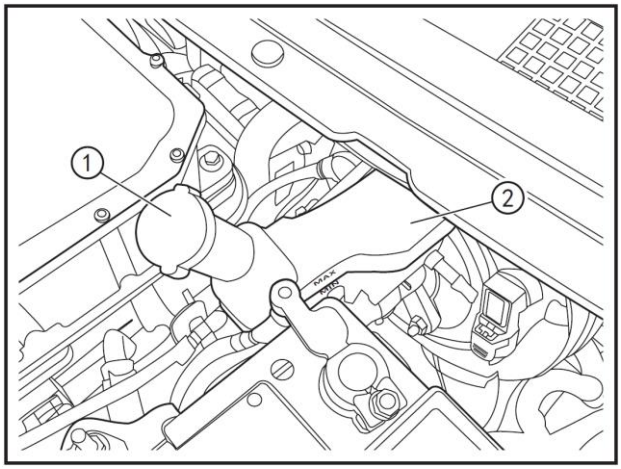
Fault symptom:	Possible causes	Countermeasures
Brake dragging (all brakes are dragging at the moment the pedal is being released)	Brake master cylinder piston returns abnormally	Replace master cylinder
	Brake pipe or hose is blocked	Check if hose is softened or pipeline is damaged Replace with new hose and/or new brake pipe
	Parking brake adjusting device fault	Check and adjust to the correct position as specified
	Brake return spring pulling force decreases or is broken	Replacement
	Parking brake steel cable or connector is unsmooth	Repair or replace
	Seizure of brake caliper or brake caliper piston	Repair as needed
	Brake caliper piston oil seal wears	Replace piston oil seal
	Free height of brake pedal is improper	Check free height of brake pedal
Pedal vibration (pedal vibrates when braking)	Hub bearing is damaged or loose	Replace hub bearing
	Steering knuckle or rear spindle is deformed	Replace steering knuckle or rear spindle
	Radial runout on sides of brake disc exceeds limit	Check each index. If the specification is not satisfied, replace brake disc or do machining
	Parallelism between brake pad and brake disc exceeds limit	Check each index. If the specification is not satisfied, replace brake disc or do machining
Brake noise	Wear or deformation of brake shoe	Replace brake pad
	Front hub bearing is loose	Replace front hub bearing
	Brake bottom plate is deformed or fixing bolt is loose	Replace or tighten the fixing bolt
	Brake disc wears to the limit	Replace brake pad
Brake warning lamp comes on after start	Brake fluid is insufficient	Add brake fluid
	Brake pipeline has leakage	Find out leaking position and repair it, and add brake fluid
	Brake warning lamp wire fault	Repair the circuit
	Brake system fault.	Check Brake System
Lighting of brake warning light when braking	Brake pipeline has leakage	Find out leaking position and repair it, and add brake fluid
	Brake fluid is insufficient	Add brake fluid

Change of Brake Fluid

Mechanical operations

⚠ CAUTION

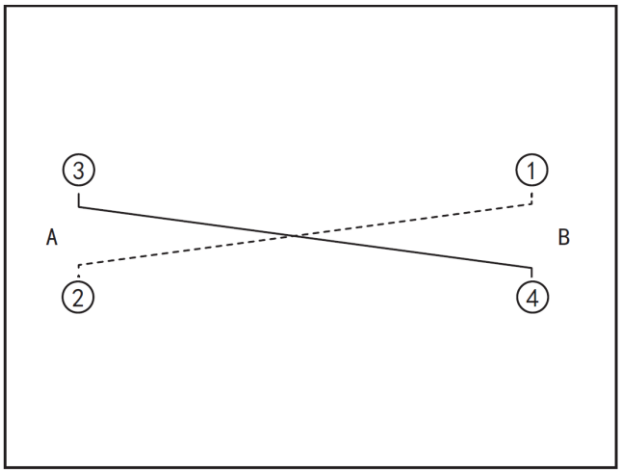
- **Before changing the brake fluid, please verify if the brake system has leakage, and if any, repair the leaked position first and then change the brake fluid.**



- Open the brake fluid reservoir cover (1), and use a sucker to extract the old brake fluid from the reservoir (2).
- Fill the reservoir with new brake fluid.

⚠ CAUTION

- **Add brake fluid specified by Dongfeng Passenger Vehicle Company.**
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint, or the paint will be damaged. If the brake fluid spills onto the paint, please wash it immediately with water and wipe it off.**
- **If the brake fluid is added after draining, bubbles are expected. Please wait 2-3min before starting to bleed.**

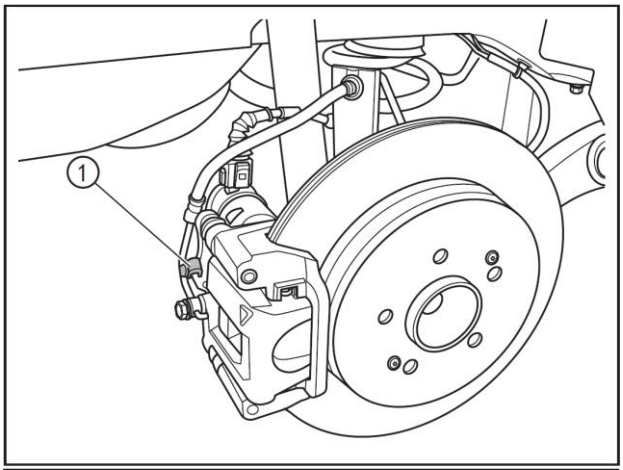


1.	Right rear brake caliper	4.	Left rear brake caliper
2.	Left front brake caliper	A: Front	
3.	Right front brake caliper	B: Rear	

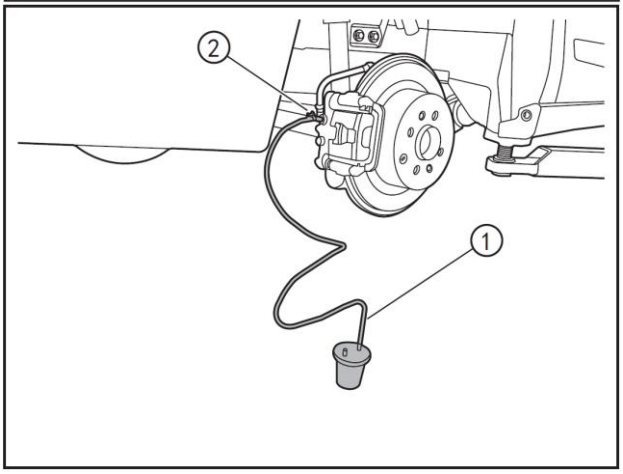
- Discharge the old brake fluid in the order shown in the figure when bleeding.

⚠ CAUTION

- **First bleed the rear brake caliper farthest away from the brake master cylinder, and then bleed the front brake caliper in the same pipeline. Bleed the other pipeline with the same methods.**
- **The brake fluid should be changed by two persons, with one person depressing the brake pedal in the vehicle, and the other bleeding each wheel cylinder.**



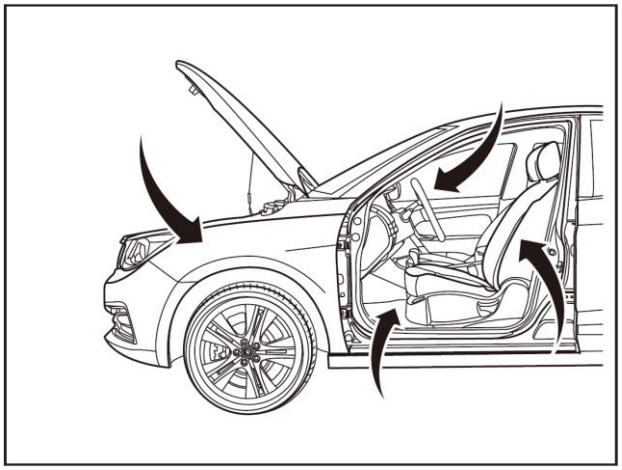
- Remove the drain plug (1) on the brake caliper.



- Sleeve one polyethylene pipe (1) with the same length as bleed bolt onto the bleed bolt, and place its the other end into the fluid container.
- Depress the brake pedal continuously several times. Then depress the brake pedal to the bottom without release, and loosen the bleed bolt (2) of the brake caliper with a pipe wrench of 8mm for 1/3~1/2 turn to discharge the brake fluid.
- When the wheel cylinder incurs almost no fluid pressure, re-tighten the bleed bolt.
- Repeat the above operations until no bubble is found in the brake pipe and the fluid color becomes clear.
- When there is no bubble, keep depressing the brake pedal, and tighten the bleed bolt to 7.8 N·m.
- Refit the drain plug cover.
- Bleed the brake calipers of other wheels as described above.
- While discharging the brake fluid, pay attention to the fluid level in the reservoir, and add in time if the fluid is insufficient.
- Clear the dirt around the bleed bolt with a wire brush before installing the polyethylene pipe.
- The polyethylene pipe should be firmly sleeved onto the bleed bolt.
- Prevent the residual fluid from spilling when bleeding, and a piece of cloth can be placed under the bleed bolt.
- After bleeding, depress the brake pedal and check the brake pipeline for leakage.
- Add the brake fluid to the MAX mark.

⚠ CAUTION

- **After changing the brake fluid, check if the brake pedal force is weak, and if so, repeat the bleeding operation.**
- **When servicing the brake master cylinder, brake caliper and brake pipeline, always do bleeding operation. And the bleeding operation should be the same as the above.**

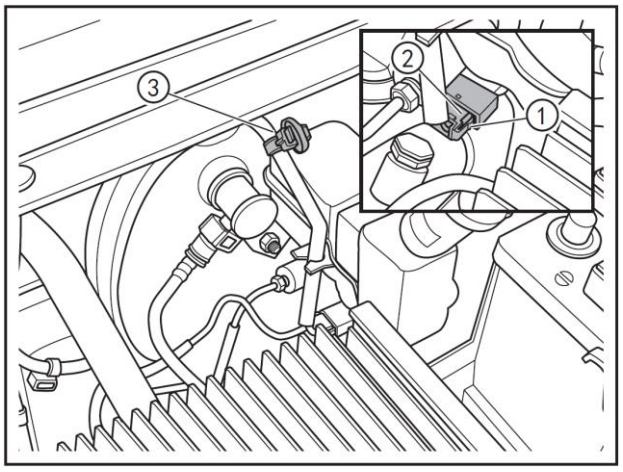


Removal and Refitting of Brake Master Cylinder

1 - Protection

Place protective pads at following locations:

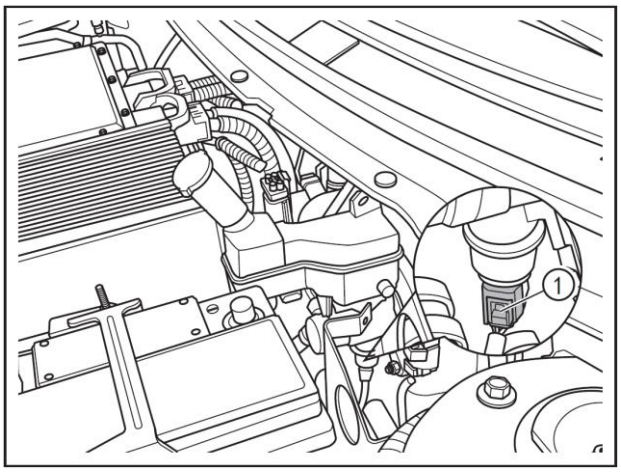
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



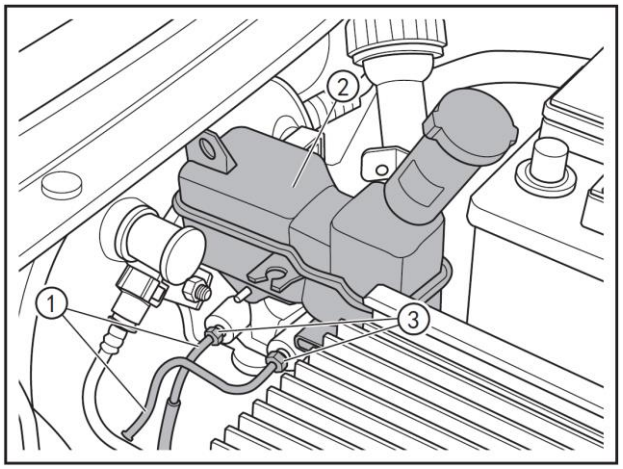
2 - Removal

⚠ CAUTION

- **Before disassembling the brake master cylinder, clear the foreign matter and dust around the reservoir, wire harnesses, and pipe interfaces.**
- Turn off the ignition switch, and apply the parking brake.
- Discharge the brake fluid. (Refer to "Change of Brake Fluid" in this section.)
- Disconnect the battery negative cable.
- Press in the clips (1) of connector, and disconnect the brake fluid level sensor connector (2).
- Use the long-nose pliers to clamp the end of clip (3), and detach the wire harness clip of brake fluid level sensor from the mounting hole on the bracket of reservoir.



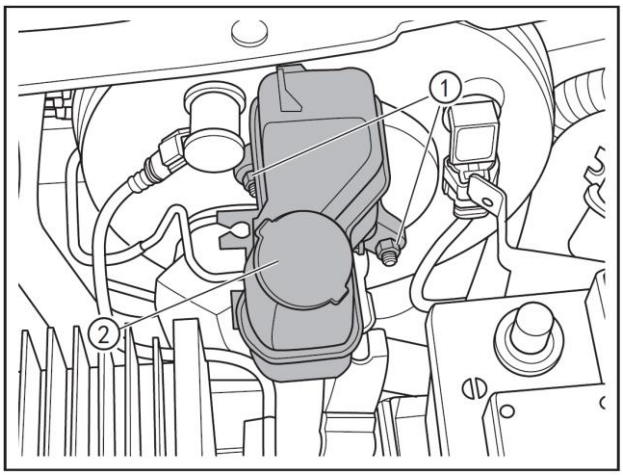
- Press in the connector clip, and then disconnect the brake pressure sensor connector (1).



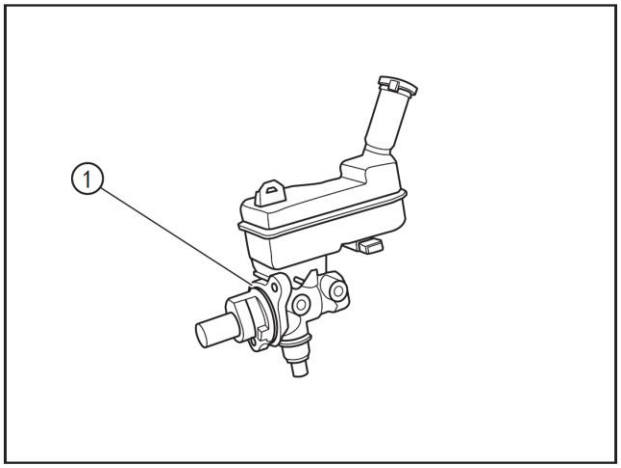
- Use the 10mm pipe wrench to remove the connecting bolts (3) of brake hose (1) and brake master cylinder (2).

⚠ CAUTION

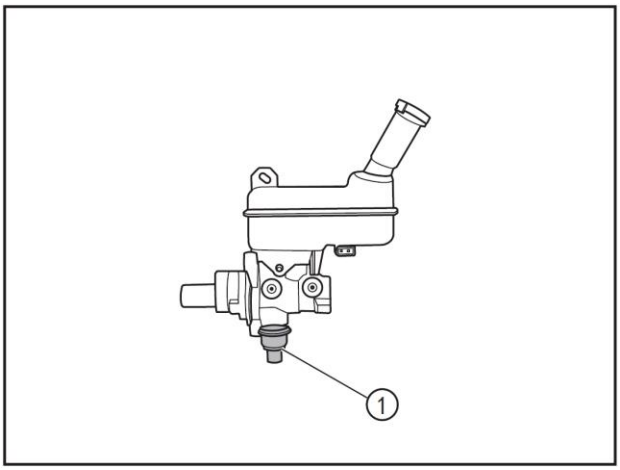
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **Before removing the bolts (3) connecting brake pipe and brake master cylinder, remove the impurities and dust around the hose connection.**
- **When disconnecting the brake pipe, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**
- **After the removal, wipe off the brake fluid spilled onto the body, and plug the end of brake pipe.**



- Remove 2 fixing nuts (1) of the brake master cylinder with the 13 mm socket;
- Remove the brake master cylinder and brake fluid reservoir assembly (2).



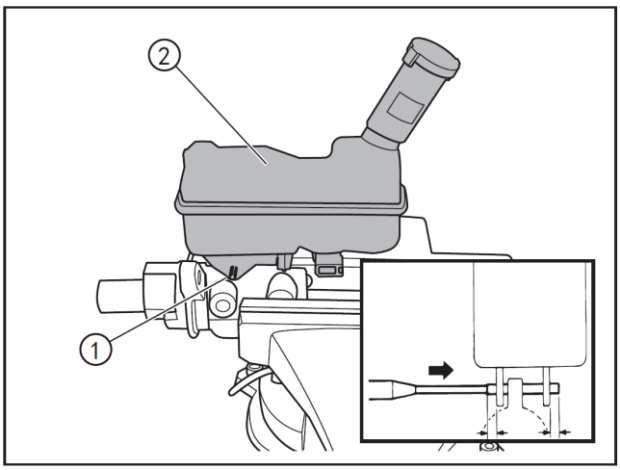
- Take the O-ring (1) out of the brake master cylinder.



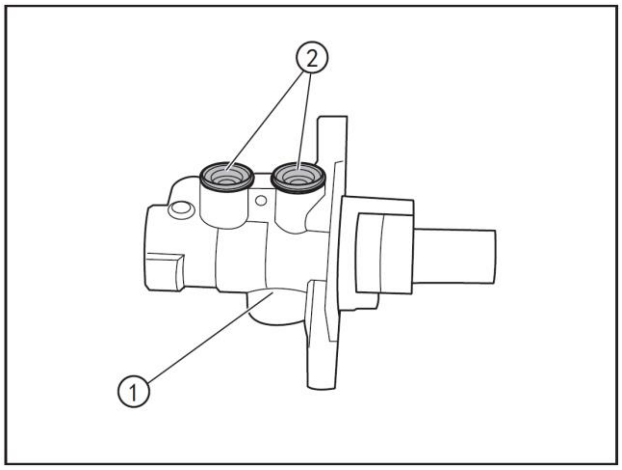
- Remove the brake pressure sensor (1) with a 24mm open-end wrench.

⚠ CAUTION

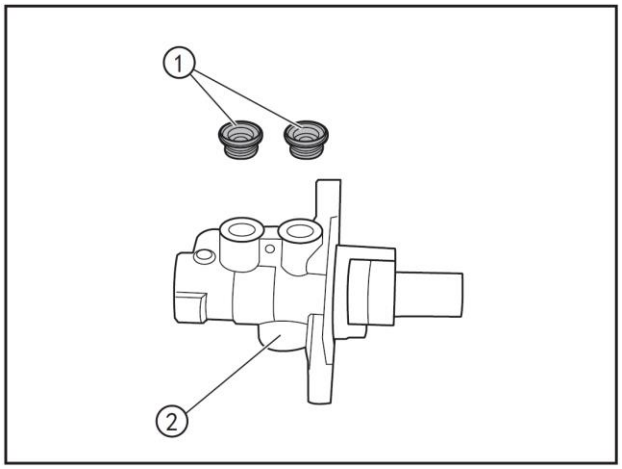
- **When disconnecting the brake pressure sensor, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**



- Use the 4mm punch to knock out the dowel pin (1) of brake fluid reservoir as indicated.
- Shake the brake fluid reservoir (2) from side to side, and then pull it out upward.

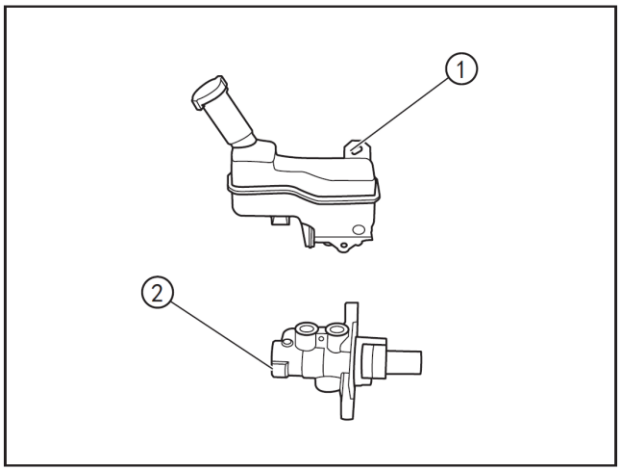


- Take the spring washer (2) out of brake master cylinder (1).

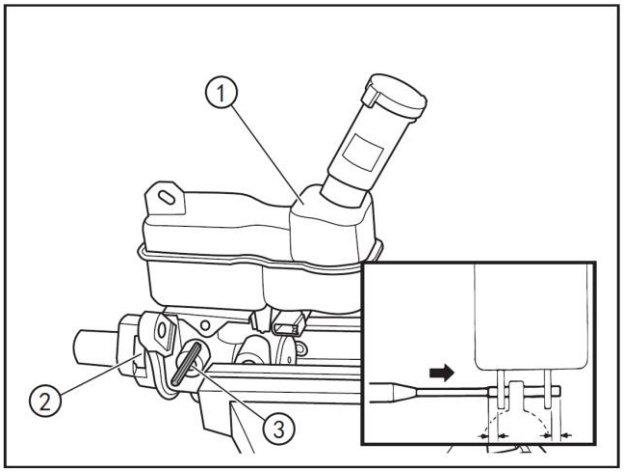


3- Refitting

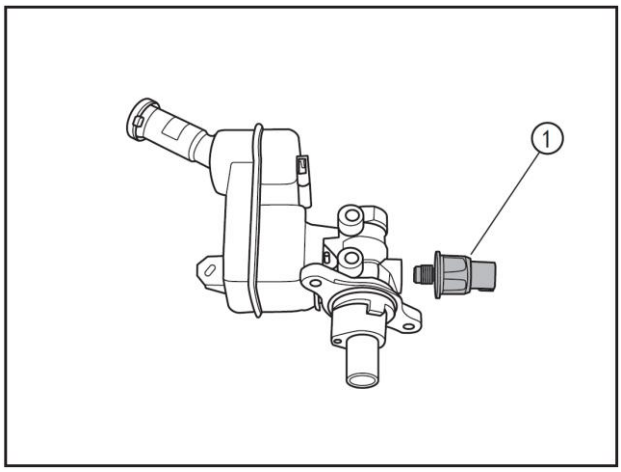
- Replace with new spring washer (1), and install it to the brake master cylinder (2).



- Refit the brake fluid reservoir (1) onto the brake master cylinder (2).



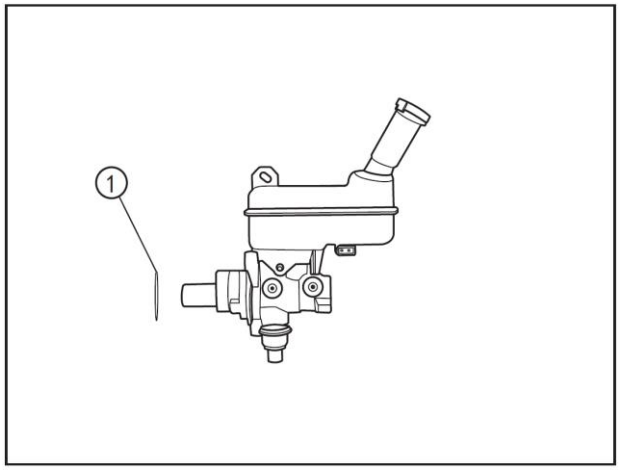
- Refit the brake fluid reservoir (1) onto the brake master cylinder (2).
- Use the 4 mm punch to refit the dowel pin (3) of brake fluid reservoir as indicated, and leave the same distance at both ends of dowel pin.



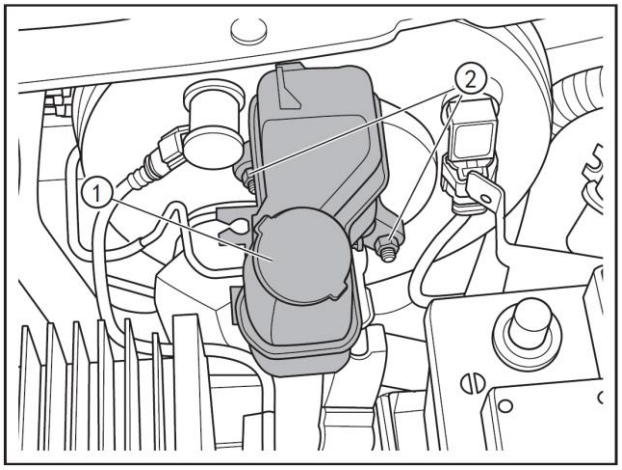
- Refit the brake pressure sensor (1), and tighten it with the 24mm open end wrench.

⚠ CAUTION

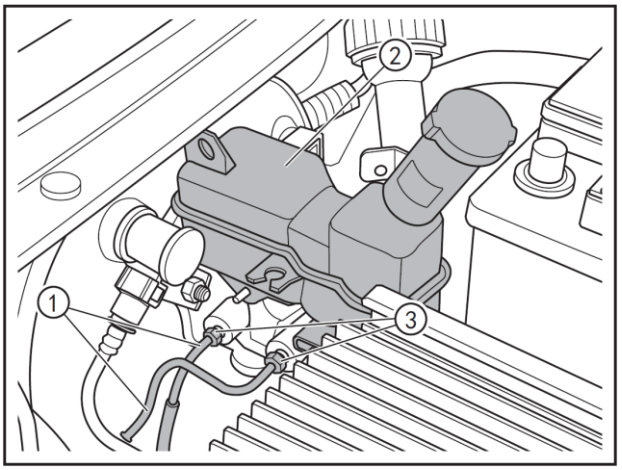
- **Apply a little amount of anti-locking compound onto the threads when refitting the brake pressure sensor.**



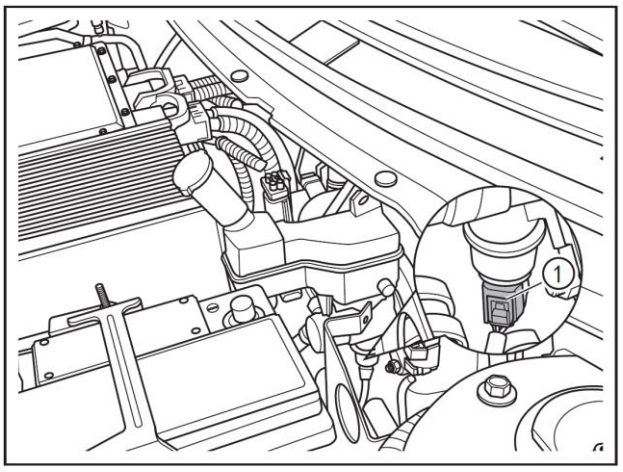
- Replace with a new O-ring (1).



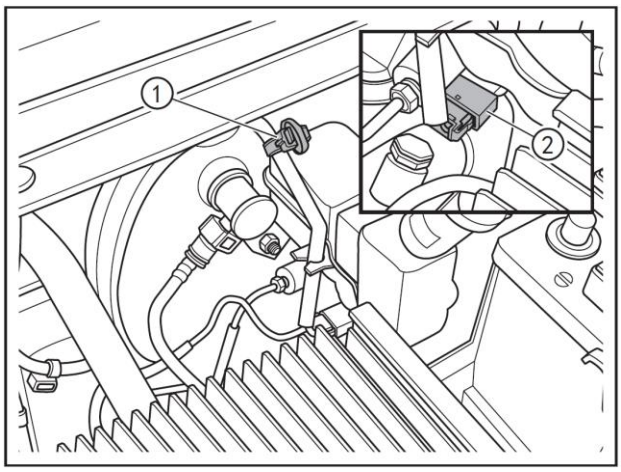
- Refit the brake master cylinder and brake fluid reservoir assembly (1).
- Tighten the 2 fixing nuts (2) of brake master cylinder with the 13 mm socket. The tightening torque of fixing bolt of brake master cylinder is 13.2N·m.



- Reconnect the brake pipe (1) onto the brake master cylinder (2).
- Use the 10mm pipe wrench to tighten the connecting bolts (3) of brake pipe and brake master pump. The tightening torque of the connecting nut is 16.2N·m.

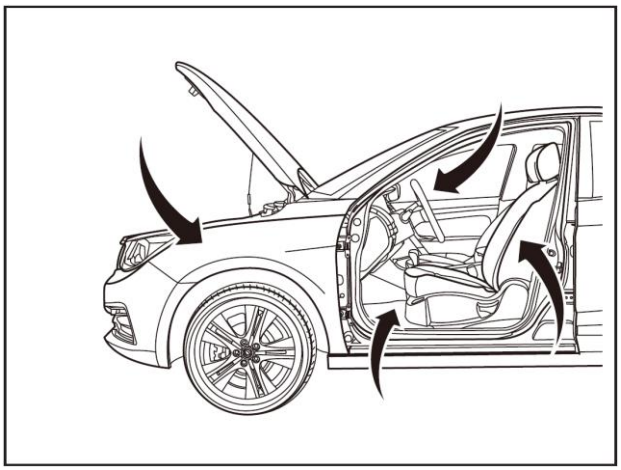


- Refit the brake pressure sensor connector (1).



- Refit the wire harness clip (1) of brake fluid level sensor into the mounting hole on the brake fluid reservoir upper bracket.
- Refit the brake fluid level sensor connector (2).

- Connect the battery negative cable.
- Add brake fluid. (Refer to "Change of Brake Fluid").
- After the adding is done, wipe away any brake fluid on the pipe connecting joints of brake master cylinder.
- Depress the brake pedal to the bottom without release for more than 1min; check if brake fluid seeps out of the connection of the brake master cylinder pipelines, and if any, re-tighten the joint bolt.



Removal and Refitting of Brake Pressure Sensor

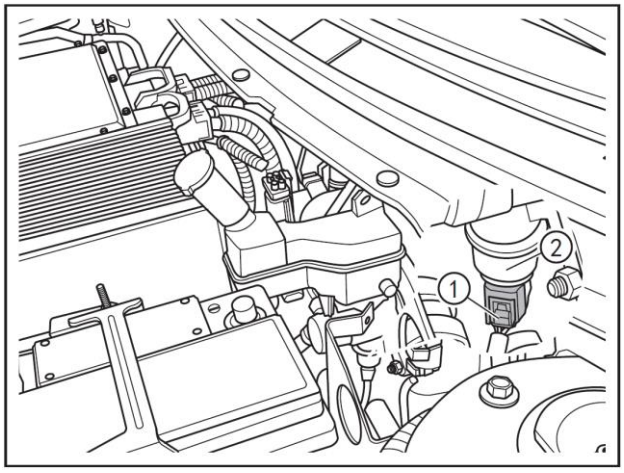
1 - Protection

Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

2 - Removal

- Turn off the ignition switch, and apply the parking brake.
- Discharge the brake fluid. (Refer to "Change of Brake Fluid" in this section.)
- Disconnect the battery negative cable.



- Press in the connector clip, and then disconnect the brake pressure sensor connector (1).
- Remove the brake pressure sensor (2) with a 24mm open-end wrench.

⚠ CAUTION

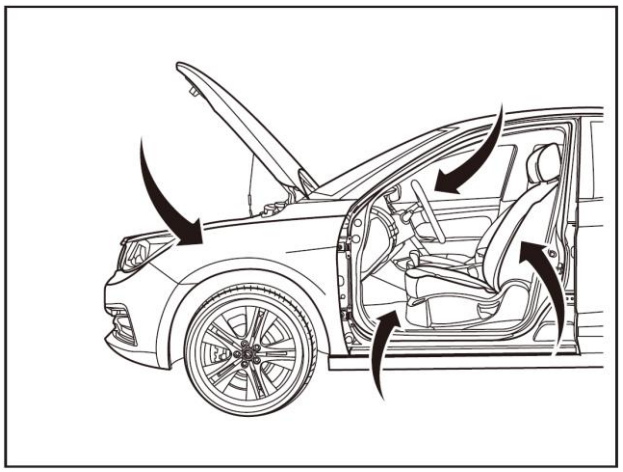
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **When disconnecting the brake pressure sensor, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**
- **After the removal, wipe off the brake fluid spilled onto the body.**

3- Refitting

- Refit in the order reverse to the removal, and observe the followings.

⚠ CAUTION

- **Apply a little amount of anti-locking compound onto the threads when refitting the brake pressure sensor.**
- **After refitting, add the brake fluid and bleed the brake system. (Refer to "Change of Brake Fluid" in this section)**



Removal and Refitting of Vacuum Booster

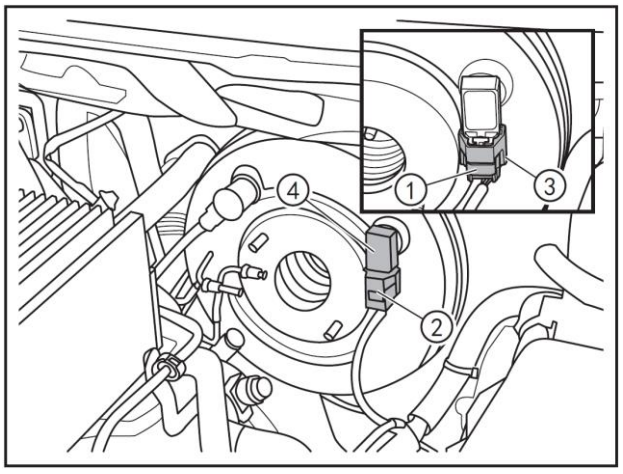
1 - Protection

Place protective pads at following locations:

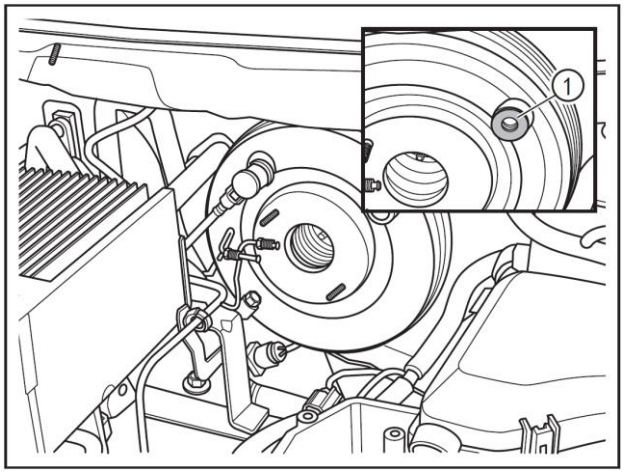
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

2 - Removal

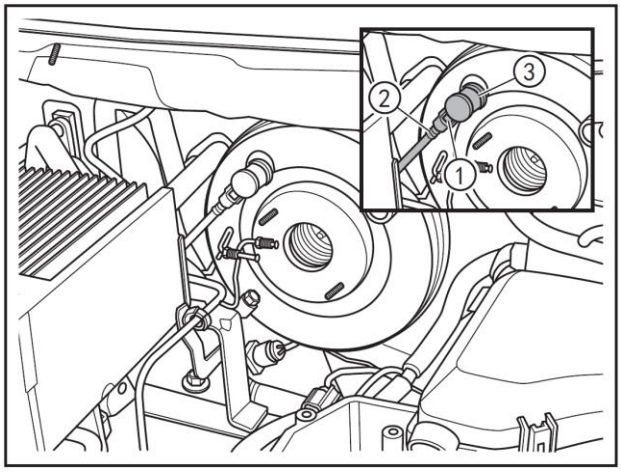
- Turn off the ignition switch, and apply the parking brake.
- Remove the battery and its tray. (Refer to "Removal and Refitting of Battery" in "Starting and Charging System")
- Remove the brake master cylinder. (Refer to "Removal and Refitting of Brake Master Cylinder" in this section.)
- Remove the brake pedal assembly. (Refer to "Removal and Refitting of Brake Pedal" in this section)



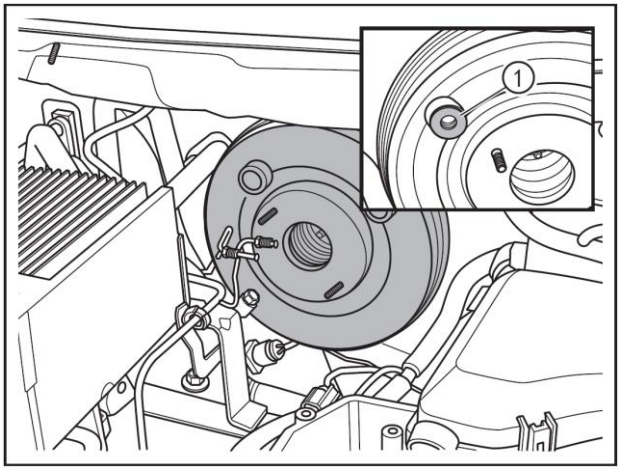
- Disconnect the clip (1) of vacuum sensor connector downwards.
- Press down the middle clip (2) of connector to detach the vacuum sensor connector (3).
- Pull out the vacuum sensor (4) with an even force.



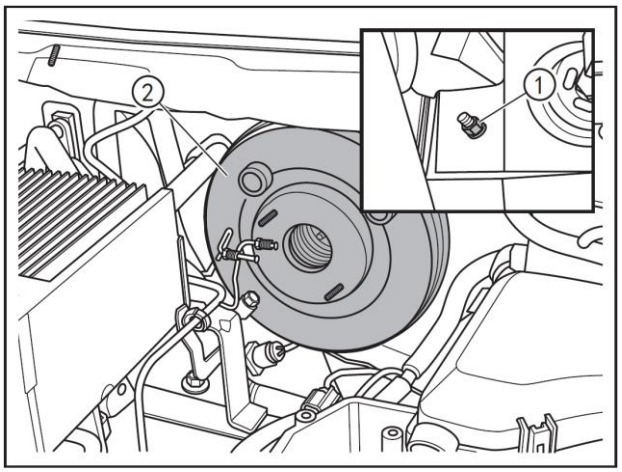
- Take out the seal (1).



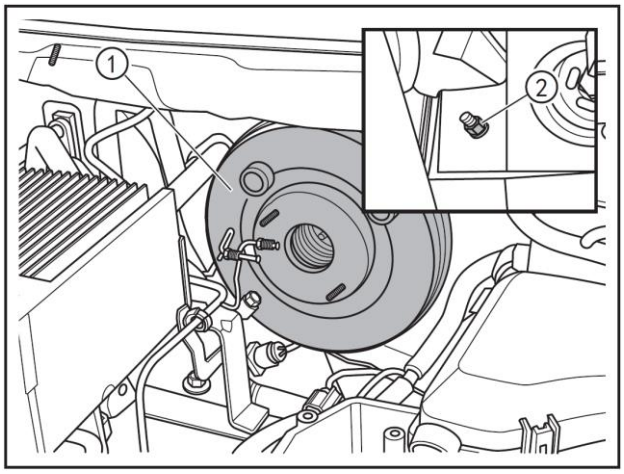
- Press the clamp (1) at both ends of vacuum pipe, and disconnect the vacuum pipe (2).
- Pull out the check valve (3) with even force.



- Take out the seal (1).

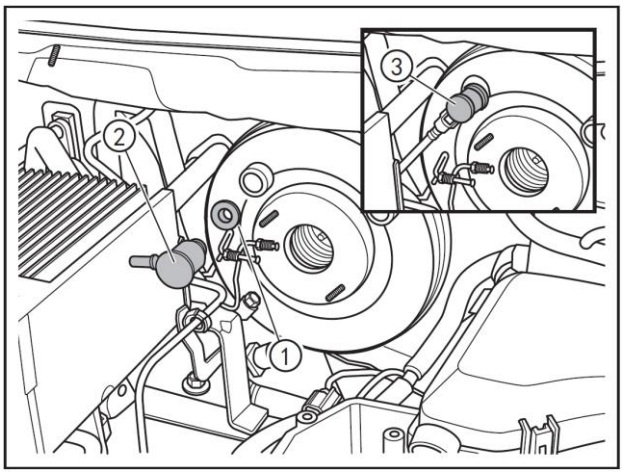


- Remove the fixing nuts (1) of vacuum booster with the 12 mm socket.
- Remove the vacuum booster (2) from the motor compartment.



3- Refitting

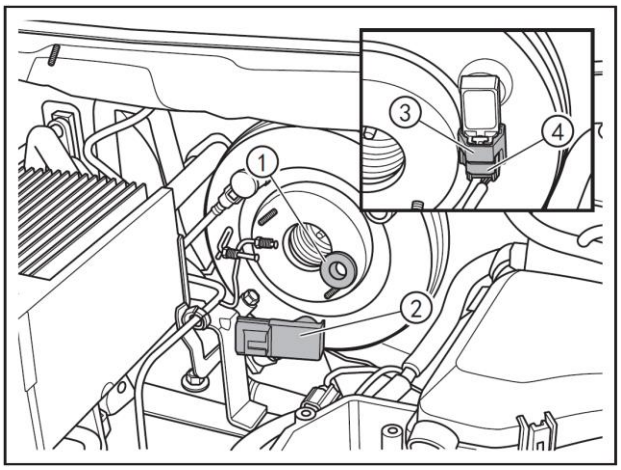
- Two workers cooperate with each other, with one person holding the vacuum booster (1) outside the vehicle, and the other person tightening the fixing nut (2) of the vacuum booster with the 12mm socket inside the vehicle. The tightening torque of fixing nut of vacuum booster is 14.2 N·m.



- Replace with a new seal (1) and install it on the vacuum booster.
- Refit the check valve (2).
- Connect the vacuum pipe (3).

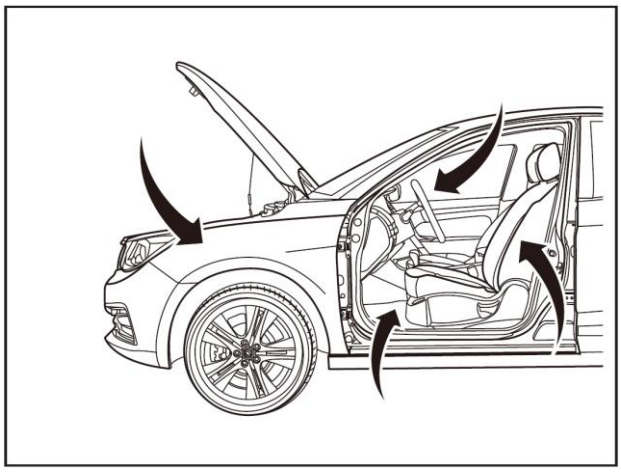
⚠ CAUTION

- **It is recommended to apply a proper amount of soapy water to the interface of the check valve in advance for an easier installation.**



- Replace with a new seal (1) and install it on the vacuum booster.
- Refit the vacuum sensor (2).
- Refit the vacuum sensor connector (3) and push the locking clip (4) upwards.

- Refit the brake pedal assembly. (Refer to "Removal and Refitting of Brake Pedal” in this section)
- Install the brake master cylinder. (Refer to "Removal and Refitting of Brake Master Cylinder" in this section.)
- Refit the battery and its tray. (Refer to "Removal and Refitting of Battery" in “Starting and Charging System”)

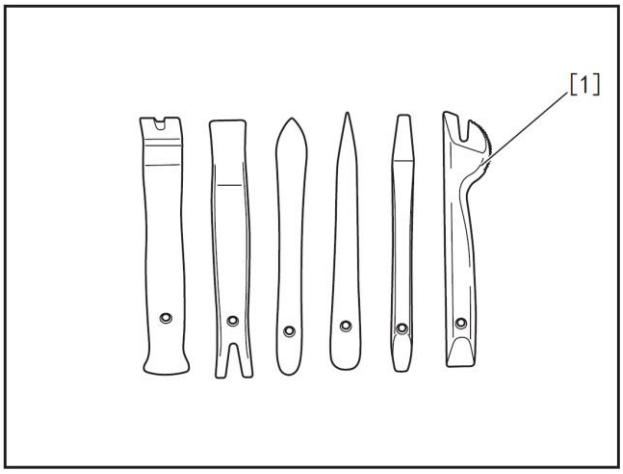


Removal and Refitting of Vacuum Pump

1 - Protection

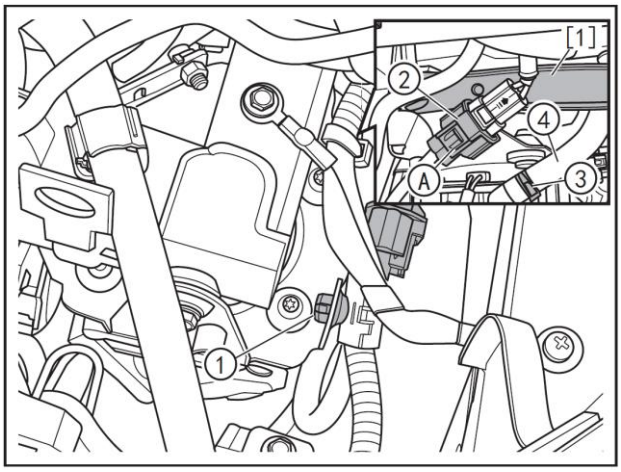
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



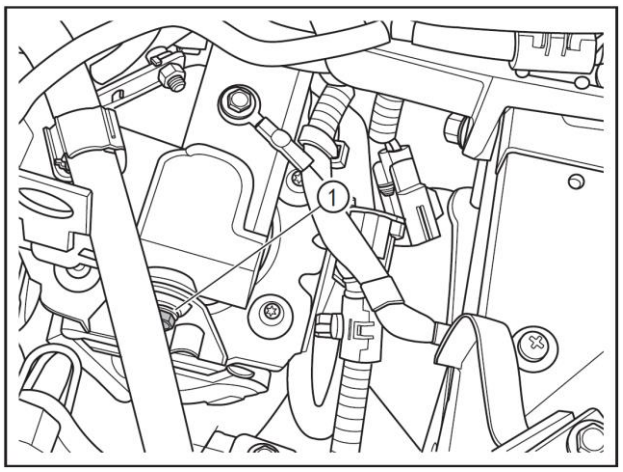
2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

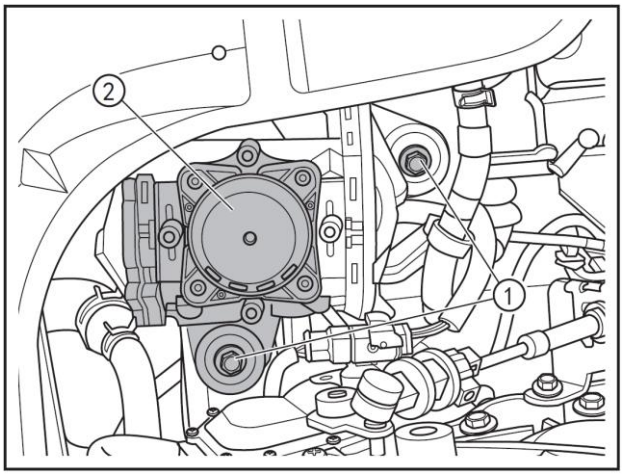


3 - Removal

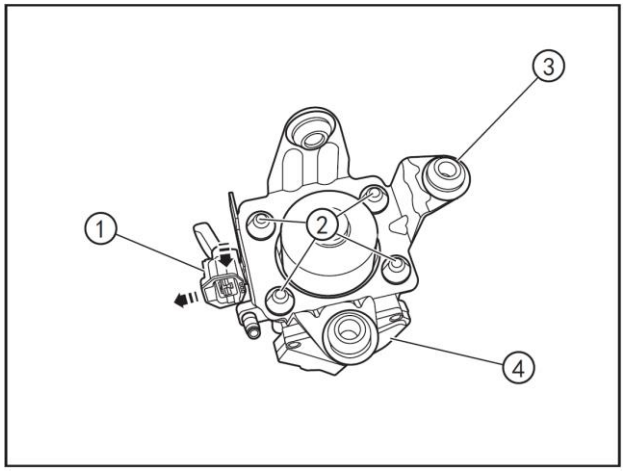
- Turn off the ignition switch, and apply the parking brake.
- Disconnect the battery negative cable.
- Detach the water pump wire harness (1) from the vacuum pump mounting bracket with the interior trim removal tool (BF1102) [1].
- Press in the connector clip A, and disconnect the vacuum pump connector (2).
- Use the long-nose pliers to detach the vacuum pipe clamp (3).
- Disconnect the vacuum pipe (4) upwards.



- Remove the fixing bolt (1) (M8 × 40) from the vacuum pump bracket with the 13mm socket.



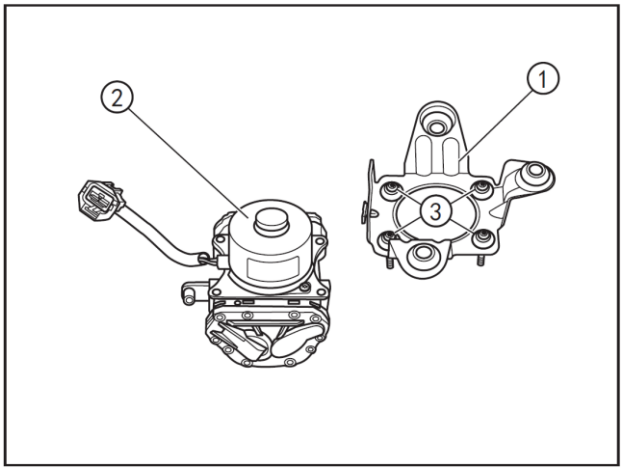
- Lift the vehicle as appropriate, and remove the 2 lower fixing bolts (1) (M8 × 40) from the vacuum pump bracket with the 13mm socket.
- Remove the vacuum pump & bracket assembly (2).



- Disconnect the vacuum pump connector (1) upwards after opening it outwards.
- Remove the 4 fixing bolts (2) of vacuum pump with the T30 screwdriver bit.
- Separate the vacuum pump bracket (3) from the vacuum pump (4).

⚠ CAUTION

- **Unscrew the fixing bolts of vacuum pump uniformly in order, so as not to damage the vacuum pump.**

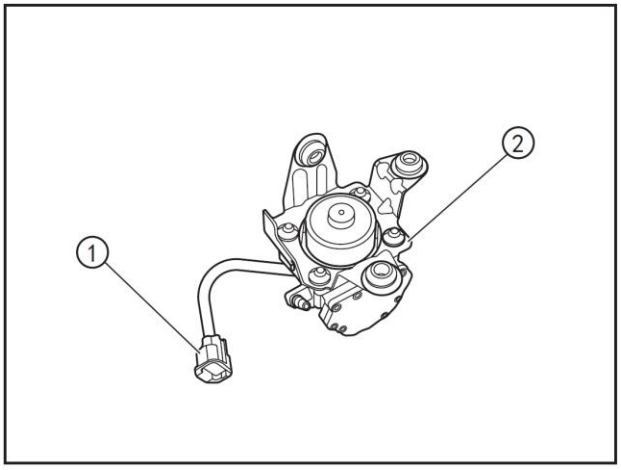


4- Refitting

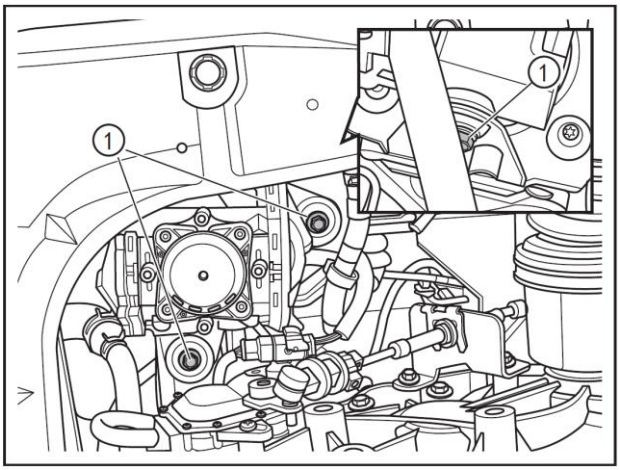
- Refit the vacuum pump bracket (1) on the vacuum pump (2).
- Tighten the fixing bolts (3) of vacuum pump with the T30 screwdriver bit.

⚠ CAUTION

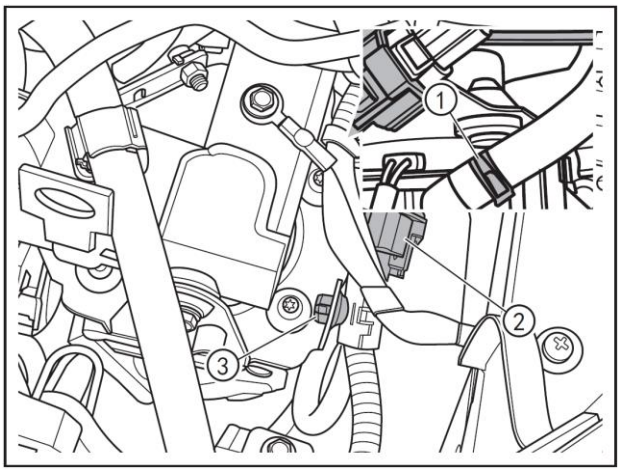
- **Screw the fixing bolts of vacuum pump uniformly in order, so as not to damage the vacuum pump.**



- Insert the vacuum pump connector (1) into the vacuum pump bracket (2).

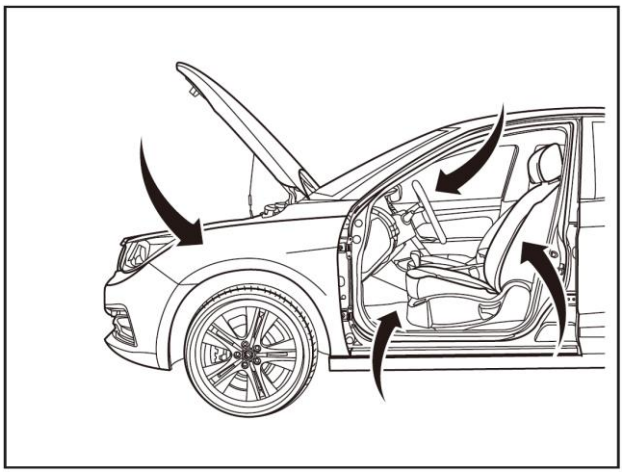


- Refit the vacuum pump assembly on the vehicle body, and tighten the 3 fixing bolts (1) on the vacuum pump bracket with the 13mm socket.



- Use a long-nose pliers to refit the vacuum tube clamp (1) to the position 5 mm from the end of the vacuum pipe.
- Connect the vacuum pump connector (2).
- Refit the water pump wire harness (3) onto the vacuum pump mounting bracket.

- After the installation, start the motor and depress the brake pedal to check if assisting power is available. If so, the installation is successfully completed; if not, recheck and refit.

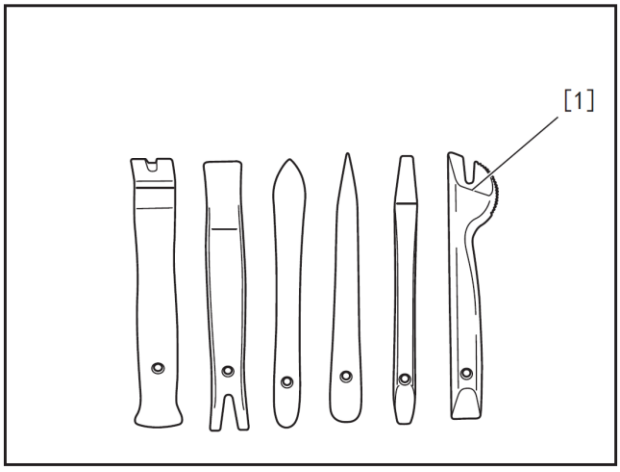


Removal and Refitting of Brake Pedal

1 - Protection

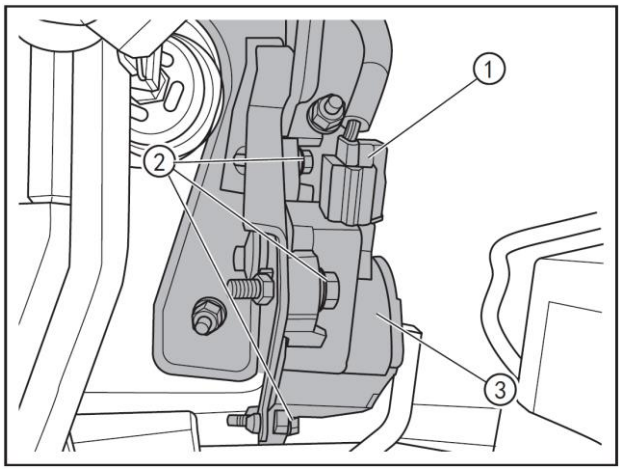
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



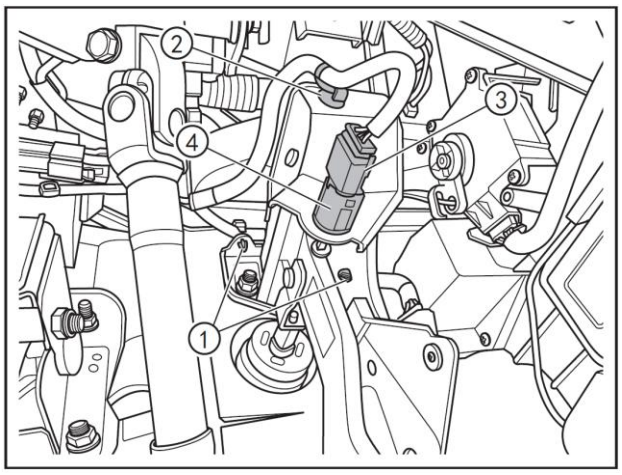
2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

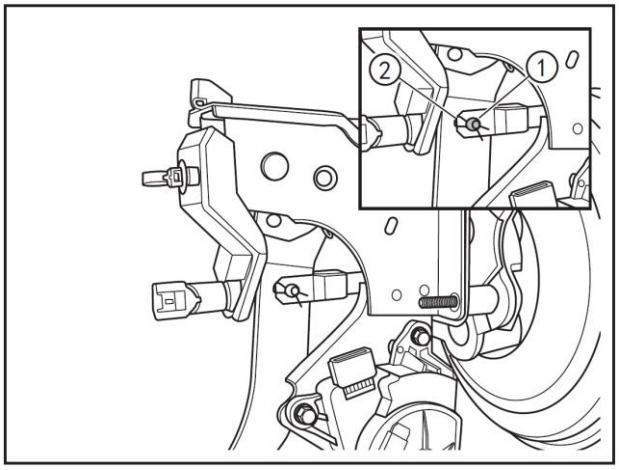


3 - Removal

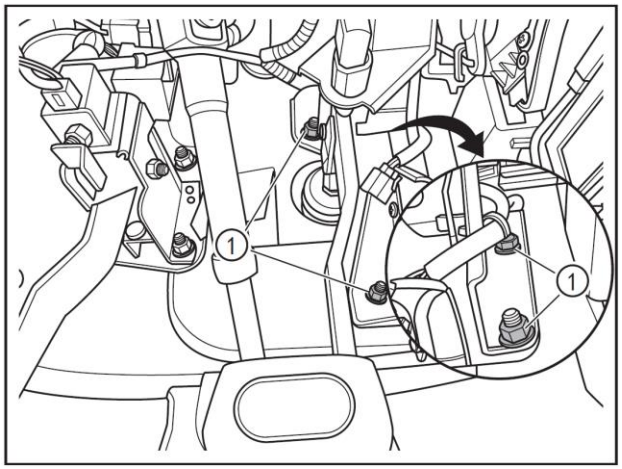
- Turn off the ignition switch, and apply the parking brake.
- Disconnect the battery negative cable.
- Disconnect the accelerator pedal position sensor (1).
- Use the 10 mm socket to remove the fixing bolts (2) of accelerator pedal.
- Remove the accelerator pedal assembly (3).



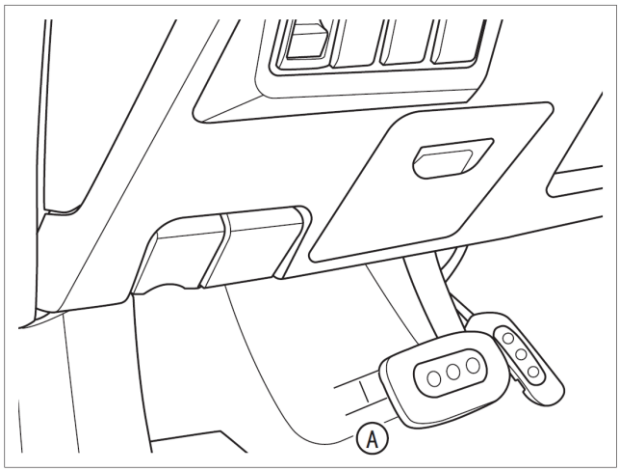
- Use the interior trim tool (BF1102) to remove the wire harness clip (1) for accelerator pedal and wire harness clip (2) for brake switch.
- Disconnect the brake switch connector (3).
- Rotate the brake switch (4) by 45° counterclockwise to remove it.



- Remove the dowel pin clip (1) connecting the brake pedal and vacuum booster, and take out the dowel pin (2).

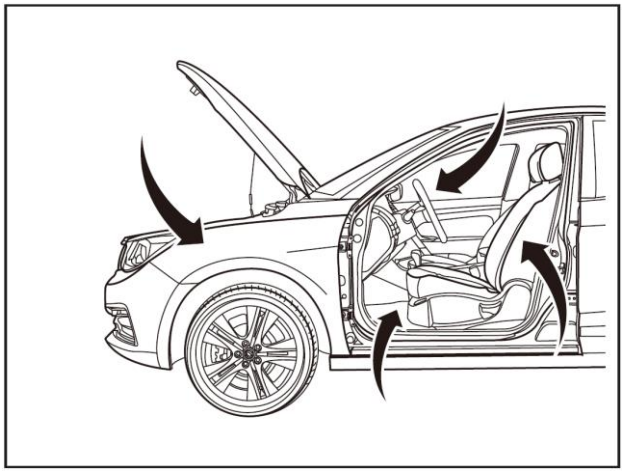


- Remove the 4 fixing bolts (1) of brake pedal, and take down the brake pedal assembly.



4- Refitting

- Refit in the order reverse to the removal, and observe the followings.
- When refitting the brake switch, note to adjust the clearance of brake switch. (Refer to "Removal and Refitting of Brake Switch" in this section)
- After installation, check that the distance A between the upper surface of the brake pedal and the floor is greater than 95mm.
- After the inspection, connect the scan tool, and read and clear DTC.

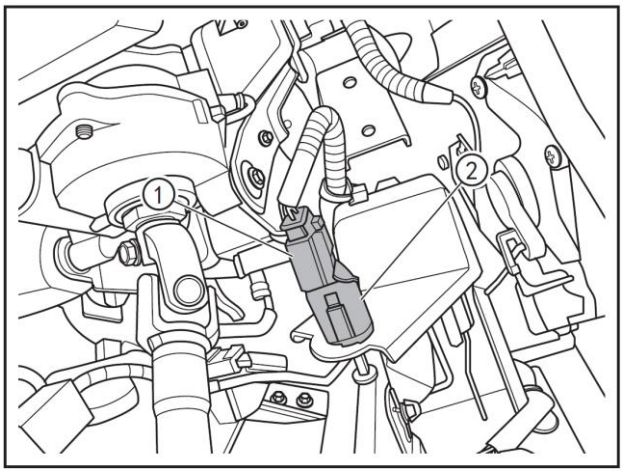


Removal and Refitting of Brake Switch

1 - Protection

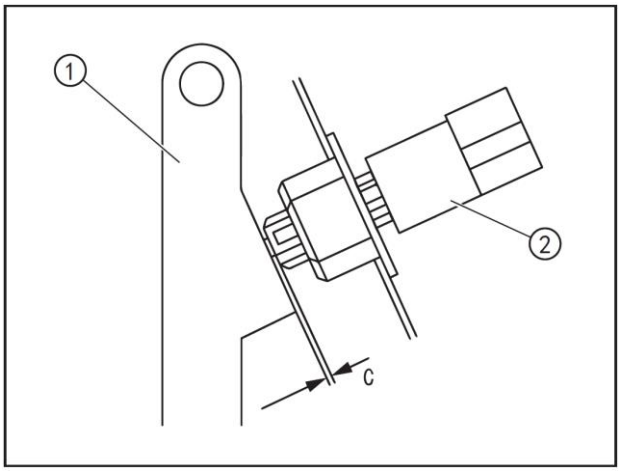
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Removal

- Turn off the ignition switch, and apply the parking brake.
- Disconnect the battery negative cable.
- Disconnect the brake switch connector (1), and remove the brake switch (2) by turning it counterclockwise for 45°.

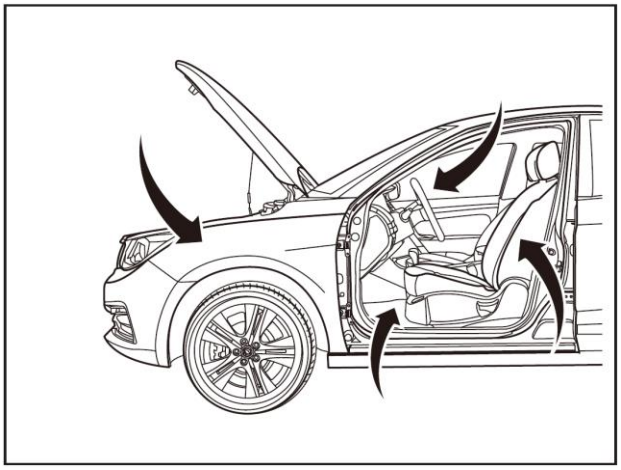


3- Refitting

- Push the brake pedal by hand, and at the same time, press the brake lamp switch (2) until its thread end touches the brake pedal lever (1).
- Make the thread end of brake lamp switch (2) touch the brake pedal lever (1), and at the same time, turn the switch clockwise by 45° to tighten it.

⚠ CAUTION

- **After the refitting, use a feeler gauge to check whether clearance "C" is within standard range. - "C" clearance: 0.74 - 1.96 mm**
- Refit the brake switch connector.
- Refit the negative cable.
- After refitting, check if the brake lamp works normally.

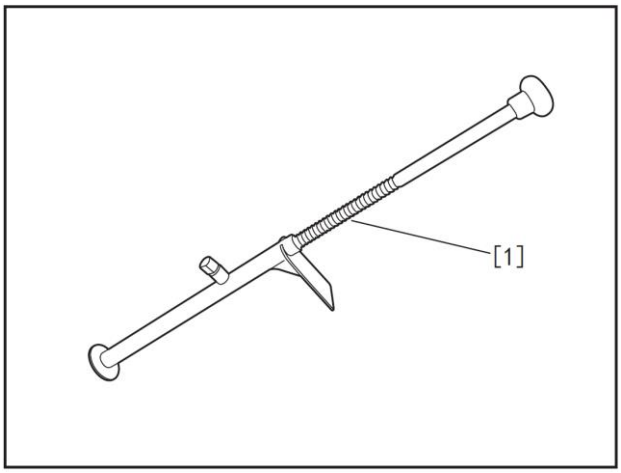


Removal and Refitting of Front Brake Hose

1 - Protection

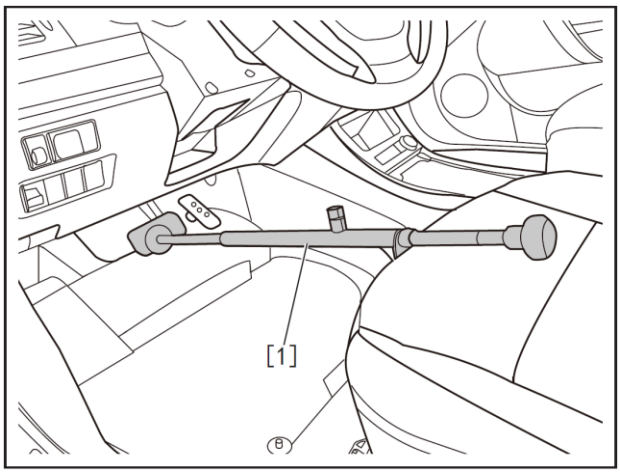
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].



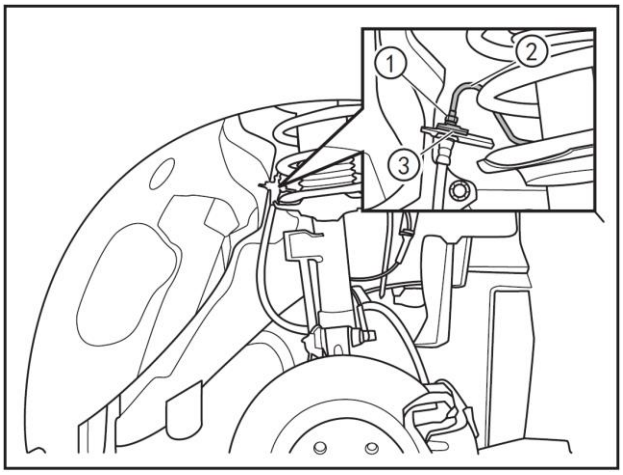
3 - Removal

- Turn off the ignition switch, and apply the parking brake.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].

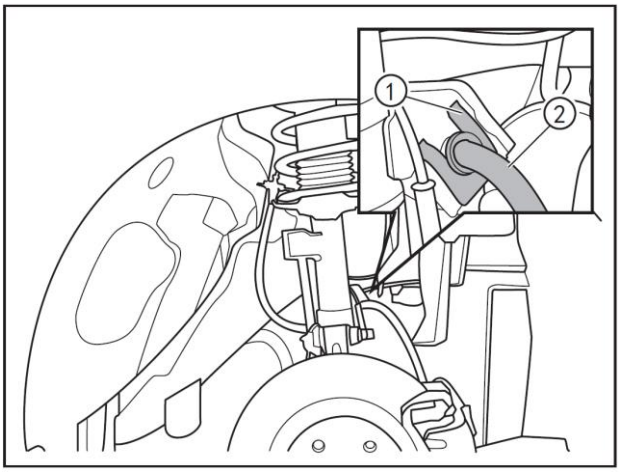
- Lift the vehicle, and remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

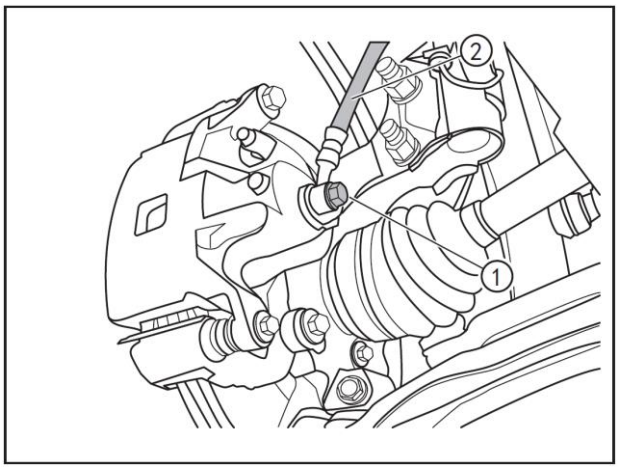
- **Before removing the front brake hose, clear the foreign matter and dust around the hose connection.**
- **When disconnecting the front brake hose, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **After the removal, wipe off the brake fluid spilled onto the body, and plug the end of brake pipe.**



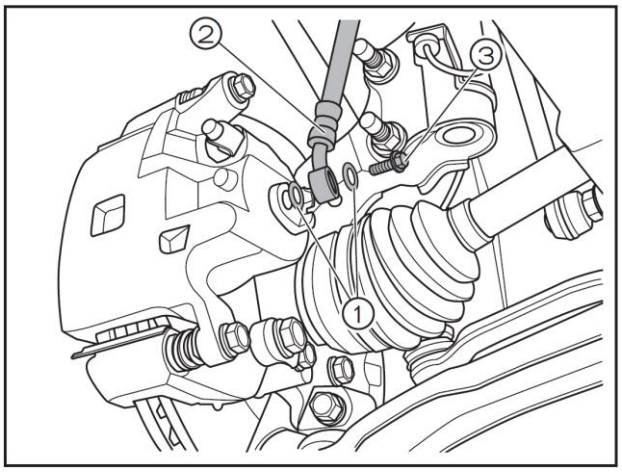
- Remove the connecting nut (1) between the brake pipe and front brake hose with a 10 mm pipe wrench.
- Disconnect the brake pipe (2).
- Pull out E-clip (3) from the front brake hose joint with a pair of long-nose pliers.



- Pull out E-clip (1) from the front brake hose middle bracket with a pair of long-nose pliers.
- Remove the rear brake hose (2).

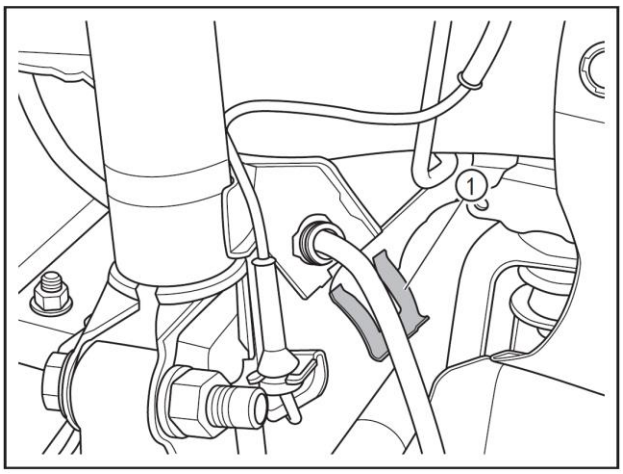


- Remove the connecting bolt (1) of front brake hose joint with the 12mm socket.
- Remove the front brake hose (2).

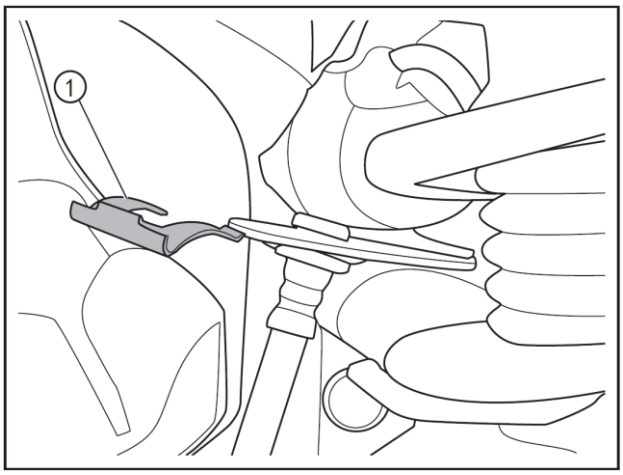


4- Refitting

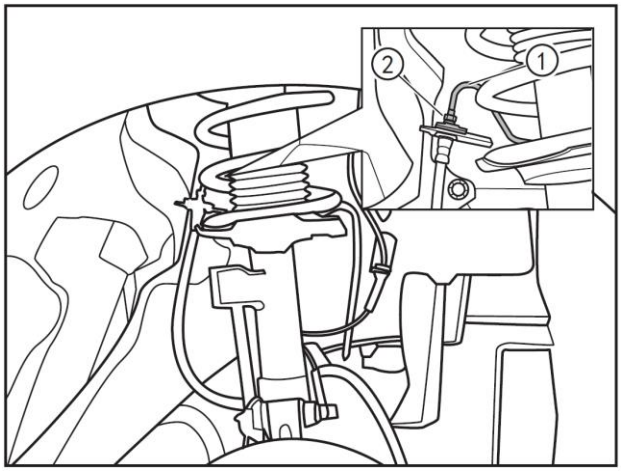
- Replace with the new gasket (1).
- Refit the front brake hose (2), and use the 12mm socket to tighten the joint bolt (3) of front brake hose. The tightening torque of joint bolt of front brake hose is 14.2N·m.



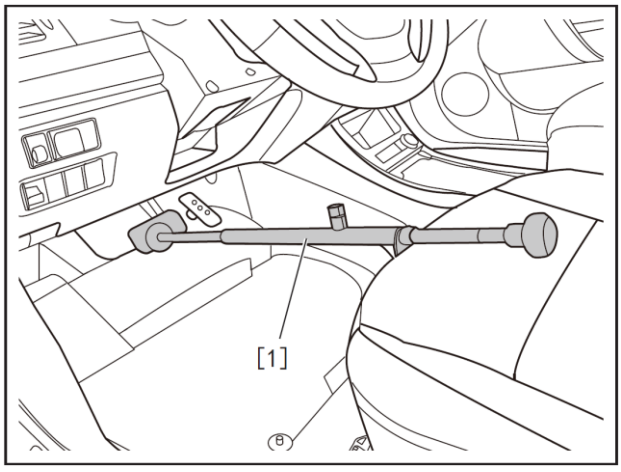
- Snap the front brake hose middle bracket into the notch on the shock absorber, and secure it with the E-clip (1).



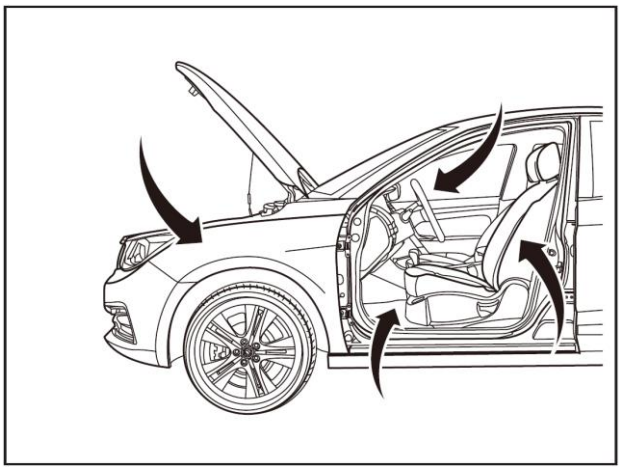
- Snap the front brake hose joint into the notch of the body bracket, and secure it with the E-clip (1).



- Refit the brake pipe (1).
- Tighten the connecting nut (2) between the brake pipe and the front brake hose with the 10mm pipe wrench. The tightening torque is 18.2N·m.



- Lower the vehicle, and remove the brake pedal suppressor (AX70903) [1]
- After refitting, bleed the brake system. (Refer to "Change of Brake Fluid".)
- After the bleeding is done, wipe away the brake fluid at the connection between the brake pipe and the front brake hose.
- Depress the brake pedal to the bottom without release for more than 1min; check if brake fluid seeps out of the connection between the brake pipe and the front brake hose, and if any, re-tighten the joint bolt.
- Refit the two front wheels. (Refer to “Removal and Refitting of Wheels”)

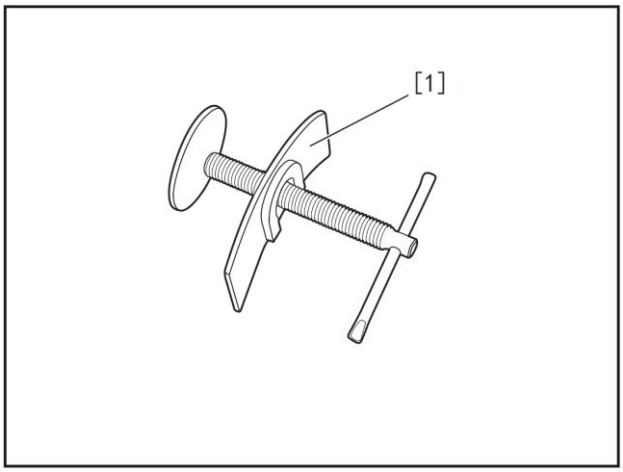


Replacement of Front Brake Pad

1 - Protection

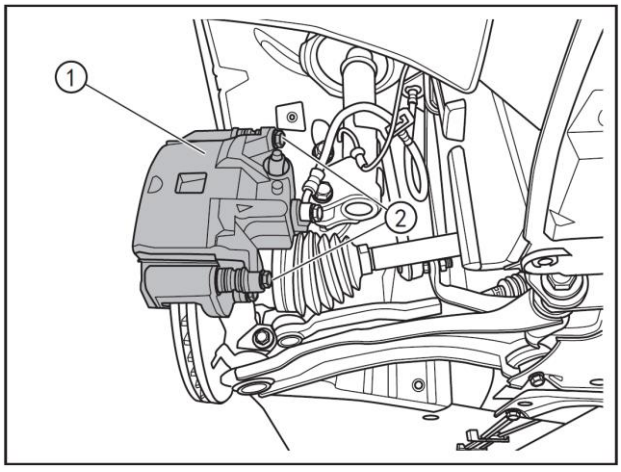
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



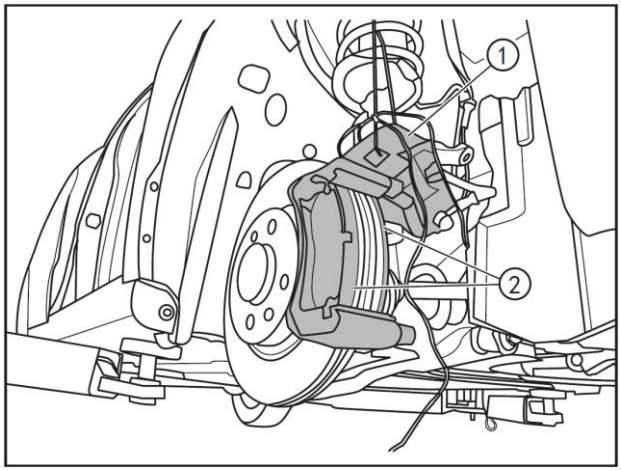
2 - Recommended tools

- Front brake caliper piston adjustment tool (BF0901) [1].



3 - Removal

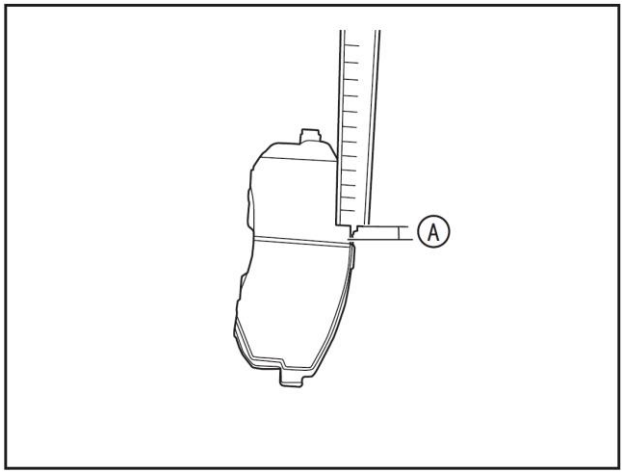
- Check carefully to ensure that the wheels are not braked.
- Remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in "Wheels")
- Remove the 2 fixing bolts (2) (M8×22) of front brake caliper (1) with the 14mm socket wrench.



- Disconnect the brake caliper (1), and hang it onto the body with metal wires.
- Remove the front brake pad (2).

⚠ CAUTION

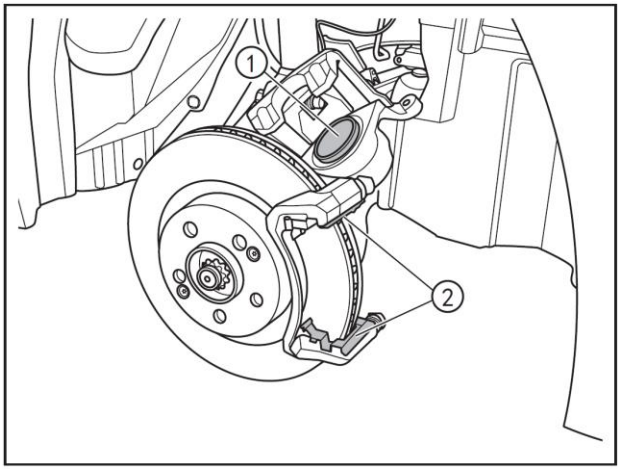
- **Never depress the brake pedal after removing the brake pad. Otherwise the brake caliper piston may come out.**



4 - Check

- Check the thickness of front brake pad with a vernier caliper.

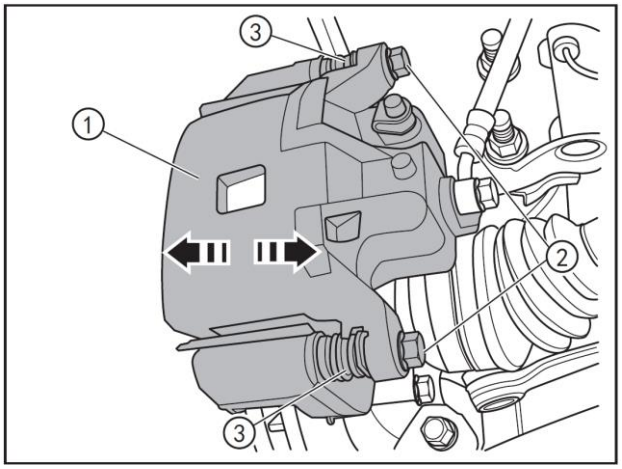
Thickness of front brake pad （A）	Standard thickness (mm)	11.6
	Wear limit (mm)	2



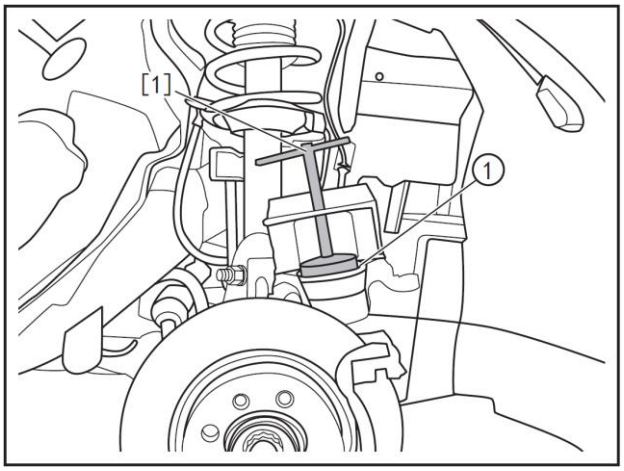
- Check the dust cover (1) of brake caliper piston for damage, crack or corrosion; if any, replace it.

⚠ CAUTION

- **The retaining spring (2) of brake pad is disposable and should be replaced after each removal.**

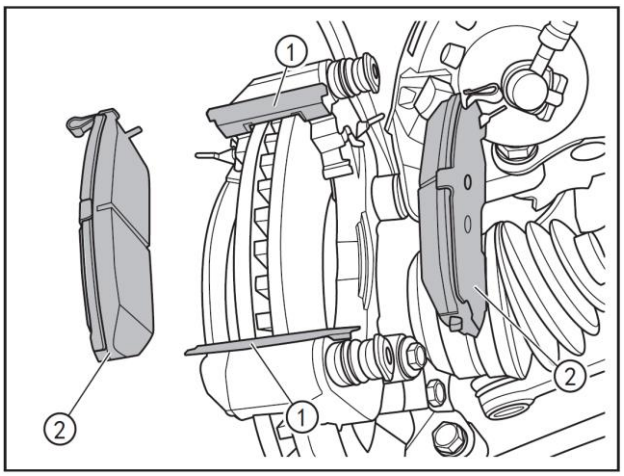


- Refit the brake caliper (1) and screw in the brake caliper lower fixing bolt (2).
- Move the brake caliper axially along the brake caliper guide pin, and check the guide pin for blocking; and if any, clean the guide pin of brake caliper, and then apply rubber grease.
- Check the guide pin dust cover (3) for corrosion and cracking; if any, replace it.

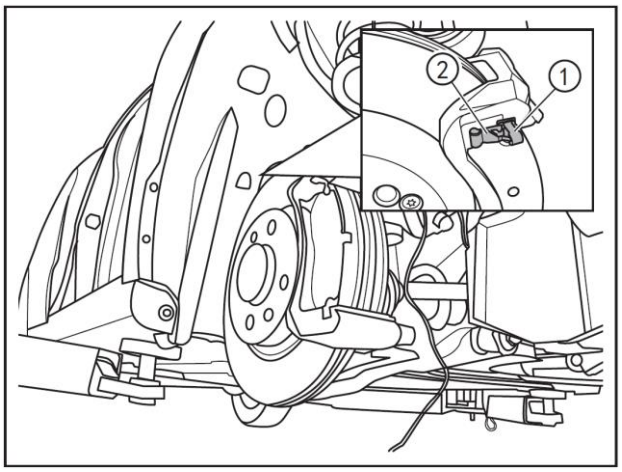


5- Refitting

- Press the brake caliper piston into the initial position with the rear brake caliper piston return tool [1].
- After the brake caliper piston is pressed in, adjust the cylinder body protective sleeve (1) to be uniform.

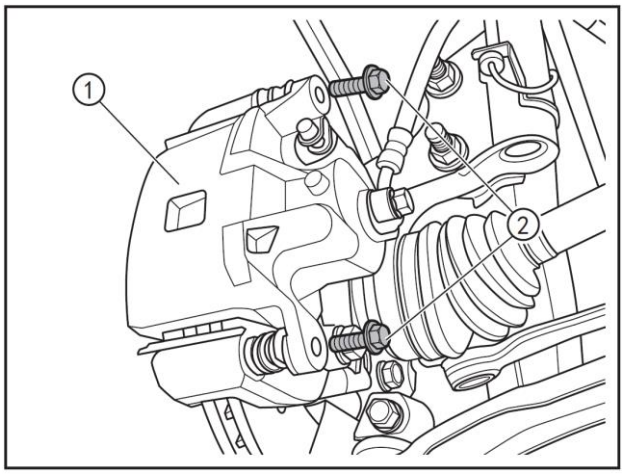


- Refit the brake caliper bracket (1) and the front brake pad (2).



⚠ CAUTION

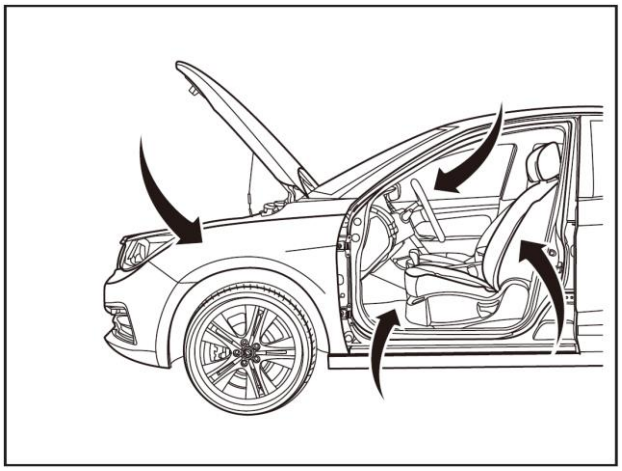
- **Be sure to secure the wear indicator (1) on the brake pad on the brake pad holder (2).**



- Refit the front brake caliper (1), and tighten the 2 fixing bolts (2) of the front brake caliper. The tightening torque of the front brake caliper fixing bolt is 26.5N·m.
- Refit the two front wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- **After refitting, always depress the brake pedal continuously until the front wheel has braking force.**
- **For vehicles subjected to replacement of brake disc together with brake pad, perform road test at an open place and depress the brake pedal several times to recover the braking effect.**

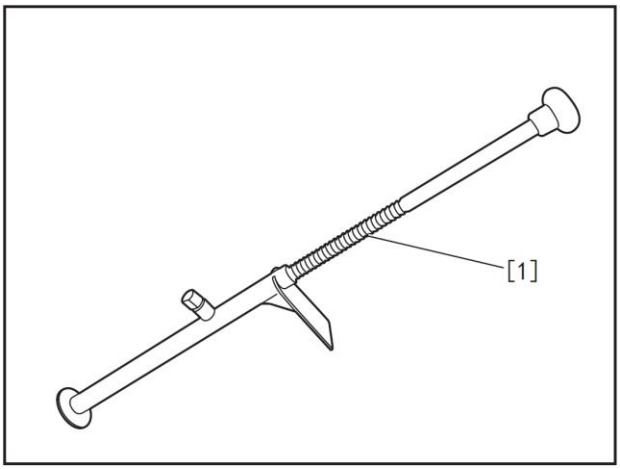


Replacement of Front Brake Caliper Assembly

1 - Protection

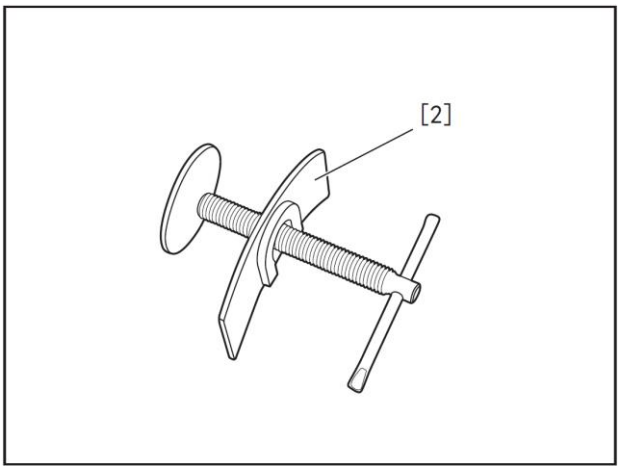
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

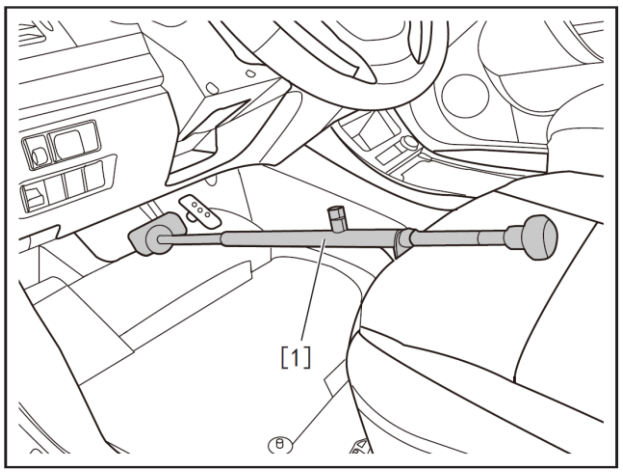


2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].



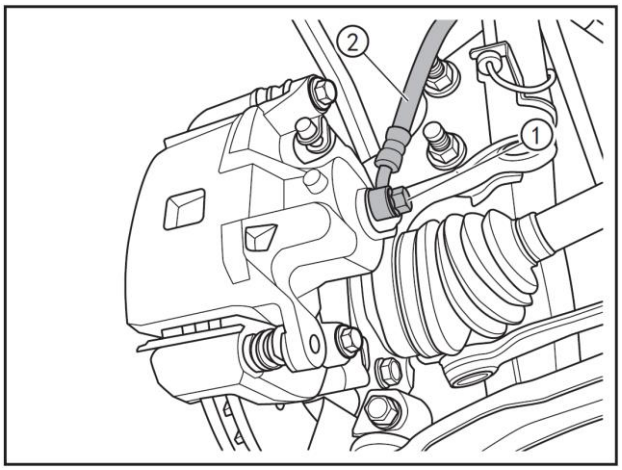
- Front brake caliper piston adjustment tool (BF0901) [2].



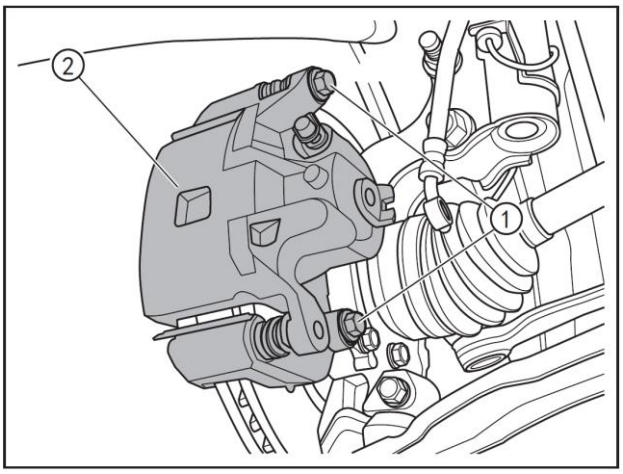
3 - Removal

CAUTION

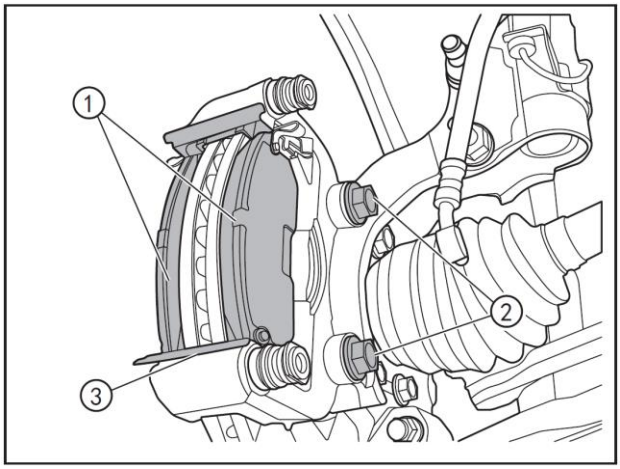
- **To install the front brake caliper assembly, do not lock the steering wheel.**
- Turn off the ignition switch, and apply the parking brake.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].
- Remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)



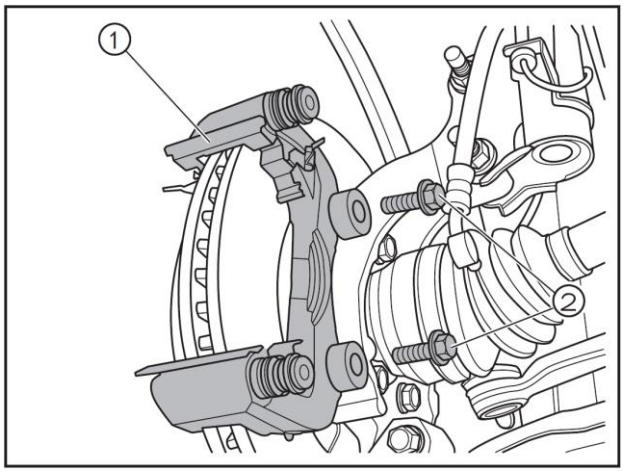
- Remove the connecting bolt (1) of front brake hose joint with the 12mm socket.
- Remove the rear brake hose (2).



- Remove the 2 fixing bolts (1) (M8×22) of front brake caliper with the 14mm socket.
- Remove the front brake caliper (2).

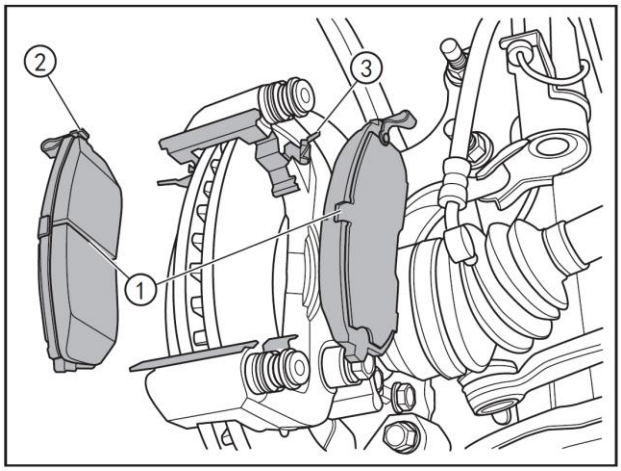


- Remove the front brake pad (1).
- Remove the 2 fixing bolts (2) (M12×28) of front brake caliper bracket with the 17mm socket.
- Remove the front brake caliper bracket (3).



4- Refitting

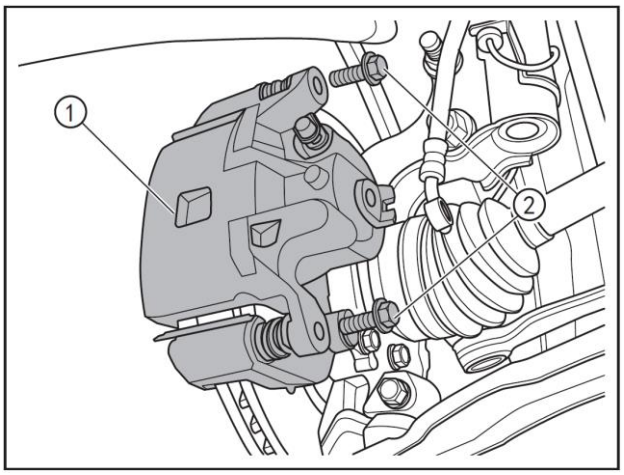
- Refit the front brake caliper bracket (1), and tighten the 2 fixing bolts (2) of the front brake caliper. The tightening torque of fixing bolt of front brake caliper is 84.3N·m.



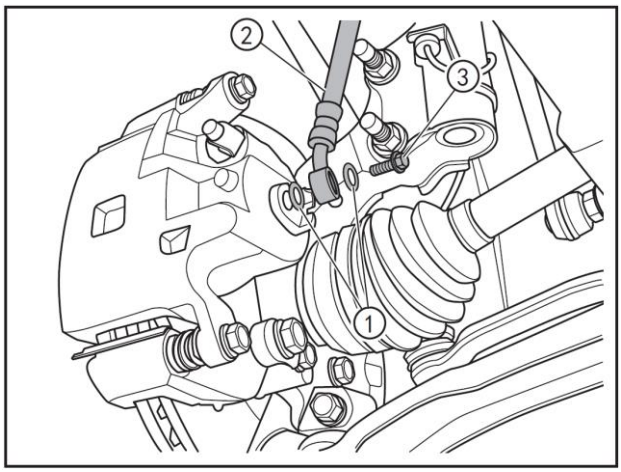
- Refit the front brake pad (1).

⚠ CAUTION

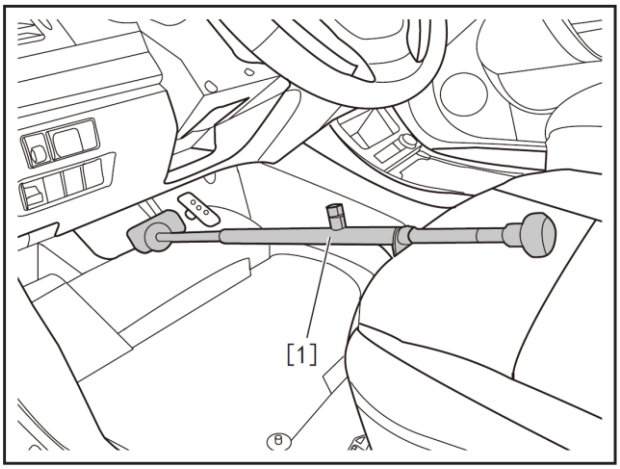
- **Be sure to secure the wear indicator (2) on the brake pad on the brake pad holder (3).**



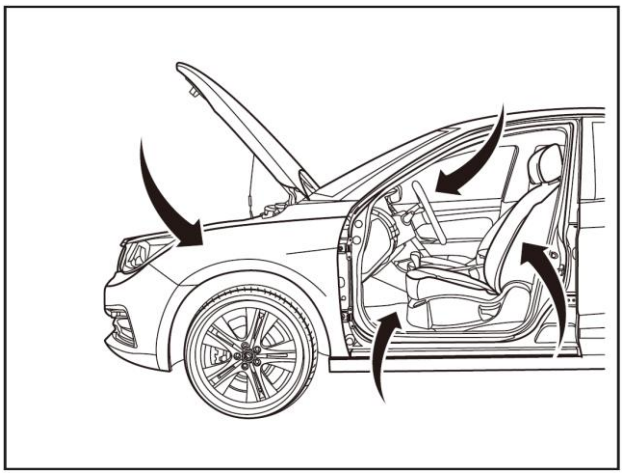
- Refit the front brake caliper (1), and tighten the 2 fixing bolts (2) of the front brake caliper with the 14mm socket. The tightening torque of the front brake caliper fixing bolt is 26.5N·m.



- Replace with the new gasket (1).
- Refit the front brake hose (2), and use the 12mm socket to tighten the joint bolt (3) of front brake hose. The tightening torque of joint bolt of front brake hose is 16.2N·m.



- Lower the vehicle, and take down the brake pedal suppressor (AX70903) [1].
- After refitting, bleed the brake system. (Refer to "Change of Brake Fluid".)
- After bleeding, refit the two front wheels. (Refer to “Removal and Refitting of Wheels”)

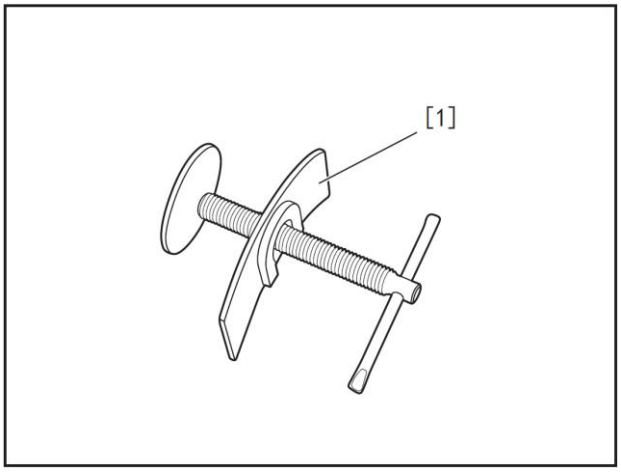


Replacement of Front Brake Disc

1 - Protection

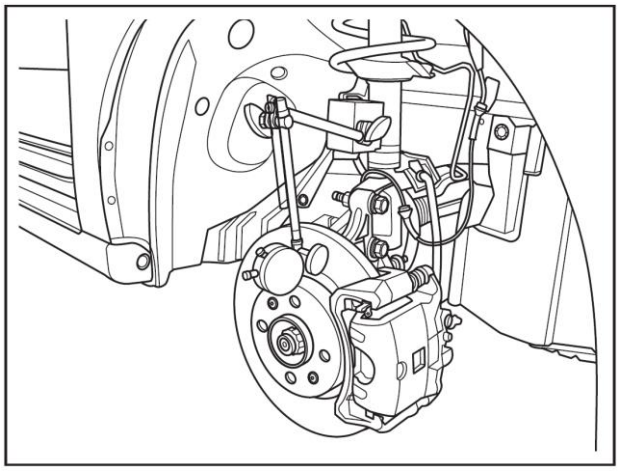
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

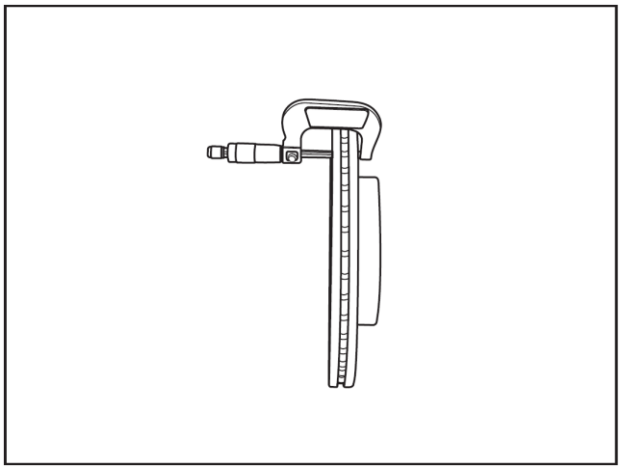
- Front brake caliper piston adjustment tool (BF0901) [1].



3 - Check

- Check the end runout of the front brake disc with a dial gage. (Measure at the position 10mm away from the outer edge of brake disc; keep the dial gage perpendicular to the brake disc, and rotate the brake disc by one turn uniformly to check its runout)
- Measure the thickness of brake disc with a micrometer.

Front brake disc	Standard thickness (mm)	28
	Runout limit (mm)	0.035
	Wear limit (mm)	26



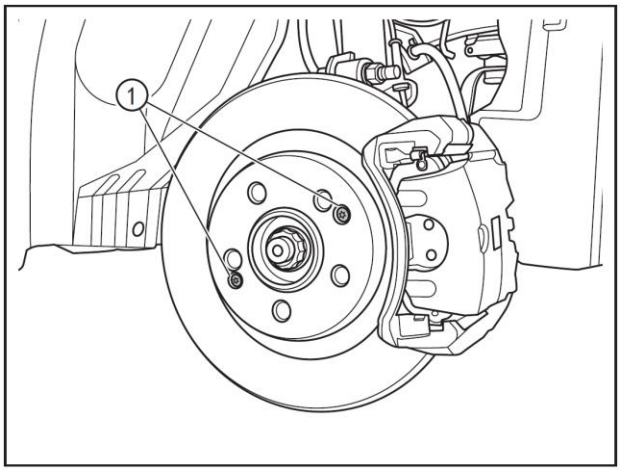
⚠ CAUTION

- **To ensure the measurement accuracy, please remove the brake caliper assembly and wipe the brake disc and measuring tool clean before measurement.**
- **The thickness of brake disc is to be measured at the position 10mm from the edge of brake disc, and three points should be selected every 120°. The minimum one among the three measurements is to be taken as the final result.**

4 - Removal

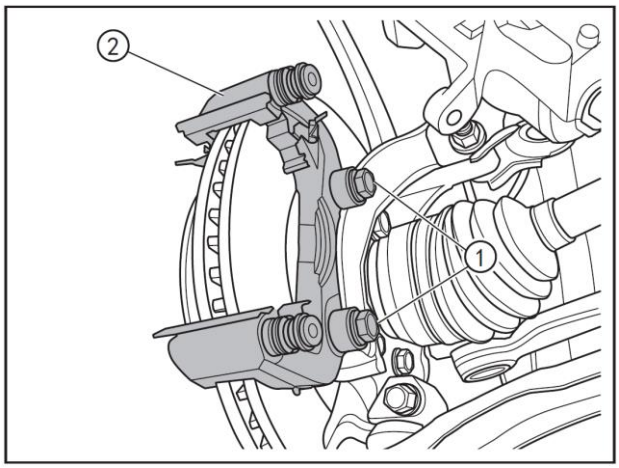
⚠ CAUTION

- **To install the front brake disc, do not lock the steering wheel.**
- Turn off the ignition switch, apply the parking brake, and remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

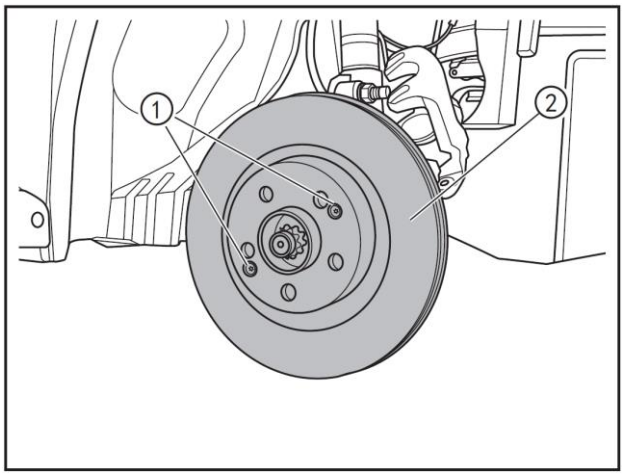


- Two workers are required for cooperation,, with one person depressing the brake pedal, and the other person loosening the 2 fixing bolts (1) of the front brake disc with the T30 screwdriver bit.

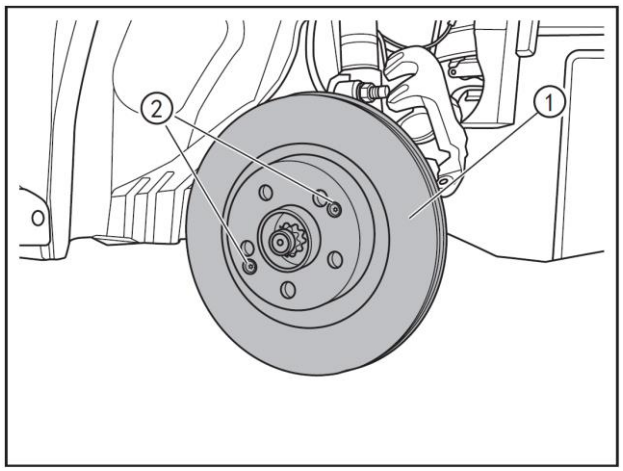
- Release the brake pedal and remove the front brake pad. (Refer to “Replacement of Front Brake Pad”).



- Remove the fixing bolts (1) (M12×28) of the brake caliper with the 17mm socket.
- Remove the brake caliper (2).

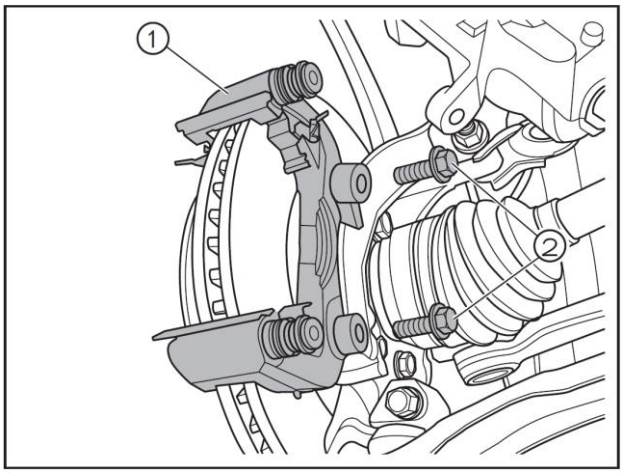


- Remove the 2 fixing bolts (1) of front brake disc with the T30 screwdriver bit.
- Remove the brake disc (2).

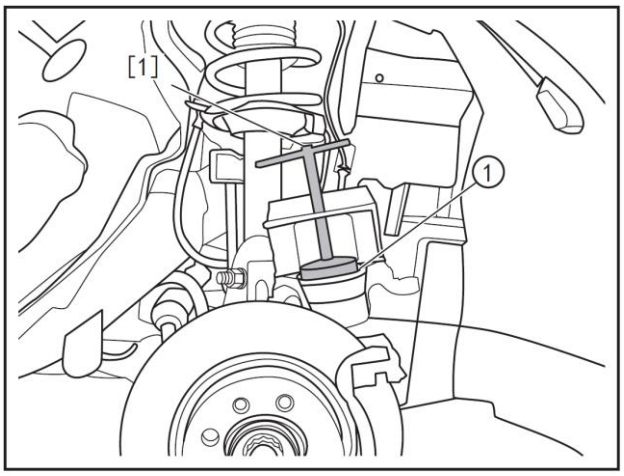


5- Refitting

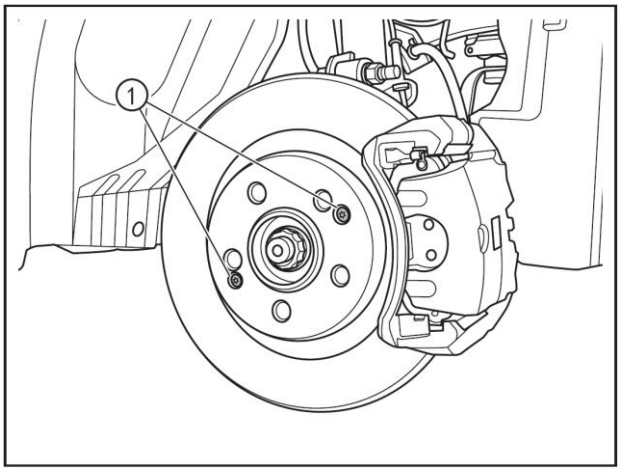
- Before refitting, clean the mating surface of front wheel hub and brake disc.
- Refit the brake disc (1), and pre-tighten the 2 fixing bolts (2) of front brake disc with the T30 screwdriver bit.



- Refit the front brake caliper bracket (1), and tighten the 2 fixing bolts (2) of the front brake caliper. The tightening torque of fixing bolt of front brake caliper is 84.3N·m.



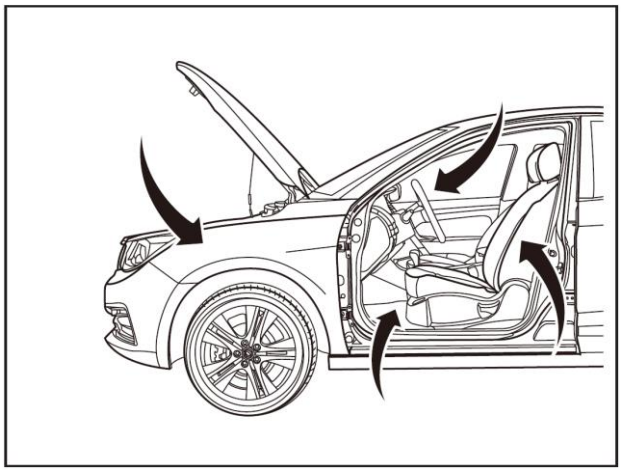
- Press the brake caliper piston into the initial position with the rear brake caliper piston return tool [1].
- After the brake caliper piston is pressed in, adjust the cylinder body protective sleeve (1) to be uniform.
- Refit the front brake pad. (Refer to “Replacement of Front Brake Pad” of this section).



- Two workers are required for cooperation,, with one person depressing the brake pedal, and the other person tightening the 2 fixing bolts (1) of the front brake disc with the T30 screwdriver bit. The tightening torque of fixing bolts of front brake disc is 10 N·m.
- Refit the two front wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- **After refitting, always depress the brake pedal continuously until the front wheel has braking force.**
- **For vehicles subjected to replacement of brake disc together with brake pad, perform road test at an open place and depress the brake pedal several times to recover the braking effect.**

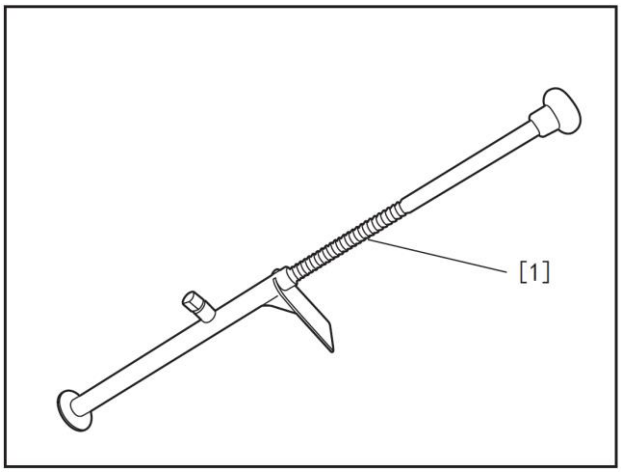


Removal and Refitting of Rear Brake Middle Hose

1 - Protection

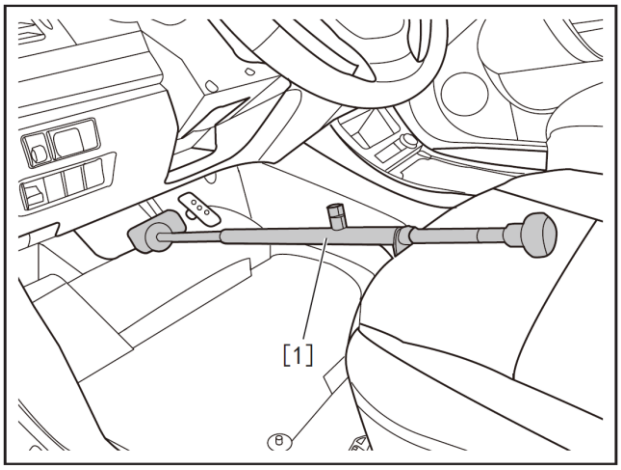
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].

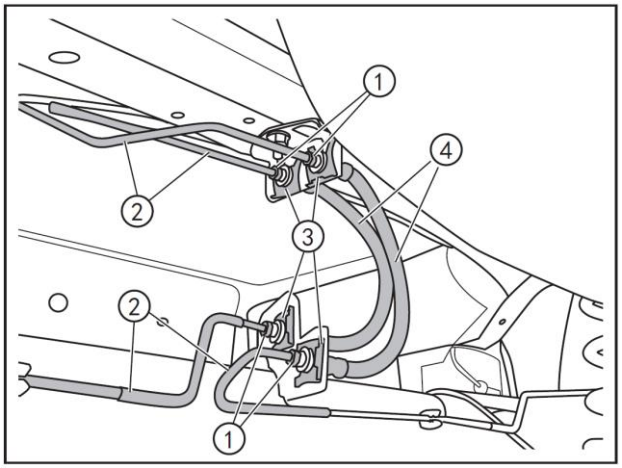


3 - Removal

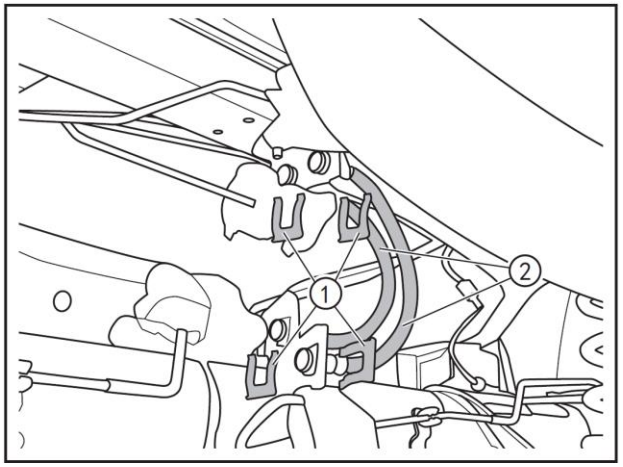
- Turn off the ignition switch, and apply the parking brake.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].
- Remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in "Wheels")

⚠ CAUTION

- **Before removing the rear brake middle hose, clear the foreign matter and dust around the hose connection.**
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **When disconnecting the rear brake hose, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**
- **After the removal, wipe off the brake fluid spilled onto the body and suspension, and wrap the end of brake pipe.**

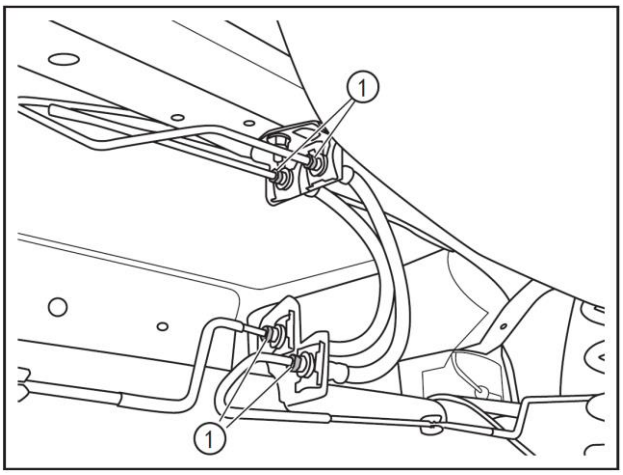


- Remove the connecting bolt (1) between the brake pipe and brake hose with the 10mm pipe wrench.
- Disconnect the brake pipe (2).
- Pull out E-clip (3) from the rear brake hose joint with a pair of long-nose pliers.
- Remove the rear brake middle hose (4).



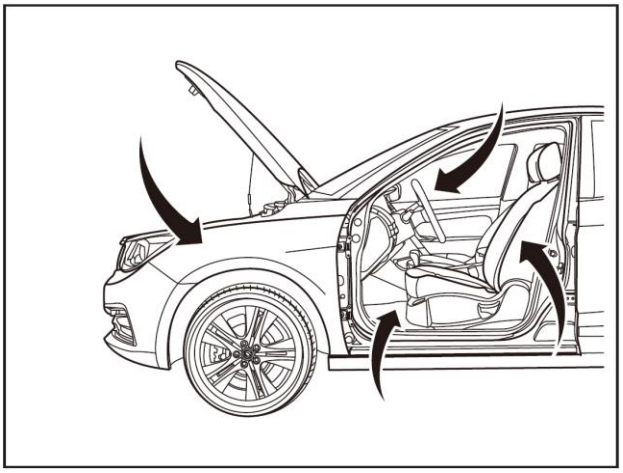
4- Refitting

- Secure the rear brake middle hose (2) to the hose bracket with the E-clip (1).



- Tighten the connecting bolt (1) between the brake pipe and the rear brake middle hose with the 10mm pipe wrench to 14.2N·m.

- Lower the vehicle, and take down the brake pedal suppressor.
- Bleed the brake system. (Refer to "Change of Brake Fluid" in this section.)
- After the bleeding is done, wipe away the brake fluid on the brake pipe line.
- Depress the brake pedal to the bottom without release for more than 1min; check if brake fluid seeps out of the connection between the brake pipe and the rear brake middle hose, and if any, re-tighten the joint bolt.
- Refit the two rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

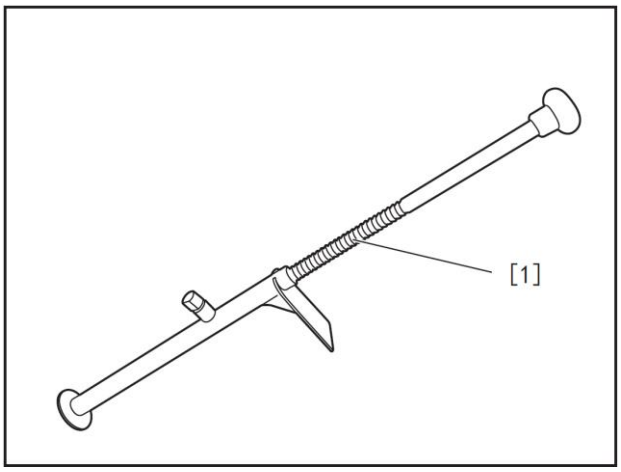


Removal and Refitting of Rear Brake Hose

1 - Protection

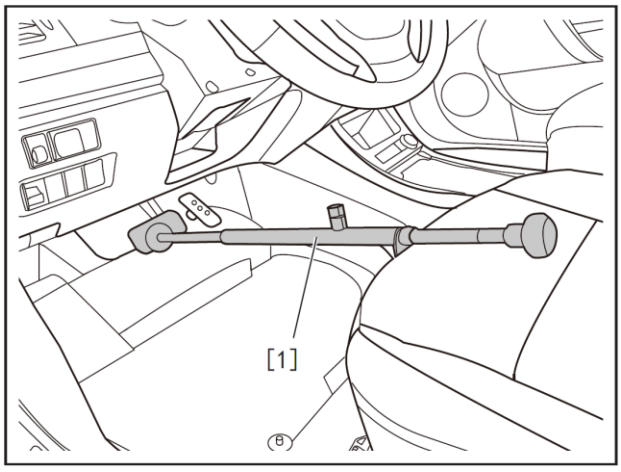
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



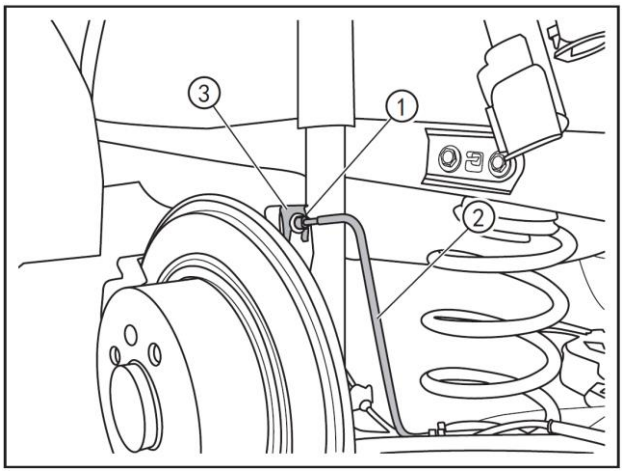
2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].



3 - Removal

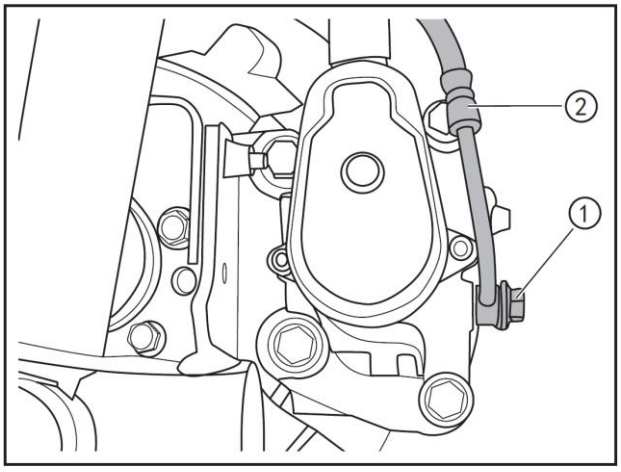
- Turn off the ignition switch, and apply the parking brake.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].
- Remove the two front wheels. (Refer to "Removal and Refitting of Wheels" in "Wheels")



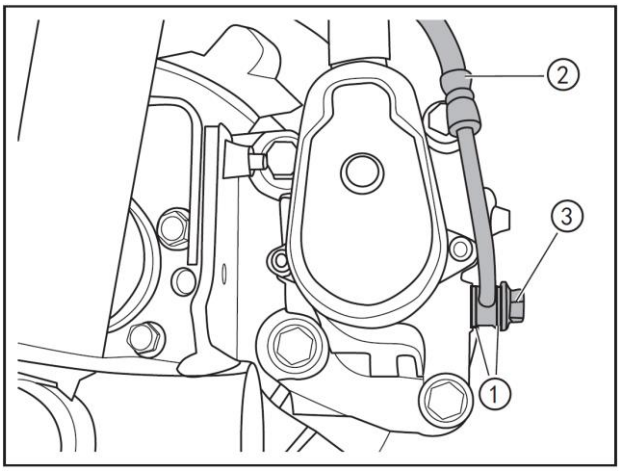
- Remove the connecting bolt (1) between the rear brake pipe and rear brake hose with the 10mm pipe wrench.
- Disconnect the rear brake pipe (2).
- Pull out E-clip (3) from the brake hose joint with a pair of long-nose pliers.

⚠ CAUTION

- **Before removing the rear brake hose, clear the foreign matter and dust around the hose connection.**
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **When disconnecting the rear brake hose, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled.**
- **After the removal, wipe off the brake fluid spilled onto the body, and wrap the end of brake pipe.**

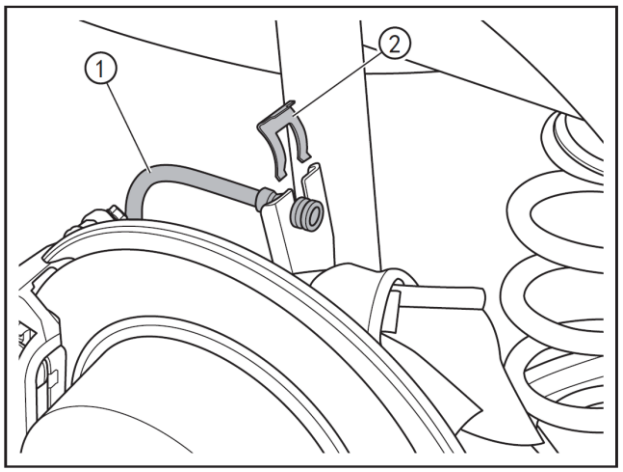


- Remove the connecting bolt (1) of rear brake hose joint with the 12mm socket.
- Remove the rear brake hose (2).

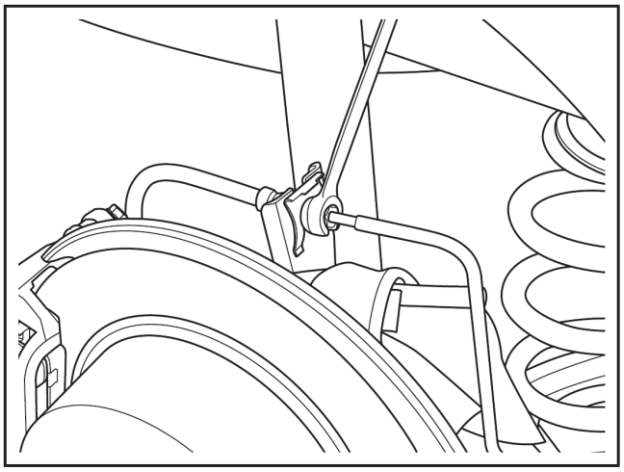


4- Refitting

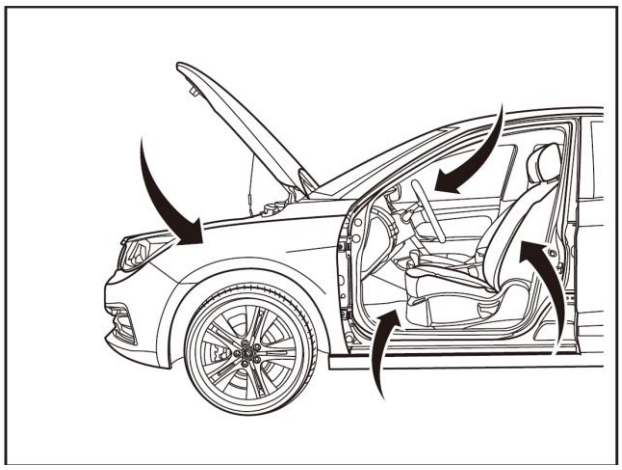
- Replace with the new gasket (1).
- Refit the rear brake hose (2), and use the 12mm socket to tighten the joint bolt (3) of rear brake hose. The tightening torque of joint bolt of rear brake hose is 31.4N·m.



- Snap the joint of rear brake hose (1) into the notch on the bracket, and secure it with the E-clip (2).



- Tighten the connecting bolt between the rear brake pipe and rear brake hose with the 10mm pipe wrench. The tightening torque is 14.2N·m.
- Lower the vehicle, and take down the brake pedal suppressor.
- Bleed the brake system. (Refer to "Change of Brake Fluid" in this section.)
- After the bleeding is done, wipe away the brake fluid at the brake hose joint. Depress the brake pedal to the bottom without release for more than 1min; check if brake fluid seeps out of the connection of the rear brake hose, and if any, re-tighten the joint bolt.
- Refit the two rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

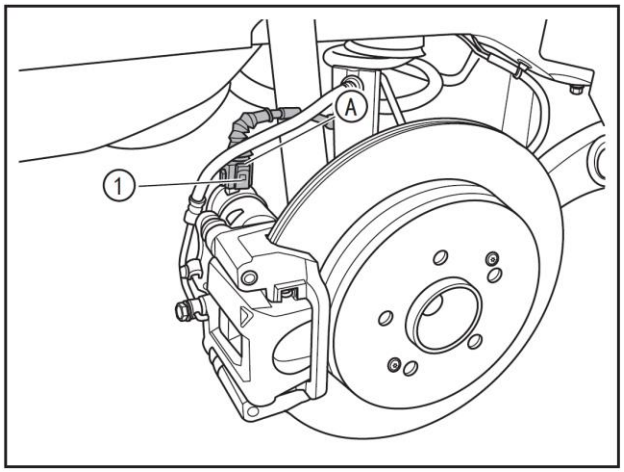


Replacement of Rear Brake Pad

1 - Protection

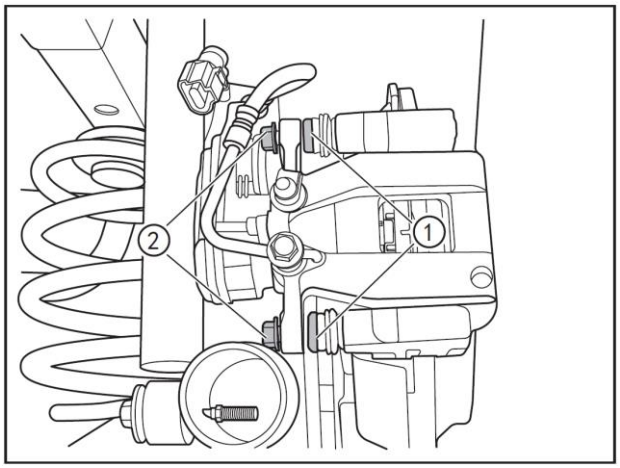
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Removal

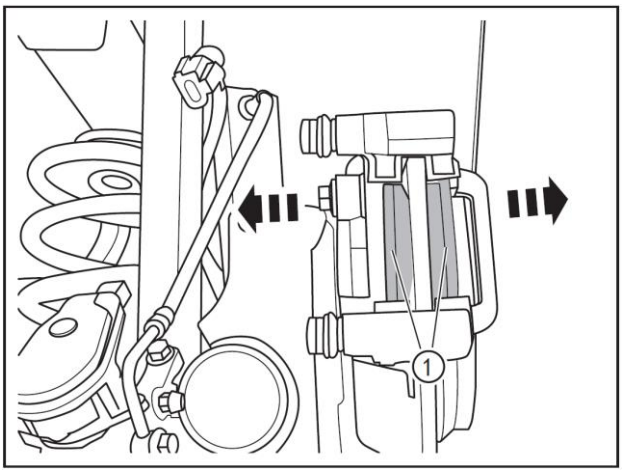
- Turn on the ignition switch and release the EPB. (Refer to "Disabling and Enabling of EPB" in "Parking Brake System")
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the tire. (Refer to "Removal and Refitting of Wheels" in "Wheels")
- Press the connector clip (A) and disconnect the connector (1).



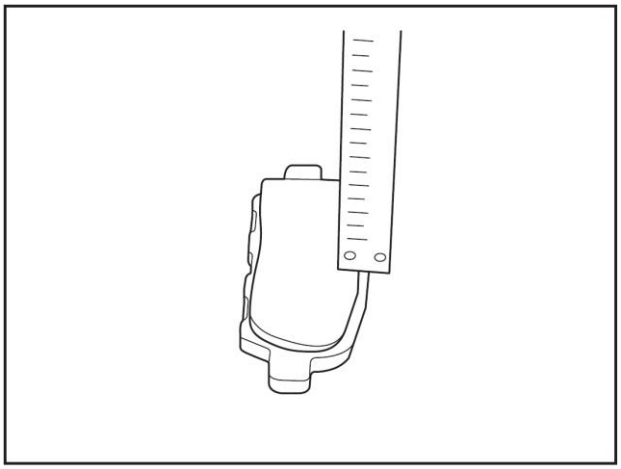
- Use the 18mm open-end wrench to hold the nut at the piston pin (1) of the brake wheel cylinder, and use the 14mm wrench to remove the fixing bolt (2) (M8 × 20) of brake wheel cylinder, and then take out the brake wheel cylinder.

⚠ CAUTION

- **The fixing bolt on the brake wheel cylinder incurs interference due to the brake pipe. When the brake wheel cylinder is disengaged, it is recommended to move the piston pin on the brake wheel cylinder to take out the brake wheel cylinder.**



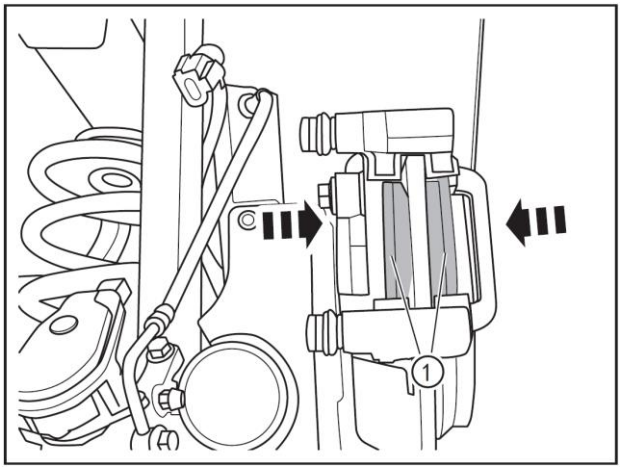
- Remove the brake pad (1) in the direction as indicated by the arrow, and replace with a new brake pad.



3 - Check

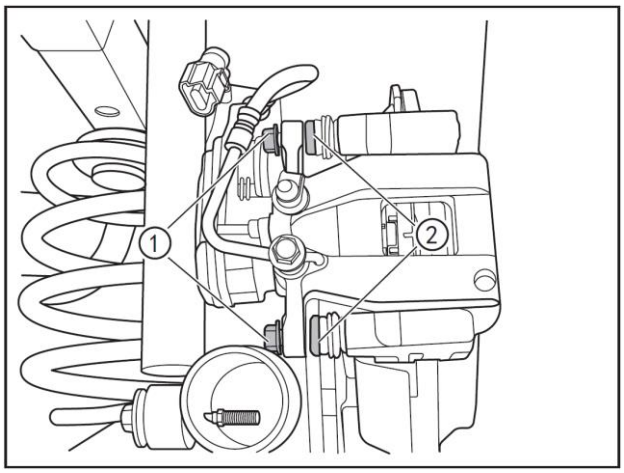
- Check the thickness of rear brake pad with a vernier caliper.

Rear brake pad	Standard thickness (mm)	9
	Wear limit (mm)	2

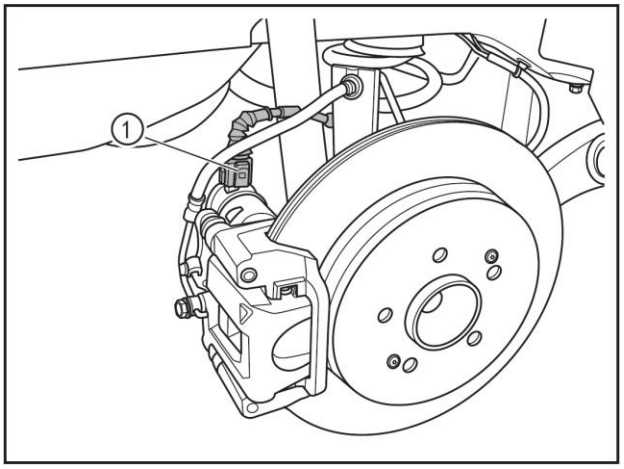


4- Refitting

- Replace with a new brake pad, and install the rear brake pad (1) in the direction as indicated by the arrow into the brake caliper groove.



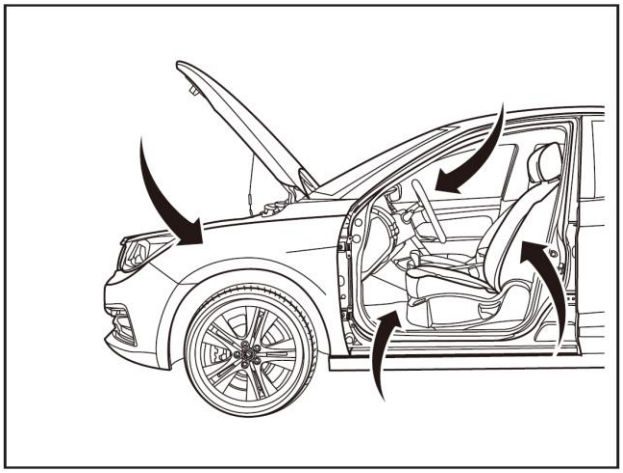
- Refit the brake wheel cylinder after aligned with the brake caliper, and install the fixing bolt (1) (M8 × 20) of brake wheel cylinder.
- Use the 18mm open-end wrench to hold the nut (2) of the brake cylinder piston pin, and tighten the fixing bolt with the 14mm wrench.



- Refit the connector (1), until a click indicating proper locking is heard.
- Refit the tire. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- **After the installation is completed, depress the brake pedal repeatedly until the brake pedal becomes hard.**

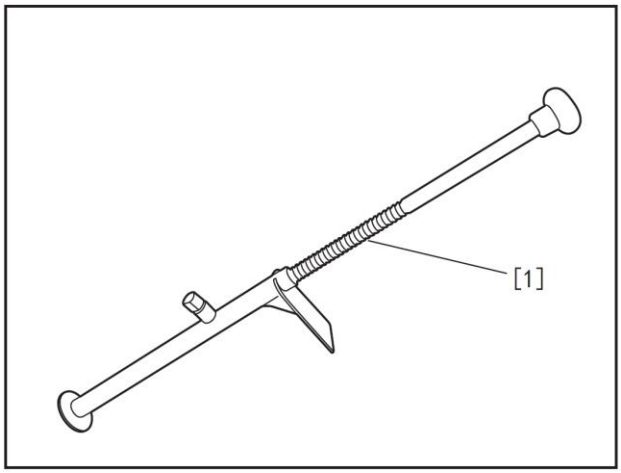


Replacement of Rear Brake Caliper Assembly

1 - Protection

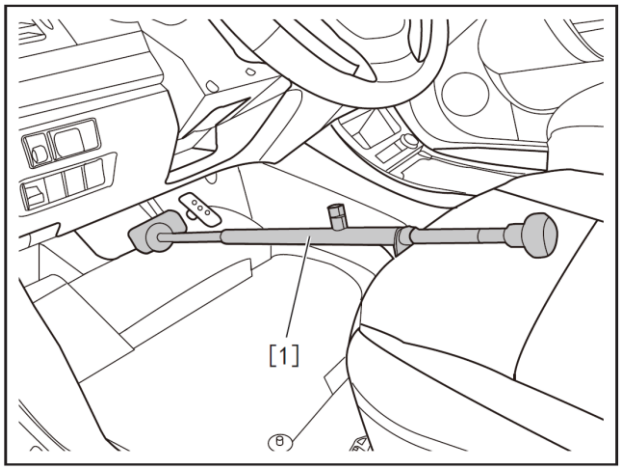
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



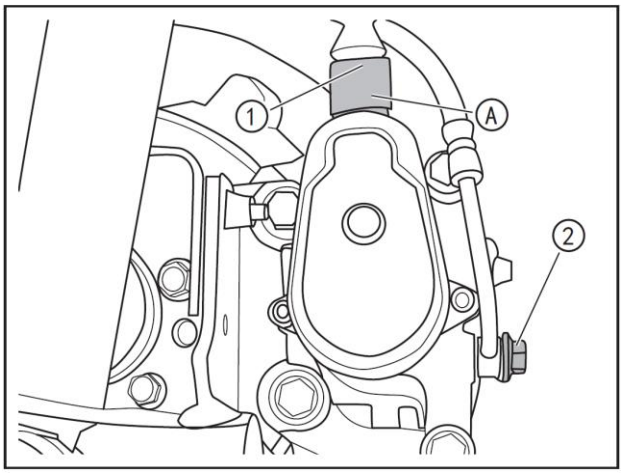
2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].



3 - Removal

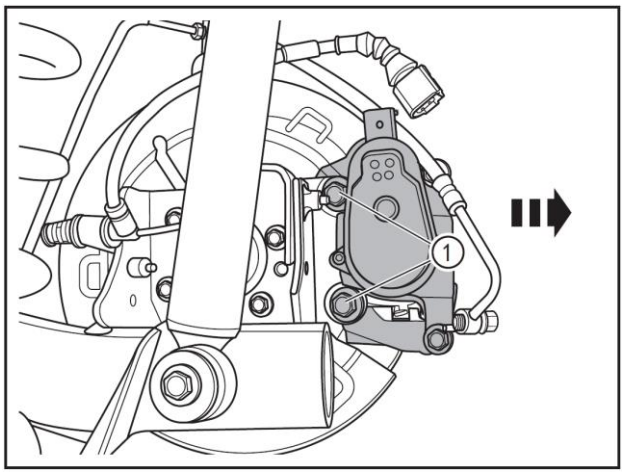
- Turn on the ignition switch and release the EPB. (Refer to “Disabling and Enabling of EPB” in “Parking Brake System”)
- Turn off the ignition switch, and disconnect battery negative cable.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].
- Remove two rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Lift the vehicle to an appropriate height.



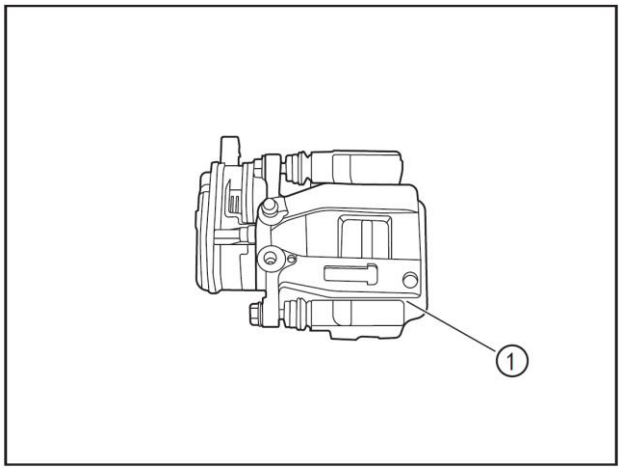
- Press the clip (A) of EPB motor connector, and disconnect the connector (1).
- Remove the brake pedal eye bolt (2) with the 13mm socket.

⚠ CAUTION

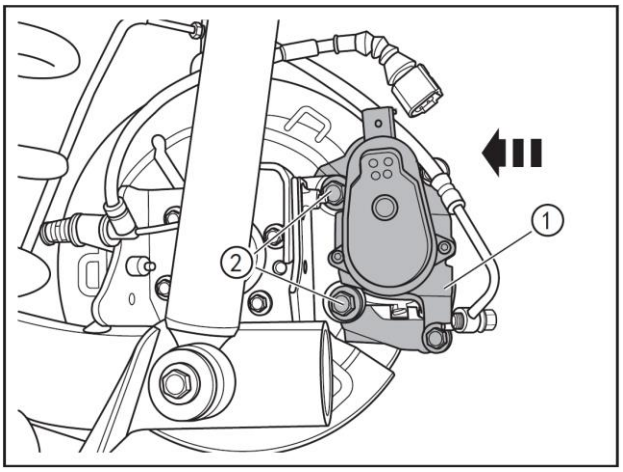
- **Before removing the joint bolt of rear brake hose, clear the foreign matter and dust around it.**
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **When disconnecting the joint bolt of rear brake hose, there will be little brake fluid flowing out, and a container is needed to collect the brake fluid spilled, and wipe away the brake fluid on the rear brake caliper.**



- Remove the fixing bolt (1) (M12 × 35) of brake caliper with the 16mm socket, and take out the rear brake caliper in the direction as indicate by the arrow.

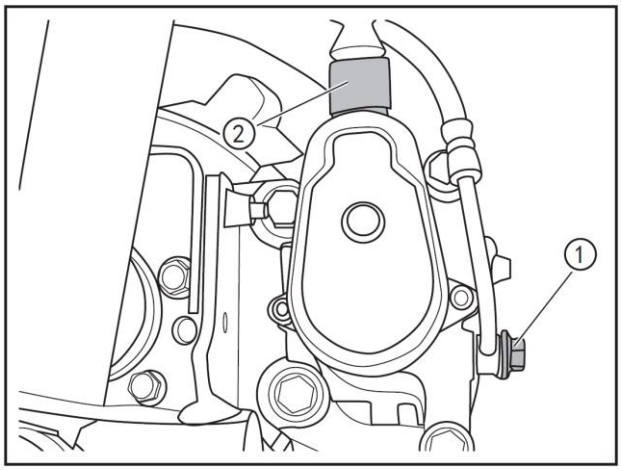


- Remove the rear brake caliper (1).



4- Refitting

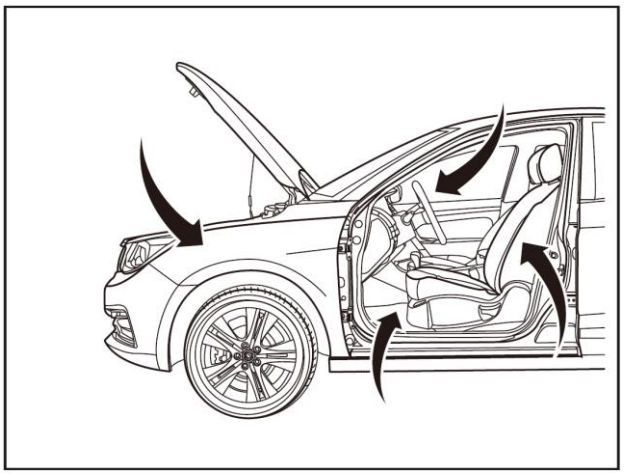
- Refit the rear brake caliper (1) in place in the direction as indicated by the arrow, and install the fixing bolt (2) (M12 × 35).
- Use a 16 mm socket to tighten the fixing bolts.



- Replace with a new gasket, align the brake pipe with the rear brake caliper mounting hole, install the eye bolt (1), and tighten it with the 13mm socket.
- Refit the connector (2) until a click is heard.
- Refit the wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- **Add brake fluid reservoir, and bleed the brake system. (Refer to "Change of Brake Fluid" in this section.)**

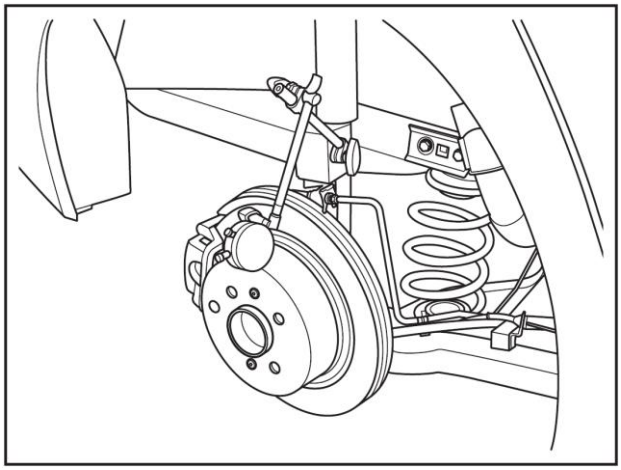


Replacement of Rear Brake Disc

1 - Protection

Place protective pads at following locations:

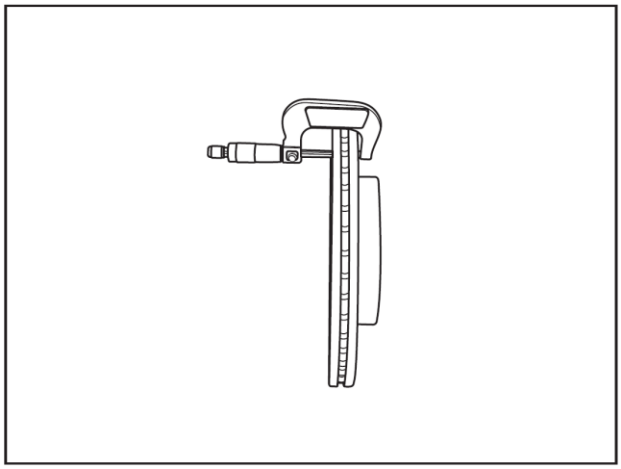
- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Check

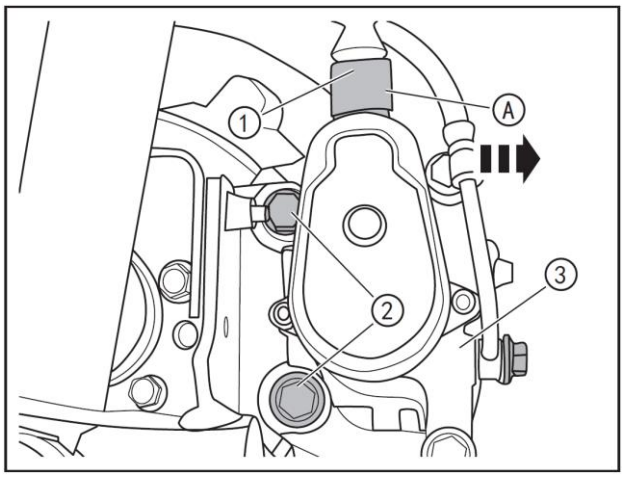
- Check the end runout of the rear brake disc with a dial gage. (Measure at the position 10mm away from the outer edge of brake disc; keep the dial gage perpendicular to the brake disc, and rotate the brake disc by one turn uniformly to check its runout)
- Measure the thickness of brake disc with a micrometer.

Rear brake disc	Standard thickness (mm)	10.3
	Runout limit (mm)	0.1
	Wear limit (mm)	8.3



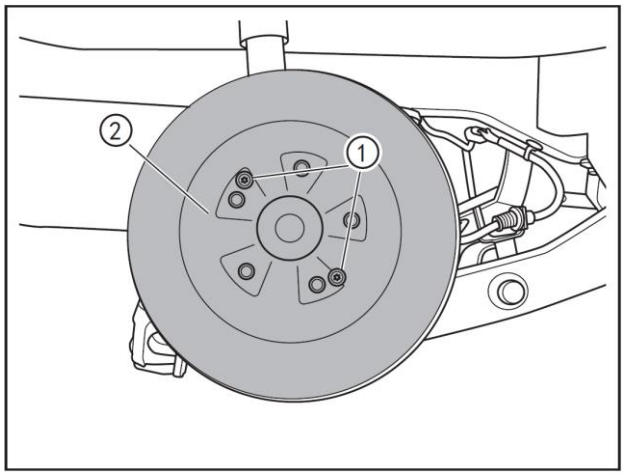
⚠ CAUTION

- To ensure the measurement accuracy, please remove the brake caliper assembly and wipe the brake disc and measuring tool clean before measurement.
- **The thickness of brake disc is to be measured at the position 10mm from the edge of brake disc, and three points should be selected every 120°. The minimum one among the three measurements is to be taken as the final result.**

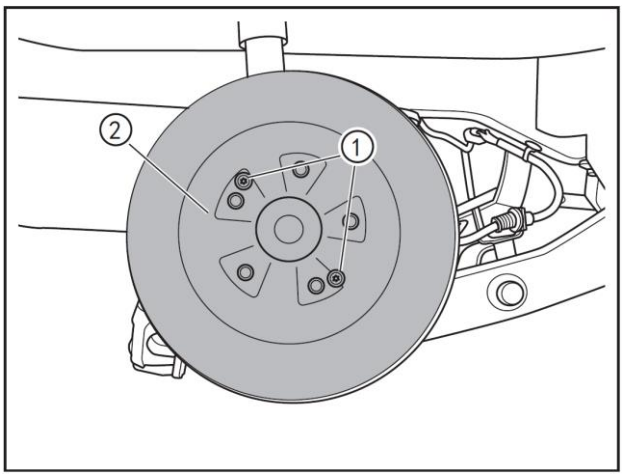


3 - Removal

- Turn on the ignition switch and release the EPB. (Refer to “Disabling and Enabling of EPB” in “Parking Brake System”)
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Press the connector clip (A) and disconnect the connector (1).
- Remove the fixing bolt (2) (M12 × 35) of brake caliper with the 16mm socket, detach the brake caliper (3) in the direction as indicate by the arrow and place it at a position involving no interference.

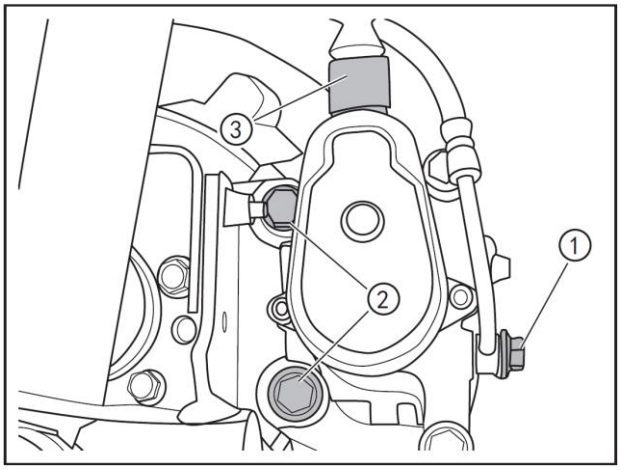


- Use the T30 screwdriver bit to remove the fixing screws (1) of the rear brake disc, and then take off the rear brake disc (2).



4- Refitting

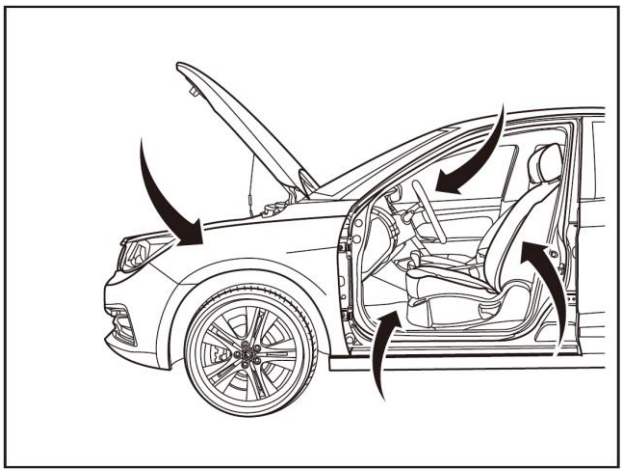
- Align the rear brake disc (1) with the mounting holes on rear hub and bearing, and install the fixing screws (2) of the brake disc.
- Use the T30 screwdriver bit to tighten the fixing screws.



- Refit the rear brake caliper (1) in place, and install the fixing bolt (2) (M12 × 35) and tighten it with the 16mm socket.
- Refit the connector (3), until a click indicating reliable locking is heard.
- Refit the wheel. (Refer to "Removal and Refitting of Wheels" in “Wheels”)

⚠ CAUTION

- After the installation is completed, depress the brake pedal repeatedly until the brake pedal becomes hard.

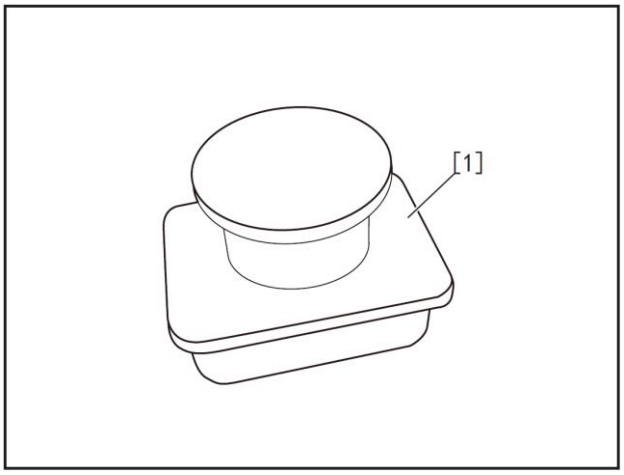


Removal and Refitting of Pressure Sensor

1 - Protection

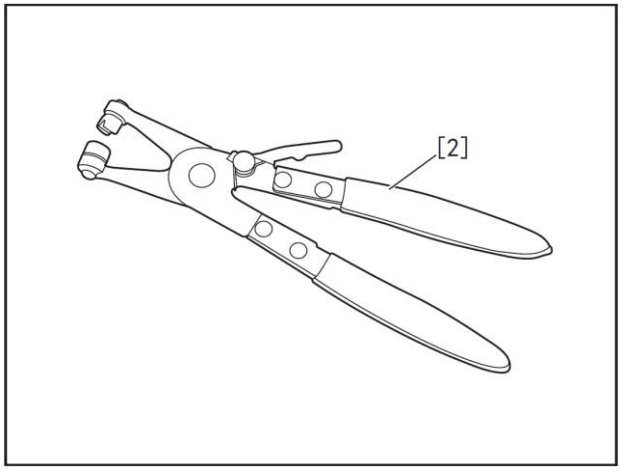
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

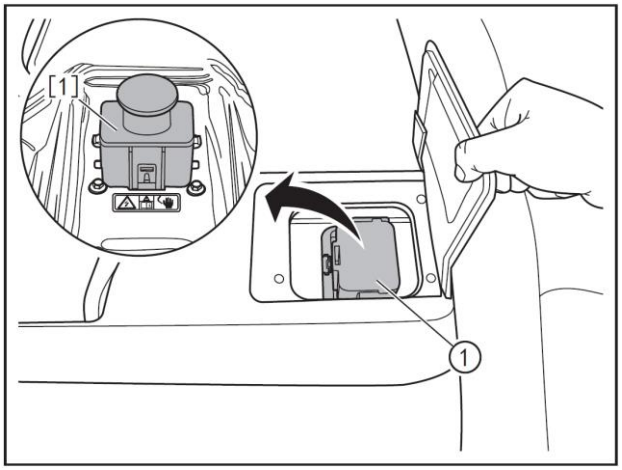


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



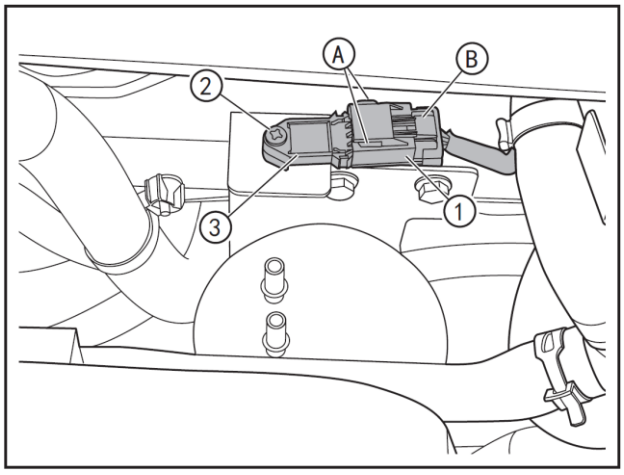
3 - Removal

⚠ CAUTION

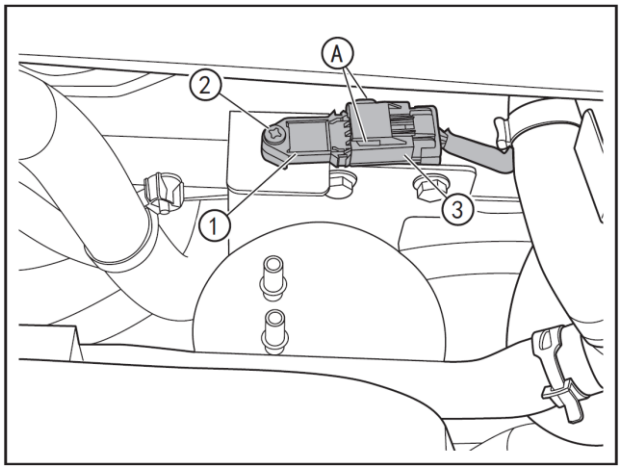
- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**

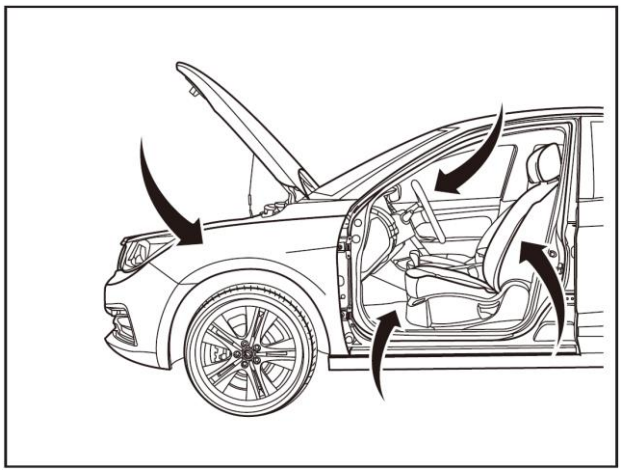


- Unlock the clip A, press in the clip B, and disconnect the connector (1).
- Use the Phillips screwdriver to remove the fixing screws (2) of pressure sensor.
- Take down the pressure sensor.



4- Refitting

- Refit the pressure sensor (1) onto the vacuum tank, and install its fixing screw (2).
- Connect the pressure sensor connector (3).
- Lock the clip A of connector.
- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

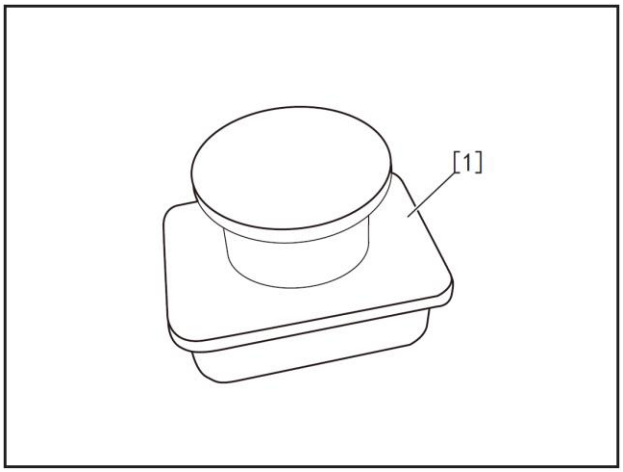


Removal and Refitting of Vacuum Tank & Bracket Assembly

1 - Protection

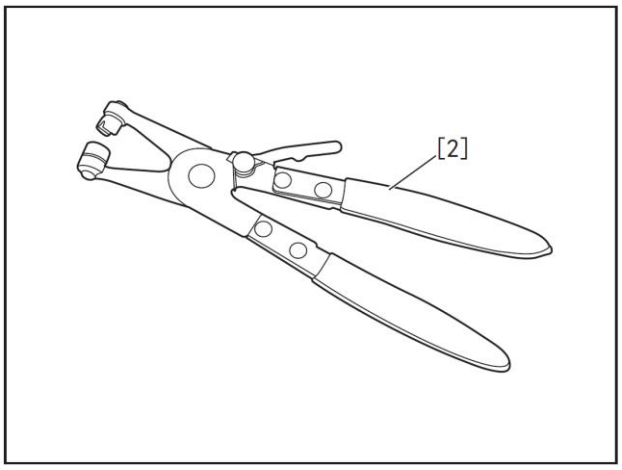
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

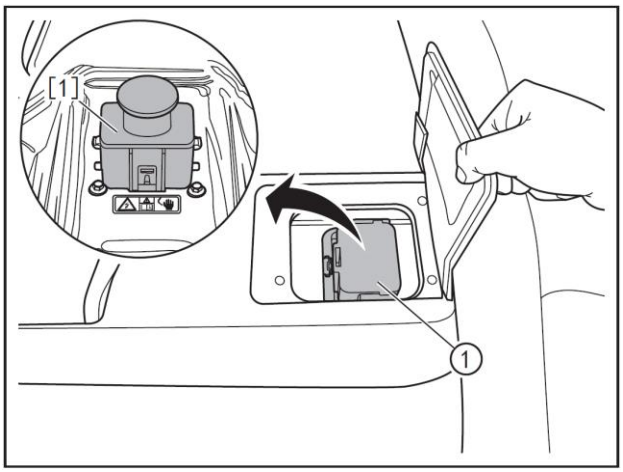


2 - Special tools

- Traction battery service switch plug (E700102)[1].



- Hose clamp removal and refitting pliers (BF0109) [2].



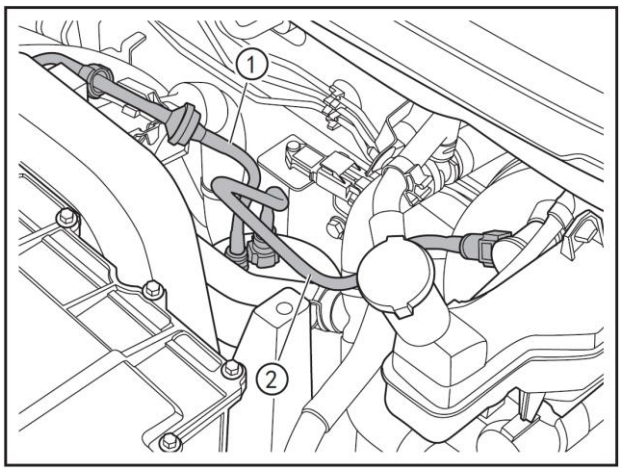
3 - Removal

⚠ CAUTION

- **Always wear insulated gloves and use insulated tools for all operations.**
- Put the shift lever in P.
- Turn off the ignition switch, and disconnect the battery negative cable.
- Remove the service switch (1). (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)

⚠ CAUTION

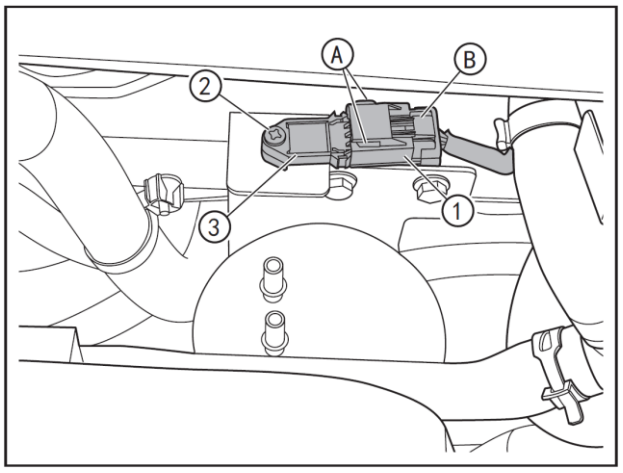
- **After removing the service switch, cover the service switch mounting hole with the traction battery service switch plug (E700102) [1] to prevent electric circuit fault when any metal chips falls into the mounting hole.**



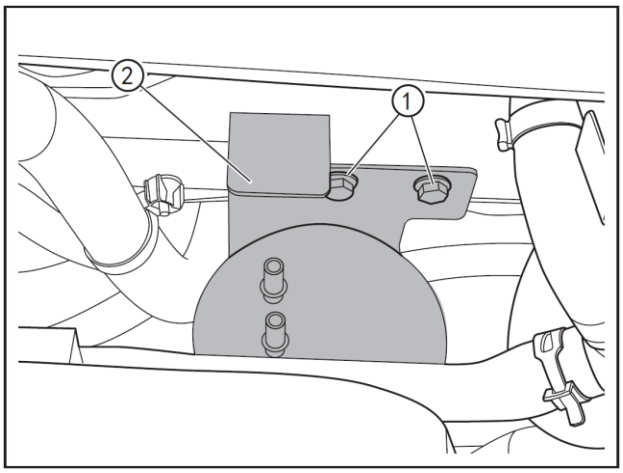
- Remove the on-board charger. (Refer to "Removal and Refitting of On-board Charger" in “Starting and Charging System”.)
- Press in the clips on both sides of the end of the vacuum pipe (1), and disconnect the vacuum pipe (1) from the vacuum tank.
- Press in the clips on both sides of the end of the vacuum pipe (2), and disconnect the vacuum pipe (2) from the vacuum tank.

⚠ CAUTION

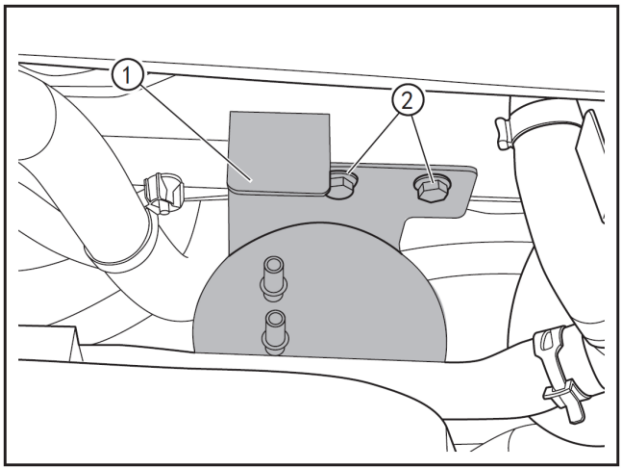
- **If the clip at the vacuum pipe end is blocked, it is recommended to rotate the vacuum pipe by a certain angle for the convenience of removal.**



- Unlock the clip A, press in the clip B, and disconnect the connector (1).
- Use the Phillips screwdriver to remove the fixing screws (2) of pressure sensor.
- Take down the pressure sensor.

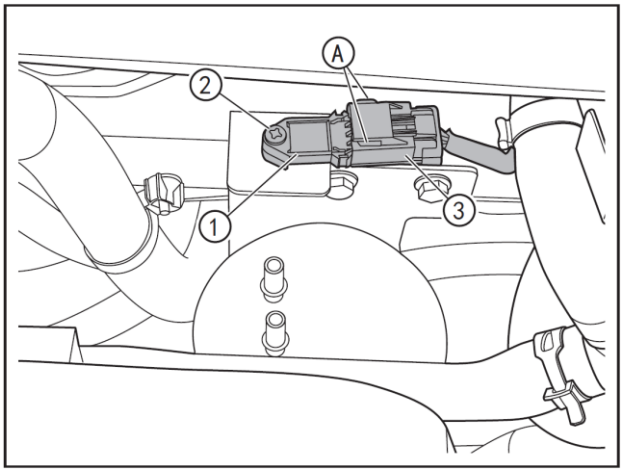


- Remove the 2 fixing bolts (M8×20) of vacuum tank & bracket assembly with the 13mm socket.
- Remove the vacuum tank & bracket assembly (2).

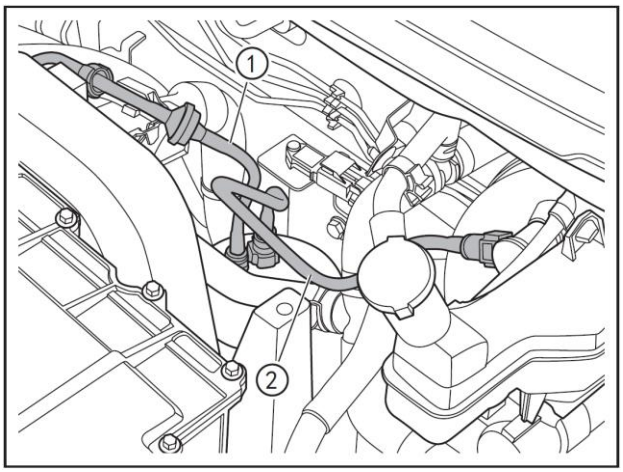


4- Refitting

- Refit the vacuum tank & bracket assembly (1) onto the vehicle body, and install its fixing bolts (2).
- Tighten the 2 fixing bolts (2) (M8×20) of vacuum tank & bracket assembly with the 13mm socket.



- Refit the pressure sensor (1) onto the vacuum tank, and install its fixing screw (2).
- Connect the pressure sensor connector (3).
- Lock the clip A of connector.



- Connect the vacuum pipe (1) and vacuum pipe (2) into the vacuum tank until a click is heard, and the pull them back to check that they are installed in place.

- Refit the service switch. (Refer to “Removal and Refitting of Service Switch” in “Traction Battery”)
- Connect the battery negative cable.

August 2018

E70 Service Manual

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Dongfeng Motor Corporation Passenger Vehicle Company
After-sales Service Technical Document

7.2

Parking Brake System

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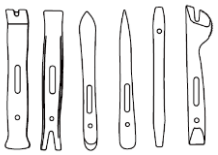
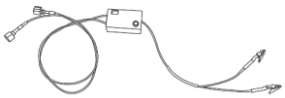
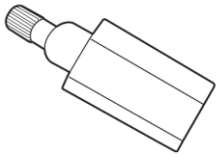
Precautions for service

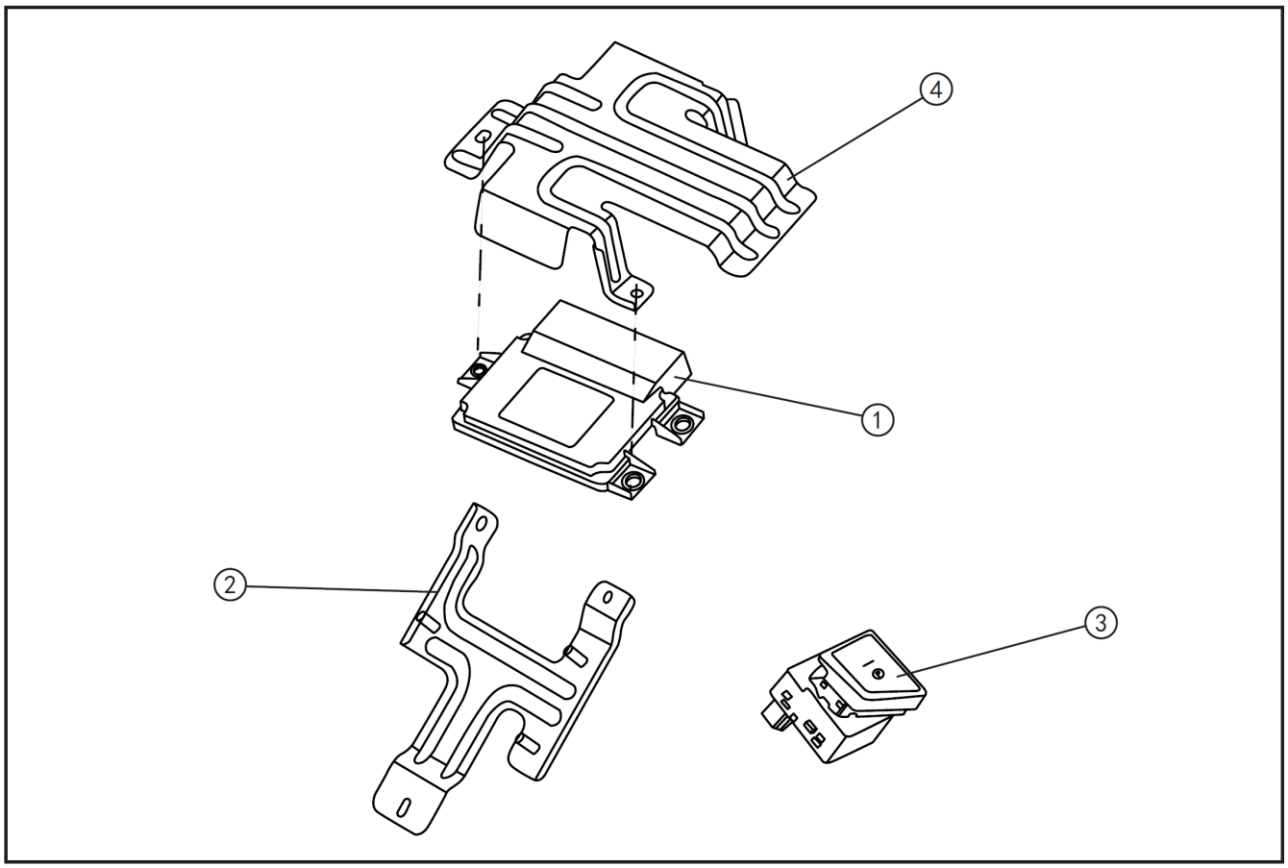
- Always use the original spare parts specified by Dongfeng Passenger Vehicle Company.
- Keep the components and site clean.
- When the removal or refitting takes place at a place involving lines, extreme care should be taken to avoid squeezing or damaging the lines.
- When the removal or refitting involves interior trims, the interior trim tool must be used, and use of sharp metal tools is prohibited.
- Never knock or hammer when removing or refitting the parking brake system.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF1102	Interior trim removal tool		For removing the interior trim and fixing clip
14A0903	Tools for emergency release of EPB		For releasing the EPB when it cannot be released normally.
14A0904	EPB adjustment tool		For releasing EPB or adjusting mounting holes when the EPB cannot be released due to EPB motor damage, or when the EPB motor cannot be installed correctly

Structure and Features

EPB control unit

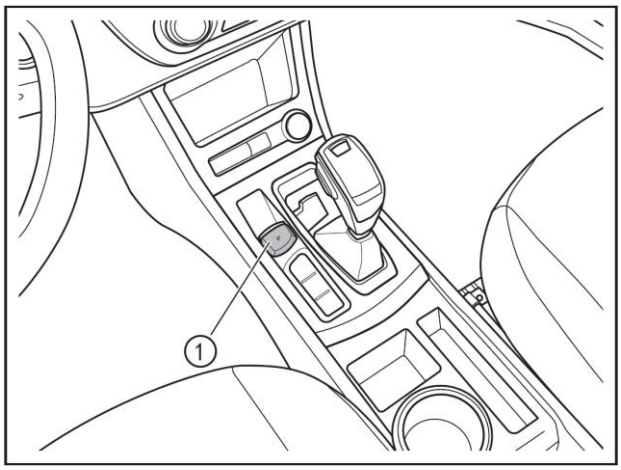


1. EPB control unit	3. EPB switch	
2. EPB ECU bracket	4. EPB ECU assembly protective cover	

DTCs of Electronic Parking Brake (EPB)

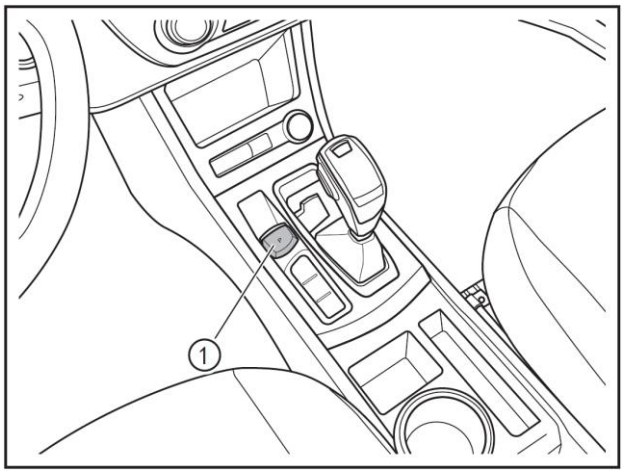
DTC	Hexadecimal	Description	Possible causes	Recommended countermeasures
U0073	88	CANBusoff	Sent error counts equal to or greater than 255	Check wire harness and connector Check other control units
C1130	14	Switch power line - short to ground or open	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1133	12	Switch pull-up detection - short to power	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1133	86	Switch pull-up detection - invalid signal	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1133	14	Switch pull-up detection - short to ground or open	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1134	12	Switch release detection - short to power	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1134	86	Switch release detection - invalid signal	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1134	14	Switch release detection - short to ground or open	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1135	2A	Switch pull-up blocking - switch blocked when pulled up	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1136	2A	Switch release blocking - switch blocked when released	Fault of switch solder joint, circuit, switch wire harness, switch plug-in, EPB wire harness, EPB connector	Inspect the 6-wire switch wire harness.
C1100	17	Overhigh voltage - ECU overvoltage	Wire harnesses and connectors of vehicle power system	1. Measure the power supply voltage 2. If abnormal, check the generator system
C1100	16	Overlow voltage - ECU undervoltage	Wire harnesses and connectors of vehicle power system	1. Measure the power supply voltage 2. If abnormal, check the generator system
C1100	60	Re-power on	Fault of wire harness and connector of vehicle power system	1. Power on again and perform manual operation, checking if it becomes normal. 2. If the fault persists, check the wire resistance of the power supply system.
C1101	16	IGN line disconnected	Wire harness and connector fault	1. With IGN ON, measure the ignition switch voltage at the EPB wire harness interface; 2. If low level is measured, inspect the ignition switch circuit;
U0293	87	Communication loss with TCU	Wire harness and connector fault	Check the EMS
U0121	87	Communication loss with ABS/ESP	Fault of ESP ECU wire harness and connector	Check the ESP

DTC	Hexadecimal	Description	Possible causes	Recommended countermeasures
U0140	87	Communication loss with BCM	Wire harness and connector fault	Check the BCM
U0116	87	Communication loss with AC	Wire harness and connector fault	Check MG control system
U0401	86	Invalid data received from ABS	EMS	Check the EMS
U0403	86	Invalid data received from ABS/ESP	ESP	Check the ESP
C1160	9	ECU hardware	Welding and elements of EPB	Replace the EPB ECU
C0574	98	PCB temperature sensor fault	Ambient temperature for element power consumption	If the ambient temperature is normal but the fault does not disappear, replace the EPB ECU.
C11B0	13	Left motor open or failed	Fault of wire harness, connector and motor winding	Inspect the motor and motor wiring.
C11B1	13	Right motor open or failed	Fault of wire harness, connector and motor winding	Inspect the motor and motor wiring.
C11B2	72	Left motor driven MOSFET (relay) failure	Welding and element fault of EPB	Replace the EPB ECU
C11B3	72	Right motor driven MOSFET (relay) failure	Welding and element fault of EPB	Replace the EPB ECU
C11B4	1D	Left motor overcurrent	Motor abnormality, connector short circuit, wire harness circuit, mechanism blockage	Inspect the calipers, motor and motor wiring.
C11B5	1D	Right motor overcurrent	Motor abnormality, connector short circuit, wire harness circuit, mechanism blockage	Inspect the calipers, motor and motor wiring.
C11B6	17	Left motor works for a long time	Transmission failure, mechanism damage	Inspect the calipers, motor and motor wiring.
C11B7	17	Right motor works for a long time	Transmission failure, mechanism damage	Inspect the calipers, motor and motor wiring.
C11B8	15	Left current detection circuit open	Welding and element fault of EPB	Replace the EPB ECU
C11B9	15	Right current detection circuit open	Welding and element fault of EPB	Replace the EPB ECU
C11BA	29	Left current detection circuit signal abnormal	Welding and element fault of EPB	Replace the EPB ECU
C11BB	29	Right current detection circuit signal abnormal	Welding and element fault of EPB	Replace the EPB ECU
C11BC	0	Left EPB not initialized or failed to initialize	Offline operation is not completed.	1. Perform initialization after ensuring that the calipers, motors, and signals are normal 2. Do servicing by pull EPB switch up
C11BD	0	Right EPB not initialized or failed to initialize	Offline operation is not completed.	1. Perform initialization after ensuring that the calipers, motors, and signals are normal 2. Do servicing by pull EPB switch up
C11BF	4	EPB slope sensor abnormality	Welding and element fault of EPB	Replace the EPB ECU
C11C0	0	EPB grade sensor not calibrated	Offline operation is not completed.	Calibrate the slope on a flat road after the vehicle is stabilized.



Release of EPB

- Under some circumstances, e.g. vehicle washing or repair, it is desired to push the vehicle forwards and backwards after the ignition switch is turned off. The vehicle washing/repair mode can be turned on by the following operations:
- Press and hold the control switch, depress the brake pedal to release the EPB, release the brake pedal, and then turn off the ignition switch. In this case, the EPB will not be automatically enabled.

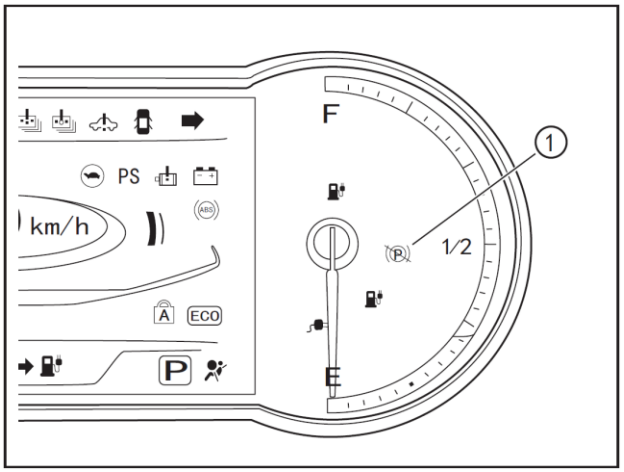


Disabling and Enabling of EPB

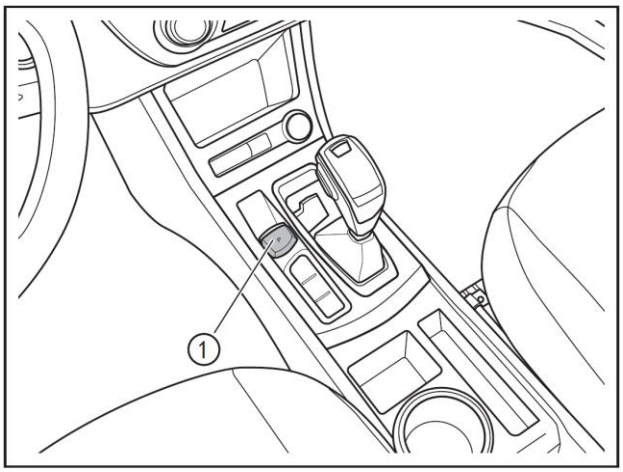
- When the rear brake system of the vehicle needs to be repaired, it is required to disable the EPB temporarily.

1- Disabling of EPB

- Turn on the ignition switch, depress the brake pedal, and press and hold the EPB switch (1).

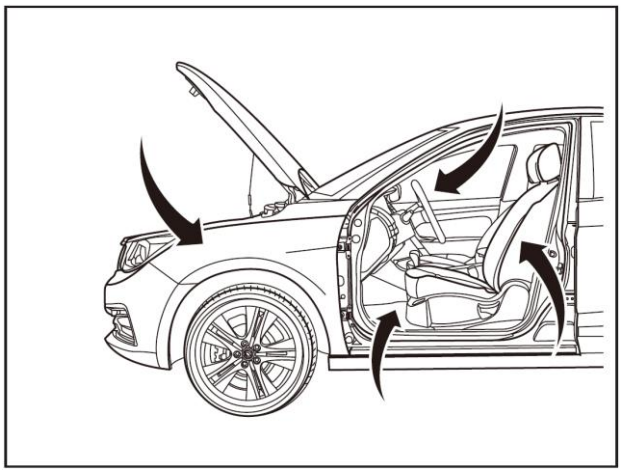


- When the EPB OFF indicator (1) on the instrument cluster flashes, release the EPB switch. While the EPB is not enabled, press the EPB switch again, and when you hear the working sound of the EPB motor, release the EPB switch. In this case, the EPB ON indicator (1) is always on. Release the brake pedal and turn off the ignition switch. In this case, the parking brake enters the maintenance mode.



2-Enabling of EPB

- Turn on the ignition switch, depress the brake pedal, pull up and hold the EPB switch (1). If you hear the working sound of the EPB motor, and the ESP OFF indicator on the instrument cluster is off, it indicates that the EPB is enabled again.

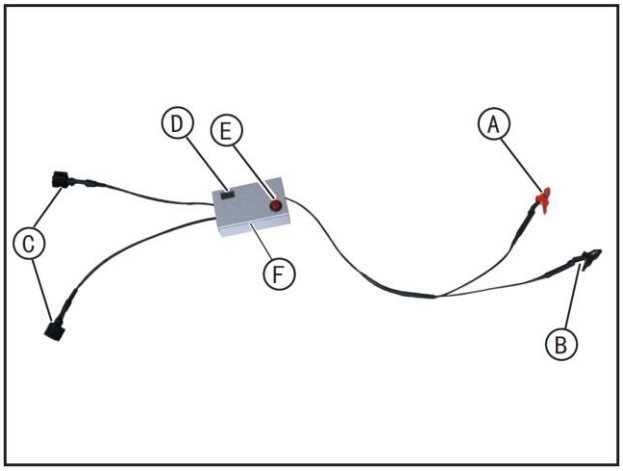


Emergency Release of EPB with Tools

1 - Protection

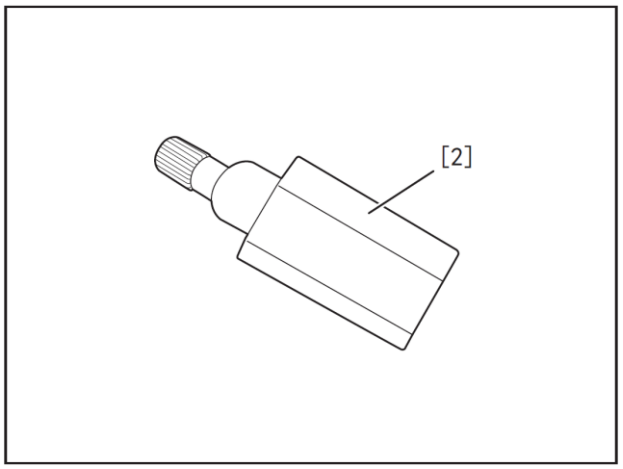
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- EPB emergency release tool (14A0903) [1].
  - Red crocodile clip (A), to be connected to the battery +;
  - Black crocodile clip (B), to be connected to the battery -;
  - Connector end (C), to be connected to the EPB motor connector end;
  - Display (D);
  - START button (E), used to switch on the power supply for releasing the EPB;
  - Control box (F).



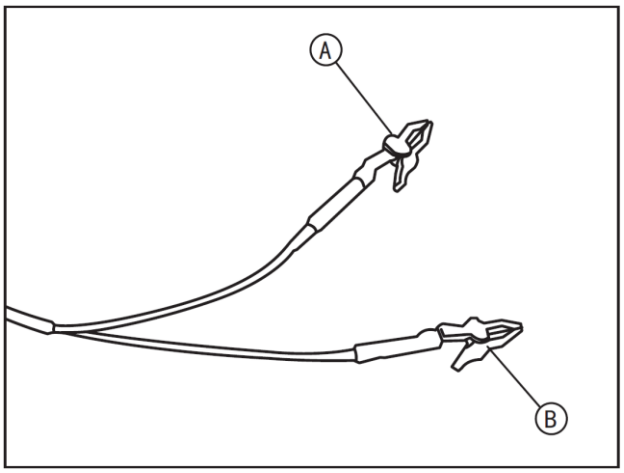
- EPB adjustment tool (14A0904) [2].

3- Emergency release measures

Symptom	Fault cause	Countermeasures
The parking brake cannot be released when the ignition switch is turned on and the EPB switch is pressed	Switch/wire harness fault	A
	ECU fault	
	MGU fault	B

CAUTION:

- When it is not possible to directly determine the cause of the fault, take action A first to try to release the brake. If action A is ineffective, take action B;
- When the battery incurs low voltage, take action A first to try to release the brake. If action A is ineffective, take action B;



4- Action A

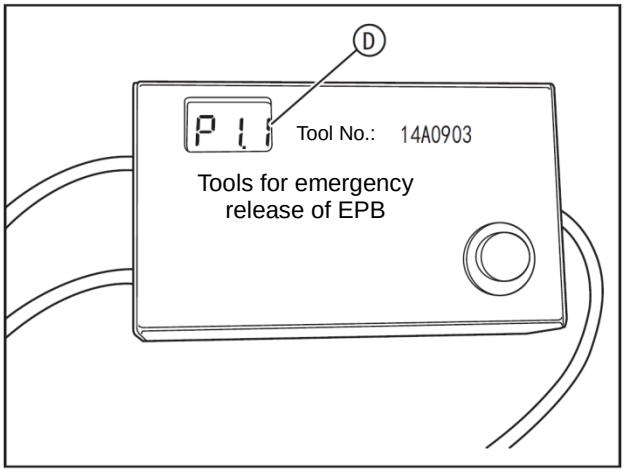
4.1- Connecting the power supply

⚠ CAUTION

- **When the vehicle is on a slope, place a wedge in front of each wheel to prevent the vehicle from moving accidentally before the emergency release of parking brake.**
- Turn off the ignition switch, and disconnect battery negative cable.
- Connect the red crocodile clip (A) of the tool to the battery + and the black crocodile clip (B) to the battery -.

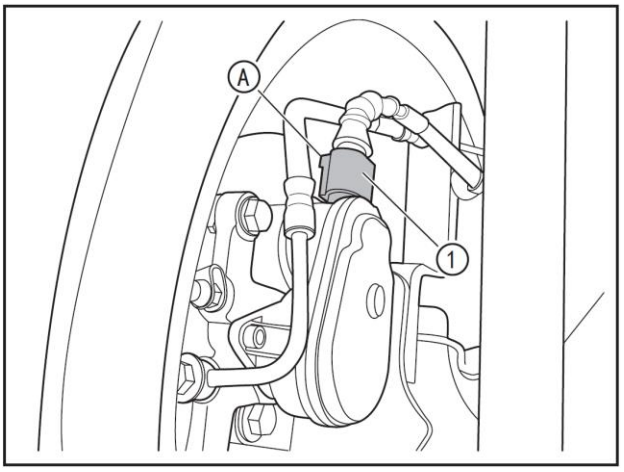
⚠ CAUTION

- **Connect the crocodile clips to the battery + and battery - correctly without reverse.**
- **Neither pull the wire harness of tool nor drop the control box (F), so as to avoid damaging the tool.**
- **Do not disassemble the tool for fear of abnormal tool timing.**



4.2- Tool self-test

- After the power supply is connected, the controller will perform the self-test. Then, the display (D) will flash “P1.1” continuously, and then the “00.0” will be displayed, indicating that the self-test is finished and the tool is ready for use.

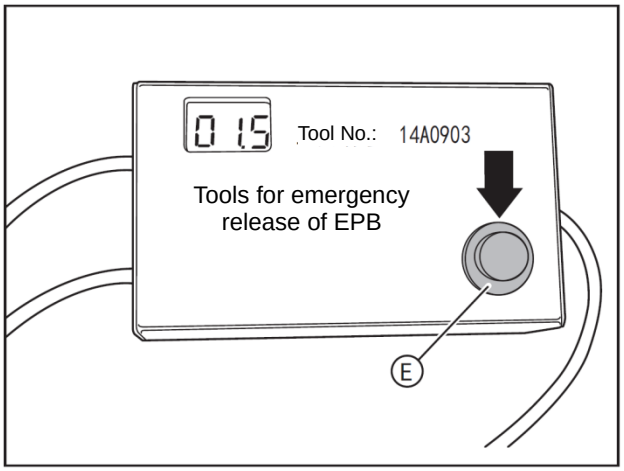


4.3- Installing tool connector

- Press the connector clip (A) and disconnect the connector (1).
- Insert the special tool connector end (C) into the EPB motor connector.

⚠ CAUTION

- **Removing the EPB connector forcibly with clip unlocked will cause damage to the connector!**
- **Disconnect the EPB motor connector on the side where the wheel is locked.**

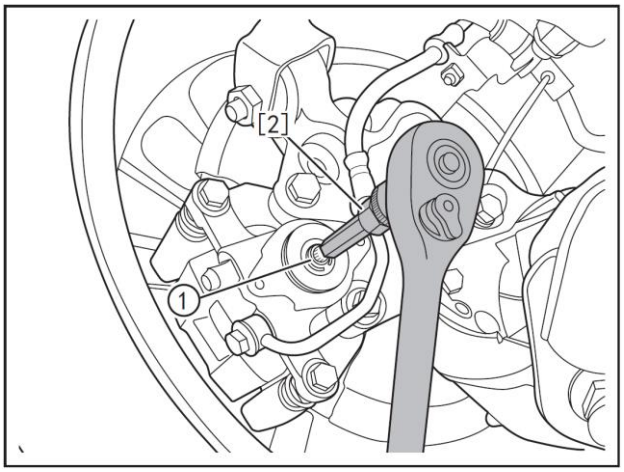


4.4- Operations

- Press the red START button (E) on the tool. Then, the controller will count down from 1.5s, and the power will be cut off after 1.5s. You can hear for working sound of EPB motor to confirm whether the motor is working normally.
- Shake the vehicle to check if the parking brake is released. If not, repeat the above operation after a while.
- If the parking brake still cannot be released, remove the EPB motor, and then disengage the parking brake from the brake caliper using the EPB adjustment tool (14A0904).

⚠ CAUTION

- **If the action mentioned above is taken for emergency release of EPB, operate the EPB repeatedly to confirm that the wheel will not be locked again. If the wheel is locked again, release the parking brake and then drive the vehicle to the service station for detailed inspection of parking brake system.**
- **If the parking brake cannot be released by the action mentioned above, please do as follows.**
- **Do not perform such emergency release operation for a long time or repeatedly for fear or battery undervoltage.**

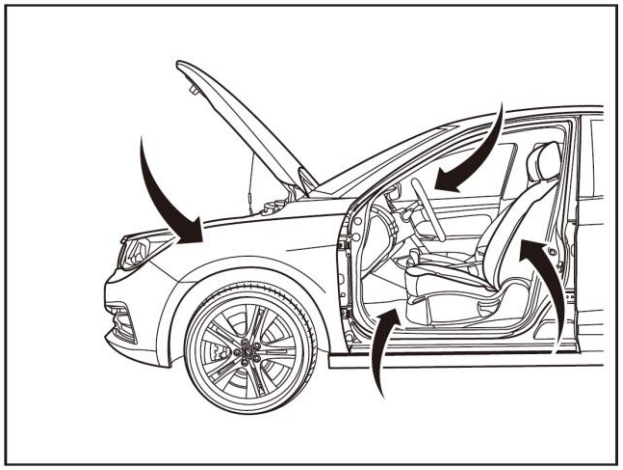


5- Action B

- Remove the EPB motor. (Refer to "Removal and Refitting of Rear EPB Motor" in this section).
- Insert the EPB adjustment tool (14A0904) [2] into the motor spline hole (1) after alignment, and use the ratchet wrench to rotate clockwise for 2-3 turns to release the parking brake.
- After the parking brake is released, move the vehicle to the service station to replace the rear brake wheel cylinder & EPB motor assembly. (Refer to "Removal and Refitting of Rear Brake Wheel Cylinder" and "Removal and Refitting of Rear EPB Motor" in this section).

⚠ CAUTION

- **When it is not possible to directly determine the cause of the fault, take action A first to try to release the brake. If action A is ineffective, take action B ;**
- **When the battery incurs low voltage, take action A first to try to release the brake. If action A is ineffective, take action B;**
- **Never adopt action B unless the parking brake cannot be released by the action A. It is also prohibited to remove the EPB motor when the parking brake can be released normally by action A (that is, the electronic caliper is normal).**
- **Before installing the EPB motor, replace with a new seal, and apply a proper amount of brake fluid to the mounting surface of seal. When installing the EPB motor, pay attention to applying a pressing force, and do not press it in forcibly, so as to avoid scratching and cutting the rubber seal.**
- **After the EPB motor is replaced, initialize the EPB system using the scan tool.**

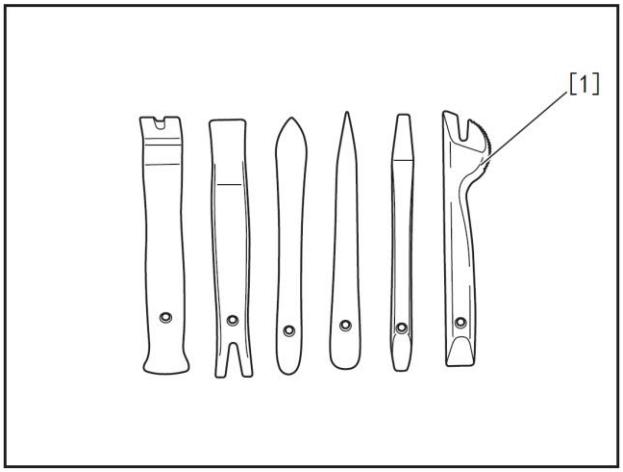


Removal and Refitting of EPB Switch

1 - Protection

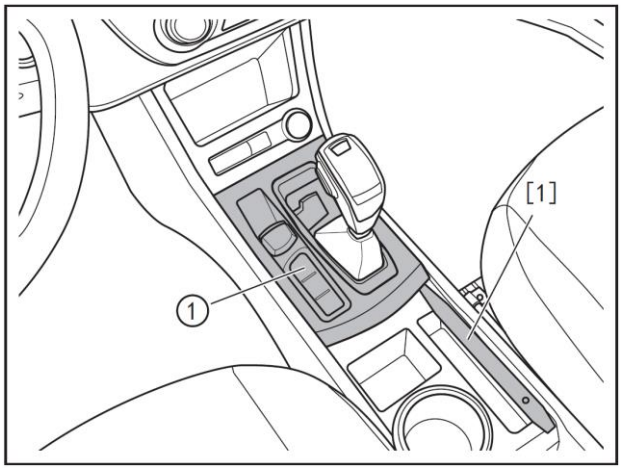
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

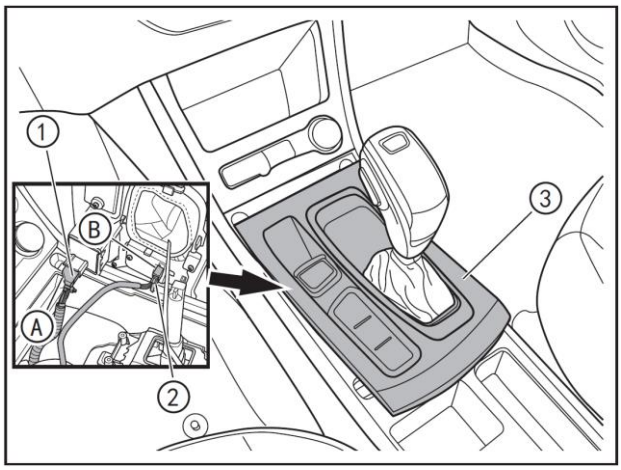


3 - Removal

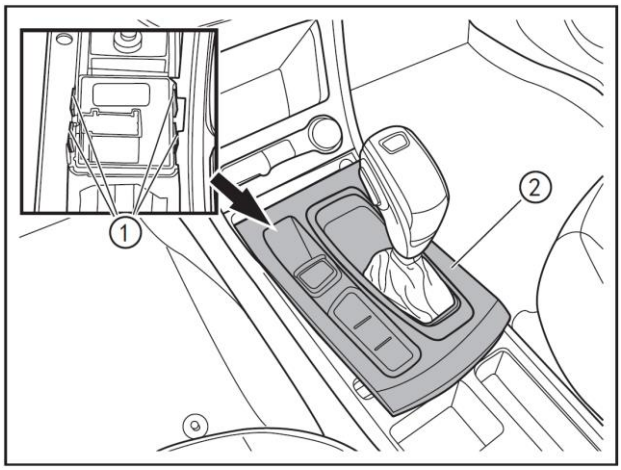
- Turn off the ignition switch, and disconnect battery negative cable.
- Use the interior trim removal tool (BF1102) [1] pry the 4 corners of the shift panel (1).

⚠ CAUTION

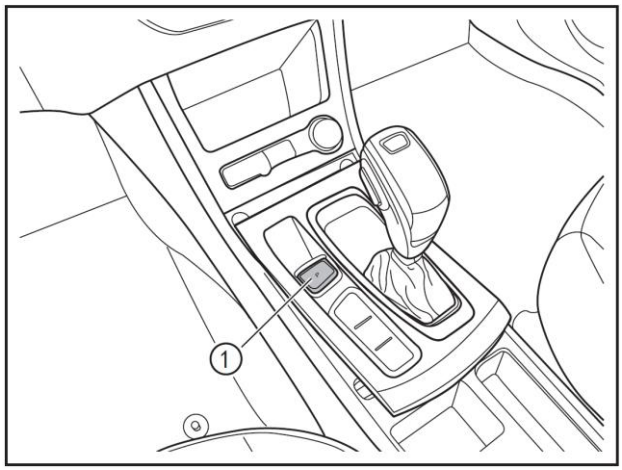
- **When removing and refitting the shift panel, prevent pulling the connecting cable between the shift lever and the shifter. Otherwise, the cable will be broken, making the shifter out of service.**



- Open the shift panel (1).
- Press the clip A on the EPB switch connector to disconnect the EPB switch connector (2).
- Lift the clip B of shift mechanism connector with the small slotted screwdriver, and then disconnect the shift mechanism connector (3).

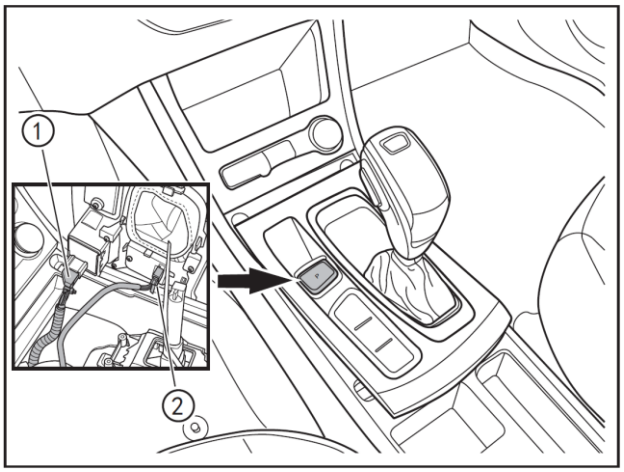


- Pry the 4 grooves at the corners of EPB switch (1), and then take the EPB switch out of the shift panel (2).

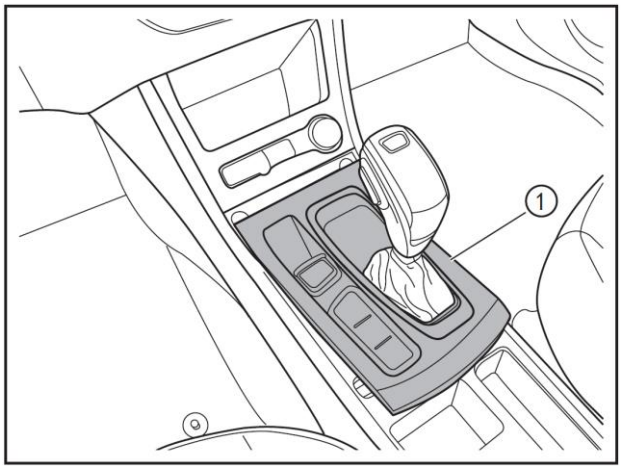


4- Refitting

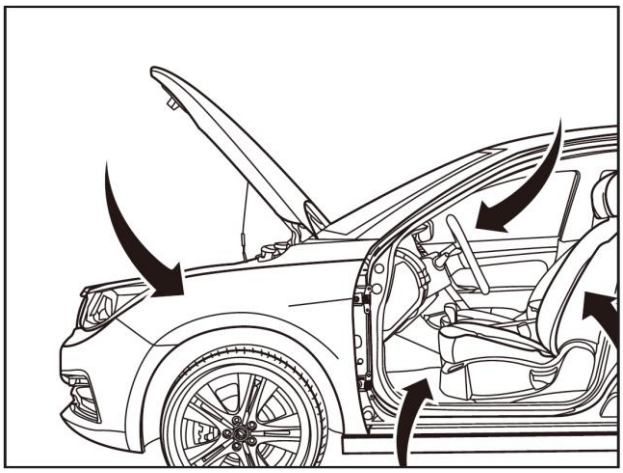
- Clamp the EPB switch (1) onto the shift panel, and ensure that it is fixed firmly.



- Refit the EPB switch connector (1), until a “click” which indicates in-place installation is heard.
- Refit the shift mechanism connector (2), until a “click” which indicates in-place installation is heard.



- Clamp the shift panel (1) onto the console, and ensure that it is fixed firmly.
- Turn on the ignition switch and operate the EPB switch to ensure that the EPB works normally.

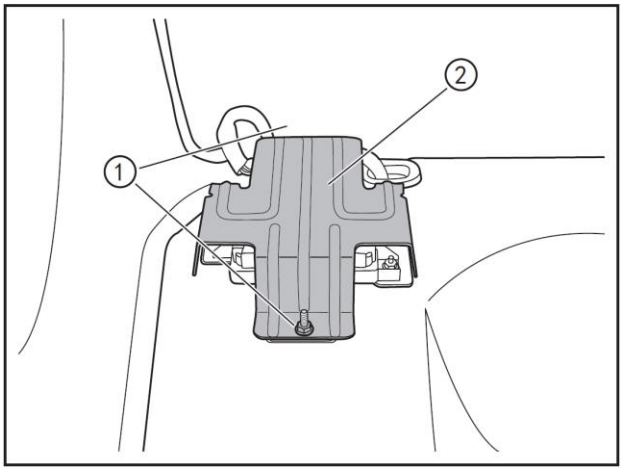


Removal and Refitting of EPB ECU

1 - Protection

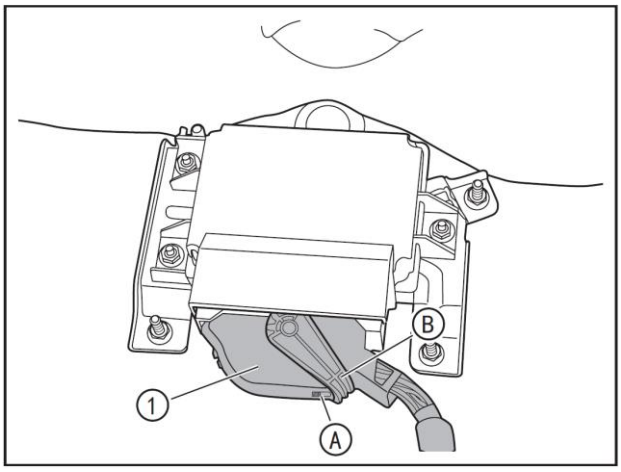
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.

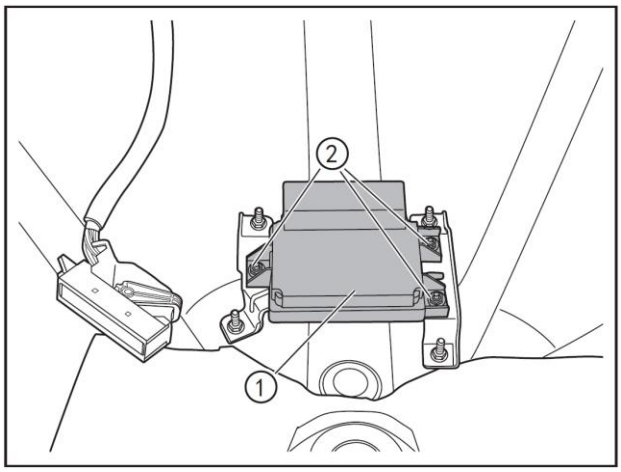


2 - Removal

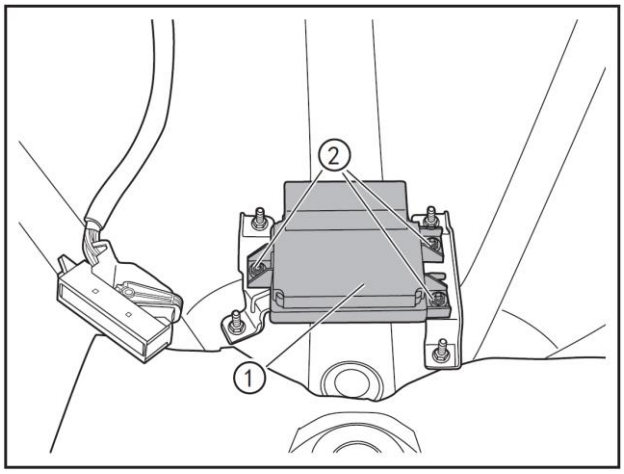
- Open the trunk lid and remove the trunk mat.
- Disconnect the battery negative cable.
- Remove the fixing nuts (1) of the EPB ECU cover with the 10mm socket.
- Remove the EPB ECU cover (2).



- Press the clip (A) of EPB ECU connector, unlock the clip (B), and then disconnect the connector (1).

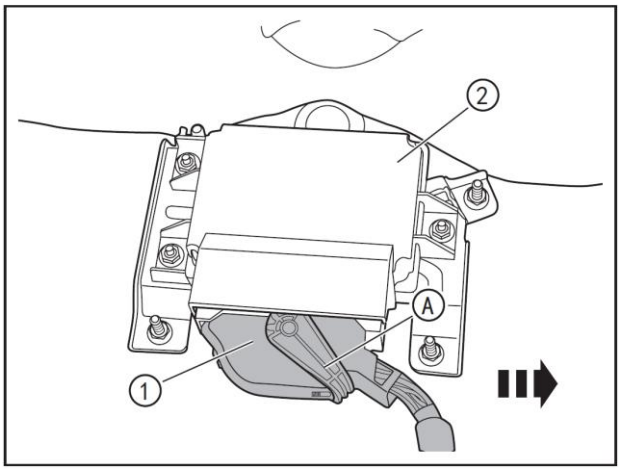


- Remove the fixing nut (2) of EPB ECU (1) with the 10mm socket, and then take off the EPB ECU.



3- Refitting

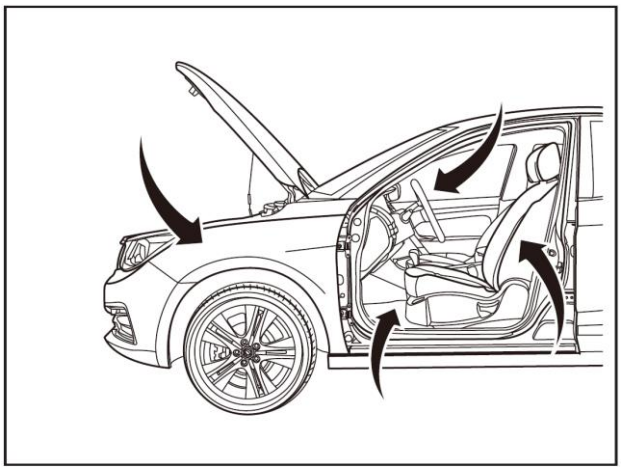
- Refit the EPB ECU (1) onto the bracket after alignment, and install the fixing nut (2).
- Tighten the fixing bolts to 8N·m with a 10 mm socket.



- Align the connector (1) with the EPB ECU (2), and lock the clip (A) in the direction as indicated by the arrow.

⚠ CAUTION

- **After the installation is completed, connect the scan tool to perform matching and learning of EPB ECU.**

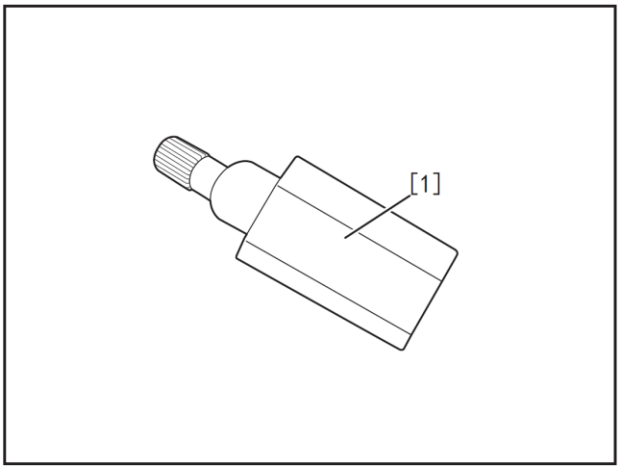


Removal and Refitting of Rear EPB Motor

1 - Protection

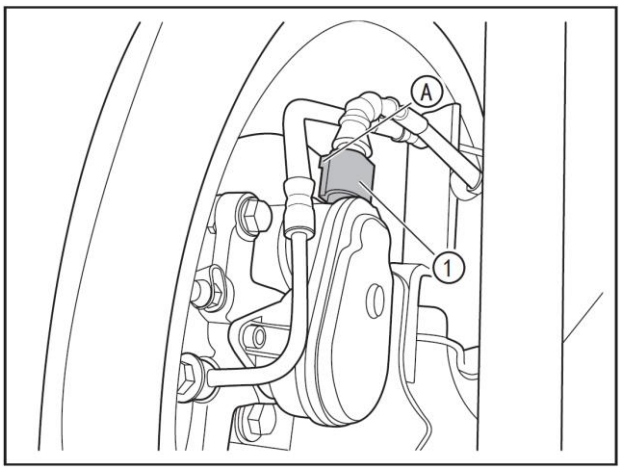
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



2 - Recommended tools

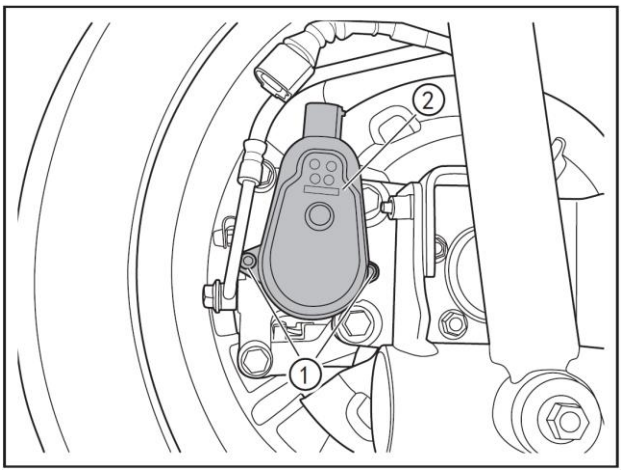
- EPB adjustment tool (14A0904) [1].



3 - Removal

⚠ CAUTION

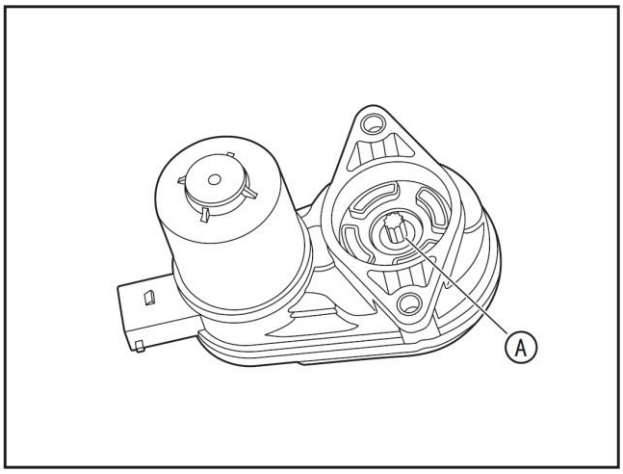
- **Turn on the ignition switch, and depress the brake pedal while pressing the EPB switch until the parking brake is released.**
- **After the parking brake is released, release the brake pedal, press the EPB switch, and turn off the ignition switch.**
- Press the connector clip (A) and disconnect the connector (1).



- Remove the fixing bolt (1) of EPB motor with the 5mm socket, and remove the EPB motor (2).

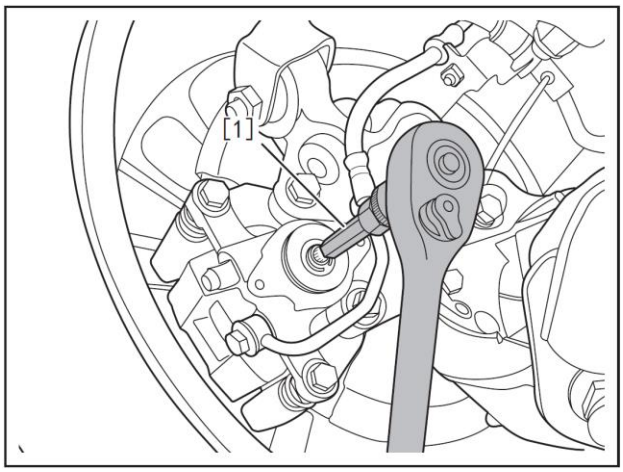
⚠ CAUTION

- **Discard the seal removed from the brake wheel cylinder, and replace it with a new one.**



4 - Check

- Check the ratchet gear (A) for wear and apply a small amount of grease to the ratchet gear.

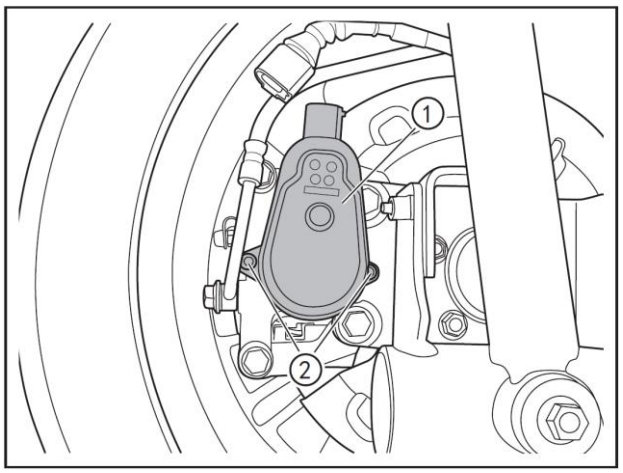


5- Refitting

- When the EPB motor cannot be installed correctly, use the EPB adjustment tool (14A0904) [1] to adjust the EPB motor spline hole as appropriate.

⚠ CAUTION

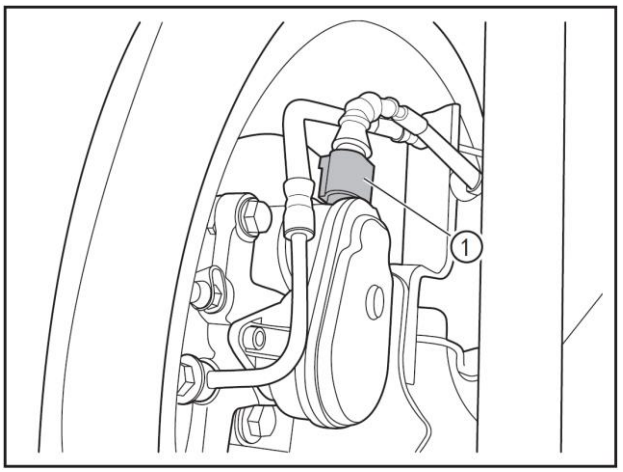
- **When the motor cannot be rotated by the tool [1] to adjust the position of spline hole, do not operate violently, so as to avoid damage of spline hole and other components.**



- Refit the EPB motor (1) on the brake wheel cylinder in place after alignment, install the 2 fixing bolts (2) of the EPB motor, and tighten them with the 5mm socket. The tightening torque is 7~9N·m.

⚠ CAUTION

- **Replace with a new seal, and apply a proper amount of brake fluid to the mounting surface of seal. When installing the EPB motor, pay attention to applying a pressing force, and do not press it in forcibly, so as to avoid scratching and cutting the rubber seal.**
- **After the EPB motor is installed, please check whether the mating surfaces of the EPB motor and the caliper body are fully fitted. If not, do not install the fixing screw, and do not try to get the mating surface well fitted by tightening the screw, otherwise the EPB motor will be damaged. Instead, it is recommended to remove the EPB motor and install it again, and when the mating surfaces are well fitted, screw in and tighten the fixing screws.**



- Refit the connector (1) until a click is heard.

⚠ CAUTION

- **Install the battery negative cable, and use the scan tool to perform brake motor learning and clear the DTCs in EPB ECU.**

August 2018

E70

Service Manual

7. Brake

7.1 Braking System

7.2 Parking Brake System

7.3 Brake Control System

7

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Dongfeng Motor Corporation Passenger Vehicle Company

After-sales Service Technical Document

7.3

Brake Control System

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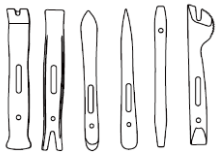
Precautions for service

- When removing or refitting the system electrical components and wire harness connectors, always disconnect battery negative cable.
- The electronic control unit or sensor etc. is likely to be damaged when impacted or knocked, so pay attention to preventing the electronic control unit from being impacted or knocked.
- Ensure that the electronic control unit and its circuits are grounded well, and prevent the connector, terminal and other positions from being contaminated by oil or water etc.
- The wheel speed sensor, electronic control unit and brake pressure regulator in the system are unrepairable, so if damage occurs, please replace them respectively in a whole.
- After servicing the brake hydraulic system, or if the brake pedal is felt soft in use, please bleed the brake system in accordance with the required methods and sequence.
- Always use the tire of the model and specification specified by Dongfeng Passenger Vehicle Company, for different types of tires may affect the braking effect.

Special tools

Tool No.	Tool Name	Tool Picture	Description
BF1102	Interior trim removal tool		For removing interior trim

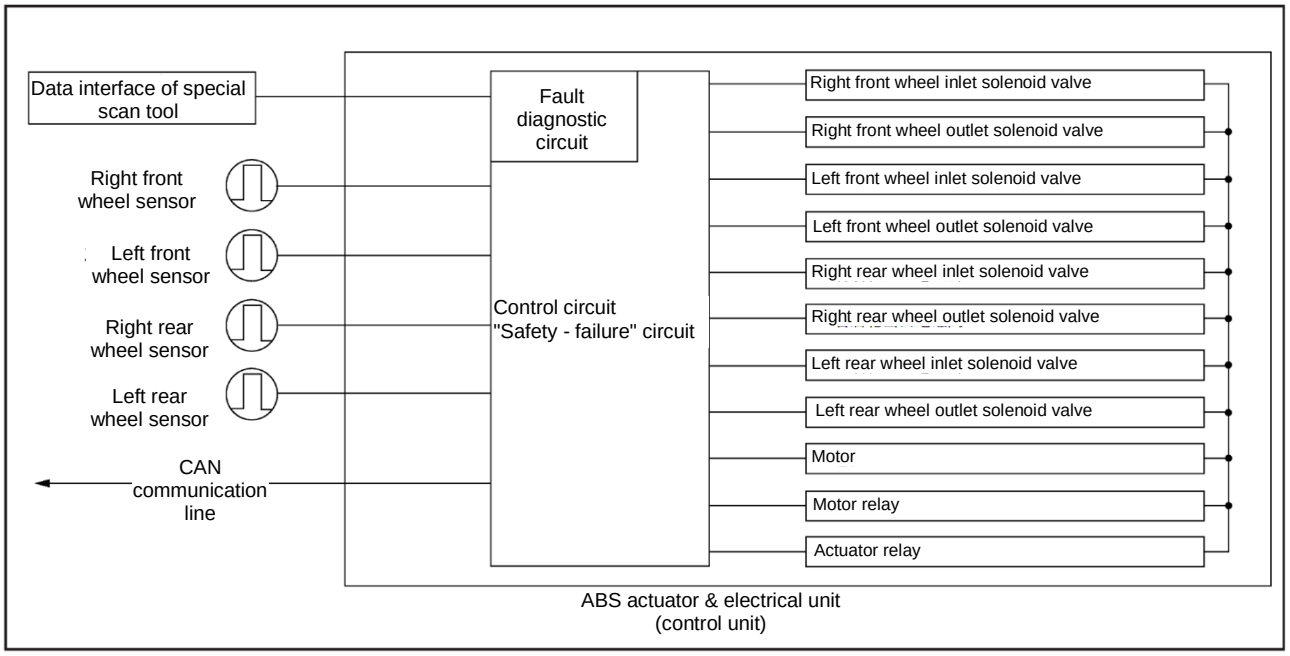
Recommended Fluids and Lubricants

Position	Name	Type	Grade	Consumption / vehicle
Braking System	Synthetic brake fluid	4606 (DOT4)	DOT4	850ml

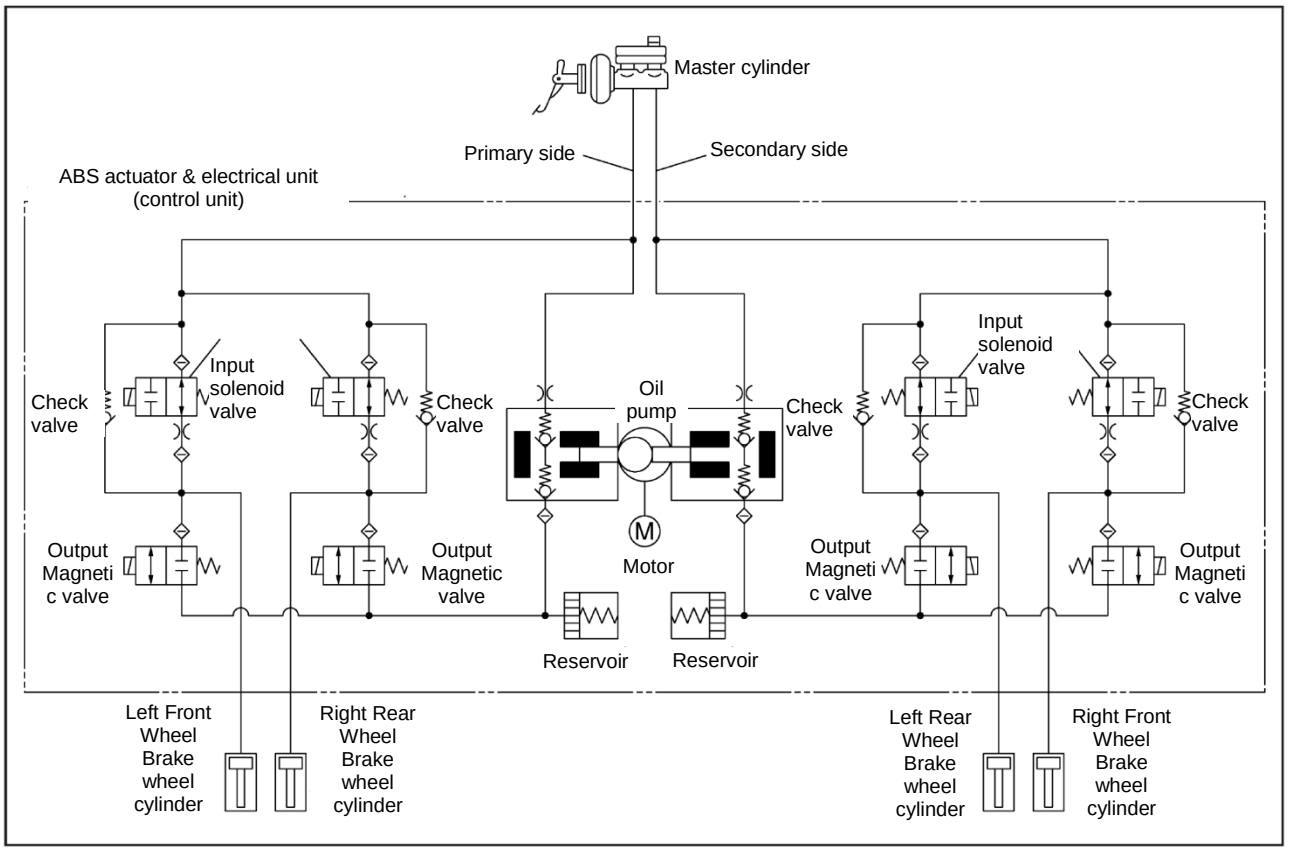
Tightening Torque

Sequence number	Name	Torque (N·m)
1	Brake oil pipe nut	16.2
2	Front wheel speed sensor fixing bolt	10
3	Rear wheel speed sensor fixing bolt	10

Control Unit



Hydraulic Circuit Diagram



ABS Function

- The anti-lock braking system has the function of wheel rotation detection during braking, and it can prevent 4-wheel locking via the electronic control unit, so as to enhance the stability in the case of sudden braking. And also improve the operating flexibility during obstacle avoidance.
- Special scan tool may be used to perform electrical system diagnosis.

⚠ CAUTION

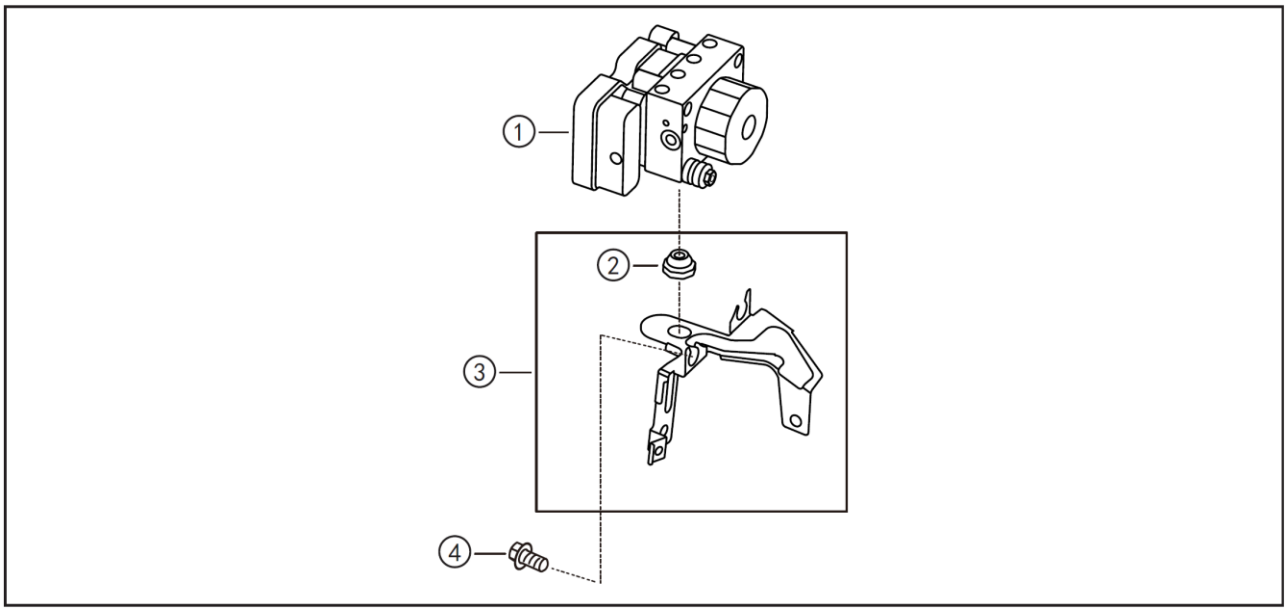
- **When you start the vehicle or the vehicle is just started, the brake pedal may vibrate, or, you will hear the motor working noise from the engine compartment. This is normal for operation and inspection.**
- When the ABS is working, the brake pedal may vibrate slightly, and you may hear the mechanical noise, which is normal.
- In the case the vehicle travels on a rough, gritty or snowy (of deep and fresh snow) road, the braking distance may be longer than that for the car without a ABS.

EBD

- EBD (electronic brakeforce distribution) is a system used to measure the slight sliding displacement between front and rear tires during braking. It controls the brake fluid pressure via electronic control unit to reduce the rear tire sliding displacement, so as to improve the operation stability.
- Special scan tool may be used to perform electrical system diagnosis.

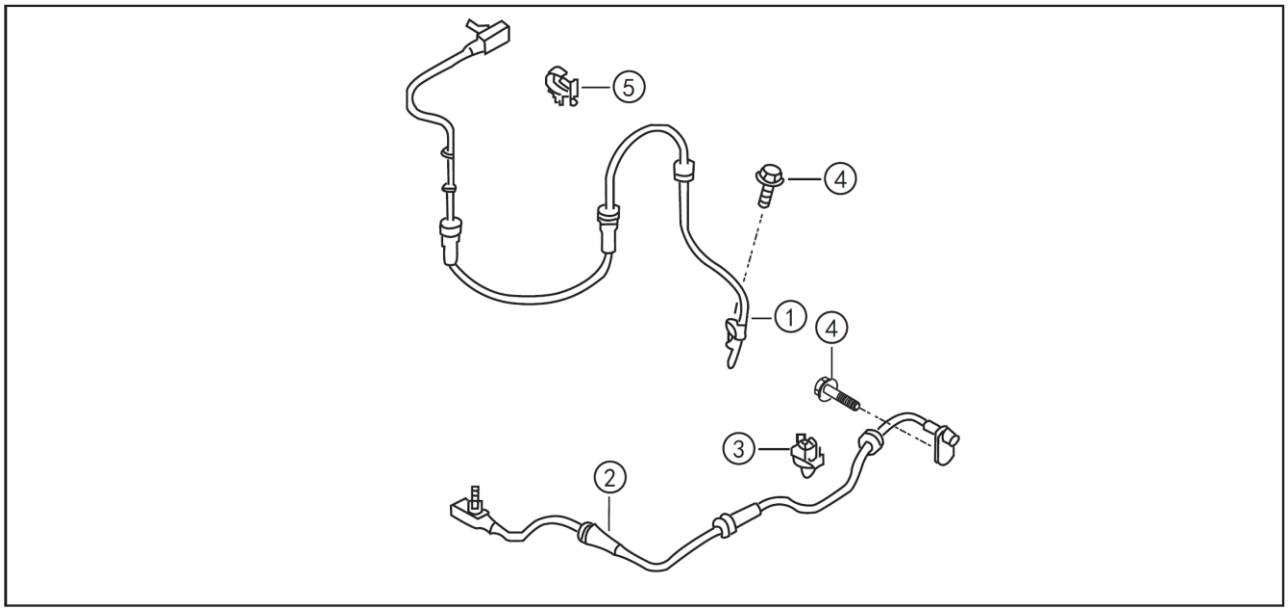
Structure and Features

ABS Hydraulic Unit Assembly



1. ABS hydraulic unit	3. Hydraulic unit bracket	
2. Damping cushion	4. Bolt	

Wheel speed sensor



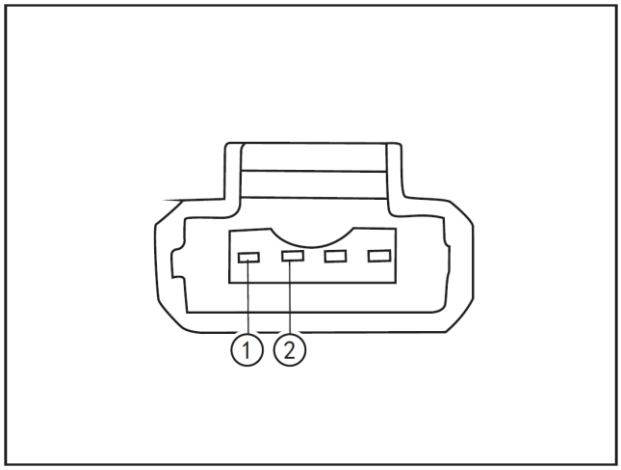
1. Front wheel speed sensor	3. Support clip	5. Pipe clamp
2. Rear wheel speed sensor	4. Bolt	

DTCs and Descriptions

DTC	Description	Possible causes	Recommended countermeasures
C1900	ECU: high voltage	Poor contact of battery terminal	Clean the terminal
C1901	ECU: low voltage	Poor contact of battery terminal	Clean the terminal
C1020	ECU error (errors of hardware and processor)	ABS internal damage	Replace ABS
C0031	Left front wheel speed sensor: (signal error) out of range, loss, noise, intermittent	Foreign matters on the sensor or ring gear	Clean probe and ring gear
C0032	Left front wheel speed sensor: signal line short to ground or open; power line open	Poor connection of sensor wire harness	Check the connection of sensor wire harness
C00A9	Left front wheel speed sensor: common error	Large distance between sensor and ring gear	Check the distance between sensor and ring gear
C0034	Right front wheel speed sensor: (signal error) out of range, loss, noise, intermittent	Foreign matters on the sensor or ring gear	Clean probe and ring gear
C0035	Right front wheel speed sensor: signal line short to ground or open; power line open	Poor connection of sensor wire harness	Check the connection of sensor wire harness
C00AA	Right front wheel speed sensor: common error	Large distance between sensor and ring gear	Check the distance between sensor and ring gear
C0037	Left rear wheel speed sensor: (signal error) out of range, loss, noise, intermittent	Foreign matters on the sensor or ring gear	Clean probe and ring gear
C0038	Left rear wheel speed sensor: signal line short to ground or open; power line open	Poor connection of sensor wire harness	Check the connection of sensor wire harness
C00AB	Left rear wheel speed sensor: common error	Large distance between sensor and ring gear	Check the distance between sensor and ring gear
C003A	Right rear wheel speed sensor: (signal error) out of range, loss, noise, intermittent	Foreign matters on the sensor or ring gear	Clean probe and ring gear
C003B	Right rear wheel speed sensor: signal line short to ground or open; power line open	Poor connection of sensor wire harness	Check the connection of sensor wire harness
C00AC	Right rear wheel speed sensor: common error	Large distance between sensor and ring gear	Check the distance between sensor and ring gear
C0010	Valve error: left front wheel inlet valve	ABS internal damage	Replace ABS
C0011	Valve error: left front wheel outlet valve	ABS internal damage	Replace ABS
C0014	Valve error: right front wheel inlet valve	ABS internal damage	Replace ABS
C0015	Valve error: right front wheel outlet valve	ABS internal damage	Replace ABS
C0018	Valve error: left rear wheel inlet valve	ABS internal damage	Replace ABS
C0019	Valve error: left rear wheel outlet valve	ABS internal damage	Replace ABS
C001C	Valve error: right rear wheel inlet valve	ABS internal damage	Replace ABS
C001D	Valve error: right rear wheel outlet valve	ABS internal damage	Replace ABS
C1095	Valve relay error	ABS internal damage	Replace ABS
C0020	Return pump error	ABS internal damage	Replace ABS
C0040	Brake pedal switch error	Poor connection of ABS wire harness and brake pedal signal line, large ground resistance of brake pedal line	Check the connection condition of wire harness, and measure the ground resistance of brake pedal line
U0073	CANBusOfferror	Error counts sent by CAN controller equal to or greater than 255	Check wire harness and connector, and check other control units

Common fault troubleshooting

Symptoms	Check item
Frequent operation of ABS	Brakeforce distribution
	Looseness of front and rear axles
	Wheel speed sensor and sensor rotor system
Unexpected pedal reaction force	Brake pedal travel
	Verify that there is sufficient braking force when ABS is not in service.
ABS work failure	Wheel speed sensor
	ABS not working at a vehicle speed below 10km/h.
Pedal vibration or ABS working noise	Wheel speed sensor
	In the following situations, when you slightly depress the brake pedal (i.e., just place your foot on the pedal), the ABS will start and you can feel vibration, which is normal.
ABS warning lamp abnormality	ABS actuator and control unit
	CAN communication line
	Instrument Cluster

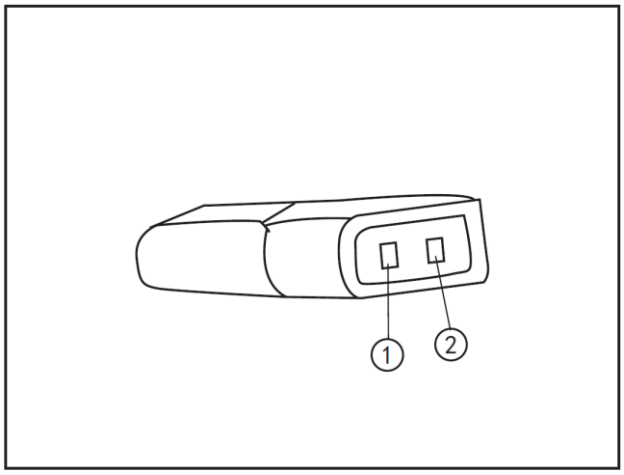


Brake Lamp Switch

1. Turn ignition switch to "OFF" position.
2. Disconnect the brake lamp switch wire harness connector.
3. Operate the brake lamp switch, and check continuity between terminals of brake lamp switch wire harness connectors.

Terminal	Status	Continuity
1-2	Press brake lamp switch (with brake pedal depressed)	Yes
	Release brake lamp switch (with brake pedal released)	No

4. Replace the brake lamp switch if any fault is found.

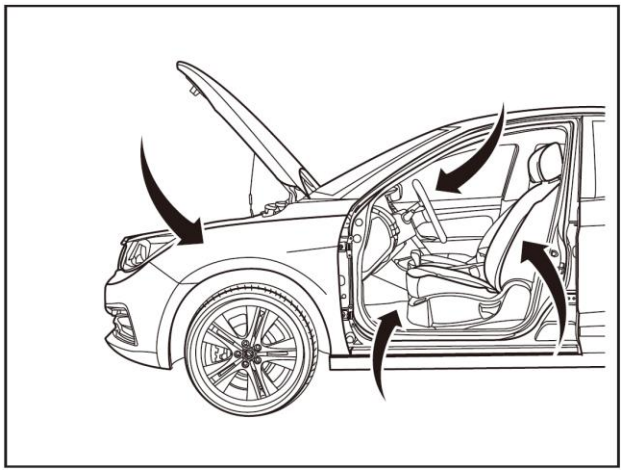


Brake Fluid Level Switch

1. Turn ignition switch to "OFF" position.
2. Disconnect the brake fluid level switch wire harness connector.
3. Check continuity between terminals of brake fluid level switch wire harness connectors.

Terminal	Status	Continuity
1-2	When brake fluid is sufficient.	No
	When brake fluid is insufficient	Yes

4. Replace the fluid reservoir if any fault is found.

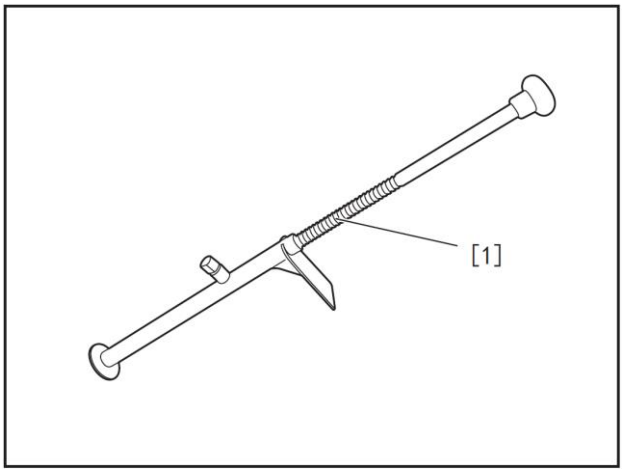


Removal and Refitting of ABS Pump

1 - Protection

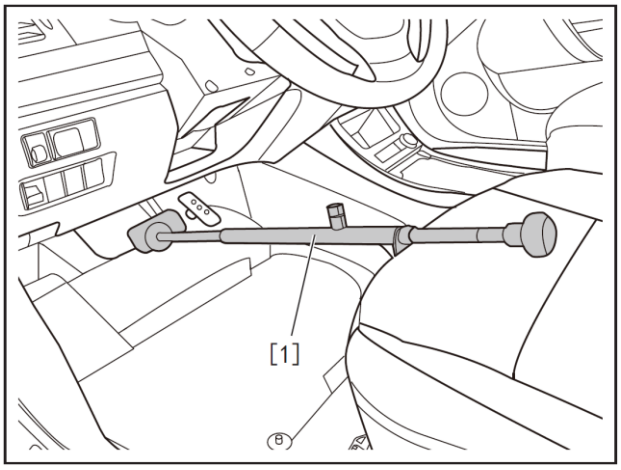
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



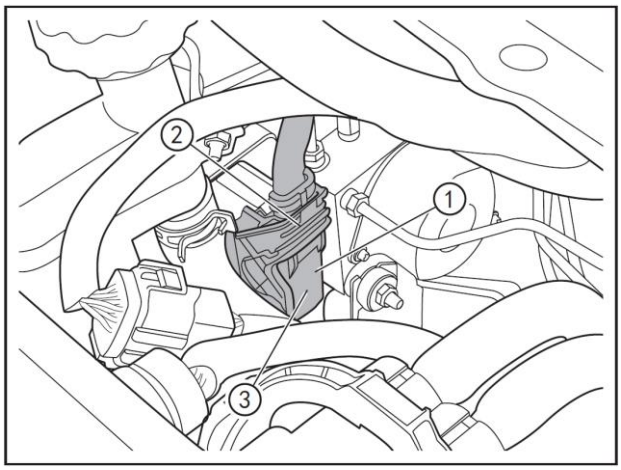
2 - Recommended tools

- Brake pedal suppressor (AX70903) [1].

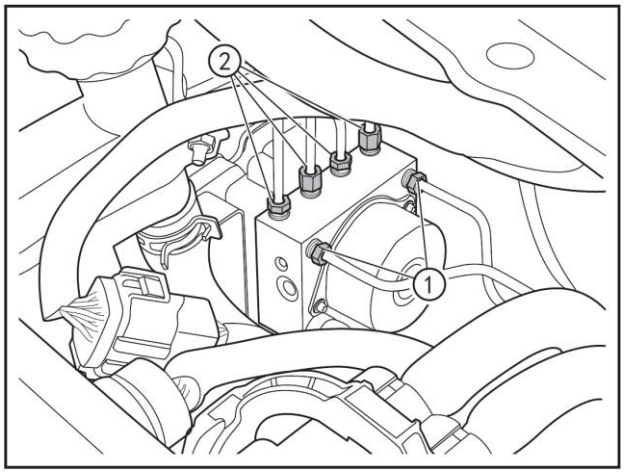


3 - Removal

- Turn off the ignition switch, and apply the parking brake.
- Depress the brake pedal, and hold it down with the brake pedal suppressor (AX70903) [1].



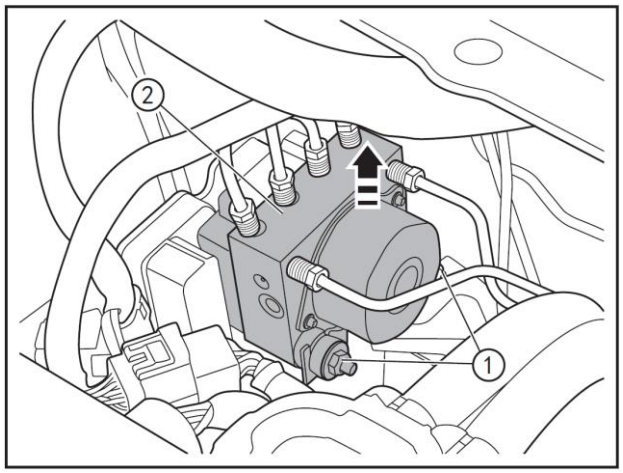
- Press the clip (1) of ABS pump connector, and turn over the locking bracket (2) downwards completely.
- Disconnect the ABS pump connector (3).



- Use the 10mm pipe wrench to remove the fixing nuts (1) of inlet pipe and the fixing nuts (2) of the outlet pipe.
- Disconnect the 2 inlet pipes and the 4 outlet pipes.

⚠ CAUTION

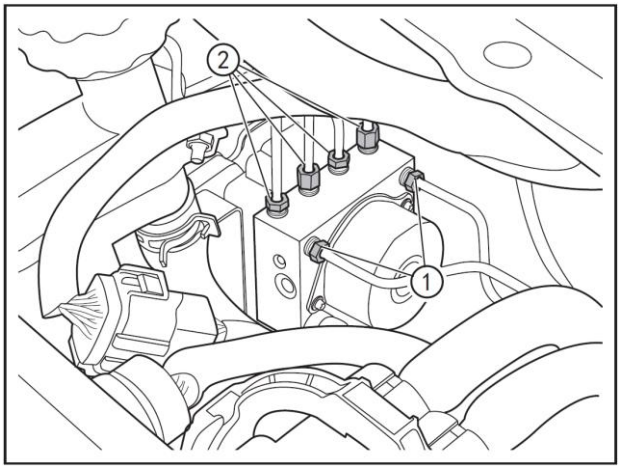
- **Brake fluid is toxic and corrosive, so never spill it onto the body paint.**
- **Before disconnecting the pipes, clear dirts on and around the pipe connections with a piece of clean cloth. And then, place a piece of cloth under the pipe to prevent the brake fluid from falling onto the vehicle.**
- **When removing the pipe, do not twist it, in case the braking effect may be affected.**
- **After the pipe is disconnected, wrap the brake pipe end with clean cloth.**



- Use the 10mm wrench to loosen the fixing nut (1) of the ABS pump.
- Pull the ABS pump upwards to remove it.

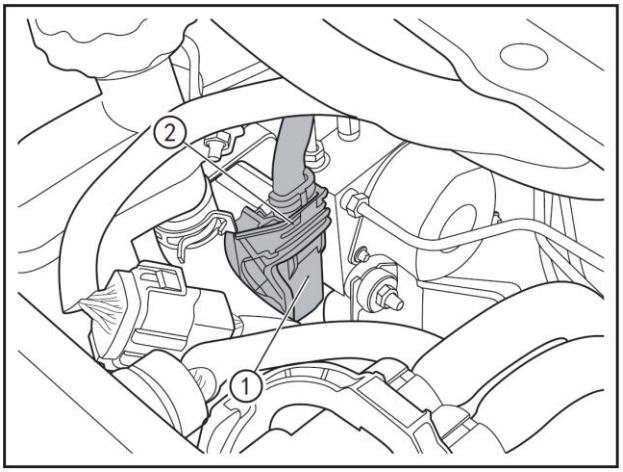
⚠ CAUTION

- **After the removal, wipe off the brake fluid spilled onto the body.**



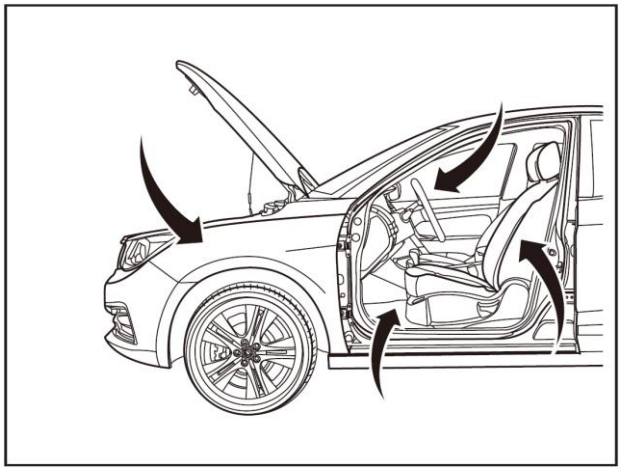
4- Refitting

- Refit in the order reverse to the removal, and observe the following.
- Use the 10mm pipe wrench to remove the fixing nuts (1) of inlet pipe.
- Remove the brake pedal suppressor. When the brake fluid flows out of the ABS pump outlet, tighten the fixing nuts (2) of inlet pipe in turn. The tightening torque of nut is 16.2N·m.



- Refit the ABS pump connector (1).
- Turn the lock lever (2) to lock the connector.

- After the refitting, connect the scan tool, and read and clear DTC.
- Bleed the brake system. (Refer to "Change of Brake Fluid" in "Brake System")
- After bleeding, check the brake system by road test to ensure that the ABS works normally.

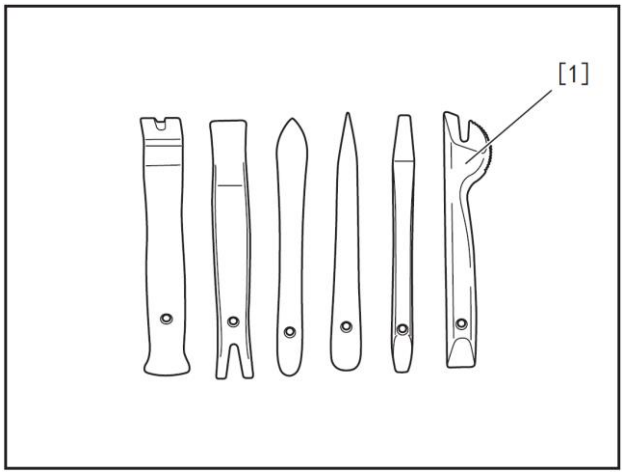


Removal and Refitting of Front Wheel Speed Sensor

1 - Protection

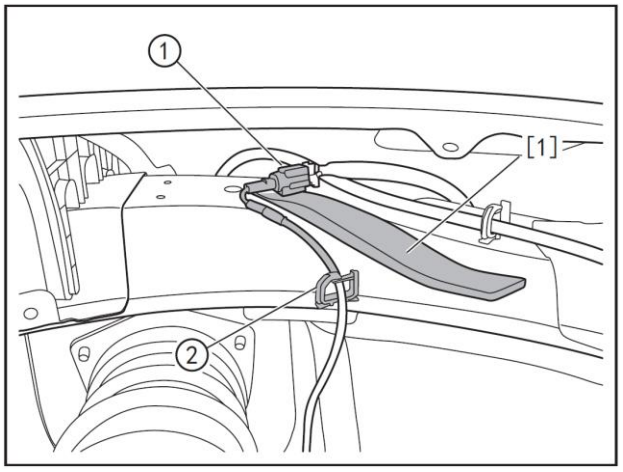
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver's seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



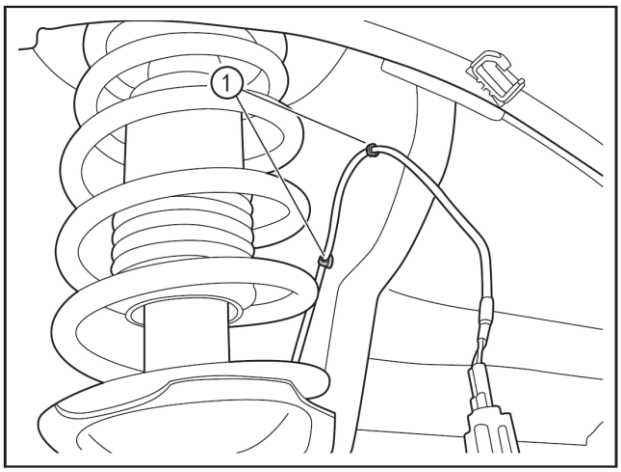
2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

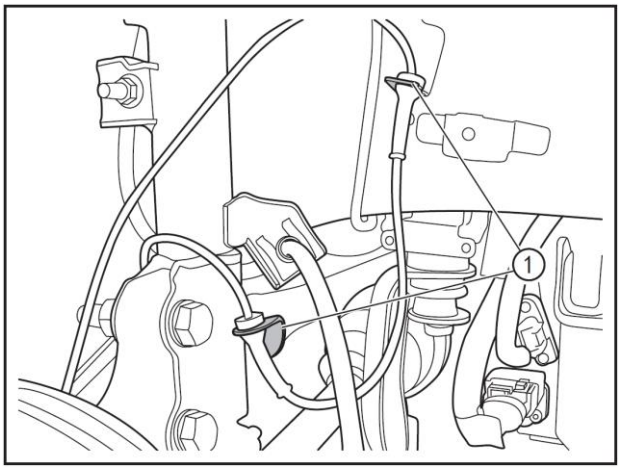


3 - Removal

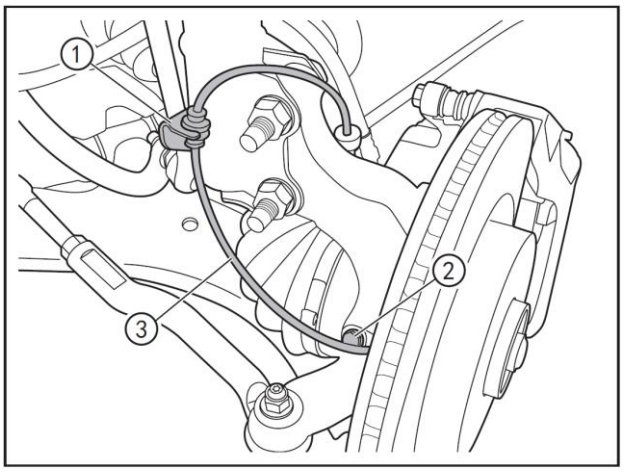
- Disconnect the battery negative cable.
- Remove the front wheel housing mudguard. (See "Removal and Refitting of Front Wheel Housing Mudguard" in "Interiors and Exteriors".)
- Use the interior trim removal tool [1] to disconnect the wheel speed sensor connector (1) from the vehicle body.
- Press and hold the bayonet in the middle of the connector, and disconnect the wheel speed sensor connector.
- Pull the wheel speed sensor wire harness out of the clip (2).



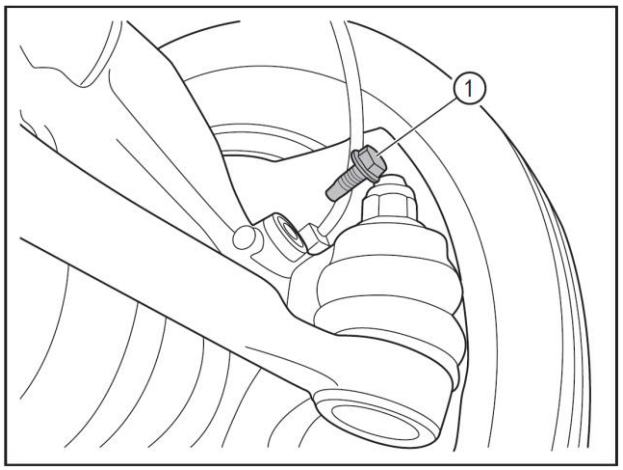
- Use the interior trim removal tool to detach the wheel speed sensor connector wire harness clip (1) from the vehicle body.



- Detach the wheel speed sensor wire harness from the bracket (1) on the vehicle body.



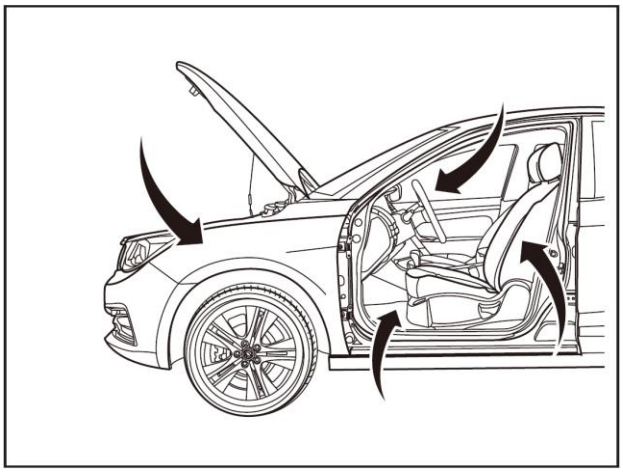
- Detach the wheel speed sensor wire harness from the bracket (1) on the vehicle body.
- Use the 10mm socket to remove the fixing bolt (2) (M6×16) of wheel speed sensor.
- Take off the front wheel speed sensor assembly (3).



4- Refitting

- Refit in the order reverse to the removal, and observe the following.
- Clean the inner surface of hole and the front wheel speed sensor assembly.
- Refit the front wheel speed sensor assembly, and then use the 10mm socket to tighten the fixing bolt (1) of the wheel speed sensor. The tightening torque is 10N·m.

- After the installation is completed, check the brake system by road test.

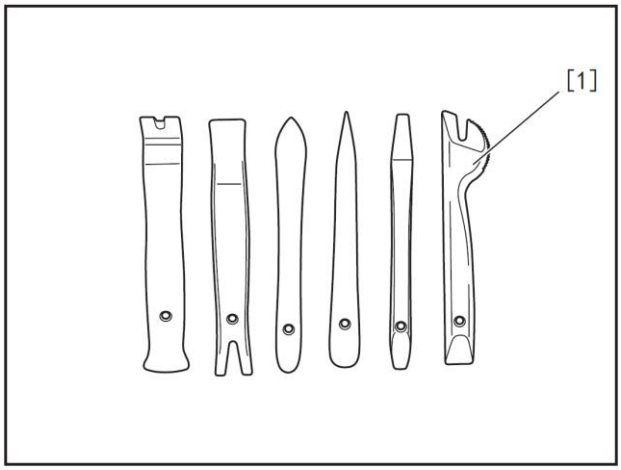


Removal and Refitting of Rear Wheel Speed Sensor

1 - Protection

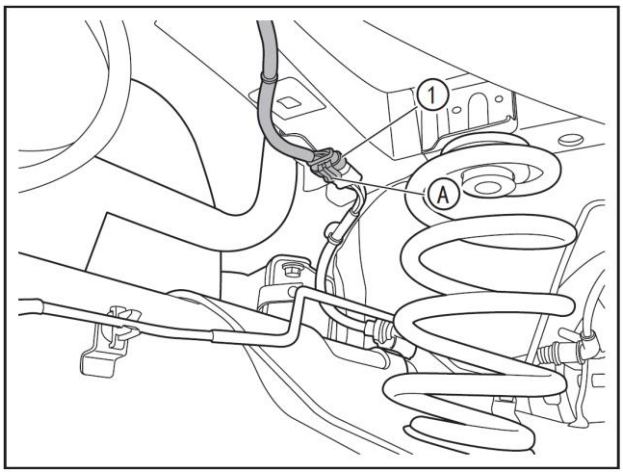
Place protective pads at following locations:

- Front fender;
- Front bumper;
- Driver’s seat;
- Carpet (on driver's side);
- Steering wheel;
- Shift lever.



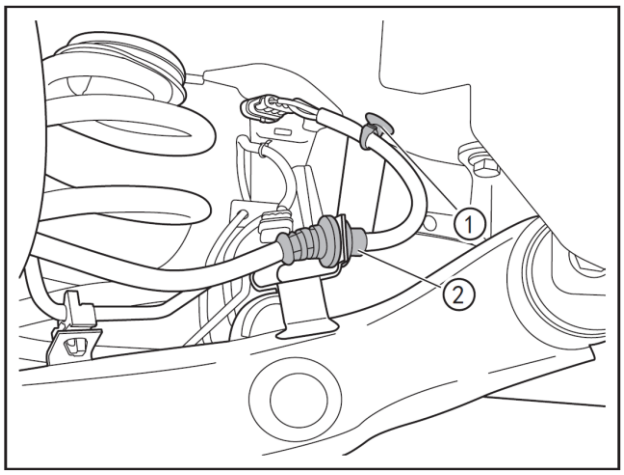
2 - Recommended tools

- Interior trim removal tool (BF1102) [1].

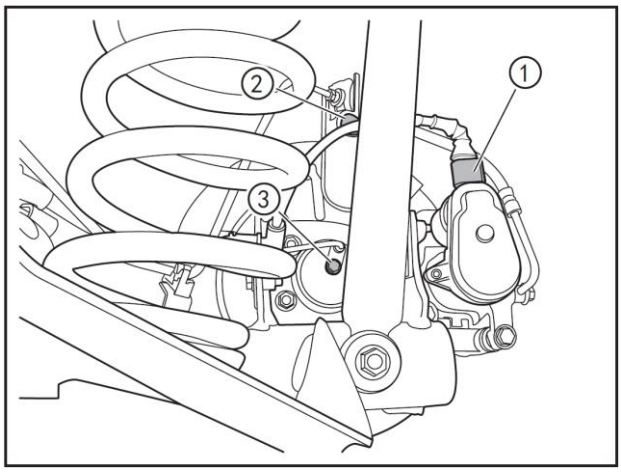


3 - Removal

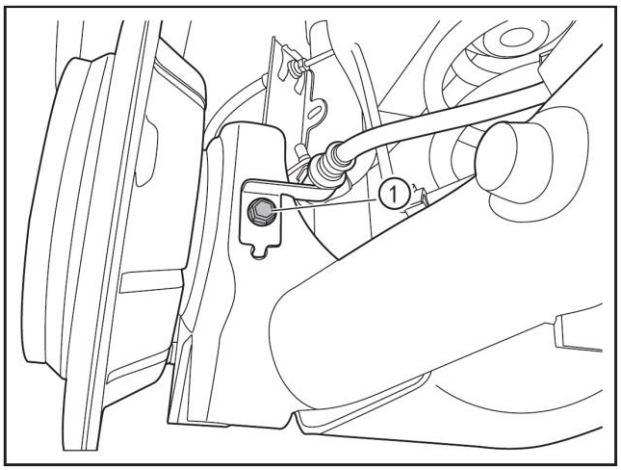
- Turn off the ignition switch, and disconnect battery negative cable.
- Remove the rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Lift the car.
- Unlock the connector clip (A) to disconnect the connector plug (1), and then pry out the wire harness clip.



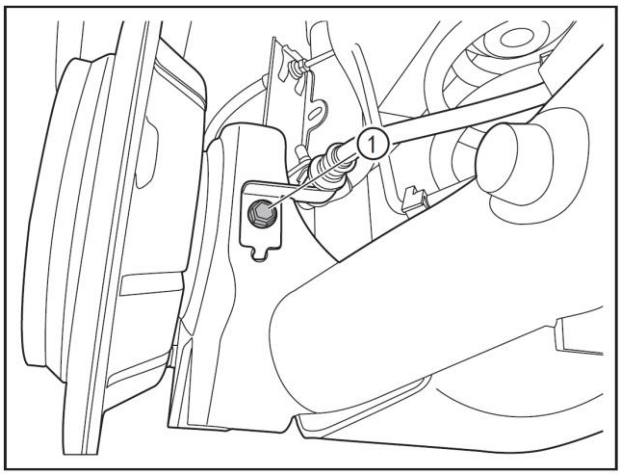
- Use the interior trim removal tool (BF1102) to pry the wire harness clip (1) open. Detach the wheel speed sensor rubber fixing block (2) from the bracket.



- Disconnect the rear EPB motor connector (1).
- Pry out the wire harness clip (2).
- Use the 10mm socket to remove the fixing bolt (3) (M6×16) of rear wheel speed sensor connector, and then disconnect the wheel speed sensor connector.

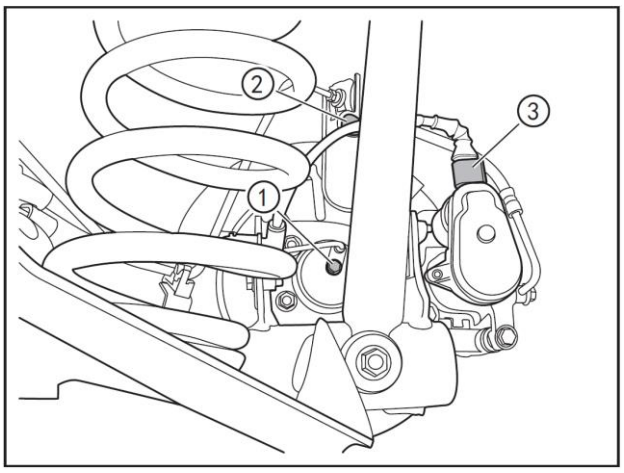


- Use the 13mm socket to remove the fixing bolt (1) (M8×25) of rear wheel speed sensor bracket, and then take out the wheel speed sensor connector.

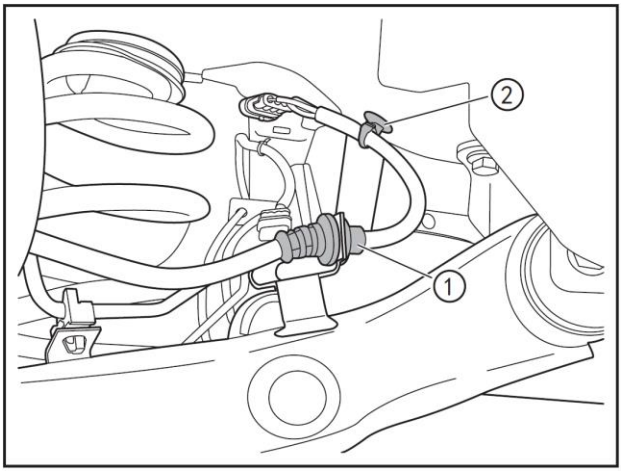


4- Refitting

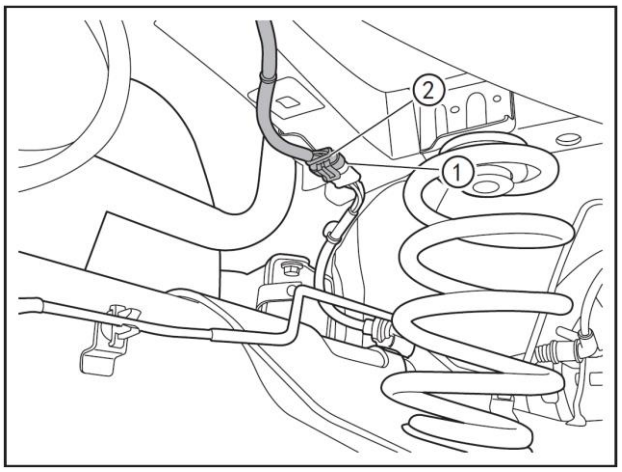
- Align the rear wheel speed sensor wire harness bracket with the mounting hole and install the fixing bolt (1) (M8 × 25).
- Tighten the fixing bolts with the 13mm socket.



- Refit the rear wheel speed sensor connector into the mounting hole after alignment, install the fixing bolts (1) (M6 × 12) of ground wire harness and tighten them with the 10mm socket to 10N·m.
- Refit the wire harness clips (2).
- Refit the rear EPB motor connector (3) until a click is heard.



- Install and tighten the rear wheel speed sensor rubber fixing block (1) to the bracket.
- Refit the wire harness clips (2).



- Refit the wire harness clip (1) in place.
- Refit the connector plug (2) and clip it in place.
- Lower the vehicle as appropriate.
- Remove the rear wheels. (Refer to "Removal and Refitting of Wheels" in “Wheels”)
- Refit the battery negative cable.