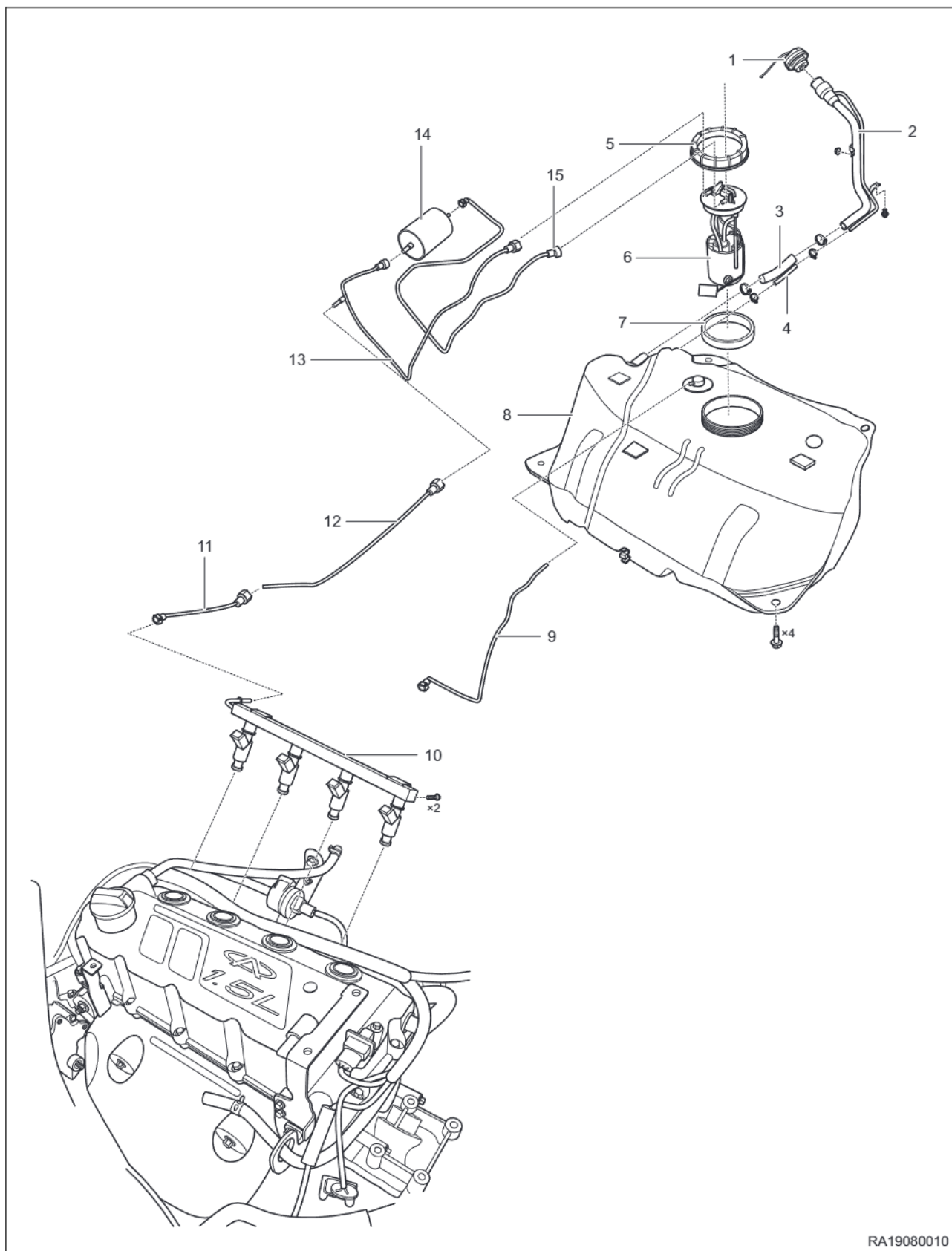

SQR477F FUEL SUPPLY SYSTEM

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GENERAL INFORMATION

Description



08

RA19080010

1 - Fuel Filler Cap	2 - Filler Tube Assembly
3 - Fuel Filler Hose	4 - Fuel Breather Hose
5 - Fuel Pump Pressure Cap	6 - Electric Fuel Pump Assembly
7 - Fuel Tank Seal Ring	8 - Fuel Tank
9 - Fuel Vapor Pipe VI	10 - Inlet Pipe II
11 - Inlet Pipe III	12 - Fuel Rail Injector Assembly
13 - Inlet and Return Pipe Assembly	14 - Fuel Filter
15 - Inlet Pipe I	

The engine fuel supply system provides a certain amount and concentration of combustible air-fuel mixture and supplies it to the cylinders according to the requirements under various operating conditions of engine. The fuel supply system consists of fuel tank, electric fuel pump assembly, fuel filter, delivery pipe, fuel rail and injector, and is used for fuel storage, filtration, delivery and injection. The function of fuel supply system is to provide gasoline with sufficient pressure to the fuel injector by using electric fuel pump assembly, and the injector injects a certain amount of gasoline to the top of intake valve in the intake manifold in accordance with the control signals from ECM.

Specifications

Torque Specifications

Description	Torque (N·m)
Fuel Filter Bracket Fixing Screw	7 ± 1.5
Fuel Tank Pressure Cap	75 ± 5
Filler Tube Assembly Lower End Bracket Fixing Bolt	7 ± 1.5
Filler Tube Assembly Fixing Nut	7 ± 1.5
Fuel Tank Fixing Bolt	23 ± 2.5
Fuel Rail Fixing Bolt	8 - 11
Worm Clamp	2.5 ± 0.5

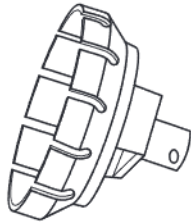
Fuel Pressure Specifications

SQR477F	Pressure (kPa)
Fuel Pressure on Fuel Rail - Key (ON)	400
Fuel Pressure on Fuel Rail - Engine Idling	400
Fuel Pressure on Fuel Rail - Key (LOCK)	400

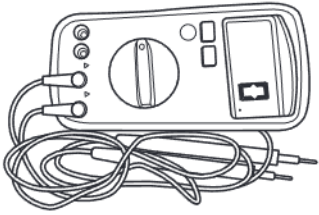
08

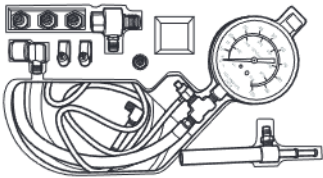
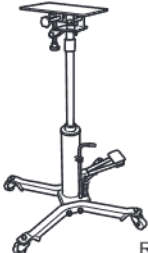
Tools

Special Tool

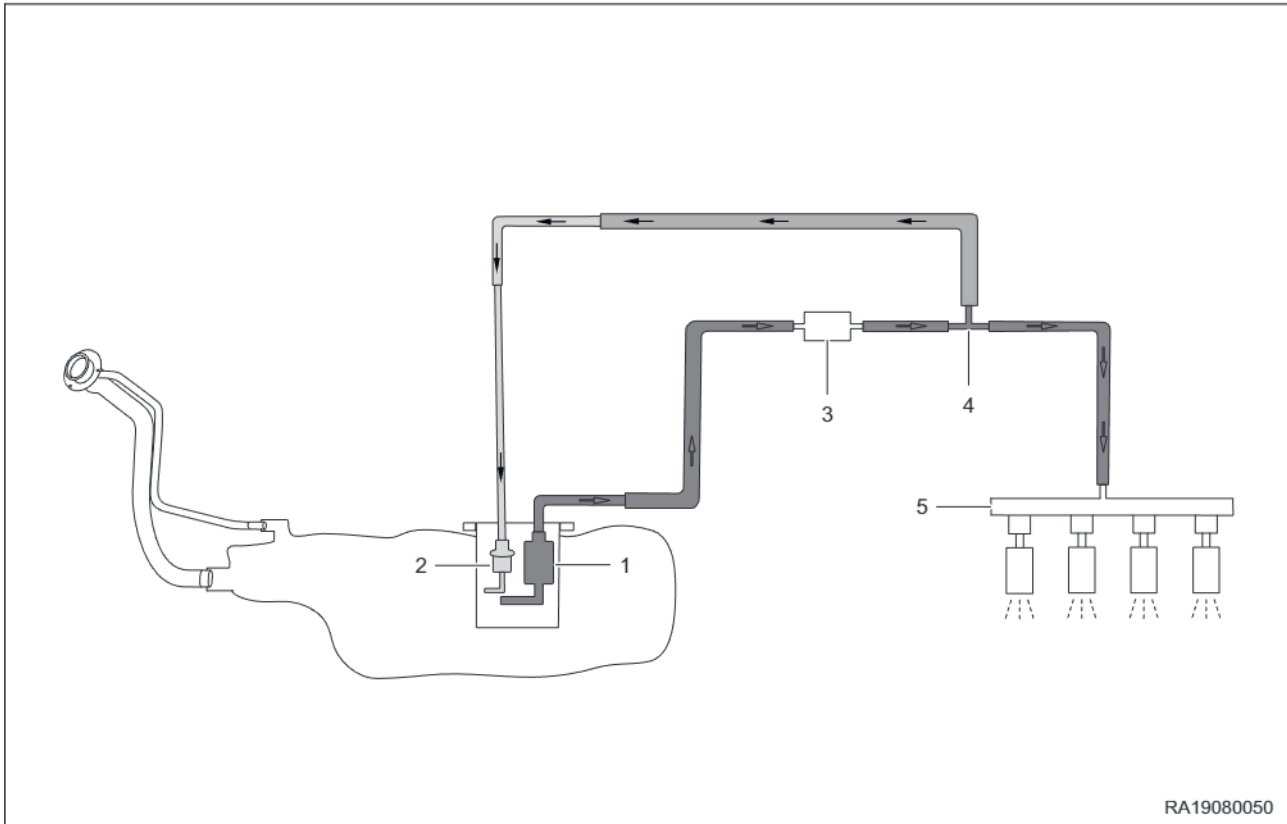
Fuel Tank Pressure Cap Remover	 RCH0000004
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General Tools

Digital Multimeter	 RCH0000002
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Fuel System Pressure Tester	 RCH0000048
Transmission Carrier	 RCH0000005

Fuel Supply System Line Connection Diagram



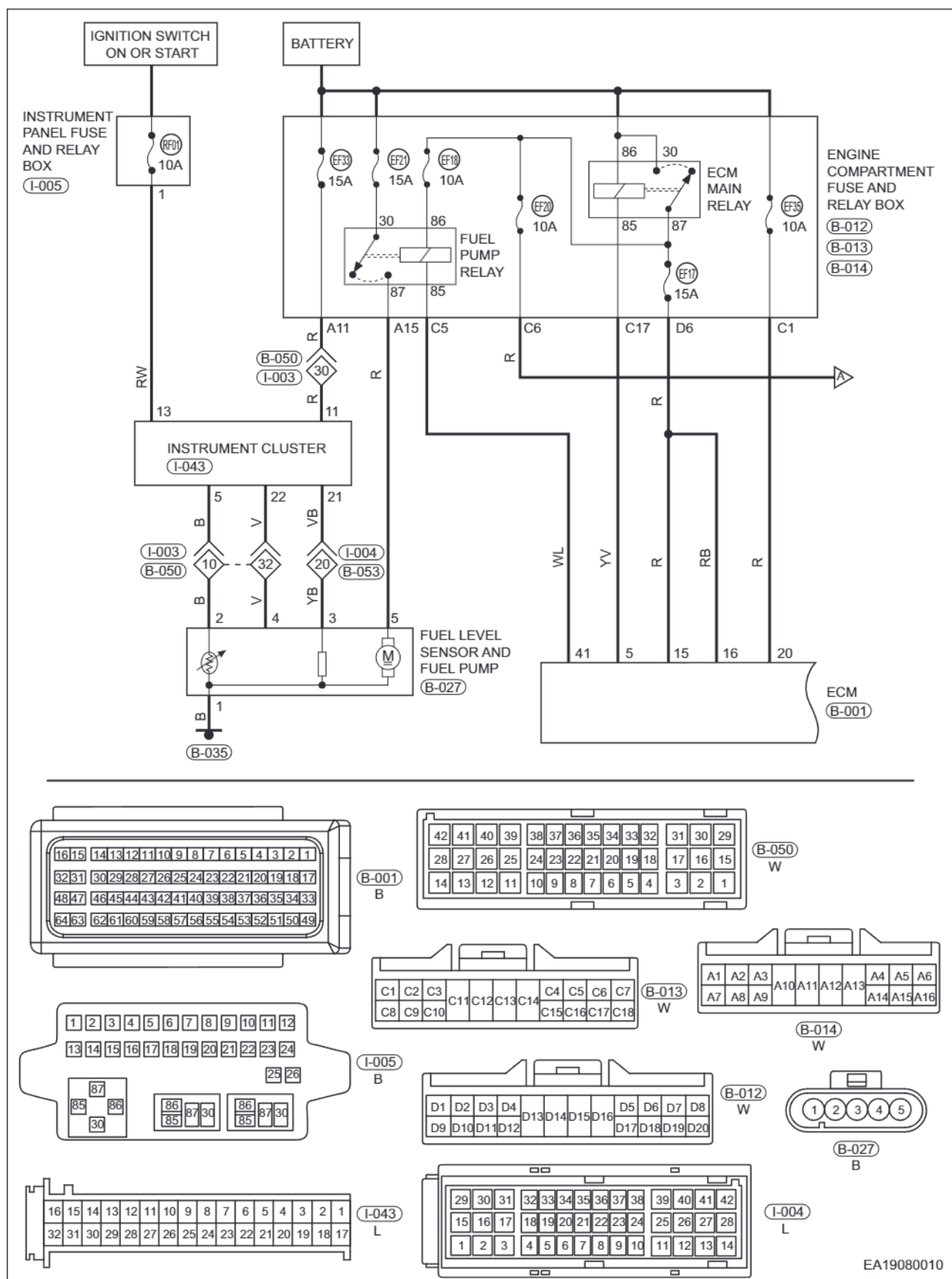
08

1 - Electric Fuel Pump Assembly	2 - Electric Fuel Pump Assembly Pressure Regulator
3 - Fuel Filter	4 - Inlet and Return Pipe Assembly
5 - Fuel Rail Injector Assembly	

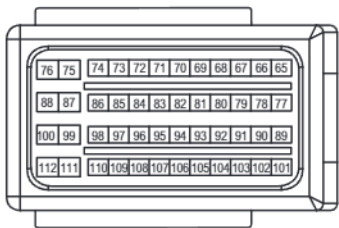
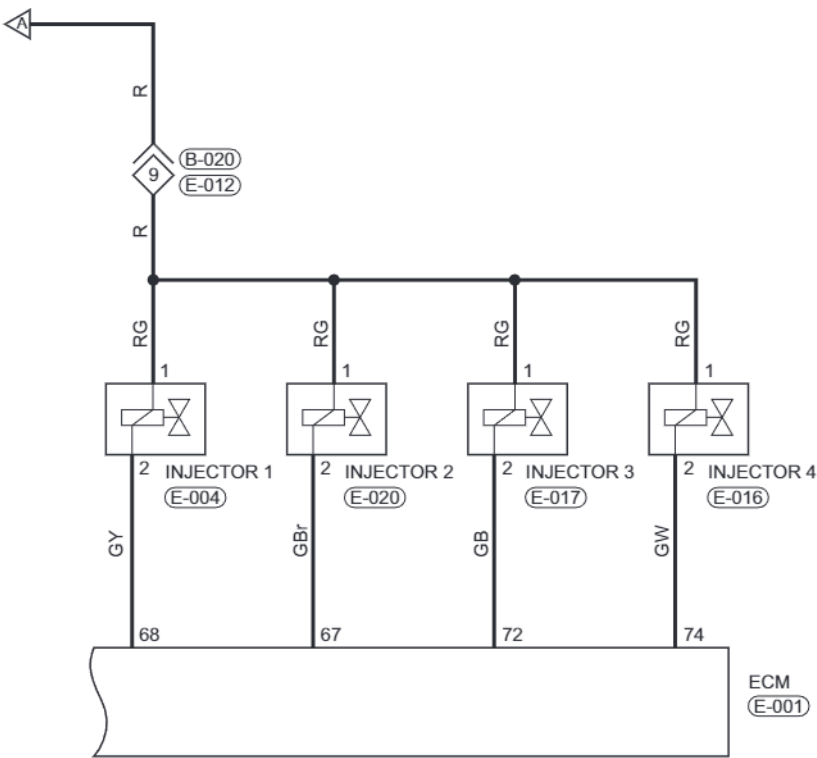
When engine operates properly, the electric fuel pump assembly (1) sucks fuel from the fuel tank and filters it through the fuel filter (3), and then deliveries it to the inlet and return pipe assembly (4). Some fuel enters the fuel rail (5) and is supplied to the injector. Some fuel flows back to the electric fuel pump assembly pressure regulator (2) directly. When the fuel supply system pressure is high, the diaphragm spring in the regulator is jacked up by the pressure, then the valve opens and the fuel flows out from the regulator. When the pressure reaches normal value, the regulator shuts off and the fuel stops flowing out. Finally, the system pressure reaches a steady state.

Circuit Diagram

Fuel Supply System (Page 1 of 2)



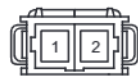
Fuel Supply System (Page 2 of 2)



(E-001)
B



(B-020)
B



(E-004) (E-017)
B B
(E-016) (E-020)
B B

EA19080020

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use the table below to help determine the cause of problem symptoms. Check each suspected area in sequence. Repair or replace the faulty components, or adjust them as necessary.

Symptom	Suspected Area	See page
Fuel pressure in fuel supply system is too low	Fuel filter (blocked)	08-13
	Electric fuel pump assembly (strainer blocked)	08-15
Fuel pressure in fuel supply system is too high	Fuel injector (clogged)	08-25
	Electric fuel pump assembly	08-15
Electric fuel pump assembly has loud operating noise and operates delay	Low fuel level	-
	Electric fuel pump assembly relay	-
	Electric fuel pump assembly	08-15
Injector is clogged and leaks	Fuel filter (blocked)	08-13
	Fuel injector	08-25
	Poor fuel quality	-
	Excessive foreign matter in fuel tank	-
Injector does not work	Fuel supply system line (broken)	-
	Fuel injector (short in coil)	08-25
	Wire harness	-

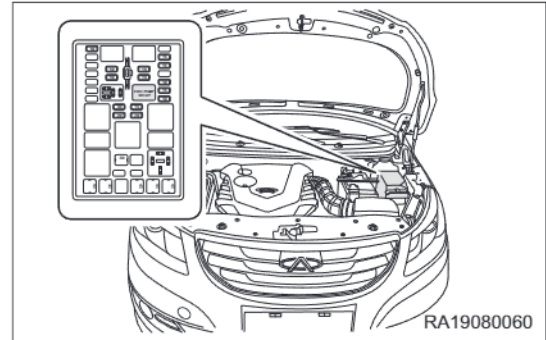
Fuel System Pressure Release

WARNING

- When engine is not operating, the fuel pressure in fuel supply system is still high. Before repairing or disconnecting the fuel line or fuel supply system components, it is necessary to release the fuel supply system pressure to prevent the fuel from spraying out accidentally. Failure to follow these instructions may result in serious personal injury or death.

Perform the following procedures to release the fuel pressure in fuel supply system:

1. Recognize and remove the electric fuel pump assembly relay from the engine compartment fuse and box.



08

2. Start and run the engine until it stalls.
3. Restart the engine until it does not run.
4. Turn the ignition switch to LOCK.
5. Disconnect the negative battery cable.
6. Insert the electric fuel pump assembly relay into the original place.

Fuel Supply System Pressure Test

Fuel Pressure Specifications

SQR477F	Pressure (kPa)
Fuel Pressure on Fuel Rail - Key (ON)	400
Fuel Pressure on Fuel Rail - Engine Idling	400
Fuel Pressure on Fuel Rail - Key (LOCK)	400

⚠ WARNING

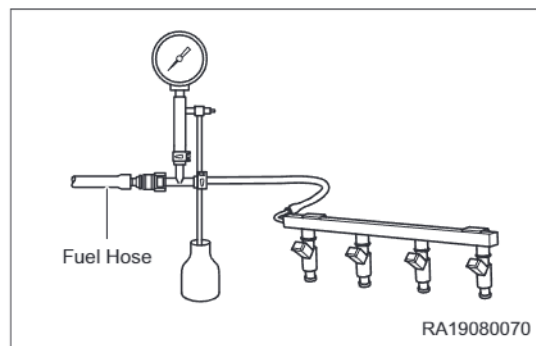
- When operating the fuel supply system, work area should be in good ventilation and keep fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- Before removing and installing the fuel pipes, release the fuel supply system pressure.

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👁 CAUTION

- Make sure that the battery voltage is 11 - 12 V.
- The service life of fuel filter should be within 30000 km.
- Make sure that the fuel supply system lines are securely connected, preventing the fuel supply system from leaking.

- Release the fuel system pressure ([See page 08-11](#)).
- Remove the engine trim cover.
- Disconnect the inlet hose connector and connect the fuel supply system pressure tester to a position between inlet hose and fuel rail.



- Start the engine and run it at idle, and then read the value on the pressure tester.
Start the engine and read the value while idling:
 - The standard pressure at idle should be higher than 400 kPa.
 - If the measured pressure value is lower than 400 kPa, check the fuel filter for blockage. Replace the fuel filter if necessary ([See page 08-13](#)).
 - If the measured pressure value is lower than 400 kPa and the fuel filter operates properly, check the electric fuel pump assembly. Replace it as necessary.
 - If the measured pressure value is too high, the injector may be clogged or the electric fuel pump assembly pressure modulating valve may be malfunctioning. Replace the injector ([See page 08-25](#)) or electric fuel pump assembly ([See page 08-15](#)) if necessary.

ON-VEHICLE SERVICE

Fuel Filter

Removal

⚠ WARNING

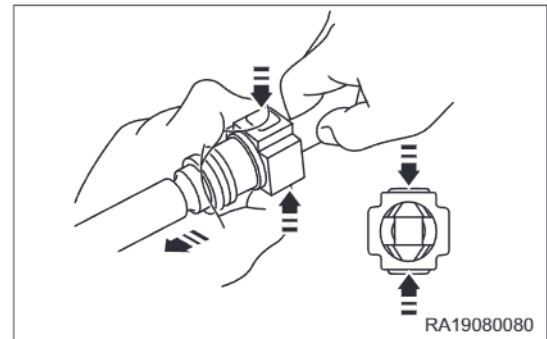
- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating the fuel supply system, work area should be in good ventilation and keep the fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- After performing the procedures for the fuel system pressure release, there still remains some pressure in the fuel line. When disconnecting the fuel line, cover the joint with a piece of cloth or equivalent to prevent the fuel from spraying out.
- If fuel leakage occurs when operating the fuel supply system, please handle the leaked fuel in time.

08

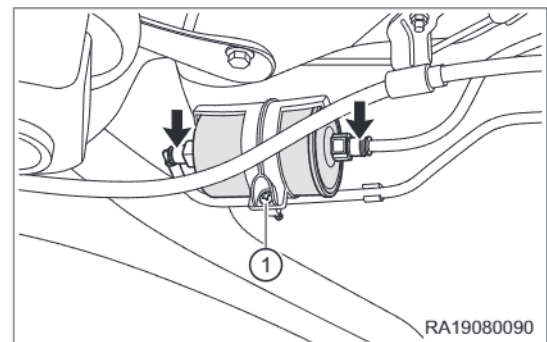
👁 CAUTION

- DO NOT damage the disconnected fuel system line or connectors. Cover the line joints or connectors with plastic bags or equivalent, preventing foreign matter from entering.

The disconnection way for all the fuel pipe coupling joints in the following procedures is shown in the illustration.



1. Release the fuel pressure in the fuel supply system (See page 08-11).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the fuel filter.
 - a. Disconnect the connecting joints (arrow) on both ends of the fuel filter.
 - b. Loosen the fuel filter bracket fixing screw (1).
(Tightening torque: $7 \pm 1.5 \text{ N}\cdot\text{m}$)



- c. Disconnect the fuel filter from the fuel filter bracket.

 CAUTION

- Cover both ends of the fuel filter with plastic bags or equivalent to prevent foreign matter from entering.

 ENVIRONMENTAL PROTECTION

- The removed fuel filter should be handled by the specialized department according to local laws and regulations. Never discard it at will.

Installation

Installation is in the reverse order of removal.

 CAUTION

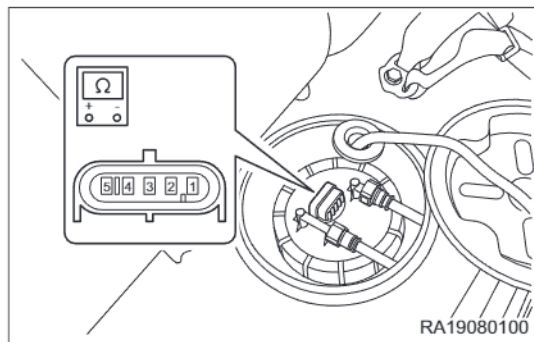
- Before connecting the hose, check if there is any damage or foreign matter on the hose or joint.
- During installation, push in the fuel pipe joint clip until a click sound is heard from the coupling joint, then check that the fuel pipe joint clip is on the collar of the fuel pipe joint. After installing the pipe joint clip, check that the fuel pipe joint cannot be pulled out. Be careful not to damage the joint. If the clip is damaged, replace it.
- Turn the ignition switch to ON (without starting the engine) to apply fuel pressure to the fuel supply system, and then check the connections for leakage.

Electric Fuel Pump Assembly

On-vehicle Inspection

1. Inspect the electric fuel pump assembly oil level sensor.
 - a. Using a flat tip screwdriver, pry up the electric fuel pump assembly protective cap, and disconnect the electric fuel pump assembly connector.
 - b. Using the digital multimeter, measure the resistance of oil level sensor based on the fuel volume in the fuel tank.

Oil Level Indicator	Tester Connection	Specification (Ω)
E	Terminal 3 - Terminal 2	275 ± 5
1/4	Terminal 3 - Terminal 2	165 ± 5
1/2	Terminal 3 - Terminal 2	97 ± 4
3/4	Terminal 3 - Terminal 2	79 ± 3
F	Terminal 3 - Terminal 2	32 ± 3



08

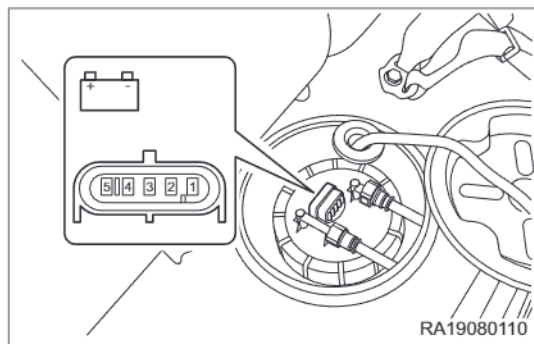
If the result is not as specified, replace the electric fuel pump assembly.

2. Check the electric fuel pump assembly operation.
 - a. Using a flat tip screwdriver, pry up the electric fuel pump assembly protective cap, and disconnect the electric fuel pump assembly connector.
 - b. Apply battery voltage to terminals 5 and 1. Check if the electric fuel pump assembly operates in 10 seconds.

HINT:

- These tests must be finished within 10 seconds to prevent the coils from being burnt.
- Leave the electric fuel pump assembly as far as possible from the battery.
- Always switch the voltage on and off on the battery side, rather than the electric fuel pump assembly side

Tester Connection	Specification
Battery positive (+) to Terminal 5 Battery negative (-) to Terminal 1	Fuel pump operates



If the electric fuel pump assembly does not operate, replace it.

Removal

⚠ WARNING

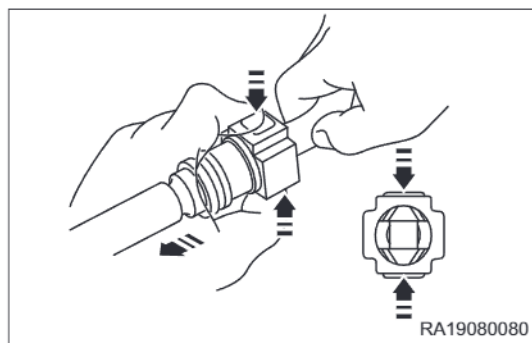
- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating the fuel supply system, work area should be in good ventilation and keep the fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- After performing the procedures for the fuel system pressure release, there still remains some pressure in the fuel line. When disconnecting the fuel line, cover the joint with a piece of cloth or equivalent to prevent the fuel from spraying out.
- If fuel leakage occurs when operating the fuel supply system, please handle the leaked fuel in time.

👁 CAUTION

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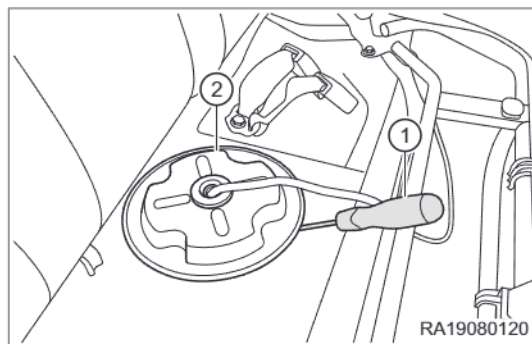
- Only use parts approved by Chery Automobile Co., Ltd. to replace the electric fuel pump assembly.
- As the electric fuel pump assembly radiates through fuel, low fuel level in the fuel tank will directly shorten the service life of the electric fuel pump assembly.
- Keep the electric fuel pump assembly and work area clean when replacing the electric fuel pump assembly; otherwise the electric fuel pump assembly element will be clogged.
- DO NOT operate the electric fuel pump assembly when it is dry or in the water. Failure to do so will damage the electric fuel pump assembly.
- DO NOT damage the disconnected fuel system line or connectors. Cover the line joints or connectors with plastic bags or equivalent, preventing foreign matter from entering.
- Keep the fuel tank and line clean, and replace the fuel filter if the electric fuel pump assembly has been replaced.

The disconnection way for all the coupling joints in the following procedures is as shown in the illustration.

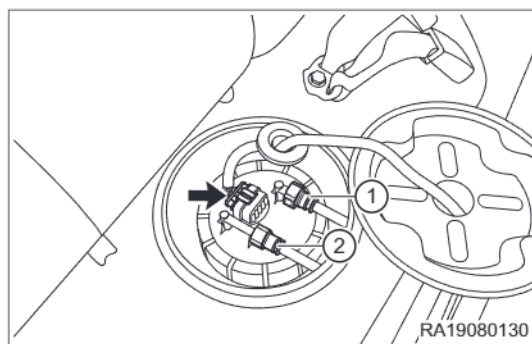


1. Release the fuel system pressure ([See page 08-11](#)).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Open the fuel filler cap and discharge the fuel vapor in the fuel tank.
5. Remove the rear seat cushion ([See page 44-14](#)).
6. Remove the electric fuel pump assembly.

- a. Using a flat tip screwdriver (1), pry up the electric fuel pump assembly protective cap (2).



- b. Disconnect the electric fuel pump assembly connector (arrow).
- c. Disconnect the coupling joint (1) between electric fuel pump assembly and inlet pipe I.
- d. Disconnect the coupling joint (2) between electric fuel pump assembly and inlet and return pipe assembly.

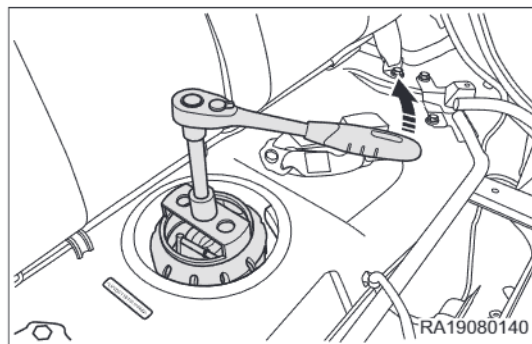


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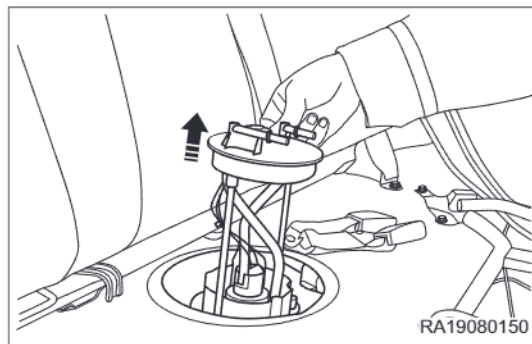
CAUTION

- Before disconnecting the joint, remove all the dirt and foreign matter from the electric fuel pump assembly pressure cap.
- DO NOT forcefully bend or twist the delivery pipe.

- e. Using the special tool (fuel tank pressure cap remover), remove the fuel tank pressure cap. (Tightening torque: 75 ± 5 N·m)



- f. Pull the electric fuel pump assembly up and out of fuel tank.



 CAUTION

- To keep the fuel tank clean, cover it completely with a plastic bag or equivalent to prevent foreign matter from entering.
- The electric fuel pump assembly can be put into a container and taken out of the cabin, thus preventing fuel in the pump from dropping into the cabin.

7. Drain the fuel in the electric fuel pump assembly.

 CAUTION

- Cover the electric fuel pump assembly completely with a plastic bag or equivalent to prevent foreign matter from entering.

Installation

08 **CAUTION**

- Before connecting the hose, check if there is any damage or foreign matter on the hose or joint.
- During installation, push in the fuel pipe connector until a click sound is heard, then check that the fuel pipe joint clip is on the collar of the fuel pipe joint. After installing the pipe joint clip, check that the fuel pipe joint cannot be pulled out. Be careful not to damage the joint. If the clip is damaged, replace it.
- Turn the ignition switch to ON (without starting the engine) to apply fuel pressure to the fuel supply system, and then check the connections for leakage.

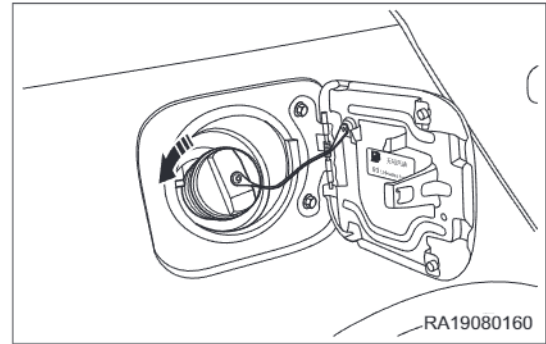
Filler Tube Assembly

Removal

WARNING

- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating the fuel supply system, work area should be in good ventilation and keep the fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- If fuel leakage occurs when operating the fuel supply system, please handle the leaked fuel in time.

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the filler tube assembly.
 - a. Open the fuel filler door, turn the oil filler cap in the direction of arrow as shown in the illustration.



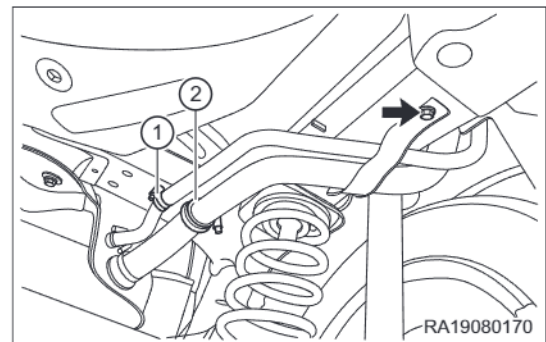
08

- b. Loosen the worm clamp (1) and disconnect the connection between fuel breather hose and fuel filler tube assembly.
(Tightening torque: $2.5 \pm 0.5 \text{ N}\cdot\text{m}$)
- c. Loosen the worm clamp (2) and disconnect the connection between fuel filler hose and fuel filler tube assembly.
(Tightening torque: $2.5 \pm 0.5 \text{ N}\cdot\text{m}$)

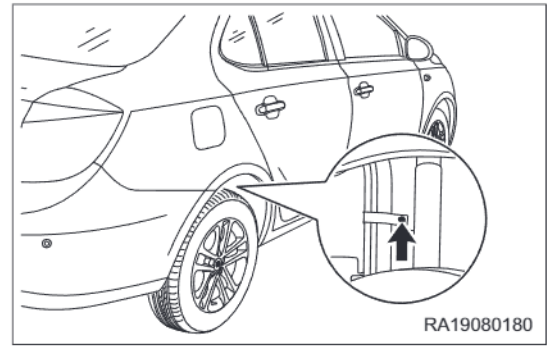
CAUTION

- Cover the joint with a plastic bag after disconnecting the fuel breather hose and fuel filler hose, in order to prevent foreign matter from entering the fuel tank and fuel from evaporating or leaking.

- d. Remove the filler tube assembly lower end bracket fixing bolt (arrow).
(Tightening torque: $7.5 \pm 1.5 \text{ N}\cdot\text{m}$)



- e. Remove the filler tube assembly fixing nut (arrow).
(Tightening torque: 7.5 ± 1.5 N·m)



- f. Remove the filler tube assembly.

Installation

Installation is in the reverse order of removal.

Fuel Tank

Removal

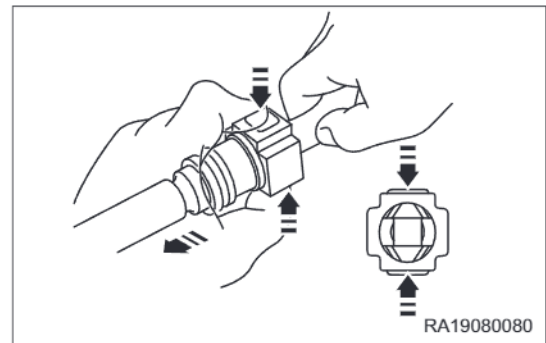
⚠ WARNING

- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating the fuel supply system, work area should be in good ventilation and keep the fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- After performing the procedures for the fuel system pressure release, there still remains some pressure in the fuel line. When disconnecting the fuel line, cover the joint with a piece of cloth or equivalent to prevent the fuel from spraying out.
- If fuel leakage occurs when operating the fuel supply system, please handle the leaked fuel in time.

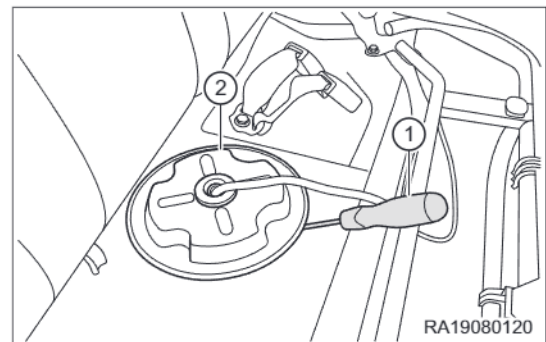
👁 CAUTION

- DO NOT damage the disconnected fuel system line or connectors. Cover the line joints or connectors with plastic bags or equivalent, preventing foreign matter from entering.

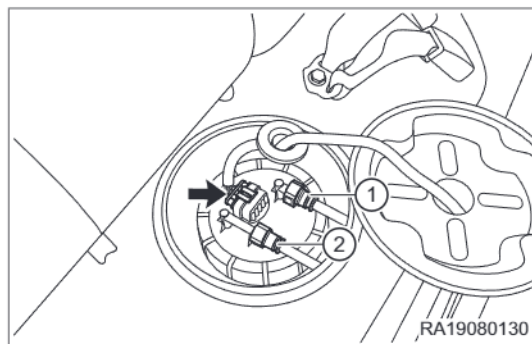
The disconnection way for all the fuel pipe coupling joints in the following procedures is shown in the illustration.



1. Release the fuel system pressure ([See page 08-11](#)).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Open the fuel filler cap and discharge the fuel vapor in the fuel tank.
5. Disconnect the electric fuel pump assembly side pipe and the line connection.
 - a. Turn over the rear seat cushion ([See page 44-14](#)).
 - b. Using a flat tip screwdriver (1), pry up the electric fuel pump assembly protective cap (2).



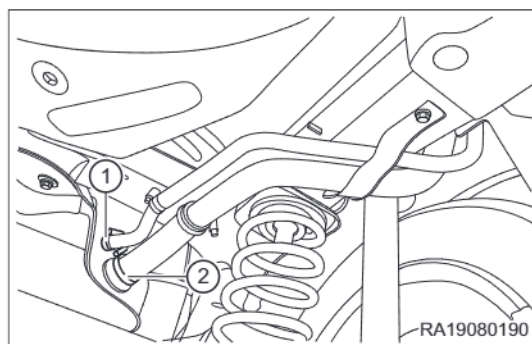
- c. Disconnect the electric fuel pump assembly connector (arrow).
- d. Disconnect the inlet pipe I joint (1) and inlet and return pipe assembly joint (2).



6. Remove the fuel filter (See page 08-13).

7. Remove the fuel tank.

- a. Loosen the worm clamp (1) and disconnect the connection between the fuel breather hose and fuel filler tube assembly.
(Tightening torque: $2.5 \pm 0.5 \text{ N}\cdot\text{m}$)
- b. Loosen the worm clamp (2) and disconnect the connection between the fuel filler hose and fuel filler tube assembly.
(Tightening torque: $2.5 \pm 0.5 \text{ N}\cdot\text{m}$)

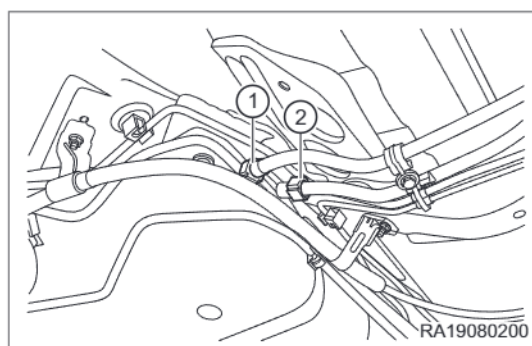


08

CAUTION

- Cover the joint with a plastic bag after disconnecting the fuel breather hose and fuel filler hose, in order to prevent foreign matter from entering the fuel tank and fuel from evaporating or leaking.

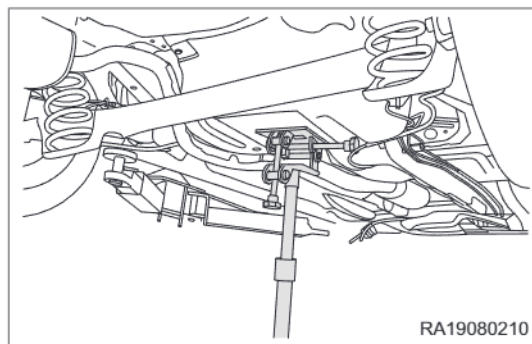
- c. Disconnect the connecting joint (1) between inlet and return pipe assembly and inlet pipe II.
- d. Disconnect the coupling joint (2) between fuel vapor pipe VI and fuel vapor pipe V.



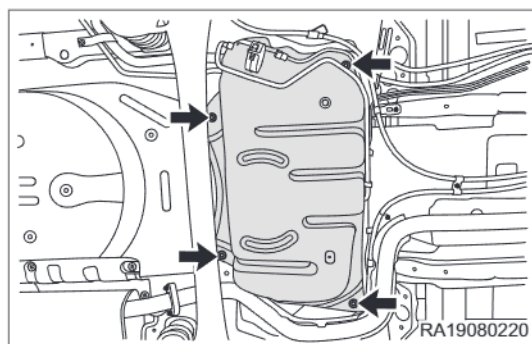
CAUTION

- Before disconnecting the joint, remove any dirt and foreign matter from the retainer.
- DO NOT forcefully bend or twist the delivery pipe.

- e. Support the fuel tank with a transmission carrier.

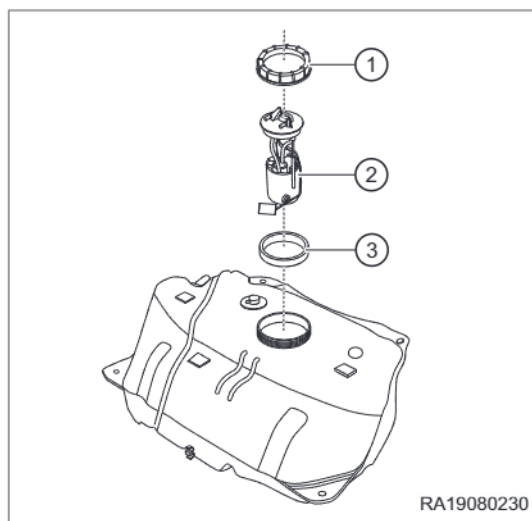


- f. Remove 4 fixing bolts (arrow) from the fuel tank.
(Tightening torque: $23 \pm 2.5 \text{ N}\cdot\text{m}$)



08

- g. Slowly lower the carrier to remove the fuel tank.
8. Remove the fuel pump pressure cap (1), electric fuel pump assembly (2) and fuel tank seal ring (3) from the fuel tank.



Fuel Tank Accessories Description

1. Fuel Vapor Valve

Function of fuel vapor valve:

When fuel vapor is produced in the fuel tank, the vapor will enter the charcoal canister through the fuel vapor valve (1) by the fuel vapor pipe (2). When the vehicle body bumps or overturns, the fuel vapor valve will automatically lock to prevent fuel overflow.

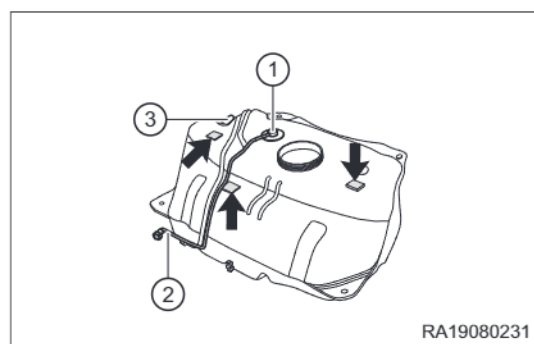
2. Fuel Breather Pipe

Function of fuel breather pipe:

When filling the fuel tank through the fuel filler, the fuel vapor will get out of the fuel tank through the fuel breather pipe (3).

3. Fuel Tank Cushion

Pay attention to the installation positions of fuel tank cushions (arrow). Incorrect installation will damage the fuel tank or fuel pipe due to friction between fuel tank and body.



08

Installation

Installation is in the reverse order of removal.

CAUTION

- Return the fuel pipe and vent pipe to their original positions, or the fuel pipe will be damaged due to friction generated by the body shock, causing fuel leak.
- Before connecting the hose, check if there is any damage or foreign matter on the hose or joint.
- During installation, push in the fuel pipe connector until a click sound is heard, then check that the fuel pipe joint clip is on the collar of the fuel pipe joint. After installing the pipe joint clip, check that the fuel pipe joint cannot be pulled out. Be careful not to damage the joint. If the clip is damaged, replace it.
- Turn the ignition switch to ON (without starting the engine) to apply fuel pressure to the fuel supply system, and then check the connections for leakage.

Fuel Rail Injector Assembly

Removal

⚠ WARNING

- Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating the fuel supply system, work area should be in good ventilation and keep the fire sources or open flames away from the work area, in which fire extinguisher should be equipped.
- After performing the procedures for the fuel system pressure release, there still remains some pressure in the fuel line. When disconnecting the fuel line, cover the joint with a piece of cloth or equivalent to prevent the fuel from spraying out.
- If fuel leakage occurs when operating the fuel supply system, please handle the leaked fuel in time.

👁 CAUTION

- DO NOT damage the disconnected fuel system line or connectors. Cover the line joints or connectors with plastic bags or equivalent, preventing foreign matter from entering.
- The injector is a part of high accuracy, featuring good anti-clogging, anti-pollution and atomization, so be careful to avoid damage to the injector during removal of the fuel rail.

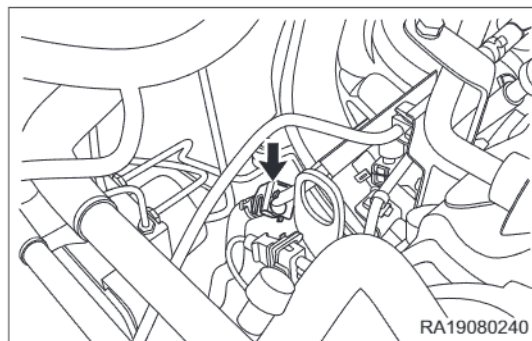
08

1. Release the fuel pressure in the fuel supply system ([See page 08-11](#)).
2. Turn off all the electrical equipment and ignition switch.

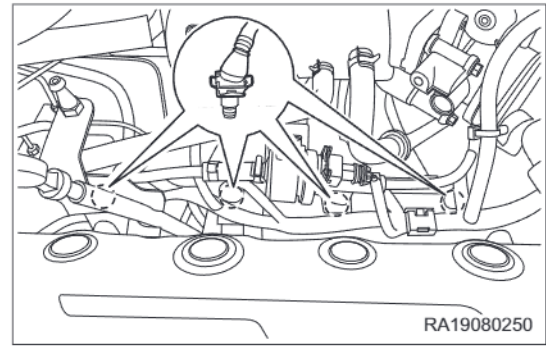
👁 CAUTION

- Install the protector to prevent the body from being scratched.

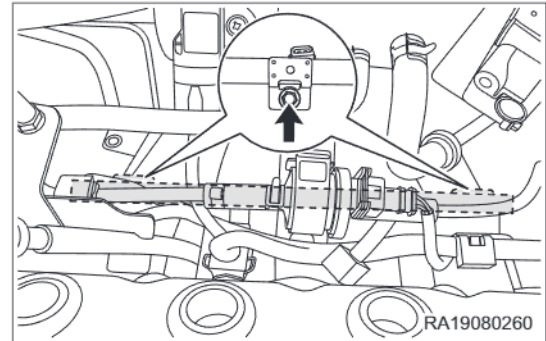
3. Disconnect the negative battery cable.
4. Remove the engine trim cover.
5. Remove the fuel rail injector Assembly.
 - a. Disconnect the coupling joint (arrow) between delivery pipe and fuel rail.



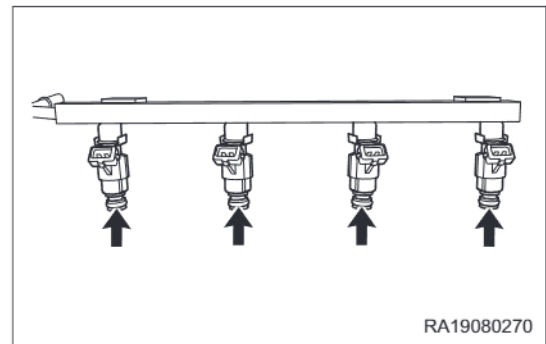
- b. Disconnect 4 connectors of the injectors separately.



- c. Loosen and remove 2 fixing bolts (arrow) from the fuel rail.
(Tightening torque: 8 - 11 N·m)



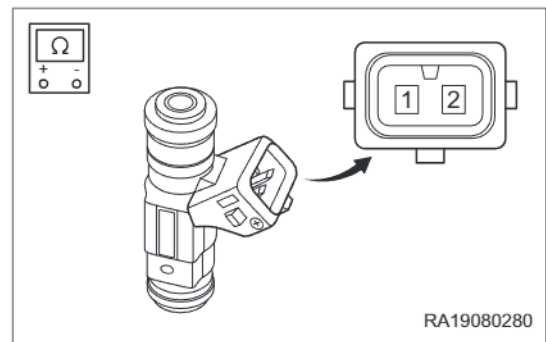
- d. Remove the fuel rail and fuel injectors.
6. Separate the injector clamps and remove the injectors (arrow) from the fuel rail.



Inspection

1. Disconnect the injector connector.
2. Measure the resistance between 2 terminals (injector side) of the injector with a digital multimeter.

Measurement Temperature	Specification (Ω)
20°C	11 - 16



Installation

Installation is in the reverse order of removal.

CAUTION

- Install a new seal to the injector sealing surface.
- Before installing the injector, apply clean grease or gasoline to the O-ring sealing surface for easy installation, preventing damage to the O-ring.

