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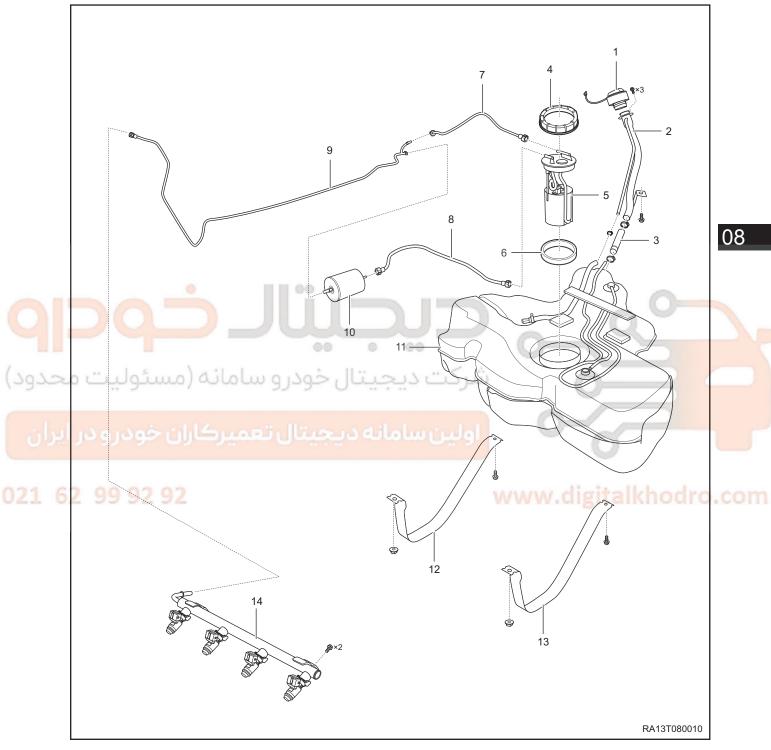


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## **GENERAL INFORMATION**

## **Description**



1 - Fuel Filler Cap	2 - Filler Tube Assembly
3 - Fuel Filler Hose	4 - Fuel Pump Pressure Cap
5 - Electric Fuel Pump Assembly	6 - Fuel Tank Seal Ring

7 - Fluid Return Pipe	8 - Inlet Pipe I
9 - Inlet and Return Pipe Assembly	10 - Fuel Filter
11 - Fuel Tank	12 - Fixing Strap I
13 - Fixing Strap II	14 - Fuel Rail Injector Assembly

Engine fuel supply system provides a certain amount and concentration of combustible air-fuel mixture and supplies it to cylinders according to the requirements under various operating conditions of engine. Fuel supply system consists of fuel tank assembly, electric fuel pump assembly, fuel filter assembly, delivery pipes, fuel rail and injectors, which is used for fuel storage, filtration, delivery and injection. The function of fuel supply system is to provide gasoline with sufficient pressure to fuel injectors by using electric fuel pump assembly, and injector injects a certain amount of gasoline to top of intake valve in intake manifold in accordance with 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 Bracket Fixing Bolt	8+3
Filler Tube Assembly Fixing Nut	8+3
Fuel Tank Fixing Bolt	23 ± 2.5
Fuel Tank Fixing Nut	23 ± 2.5
Fuel Rail Fixing Bolt	8 - 11
Worm Clamp	3.5 ± 0.5

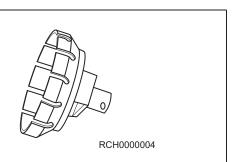
## **Fuel Pressure Specifications**

021 6	2 99 92 92 SQR477F	Pressure (kPa)
022	Fuel Rail Fuel Pressure - Key (ON)	400
	Fuel Rail Fuel Pressure - Engine Idling	400
	Fuel Rail Fuel Pressure - Key (OFF)	400

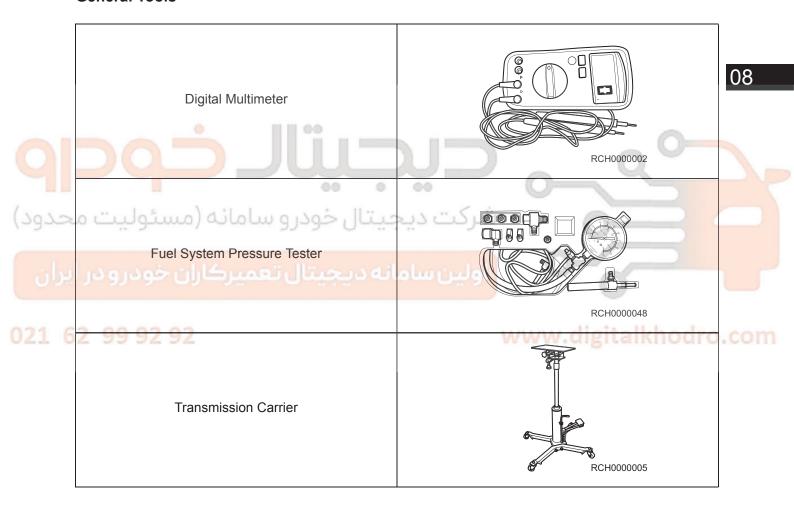
## **Tools**

## **Special Tool**

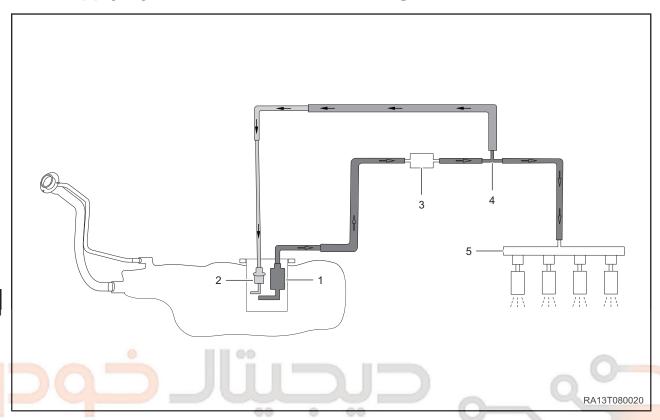
Fuel Tank Pressure Cap Remover



### **General Tools**



## **Fuel Supply System Line Connection Diagram**

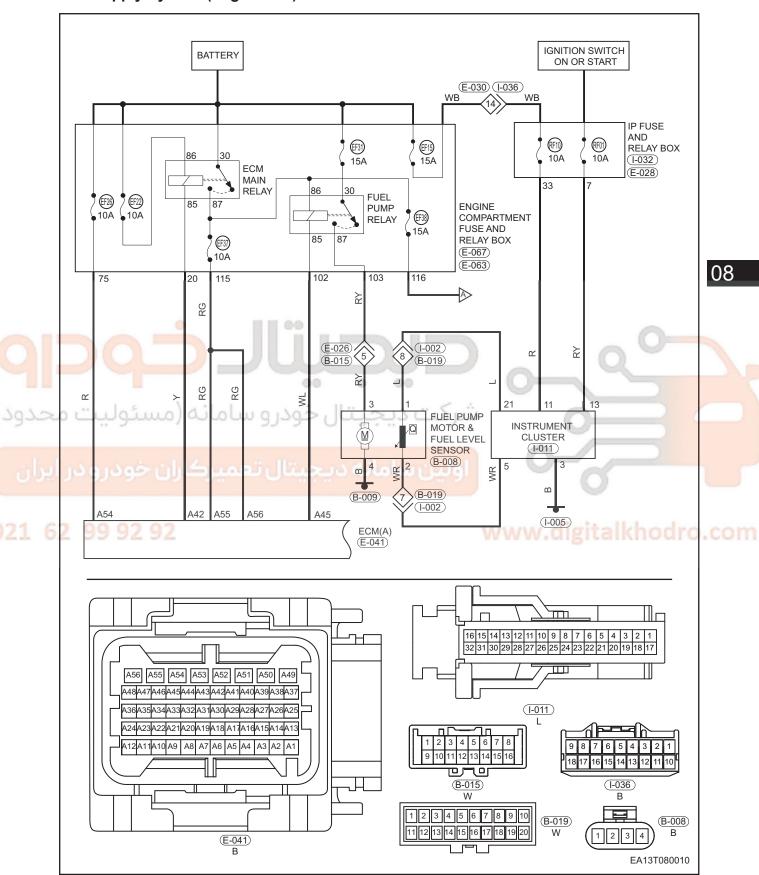


1 - Electric Fuel Pump	2 - Electric Fuel Pump Assembly Pressure Regulator
3 - Fuel Filter Assembly	4 - Inlet and Return Pipe Assembly
5 - Fuel Rail Injector Assembly	

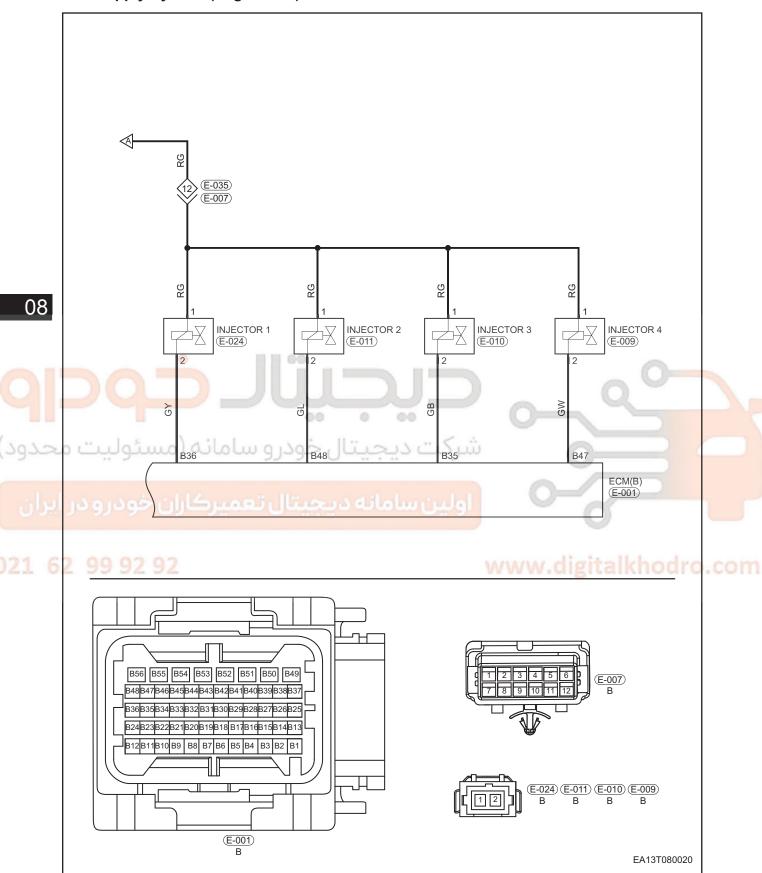
When engine operates properly, electric fuel pump (1) sucks fuel from fuel tank and filters it through fuel filter (3), and then deliveries it to inlet and return pipe assembly (4). Part of fuel enters fuel rail (5) and is supplied to injectors. Part of fuel flows back to electric fuel pump assembly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

## **Circuit Diagram**

Fuel Supply System (Page 1 of 2)



## Fuel Supply System (Page 2 of 2)



## **DIAGNOSIS & TESTING**

## **Problem Symptoms Table**

Fuel Supply System Problem Symptoms Table

Symptom	Suspected Area	See page
Fuel pressure in fuel supply system is too	Fuel filter (clogged)	08-12
low	Electric fuel pump (strainer blocked)	08-14
Fuel pressure in fuel supply system is too high	Fuel injector (clogged)	08-22
	Electric fuel pump	08-14
	Low fuel level	08-14
Electric fuel pump has loud noise or a delay in operating	Electric fuel pump assembly relay	55-30
	Electric fuel pump assembly	08-14
Fuel injector is clogged or leaked	Fuel filter (clogged)	08-12
	Fuel injector	08-22
	Poor fuel quality	
	Excessive impurities in fuel tank	0
01	Fuel supply system line (broken)	-
Fuel injector does not work	Fuel injector (short in coil)	08-22
عودرو ساس ما	Wire harness	

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## **Fuel System Pressure Release**

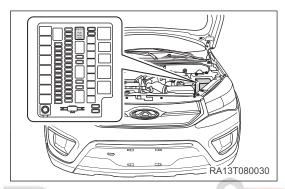
## **⚠** WARNING

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

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

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



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

## **Fuel Supply System Pressure Test**

## **Fuel Pressure Specifications**

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

## **⚠** WARNING

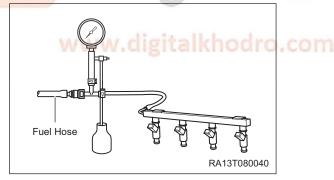
- When operating fuel supply system, work area should be in good ventilation and keep fire sources or open flames away from work area, in which fire extinguisher should be equipped.
- Before operating fuel supply system, please touch vehicle body to discharge static electricity; failure to do so will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

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## **CAUTION**

- Make sure that battery voltage is 11 12 V.
- Service mileages of fuel filter should be within 30000 km.
- Make sure that fuel supply system lines are securely connected, preventing fuel supply system from leaking.
- Release the fuel system pressure (See page 08-10).
- Disconnect inlet hose connector and connect fuel supply system pressure tester between inlet hose and fuel rail.

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- 3. Start engine and run it at idle, and then read value on pressure tester.
  - Start engine and read value while idling:
  - Standard pressure at idle should be higher than 400 kPa.
  - If measured pressure value is lower than 400 kPa, check fuel filter for blockage.
     Replace fuel filter if necessary (See page 08-12).
  - If measured pressure value is lower than 400 kPa and fuel filter operates properly, check electric fuel pump assembly. Replace as necessary.
  - If measured pressure value is too high, injector may be clogged or electric fuel pump assembly
    pressure modulating valve may be malfunctioning.
    - Replace injector (See page 08-22) or electric fuel pump assembly (See page 08-14) if necessary.

## **ON-VEHICLE SERVICE**

## **Fuel Filter Assembly**

### Removal

## CAUTION

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

## 

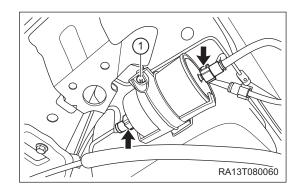
- Before operating fuel supply system, please touch vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating fuel supply system, work area should be in good ventilation and keep fire sources or open flames away from work area, in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

Disconnection way for all fuel pipe coupling joints in following procedures is shown in illustration.

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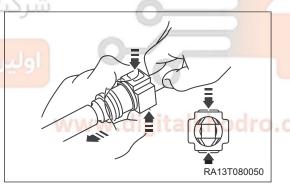
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- 1. Release the fuel supply system pressure (See page 08-10).
- 2. Turn off all electrical equipment and the ignition switch.
- 3. Disconnect the negative battery cable.
- 4. Remove the fuel filter assembly.
  - a. Disconnect coupling joints (arrow) on both ends of fuel filter.
  - b. Loosen the fuel filter bracket fixing screw (1).(Tightening torque: 5 ± 1 N⋅m)



c. Remove fuel filter from fuel filter bracket.





## **CAUTION**

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

## **ENVIRONMENTAL PROTECTION**

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

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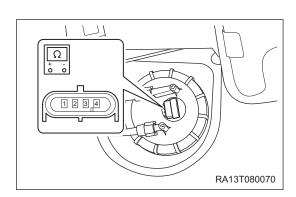
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## **Electric Fuel Pump Assembly**

## **On-vehicle Inspection**

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

Fuel Level Indictor	Multimeter Connection	Specification (Ω)
E	Terminal 3 - Terminal 4	283 ± 5
F E	Terminal 3 - Terminal 4	137 ± 4
	Terminal 3 - Terminal 4	89 ± 4
D. E.	Terminal 3 - Terminal 4	62 ± 3
	Terminal 3 - Terminal 4	40 ± 2







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

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

### HINT:

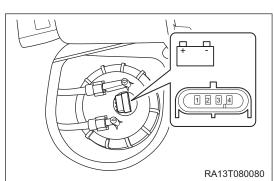
These tests must be finished within 10 seconds to prevent coils from being burnt.

Keep electric fuel pump as far away from battery as possible.

Always switch voltage on and off on battery side, rather than electric fuel pump side.

Multimeter Connection	Specifications
Battery positive (+) - Terminal 1	Fuel pump
Battery negative (-) - Terminal 2	operates

If electric fuel pump does not operate, replace it.



### Removal

### **⚠** WARNING

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

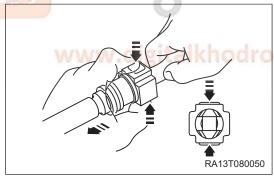
## **CAUTION**

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

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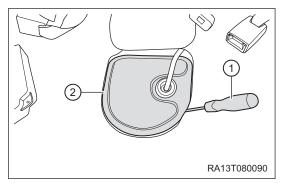
Disconnection way for all fuel pipe coupling joints in following procedures is shown in illustration.

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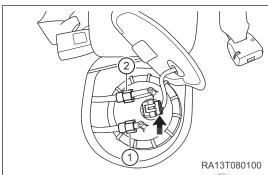


- 1. Release the fuel system pressure (See page 08-10).
- 2. Turn off all electrical equipment and the ignition switch.
- 3. Disconnect the negative battery cable.
- 4. Open fuel filler cap and discharge fuel vapor in fuel tank.
- 5. Remove the rear seat cushion (See page 47-15).

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



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



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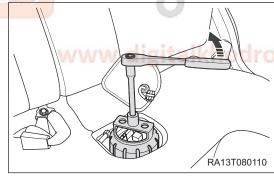
## **CAUTION**

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

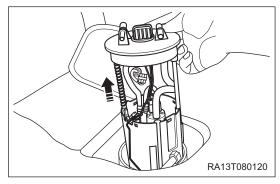
a As shown in illustration, use special tool (fuel tank

6-8

- e. As shown in illustration, use special tool (fuel tank pressure cap remover) to remove fuel tank pressure cap.
  - (Tightening torque: 75 ± 5 N·m)



f. Pull electric fuel pump assembly upward and pull out fuel tank.



### CAUTION

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

### **CAUTION**

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

### Installation

**CAUTION** 

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

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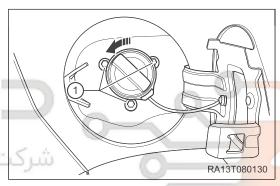
## Filler Tube Assembly

### Removal

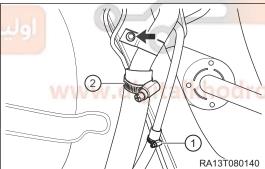
## **↑** WARNING

- Before operating fuel supply system, please touch vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.
- When operating fuel supply system, work area should be in good ventilation and keep fire sources or open flames away from work area, in which fire extinguisher should be equipped.
- If fuel leakage occurs when operating fuel supply system, please handle leaked fuel in time.
- 1. Turn off all electrical equipment and the ignition switch.
- 2. Disconnect the negative battery cable.
- 3. Remove the filler tube assembly.
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- a. Open fuel filler door, rotate and open fuel filler cap in direction of arrow as shown in illustration.
- b. Remove 3 fixing bolts (1).(Tightening torque: 8 + 3 N·m)

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- c. Loosen worm clamp (2) and disconnect connection between fuel filler hose and filler tube assembly.
   (Tightening torque: 3.5 ± 0.5 N·m)
- d. Loosen worm clamp (1) and disconnect connection between fuel breather hose and filler tube assembly.
   (Tightening torque: 3.5 ± 0.5 N·m)



### CAUTION

- Cover joints with plastic bags after disconnecting fuel filler hose and fuel breather hose, in order to prevent foreign matter from entering fuel tank and fuel from evaporating or leaking.
  - e. Remove fixing bolt (arrow) from filler tube assembly lower bracket. (Tightening torque: 8 + 3 N·m)
  - f. Remove the filler tube assembly.

#### Installation

Installation is in the reverse order of removal.

## **Fuel Tank**

### Removal

### **↑** WARNING

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

## CAUTION

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

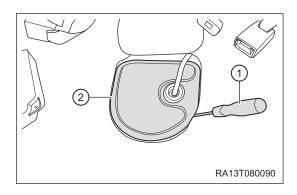
Disconnection way for all fuel pipe coupling joints in following procedures is shown in illustration.

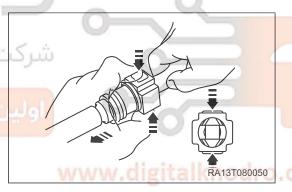
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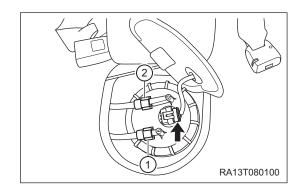
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- 1. Release the fuel system pressure (See page 08-10).
- 2. Turn off all electrical equipment and the ignition switch.
- 3. Disconnect the negative battery cable.
- 4. Remove the front muffler (See page 11-14).
- 5. Open fuel filler cap and discharge fuel vapor in fuel tank.
- 6. Disconnect connection between electric fuel pump side pipe and line.
  - a. Turn over the rear seat cushion (See page 47-15).
  - b. Using a flat tip screwdriver (1), pry up electric fuel pump assembly protective cap (2).

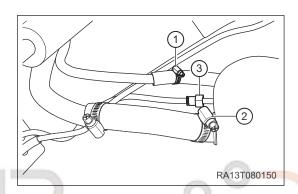




- c. Disconnect the electric fuel pump assembly connector (arrow).
- d. Disconnect inlet pipe I assembly jonit (1) and return pipe assembly joint (2).



- 7. Remove the fuel filter (See page 08-12).
- 8. Remove the fuel tank.
  - a. Loosen worm clamp (1) and disconnect connection between fuel breather hose and filler tube assembly.
     (Tightening torque: 3.5 ± 0.5 N·m)
  - b. Loosen worm clamp (2) and disconnect connection between fuel filler hose and filler tube assembly.
     (Tightening torque: 3.5 ± 0.5 N·m)
  - c. Disconnect coupling joint (3) between fuel vapor line and canister line.



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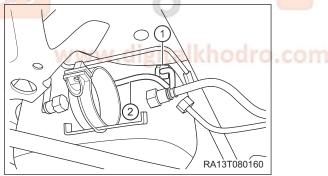
## CAUTION

Cover joints with plastic bags after disconnecting fuel filler hose and fuel breather hose, in order to
prevent foreign matter from entering fuel tank and fuel from evaporating or leaking.

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d. Disconnect coupling joint (1) between inlet and return pipe assembly and return pipe ssembly.

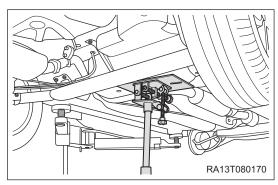
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### CAUTION

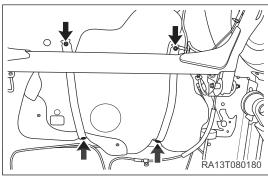
- Before disconnecting joints, remove any dirt and foreign matter from retainer.
- DO NOT forcefully bend or twist delivery pipes.
  - e. Move cnister vacuum pipe (2) away from fuel tank.

f. Support fuel tank with a transmission carrier.



g. Remove 2 fixing bolts (arrow) and 2 fixing nut (1) and fuel tank fixing strap.

(Tightening torque: 23 ± 2.5 N·m)



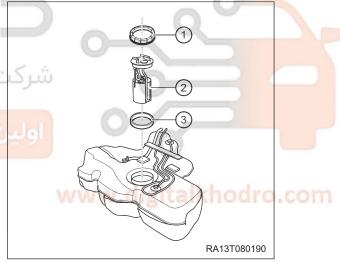
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- h. Slowly lower transmission carrier to remove fuel tank.
- 9. Remove fuel pump pressure cap (1), electric fuel pump assembly (2) and fuel tank seal ring (3) from fuel tank.

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## **Fuel Tank Accessories Description**

1. Fuel Vapor Valve

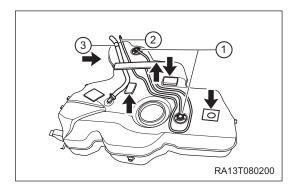
Function of fuel vapor valve:

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

2. Fuel Breather Pipe

Function of fuel breather pipe:

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



#### 3. Fuel Tank Cushion

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

#### Installation

Installation is in the reverse order of removal.

## CAUTION

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

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## **Fuel Rail Injector Assembly**

### Removal

### **↑** WARNING

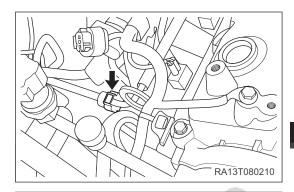
- Before operating fuel supply system, please touch vehicle body to discharge static electricity; failure to
  do so will cause a fire, even result in an explosion.
- When operating fuel supply system, work area should be in good ventilation and keep fire sources or
  open flames away from work area,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

### CAUTION

- DO NOT damage disconnected fuel system line or connectors. Cover line joints or connectors with plastic bags or equivalent, preventing foreign matter from entering.
- Injector is a part of high accuracy, featuring good anti-clogging, anti-pollution and atomization, so be careful not to damage the injector during removal of fuel rail.
- 1. Release the fuel supply system pressure (See page 08-12).
- 2. Turn off all electrical equipment and the ignition switch.

## **©** CAUTION

- Install protector to prevent body from being scratched.
- 3. Disconnect the negative battery cable.
- 4. Remove the engine trim cover.
- 5. Remove the ignition coil (See page 14-8).
- 6. Remove the fuel rail injector Assembly.
  - a. Disconnect coupling joint (arrow) between delivery pipe and fuel rail.



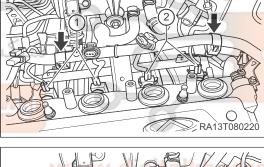
08

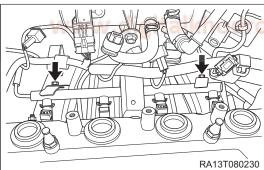
- b. Move away 2 wire harness clips (arrow).
- c. Disconnect 4 connectors (1) and (2) from injectors separately.

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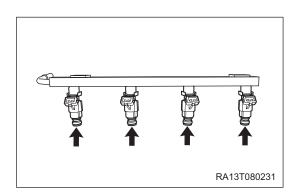
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d. Remove 2 fixing bolts (arrow) from fuel rail.(Tightening torque: 8 - 11 N·m)





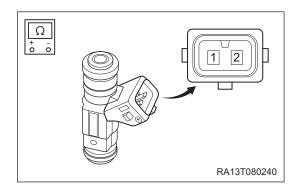
- e. Remove fuel rail and fuel injectors.
- 7. Separate injector clips and remove injectors (arrow) from fuel rail.



## Inspection

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

Measurement Temperature	Specifications (Ω)
20°C	11–16



## Installation

Installation is in the reverse order of removal.

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## CAUTION

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

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

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