

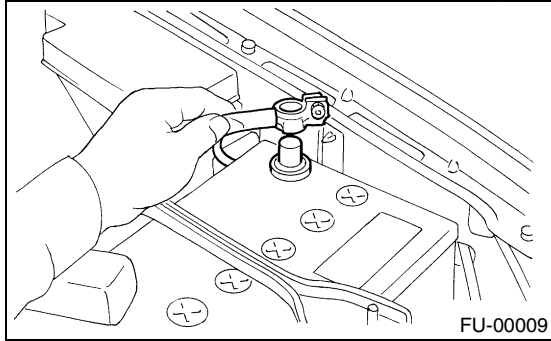
REAR OXYGEN SENSOR

FUEL INJECTION (FUEL SYSTEMS)

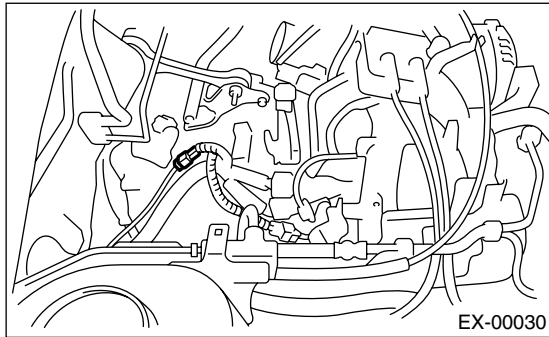
15.Rear Oxygen Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



- 2) Lift-up the vehicle.
- 3) Disconnect the connector from the rear oxygen sensor.



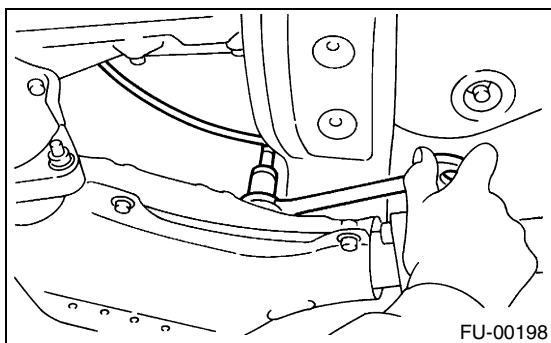
- 4) Apply SUBARU CRC or its equivalent to the threaded portion of rear oxygen sensor, and leave it for one minute or more.

SUBARU CRC (Part No. 004301003)

- 5) Remove the rear oxygen sensor.

CAUTION:

When removing the oxygen sensor, wait until exhaust pipe cools, otherwise it will damage exhaust pipe.



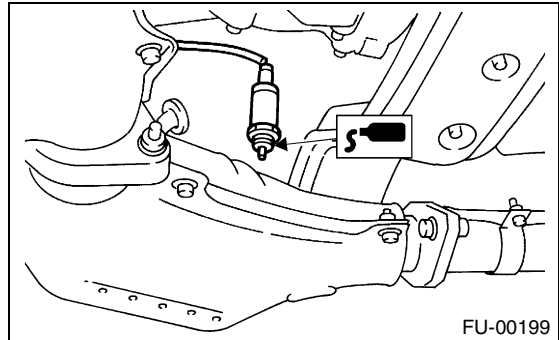
B: INSTALLATION

- 1) Before installing rear oxygen sensor, apply the anti-seize compound only to the threaded portion of rear oxygen sensor to make the next removal easier.

CAUTION:

Never apply anti-seize compound to protector of rear oxygen sensor.

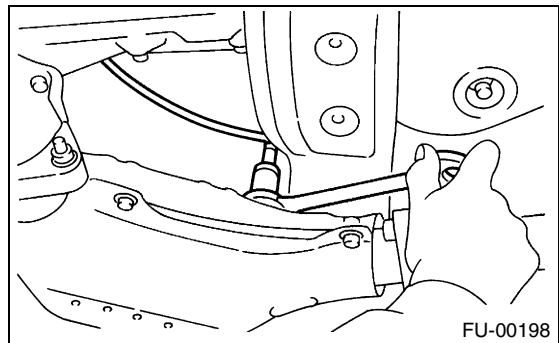
**Anti-seize compound:
SS-30 by JET LUBE**



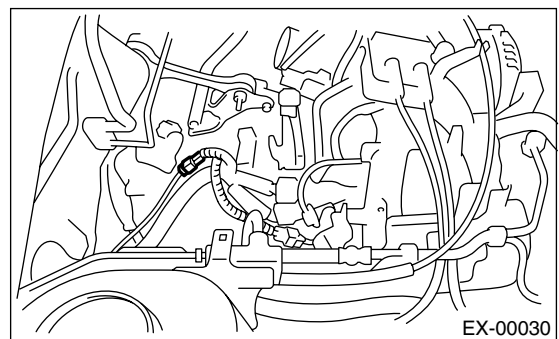
- 2) Install the rear oxygen sensor.

Tightening torque:

21 N·m (2.1 kgf-m, 15.2 ft-lb)



- 3) Connect the connector to the rear oxygen sensor.

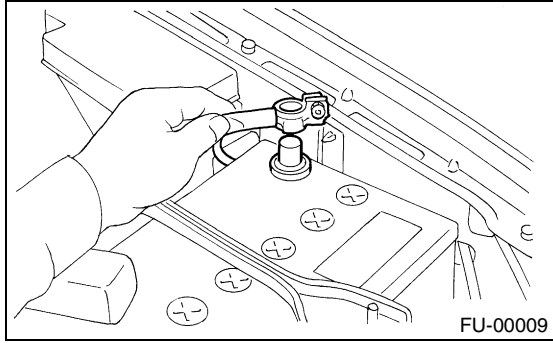


- 4) Lower the vehicle.

REAR OXYGEN SENSOR

FUEL INJECTION (FUEL SYSTEMS)

5) Connect the battery ground cable to battery.



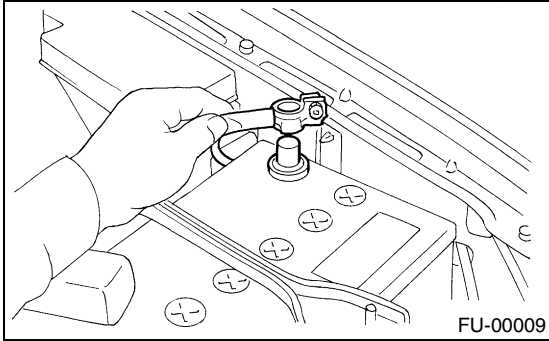
ENGINE CONTROL MODULE

FUEL INJECTION (FUEL SYSTEMS)

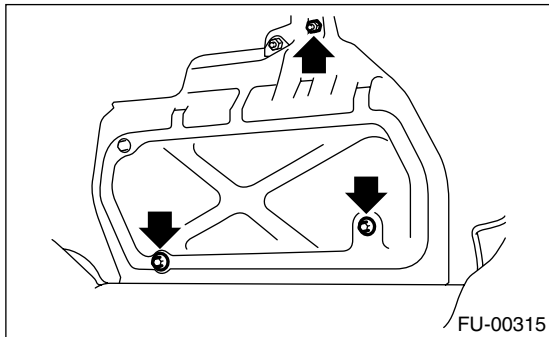
16.Engine Control Module

A: REMOVAL

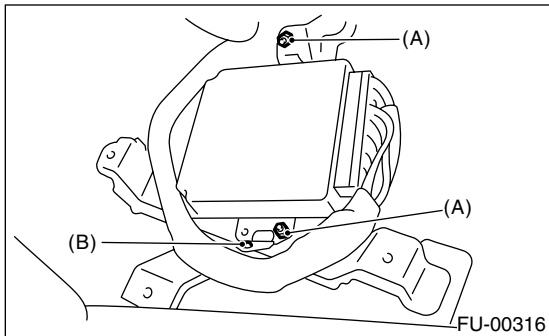
- 1) Disconnect the ground cable from battery.



- 2) Remove the lower inner trim of passenger side.
<Ref. to EI-44, REMOVAL, Lower Inner Trim.>
- 3) Detach the floor mat of front passenger seat.
- 4) Remove the protect cover.



- 5) Remove the nuts (A) which hold ECM to the bracket.
- 6) Remove the clip (B) from the bracket.



- 7) Disconnect the ECM connectors and take out the ECM.

B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

When replacing ECM, be careful not to use the wrong spec. ECM to avoid any damage to the fuel injection system.

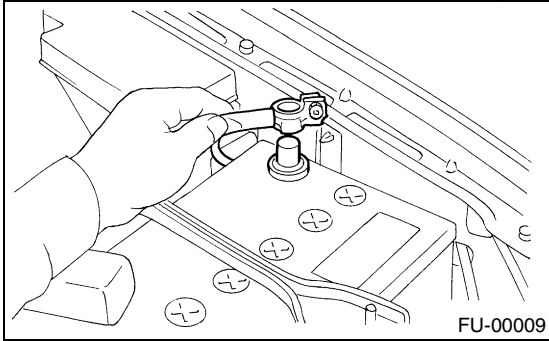
Tightening torque:

5 N·m (0.51 kgf-m, 3.7 ft-lb)

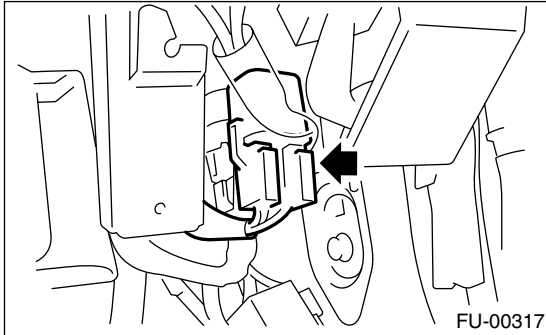
17.Main Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.



- 2) Remove the passenger's side front side sill cover.
- 3) Remove the bolt which holds main bracket on the body.
- 4) Disconnect the connectors from the main relay.



B: INSTALLATION

Install in the reverse order of removal.

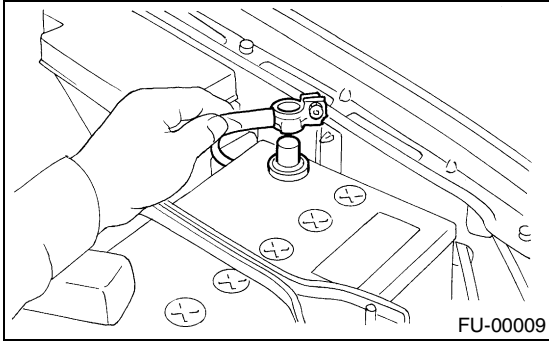
FUEL PUMP RELAY

FUEL INJECTION (FUEL SYSTEMS)

18. Fuel Pump Relay

A: REMOVAL

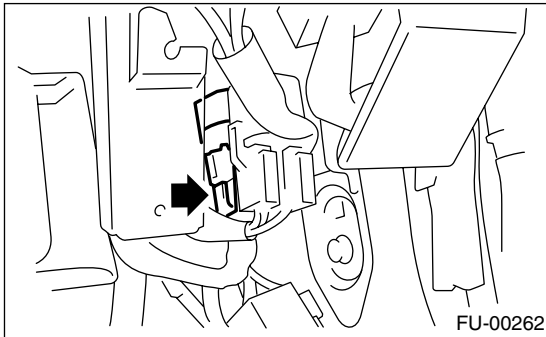
1) Disconnect the ground cable from battery.



2) Remove the passenger's side front side sill cover.

3) Remove the bolt which holds fuel pump relay bracket on the body.

4) Disconnect the connector from the fuel pump.



5) Remove the fuel pump relay from the mounting bracket.

B: INSTALLATION

Install in the reverse order of removal.

19. Fuel

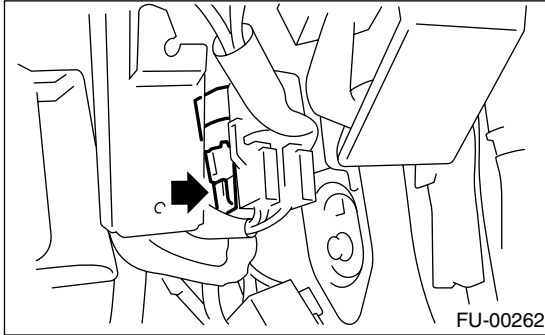
A: OPERATION

1. RELEASING OF FUEL PRESSURE

WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

1) Disconnect the connector from fuel pump relay.



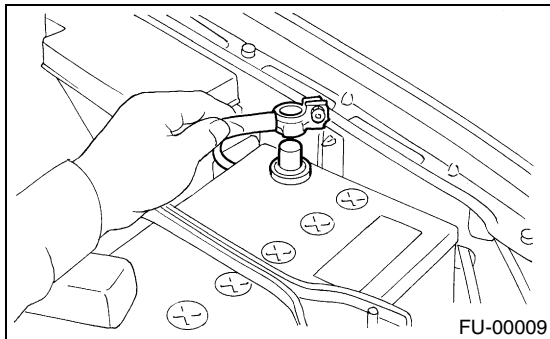
- 2) Start the engine and run it until it stalls.
- 3) After the engine stalls, crank it for 5 more seconds.
- 4) Turn the ignition switch to OFF.

2. DRAINING FUEL

WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

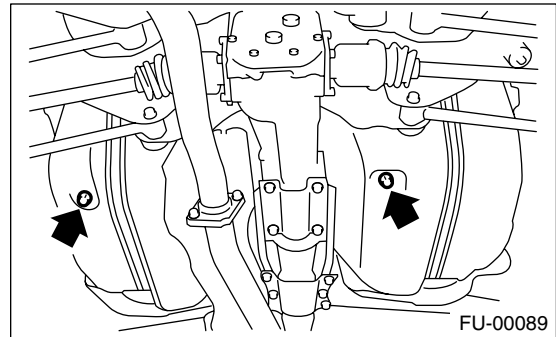
- 1) Set the vehicle on a lift.
- 2) Disconnect the ground cable from battery.



- 3) Open the fuel filler flap lid and remove fuel filler cap.
- 4) Lift-up the vehicle.

5) Drain fuel from the fuel tank.

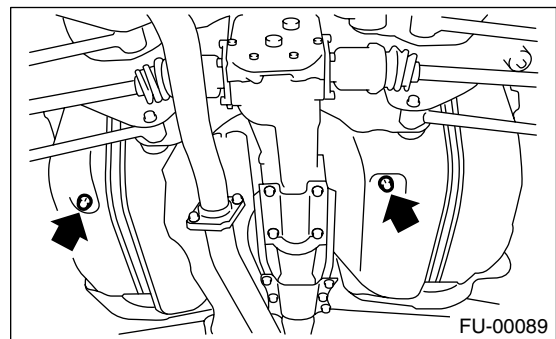
Set a container under the vehicle and remove the drain plug from fuel tank.



6) Tighten the fuel drain plug.

Tightening torque:

26 N·m (2.7 kgf·m, 19.2 ft·lb)



FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

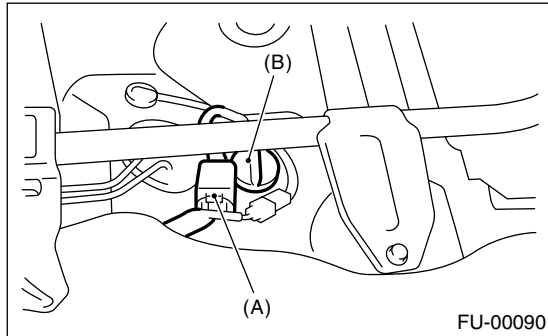
20. Fuel Tank

A: REMOVAL

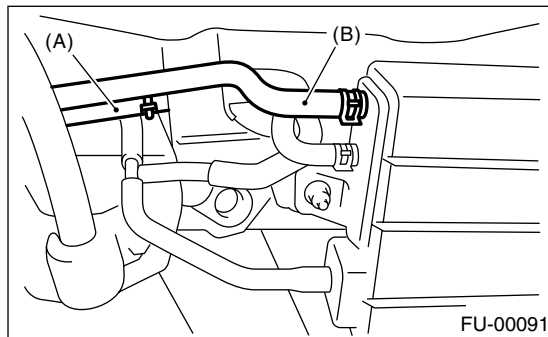
WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

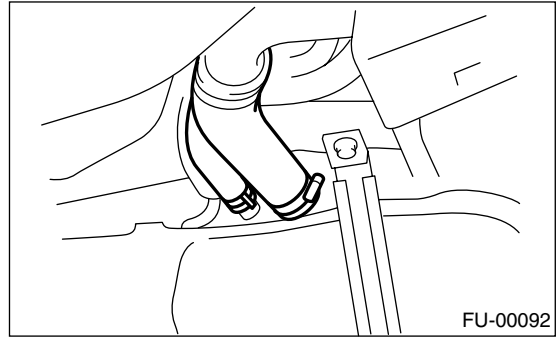
- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 3) Drain fuel from the fuel tank. <Ref. to FU(SOHC)-49, DRAINING FUEL, OPERATION, Fuel.>
- 4) Remove the rear seat.
- 5) Disconnect the connector (A) of fuel tank cord to rear harness.
- 6) Push the grommet (B) which holds fuel tank cord on floor panel into under the body.



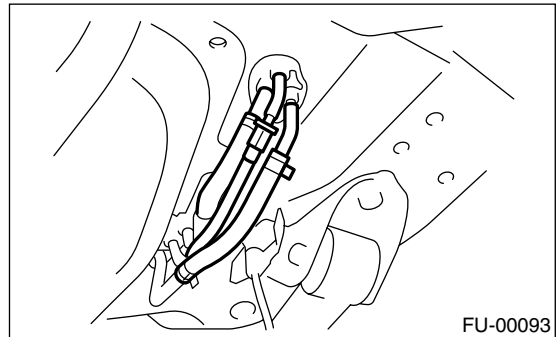
- 7) Remove the rear crossmember. <Ref. to RS-19, REMOVAL, Rear Crossmember.>
- 8) Disconnect the two-way valve hose (A) from two-way valve and disconnect the canister hose (B) from canister.



- 9) Loosen the clamp and disconnect the fuel filler hose and air vent hose from fuel filler pipe.



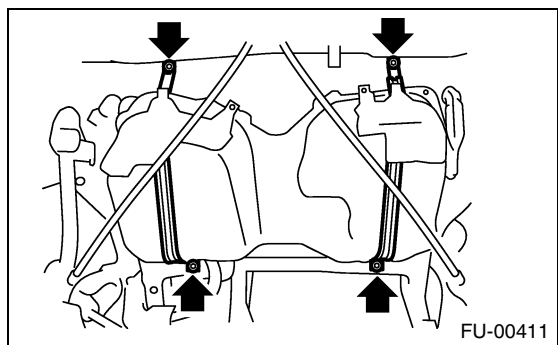
- 10) Move the clips, and disconnect quick connector. <Ref. to FU(SOHC)-65, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>
- 11) Disconnect the fuel hoses.



- 12) Support the fuel tank with transmission jack, and remove the bolts from bands and dismount fuel tank from the vehicle.

WARNING:

A helper is required to perform this work.



FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

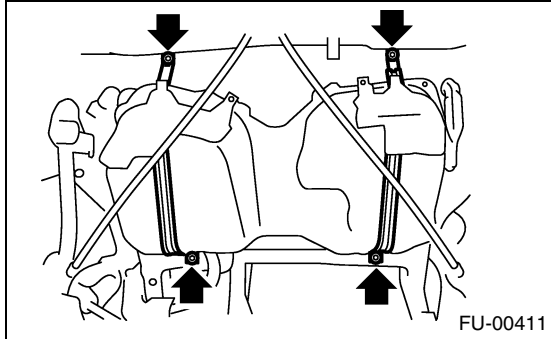
B: INSTALLATION

1) Support the fuel tank with transmission jack and push the fuel tank harness into access hole with grommet.

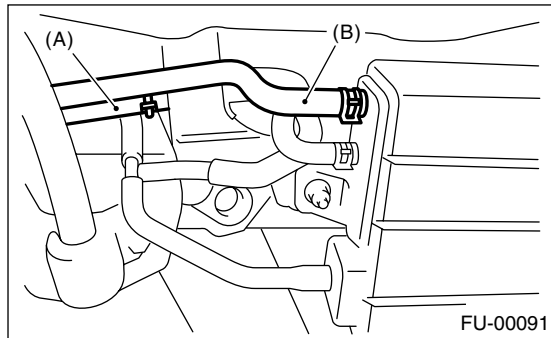
2) Set the fuel tank and temporarily tighten the bolts of fuel tank bands.

WARNING:

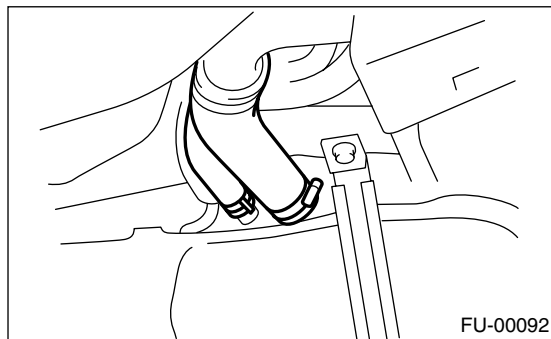
A helper is required to perform this work.



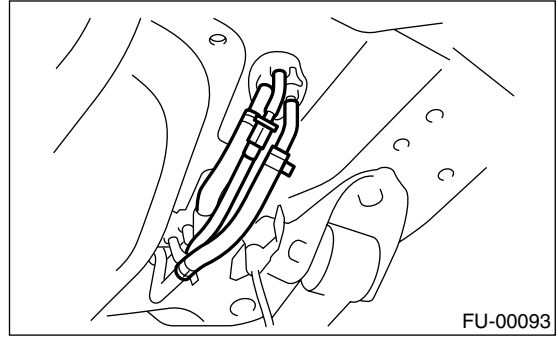
3) Connect the two-way valve hose (A) to two-way valve and connect the canister hose (B) to canister.



4) Connect the fuel filler hose and air vent hose.



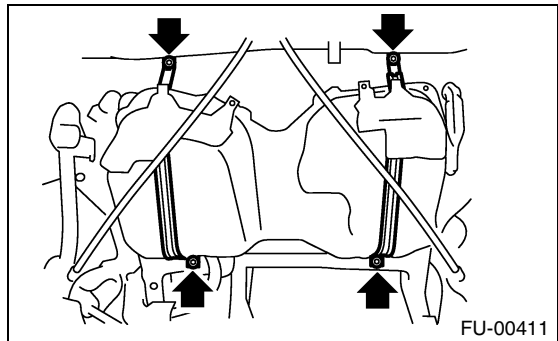
5) Connect the fuel hoses, and secure them with clips and quick connector. <Ref. to FU(SOHC)-66, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>



6) Tighten the band mounting bolts.

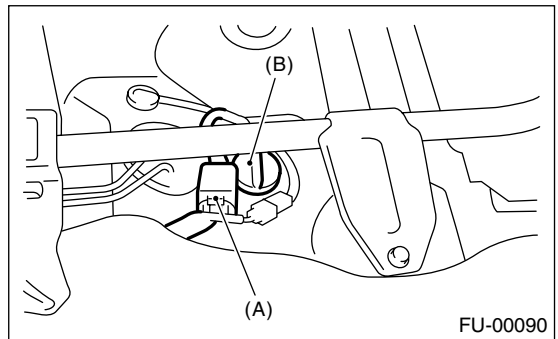
Tightening torque:

33 N-m (3.4 kgf-m, 24.3 ft-lb)



7) Install the rear crossmember. <Ref. to RS-19, INSTALLATION, Rear Crossmember.>

8) Connect the connector (A) to fuel tank cord and plug the service hole with grommet (B).

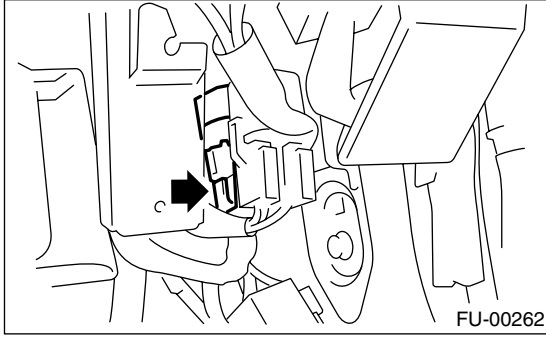


9) Set the rear seat and floor mat.

FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

10) Connect the connector to fuel pump relay.



C: INSPECTION

- 1) Make sure there are no cracks, holes, or other damage on the fuel tank.
- 2) Make sure that the fuel hoses and fuel pipes are not cracked and that connections are tight.

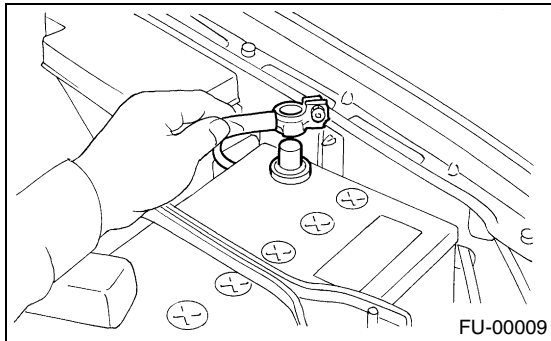
21. Fuel Filler Pipe

A: REMOVAL

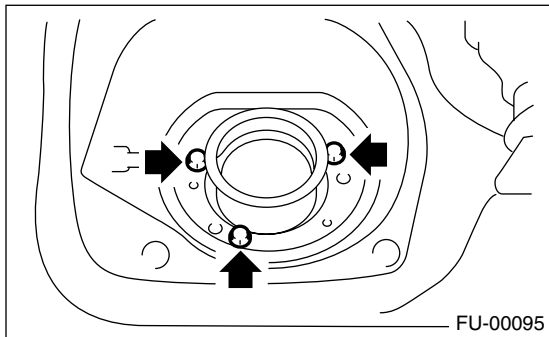
WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

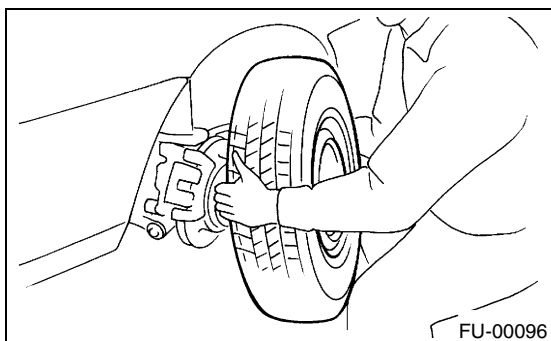
- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 3) Open the fuel filler flap lid and remove fuel filler cap.
- 4) Disconnect the ground cable from battery.



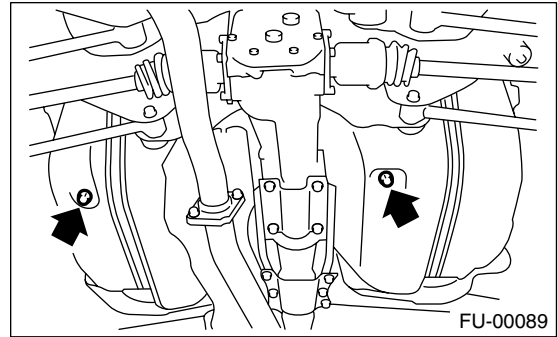
- 5) Remove the screws holding packing in place.



- 6) Loosen the rear right side wheel nuts.
- 7) Lift-up the vehicle.
- 8) Remove the rear right side wheel.



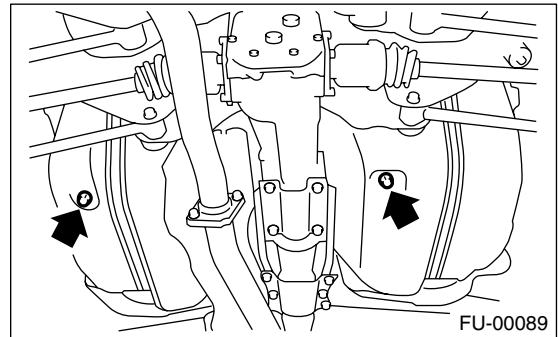
- 9) Drain fuel from the fuel tank. Set a container under the vehicle and remove the drain plug from fuel tank.



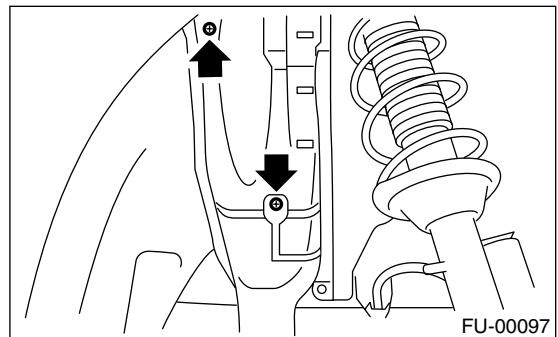
- 10) Tighten the fuel drain plug and then install the front right side tank cover.

Tightening torque:

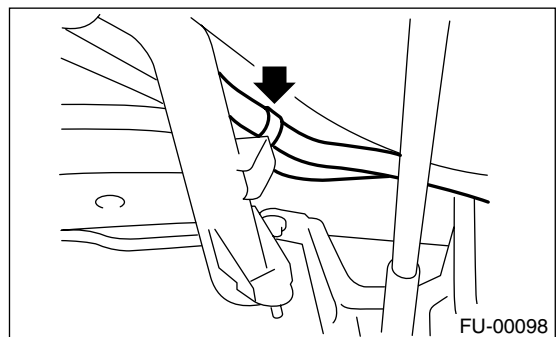
26 N·m (2.7 kgf·m, 19.2 ft·lb)



- 11) Remove the fuel filler pipe protector.



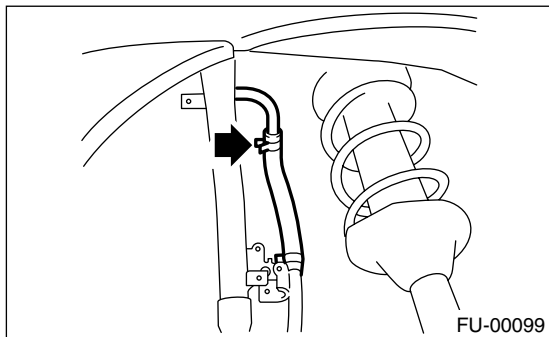
- 12) Separate the evaporation hoses from clip of fuel filler pipe.



FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

13) Disconnect the air vent hose from fuel filler pipe.

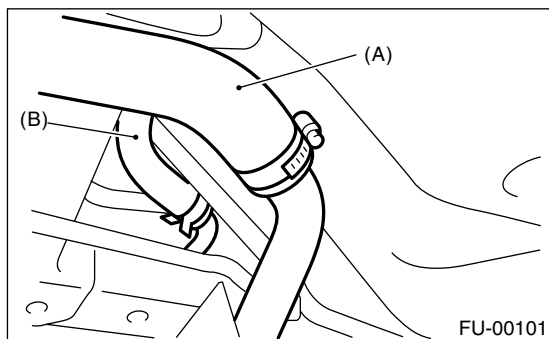


14) Remove the bolts which hold fuel filler pipe bracket on body.



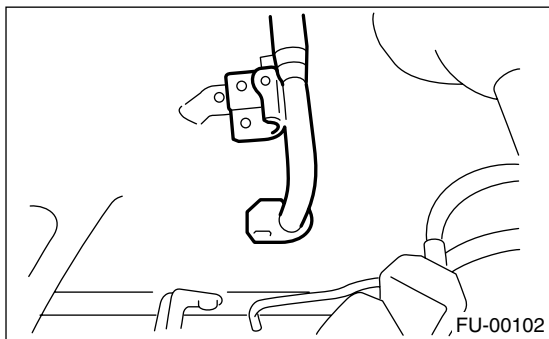
15) Loosen the clamp and separate fuel filler hose (A) from fuel filler pipe.

16) Move the clip and separate air vent hose (B).



17) Remove the fuel filler pipe to under side of the vehicle.

18) Remove the air vent pipe together with clip from body.



B: INSTALLATION

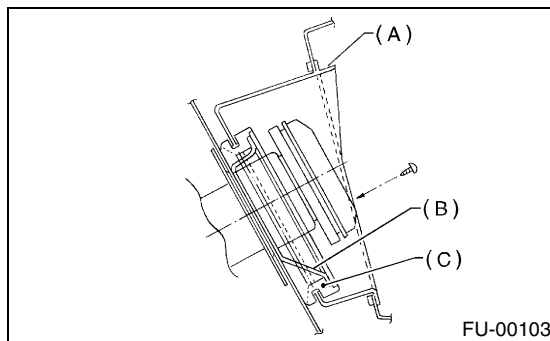
1) Hold the fuel filler flap open.

2) Set the fuel saucer (A) with rubber packing (C) and insert the fuel filler pipe into hole from the inner side of apron.

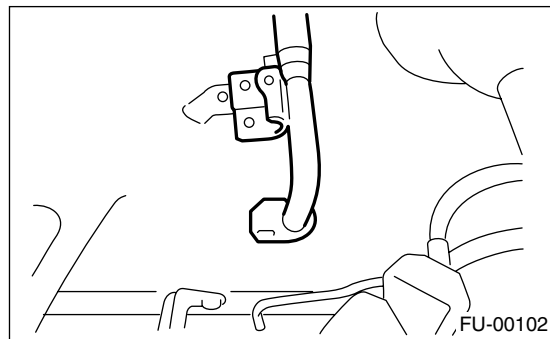
3) Align the holes in fuel filler pipe neck and set cup (B), and tighten the screws.

NOTE:

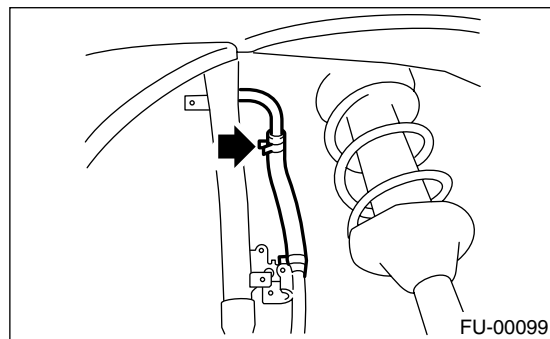
If the edges of rubber packing are folded toward inside, straighten it with a screwdriver.



4) Install the air vent pipe.



5) Connect the air vent hose to fuel filler pipe.



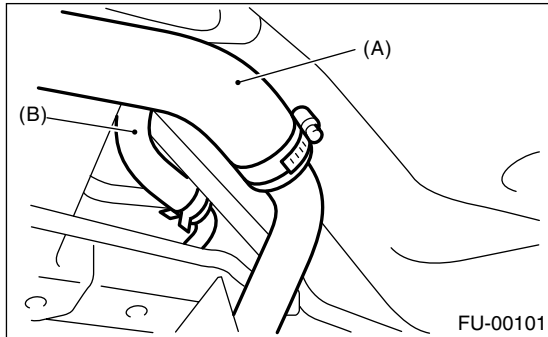
FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

6) Insert the fuel filler hose (A) approx. 35 to 40 mm (1.38 to 1.57 in) over the lower end of fuel filler pipe and tighten the clamp.

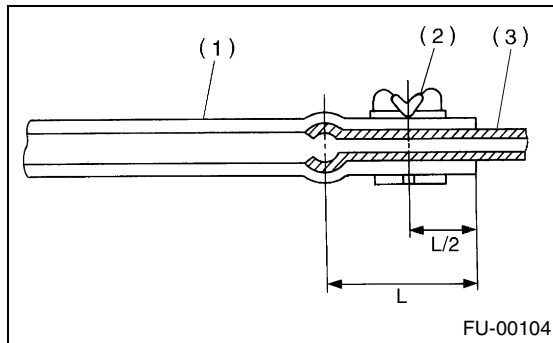
CAUTION:

Do not allow clips to touch the air vent hose (B) and rear suspension crossmember.



7) Insert the air vent hose approx. 25 to 30 mm (0.98 to 1.18 in) into the lower end of air vent pipe and hold clip.

$L = 27.5 \pm 2.5 \text{ mm (1.083 \pm 0.098 in)}$

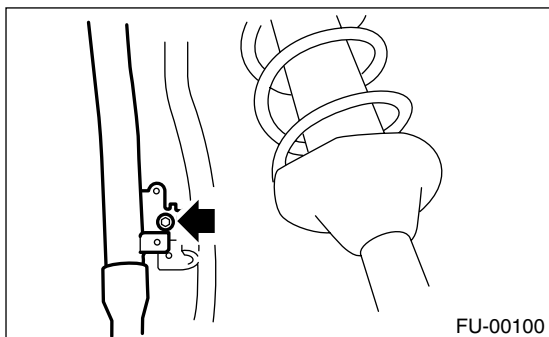


- (1) Hose
- (2) Clip
- (3) Pipe

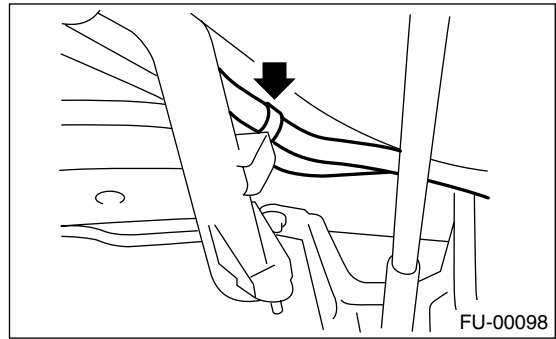
8) Tighten the bolt which holds fuel filler pipe bracket on body.

Tightening torque:

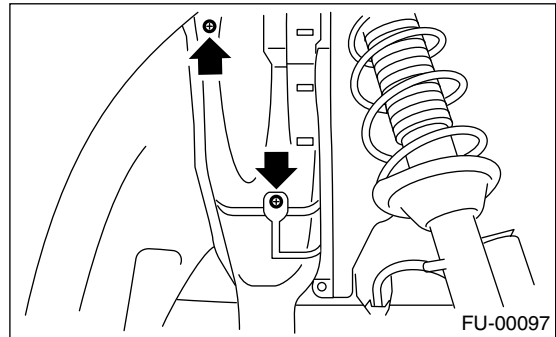
$7.4 \text{ N}\cdot\text{m (0.75 kgf}\cdot\text{m, 5.4 ft}\cdot\text{lb)}$



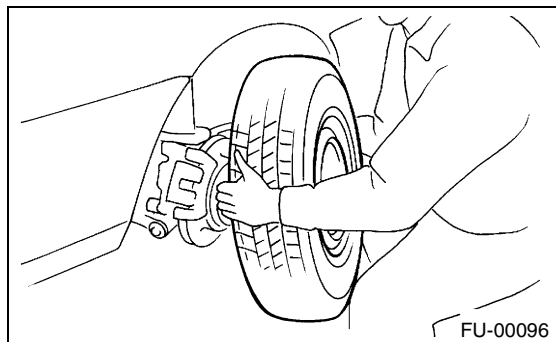
9) Hold the evaporation hoses onto clip of fuel filler pipe.



10) Install the fuel filler pipe protector.



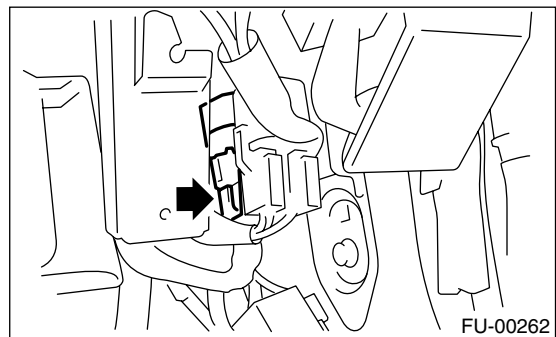
11) Install the rear right wheel.



12) Lower the vehicle.

13) Tighten the wheel nuts.

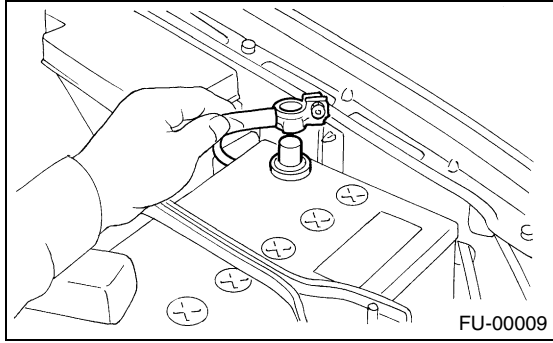
14) Connect the connector to fuel pump relay.



FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

15) Connect the battery ground cable to battery.



22. Fuel Pump

A: REMOVAL

WARNING:

- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel.

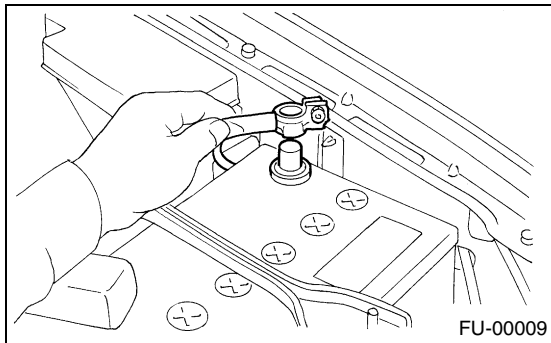
NOTE:

Fuel pump assembly consists of fuel pump and fuel level sensor.

1) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>

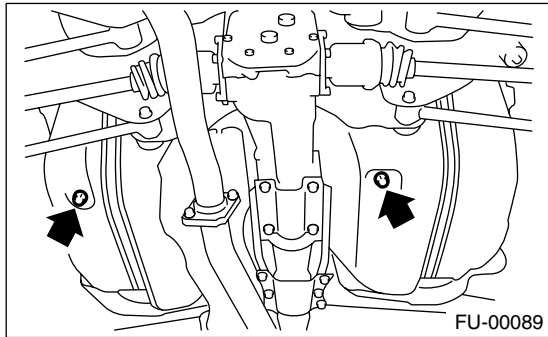
2) Open the fuel filler flap lid and remove fuel filler cap.

3) Disconnect the ground cable from battery.



4) Lift-up the vehicle.

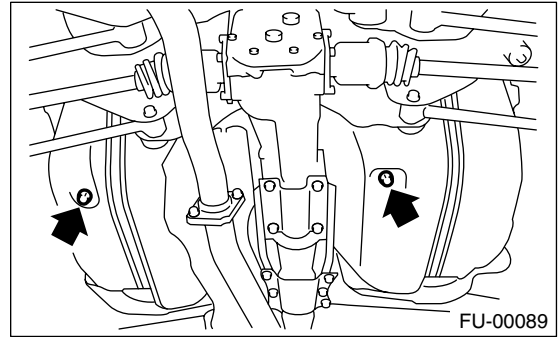
5) Drain fuel from the fuel tank. Set a container under the vehicle and remove the drain plug from fuel tank.



6) Tighten the fuel drain plug.

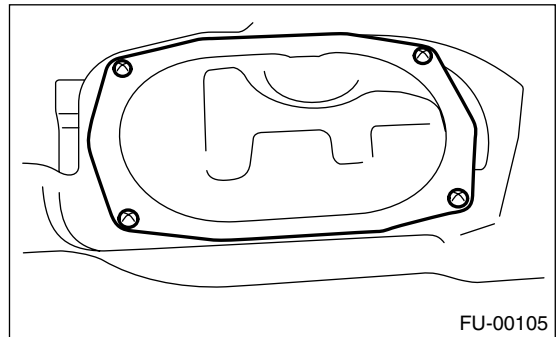
Tightening torque:

26 N·m (2.7 kgf·m, 19.2 ft·lb)

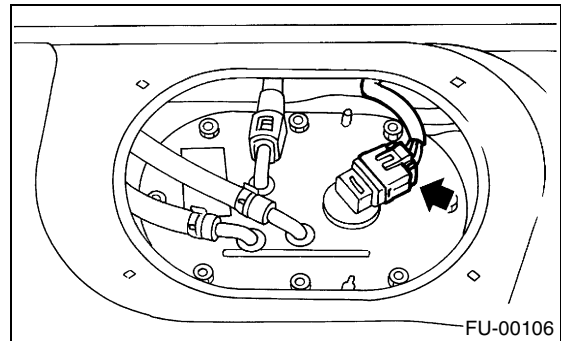


7) Raise the rear seat and turn floor mat up.

8) Remove the access hole lid.

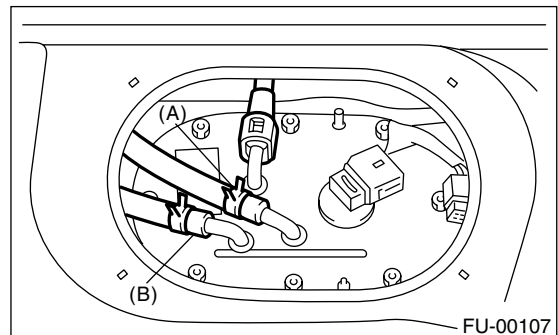


9) Disconnect the connector from fuel pump.



10) Disconnect the quick connector and then disconnect fuel delivery hose. <Ref. to FU(SOHC)-65, Fuel Delivery, Return and Evaporation Lines.>

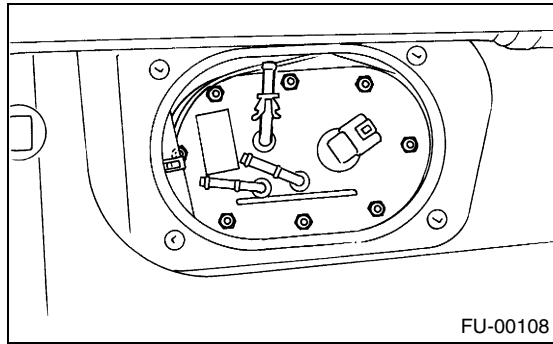
11) Move the clips, and then disconnect the fuel return hose (A) and jet pump hose (B).



FUEL PUMP

FUEL INJECTION (FUEL SYSTEMS)

12) Remove the nuts which install fuel pump assembly onto fuel tank.



13) Take off the fuel pump assembly from fuel tank.

B: INSTALLATION

Install in the reverse order of removal. Do the following:

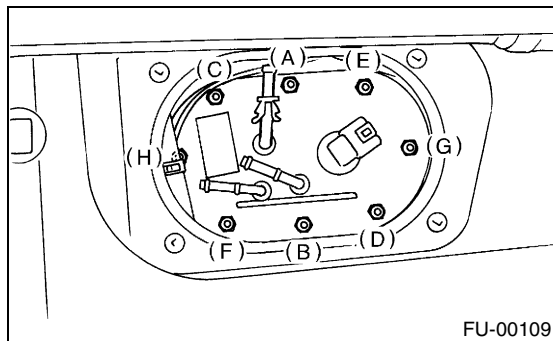
NOTE:

Always use new gaskets.

- (1) Ensure sealing portion is free from fuel or foreign particles before installation.
- (2) Tighten the nuts in alphabetical sequence shown in the figure to specified torque.

Tightening torque:

4.4 N·m (0.45 kgf-m, 3.3 ft-lb)

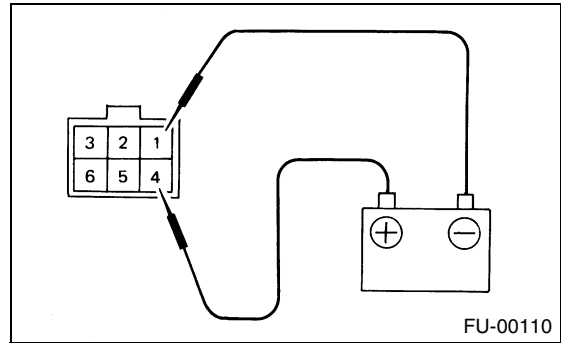


C: INSPECTION

Connect the lead harness to connector terminal of fuel pump and apply battery power supply to check whether the pump operates.

WARNING:

- Wipe off the fuel completely.
- Keep the battery as far apart from fuel pump as possible.
- Be sure to turn the battery supply ON and OFF on battery side.
- Do not run the fuel pump for a long time under non-load condition.



23. Fuel Level Sensor

A: REMOVAL

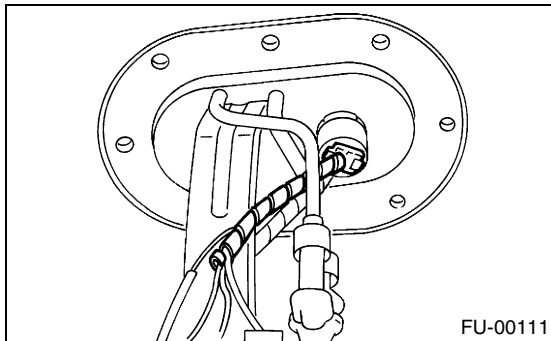
WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

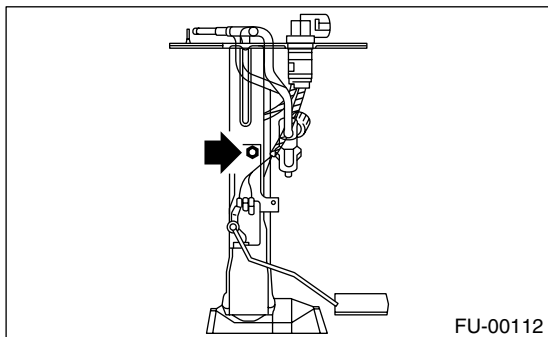
NOTE:

Fuel level sensor is built in fuel pump assembly.

- 1) Remove the fuel pump assembly. <Ref. to FU(SOHC)-57, REMOVAL, Fuel Pump.>
- 2) Disconnect the connector from fuel pump bracket.



- 3) Remove the bolt which installs fuel level sensor on mounting bracket.



B: INSTALLATION

Install in the reverse order of removal.

FUEL SUB LEVEL SENSOR

FUEL INJECTION (FUEL SYSTEMS)

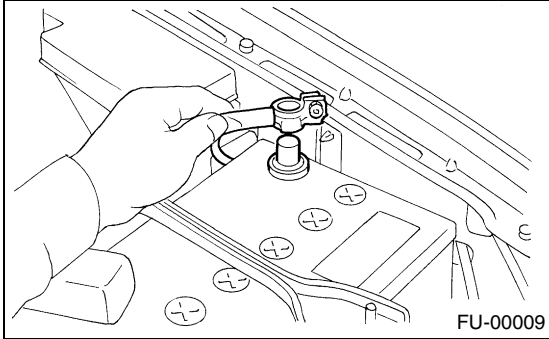
24. Fuel Sub Level Sensor

A: REMOVAL

WARNING:

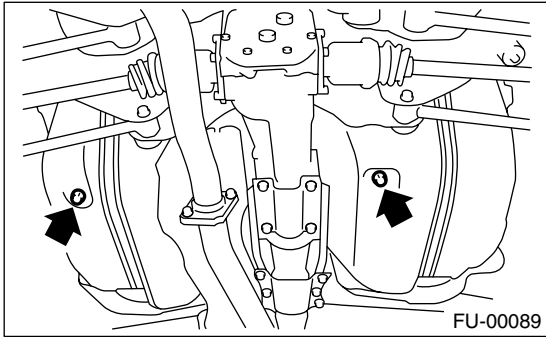
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel.

1) Disconnect the ground cable from battery.



2) Lift-up the vehicle.

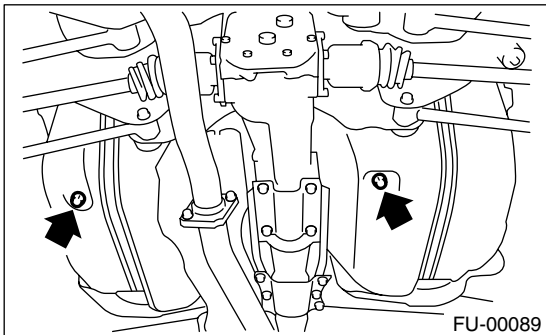
3) Drain fuel from the fuel tank. Set a container under the vehicle and remove the drain plug from fuel tank.



4) Tighten the fuel drain plug.

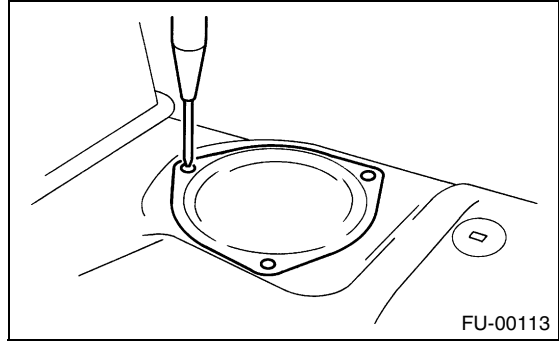
Tightening torque:

26 N·m (2.7 kgf-m, 19.2 ft-lb)



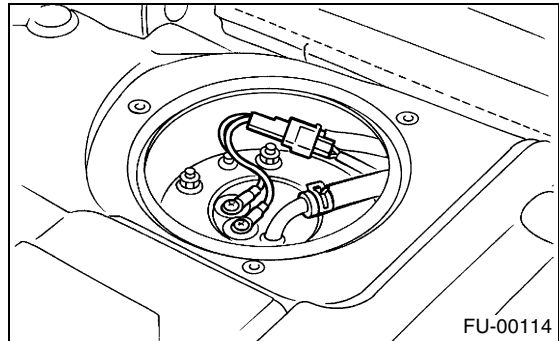
5) Remove the rear seat.

6) Remove the service hole cover.

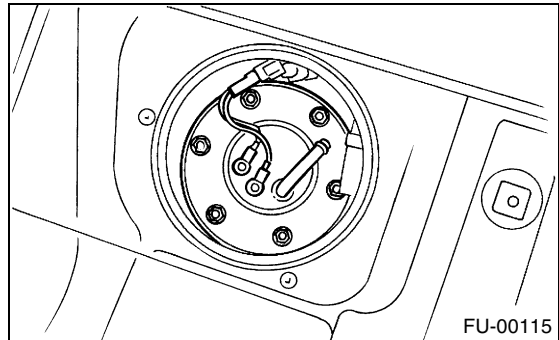


7) Disconnect the connector from fuel sub meter.

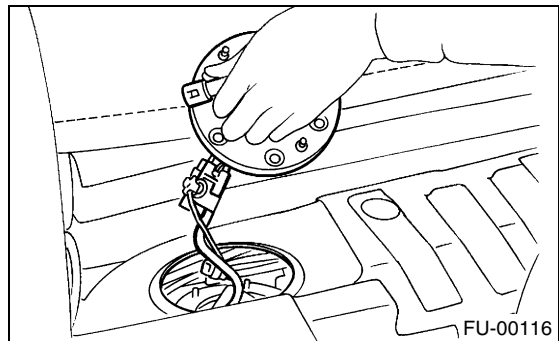
8) Disconnect the fuel jet pump hose.



9) Remove the bolts which install fuel sub meter unit on fuel tank.



10) Remove the fuel sub meter unit.



FUEL SUB LEVEL SENSOR

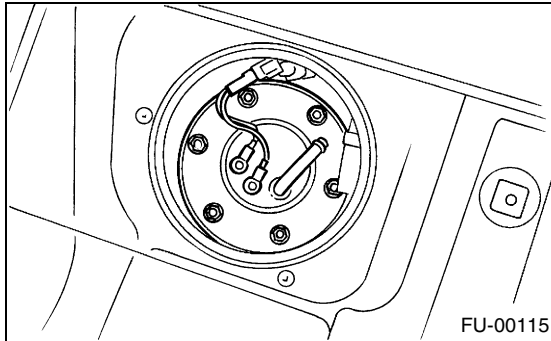
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

4.4 N·m (0.45 kgf-m, 3.3 ft-lb)



FUEL FILTER

FUEL INJECTION (FUEL SYSTEMS)

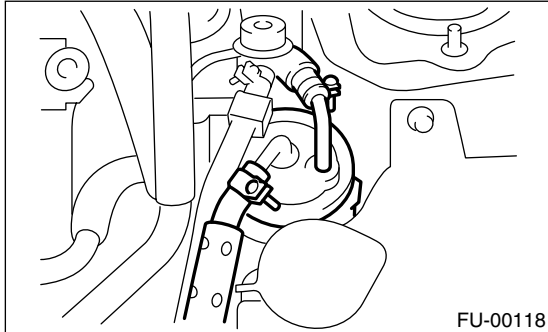
25. Fuel Filter

A: REMOVAL

WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

- 1) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 2) Disconnect the fuel delivery hoses from fuel filter.



- 3) Remove the filter from holder.

B: INSTALLATION

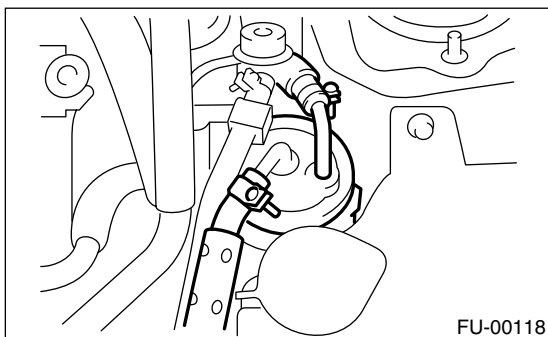
CAUTION:

- If fuel hoses are damaged at the connecting portion, replace it with a new one.
- If clamps are badly damaged, replace with new ones.

- 1) Install in the reverse order of removal.
- 2) Tighten the hose clamp screws.

Tightening torque:

1.25 N·m (0.13 kgf·m, 0.94 ft·lb)



C: INSPECTION

- 1) Check the inside of fuel filter for dirt and water sediment.
- 2) If it is clogged, or if replacement interval has been reached, replace it.
- 3) If water is found in it, shake and expel the water from inlet port.

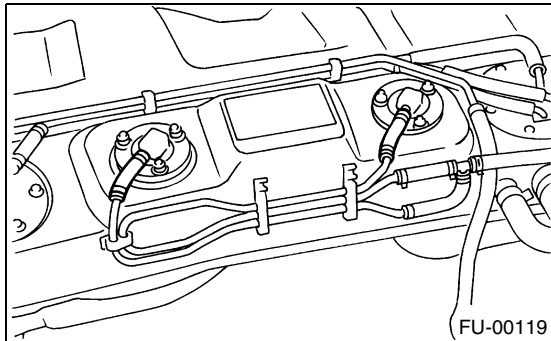
26. Fuel Cut Valve

A: REMOVAL

WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

- 1) Remove the fuel tank. <Ref. to FU(SOHC)-50, REMOVAL, Fuel Tank.>
- 2) Move the clip and disconnect the evaporation hose from fuel cut valve.



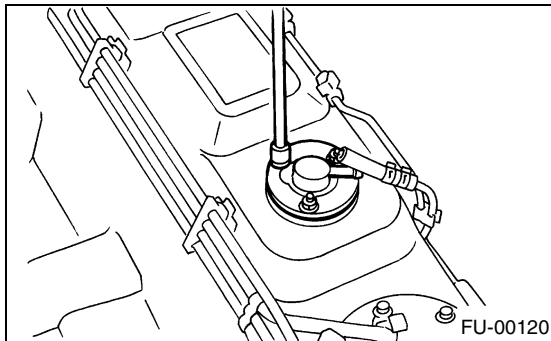
- 3) Remove the bolts which install fuel cut valve.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

4.4 N·m (0.45 kgf-m, 3.3 ft-lb)



FUEL DAMPER VALVE

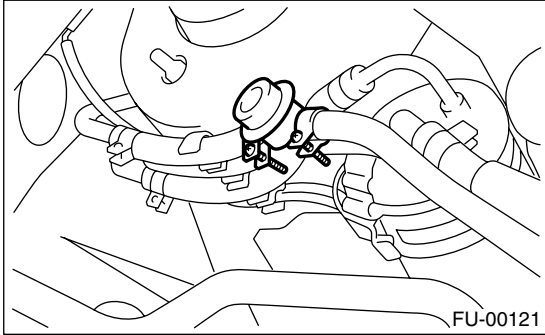
FUEL INJECTION (FUEL SYSTEMS)

27. Fuel Damper Valve

A: REMOVAL

1) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>

2) Remove the fuel damper valve from fuel return line.



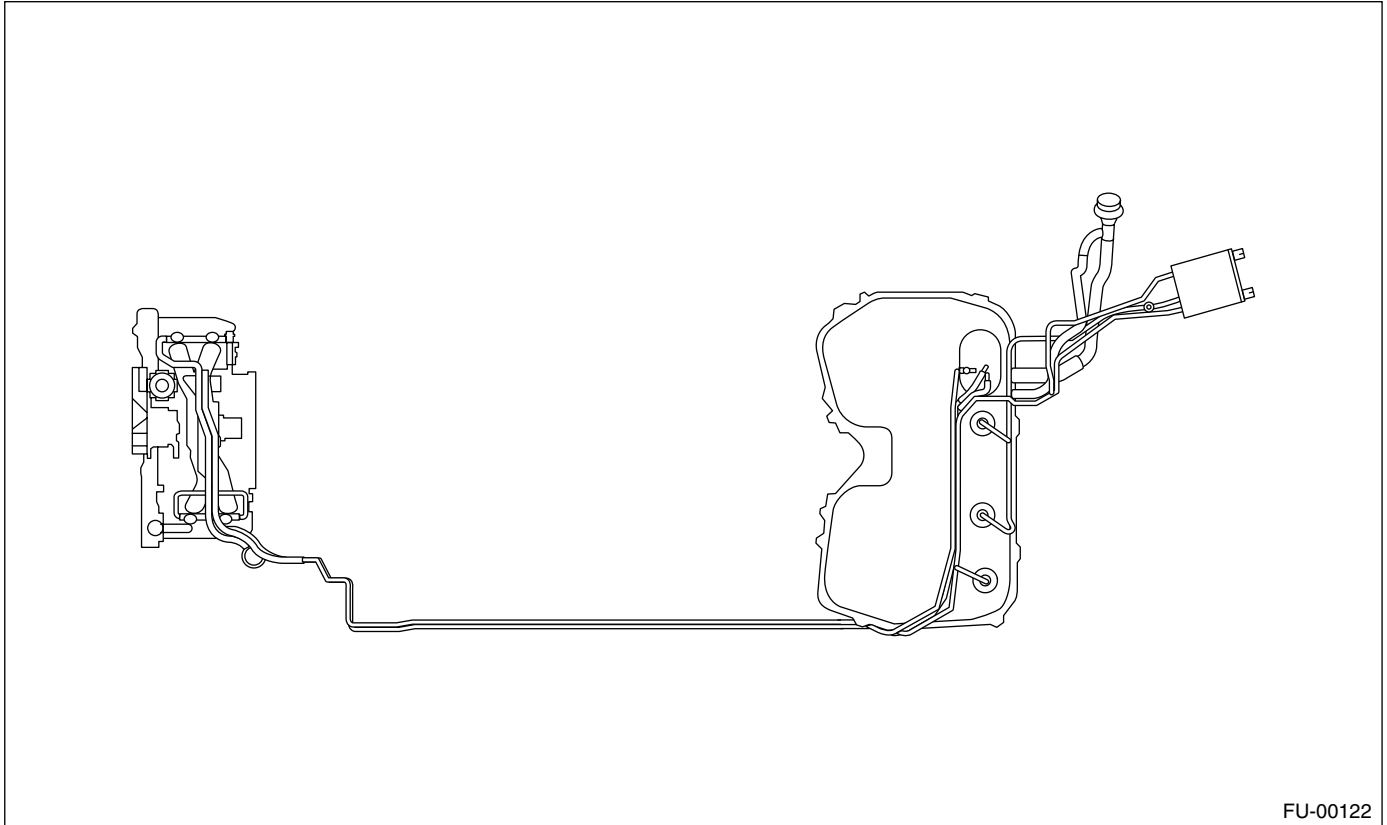
B: INSTALLATION

Install in the reverse order of removal.

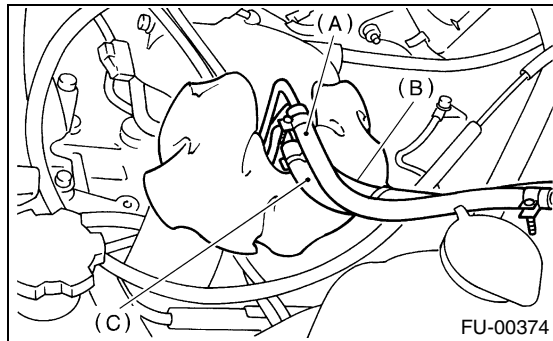
28. Fuel Delivery, Return and Evaporation Lines

A: REMOVAL

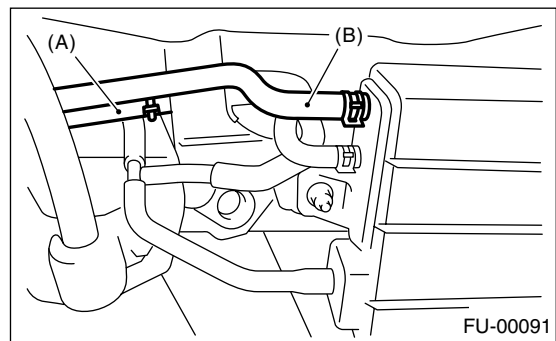
- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(SOHC)-49, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 3) Open the fuel filler flap lid and remove fuel filler cap.
- 4) Remove the floor mat. <Ref. to EI-49, REMOVAL, Floor Mat.>
- 5) Remove the fuel delivery pipes and hoses, fuel return pipes and hoses, evaporation pipes and hoses.



- 6) In the engine compartment, detach the fuel delivery hose (A), return hose (B) and evaporation hose (C).



- 8) Disconnect the two-way valve hose (A) from two-way valve and disconnect the canister hose (B) from canister.



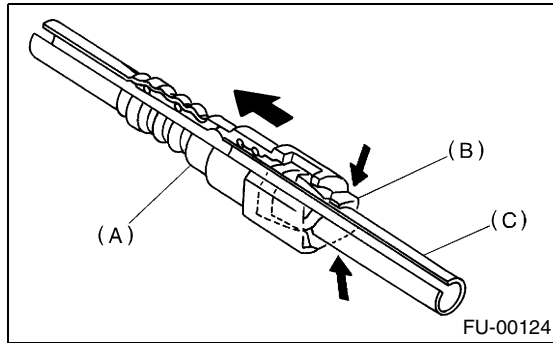
- 7) Lift-up the vehicle.

FUEL DELIVERY, RETURN AND EVAPORATION LINES

FUEL INJECTION (FUEL SYSTEMS)

9) Separate the quick connector on fuel delivery line.

- (1) Clean the pipe and connector, if they are covered with dust.
- (2) Hold the connector (A) and push retainer (B) down.
- (3) Pull out the connector (A) from retainer (B).



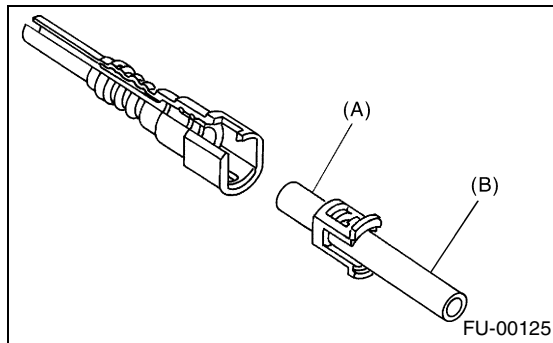
- (A) Connector
- (B) Retainer
- (C) Pipe

B: INSTALLATION

1) Connect the quick connector on fuel delivery line.

NOTE:

- Always use a new retainer.
- Make sure that the connected portion is not damaged or has dust. If necessary, clean the seal surface of pipe.



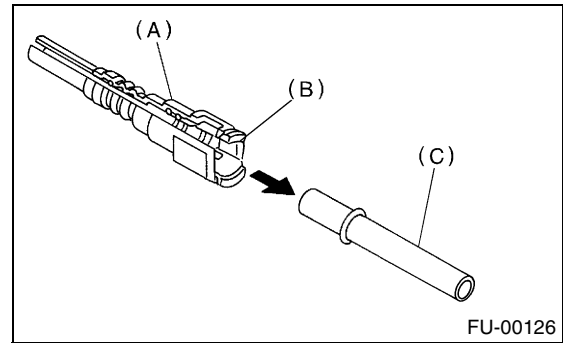
- (A) Seal surface
- (B) Pipe

(1) Set the new retainer (B) to connector (A).

(2) Push the pipe into connector completely.

NOTE:

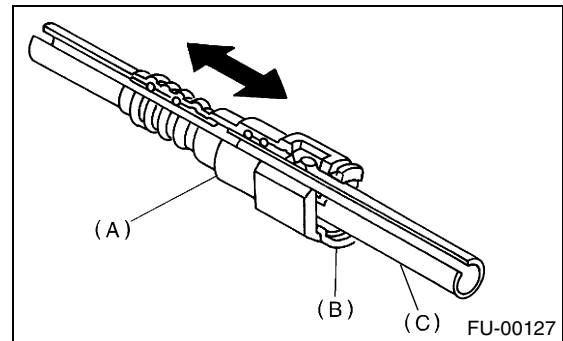
At this time, two clicking sounds are heard.



- (A) Connector
- (B) Retainer
- (C) Pipe

CAUTION:

- Pull the connector to ensure it is connected securely.
- Ensure the two retainer pawls are engaged in their mating positions in the connector.
- Be sure to inspect the hoses and their connections for any leakage of fuel.



- (A) Connector
- (B) Retainer
- (C) Pipe

FUEL DELIVERY, RETURN AND EVAPORATION LINES

FUEL INJECTION (FUEL SYSTEMS)

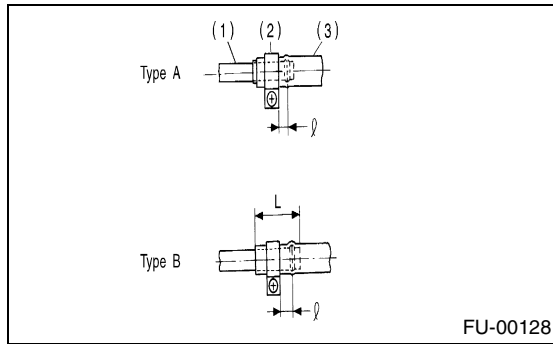
2) Connect the fuel delivery hose to pipe with an overlap of 20 to 25 mm (0.79 to 0.98 in).

Type A: When the fitting length is specified.

Type B: When the fitting length is not specified.

\varnothing : 2.5 ± 1.5 mm (0.098 ± 0.059 in)

L : 22.5 ± 2.5 mm (0.886 ± 0.098 in)



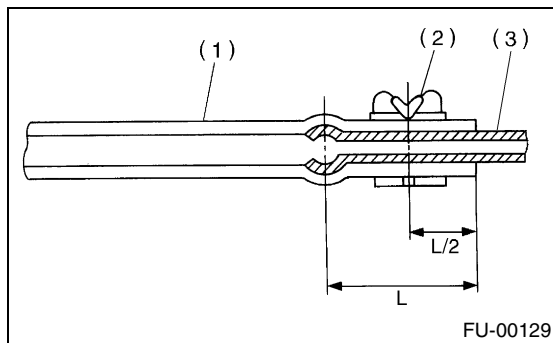
- (1) Fitting
- (2) Clamp
- (3) Hose

3) Connect the evaporation hose to pipe by approx. 15 mm (0.59 in) from the hose end.

$L = 17.5 \pm 2.5$ mm (0.689 ± 0.098 in)

CAUTION:

Be sure to inspect the hoses and their connections for any leakage of fuel.



- (1) Hose
- (2) Clip
- (3) Pipe

C: INSPECTION

- 1) Make sure that there are no cracks on the fuel pipes and fuel hoses.
- 2) Make sure that the fuel pipe and fuel hose connections are tight.

FUEL SYSTEM TROUBLE IN GENERAL

FUEL INJECTION (FUEL SYSTEMS)

29. Fuel System Trouble in General

A: INSPECTION

Trouble and possible cause		Corrective action
1. Insufficient fuel supply to the injector		
1)	Fuel pump will not operate.	
	○ Defective terminal contact.	Inspect connections, especially ground, and tighten securely.
	○ Trouble in electromagnetic or electronic circuit parts.	Replace the fuel pump.
2)	Lowering of fuel pump function.	Replace the fuel pump.
3)	Clogged dust or water in the fuel filter.	Replace the fuel filter, clean or replace fuel tank.
4)	Clogged or bent fuel pipe or hose.	Clean, correct or replace the fuel pipe or hose.
5)	Air is mixed in the fuel system.	Inspect or retighten each connection part.
6)	Clogged or bent breather tube or pipe.	Clean, correct or replace the air breather tube or pipe.
7)	Damaged diaphragm of pressure regulator.	Replace.
2. Leakage or blow out fuel		
1)	Loosened joints of the fuel pipe.	Retightening.
2)	Cracked fuel pipe, hose and fuel tank.	Replace.
3)	Defective welding part on the fuel tank.	Replace.
4)	Defective drain packing of the fuel tank.	Replace.
5)	Clogged or bent air breather tube or air vent tube.	Clean, correct or replace the air breather tube or air vent tube.
3. Gasoline smell inside of compartment		
1)	Loose joints at air breather tube, air vent tube and fuel filler pipe.	Retightening.
2)	Defective packing air tightness on the fuel saucer.	Correct or replace the packing.
3)	Cracked fuel separator.	Replace the separator.
4)	Inoperative fuel pump modulator or circuit.	Replace.
4. Defective fuel meter indicator		
1)	Defective operation of fuel level sensor.	Replace.
2)	Defective operation of fuel meter.	Replace.
5. Noise		
1)	Large operation noise or vibration of fuel pump.	Replace.

NOTE:

- When the vehicle is left unattended for an extended period of time, water may accumulate in the fuel tank.

To prevent water condensation.

(1) Top off the fuel tank or drain the fuel completely.

(2) Drain the water condensation from the fuel filter.

- Refilling the fuel tank.

Refill the fuel tank while there is still some fuel left in the tank.

- Protecting the fuel system against freezing and water condensation.

(3) Cold areas:

In snow-covered areas, mountainous areas, skiing areas, etc. where ambient temperatures drop below 0°C (32°F) throughout the winter season, use an anti-freeze solution in the cooling system. Refueling will also complement the effect of anti-freeze solution each time the fuel

level drops to about one-half. After the winter season, drain the water which may have accumulated in the fuel filter and fuel tank in the manner same as that described under "Affected areas" below.

(4) Affected areas:

When the water condensation is notched in the fuel filter, drain the water from both the fuel filter and fuel tank or use a water removing agent (or anti-freeze solution) in the fuel tank.

- Observe the instructions, notes, etc., indicated on the label affixed to the anti-freeze solution (water removing agent) container before use.