

ENGINE SECTION 3

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

FUEL INJECTION (FUEL SYSTEMS) FU(H4DOSTC)

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES) EC(H4DOSTC)

INTAKE (INDUCTION) IN(H4DOSTC)

MECHANICAL ME(H4DOSTC)

EXHAUST EX(H4DOSTC)

COOLING CO(H4DOSTC)

LUBRICATION LU(H4DOSTC)

SPEED CONTROL SYSTEMS SP(H4DOSTC)

IGNITION IG(H4DOSTC)

STARTING/CHARGING SYSTEMS SC(H4DOSTC)

ENGINE (DIAGNOSTICS) EN(H4DOSTC)

FUEL INJECTION (FUEL SYSTEMS)

FU(H4DOSTC)

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GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

1. General Description

A: SPECIFICATIONS

Fuel tank	Capacity	64 ℓ (16.9 US gal, 14.1 Imp gal)
	Location	Under rear seat
Fuel pump	Type	Impeller
	Shutoff discharge pressure	450 — 677 kPa (4.59 — 6.9 kg/cm ² , 65.27 — 98.2 psi)
	Discharge flow	More than 130 ℓ (34.3 US gal, 28.6 Imp gal)/h [12 V at 300 kPa (3.06 kg/cm ² , 43.5 psi)]
Fuel filter		Cartridge type

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

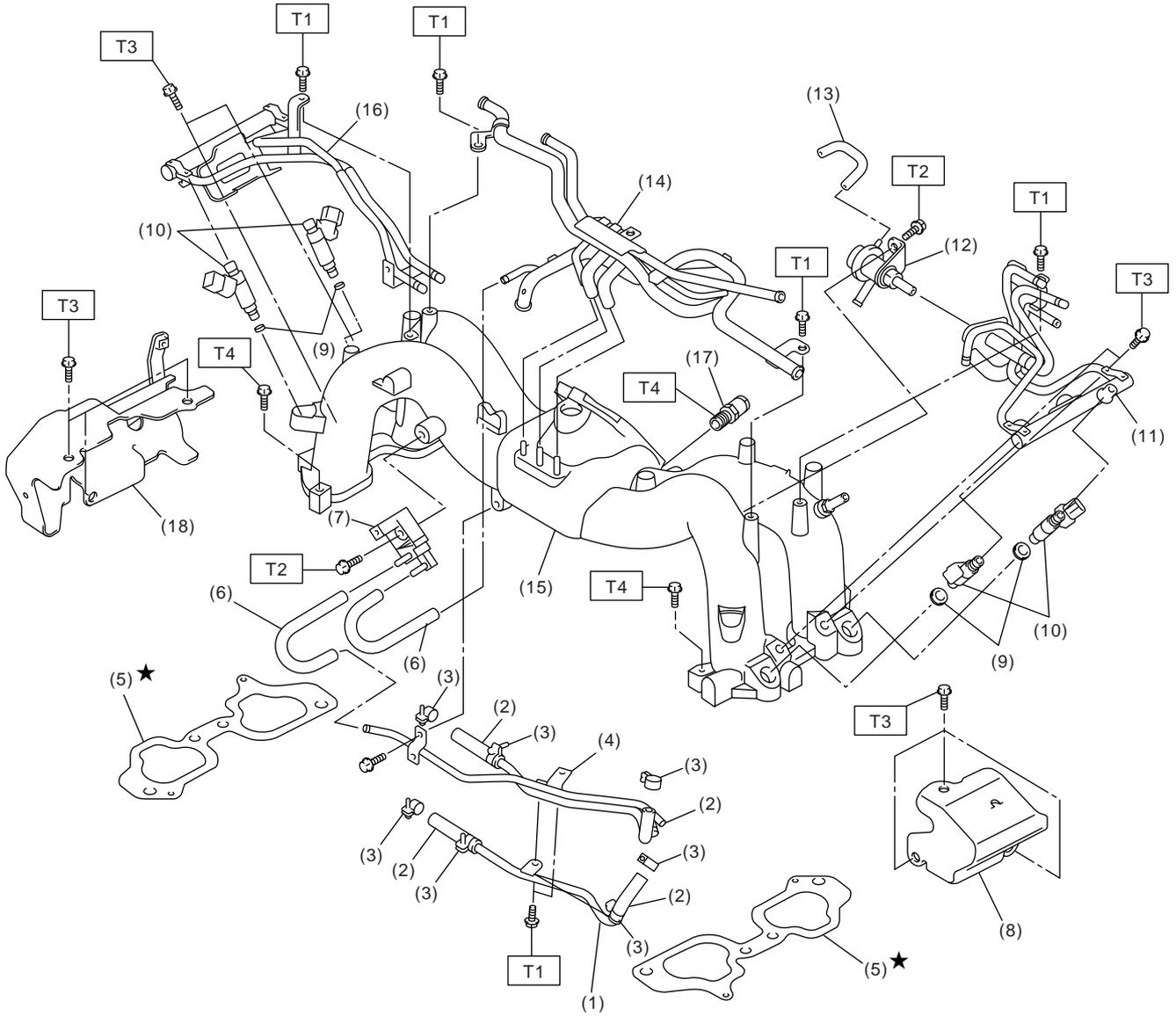
MEMO:

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

B: COMPONENT

1. INTAKE MANIFOLD



FU-00625

FU(H4DOSTC)-4

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

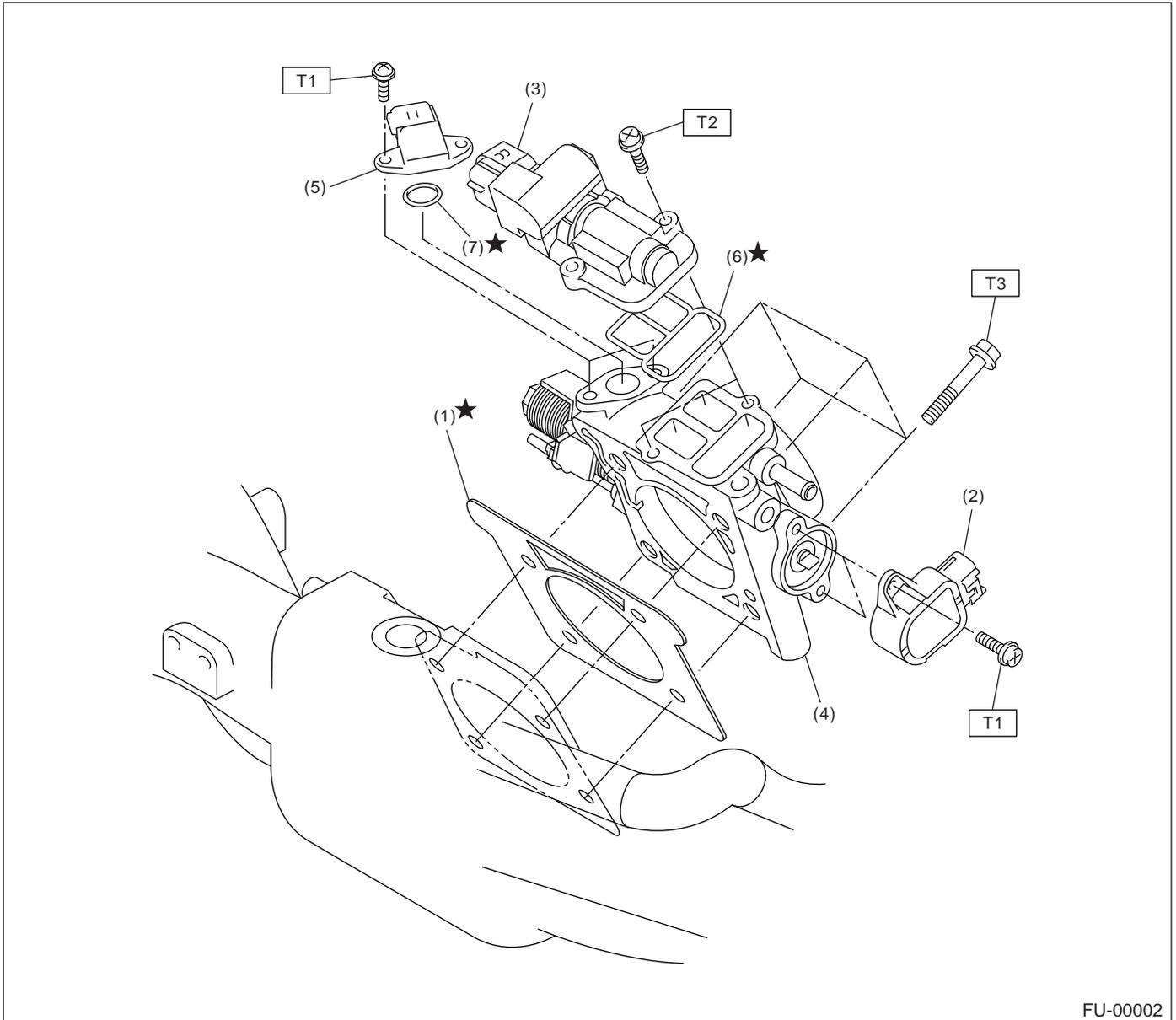
- | | | |
|------------------------------------|--|-----------------------------|
| (1) Fuel pipe ASSY | (10) Fuel injector | (18) Fuel pipe protector RH |
| (2) Hose | (11) Fuel injector pipe LH | |
| (3) Clamp | (12) Pressure regulator | |
| (4) Evaporation and fuel pipe ASSY | (13) Hose | |
| (5) Gasket | (14) Evaporation and coolant pipe ASSY | |
| (6) Purge hose | (15) Intake manifold | |
| (7) Purge control solenoid valve | (16) Fuel injector pipe RH | |
| (8) Fuel pipe protector LH | (17) PCV valve | |
| (9) Insulator | | |

Tightening torque: N·m (kgf-m, ft-lb)**T1: 5.0 (0.51, 3.7)****T2: 19 (1.94, 13.7)****T3: 19 (1.94, 13.7)****T4: 25 (2.5, 18.1)**

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

2. AIR INTAKE SYSTEM



FU-00002

- | | |
|-------------------------------------|---------------------|
| (1) Gasket | (5) Pressure sensor |
| (2) Throttle position sensor | (6) Gasket |
| (3) Idle air control solenoid valve | (7) O-ring |
| (4) Throttle body | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 1.6 (0.16, 1.2)

T2: 2.8 (0.29, 2.1)

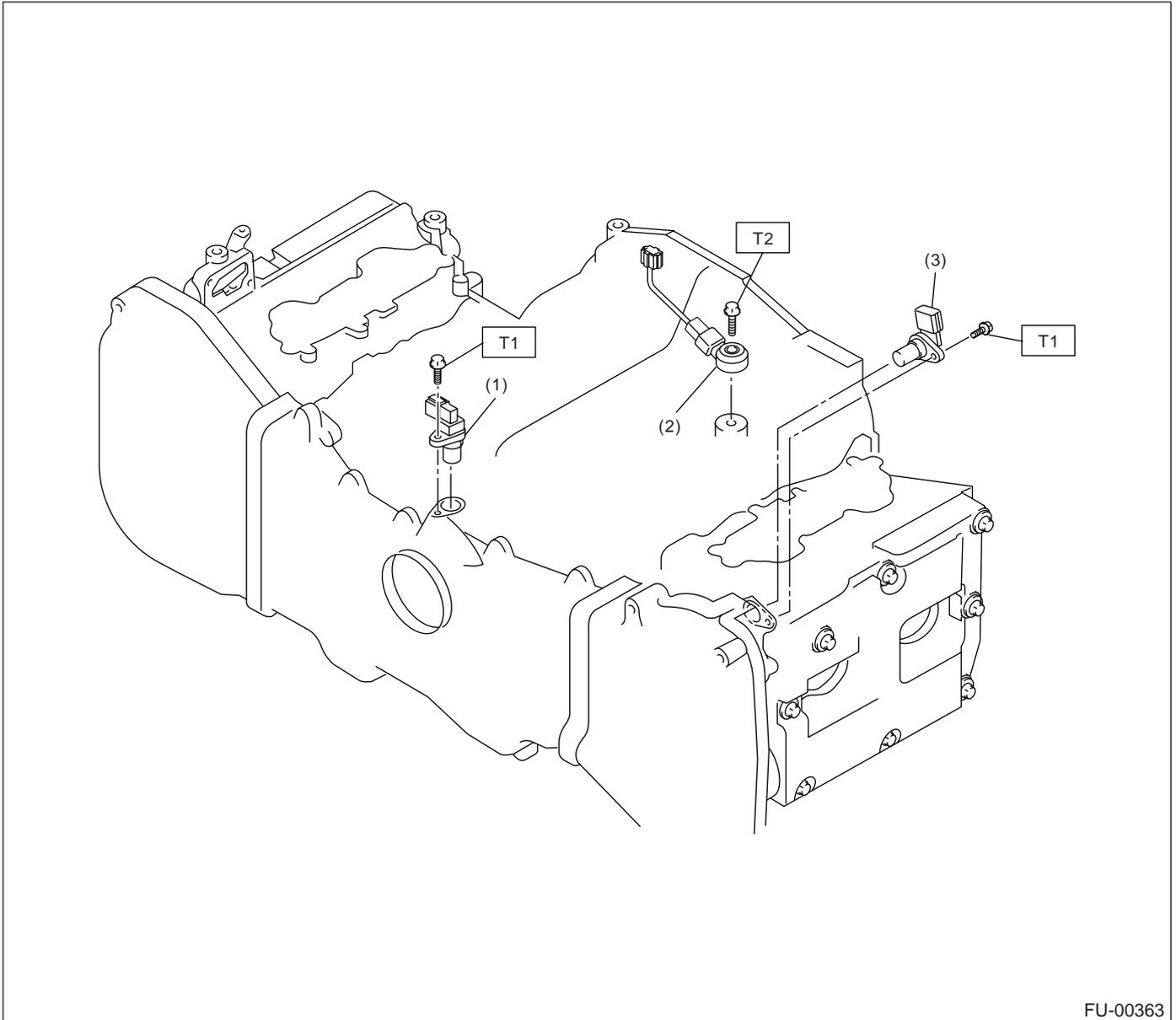
T3: 22 (2.2, 15.9)

FU(H4DOSTC)-6

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

3. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



FU-00363

- (1) Crankshaft position sensor
- (2) Knock sensor

- (3) Camshaft position sensor

Tightening torque: N·m (kgf·m, ft·lb)

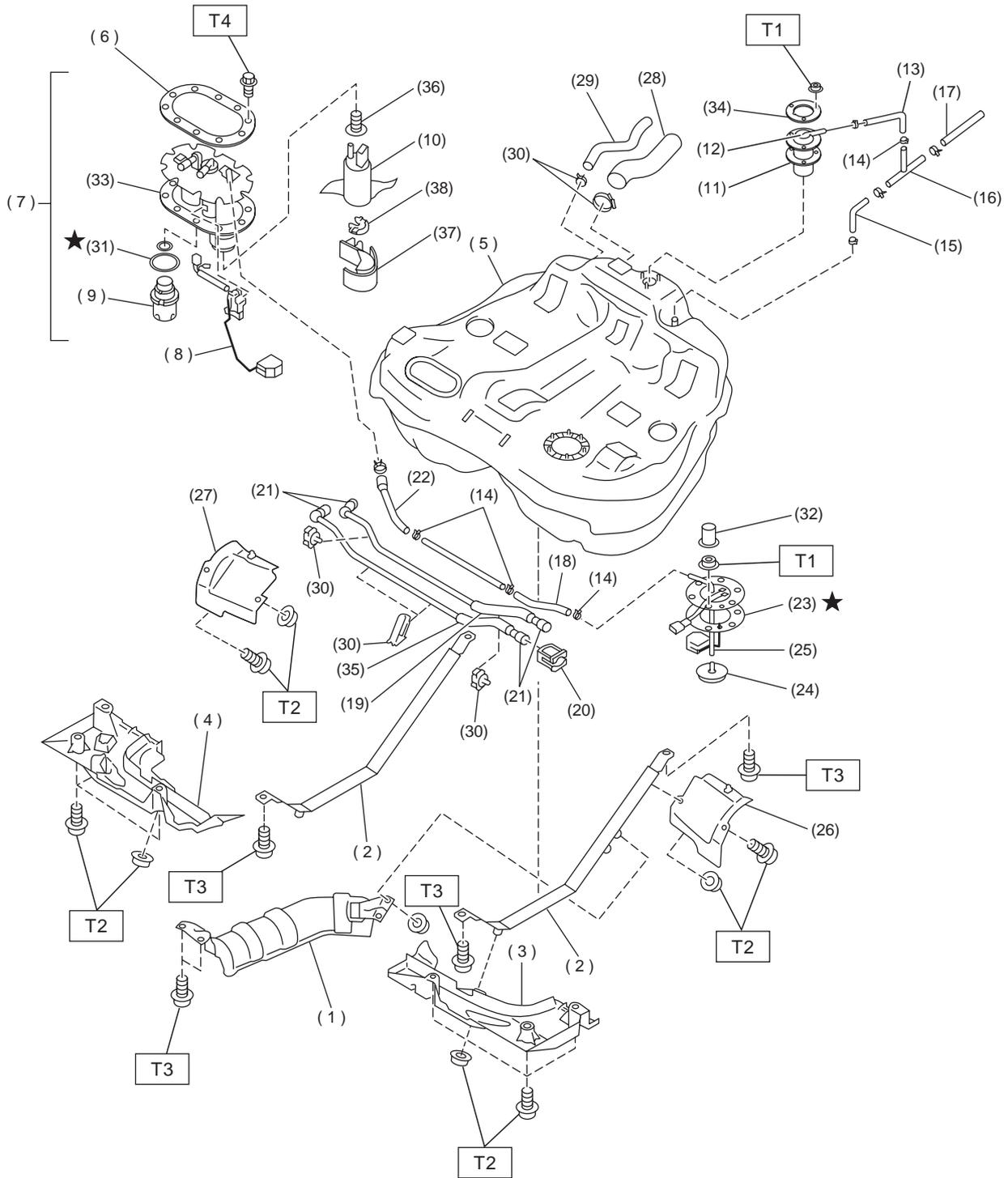
T1: 6.4 (0.65, 4.7)

T2: 24 (2.4, 17.4)

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

4. FUEL TANK



FU-00626

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

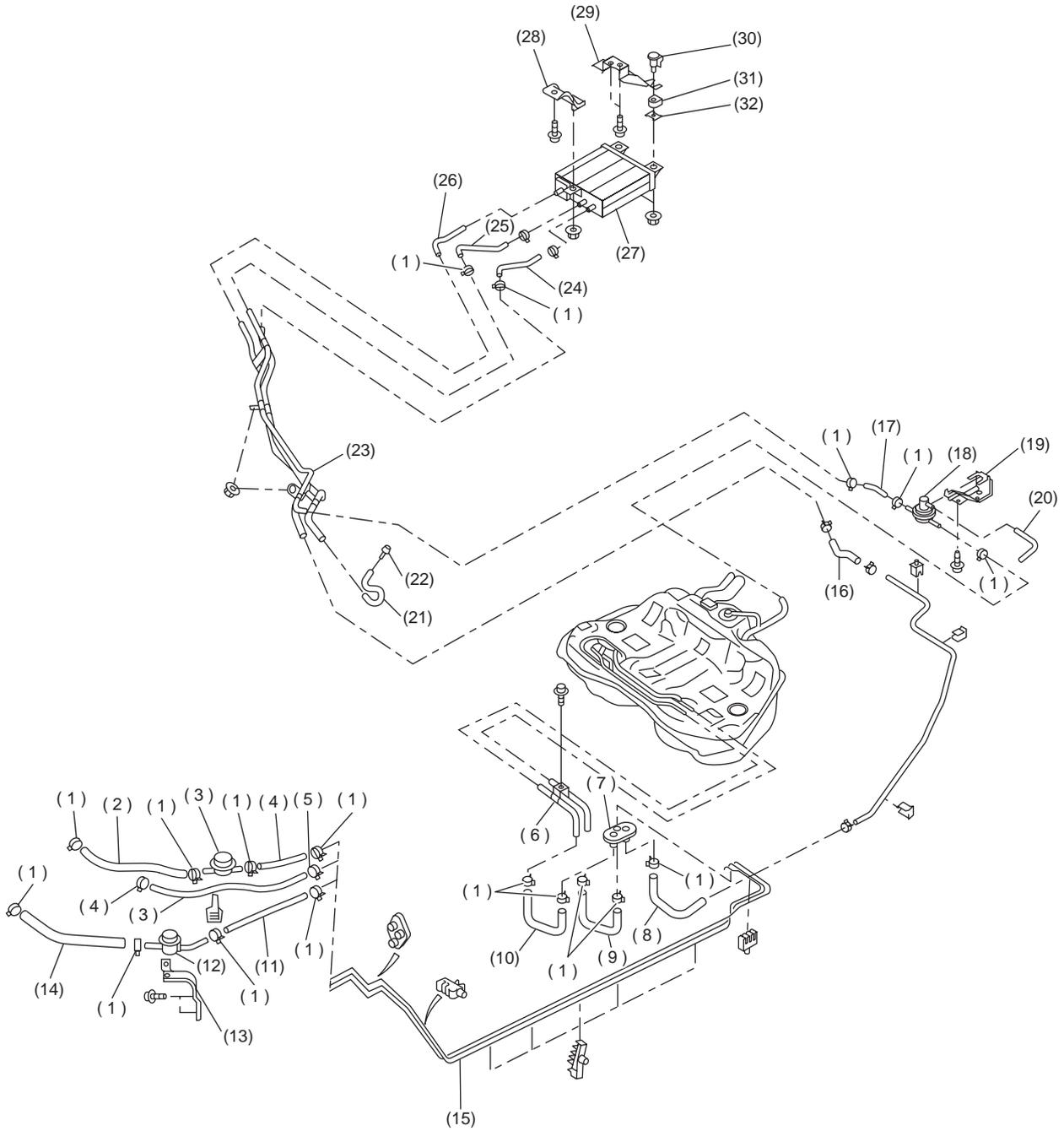
(1) Heat shield cover	(16) Joint pipe	(31) Gasket
(2) Fuel tank band	(17) Evaporation hose B	(32) Cap
(3) Protector LH (Front)	(18) Jet pump hose A	(33) Gasket
(4) Protector RH (Front)	(19) Fuel return tube	(34) Fuel cut valve plate
(5) Fuel tank	(20) Retainer	(35) Fuel delivery tube
(6) Fuel pump plate	(21) Quick connector	(36) Seal
(7) Fuel pump ASSY	(22) Jet pump hose B	(37) Fuel pump holder
(8) Fuel level sensor	(23) Fuel sub level sensor gasket	(38) Grommet
(9) Fuel filter	(24) Jet pump filter	
(10) Fuel pump	(25) Fuel sub level sensor	
(11) Fuel cut valve gasket	(26) Protector LH (Rear)	
(12) Fuel cut valve	(27) Protector RH (Rear)	
(13) Evaporation hose A	(28) Fuel filler hose	
(14) Clip	(29) Vent hose	
(15) Evaporation hose C	(30) Clamp	

Tightening torque: N·m (kgf-m, ft-lb)**T1: 4.4 (0.45, 3.3)****T2: 18 (1.8, 13.0)****T3: 33 (3.4, 25)****T4: 5.9 (0.6, 4.3)**

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

5. FUEL LINE



FU-00627

GENERAL DESCRIPTION

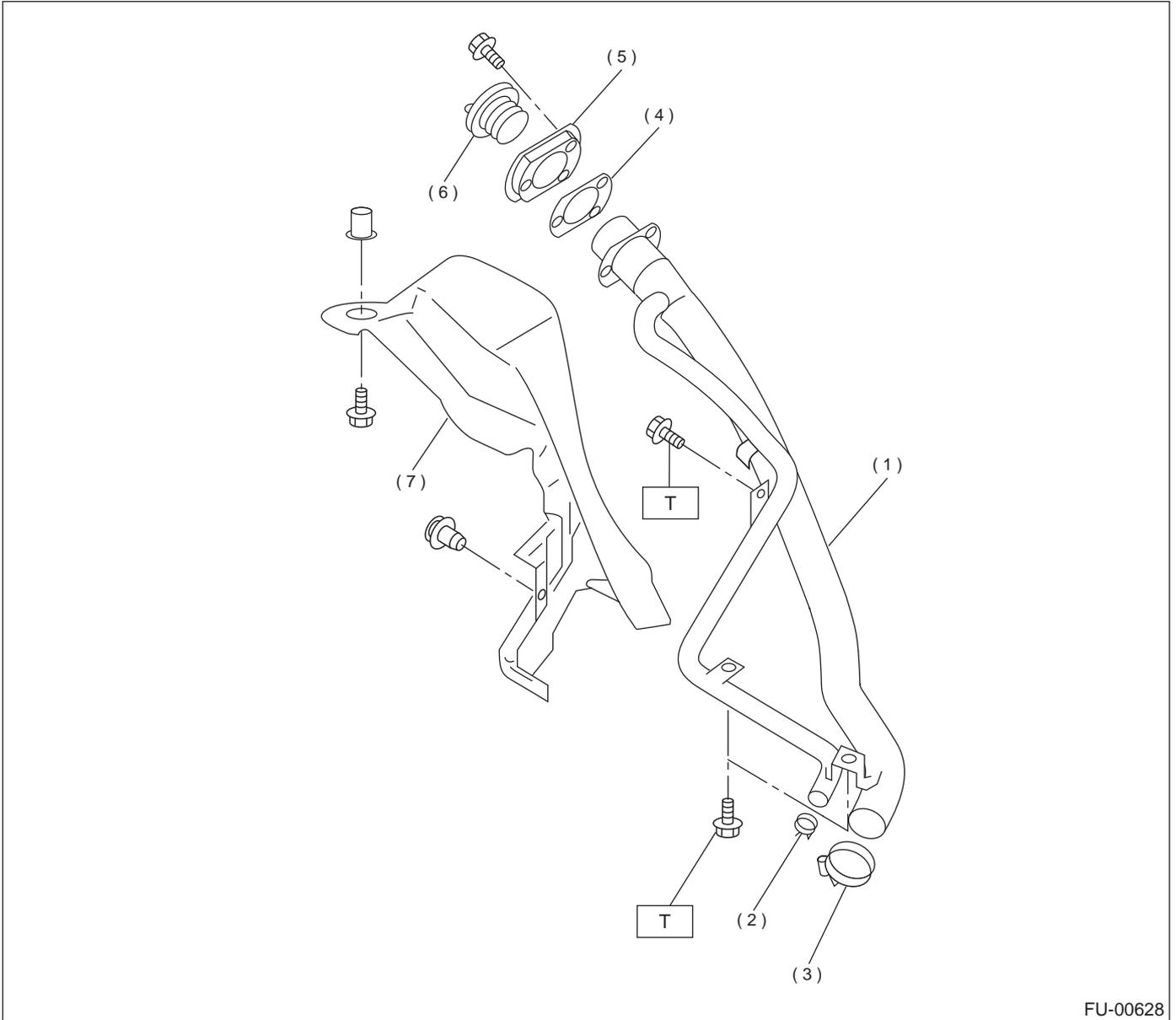
FUEL INJECTION (FUEL SYSTEMS)

- | | | |
|---------------------------|-------------------------------|------------------------------|
| (1) Clamp | (12) Damper valve (Delivery) | (23) Evaporation pipe ASSY |
| (2) Fuel return hose A | (13) Bracket | (24) Purge hose |
| (3) Damper valve (Return) | (14) Fuel delivery hose C | (25) Evaporation hose C |
| (4) Fuel return hose B | (15) Fuel pipe ASSY | (26) Canister drain hose |
| (5) Clip | (16) Evaporation hose B | (27) Canister |
| (6) Fuel pipe ASSY | (17) Two-way valve hose | (28) Front canister bracket |
| (7) Grommet | (18) Two-way valve | (29) Rear canister bracket |
| (8) Evaporation hose A | (19) Two-way valve bracket | (30) Canister bracket spacer |
| (9) Fuel return hose C | (20) Two-way valve drain hose | (31) Cushion |
| (10) Fuel delivery hose A | (21) Drain hose | (32) Canister bracket plate |
| (11) Fuel delivery hose B | (22) Fuel pipe connector | |

GENERAL DESCRIPTION

FUEL INJECTION (FUEL SYSTEMS)

6. FUEL FILLER PIPE



FU-00628

- (1) Fuel filler pipe ASSY
- (2) Clip
- (3) Clamp
- (4) Filler pipe packing
- (5) Filler ring
- (6) Filler cap
- (7) Fuel filler pipe protector

Tightening torque: N·m (kgf·m, ft·lb)

T: 7.4 (0.75, 5.4)

GENERAL DESCRIPTION

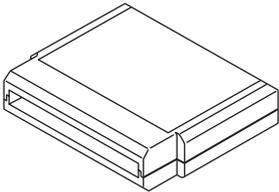
FUEL INJECTION (FUEL SYSTEMS)

C: CAUTION

- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.

- Be careful not to burn your hands, because each part on the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel on the floor.

D: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST24082AA210</p>	24082AA210	CARTRIDGE	Troubleshooting for electrical system.
 <p>ST22771AA030</p>	22771AA030	SELECT MONITOR KIT	Troubleshooting for electrical systems. <ul style="list-style-type: none"> • English: 22771AA030 (Without printer) • German: 22771AA070 (Without printer) • French: 22771AA080 (Without printer) • Spanish: 22771AA090 (Without printer)

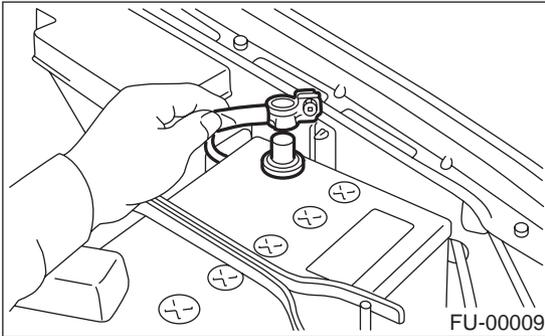
THROTTLE BODY

FUEL INJECTION (FUEL SYSTEMS)

2. Throttle Body

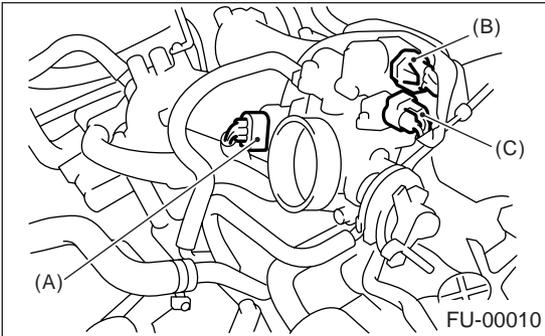
A: REMOVAL

1) Disconnect the ground cable from battery.

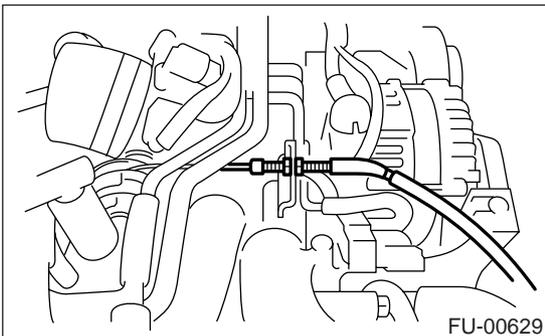


2) Remove the intercooler. <Ref. to IN(H4DOSTC)-13, REMOVAL, Intercooler.>

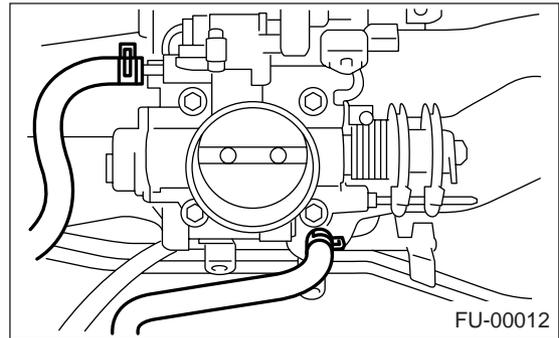
3) Disconnect the connector from the throttle position sensor (A) and idle air control solenoid valve (B) and pressure sensor (C).



4) Disconnect the accelerator cable.



5) Disconnect the engine coolant hoses from throttle body.



6) Remove the bolts which secure throttle body to intake manifold.

B: INSTALLATION

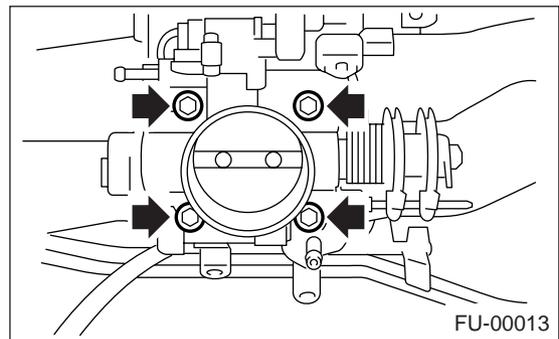
1) Install in the reverse order of removal.

NOTE:

Always use a new gasket.

Tightening torque:

22 N·m (2.2 kgf-m, 15.9 ft-lb)

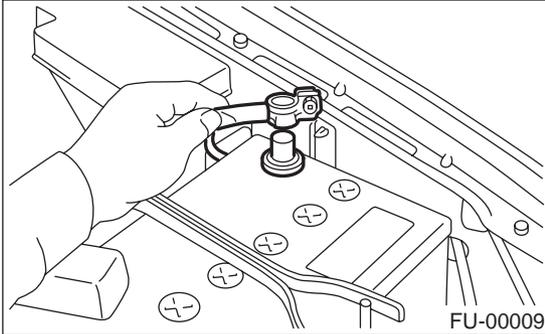


2) Install the accelerator cable. <Ref. to SP(H4SO)-10, INSTALLATION, Accelerator Control Cable.>

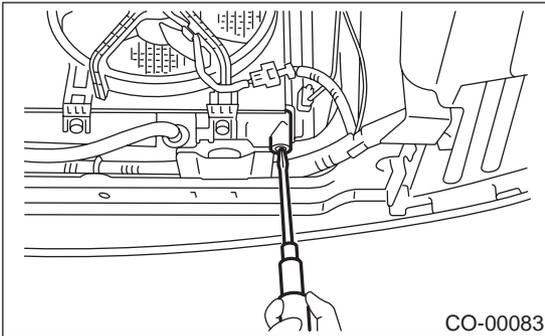
3. Intake Manifold

A: REMOVAL

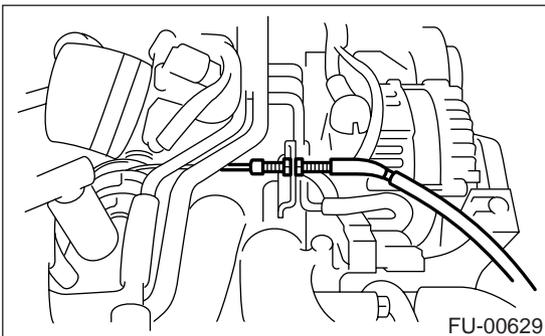
- 1) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 2) Disconnect the ground cable from battery.



- 3) Lift-up the vehicle.
- 4) Remove the under cover.
- 5) Drain the coolant about 3.0 ℓ (3.2 US qt, 2.6 Imp qt).

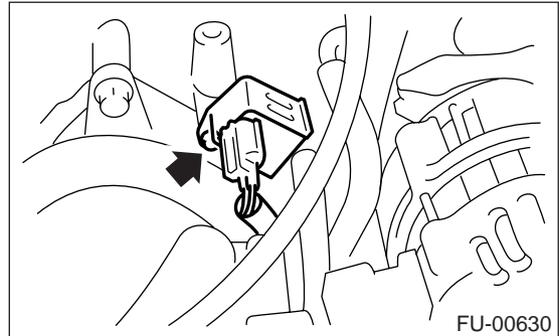


- 6) Remove the air cleaner upper cover and air intake boot. <Ref. to IN(H4DOSTC)-10, REMOVAL, Air Cleaner.>
- 7) Remove the air cleaner element.
- 8) Remove the intercooler. <Ref. to IN(H4DOSTC)-13, REMOVAL, Intercooler.>
- 9) Disconnect the accelerator cable.

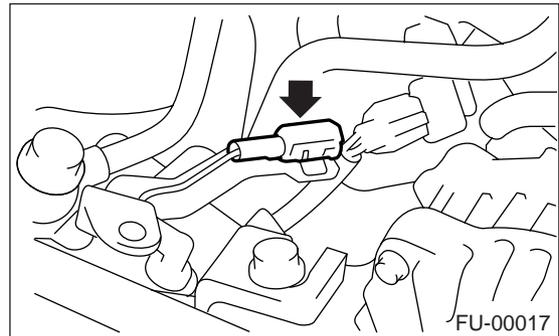


- 10) Remove the coolant filler tank. <Ref. to CO(H4DOSTC)-33, REMOVAL, Coolant Filler Tank.>

- 11) Remove the power steering pump.
 - (1) Remove the purge control solenoid valve.

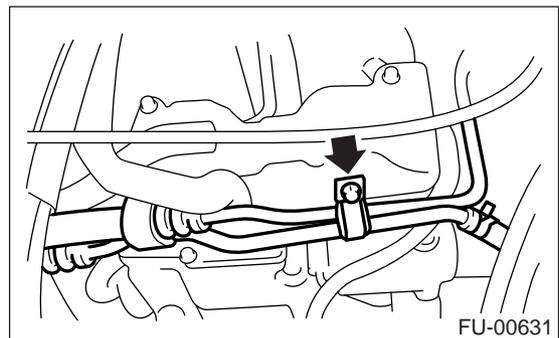


- (2) Remove the front side V-belt. <Ref. to ME(H4DOSTC)-42, REMOVAL, V-belt.>
- (3) Disconnect the power steering switch connector.



- (4) Remove the bolt which secures power steering pipe brackets to intake manifold.

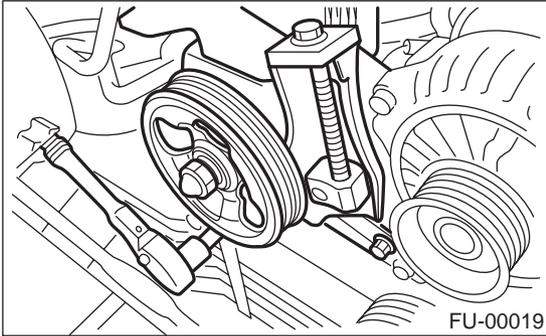
NOTE:
Do not disconnect the power steering hose.



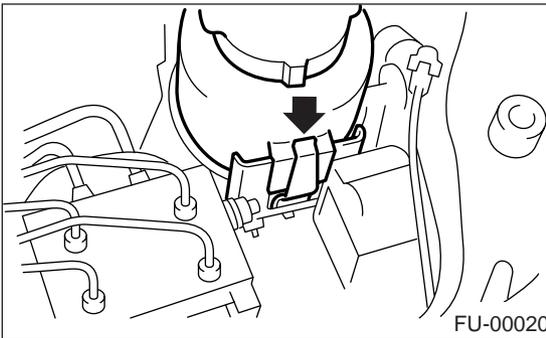
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

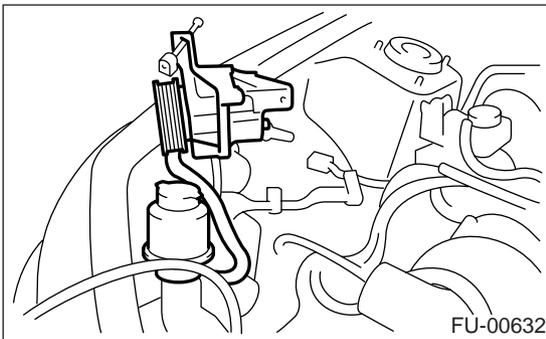
(5) Remove the bolts which secure power steering pump bracket.



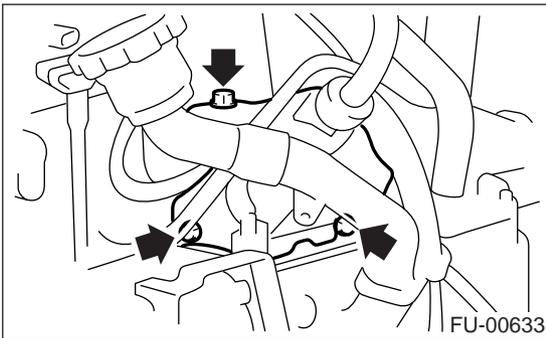
(6) Remove the power steering tank from the bracket by pulling it upward.



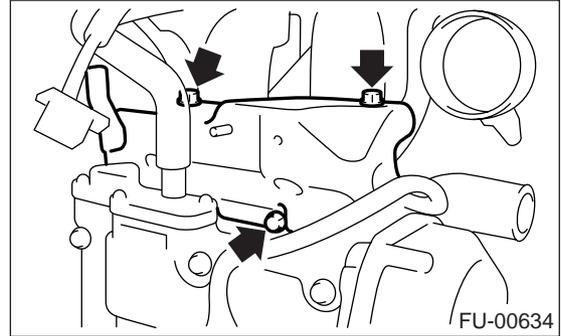
(7) Place the power steering pump on the right side wheel apron.



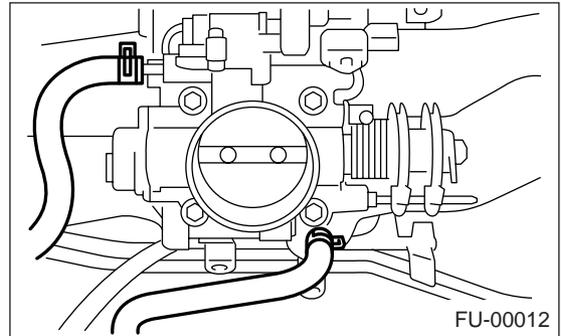
12) Remove the fuel pipe protector LH.



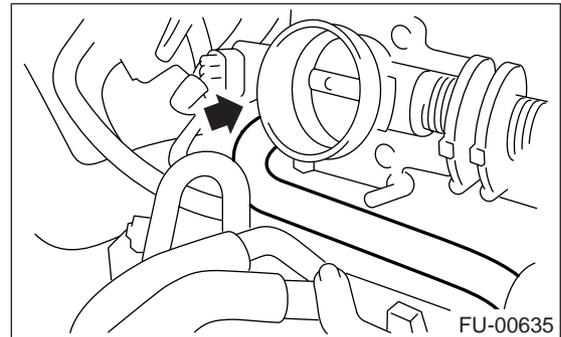
13) Remove the fuel pipe protector RH.



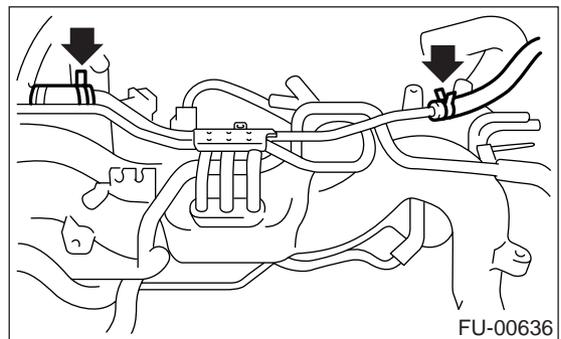
14) Disconnect the engine coolant hoses from throttle body.



15) Disconnect the emission hose from PCV valve.



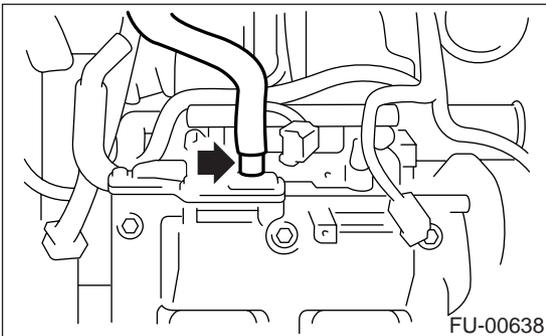
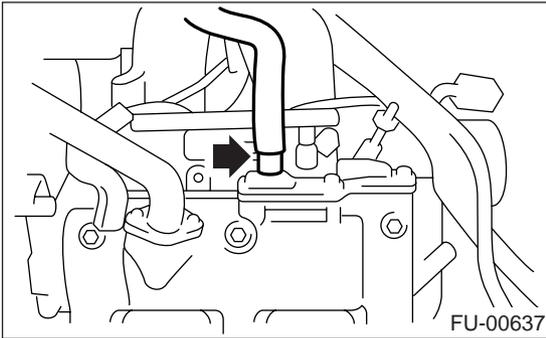
16) Disconnect the engine coolant hoses from the evaporation and coolant pipe assembly.



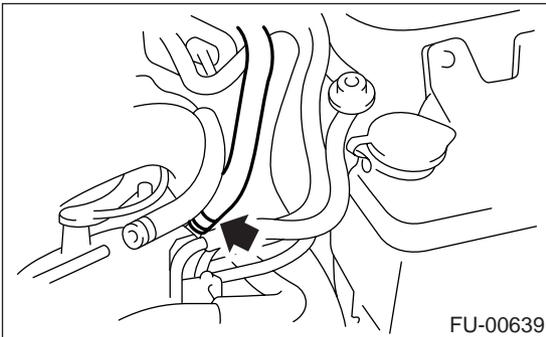
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

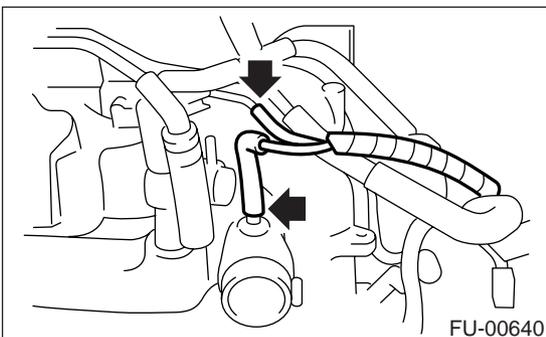
17) Disconnect the blow-by hoses from cylinder head.



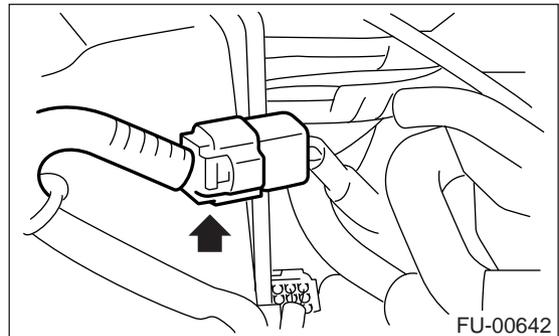
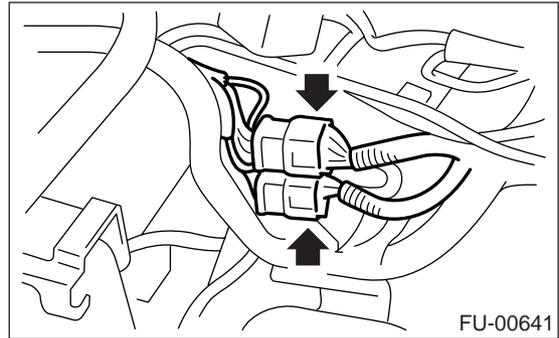
18) Disconnect the brake booster hose.



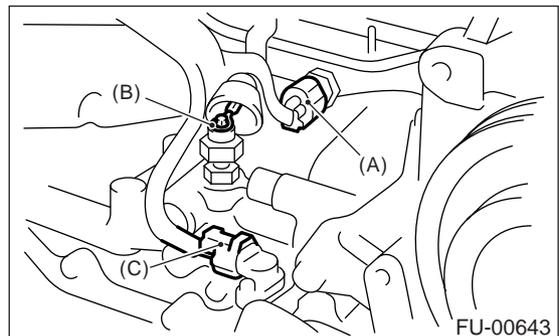
19) Disconnect the pressure hose from intake duct.



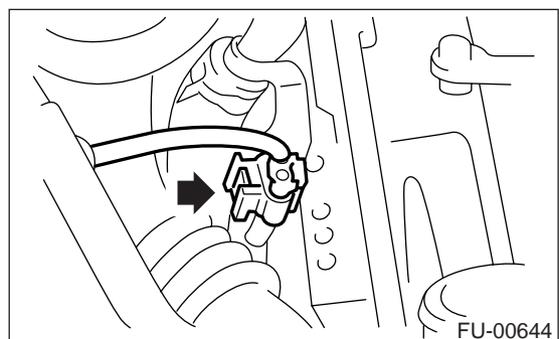
20) Disconnect the engine harness connectors from bulkhead harness connectors.



21) Disconnect the connectors from the engine coolant temperature sensor (A), oil pressure switch (B) and crankshaft position sensor (C).



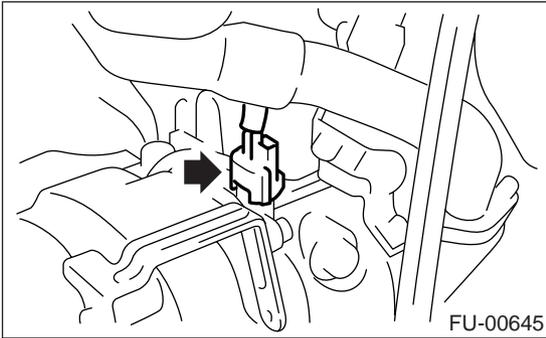
22) Disconnect the knock sensor connector.



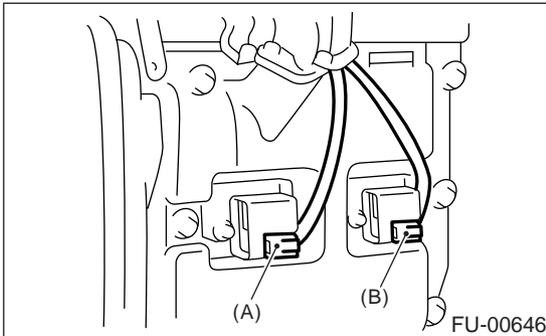
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

23) Disconnect the connector from camshaft position sensor.

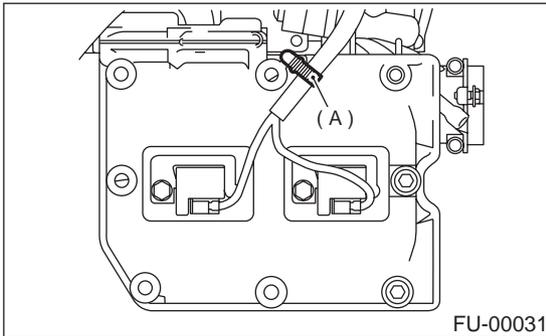


24) Disconnect the connector from ignition coil.



- (A) White
- (B) Black

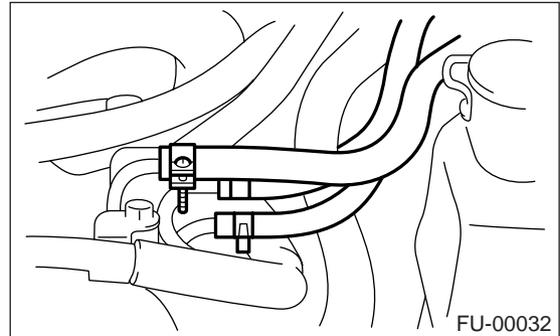
25) Disconnect the engine harness fixed by clip (A) from cylinder head cover.



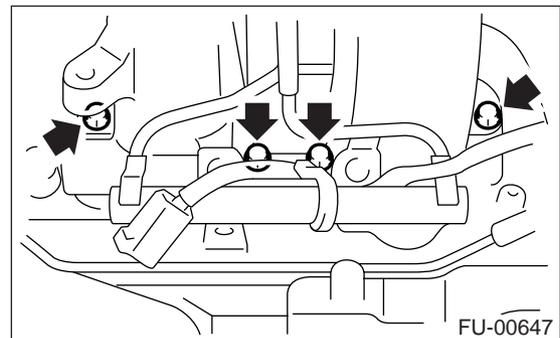
26) Disconnect the fuel delivery hose, return hose and evaporation hose.

WARNING:

Catch the fuel from hoses in a container.



27) Remove the bolts which secure intake manifold to cylinder heads.



28) Remove the intake manifold.

B: INSTALLATION

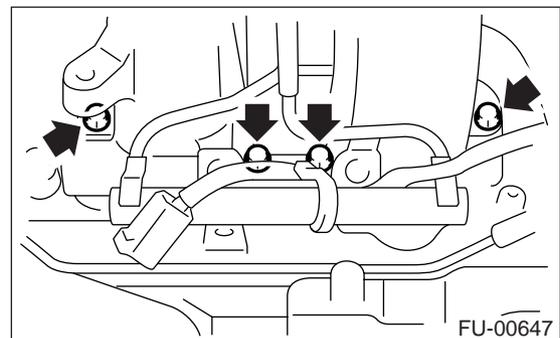
1) Install the intake manifold onto cylinder heads.

NOTE:

Always use new gaskets.

Tightening torque:

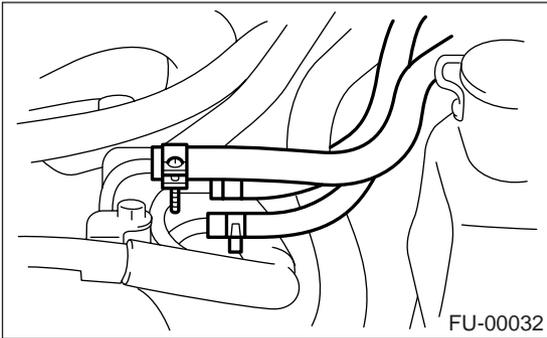
25 N·m (2.5 kgf·m, 18.1 ft·lb)



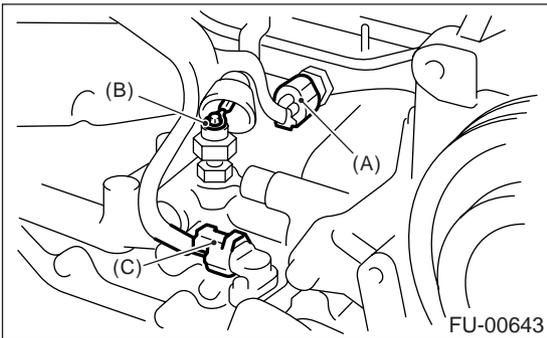
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

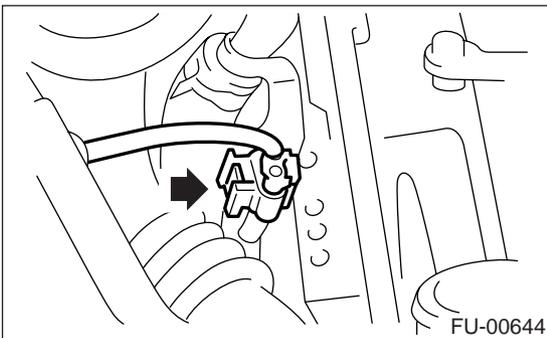
2) Connect the fuel delivery hose, return hose, and evaporation hose.



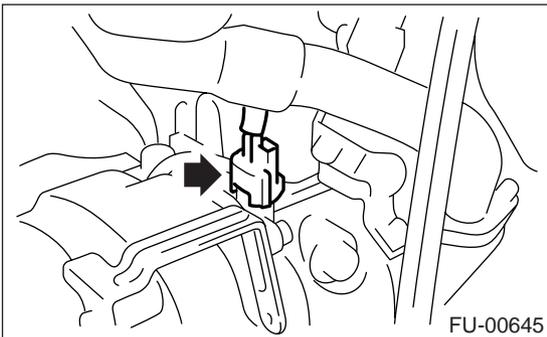
3) Connect the connector to the oil pressure switch (B), crankshaft position sensor (C) and engine coolant temperature sensor (A).



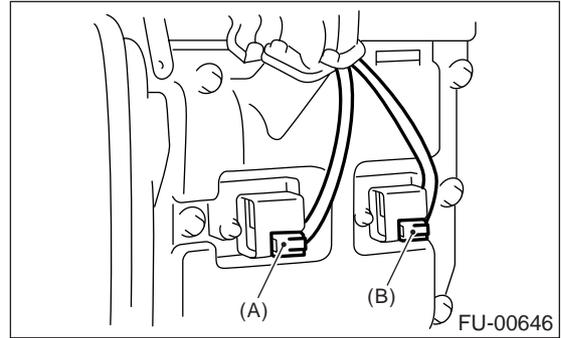
4) Connect the connector to knock sensor.



5) Connect the connector to camshaft position sensor.



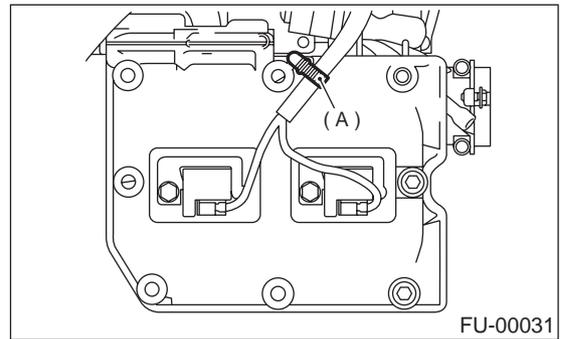
6) Connect the connector to ignition coil.



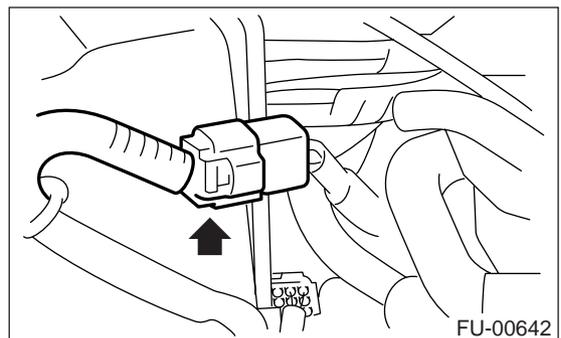
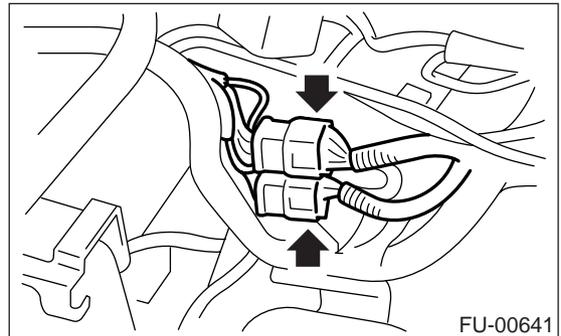
(A) White

(B) Black

7) Connect the engine harness with clip (A) to bracket.



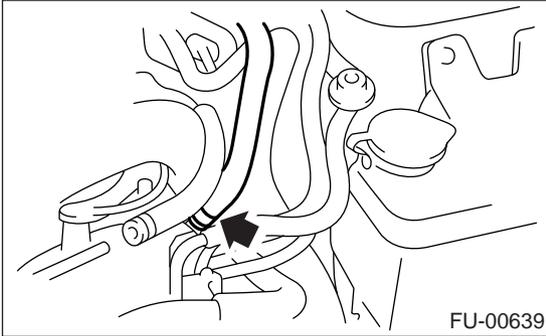
8) Connect the engine harness connector to bulk-head harness connectors.



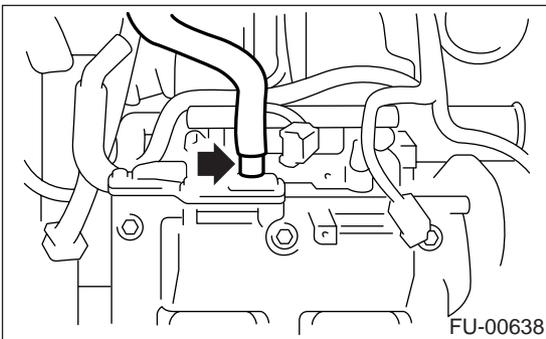
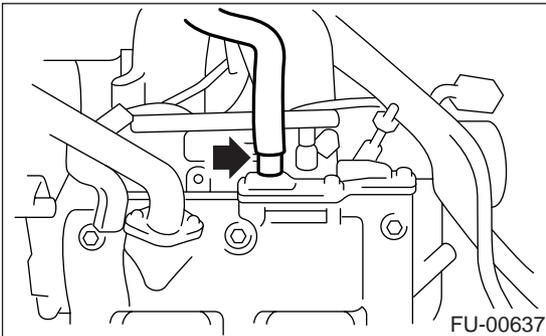
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

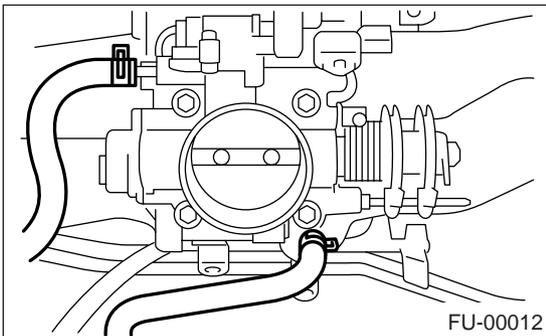
9) Connect the brake booster vacuum hose.



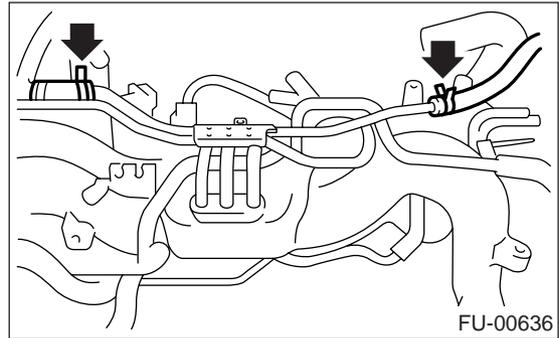
10) Connect the blow-by hoses to cylinder head.



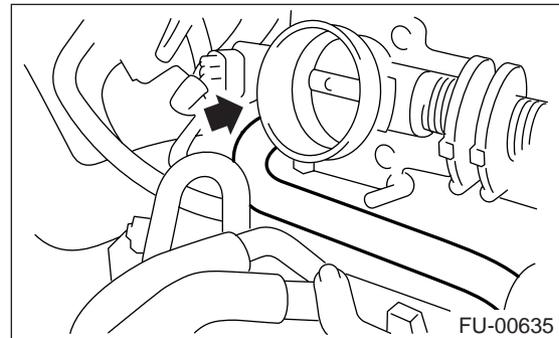
11) Connect the engine coolant hoses to throttle body.



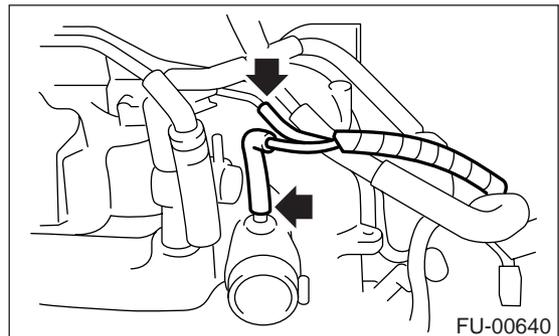
12) Connect the engine coolant hoses to engine coolant pipe.



13) Connect the emission hose to PCV valve.



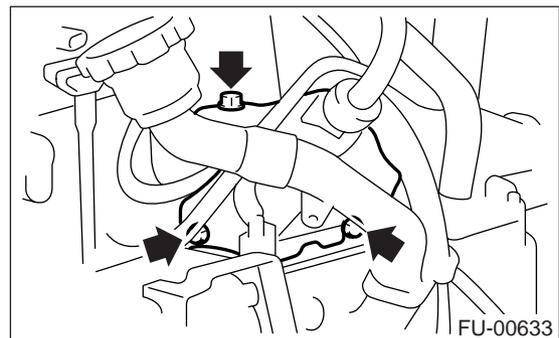
14) Connect the pressure hose to intake duct.



15) Install the fuel pipe protector LH.

Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



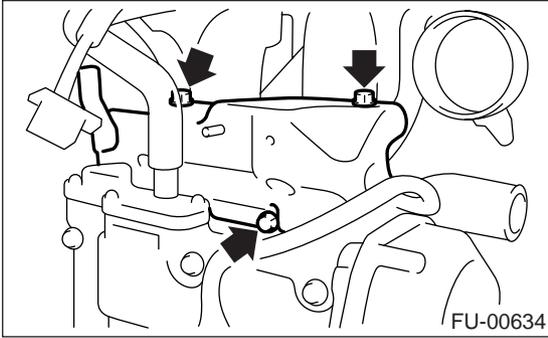
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

16) Install the fuel pipe protector RH.

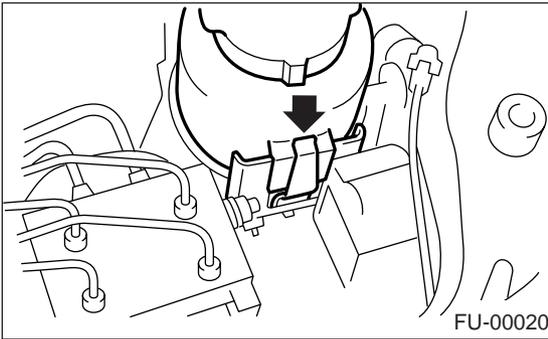
Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)

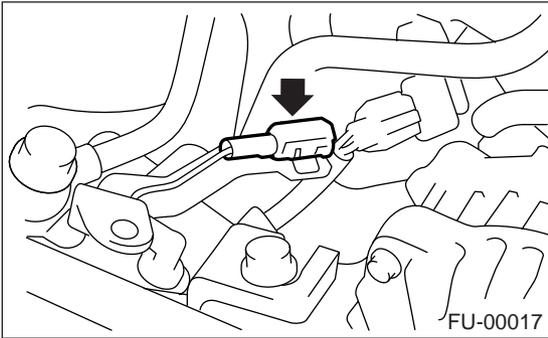


17) Install the power steering pump.

(1) Install the power steering tank on bracket.



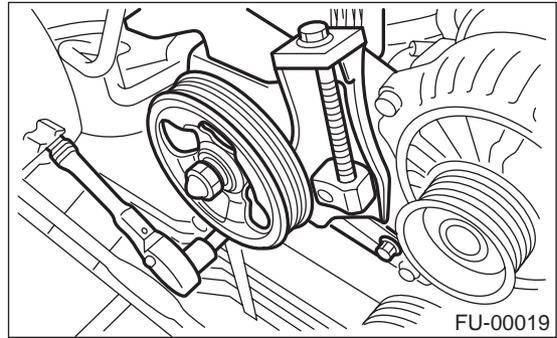
(2) Connect the connector to power steering pump switch.



(3) Install the power steering pump, and tighten the bolts.

Tightening torque:

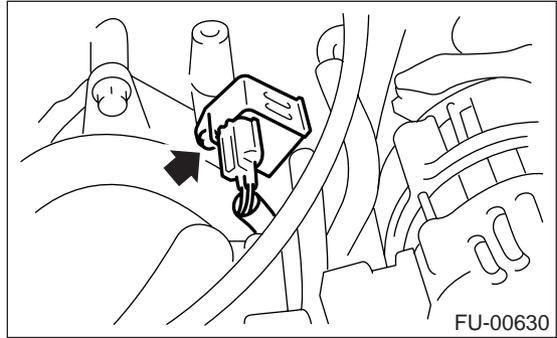
22 N·m (2.2 kgf-m, 15.9 ft-lb)



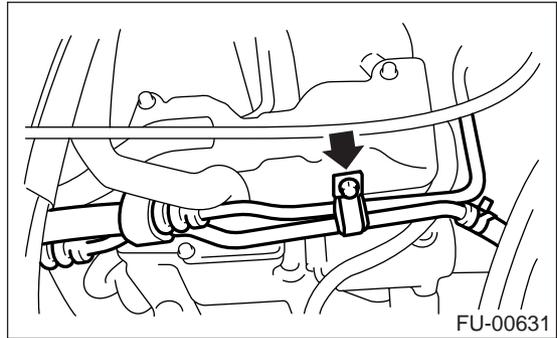
(4) Install the purge control solenoid valve.

Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



(5) Install the power steering pipe brackets on right side intake manifold.



(6) Install the front side V-belt.

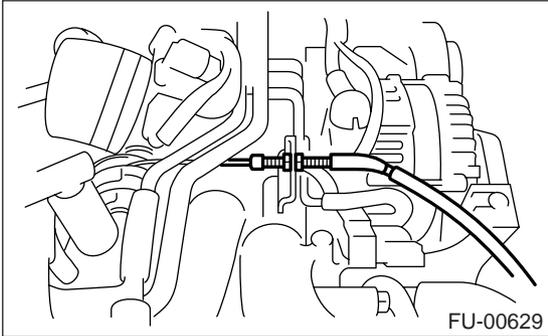
<Ref. to ME(H4DOSTC)-42, INSTALLATION, V-belt.>

18) Install the coolant filler tank. <Ref. to CO(H4DOSTC)-33, INSTALLATION, Coolant Filler Tank.>

INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

19) Connect the accelerator cable. <Ref. to SP(H4SO)-10, INSTALLATION, Accelerator Control Cable.>

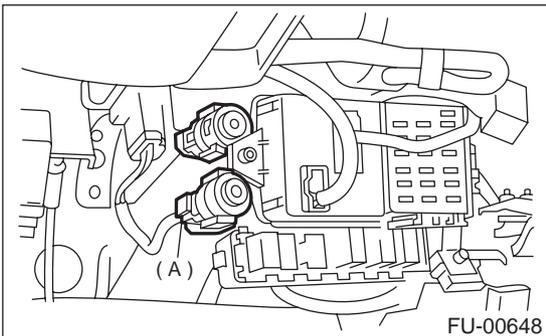


20) Install the intercooler. <Ref. to IN(H4DOSTC)-15, INSTALLATION, Turbocharger.>

21) Install the air cleaner element.

22) Install the air cleaner upper cover and air intake duct as a unit. <Ref. to IN(H4DOSTC)-10, INSTALLATION, Air Cleaner.>

23) Connect the connector to fuel pump relay (A).



24) Connect the battery ground cable to battery.

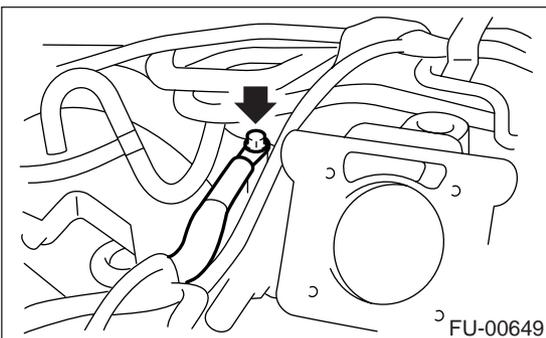
25) Lift-up the vehicle.

26) Install the under cover.

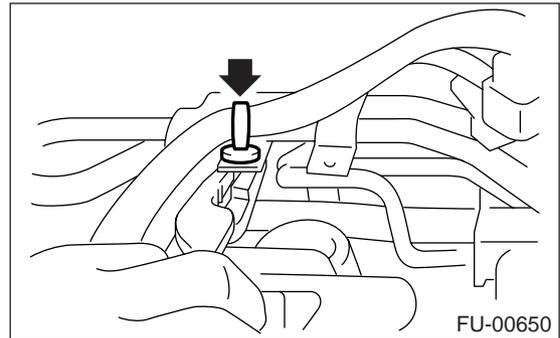
27) Fill the coolant. <Ref. to CO(H4DOSTC)-15, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

C: DISASSEMBLY

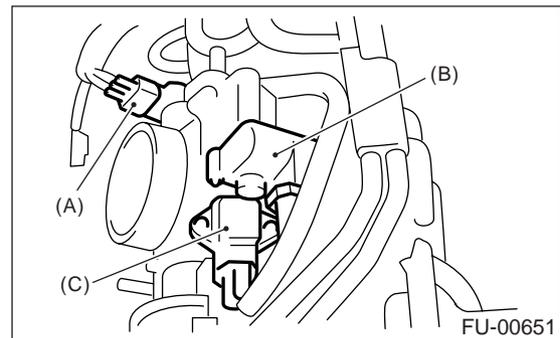
1) Remove the engine ground cable from intake manifold.



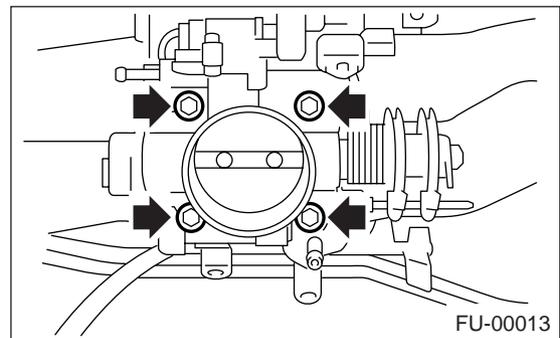
2) Disconnect the engine harness fixed by clip from engine coolant pipe.



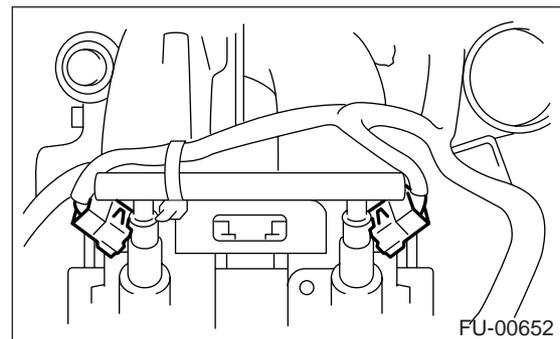
3) Disconnect the connector from the throttle position sensor (A), idle air control solenoid valve (B) and pressure sensor (C).



4) Remove the throttle body from intake manifold.



5) Disconnect the connector from fuel injector.

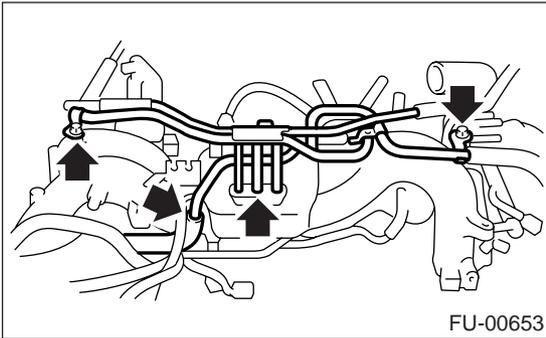


6) Disconnect the evaporation hoses from the evaporation and coolant pipe assembly.

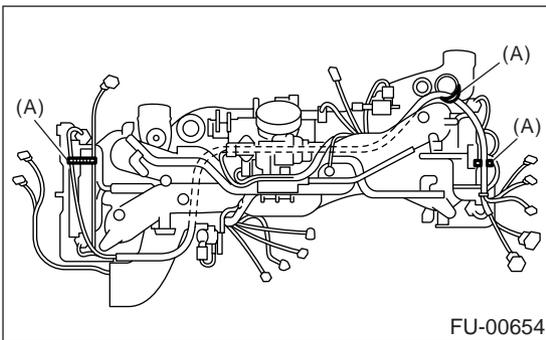
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

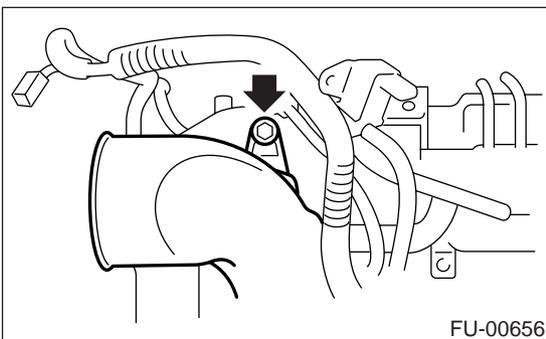
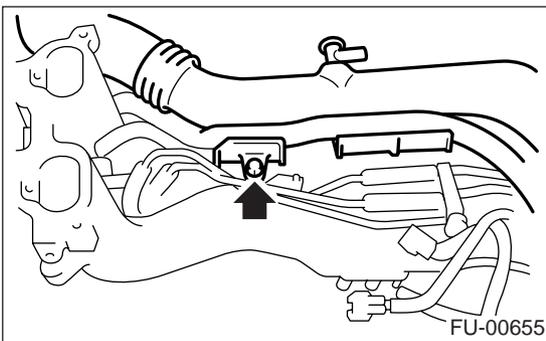
7) Remove the evaporation and coolant pipe assembly.



8) Remove the harness bands (A) which hold engine harness onto intake manifold.

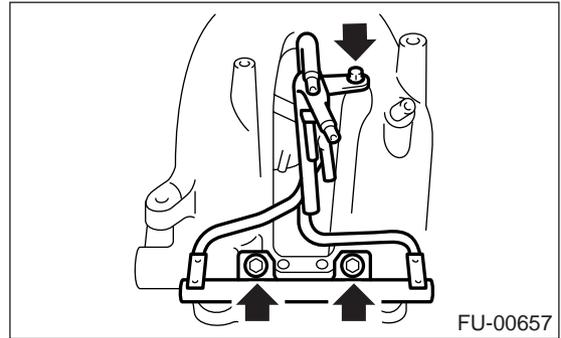


9) Remove the intake duct and engine harness from intake manifold as a unit.

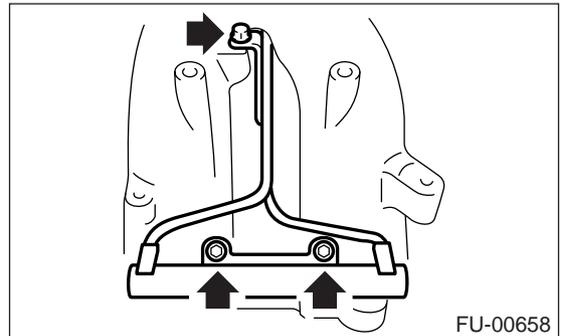


10) Remove the bolts which hold fuel injector pipe onto intake manifold.

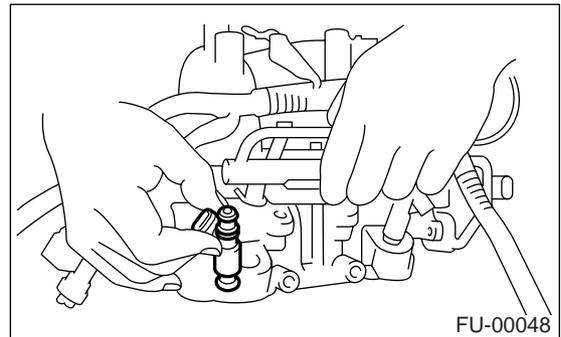
• LH SIDE



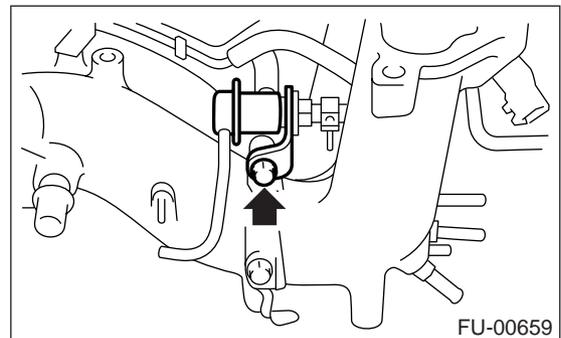
• RH SIDE



11) Remove the fuel injector.



12) Remove the pressure regulator.

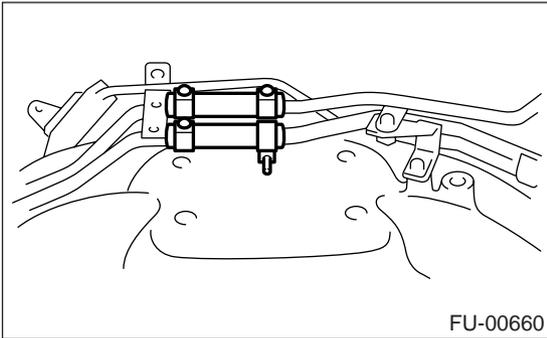


13) Remove the engine harness from intake manifold.

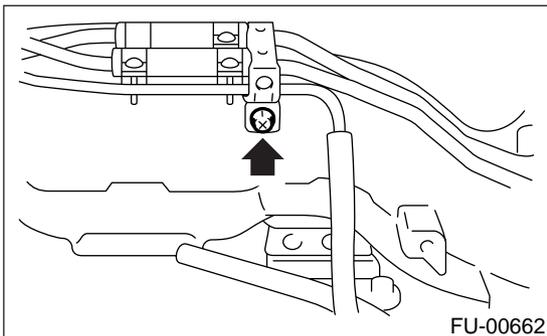
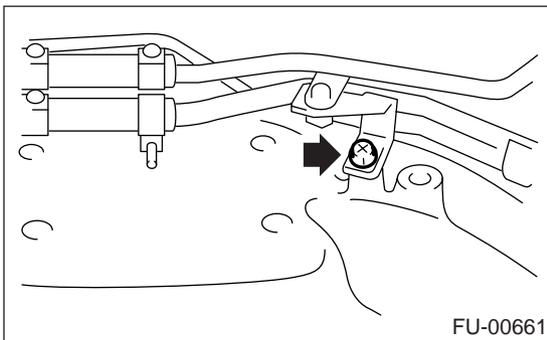
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

14) Loosen the clamps which hold fuel hose to fuel pipe assembly.



15) Remove the bolts which install fuel pipe on intake manifold.



D: ASSEMBLY

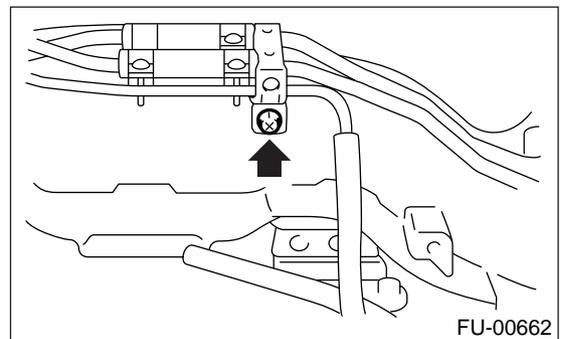
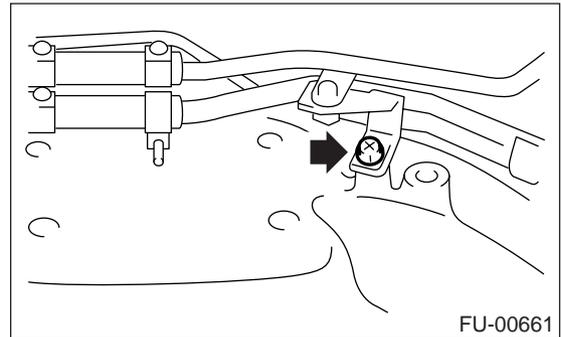
NOTE:

Replace the gasket with a new one.

1) Install the fuel pipe assembly to intake manifold.

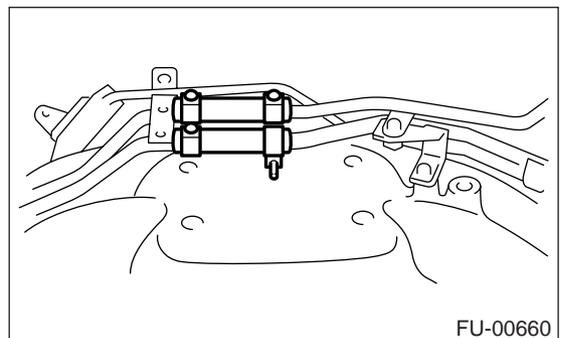
Tightening torque:

5.0 N·m (0.51 kgf-m, 3.7 ft-lb)



2) Install the fuel injector pipe LH.

3) Connect the fuel hose to fuel pipe, and tighten the clamp screw.



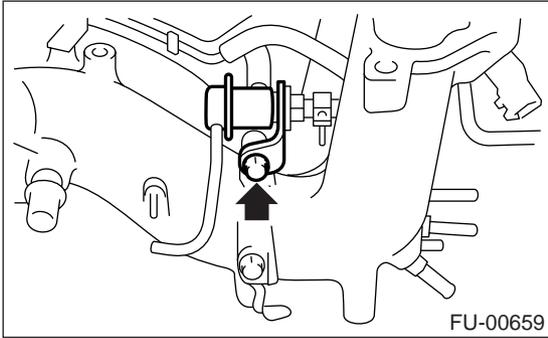
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

4) Install the pressure regulator.

Tightening torque:

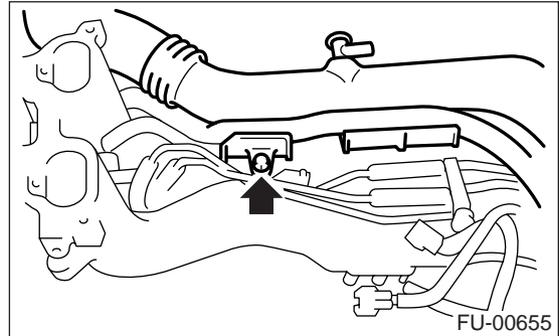
19 N·m (1.94 kgf-m, 13.7 ft-lb)



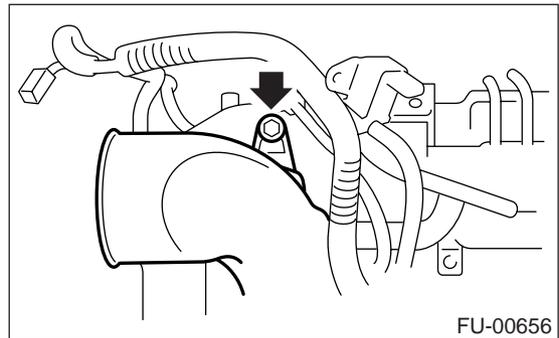
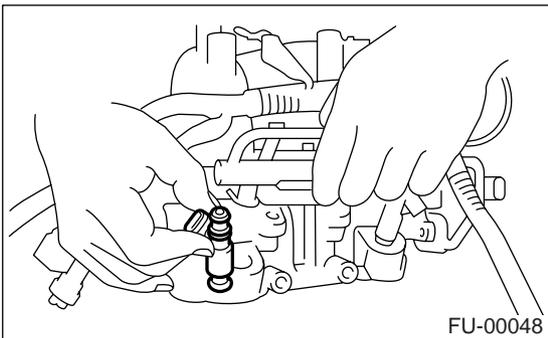
7) Install the intake duct and engine harness to intake manifold as a unit.

Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



5) Install the fuel injector.

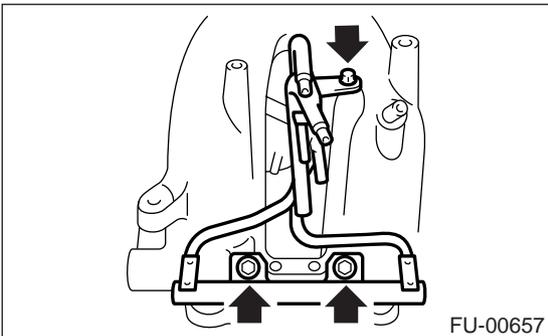


6) Tighten the bolts which install fuel injector pipe onto intake manifold.

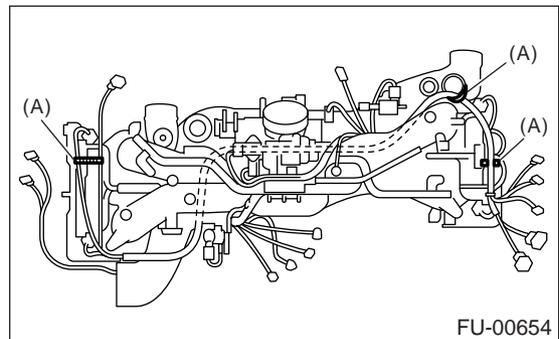
Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)

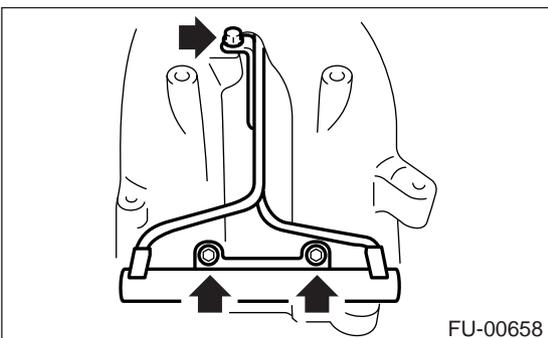
• LH SIDE



8) Hold the engine harness by harness bands (A).



• RH SIDE



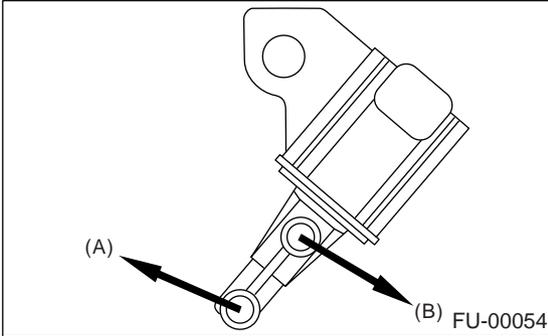
INTAKE MANIFOLD

FUEL INJECTION (FUEL SYSTEMS)

9) Connect the hoses to purge control solenoid valve.

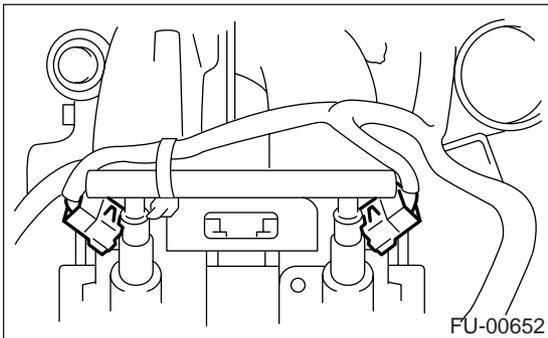
NOTE:

Connect the evaporation hoses as shown in the figure.



- (A) To intake manifold
- (B) To fuel pipe assembly

10) Connect the connector to fuel injector.

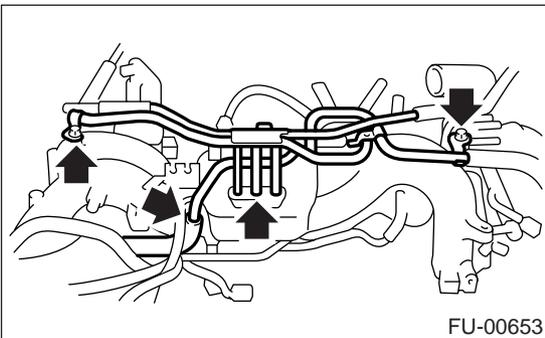


11) Install the evaporation and coolant pipe assembly.

12) Connect the evaporation hoses to evaporation and coolant pipe assembly.

Tightening torque:

5.0 N·m (0.51 kgf-m, 3.7 ft-lb)



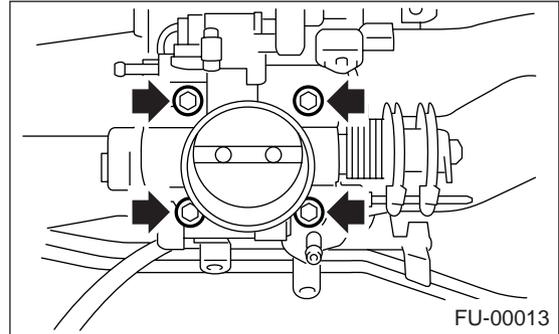
13) Install the throttle body to intake manifold.

NOTE:

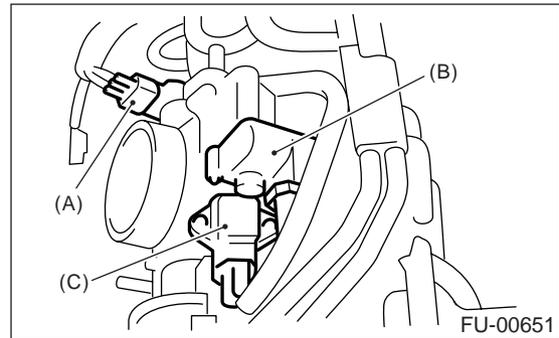
Replace the gasket with a new one.

Tightening torque:

22 N·m (2.2 kgf-m, 15.9 ft-lb)



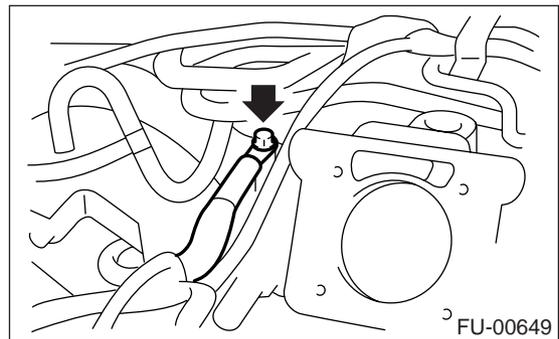
14) Connect the connector to the throttle position sensor (A), idle air control solenoid valve (B) and pressure sensor (C).



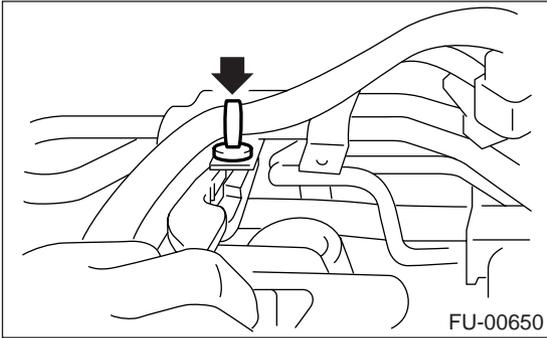
15) Install the engine ground cable to intake manifold.

Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



16) Connect the engine harness with clip to engine coolant pipe.



E: INSPECTION

Make sure the fuel pipe and fuel hoses are not cracked and that connections are tight.

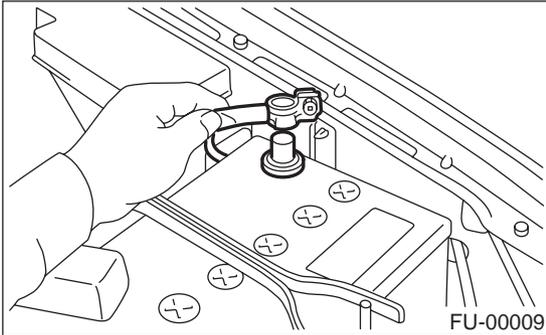
ENGINE COOLANT TEMPERATURE SENSOR

FUEL INJECTION (FUEL SYSTEMS)

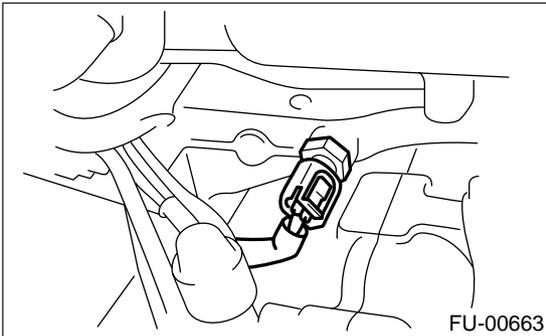
4. Engine Coolant Temperature Sensor

A: REMOVAL

- 1) Drain engine coolant.
- 2) Disconnect the ground cable from battery.



- 3) Remove the generator. <Ref. to SC(H4DOSTC)-14, REMOVAL, Generator.>
- 4) Disconnect the connector from engine coolant temperature sensor.
- 5) Remove the engine coolant temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

18 N·m (1.8 kgf·m, 13.3 ft·lb)

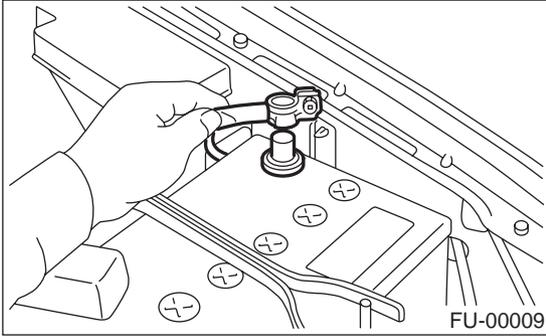
CRANKSHAFT POSITION SENSOR

FUEL INJECTION (FUEL SYSTEMS)

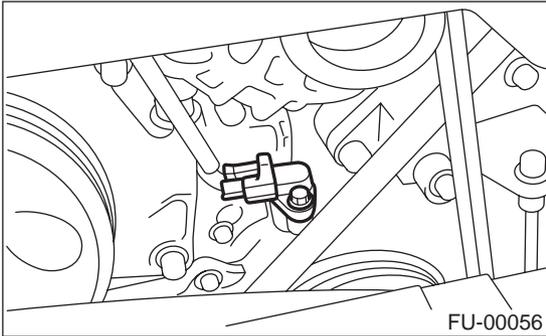
5. Crankshaft Position Sensor

A: REMOVAL

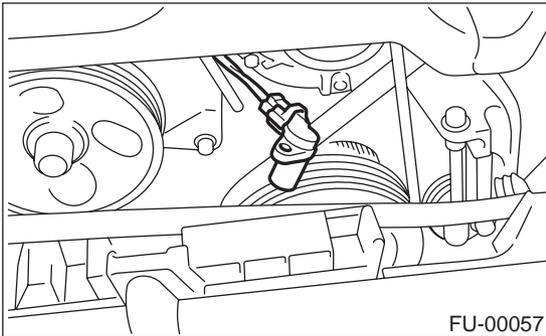
1) Disconnect the ground cable from battery.



2) Remove the bolt which installs crankshaft position sensor to cylinder block.



3) Remove the crankshaft position sensor, and then disconnect the connector from it.

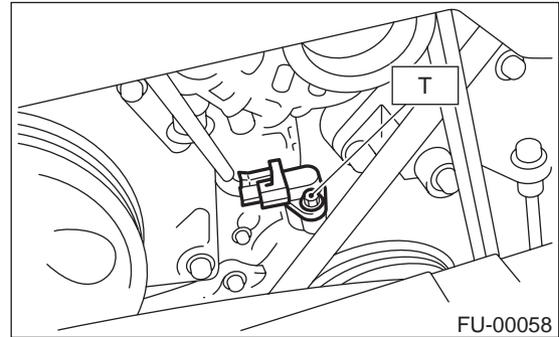


B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

T: 6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



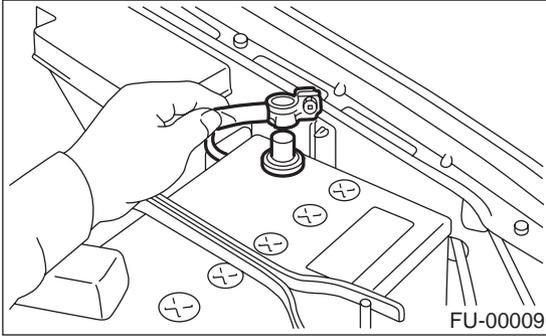
CAMSHAFT POSITION SENSOR

FUEL INJECTION (FUEL SYSTEMS)

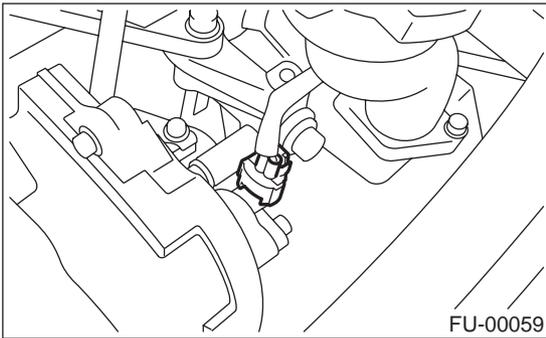
6. Camshaft Position Sensor

A: REMOVAL

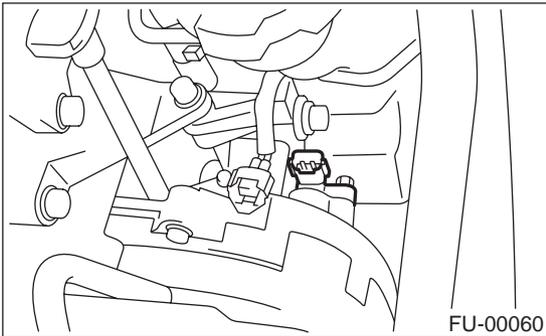
1) Disconnect the ground cable from battery.



2) Disconnect the connector from camshaft position sensor.



3) Remove the camshaft position sensor from camshaft support LH.

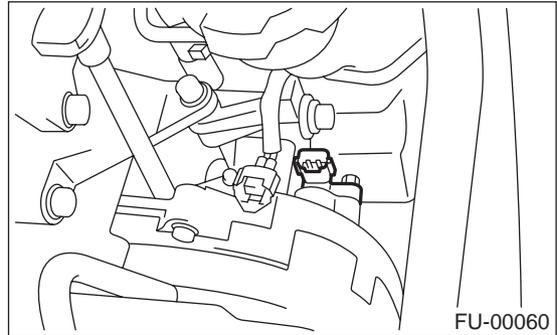


B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

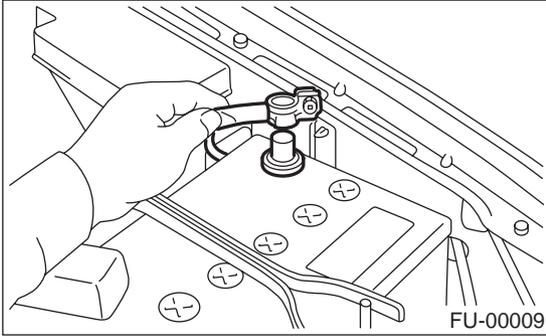
T: 6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



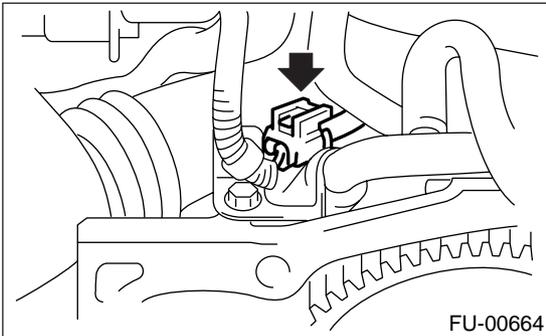
7. Knock Sensor

A: REMOVAL

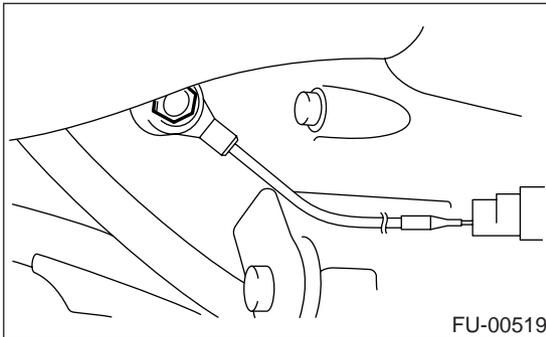
- 1) Disconnect the ground cable from battery.



- 2) Remove the intercooler. <Ref. to IN(H4DOSTC)-13, REMOVAL, Intercooler.>
- 3) Disconnect the knock sensor connector.



- 4) Remove the knock sensor from cylinder block.



B: INSTALLATION

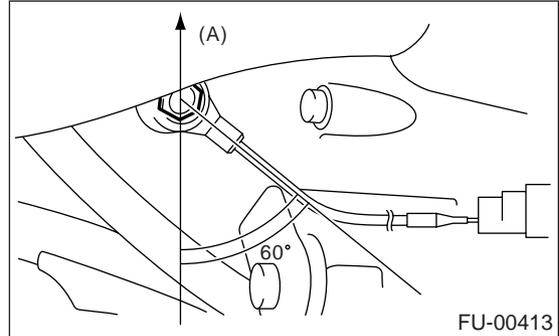
- 1) Install the knock sensor to cylinder block.

Tightening torque:

24 N·m (2.4 kgf·m, 17.4 ft·lb)

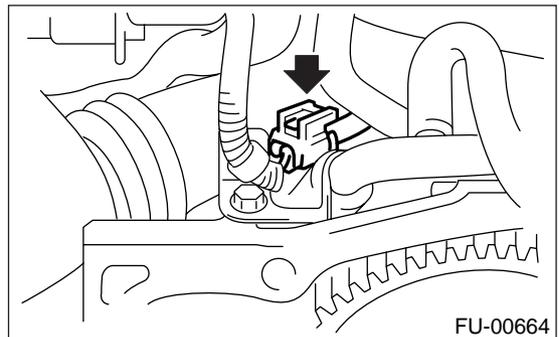
NOTE:

The extraction area of knock sensor cord must be positioned at a 60° angle relative to the engine rear.

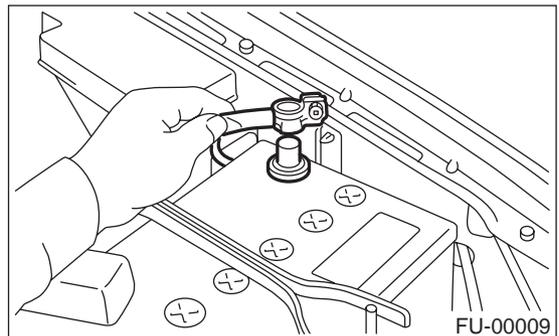


(A) Front side

- 2) Connect the knock sensor connector.



- 3) Install the intercooler. <Ref. to IN(H4DOSTC)-14, INSTALLATION, Intercooler.>
- 4) Connect the battery ground cable to battery.



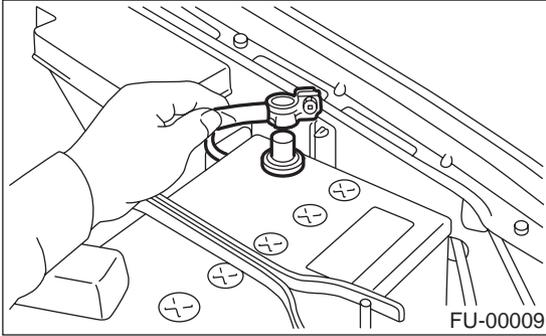
THROTTLE POSITION SENSOR

FUEL INJECTION (FUEL SYSTEMS)

8. Throttle Position Sensor

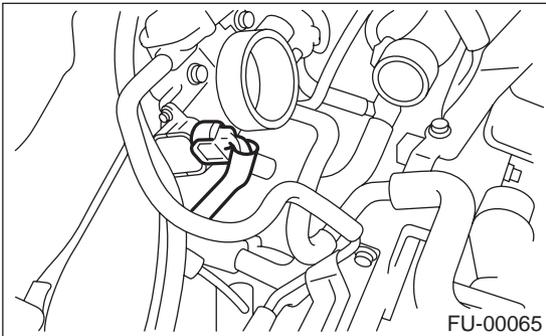
A: REMOVAL

1) Disconnect the ground cable from battery.

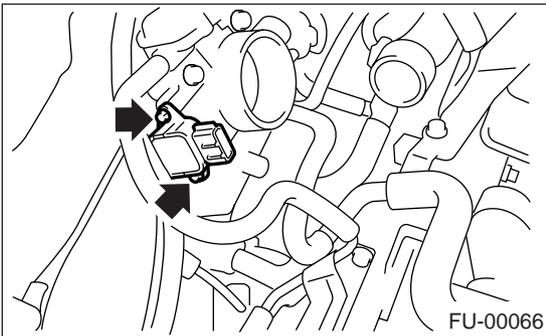


2) Remove the intercooler. <Ref. to IN(H4DOSTC)-13, REMOVAL, Intercooler.>

3) Disconnect the connector from throttle position sensor.



4) Remove the throttle position sensor holding screws, and then remove it.

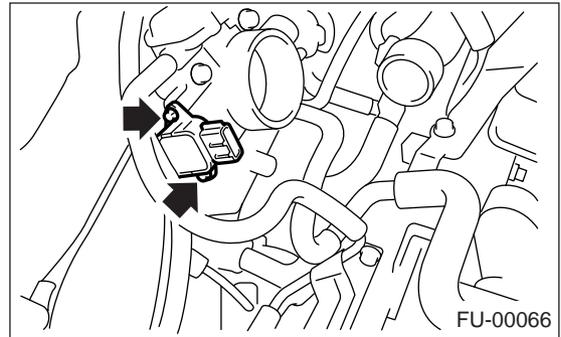


B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

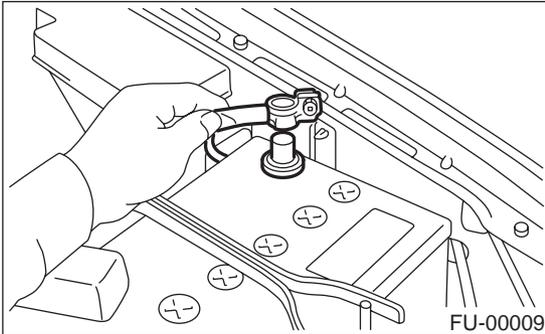
1.6 N·m (0.16 kgf-m, 1.2 ft-lb)



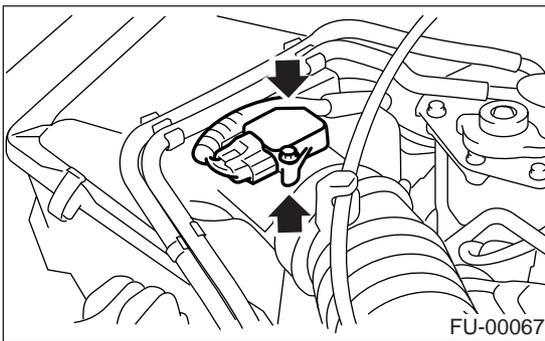
9. Mass Air Flow and Intake Air Temperature Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



- 2) Disconnect the connector mass air flow and intake air temperature sensor.
- 3) Remove the mass air flow and intake air temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

7.5 N·m (0.76 kgf-m, 5.5 ft-lb)

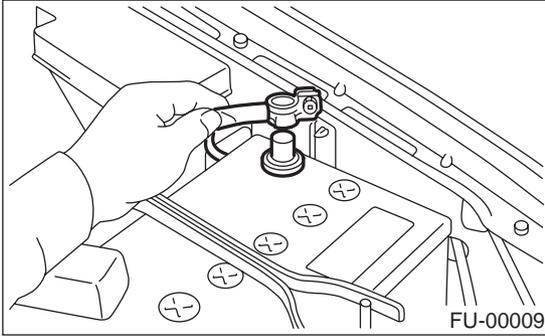
PRESSURE SENSOR

FUEL INJECTION (FUEL SYSTEMS)

10. Pressure Sensor

A: REMOVAL

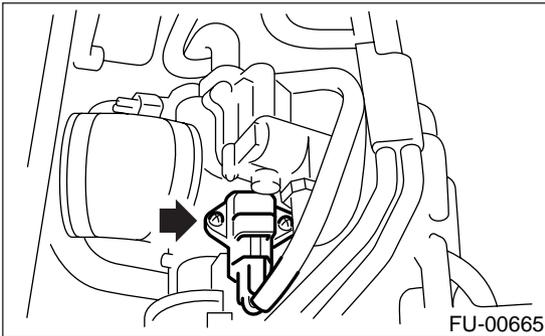
1) Disconnect the ground cable from battery.



2) Remove the idle air control solenoid valve. <Ref. to FU(H4DOSTC)-35, REMOVAL, Idle Air Control Solenoid Valve.>

3) Disconnect the connectors from pressure sensor.

4) Remove the pressure sensor from throttle body.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Replace the O-ring for the pressure sensor with new ones.

Tightening torque:

1.6 N·m (0.16 kgf-m, 1.2 ft-lb)

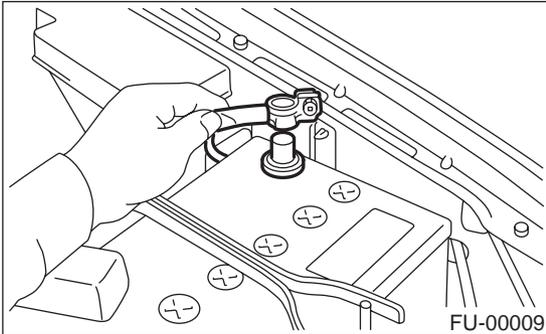
IDLE AIR CONTROL SOLENOID VALVE

FUEL INJECTION (FUEL SYSTEMS)

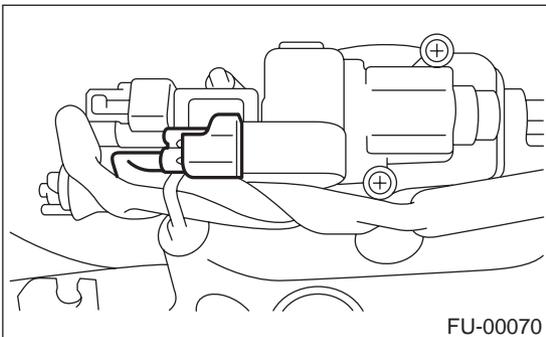
11. Idle Air Control Solenoid Valve

A: REMOVAL

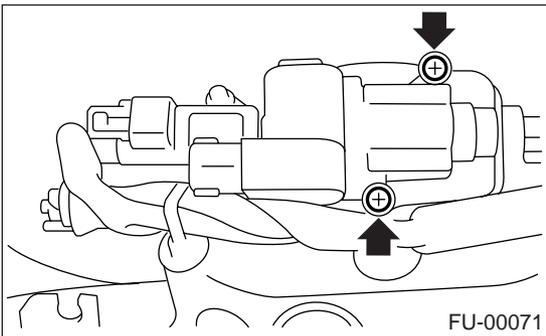
- 1) Disconnect the ground cable from battery.



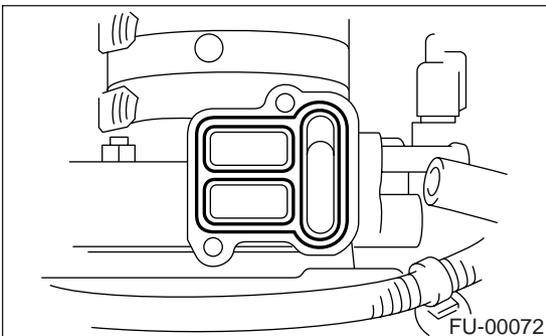
- 2) Disconnect the connector from idle air control solenoid valve.



- 3) Remove the idle air control solenoid valve from throttle body.



- 4) Remove the gasket from throttle body.



B: INSTALLATION

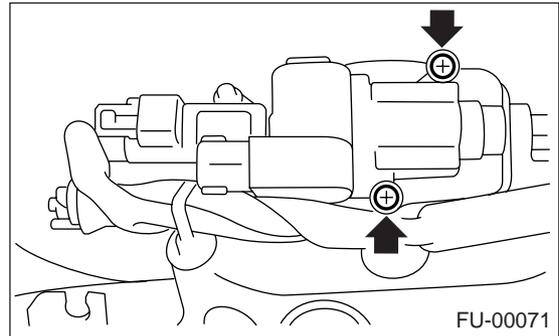
Install in the reverse order of removal.

NOTE:

Always use a new gasket.

Tightening torque:

2.8 N·m (0.29 kgf-m, 2.1 ft-lb)



FUEL INJECTOR

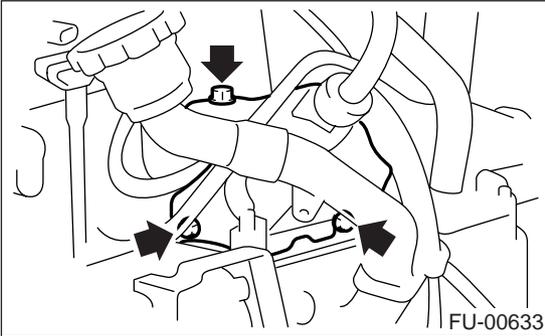
FUEL INJECTION (FUEL SYSTEMS)

12. Fuel Injector

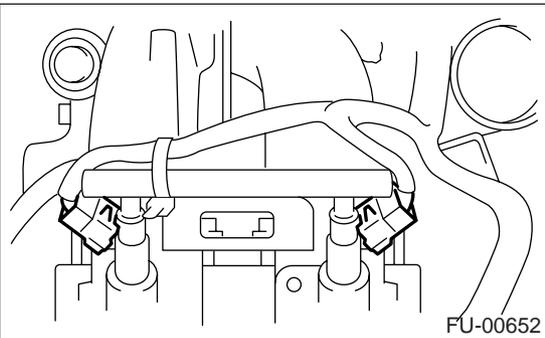
A: REMOVAL

1. RH SIDE

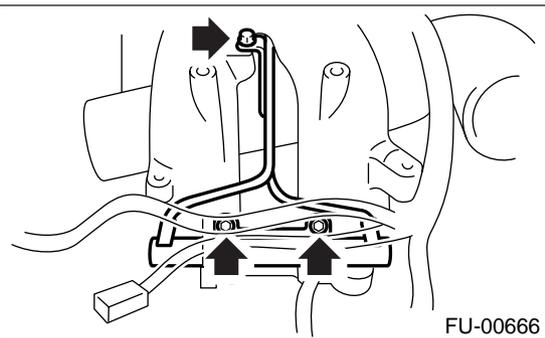
1) Remove the fuel pipe protector RH.



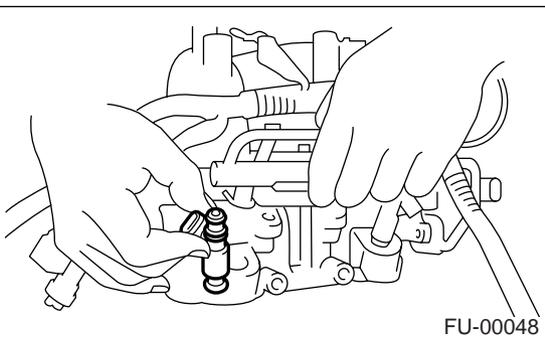
2) Disconnect the connector from fuel injector.



3) Remove the bolts which hold injector pipe to intake manifold.

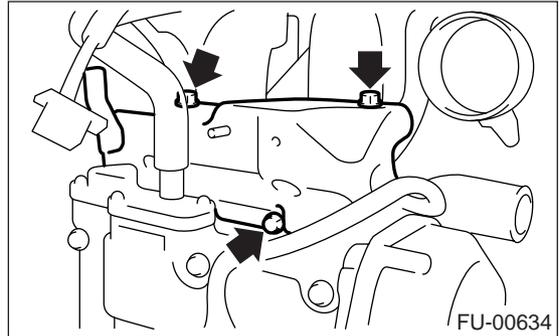


4) Remove the fuel injector while lifting up the fuel injector pipe.

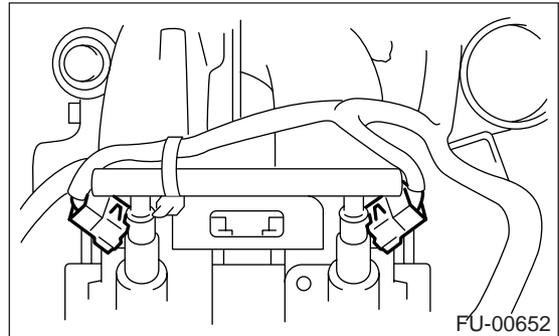


2. LH SIDE

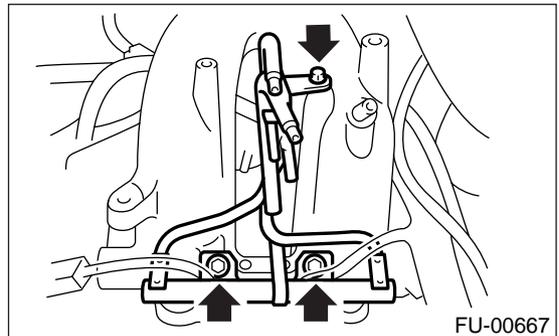
1) Remove the fuel pipe protector LH.



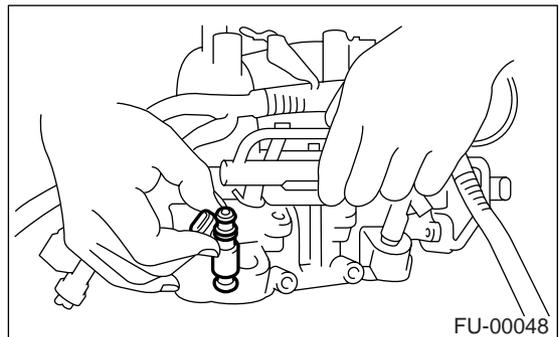
2) Disconnect the connector from fuel injector.



3) Remove the bolts which hold injector pipe to intake manifold.



4) Remove the fuel injector while lifting up the fuel injector pipe.



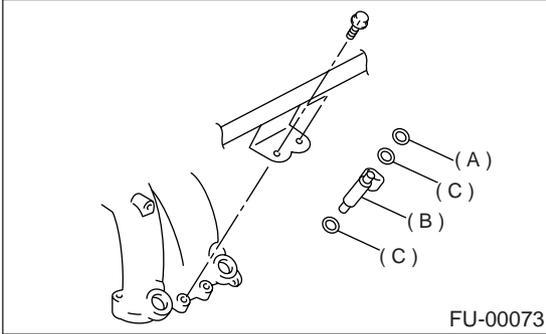
B: INSTALLATION

1. RH SIDE

Install in the reverse order of removal.

NOTE:

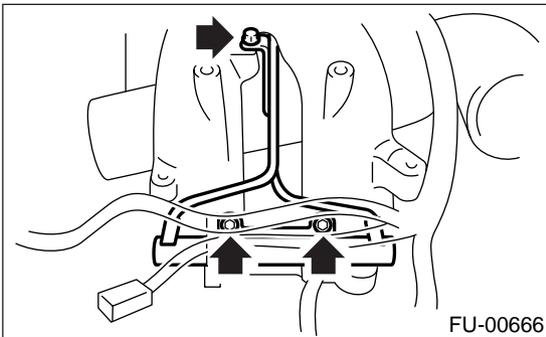
Replace the O-ring and insulators with new ones.



- (A) O-ring
- (B) Fuel injector
- (C) Insulator

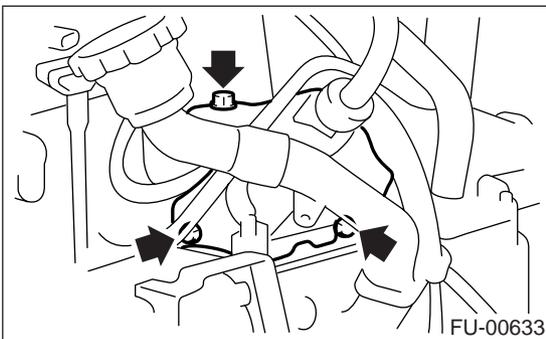
Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)

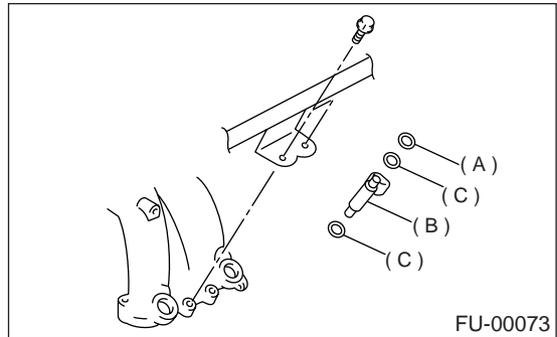


2. LH SIDE

Install in the reverse order of removal.

NOTE:

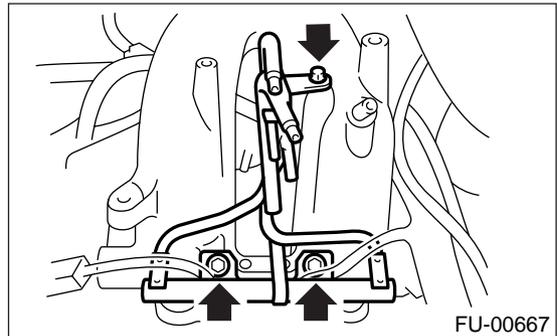
Replace the O-ring and insulators with new ones.



- (A) O-ring
- (B) Fuel injector
- (C) Insulator

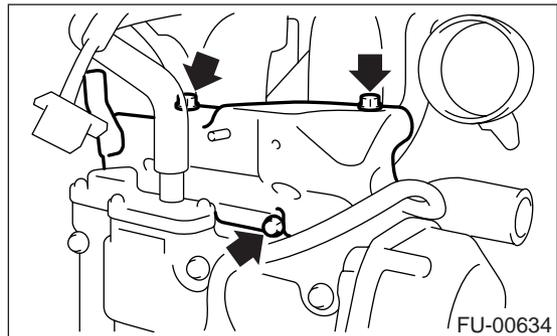
Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



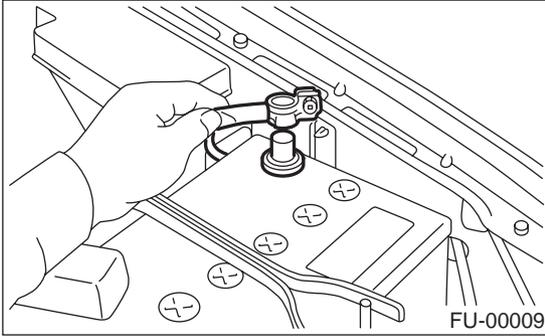
FRONT OXYGEN (A/F) SENSOR

FUEL INJECTION (FUEL SYSTEMS)

13. Front Oxygen (A/F) Sensor

A: REMOVAL

1) Disconnect the ground cable from battery.



2) Disconnect the connector from front oxygen (A/F) sensor.

3) Lift-up the vehicle.

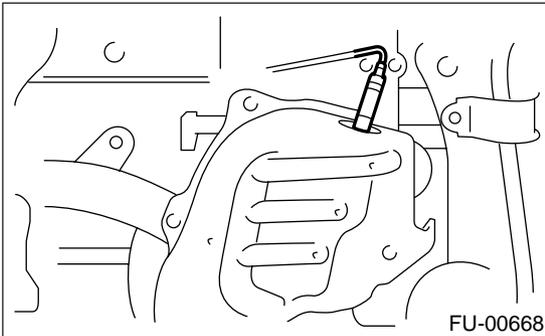
4) Apply SUBARU CRC or its equivalent to the threaded portion of front oxygen (A/F) sensor, and then leave it for one minute or more.

SUBARU CRC (Part No. 004301003)

5) Remove the front oxygen (A/F) sensor.

NOTE:

When removing the oxygen (A/F) sensor, wait until the exhaust pipe cools, otherwise it will damage the exhaust pipe.



B: INSTALLATION

1) Before installing the front oxygen (A/F) sensor, apply anti-seize compound only to the threaded portion of front oxygen (A/F) sensor to make the next removal easier.

Anti-seize compound:

SS-30 by JET LUBE

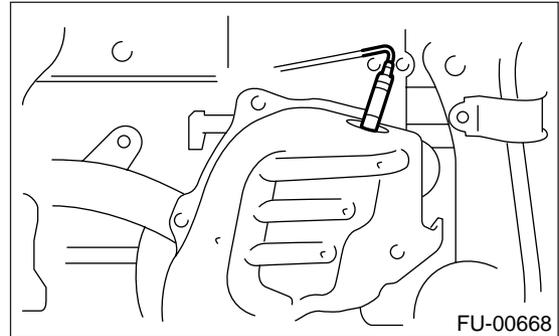
NOTE:

Never apply anti-seize compound to the protector of front oxygen (A/F) sensor.

2) Install the front oxygen (A/F) sensor.

Tightening torque:

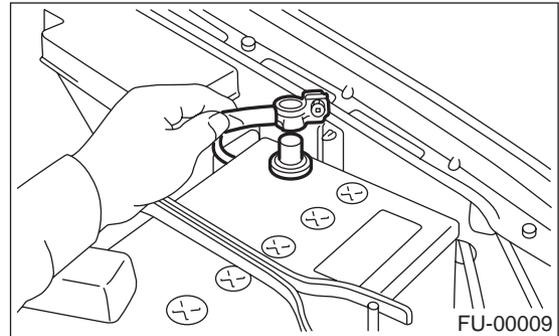
21 N·m (2.1 kgf·m, 15.2 ft·lb)



3) Lower the vehicle.

4) Connect the connector of front oxygen (A/F) sensor.

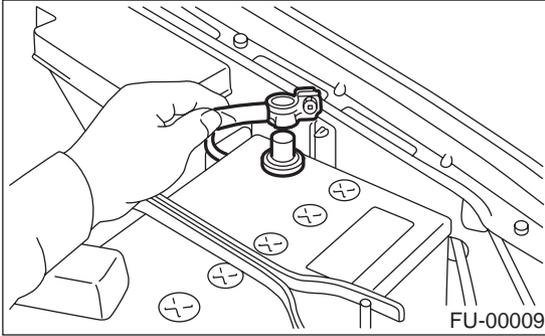
5) Connect the battery ground cable to battery.



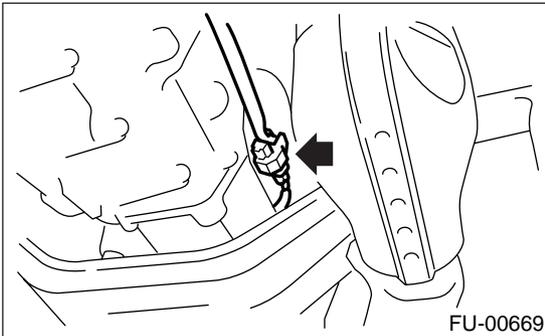
14. Rear Oxygen Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



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



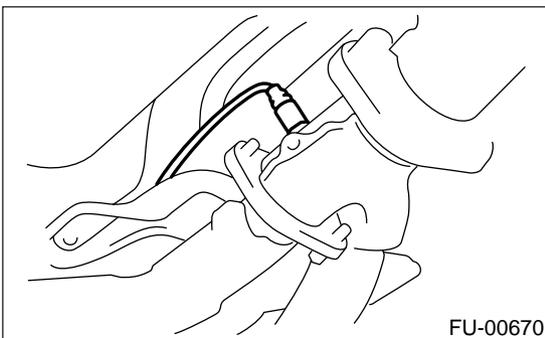
- 4) Apply SUBARU CRC or its equivalent to the threaded portion of rear oxygen sensor, and then leave it for one minute or more.

SUBARU CRC (Part No. 004301003)

- 5) Remove the rear oxygen sensor.

NOTE:

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



B: INSTALLATION

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

NOTE:

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

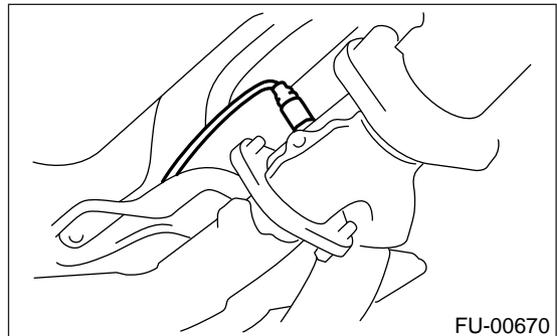
Anti-seize compound:

SS-30 by JET LUBE

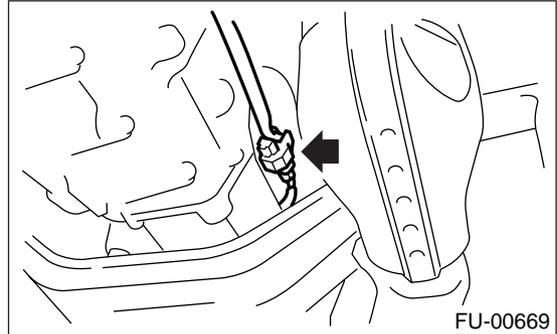
- 2) Install the rear oxygen sensor.

Tightening torque:

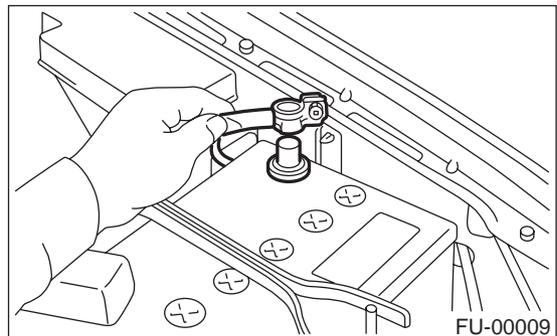
21 N·m (2.1 kgf-m, 15.2 ft-lb)



- 3) Connect the connector to rear oxygen sensor.



- 4) Lower the vehicle.
- 5) Connect the battery ground cable to battery.



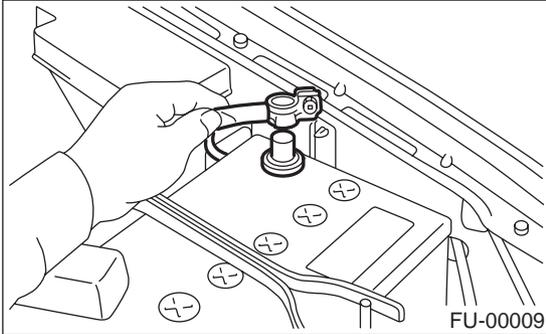
ENGINE CONTROL MODULE

FUEL INJECTION (FUEL SYSTEMS)

15.Engine Control Module

A: REMOVAL

1) Disconnect the ground cable from battery.

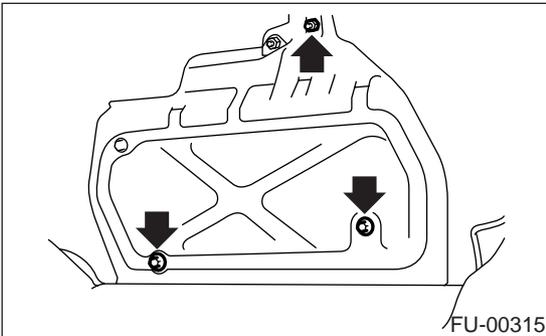


2) Remove the lower inner trim of passenger side.

<Ref. to EI-39, REMOVAL, Lower Inner Trim.>

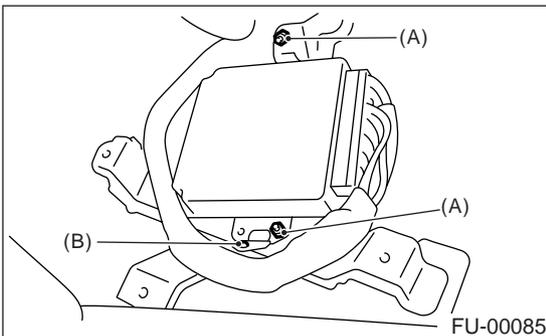
3) Detach the floor mat of front passenger seat.

4) Remove the protect cover.



5) Remove the nuts (A) which hold ECM to bracket.

6) Remove the clip (B) from bracket.



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

B: INSTALLATION

Install in the reverse order of removal.

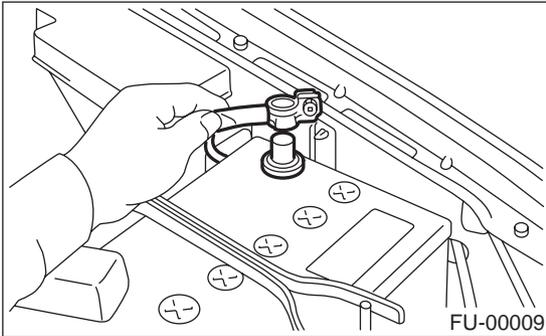
NOTE:

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

16.Main Relay

A: REMOVAL

1) Disconnect the ground cable from battery.

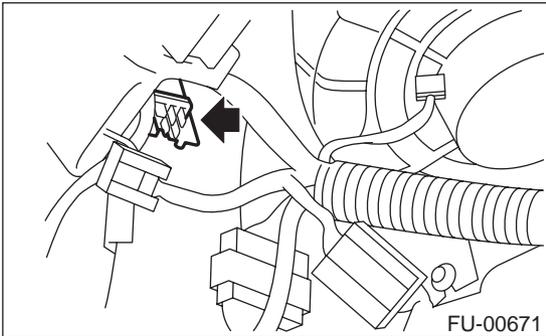


2) Remove the lower inner trim of passenger side.

<Ref. to EI-39, REMOVAL, Lower Inner Trim.>

3) Disconnect the connectors from main relay.

4) Remove the bolt which holds main relay bracket on body.



B: INSTALLATION

Install in the reverse order of removal.

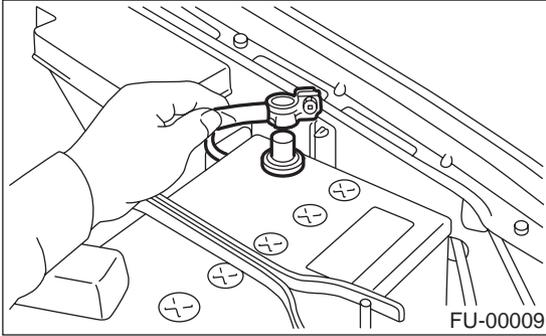
FUEL PUMP RELAY

FUEL INJECTION (FUEL SYSTEMS)

17. Fuel Pump Relay

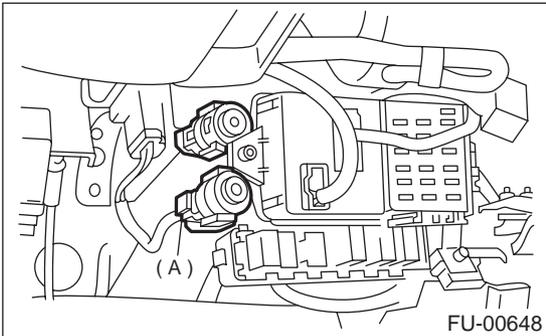
A: REMOVAL

1) Disconnect the ground cable from battery.



2) Remove the lower cover.

3) Disconnect the connector from fuel pump relay (A).



4) Remove the fuel pump relay from mounting bracket.

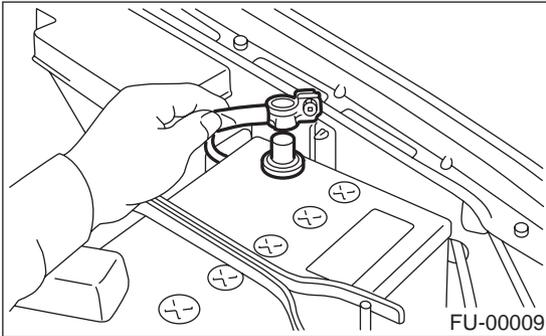
B: INSTALLATION

Install in the reverse order of removal.

18. Fuel Pump Controller

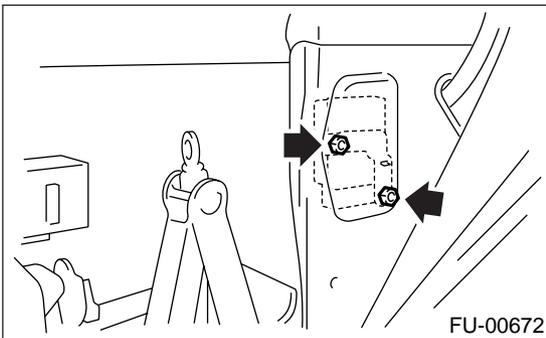
A: REMOVAL

1) Disconnect the ground cable from battery.

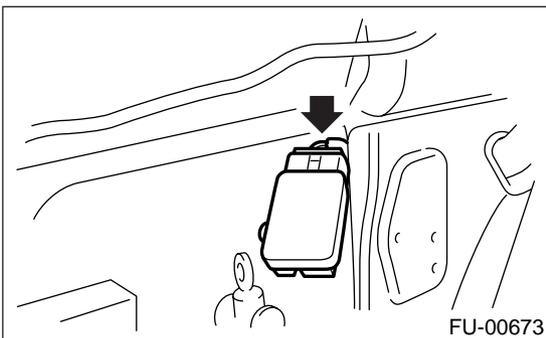


2) Remove the rear quarter trim. <Ref. to EI-40, REMOVAL, Rear Quarter Trim.>

3) Remove the fuel pump controller.



4) Disconnect the connector from the fuel pump controller.



B: INSTALLATION

Install in the reverse order of removal.

FUEL

FUEL INJECTION (FUEL SYSTEMS)

19. Fuel

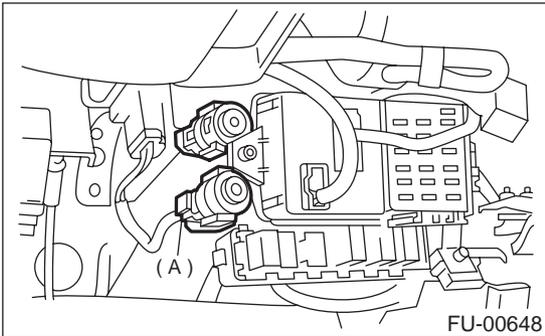
A: OPERATION

1. RELEASING OF FUEL PRESSURE

WARNING:

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

- 1) Disconnect the connector from fuel pump relay (A).



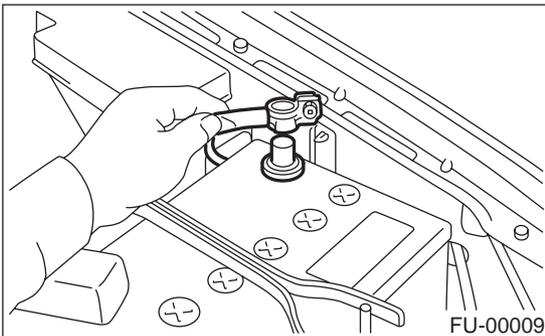
- 2) Start the engine and run it until it stalls.
- 3) After the engine stalls, crank it for five more seconds.
- 4) Turn the ignition switch to OFF.

2. DRAINING FUEL

WARNING:

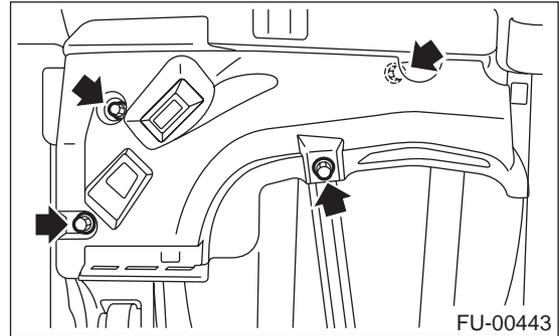
- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.

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

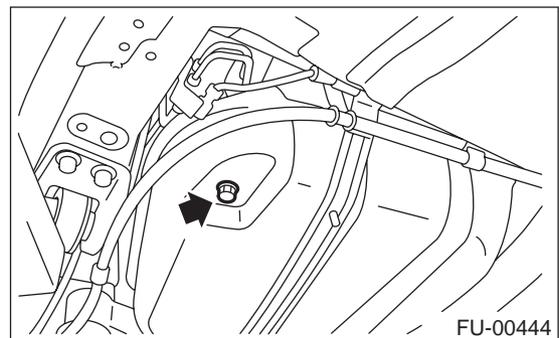


- 3) Lift-up the vehicle.

- 4) Remove the protector RH (Front).



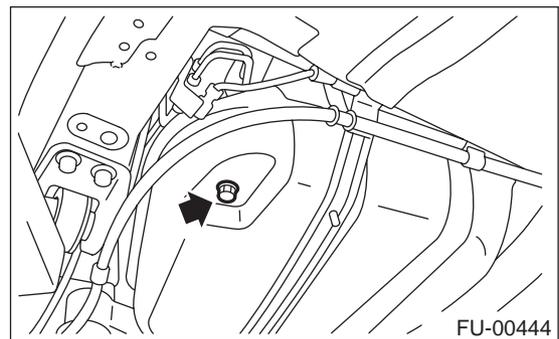
- 5) Drain the fuel from fuel tank.
Set a container under the vehicle, and then remove the drain plug from fuel tank.



- 6) Tighten the fuel drain plug, and then install the protector RH (Front).

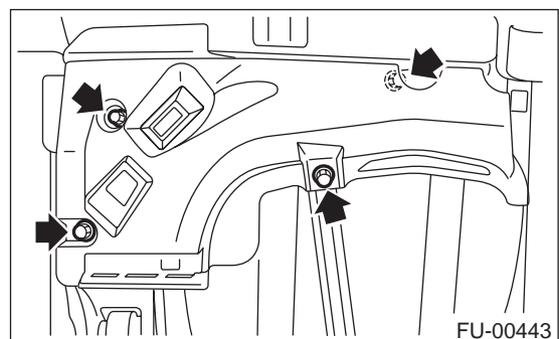
Tightening torque:

26 N·m (2.65 kgf-m, 19.2 ft-lb)



Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

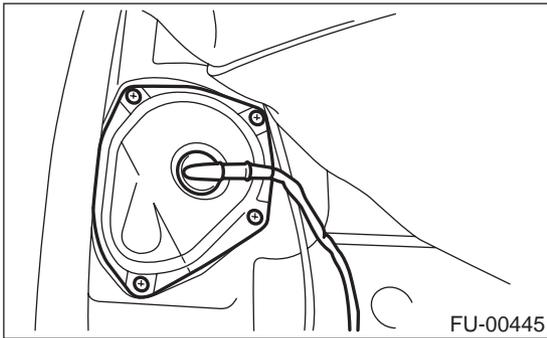


FUEL

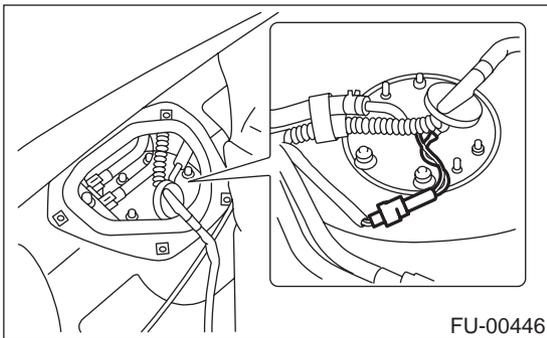
FUEL INJECTION (FUEL SYSTEMS)

7) Lower the vehicle.

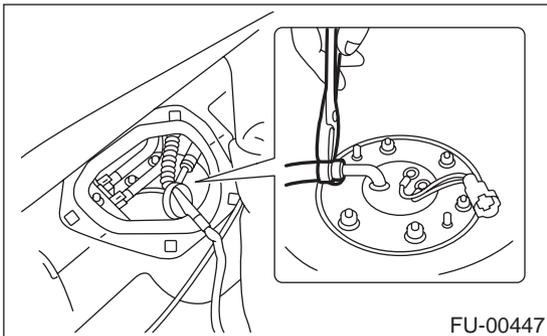
8) Remove the sub service hole cover.



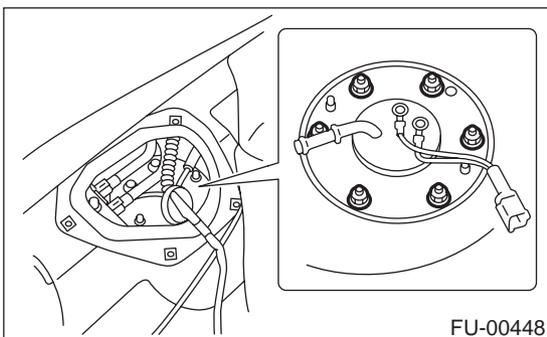
9) Disconnect the connector from fuel sub level sensor.



10) Disconnect the fuel jet pump hose.



11) Remove the fuel sub level sensor.



12) Drain the fuel from fuel tank by using a hand pump.

WARNING:

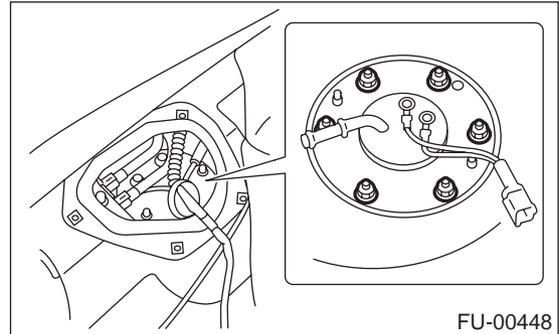
Do not use a motor pump when draining the fu-

el.

13) After draining the fuel, reinstall the fuel sub level sensor.

Tightening torque:

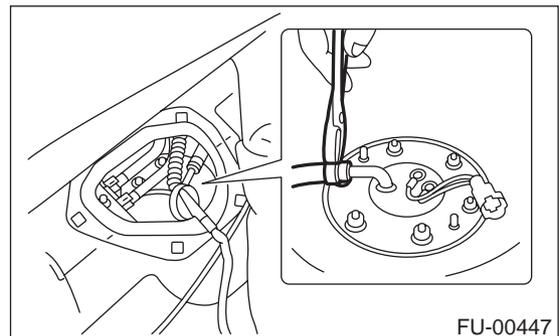
T: 4.4 N·m (0.45 kgf·m, 3.3 ft·lb)



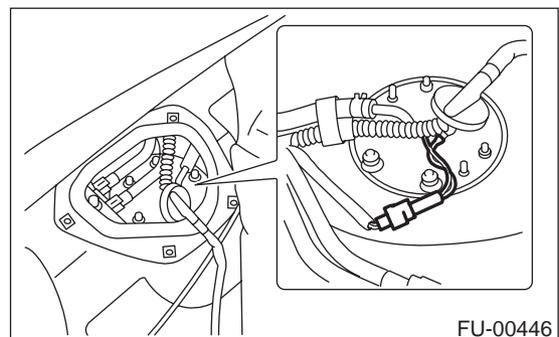
NOTE:

If you have not removed the fuel tank yet, proceed with the procedure below for installation.

(1) Connect the fuel jet pump hose.



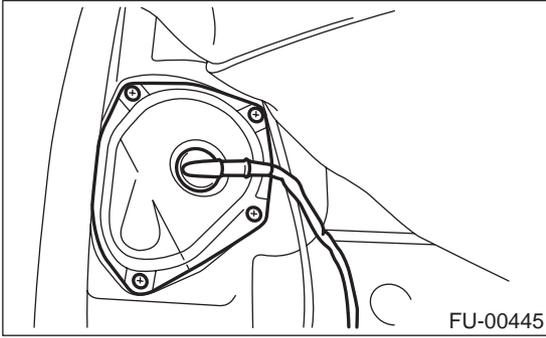
(2) Connect the connector from fuel sub level sensor.



FUEL

FUEL INJECTION (FUEL SYSTEMS)

- (3) Install the sub service hole cover.

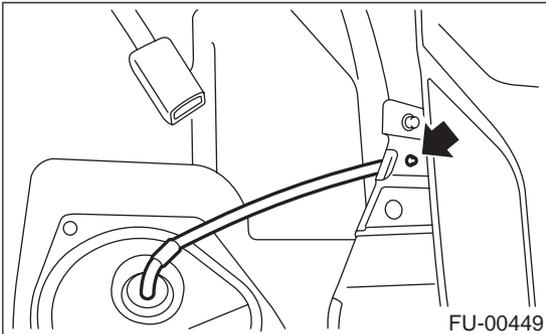


- (4) Set the rear seat and floor mat.

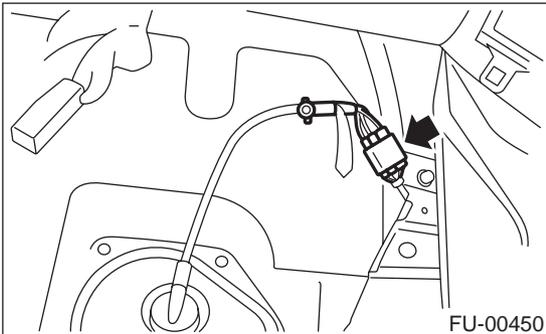
20. Fuel Tank

A: REMOVAL

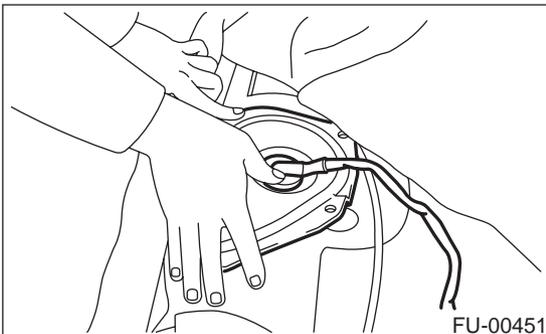
- 1) Set the vehicle on the lift.
- 2) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 3) Drain the fuel from fuel tank. <Ref. to FU(H4DOSTC)-44, DRAINING FUEL, OPERATION, Fuel.>
- 4) Remove the holder clip which secures fuel tank cord on bracket.



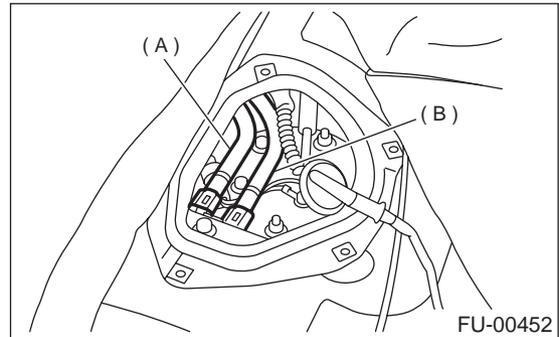
- 5) Disconnect the connector of fuel tank cord to rear harness.



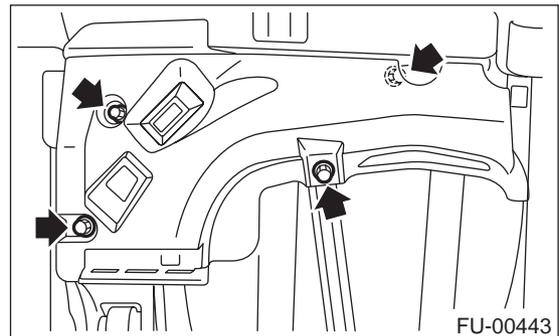
- 6) Push the grommet which holds fuel tank cord on service hole cover into body side.



- 7) Separate the quick connector of fuel delivery (A) and return hose (B). <Ref. to FU(H4DOSTC)-67, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>



- 8) Remove the parking brake cable.
 - (1) Remove the console box. <Ref. to EI-34, REMOVAL, Console Box.>
 - (2) Remove the parking brake bracket, and then disconnect the parking brake cable from equalizer. <Ref. to PB-7, REMOVAL, Parking Brake Cable.>
- 9) Remove the wheel nuts from rear wheels.
- 10) Lift-up the vehicle.
- 11) Remove the rear wheel.
- 12) Remove the front side protector.



FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

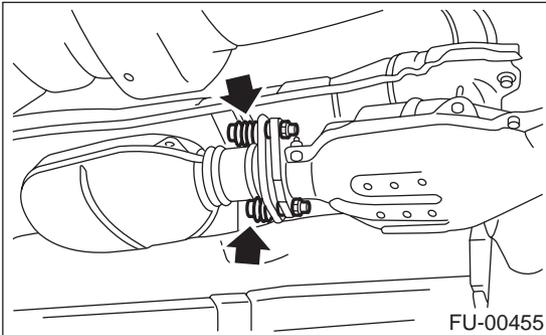
13) Remove the rear exhaust pipe and muffler.

NOTE:

To facilitate the removal, apply a coat of SUBARU CRC to matching area of rubber cushions in advance.

SUBARU CRC (Part No. 004301003)

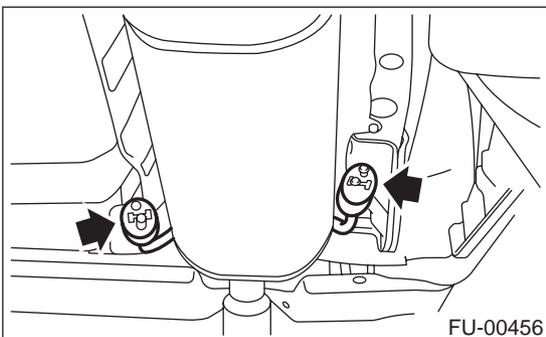
(1) Separate the rear exhaust pipe from center exhaust pipe.



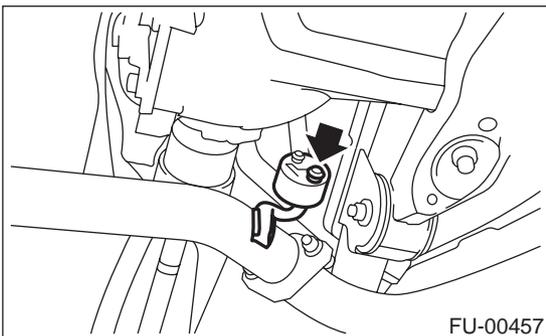
(2) Remove the right and left rubber cushions.

NOTE:

Be careful not to pull down the muffler.

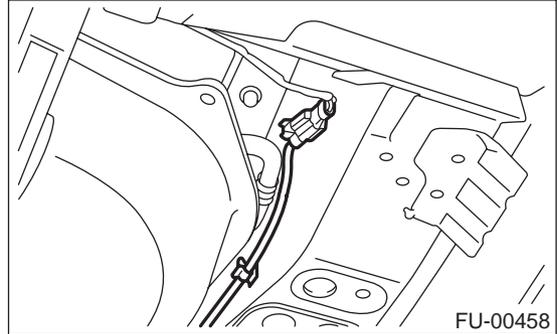


(3) Remove the front rubber cushion, and then detach the muffler assembly.



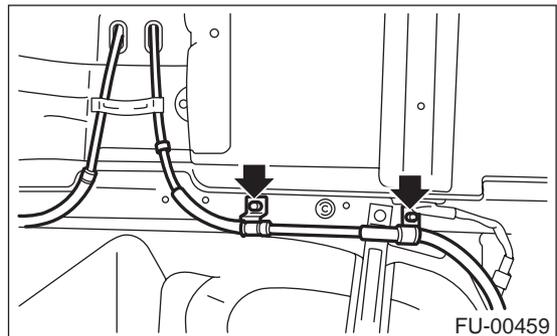
14) Remove the propeller shaft. <Ref. to DS-14, REMOVAL, Propeller Shaft.>

15) Disconnect the connector from ABS sensor.

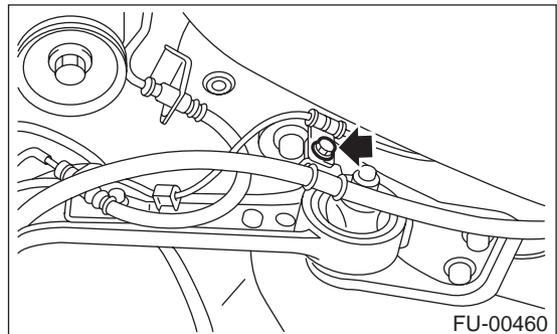


16) Remove the bolts which hold parking brake cable holding bracket.

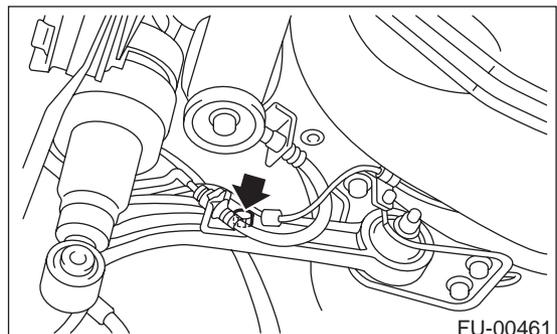
17) Remove the parking brake cable from cabin by forcibly pulling it backward.



18) Remove the bolt which holds parking brake cable holding bracket.



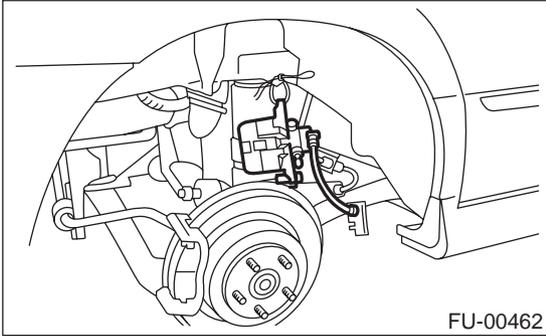
19) Remove the bolt which holds rear brake hoses holding bracket.



FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

20) Remove the rear brake caliper, and then tie it up to the body side of vehicle as shown in the figure.

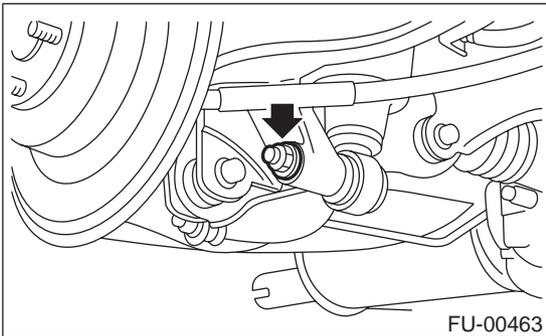


21) Remove the rear suspension assembly.

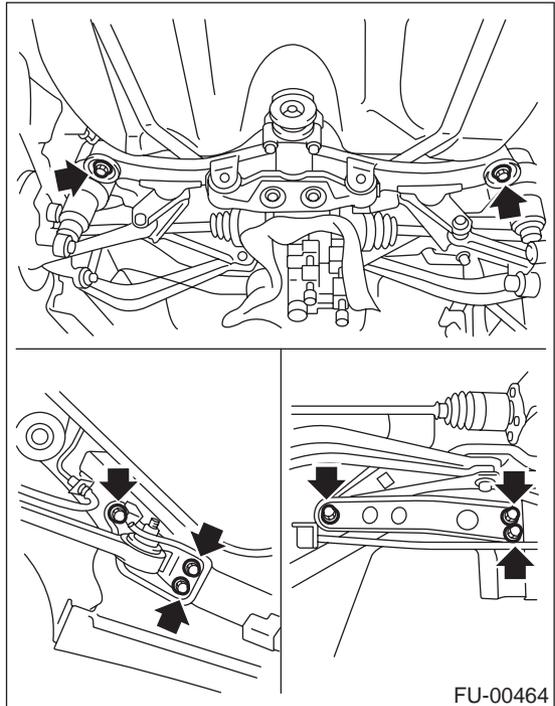
CAUTION:

A helper is required to perform this work.

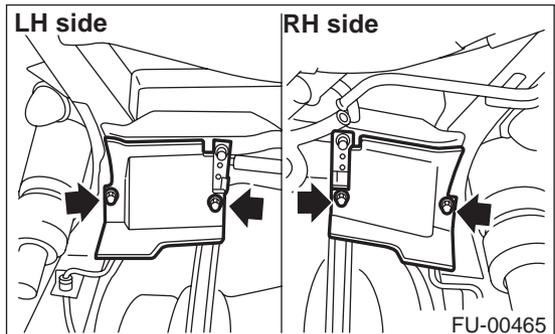
- (1) Support the rear differential with transmission jack.
- (2) Remove the bolt which holds rear shock absorber to rear suspension arm.



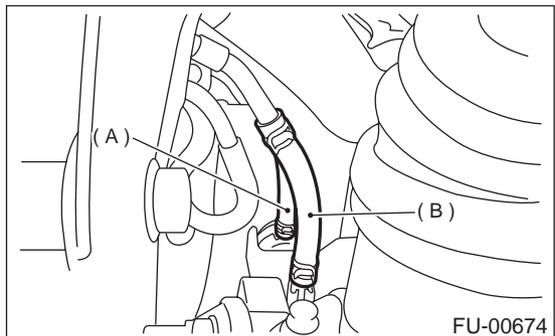
(3) Remove the bolts which secure rear suspension assembly to body.



(4) Remove the rear suspension assembly.
22) Remove the rear side protector.



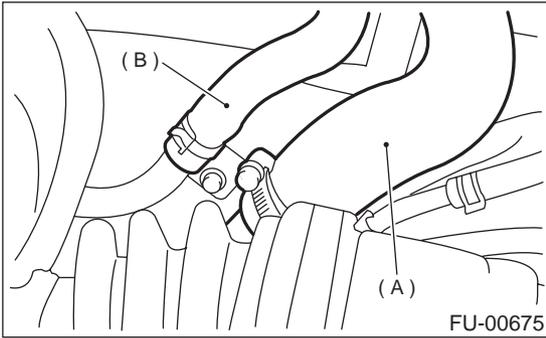
23) Disconnect the two-way valve hose (A) from two-way valve, and then disconnect the evaporation hose (B) from evaporation pipe.



FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

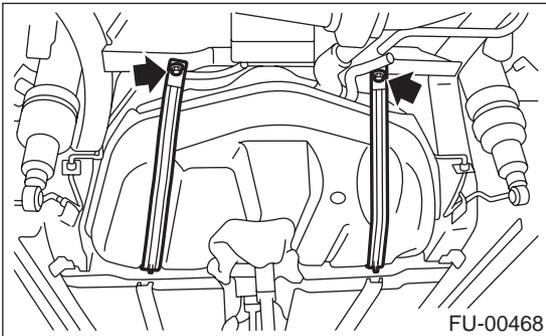
24) Loosen the clamp and disconnect the fuel filler hose (A) and air vent hose (B) from fuel filler pipe.



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

CAUTION:

A helper is required to perform this work.



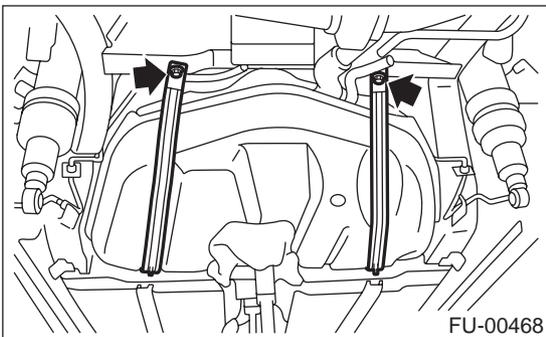
B: INSTALLATION

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

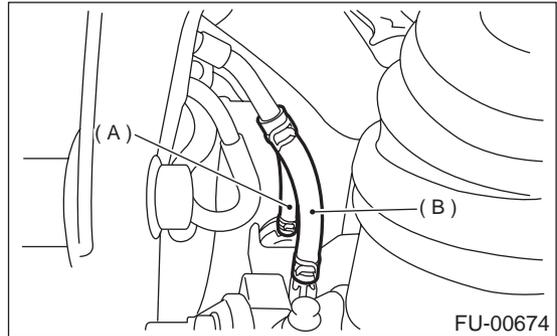
2) Set the fuel tank, and then temporarily tighten the bolts of fuel tank bands.

CAUTION:

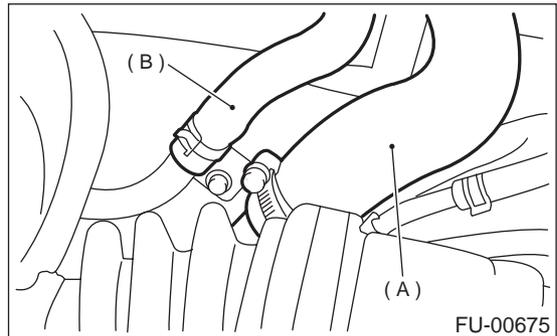
A helper is required to perform this work.



3) Connect the two-way valve hose (A) to two-way valve, and then connect the evaporation hose (B) to evaporation pipe.



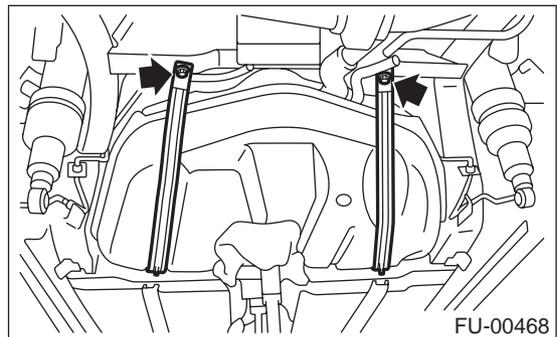
4) Connect the fuel filler hose (A) and air vent hose (B).



5) Tighten the band mounting bolts.

Tightening torque:

33 N·m (3.4 kgf-m, 25 ft-lb)



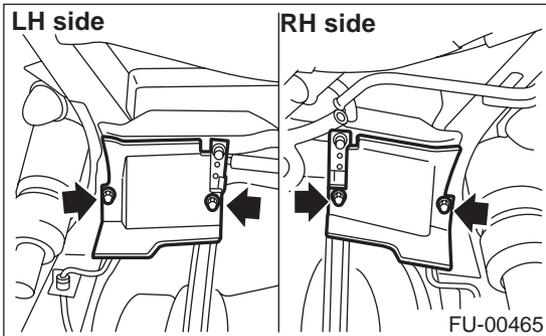
FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

6) Install the rear side protector.

Tightening torque:

18 N·m (1.8 kgf·m, 13.0 ft·lb)



7) Install the rear suspension assembly.

CAUTION:

A helper is required to perform this work.

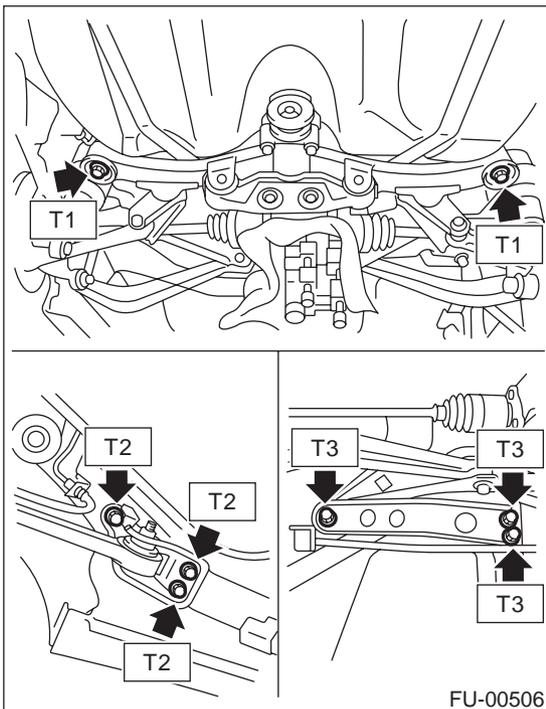
(1) Support the rear suspension assembly, and then tighten the bolts which secure rear suspension assembly.

Tightening torque:

T1: 172 N·m (17.5 kgf·m, 127 ft·lb)

T2: 108 N·m (11.0 kgf·m, 80 ft·lb)

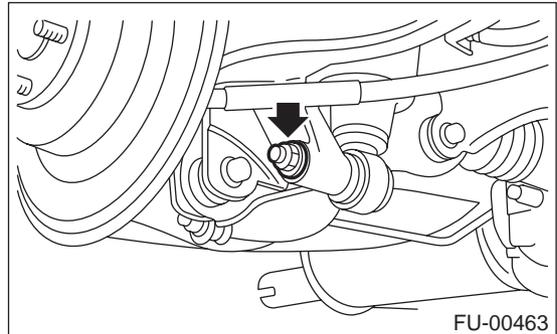
T3: 66 N·m (6.7 kgf·m, 48 ft·lb)



(2) Tighten the bolt which holds rear shock absorber to rear suspension arm. <Ref. to RS-11, INSTALLATION, Rear Arm.>

Tightening torque:

157 N·m (16 kgf·m, 116 ft·lb)

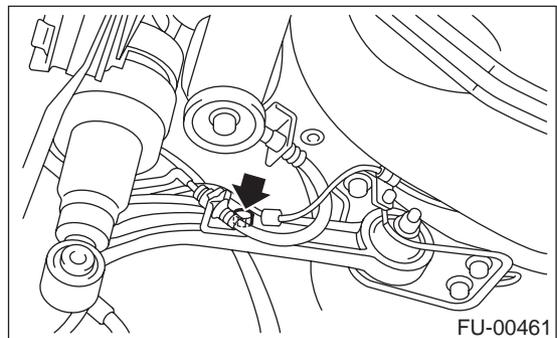


8) Install the rear brake caliper. <Ref. to BR-29, INSTALLATION, Rear Disc Brake Assembly.>

9) Tighten the bolt which holds rear brake hoses holding bracket.

Tightening torque:

33 N·m (3.4 kgf·m, 25 ft·lb)



10) Install the parking brake cable to cabin by forcibly pushing it forward.

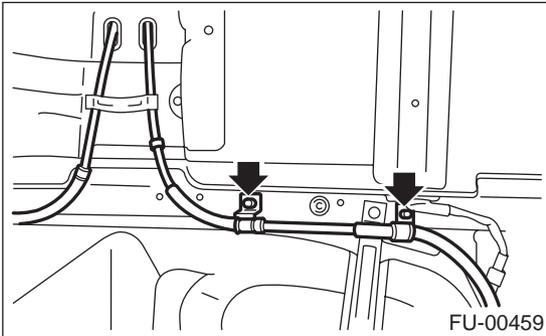
FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

11) Tighten the bolts which hold parking brake cable holding bracket.

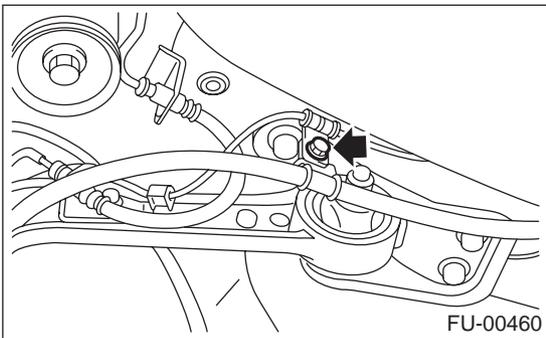
Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

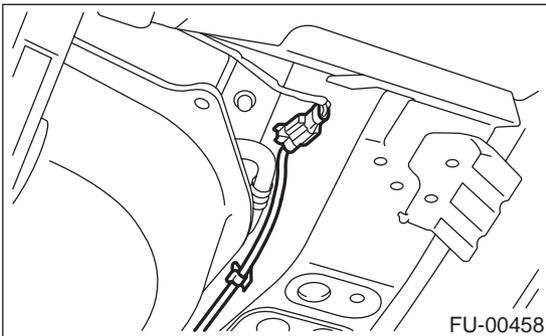


Tightening torque:

32 N·m (3.3 kgf-m, 23.9 ft-lb)



12) Connect the connector to ABS sensor.



13) Install the propeller shaft. <Ref. to DS-15, INSTALLATION, Propeller Shaft.>

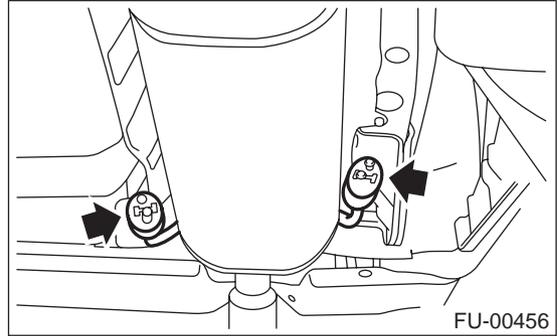
14) Install the rear exhaust pipe and muffler.

NOTE:

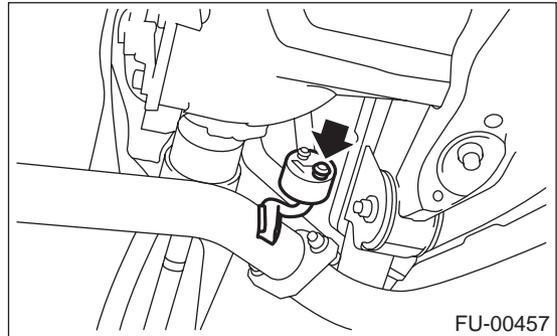
To facilitate the procedure, apply a coat of SUBARU CRC to matching area of the rubber cushions in advance.

SUBARU CRC (Part No. 004301003)

(1) Install the right and left rubber cushions.



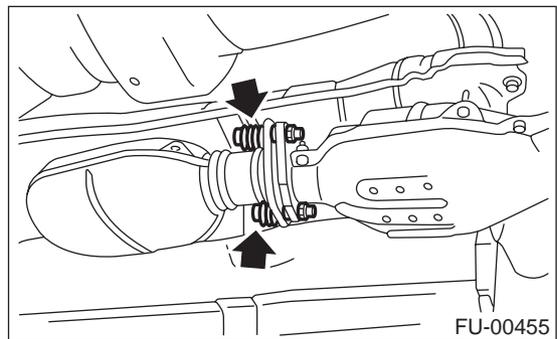
(2) Install the front rubber cushion and attach muffler assembly.



(3) Install the rear exhaust pipe to center exhaust pipe.

Tightening torque:

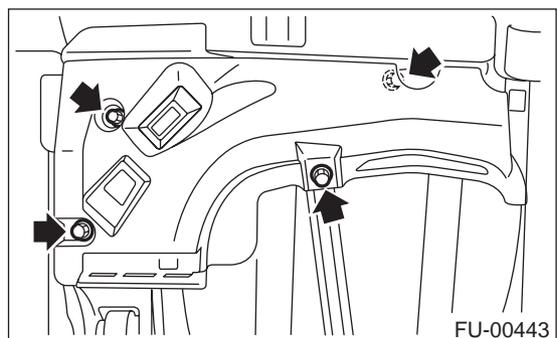
18 N·m (1.8 kgf-m, 13.0 ft-lb)



15) Install the front side protector.

Tightening torque:

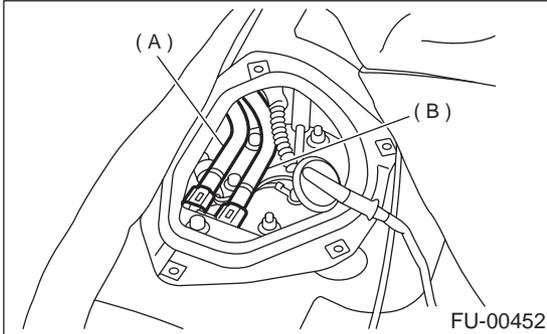
18 N·m (1.8 kgf-m, 13.0 ft-lb)



FUEL TANK

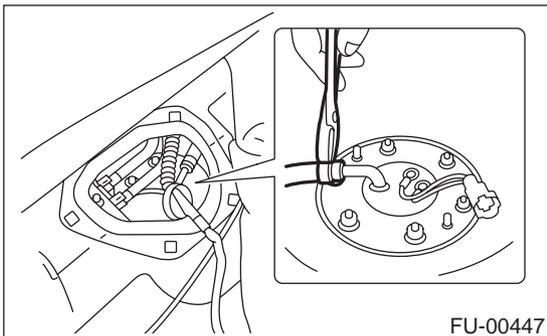
FUEL INJECTION (FUEL SYSTEMS)

- 16) Install the rear wheel.
- 17) Lower the vehicle.
- 18) Tighten the wheel nuts to rear wheel.
- 19) Install the parking brake cable. <Ref. to PB-7, INSTALLATION, Parking Brake Cable.>
- 20) Install the console box. <Ref. to EI-34, INSTALLATION, Console Box.>
- 21) Connect the fuel hoses, and then hold them with the quick connector. <Ref. to FU(H4DOSTC)-68, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

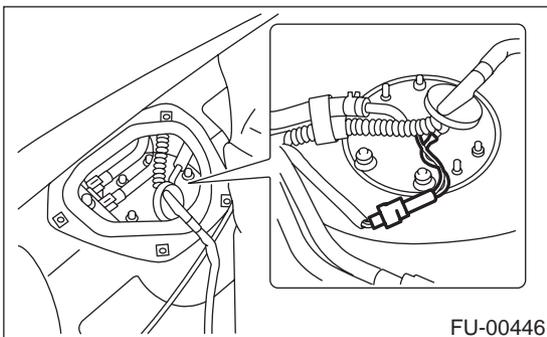


- (A) Delivery hose
(B) Return hose

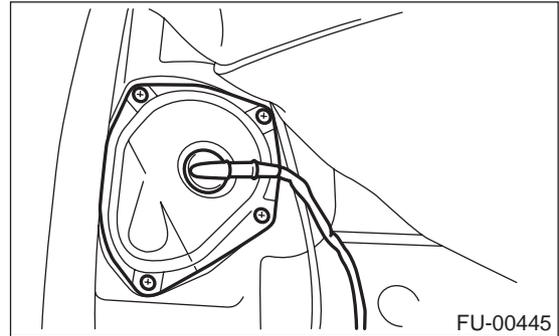
- 22) Connect the fuel jet pump hose.



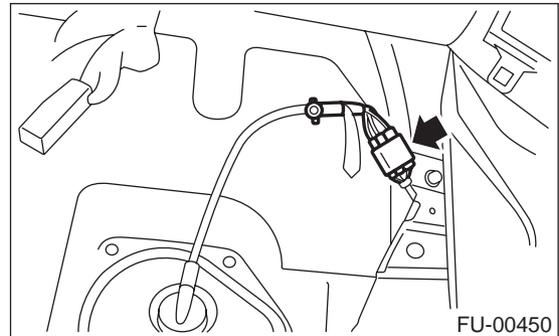
- 23) Connect the connector to fuel sub level sensor.



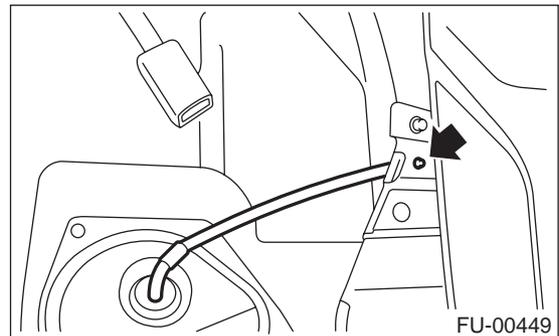
- 24) Install the sub service hole cover.



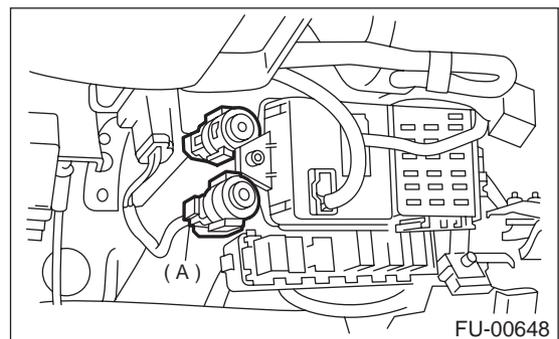
- 25) Connect the connectors to fuel tank cord, and then plug the service hole with grommet.



- 26) Install the holder clip which secures fuel tank cord on bracket.



- 27) Set the rear seat and floor mat.
- 28) Connect the connector to fuel pump relay (A).



- 29) Adjust the parking brake lever stroke. <Ref. to PB-6, ADJUSTMENT, Parking Brake Lever.>

FUEL TANK

FUEL INJECTION (FUEL SYSTEMS)

30) Check the wheel alignment and adjust if necessary. <Ref. to FS-6, INSPECTION, Wheel Alignment.>

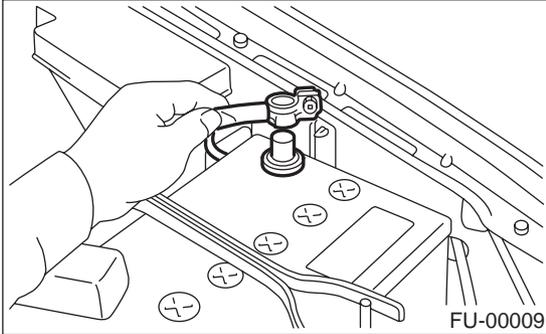
C: INSPECTION

- 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.

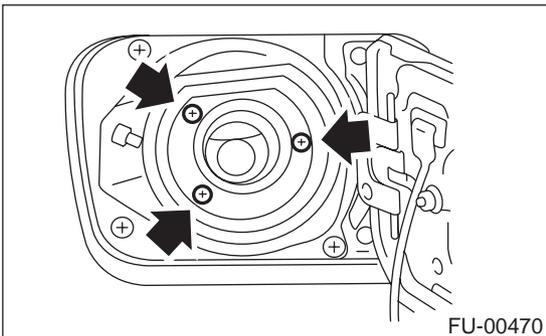
21. Fuel Filler Pipe

A: REMOVAL

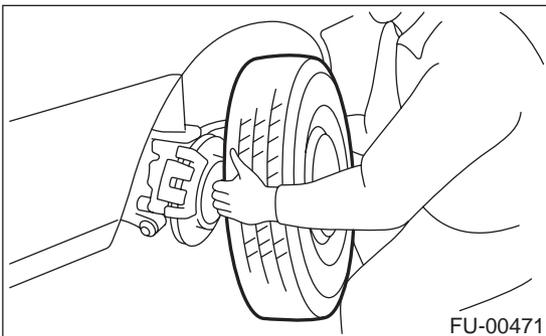
- 1) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 2) Open the fuel filler flap lid, and then remove the filler cap.
- 3) Disconnect the ground cable from battery.



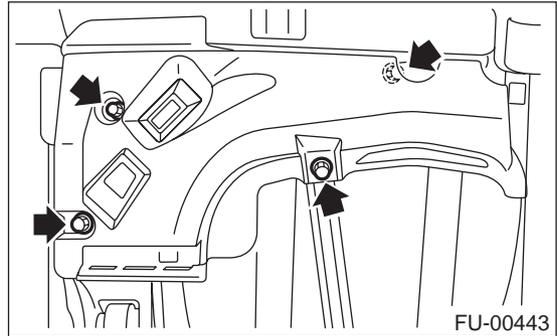
- 4) Remove the screws holding packing in place.



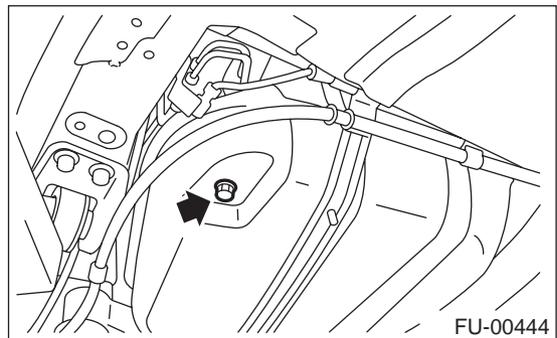
- 5) Lift-up the vehicle.
- 6) Remove the rear right side wheel nuts.
- 7) Remove the wheel RH (Rear).



- 8) Remove the protector RH (Front).

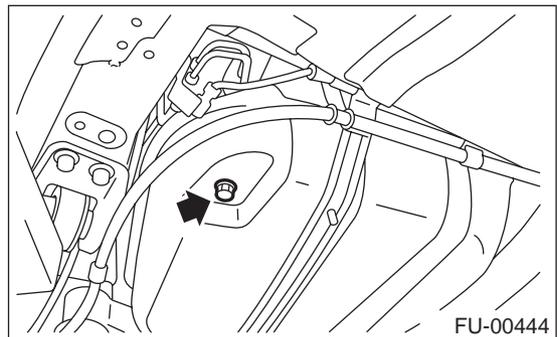


- 9) Drain fuel from fuel tank. Set a container under the vehicle, and then remove the drain plug from fuel tank.

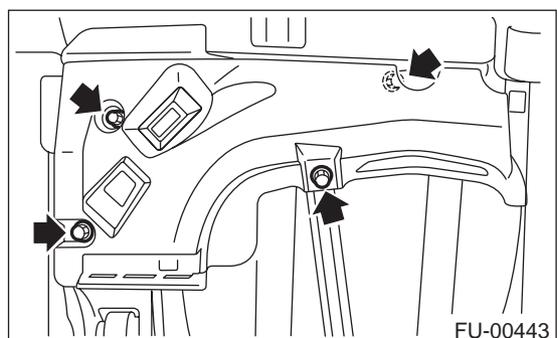


- 10) Tighten the fuel drain plug, and then install the protector RH (Front).

Tightening torque:
26 N·m (2.65 kg-m, 19.2 ft-lb)



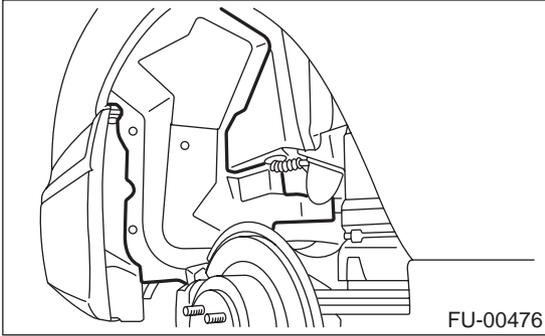
Tightening torque:
18 N·m (1.8 kg-m, 13.0 ft-lb)



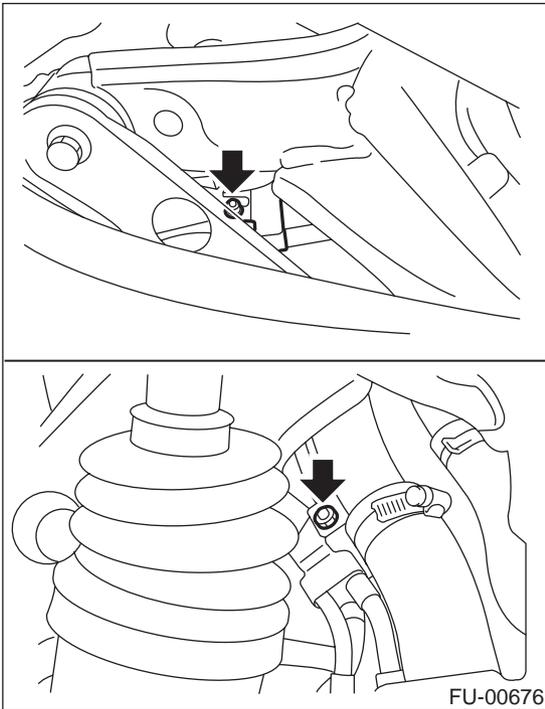
FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

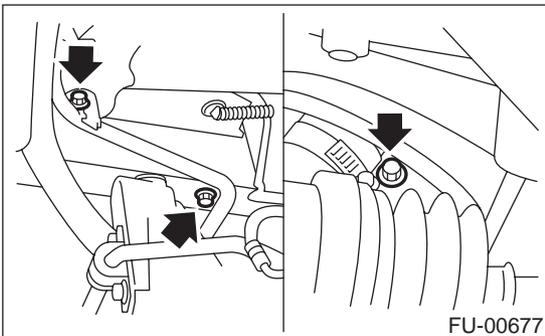
11) Remove the fuel filler pipe protector.



12) Remove the bolts which hold evaporation pipe bracket on fuel filler pipe.

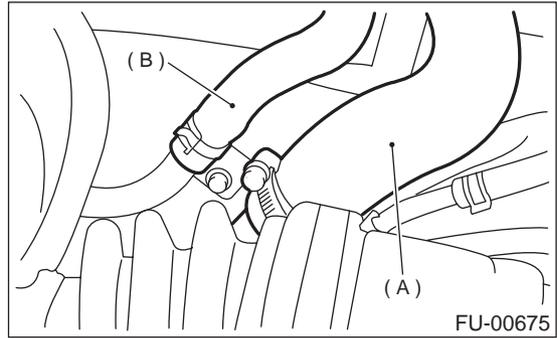


13) Remove the bolts which hold fuel filler pipe bracket on body.



14) Loosen the clamp, and then separate the fuel filler hose (A) from fuel filler pipe.

15) Move the clip, and then separate the air vent hose (B).

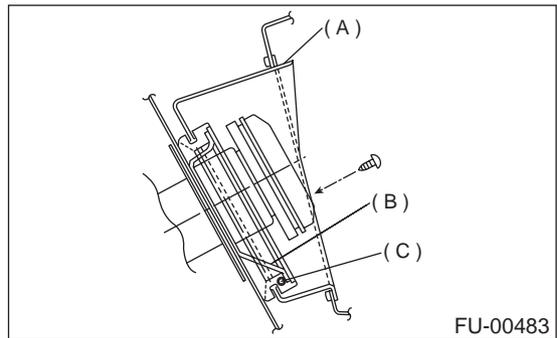


16) Remove the fuel filler pipe to under side of the vehicle.

B: INSTALLATION

1) Hold the fuel filler flap open.

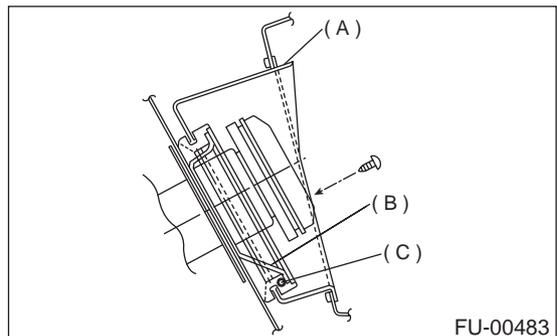
2) Set the fuel saucer (A) with rubber packing (C), and then insert the fuel filler pipe into hole from the inner side of apron.



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

NOTE:

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



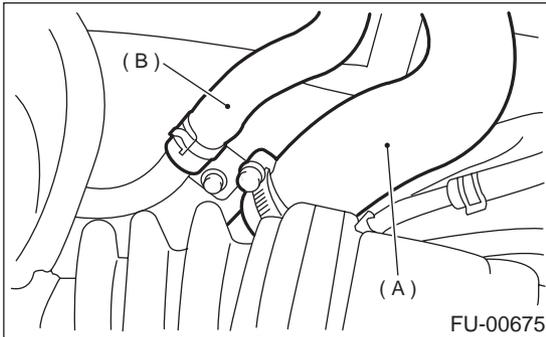
FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

4) 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 then tighten clamp.

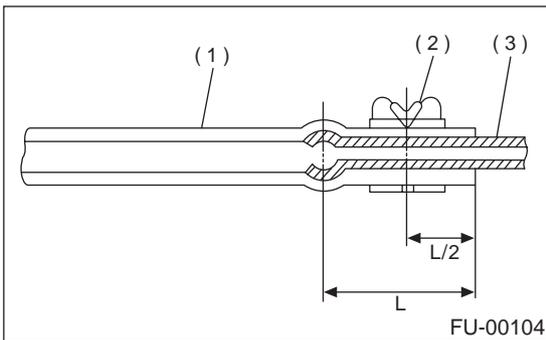
NOTE:

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



5) 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.

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

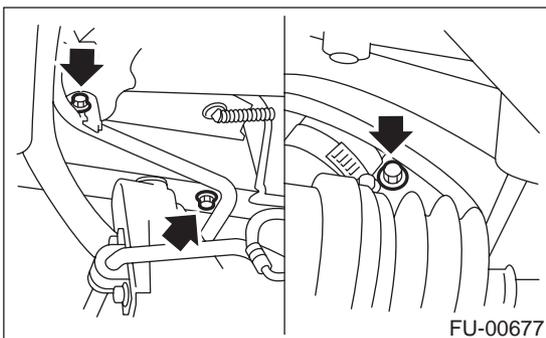


- (1) Hose
- (2) Clip
- (3) Pipe

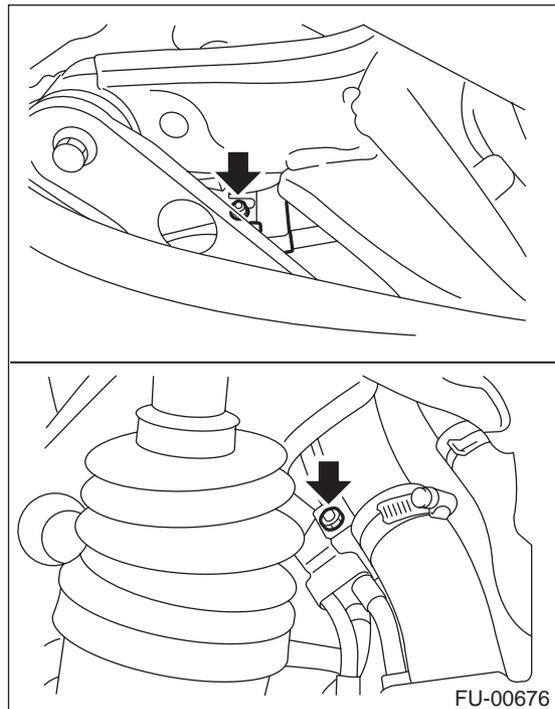
6) Tighten the bolt which holds fuel filler pipe bracket on body.

Tightening torque:

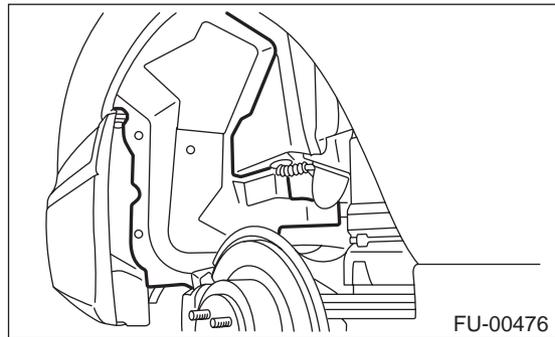
$7.4 \text{ N}\cdot\text{m (0.75 kg}\cdot\text{m, 5.4 ft}\cdot\text{lb)}$



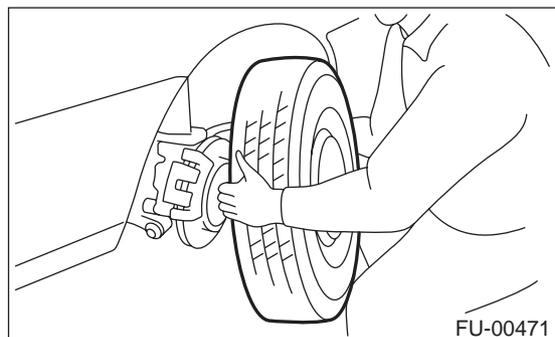
7) Tighten the bolts which hold evaporation pipe bracket on fuel pipe.



8) Install the fuel filler pipe protector.



9) Install the rear right wheel.



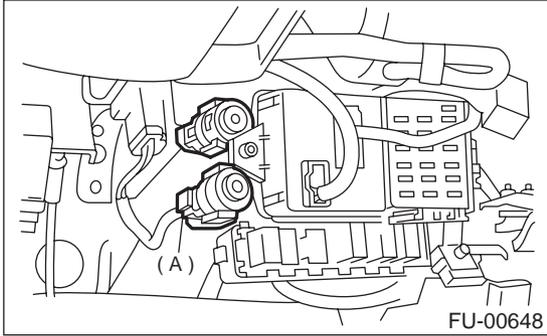
10) Lower the vehicle.

11) Tighten the wheel nuts.

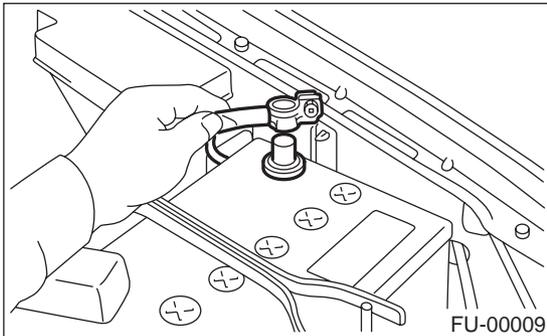
FUEL FILLER PIPE

FUEL INJECTION (FUEL SYSTEMS)

12) Connect the connector to fuel pump relay (A).



13) Connect the battery ground cable to battery.



22. Fuel Pump

A: REMOVAL

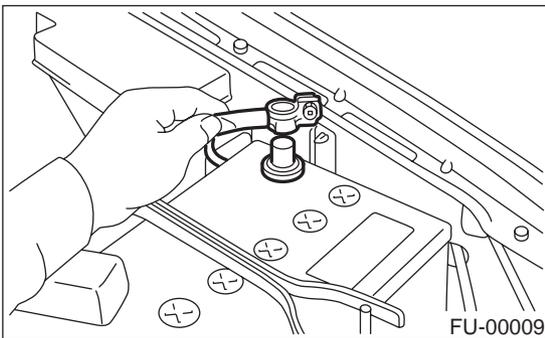
WARNING:

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

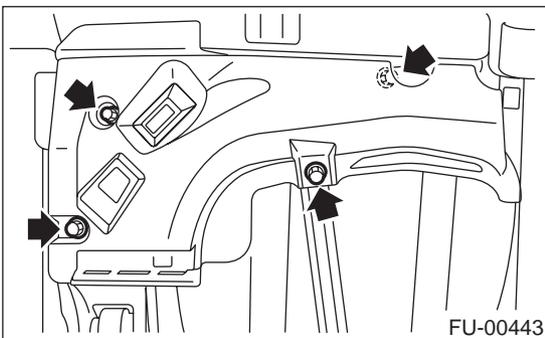
NOTE:

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

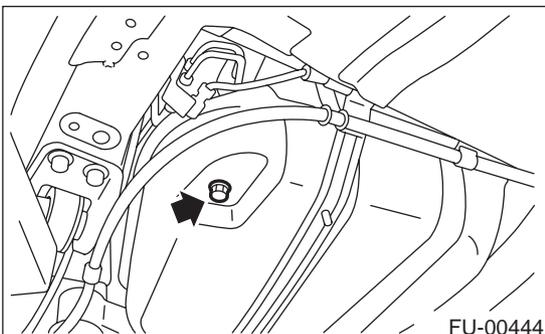
- 1) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 2) Open the fuel filler flap lid, and then remove the fuel filler cap.
- 3) Disconnect the ground cable from battery.



- 4) Lift-up the vehicle.
- 5) Remove the protector RH (Front).



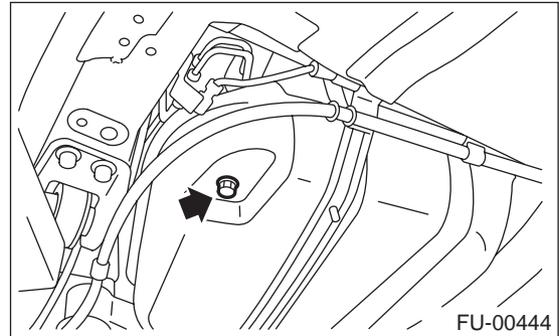
- 6) Drain the fuel from fuel tank. Set a container under the vehicle, and then remove the drain plug from fuel tank.



- 7) Tighten the fuel drain plug, and then install the protector RH (Front).

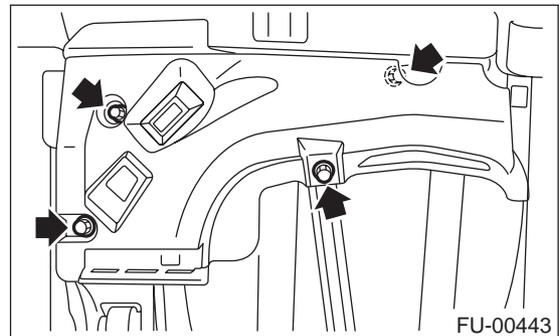
Tightening torque:

26 N·m (2.65 kgf-m, 19.2 ft-lb)

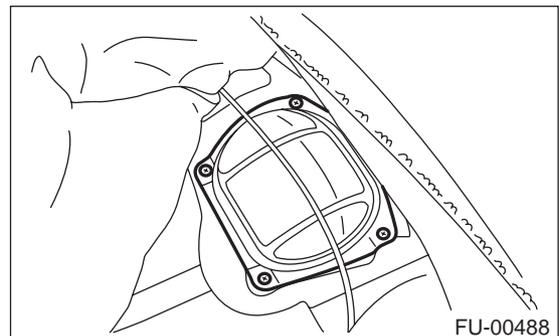


Tightening torque:

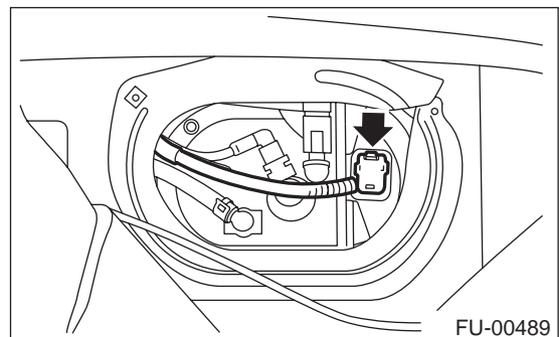
18 N·m (1.8 kgf-m, 13.0 ft-lb)



- 8) Raise the rear seat, and then turn the floor mat up.
- 9) Remove the access hole lid.



- 10) Disconnect the connector from fuel pump.

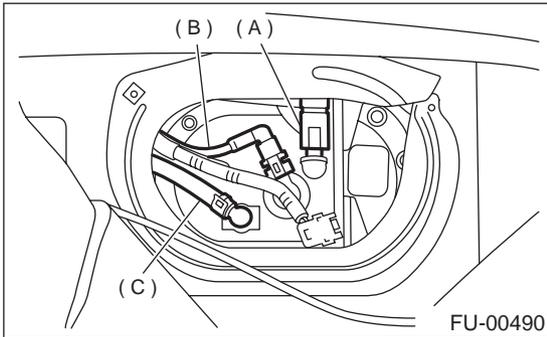


FUEL PUMP

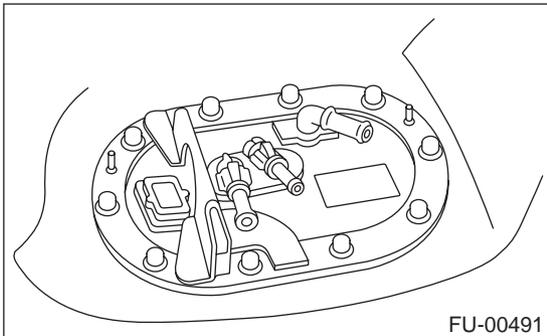
FUEL INJECTION (FUEL SYSTEMS)

11) Move the clips, and then disconnect the jet pump hose (C).

12) Disconnect the quick connector, and then disconnect the fuel delivery hose (A) and return hose (B). <Ref. to FU(H4DOSTC)-67, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>



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



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

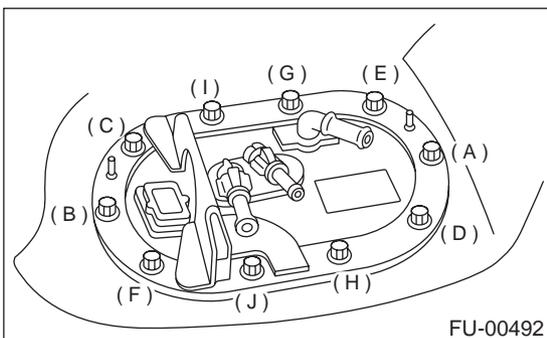
B: INSTALLATION

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

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

Tightening torque:

5.9 N·m (0.6 kgf·m, 4.3 ft·lb)

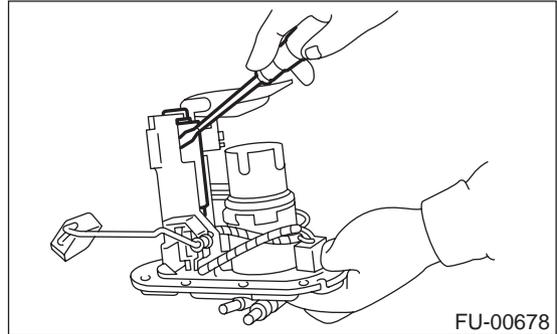


C: DISASSEMBLY

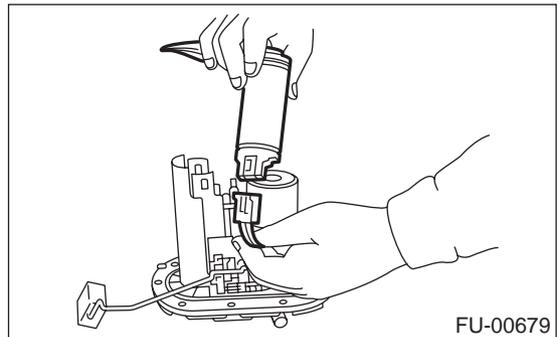
1) Remove the fuel pump and pump holder.

NOTE:

When disassembling the pump holder, be careful as it is installed with two pawls.



2) Disconnect the connector from fuel pump.



D: ASSEMBLY

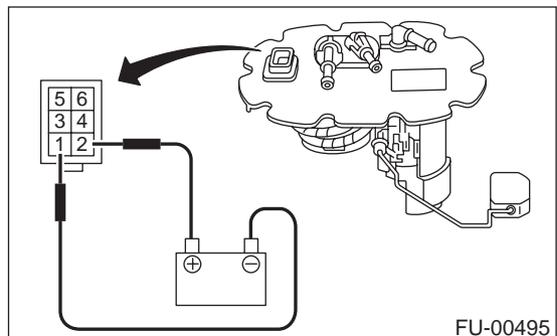
Assemble in the reverse order of disassembly.

E: INSPECTION

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

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 the battery side.
- Do not run the fuel pump for a long time under non-load condition.



23. Fuel Level Sensor

A: REMOVAL

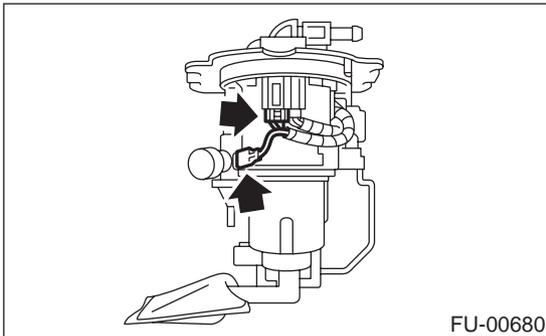
WARNING:

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

NOTE:

The fuel level sensor is built in fuel pump assembly.

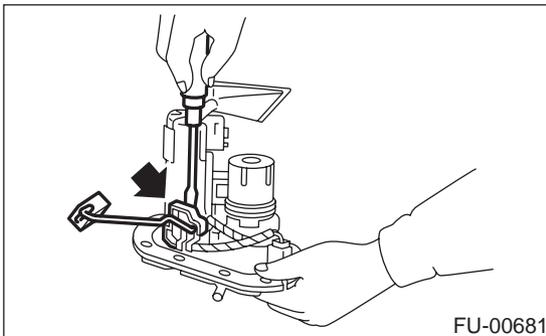
- 1) Remove the fuel pump assembly. <Ref. to FU(H4DOSTC)-59, REMOVAL, Fuel Pump.>
- 2) Disconnect the connector from fuel pump bracket.



- 3) Pushing the pawls with a screwdriver, remove the fuel meter unit by pulling it downwards.

NOTE:

Replace the fuel filter pawls with new ones as they might brake when removed.

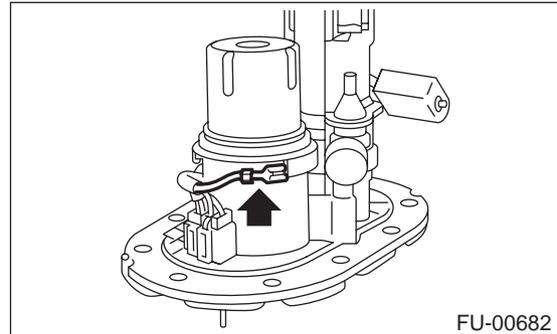


B: INSTALLATION

Install in the reverse order of removal.

WARNING:

- Ground cable must be connected.
- Spark may occur and ignite if fuel is nearby.



FUEL SUB LEVEL SENSOR

FUEL INJECTION (FUEL SYSTEMS)

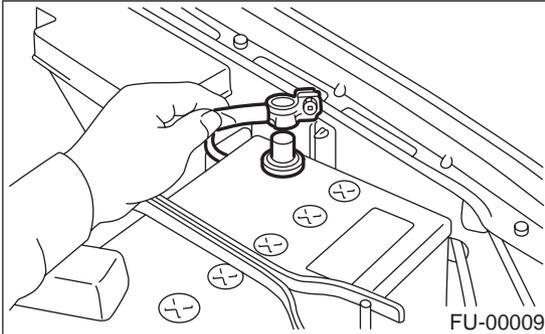
24. Fuel Sub Level Sensor

A: REMOVAL

WARNING:

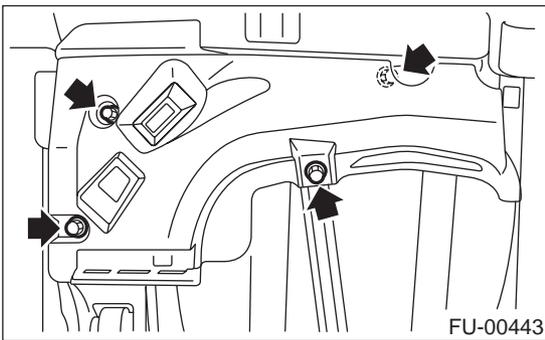
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel on the floor.

1) Disconnect the ground cable from battery.

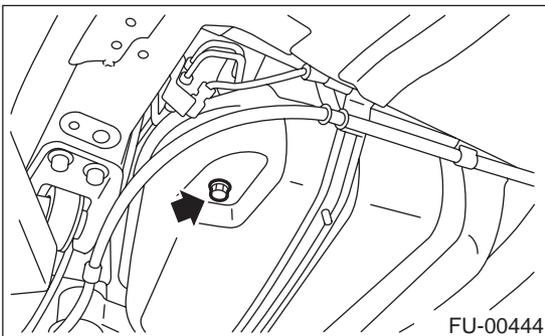


2) Lift-up the vehicle.

3) Remove the front side fuel tank cover.



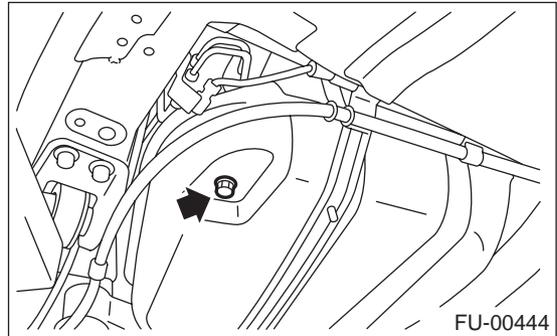
4) Drain fuel from fuel tank. Set a container under the vehicle, and then remove the drain plug from fuel tank.



5) Tighten the fuel drain plug and install the protector RH (Front).

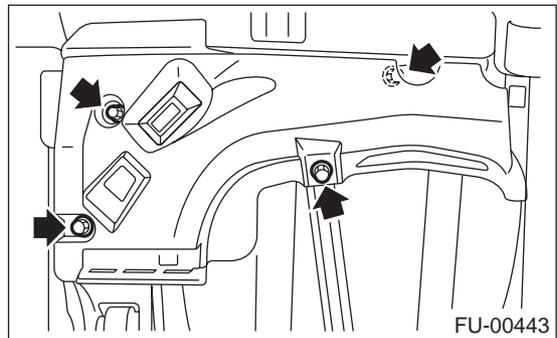
Tightening torque:

26 N·m (2.65 kgf-m, 19.2 ft-lb)



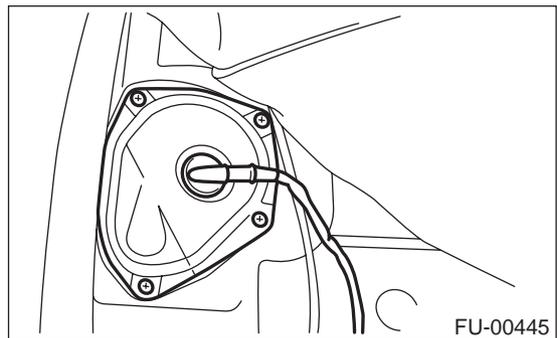
Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

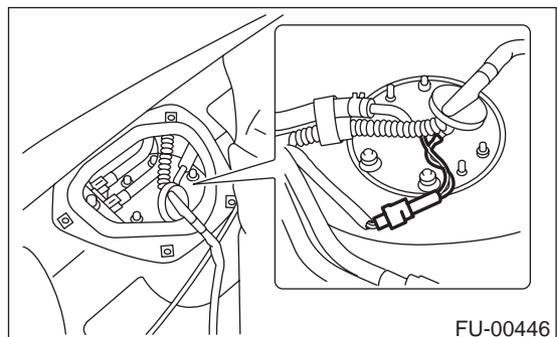


6) Remove the rear seat.

7) Remove the service hole cover.



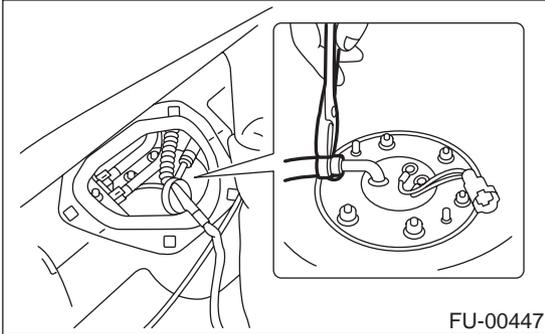
8) Disconnect the connector from fuel sub level sensor.



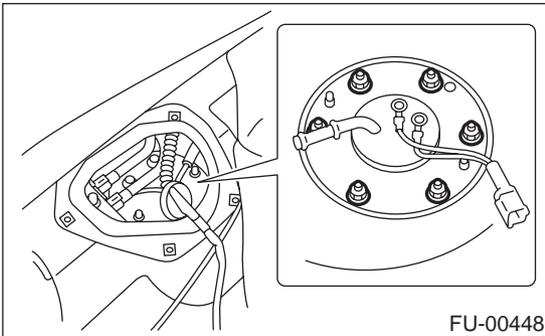
FUEL SUB LEVEL SENSOR

FUEL INJECTION (FUEL SYSTEMS)

9) Disconnect the fuel jet pump hose.



10) Remove the bolts which install fuel sub level sensor on fuel tank.



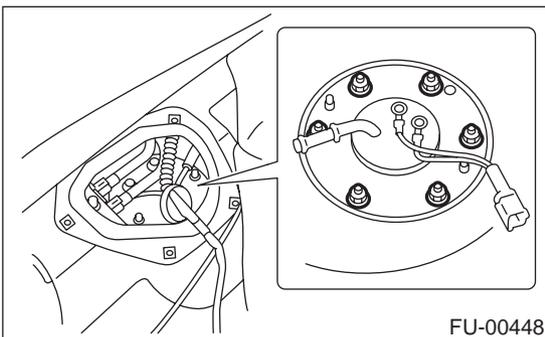
11) Remove the fuel sub level sensor.

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

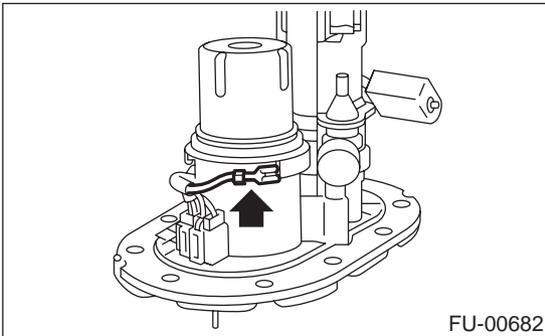
WARNING:

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

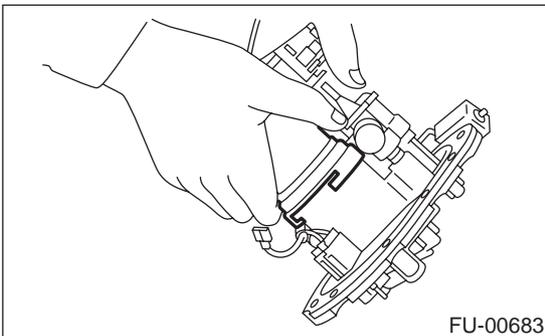
NOTE:

The fuel filter is built in fuel pump assembly.

- 1) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 2) Remove the fuel pump assembly. <Ref. to FU(H4DOSTC)-59, REMOVAL, Fuel Pump.>
- 3) Disconnect the ground cable from filter holder.



- 4) Remove the filter holder by turning it to the left from the body pawls, and then take out the filter.

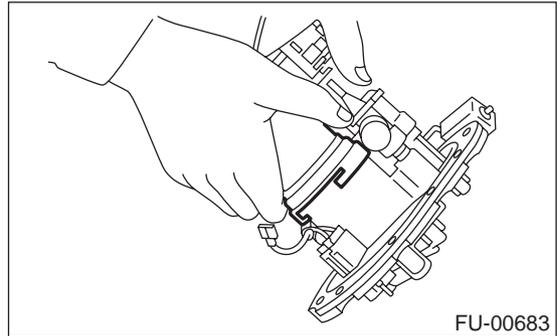


B: INSTALLATION

NOTE:

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

- 1) Set the O-ring on the filter holder, and then install by turning to the right.



- 2) Install the fuel pump assembly. <Ref. to FU(H4DOSTC)-60, INSTALLATION, Fuel Pump.>

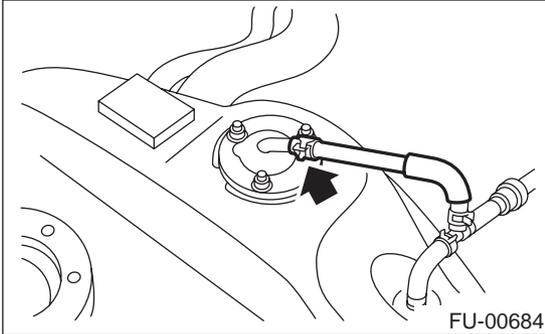
C: INSPECTION

- 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.

26. Fuel Cut Valve

A: REMOVAL

- 1) Remove the fuel tank. <Ref. to FU(H4DOSTC)-47, REMOVAL, Fuel Tank.>
- 2) Move the clip, and then disconnect the evaporation hose from fuel cut valve.



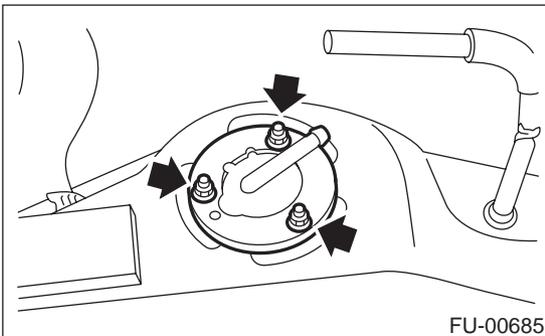
- 3) Remove the bolts which install fuel cut valve.

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

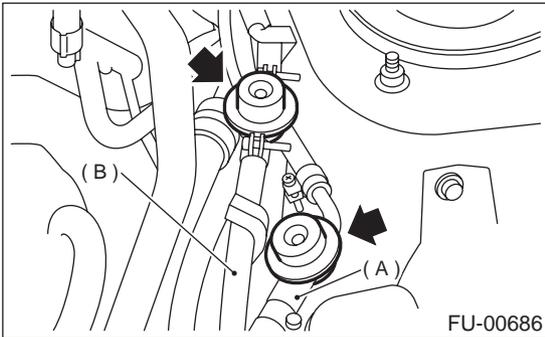
FUEL INJECTION (FUEL SYSTEMS)

27. Fuel Damper Valve

A: REMOVAL

1) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>

2) Remove the fuel damper valve from fuel delivery line (A) and return line (B).



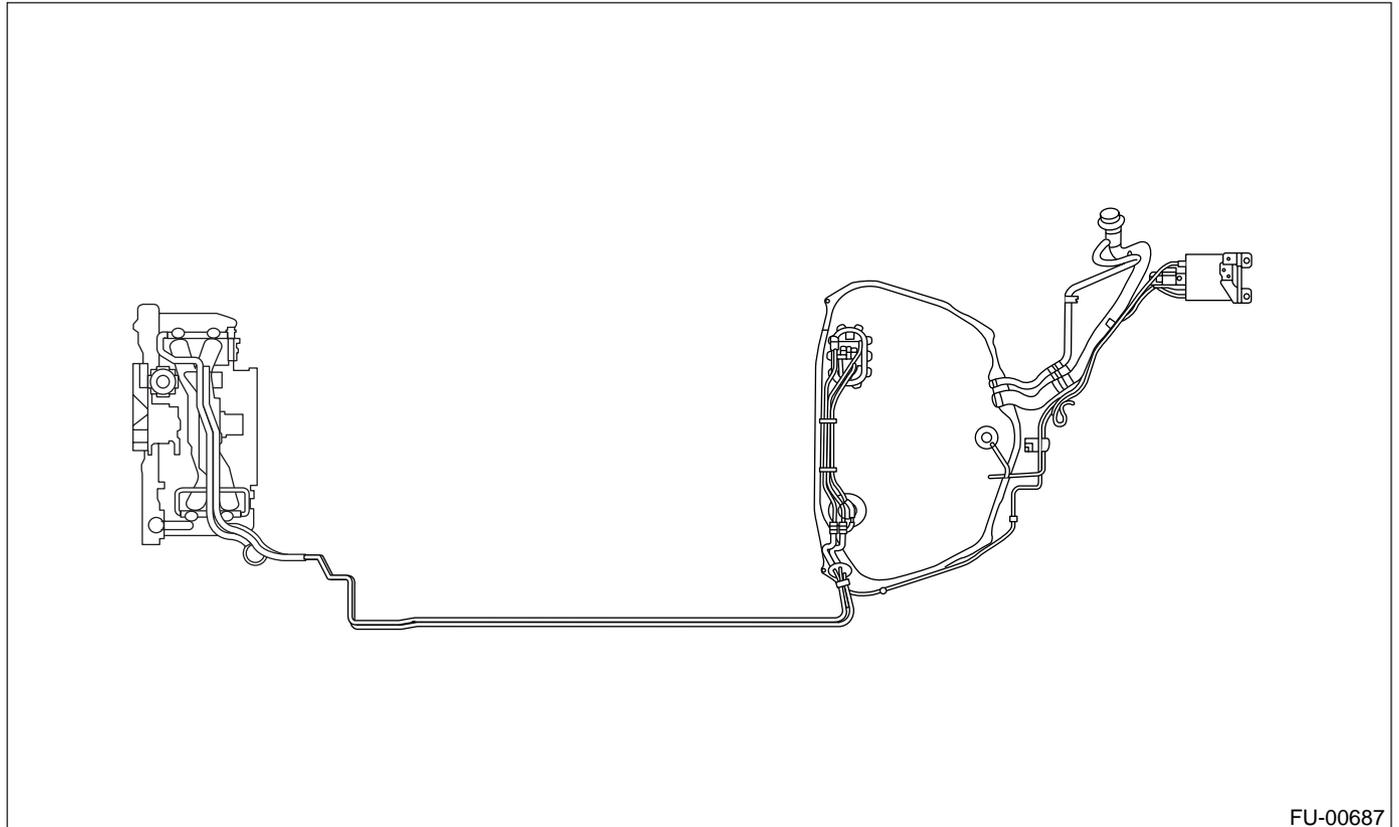
B: INSTALLATION

Install in the reverse order of removal.

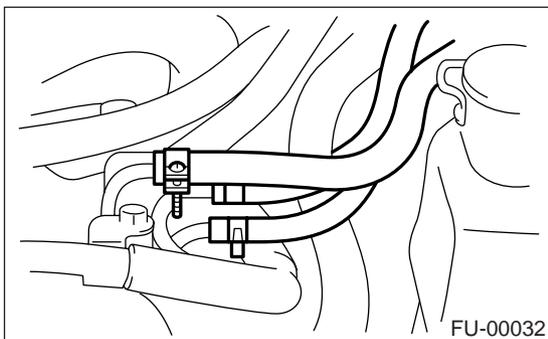
28. Fuel Delivery, Return and Evaporation Lines

A: REMOVAL

- 1) Set the vehicle on the lift.
- 2) Release the fuel pressure. <Ref. to FU(H4DOSTC)-44, RELEASING OF FUEL PRESSURE, OPERATION, Fuel.>
- 3) Open the fuel filler flap lid, and then remove the fuel filler cap.
- 4) Remove the floor mat. <Ref. to EI-48, REMOVAL, Floor Mat.>
- 5) Remove the fuel delivery pipes and hoses, fuel return pipes and hoses, evaporation pipes and hoses.

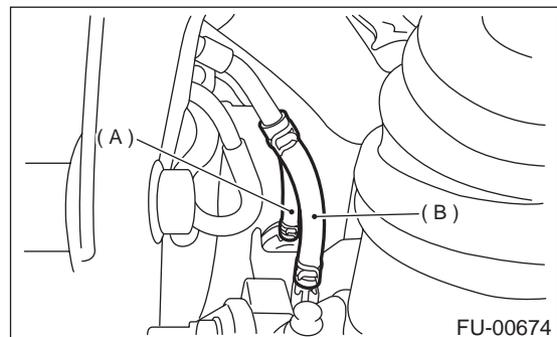


- 6) In engine compartment, detach the fuel delivery hoses, return hoses and evaporation hose.



- 7) Lift-up the vehicle.

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



FUEL DELIVERY, RETURN AND EVAPORATION LINES

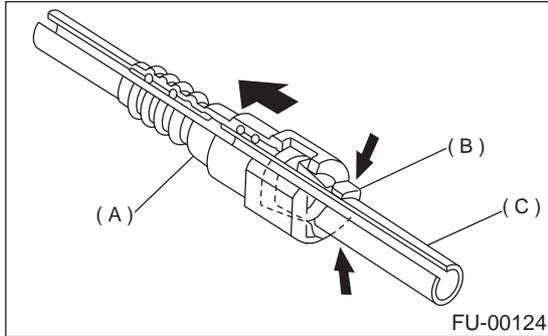
FUEL INJECTION (FUEL SYSTEMS)

9) Separate the quick connector on fuel delivery and return 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).

NOTE:

Replace the retainer with new ones.



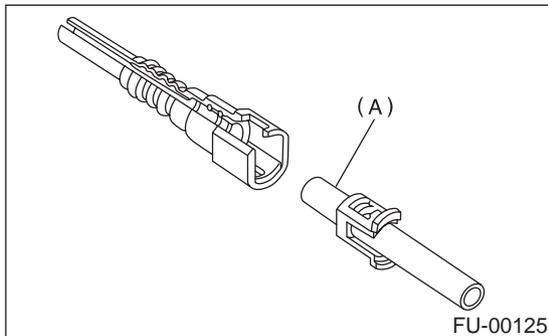
- (A) Connector
- (B) Retainer
- (C) Pipe

B: INSTALLATION

1) Connect the quick connector on fuel delivery and return 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.

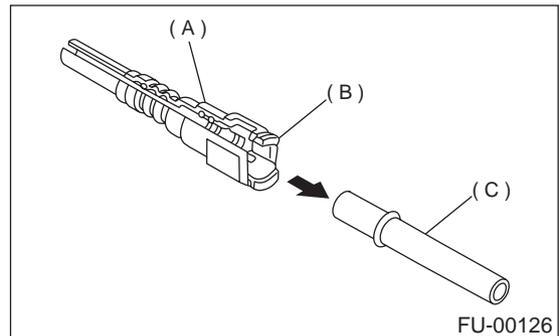


- (A) Seal surface

- (1) Set a new retainer (B) to connector (A).
- (2) Push the pipe into connector completely.

NOTE:

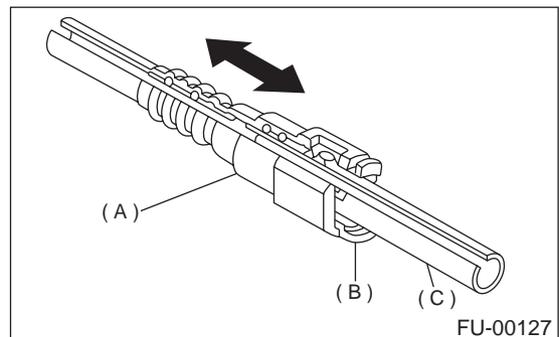
At this time, two clicking sounds are heard.



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

NOTE:

- 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 leakage of fuel.



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

FUEL DELIVERY, RETURN AND EVAPORATION LINES

FUEL INJECTION (FUEL SYSTEMS)

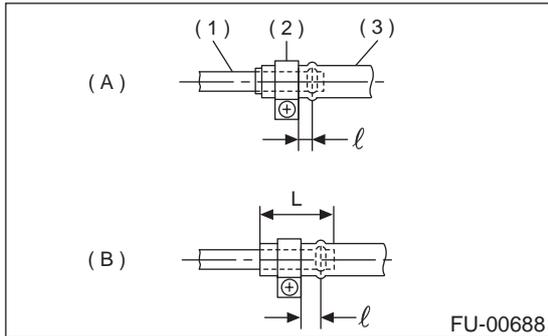
2) Connect the fuel delivery hose to pipe with an overlap of 20 to 25 mm (0.79 to 0.98 in).

Type A: When fitting length is specified.

Type B: When fitting length is not specified.

ℓ : 2.5 ± 1.5 mm (0.098 ± 0.059 in)

L : 22.5 ± 2.5 mm (0.886 ± 0.098 in)



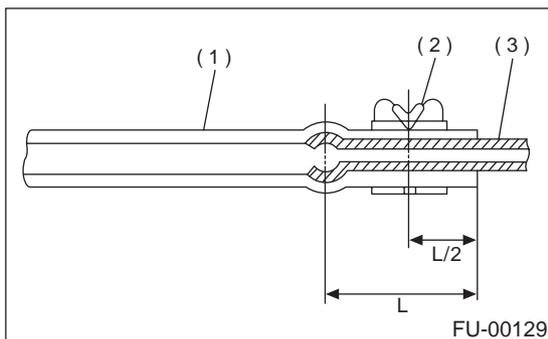
- (1) Fitting
- (2) Clamp
- (3) Hose
- (A) Type A
- (B) Type B

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

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

NOTE:

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 the 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 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 meter unit.	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 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.

- (1) 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 water which may have accumulated in the fuel filter and fuel tank in the manner same as that described under Affected areas below.

- (2) Affected areas

When water condensation is notched in the fuel filter, drain 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.