

General Description

FUEL INJECTION (FUEL SYSTEMS)

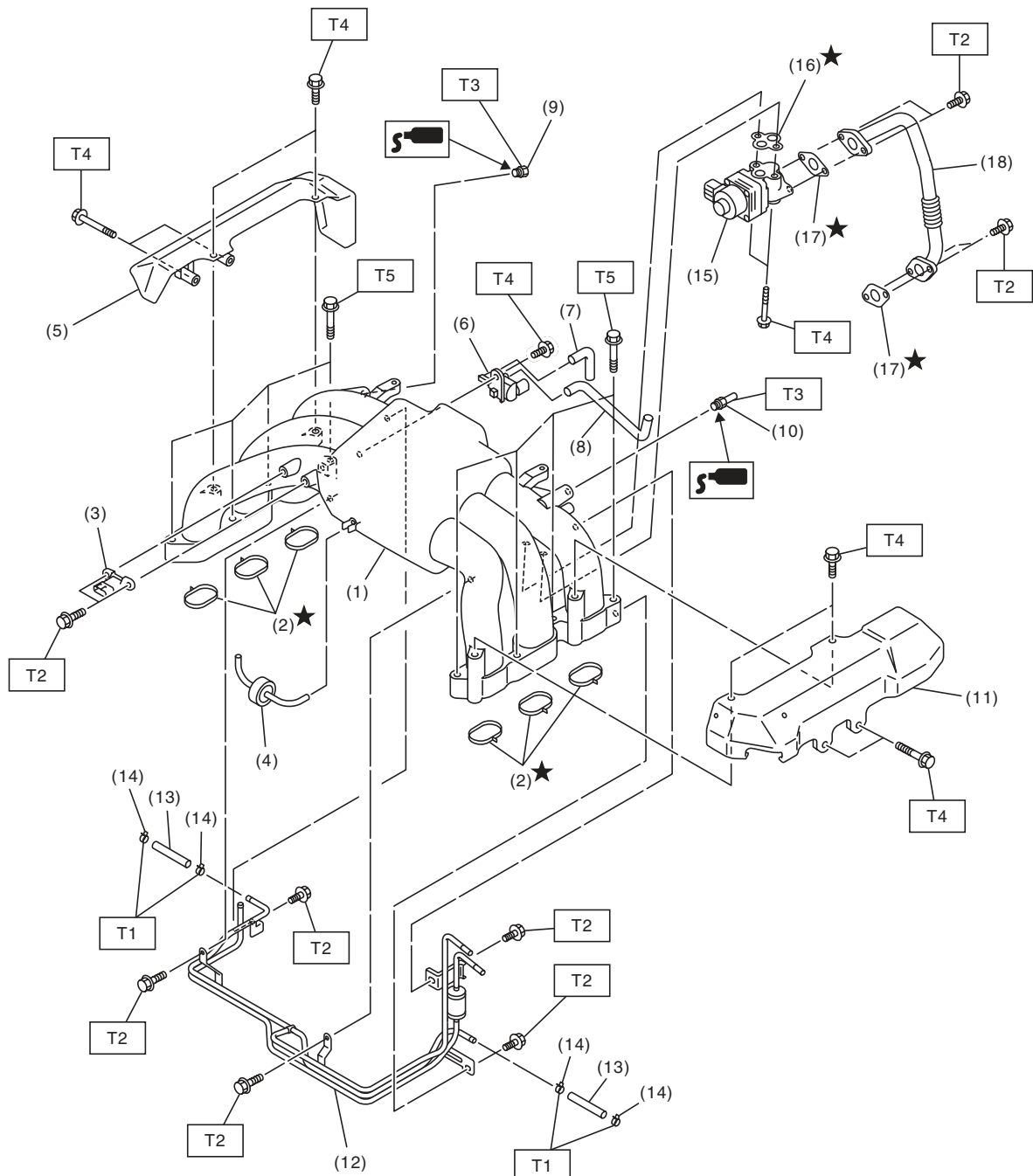
1. General Description

A: SPECIFICATION

Fuel tank	Capacity	64 ℓ (16.9 US gal, 14.1 Imp gal)
	Install locations	Under rear seat
Fuel pump	Type	Impeller
	Shutoff discharge pressure	550 — 850 kPa (5.61 — 8.67 kg/cm ² , 79.8 — 123.3 psi)
	Discharge rate	155 ℓ (41 US gal, 34.1 Imp gal)/h or more [12 V at 300 kPa (3.06 kg/cm ² , 43.5 psi)]
Fuel filter		In-tank type

B: COMPONENT

1. INTAKE MANIFOLD



FU-04042

FU(H6DO)-3

General Description

FUEL INJECTION (FUEL SYSTEMS)

- | | | |
|---------------------------------------|-----------------------------|---------------|
| (1) Intake manifold | (10) Nipple | (18) EGR pipe |
| (2) O-ring | (11) Fuel pipe protector LH | |
| (3) Manifold absolute pressure sensor | (12) Fuel pipe ASSY | |
| (4) Filter | (13) Hose | |
| (5) Fuel pipe protector RH | (14) Clamp | |
| (6) Purge control solenoid valve | (15) EGR valve | |
| (7) Hose | (16) Gasket | |
| (8) Hose | (17) Gasket | |
| (9) Plug | | |

Tightening torque:N-m (kgf-m, ft-lb)

T1: 1.25 (0.1, 0.9)

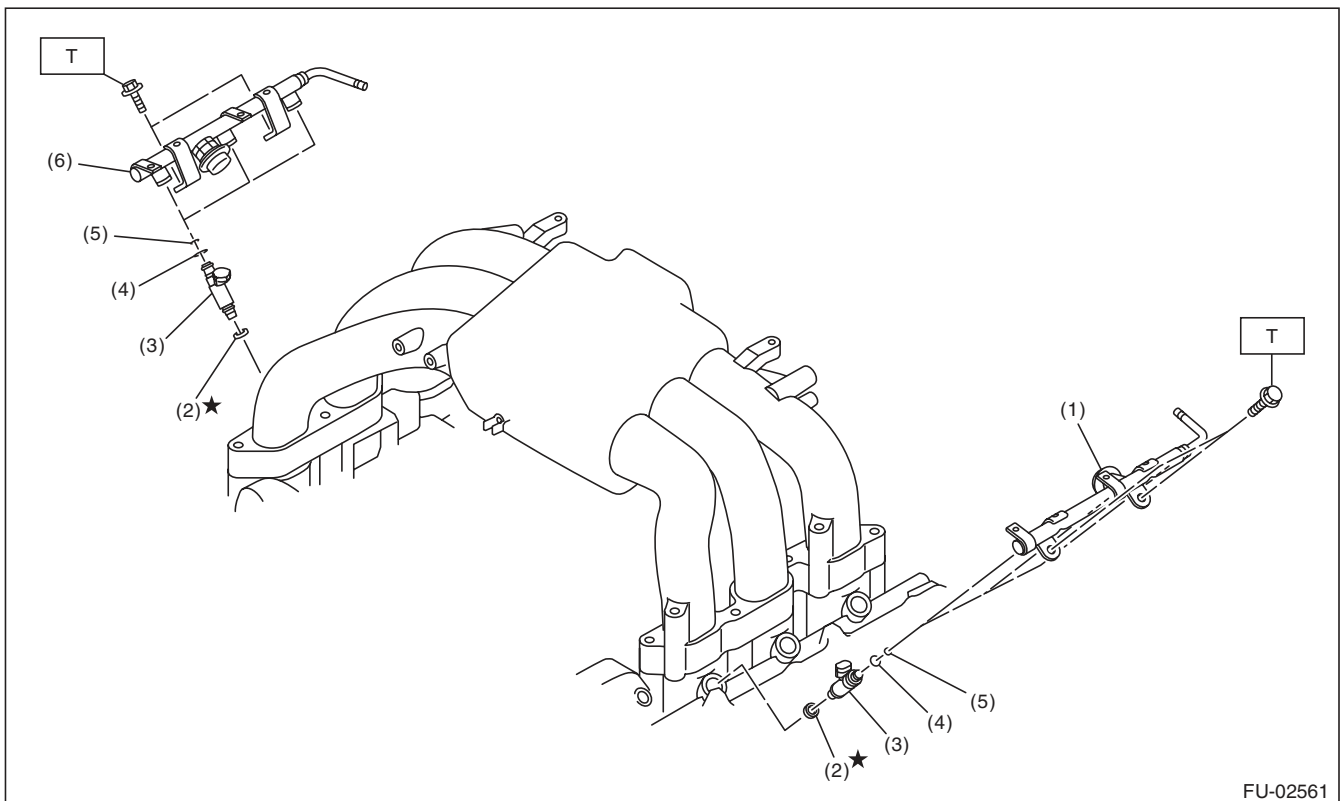
T2: 6.4 (0.7, 4.7)

T3: 17 (1.7, 12.5)

T4: 19 (1.9, 14.0)

T5: 25 (2.5, 18.4)

2. FUEL INJECTOR



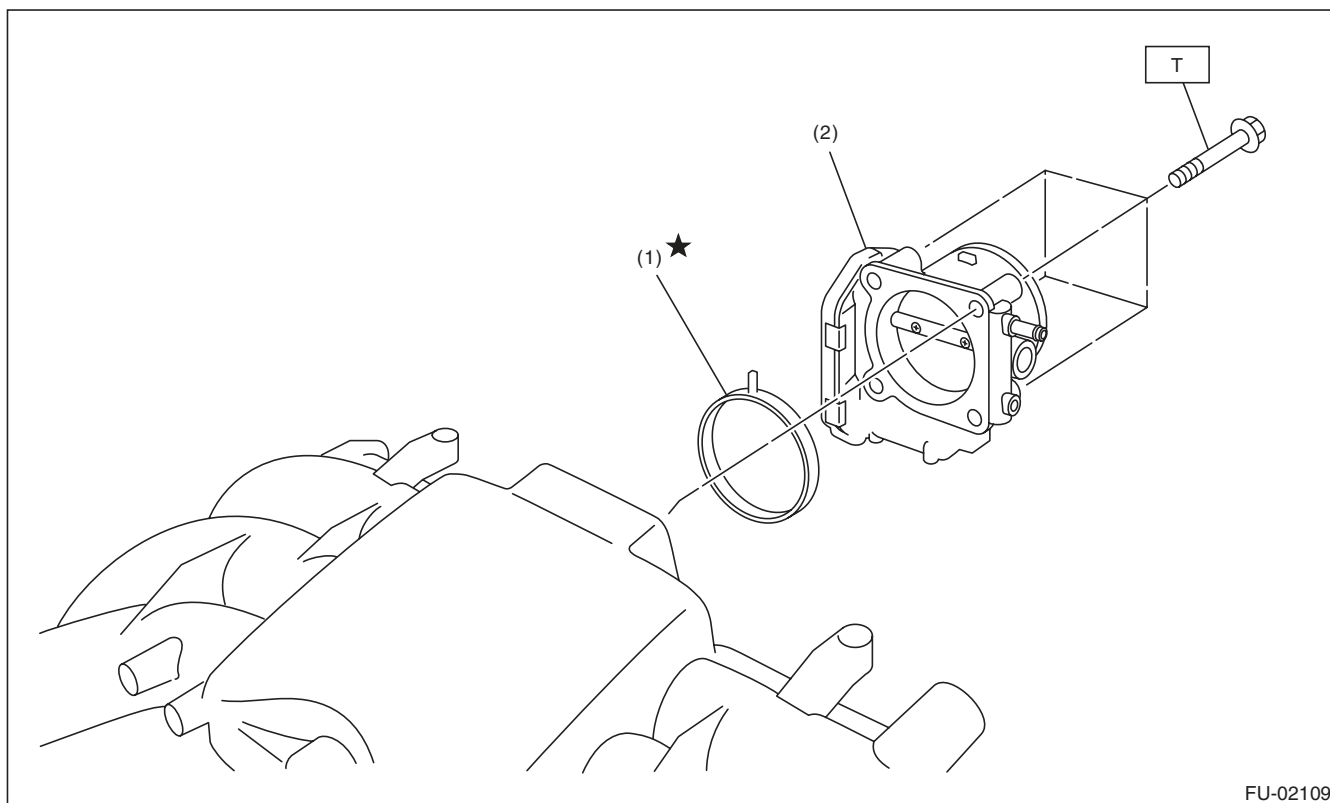
- | | |
|---------------------------|---------------------------|
| (1) Fuel injector pipe LH | (4) Injection rubber |
| (2) Insulator | (5) O-ring |
| (3) Fuel injector | (6) Fuel injector pipe RH |

Tightening torque:N-m (kgf-m, ft-lb)

T: 19 (1.9, 14.0)

FUEL INJECTION (FUEL SYSTEMS)

3. AIR INTAKE SYSTEM



(1) O-ring

(2) Throttle body

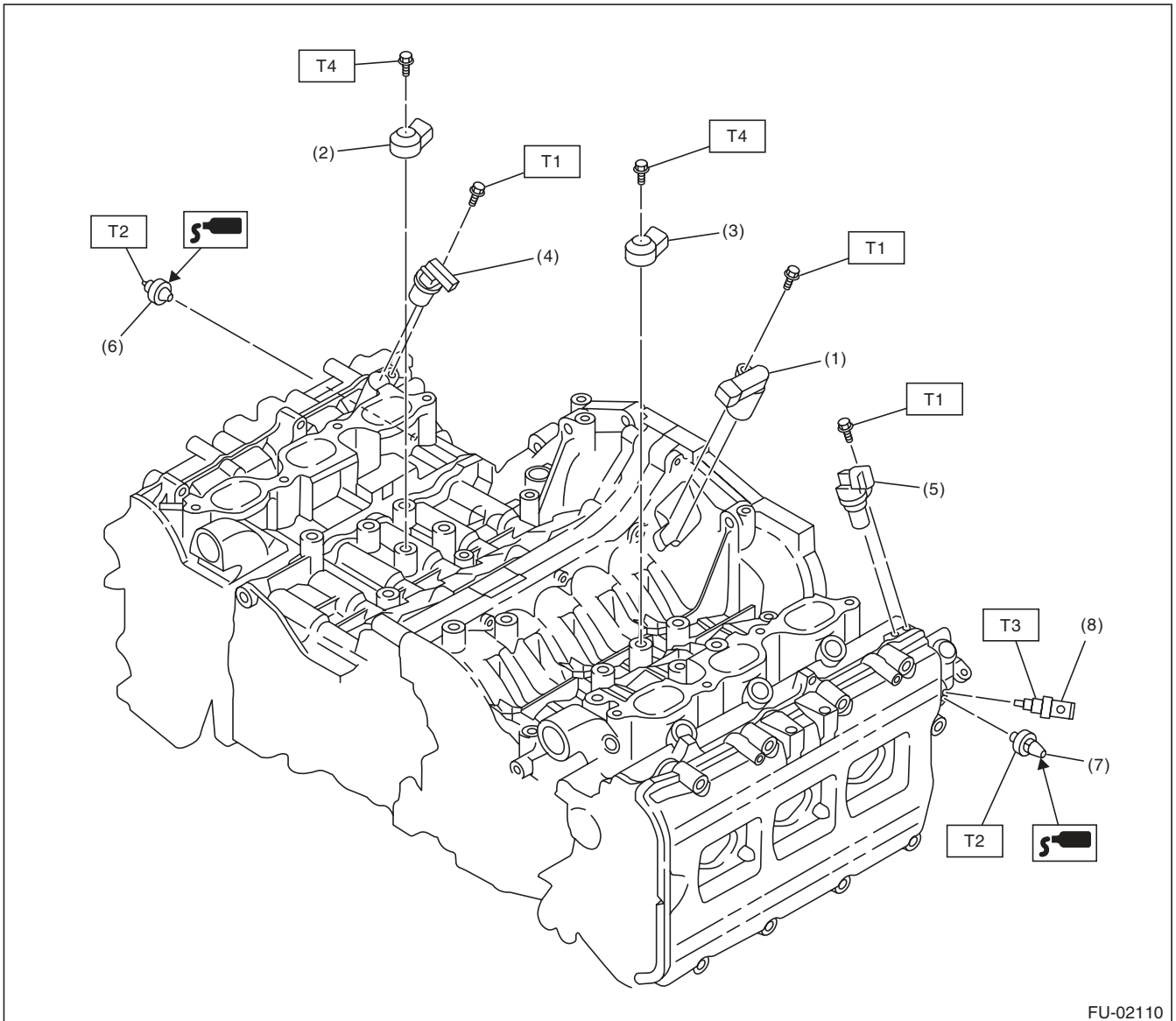
Tightening torque:N·m (kgf-m, ft-lb)

$T: 8 (0.8, 5.9)$

General Description

FUEL INJECTION (FUEL SYSTEMS)

4. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



FU-02110

- | | |
|---------------------------------|--|
| (1) Crankshaft position sensor | (6) Variable valve lift diagnosis oil pressure switch RH |
| (2) Knock sensor RH | (7) Variable valve lift diagnosis oil pressure switch LH |
| (3) Knock sensor LH | (8) Oil temperature sensor |
| (4) Camshaft position sensor RH | |
| (5) Camshaft position sensor LH | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 6.4 (0.7, 4.7)

T2: 17 (1.7, 12.5)

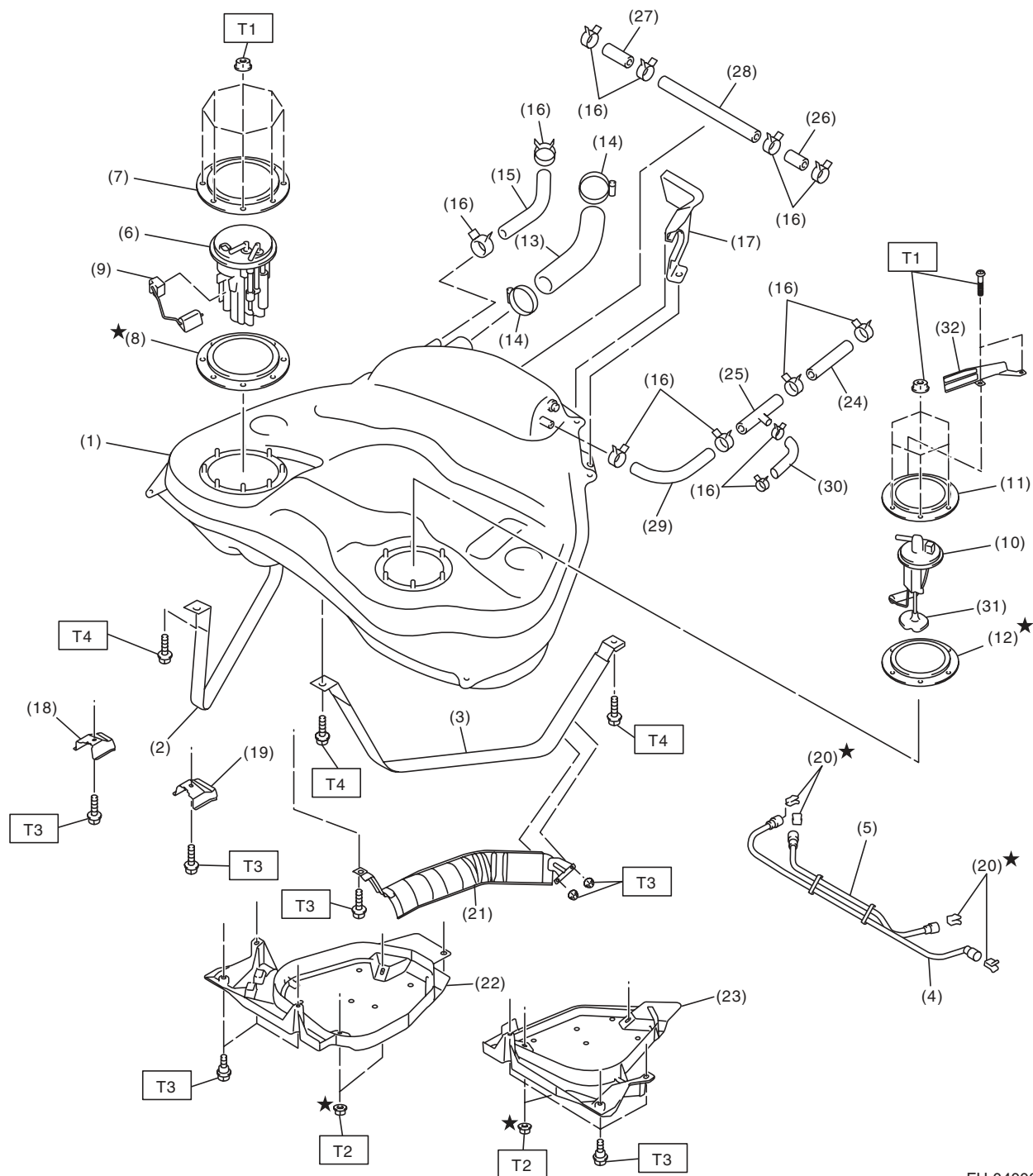
T3: 22 (2.2, 16.2)

T4: 25 (2.5, 18.4)

General Description

FUEL INJECTION (FUEL SYSTEMS)

5. FUEL TANK



FU-04000

FU(H6DO)-7

General Description

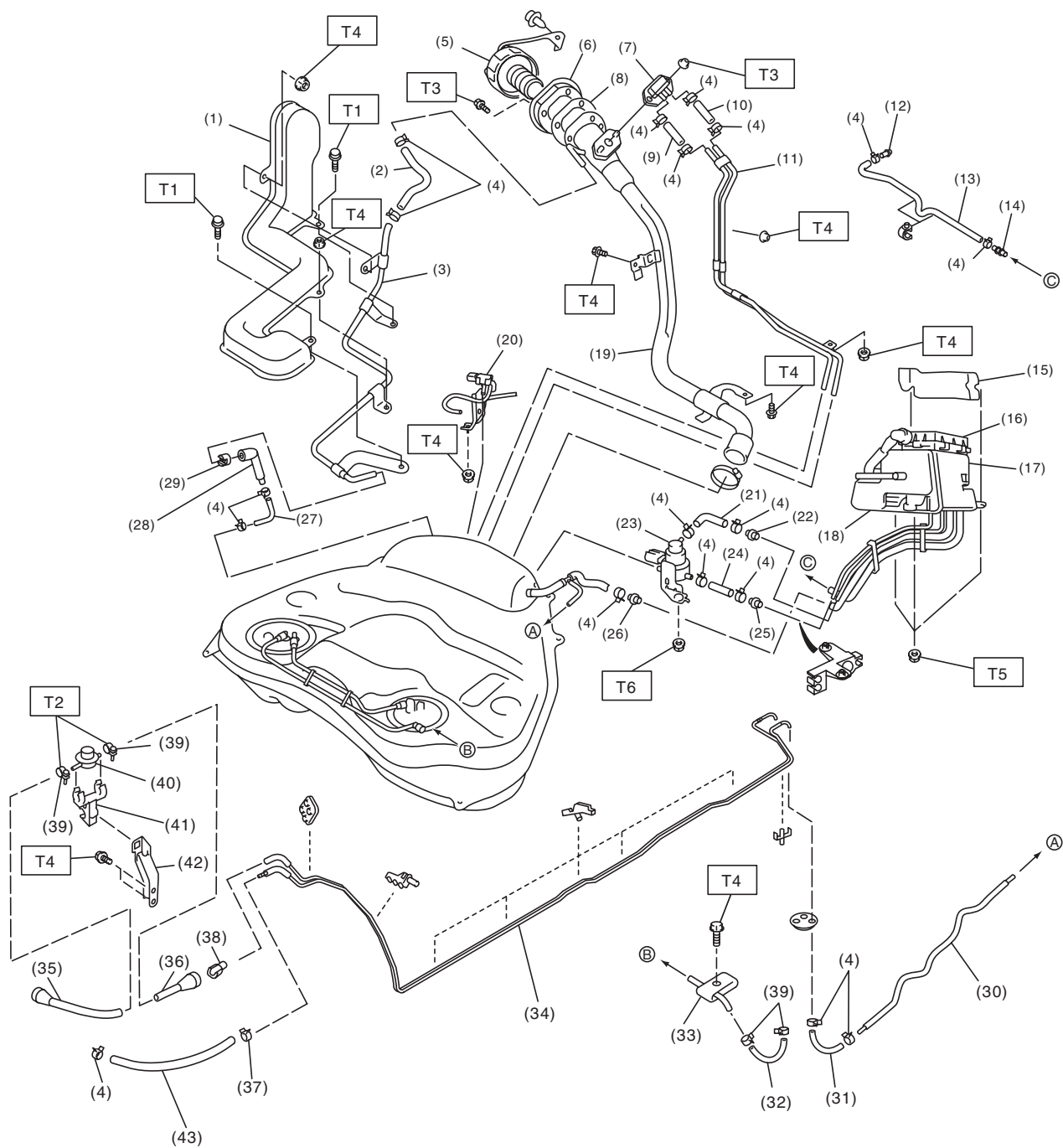
FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel tank	(14) Clamp	(27) Evaporation hose D
(2) Fuel tank band RH	(15) Evaporation hose A	(28) Evaporation pipe
(3) Fuel tank band LH	(16) Clip	(29) Evaporation hose E
(4) Delivery tube	(17) Fuel tank protector LH (Rear)	(30) Evaporation hose F
(5) Jet pump tube	(18) Stopper RH	(31) Fuel sub level sensor filter
(6) Fuel pump ASSY	(19) Stopper LH	(32) Fuel sub level sensor protector
(7) Fuel pump upper plate	(20) Retainer	
(8) Fuel pump gasket	(21) Heat shield cover	<i>Tightening torque:N·m (kgf-m, ft-lb)</i>
(9) Fuel level sensor	(22) Fuel tank protector RH (Front)	<i>T1: 4.4 (0.4, 3.2)</i>
(10) Fuel sub level sensor	(23) Fuel tank protector LH (Front)	<i>T2: 9 (0.9, 6.6)</i>
(11) Fuel sub level sensor upper plate	(24) Evaporation hose B	<i>T3: 17.5 (1.8, 12.9)</i>
(12) Fuel sub level sensor gasket	(25) Connector	<i>T4: 33 (3.4, 24.3)</i>
(13) Fuel filler hose	(26) Evaporation hose C	

General Description

FUEL INJECTION (FUEL SYSTEMS)

6. FUEL LINE



FU-03217

FU(H6DO)-9

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Evaporation pipe protector	(18) Canister	(35) Fuel delivery hose A
(2) Evaporation hose D	(19) Fuel filler pipe	(36) Fuel delivery hose B
(3) Evaporation pipe B	(20) Fuel tank pressure sensor	(37) Clamp
(4) Clip	(21) Canister hose B	(38) Quick connector check cover
(5) Fuel filler cap	(22) Connector B	(39) Clip
(6) Filler ring	(23) Pressure control solenoid valve	(40) Fuel damper
(7) Shut valve	(24) Canister hose A	(41) Fuel damper holder
(8) Gasket	(25) Connector B	(42) Fuel damper bracket
(9) Evaporation hose C	(26) Connector A	(43) Evaporation hose A
(10) Evaporation hose C	(27) Evaporation hose E	
(11) Evaporation pipe A	(28) Evaporation tube	
(12) Drain hose connector	(29) Retainer	
(13) Drain hose	(30) Purge pipe	
(14) Connector A	(31) Purge hose C	
(15) Canister protector	(32) Fuel hose	
(16) Drain filter	(33) Connector	
(17) Drain valve	(34) Fuel pipe ASSY	

Tightening torque:N·m (kgf-m, ft-lb)

T1: 1 (0.1, 0.7)

T2: 1.25 (0.1, 0.9)

T3: 4.4 (0.4, 3.2)

T4: 7.5 (0.8, 5.5)

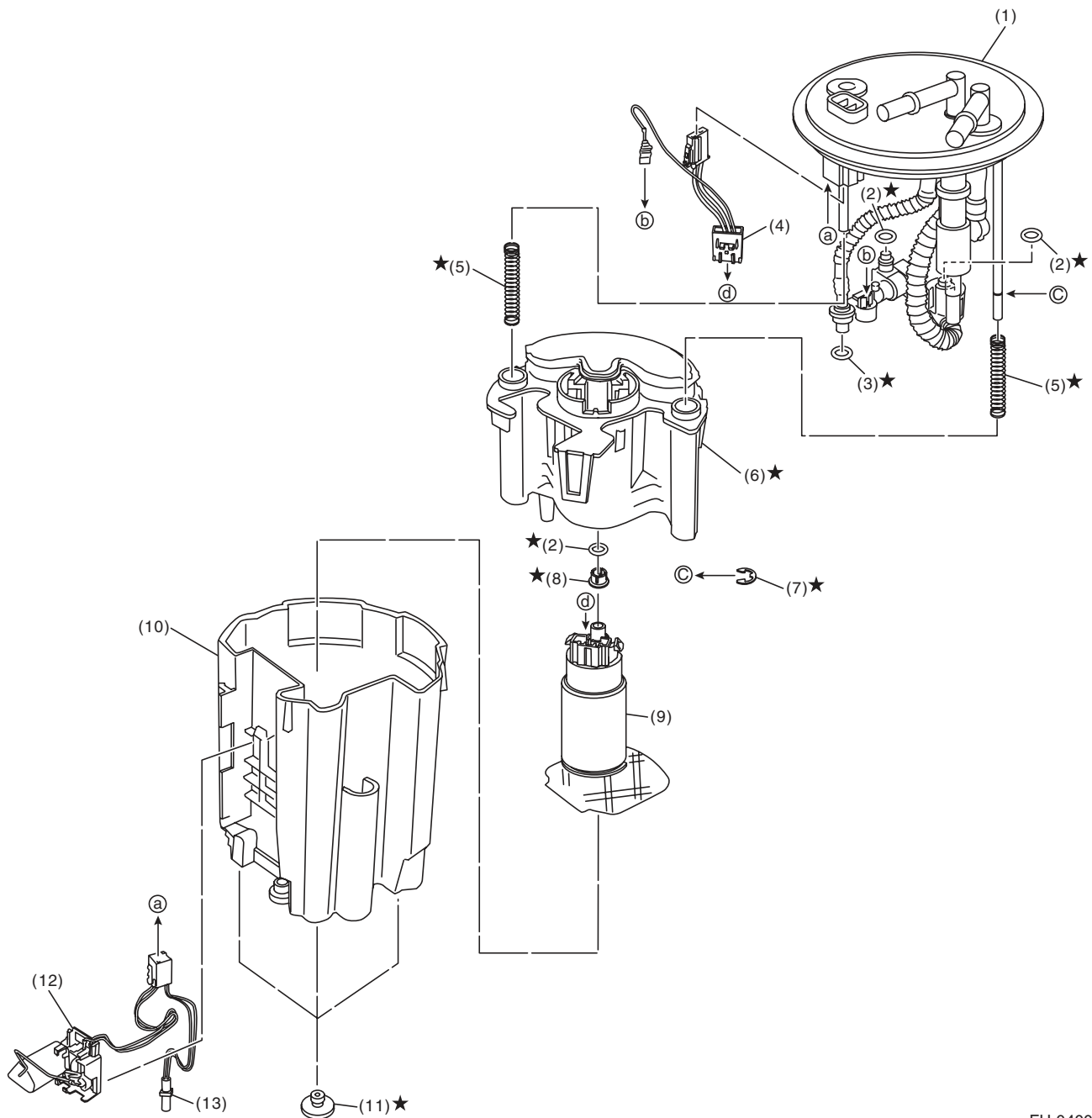
T5: 8 (0.8, 5.9)

T6: 17.6 (1.8, 13.0)

General Description

FUEL INJECTION (FUEL SYSTEMS)

7. FUEL PUMP



FU-04005

- | | | |
|---------------------------|-----------------|------------------------------|
| (1) Sub tank bracket ASSY | (6) Fuel filter | (10) Sub tank |
| (2) O-ring | (7) Clip | (11) Cushion |
| (3) O-ring | (8) Spacer | (12) Fuel level sensor |
| (4) Fuel pump harness | (9) Pump ASSY | (13) Fuel temperature sensor |
| (5) Spring | | |

FU(H6DO)-11

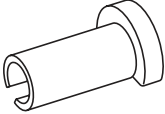
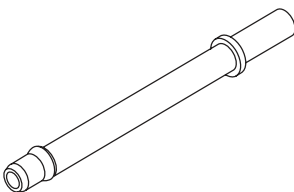
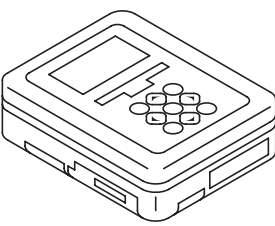
General Description

FUEL INJECTION (FUEL SYSTEMS)

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from the battery.
- Place "NO OPEN FLAMES" signs near the working area.
- Prepare a container and cloth to prevent scattering of fuels when performing work where fuels can be spilled. If the fuel spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing fuel.

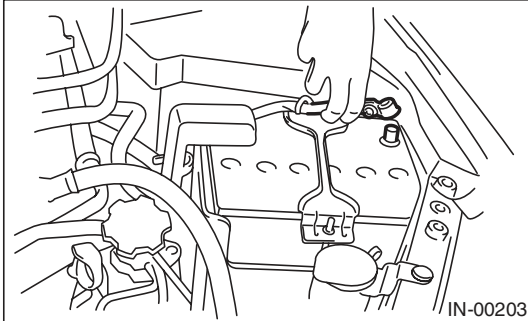
D: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST42099AE000	42099AE000	QUICK CONNECTOR RELEASE	Used for disconnecting quick connector of the engine compartment.
 ST18471AA000	18471AA000	FUEL PIPE ADAPTER	Used for draining fuel.
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for draining fuel.

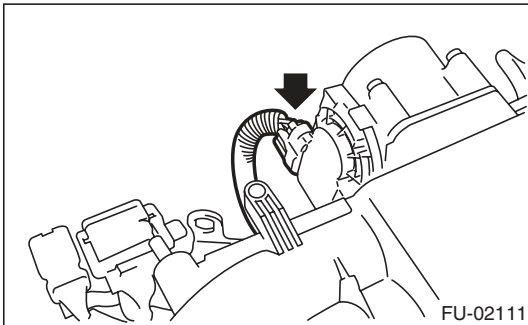
2. Throttle Body

A: REMOVAL

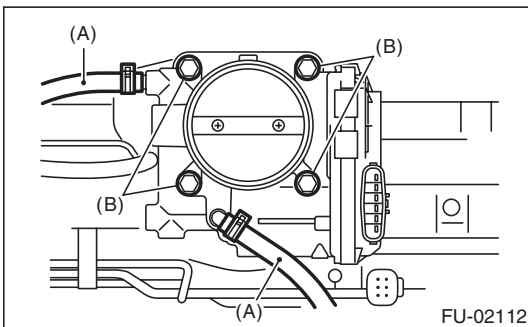
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Disconnect the connector from throttle body.



- 5) Disconnect the engine coolant hoses (A) from the throttle body.
- 6) Remove the bolts (B) which secure throttle body to intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use new O-rings.

Tightening torque:

8 N·m (0.8 kgf-m, 5.9 ft-lb)

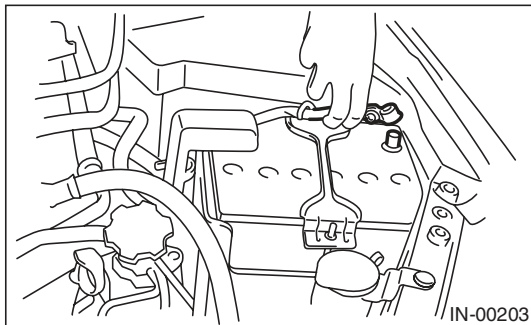
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

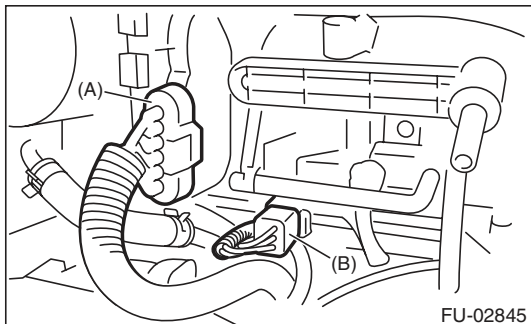
3. Intake Manifold

A: REMOVAL

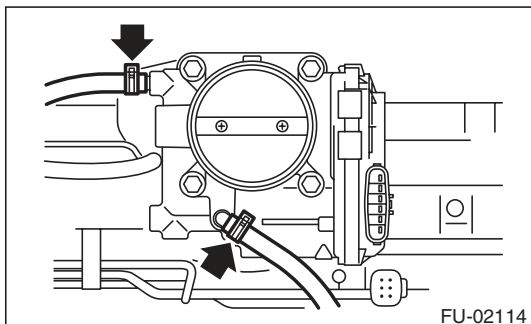
- 1) Remove the collector cover.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler lid, and remove the fuel filler cap.
- 4) Disconnect the ground cable from battery.



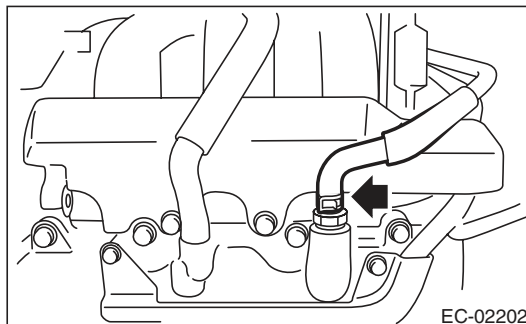
- 5) Remove the air cleaner case and air intake chamber. <Ref. to IN(H6DO)-5, REMOVAL, Air Cleaner Case.> <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 6) Disconnect the connector (A) from the throttle body.
- 7) Disconnect the engine harness connector (B).



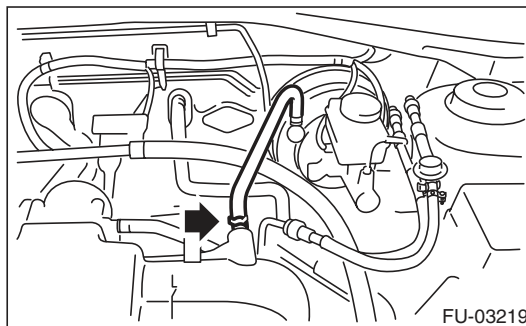
- 8) Disconnect the engine coolant hoses from the throttle body.



- 9) Disconnect the PCV hose.



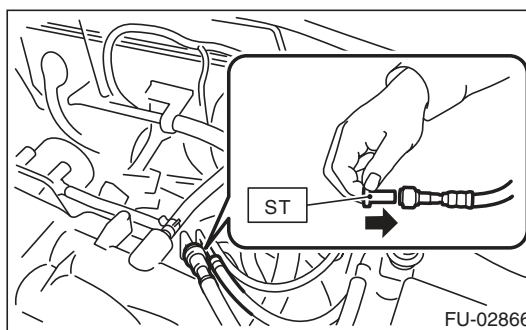
- 10) Disconnect the brake booster hose.



- 11) Disconnect the fuel hoses from the fuel pipe.
 - (1) Disconnect the connector of fuel pipe by pushing the ST in the direction of arrow.
- ST 42099AE000 QUICK CONNECTOR RELEASE
- (2) Remove the clip and disconnect the evaporation hose from the pipe.

CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.



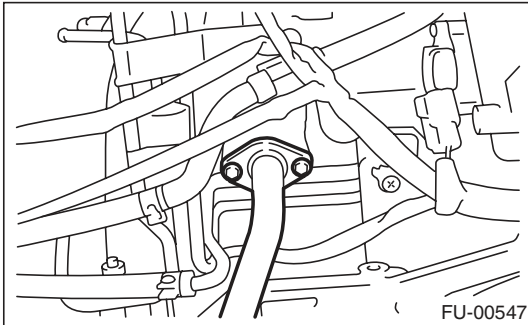
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

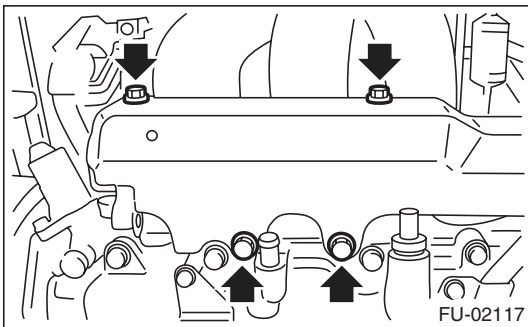
12) Remove the EGR pipe from EGR valve.

NOTE:

Be careful not to drop the gasket.

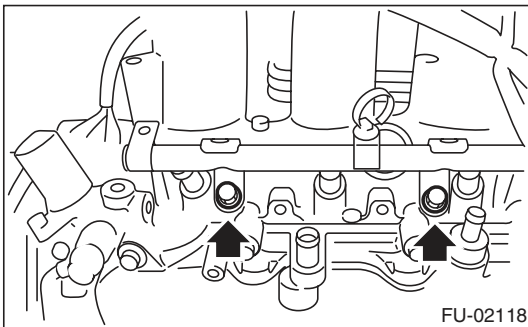


13) Remove the fuel pipe protector LH.

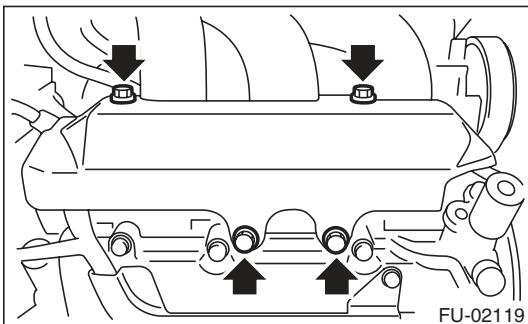


14) Remove the engine harness from the fuel injector pipe LH.

15) Remove the bolts which hold fuel injector pipe LH to cylinder head.

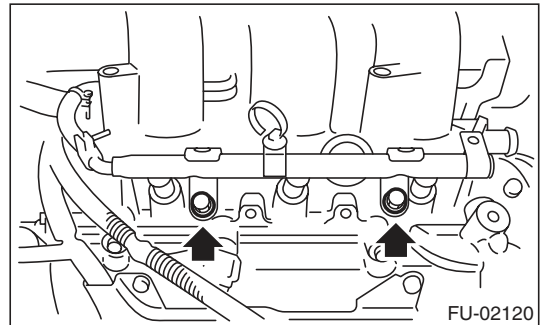


16) Remove the fuel pipe protector RH.



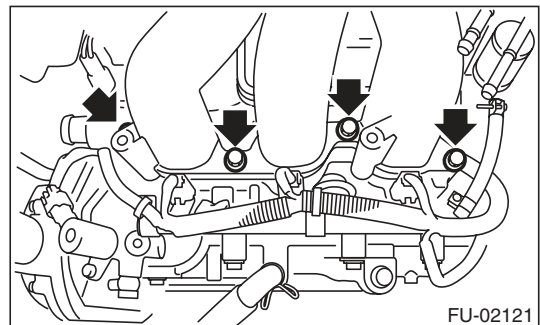
17) Remove the engine harness from the fuel injector pipe RH.

18) Remove the bolts which hold the fuel injector pipe RH to the cylinder head.

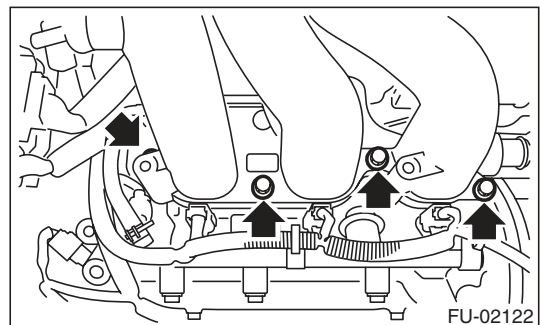


19) Remove the bolts which hold the intake manifold to the cylinder head.

• LH side



• RH side



20) Remove the intake manifold.

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

1) Install the intake manifold onto cylinder heads.

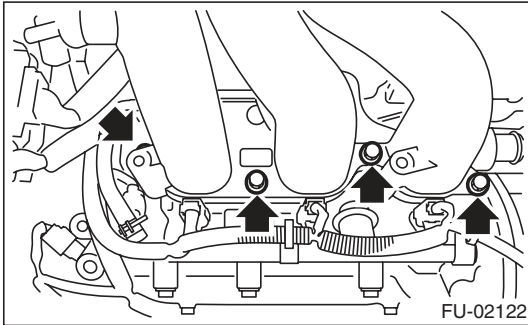
NOTE:

Use new O-rings.

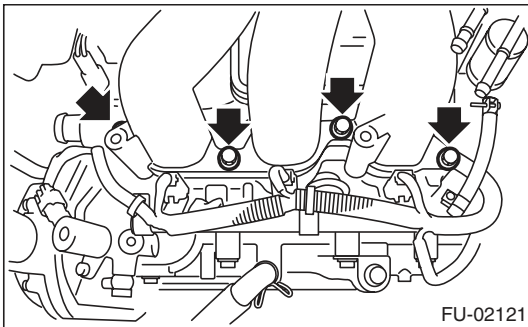
Tightening torque:

25 N·m (2.5 kgf-m, 18.4 ft-lb)

- RH side



- LH side



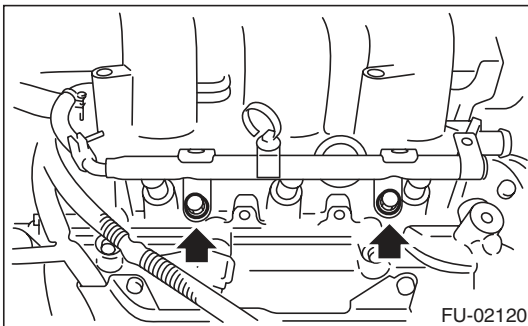
2) Install the bolts which hold fuel injector pipe RH to cylinder head.

NOTE:

Use new O-rings.

Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)

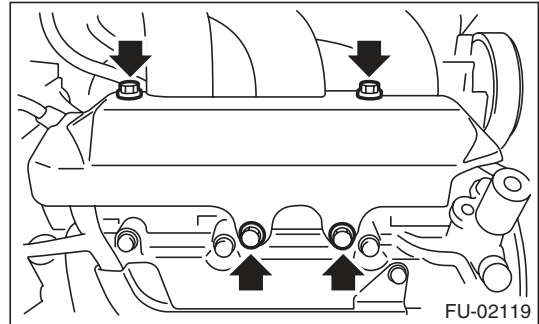


3) Install the engine harness to fuel injector pipe RH.

4) Install the fuel pipe protector RH.

Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



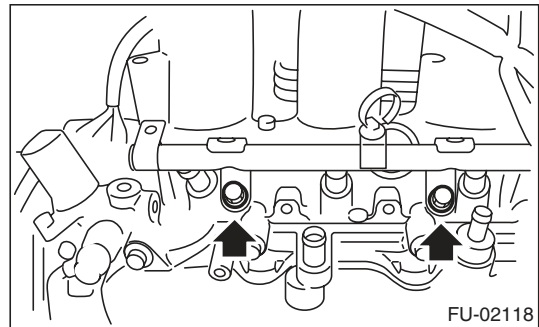
5) Install the bolts which hold fuel injector pipe LH to cylinder head.

NOTE:

Use new O-rings.

Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)

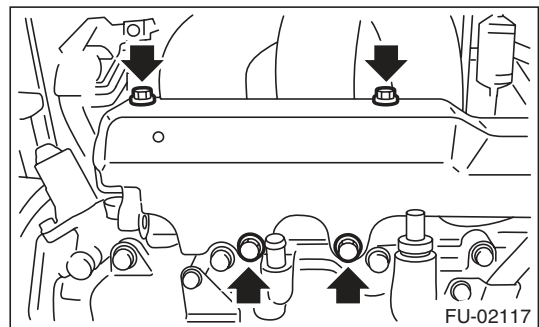


6) Install the engine harness to fuel injector pipe LH.

7) Install the fuel pipe protector LH.

Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

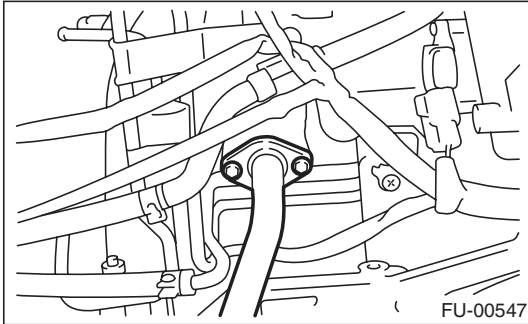
8) Install the EGR pipe to EGR valve.

NOTE:

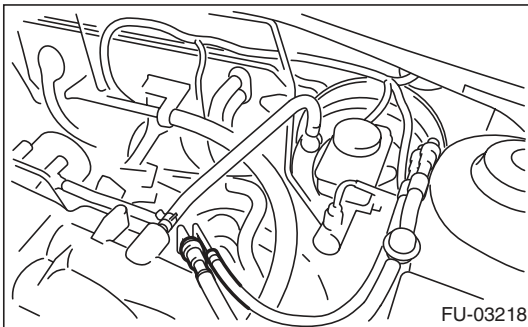
Use a new gasket.

Tightening torque

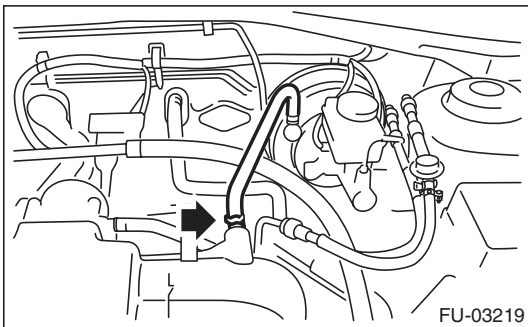
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



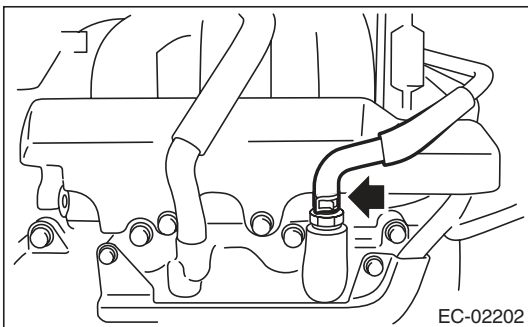
9) Connect the fuel hoses to fuel pipe.



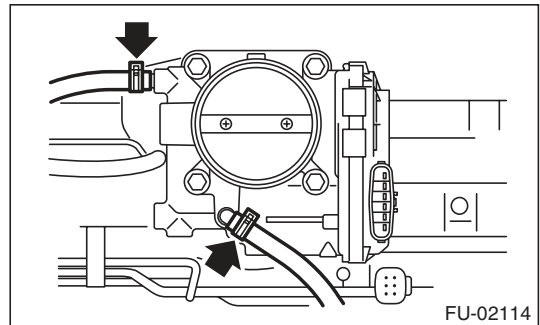
10) Connect the brake booster hose.



11) Connect the PCV hose.

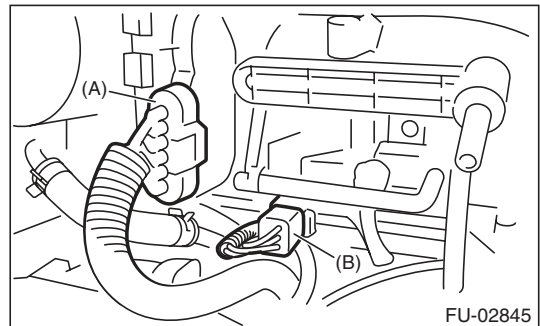


12) Connect the engine coolant hoses to throttle body.



13) Connect the connector (A) to throttle body.

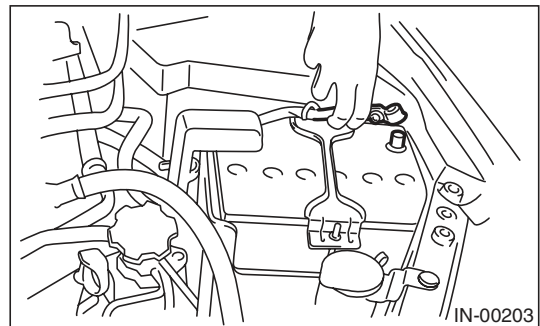
14) Connect the engine harness connector (B).



15) Install the air cleaner case and air intake chamber. <Ref. to IN(H6DO)-6, INSTALLATION, Air Cleaner Case.> <Ref. to IN(H6DO)-7, INSTALLATION, Air Intake Chamber.>

16) Install the fuse of fuel pump to the main fuse box.

17) Connect the ground cable to battery.



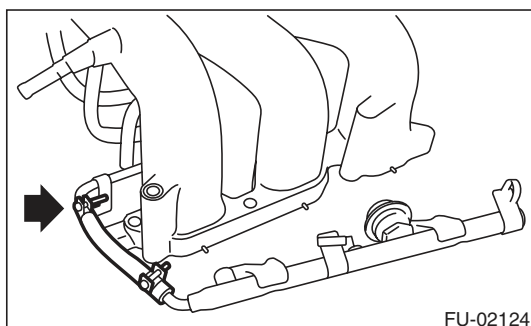
18) Install the collector cover.

Intake Manifold

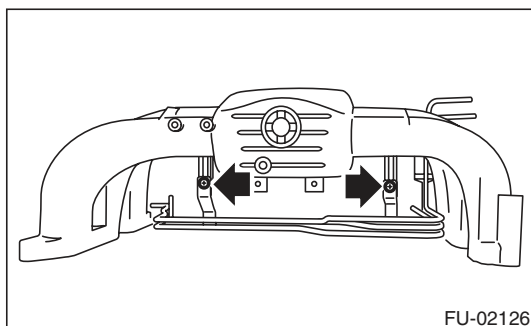
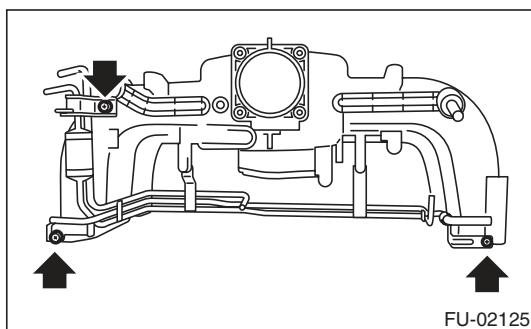
FUEL INJECTION (FUEL SYSTEMS)

C: DISASSEMBLY

- 1) Remove the engine harness from intake manifold.
- 2) Remove the throttle body. <Ref. to FU(H6DO)-13, REMOVAL, Throttle Body.>
- 3) Remove the EGR valve. <Ref. to FU(H6DO)-27, REMOVAL, EGR Valve.>
- 4) Remove the manifold absolute pressure sensor. <Ref. to FU(H6DO)-25, REMOVAL, Manifold Absolute Pressure Sensor.>
- 5) Remove the purge control solenoid valve. <Ref. to EC(H6DO)-8, REMOVAL, Purge Control Solenoid Valve.>
- 6) Loosen the clamp which holds fuel injector pipe to the fuel hose, and then disconnect the pipe from fuel hose.



- 7) Remove the bolts which install fuel pipes on intake manifold.



D: ASSEMBLY

NOTE:

When assembling the nipple, apply liquid gasket.

Liquid gasket:

THREE BOND 1105 (Part No. 004403010) or equivalent

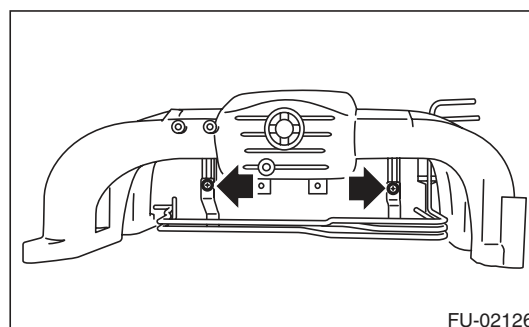
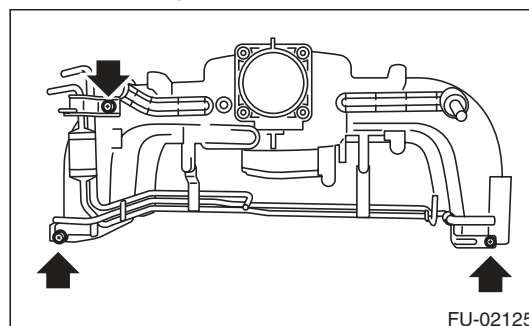
Tightening torque:

17 N·m (1.7 kgf-m, 12.5 ft-lb)

- 1) Tighten the bolts which install fuel pipes on intake manifold.

Tightening torque:

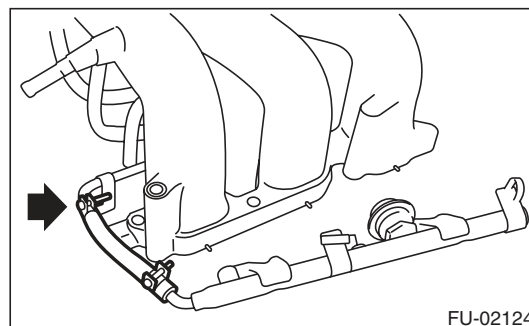
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



- 2) Connect the fuel injector pipe to fuel hose, and tighten the clamp screw.

Tightening torque:

1.25 N·m (0.1 kgf-m, 0.9 ft-lb)



- 3) Install the purge control solenoid valve. <Ref. to EC(H6DO)-8, INSTALLATION, Purge Control Solenoid Valve.>

- 4) Install the manifold absolute pressure sensor.
<Ref. to FU(H6DO)-25, INSTALLATION, Manifold Absolute Pressure Sensor.>
- 5) Install the EGR valve. <Ref. to FU(H6DO)-27, INSTALLATION, EGR Valve.>
- 6) Install the throttle body to the intake manifold.
<Ref. to FU(H6DO)-13, INSTALLATION, Throttle Body.>
- 7) Install the engine harness to the intake manifold.

E: INSPECTION

Make sure the fuel pipe and fuel hoses are not damaged and the connections are tightened firmly.

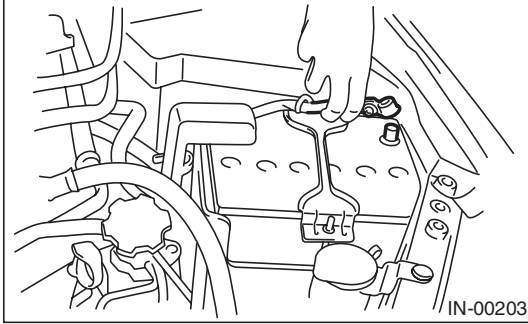
Engine Coolant Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

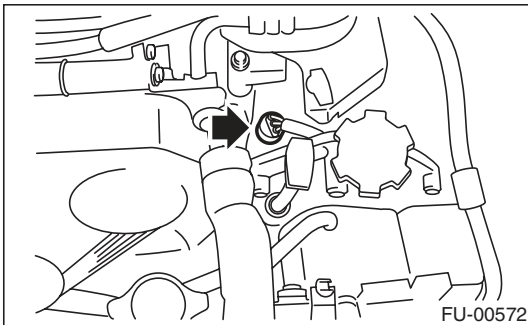
4. Engine Coolant Temperature Sensor

A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Drain engine coolant. <Ref. to CO(H6DO)-10, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 4) Disconnect the connectors from the engine coolant temperature sensor.



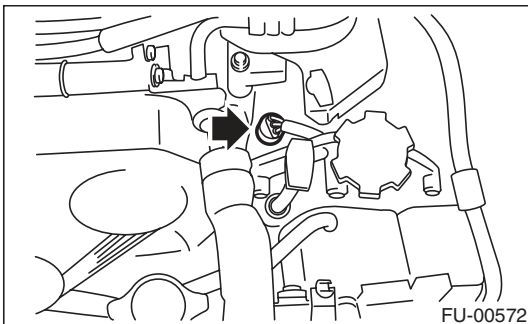
- 5) Remove the engine coolant temperature sensor.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

22 N·m (2.2 kgf-m, 16.2 ft-lb)



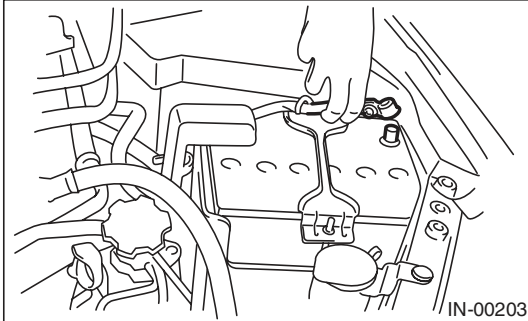
Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

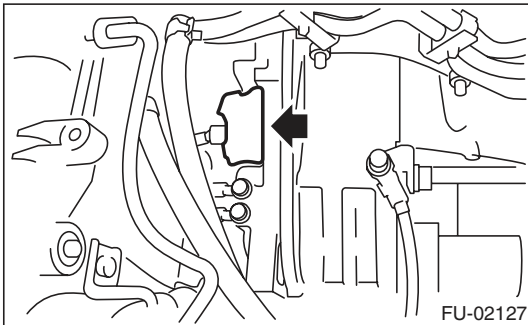
5. Crankshaft Position Sensor

A: REMOVAL

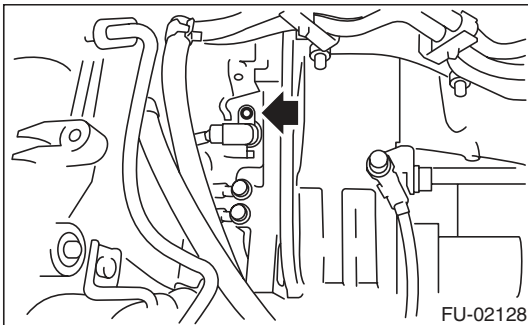
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Remove the service hole cover.



- 5) Remove the crankshaft position sensor.



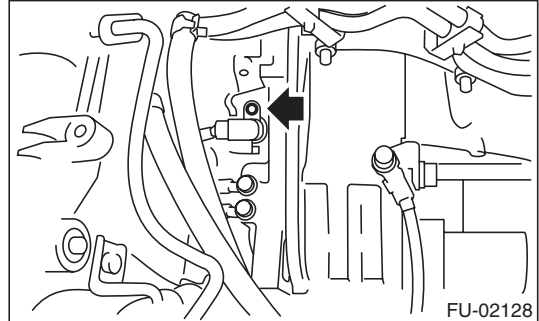
- 6) Disconnect the connector from crankshaft position sensor.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



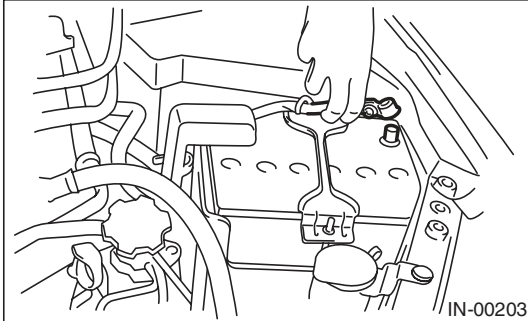
Camshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

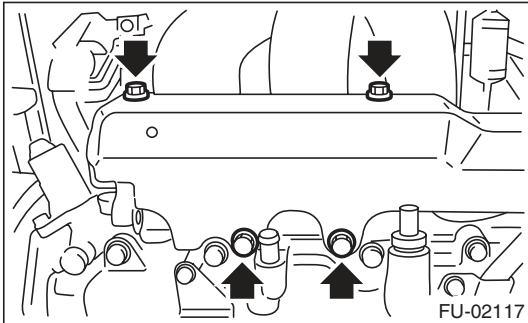
6. Camshaft Position Sensor

A: REMOVAL

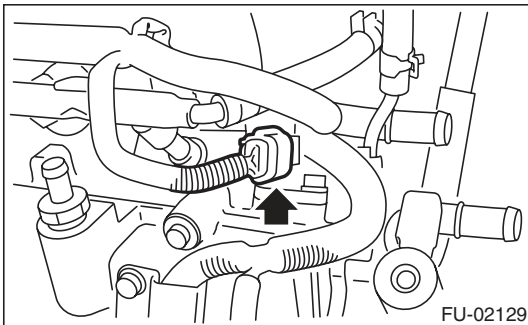
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from the battery.



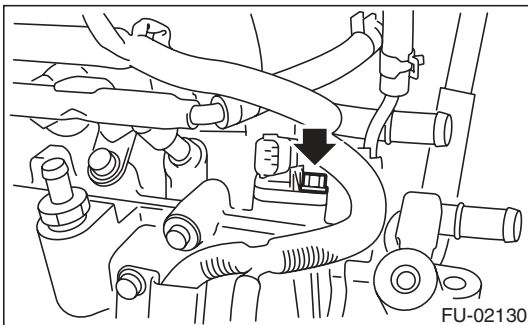
- 3) Remove the generator harness from the fuel pipe protector LH.
- 4) Remove the fuel pipe protector LH.



- 5) Disconnect the connector from camshaft position sensor LH.



- 6) Remove the camshaft position sensor LH.



- 7) Remove the camshaft position sensor RH in the same procedure as LH.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

Camshaft position sensor

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

Fuel pipe protector

19 N·m (1.9 kgf-m, 14.0 ft-lb)

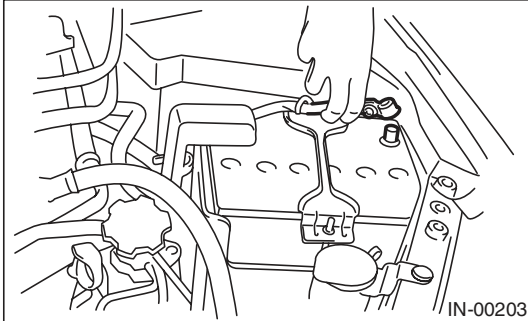
Knock Sensor

FUEL INJECTION (FUEL SYSTEMS)

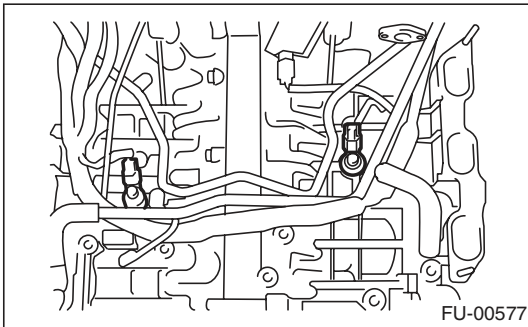
7. Knock Sensor

A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the intake manifold. <Ref. to FU(H6DO)-14, REMOVAL, Intake Manifold.>
- 4) Disconnect the knock sensor connector.
- 5) Remove the knock sensor from the cylinder block.



B: INSTALLATION

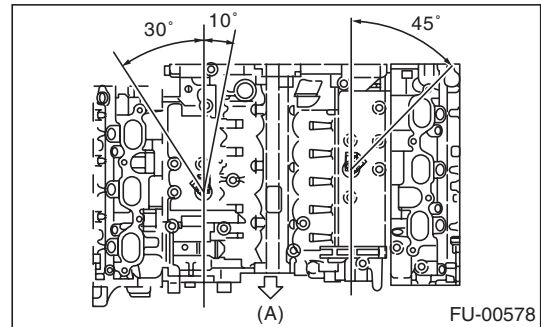
- 1) Install the knock sensor to cylinder block.

Tightening torque:

25 N·m (2.5 kgf-m, 18.4 ft-lb)

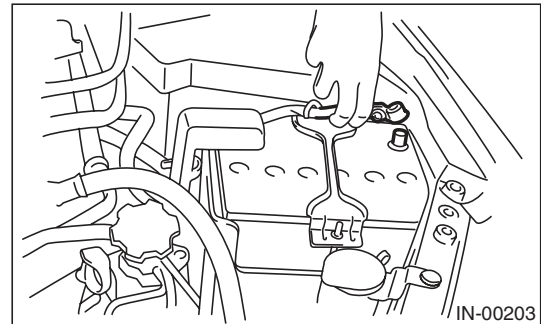
NOTE:

For the knock sensor installation angle, refer to the figure below.



(A) Front side of vehicle

- 2) Connect the knock sensor connector.
- 3) Install the intake manifold. <Ref. to FU(H6DO)-16, INSTALLATION, Intake Manifold.>
- 4) Connect the ground cable to battery.



- 5) Install the collector cover.

Throttle Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

8. Throttle Position Sensor

A: SPECIFICATION

Throttle body is a non-disassembled part, so do not remove the throttle position sensor from throttle body.

Refer to “Throttle Body” for removal and installation procedure. <Ref. to FU(H6DO)-13, REMOVAL, Throttle Body.> <Ref. to FU(H6DO)-13, INSTALLATION, Throttle Body.>

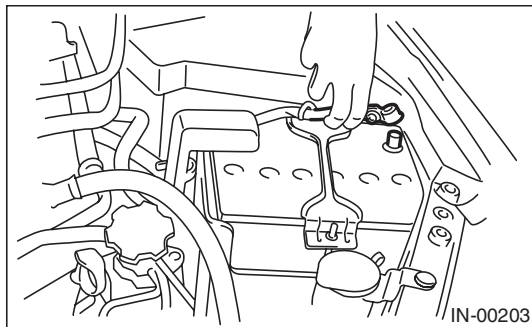
Manifold Absolute Pressure Sensor

FUEL INJECTION (FUEL SYSTEMS)

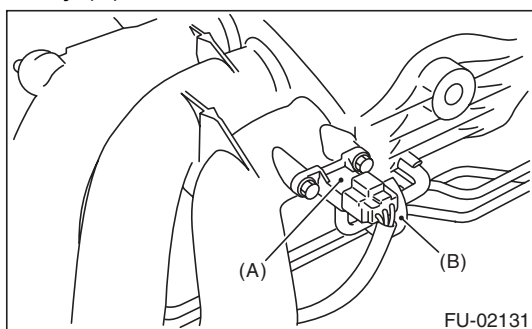
9. Manifold Absolute Pressure Sensor

A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from the battery.



- 3) Disconnect the connector from the manifold absolute pressure sensor (A), and remove the filter assembly (B) from the intake manifold.



- 4) Remove the manifold absolute pressure sensor from intake manifold.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

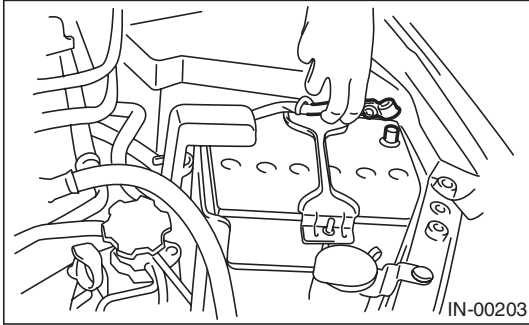
Mass Air Flow and Intake Air Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

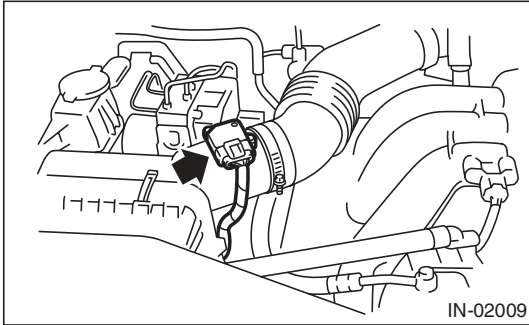
10. Mass Air Flow and Intake Air Temperature Sensor

A: REMOVAL

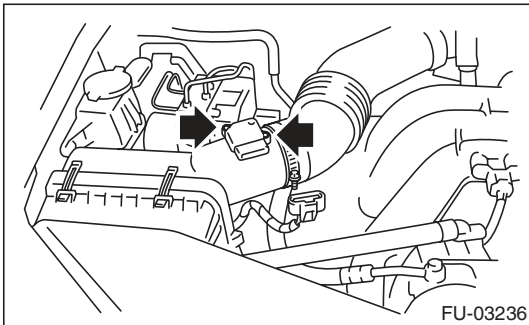
- 1) Disconnect the ground cable from the battery.



- 2) Disconnect the connectors from the 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.

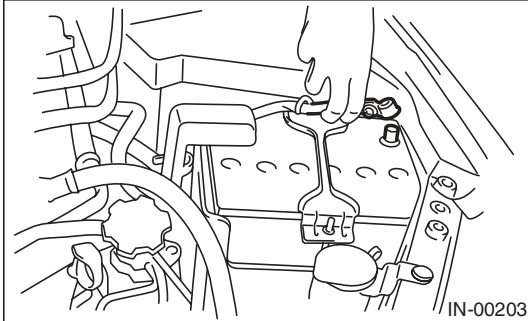
Tightening torque:

1 N·m (0.1 kgf-m, 0.7 ft-lb)

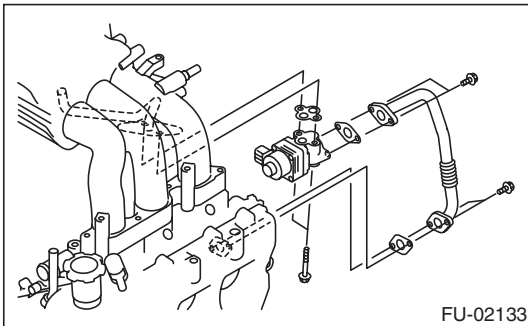
11.EGR Valve

A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Remove the starter. <Ref. to SC(H4SO)-6, REMOVAL, Starter.>
- 5) Remove the EGR pipe from EGR valve and cylinder head.
- 6) Remove the EGR valve from intake manifold.



- 7) Disconnect the connector from the EGR valve.

B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

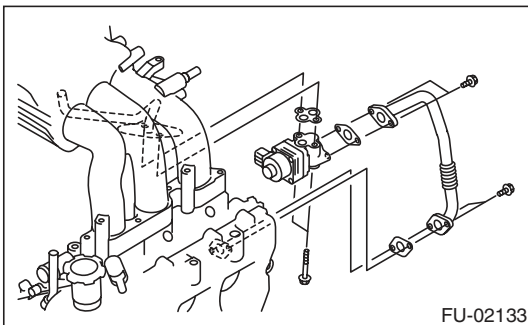
Tightening torque:

EGR valve

19 N·m (1.9 kgf-m, 14.0 ft-lb)

EGR pipe

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



Fuel Injector

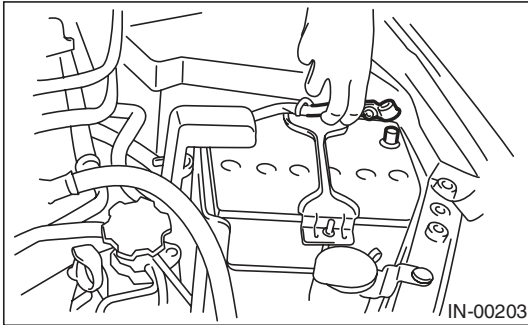
FUEL INJECTION (FUEL SYSTEMS)

12. Fuel Injector

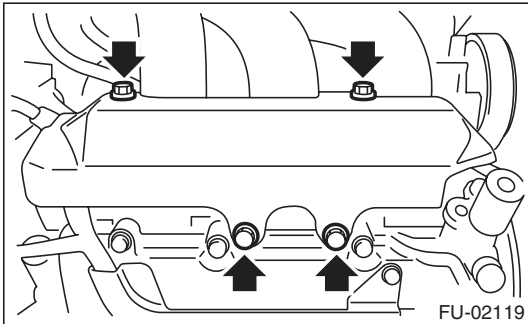
A: REMOVAL

1. RH SIDE

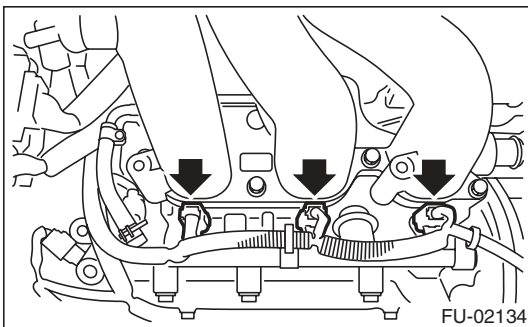
- 1) Remove the collector cover.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler lid, and remove the fuel filler cap.
- 4) Disconnect the ground cable from battery.



- 5) Remove the air cleaner case. <Ref. to IN(H6DO)-5, REMOVAL, Air Cleaner Case.>
- 6) Remove the fuel pipe protector RH.

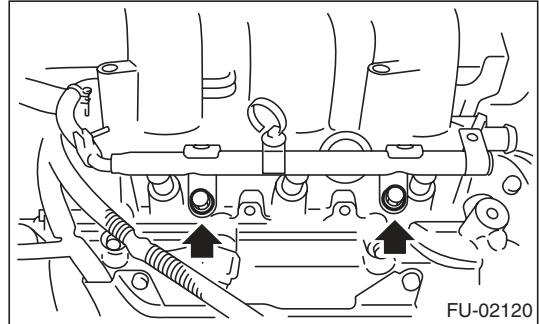


- 7) Disconnect the connector from fuel injector.



- 8) Remove the engine harness from the fuel injector pipe RH.

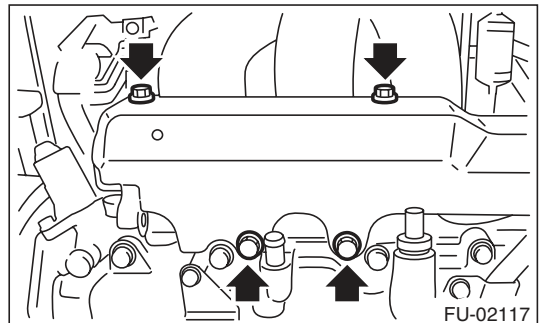
- 9) Remove the bolt which holds fuel injector pipe onto cylinder head.



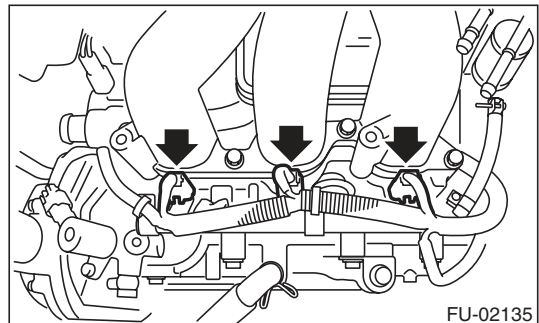
- 10) Remove the fuel injector while lifting up the fuel injector pipe.

2. LH SIDE

- 1) Remove the collector cover.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler lid, and remove the fuel filler cap.
- 4) Remove the battery. <Ref. to SC(H4SO)-20, REMOVAL, Battery.>
- 5) Remove the generator harness from the fuel pipe protector LH.
- 6) Remove the fuel pipe protector LH.



- 7) Disconnect the connector from fuel injector.

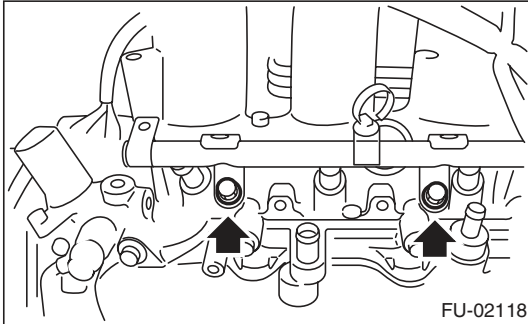


- 8) Remove the engine harness from the fuel injector pipe LH.

Fuel Injector

FUEL INJECTION (FUEL SYSTEMS)

9) Remove the bolt which holds fuel injector pipe onto cylinder head.



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

B: INSTALLATION

1. RH SIDE

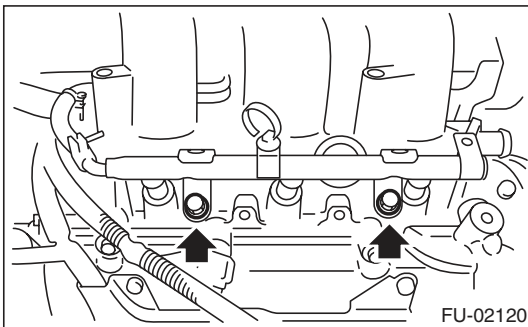
Install in the reverse order of removal.

NOTE:

Use new O-rings.

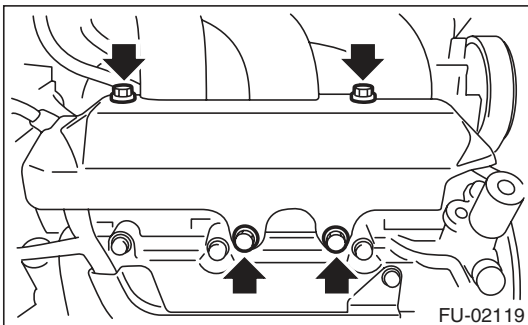
Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



2. LH SIDE

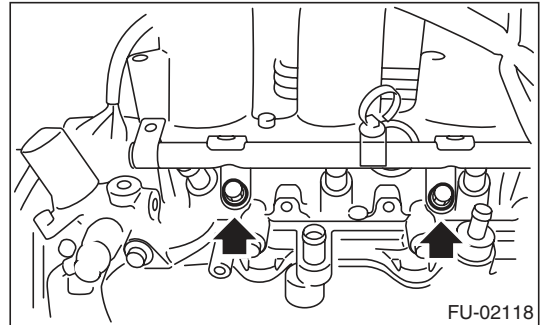
Install in the reverse order of removal.

NOTE:

Use new O-rings.

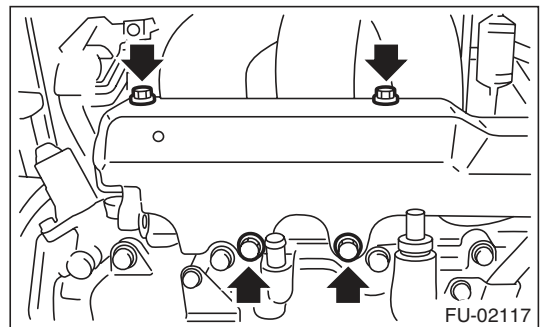
Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)



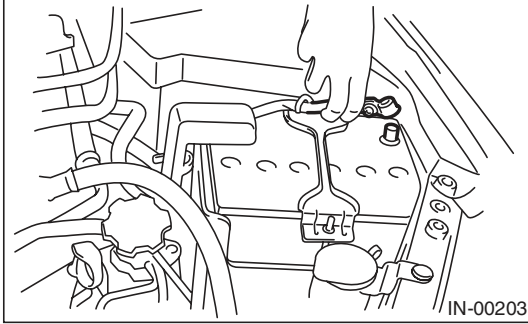
Variable Valve Lift Diagnosis Oil Pressure Switch

FUEL INJECTION (FUEL SYSTEMS)

13. Variable Valve Lift Diagnosis Oil Pressure Switch

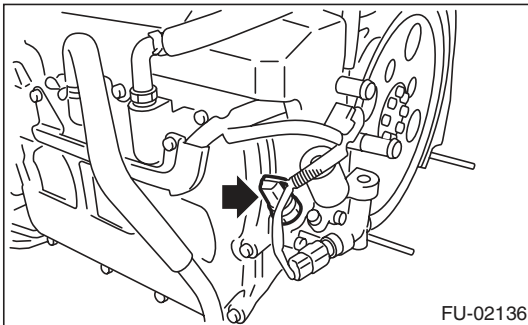
A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.

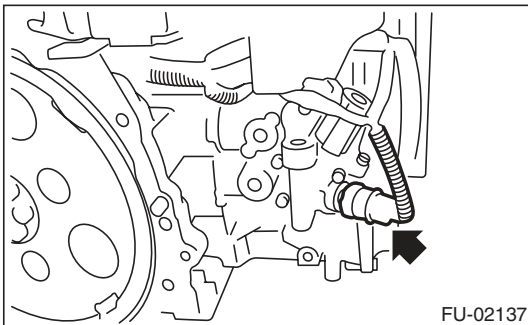


- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Disconnect the connector from the variable valve lift diagnosis oil pressure switch.
- 5) Remove the variable valve lift diagnosis oil pressure switch.

- LH side



- RH side



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Apply liquid gasket to the variable valve lift diagnosis oil pressure switch threads.

Liquid gasket:

THREE BOND 1324 (Part No. 004403042) or equivalent

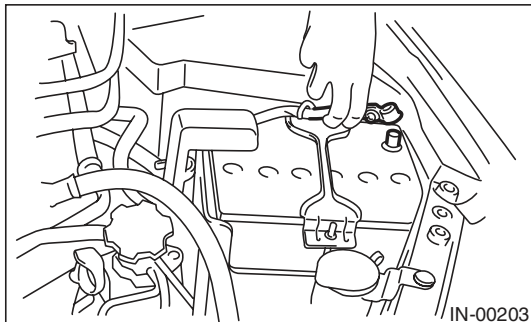
Tightening torque:

17 N·m (1.7 kgf-m, 12.5 ft-lb)

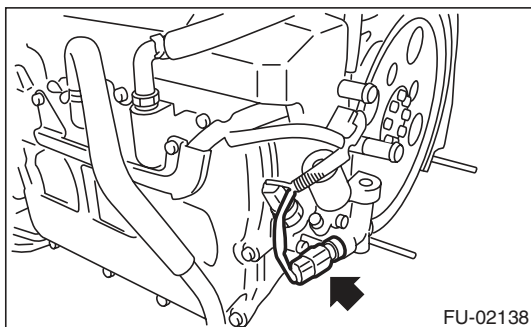
14. Oil Temperature Sensor

A: REMOVAL

- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Disconnect the connector from the oil temperature sensor.



- 5) Remove the oil temperature sensor.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

22 N·m (2.2 kgf-m, 16.2 ft-lb)

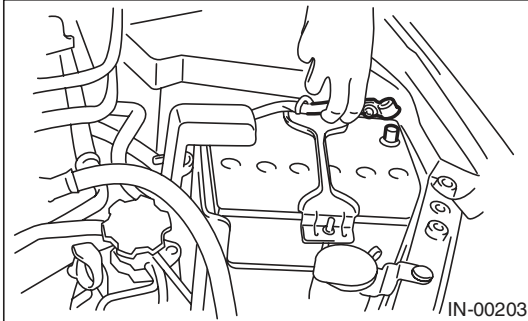
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

15. Front Oxygen (A/F) Sensor

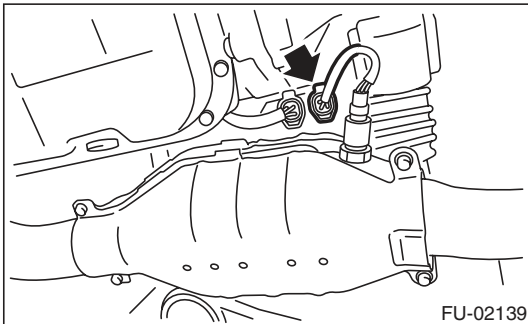
A: REMOVAL

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

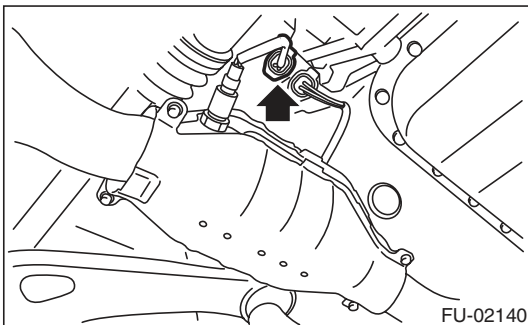


- 3) Lift up the vehicle.
- 4) Disconnect the connector of front oxygen (A/F) sensor.

- LH side



- RH side



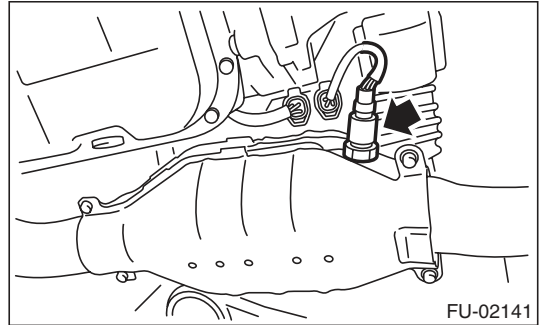
- 5) Apply spray-type lubricant to the threaded portion of front oxygen (A/F) sensor, and leave it for one minute or more.

- 6) Remove the front oxygen (A/F) sensor.

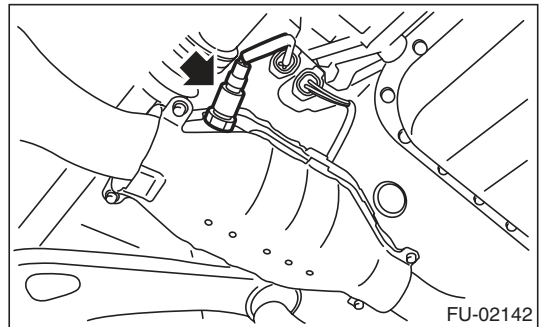
CAUTION:

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

- LH side



- RH side



Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

CAUTION:

If lubricant is spilt onto the exhaust pipe, wipe it off with cloth to avoid emission of smoke or causing a fire.

1) Before installing 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.

CAUTION:

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

Anti-seize compound:

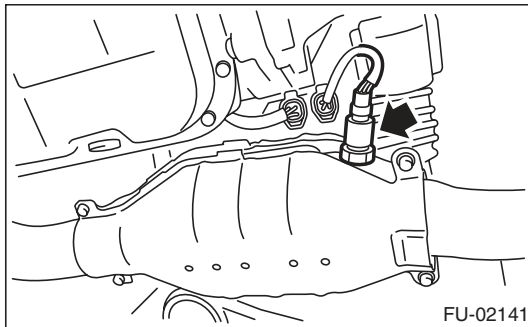
NEVER-SEEZ NSN, JET LUBE SS-30 or equivalent

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

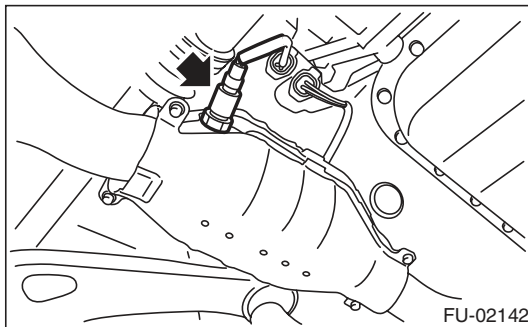
Tightening torque:

21 N·m (2.1 kgf-m, 15.5 ft-lb)

- LH side

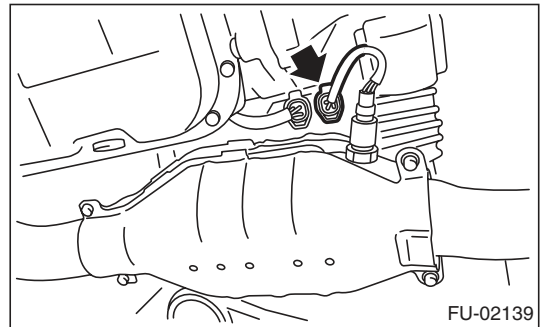


- RH side

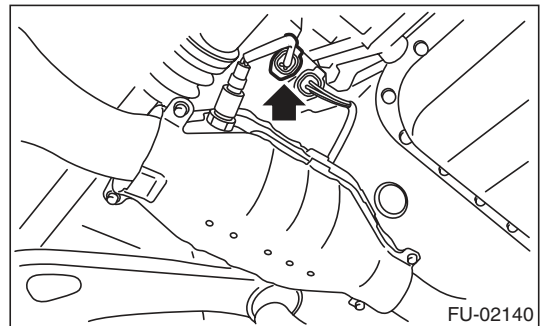


3) Connect the connector of front oxygen (A/F) sensor.

- LH side

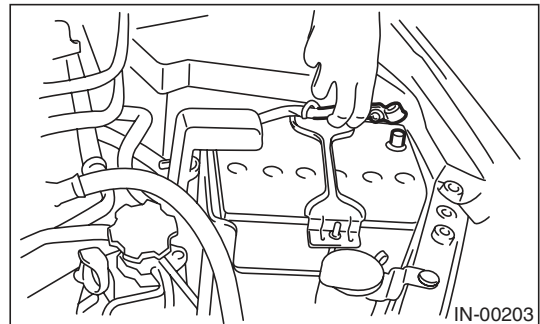


- RH side



4) Lower the vehicle.

5) Connect the ground cable to battery.



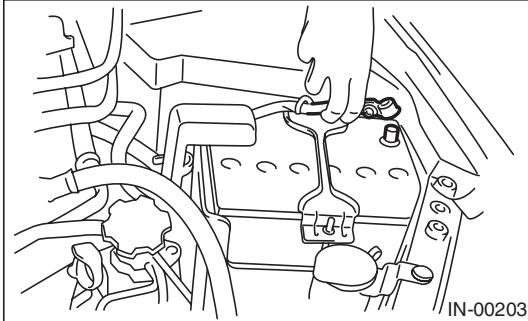
Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

16.Rear Oxygen Sensor

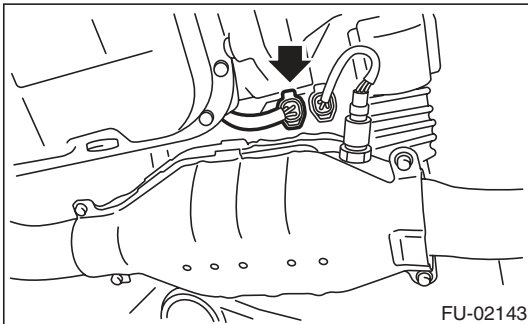
A: REMOVAL

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

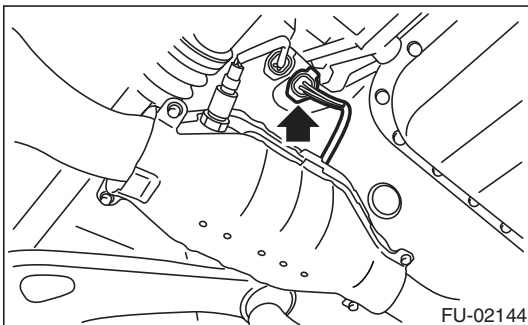


- 3) Lift up the vehicle.
- 4) Disconnect the connector from rear oxygen sensor.

- LH side



- RH side



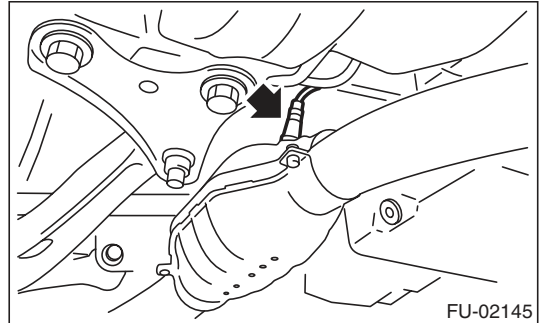
- 5) Remove the clip holding the harness.
- 6) Apply spray-type lubricant to the threaded portion of rear oxygen sensor, and leave it for one minute or more.

- 7) Remove the rear oxygen sensor.

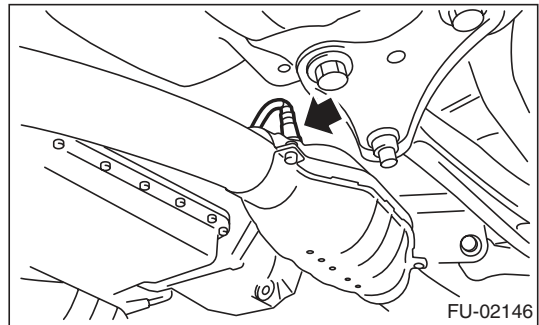
CAUTION:

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

- LH side



- RH side



Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

CAUTION:

If lubricant is spilt onto the exhaust pipe, wipe it off with cloth to avoid emission of smoke or causing a fire.

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

CAUTION:

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

Anti-seize compound:

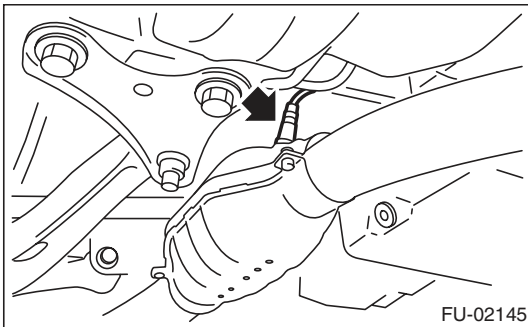
NEVER-SEEZ NSN, JET LUBE SS-30 or equivalent

2) Install the rear oxygen sensor.

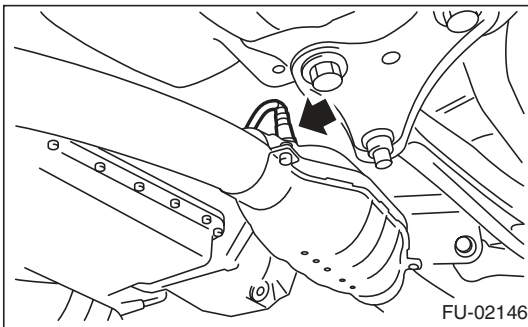
Tightening torque:

21 N·m (2.1 kgf-m, 15.5 ft-lb)

- LH side



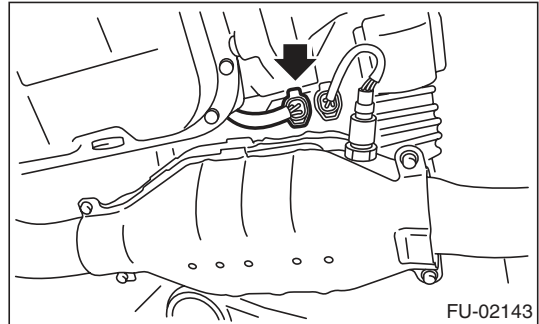
- RH side



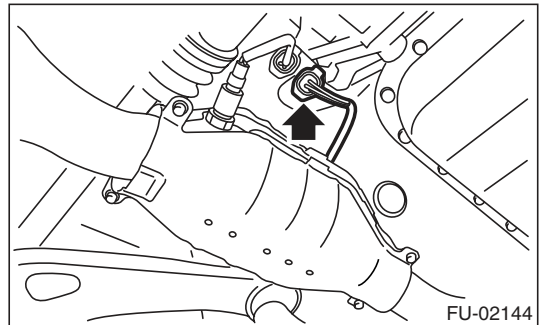
3) Hold the harness with clip.

4) Connect the connector to rear oxygen sensor.

- LH side

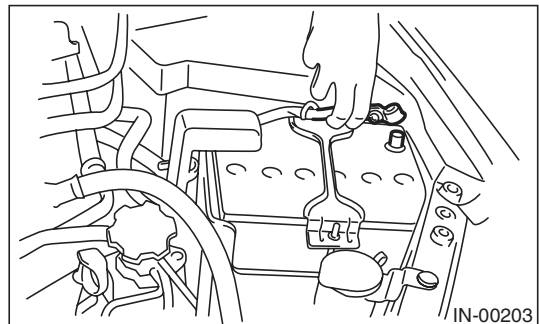


- RH side



5) Lower the vehicle.

6) Connect the ground cable to battery.



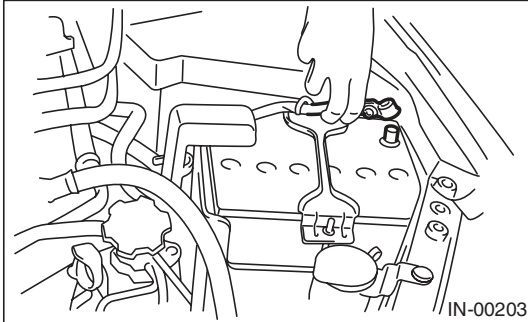
SI-DRIVE (SUBARU Intelligent Drive) Selector

FUEL INJECTION (FUEL SYSTEMS)

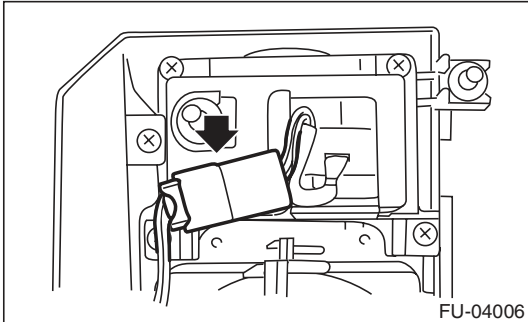
17. SI-DRIVE (SUBARU Intelligent Drive) Selector

A: REMOVAL

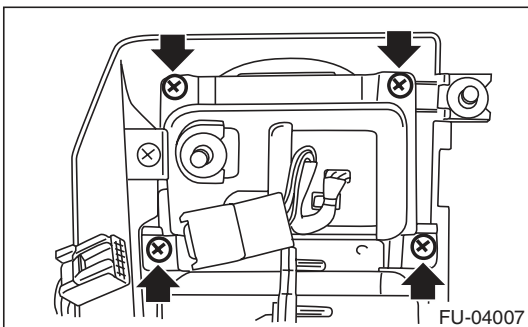
- 1) Disconnect the ground cable from battery.



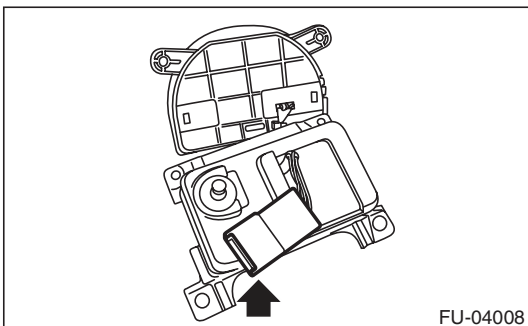
- 2) Remove the console box. <Ref. to EI-52, REMOVAL, Glove Box.>
3) Disconnect the SI-DRIVE selector connector.



- 4) Remove the screws which secure the SI-DRIVE selector to the console box.



- 5) Disconnect the connector from SI-DRIVE selector cover, and remove the SI-DRIVE selector.

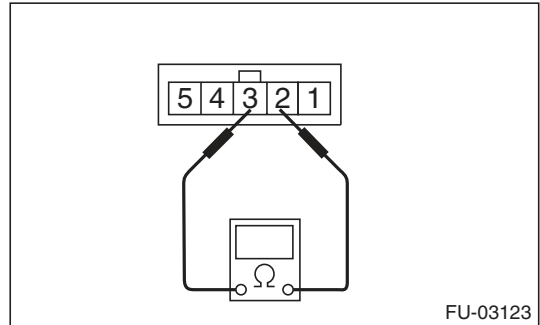


B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

Measure the resistance between SI-DRIVE selector terminals.



Switch position	Terminal No.	Standard value
Sport (when turning the SI-DRIVE selector to the left)	2 and 3	Less than 10 Ω
Intelligent (when pushing the SI-DRIVE selector)		0.8 — 1.2 k Ω
Sport Sharp (when turning the SI-DRIVE selector to the right)		2.14 — 3.2 k Ω

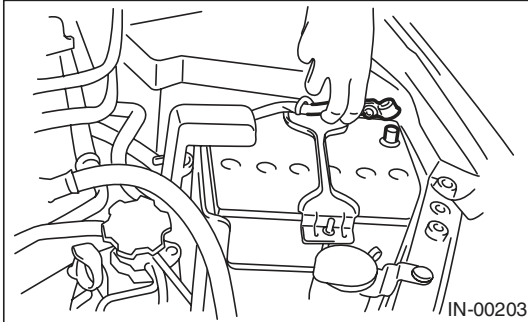
SI-DRIVE (SUBARU Intelligent Drive) S# Switch

FUEL INJECTION (FUEL SYSTEMS)

18.SI-DRIVE (SUBARU Intelligent Drive) S# Switch

A: REMOVAL

- 1) Disconnect the ground cable from battery.

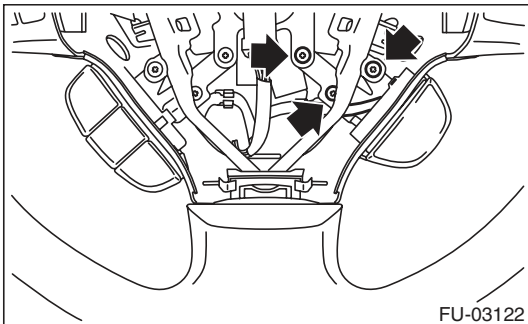


- 2) Remove the airbag module. <Ref. to AB-14, REMOVAL, Driver's Airbag Module.>

WARNING:

Always refer to "Airbag System" before performing service on the airbag modules. <Ref. to AB-4, CAUTION, General Description.>

- 3) Remove the screws which secure the SI-DRIVE S# switch to the steering wheel, and remove the SI-DRIVE S# switch.



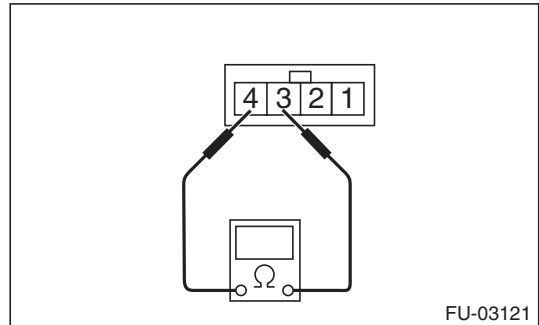
- 4) Disconnect the connectors from the SI-DRIVE S# switch.

B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

Measure the resistance between SI-DRIVE S# switch terminals.



Switch position	Terminal No.	Standard value
ON (When the SI-DRIVE S# switch is pressed)	3 and 4	Less than 10 Ω
OFF		1 M Ω or more

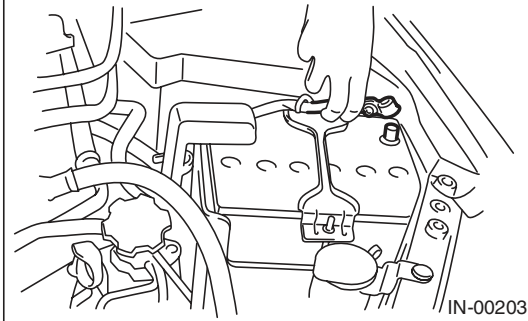
Engine Control Module (ECM)

FUEL INJECTION (FUEL SYSTEMS)

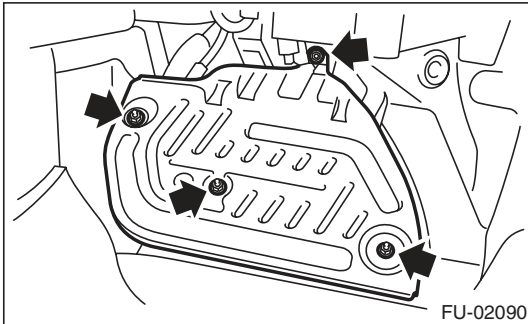
19.Engine Control Module (ECM)

A: REMOVAL

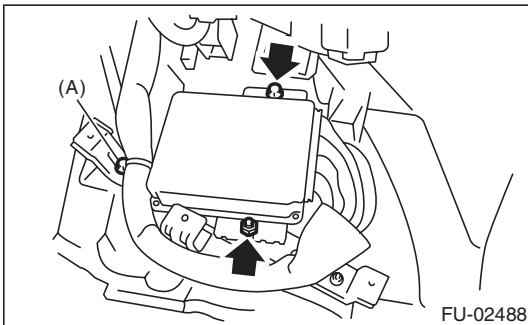
- 1) Disconnect the ground cable from battery.



- 2) Remove the lower inner trim of passenger's side. <Ref. to EI-61, REMOVAL, Lower Inner Trim.>
- 3) Detach the floor mat of passenger's seat.
- 4) Remove the protect cover.



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



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

B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

When the ECM of model with immobilizer has been replaced, be sure to perform the registration of immobilizer system. (Refer to the "PC application help for Subaru Select Monitor".)

NOTE:

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

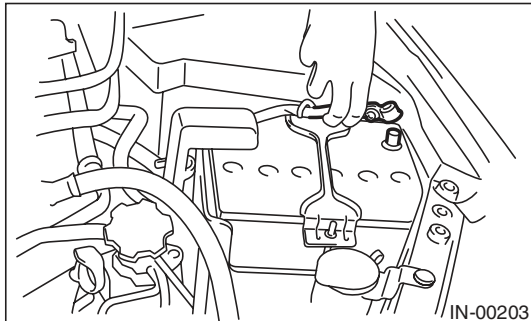
Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

20.Main Relay

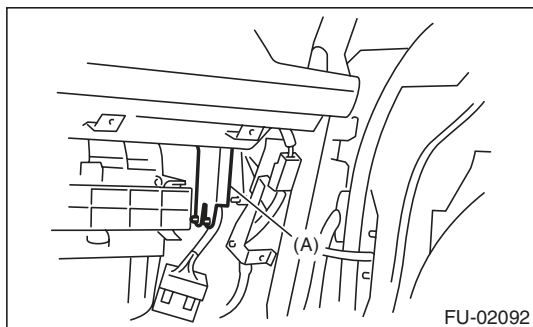
A: REMOVAL

- 1) Disconnect the ground cable from battery.

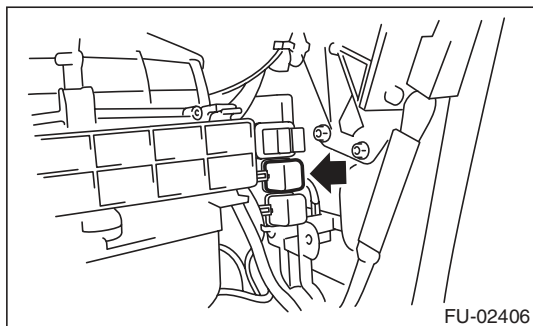


- 2) Remove the glove box. <Ref. to EI-52, REMOVAL, Glove Box.>

- 3) Remove the harness cover (A).



- 4) Disconnect the connectors from main relay.



B: INSTALLATION

Install in the reverse order of removal.

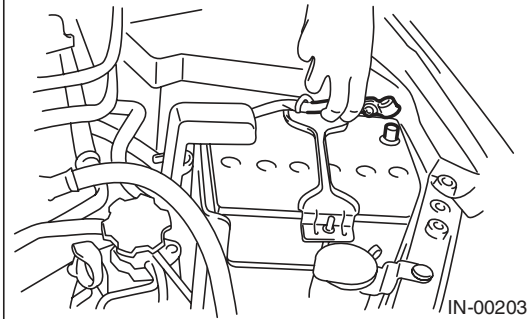
Fuel Pump Relay

FUEL INJECTION (FUEL SYSTEMS)

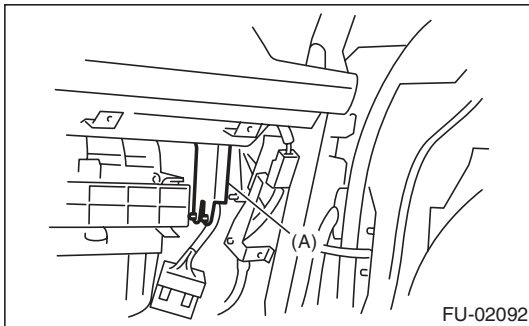
21. Fuel Pump Relay

A: REMOVAL

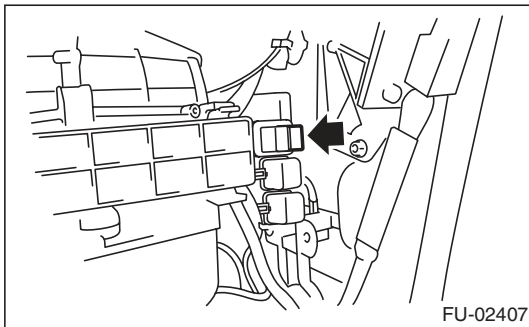
- 1) Disconnect the ground cable from battery.



- 2) Remove the glove box. <Ref. to EI-52, REMOVAL, Glove Box.>
3) Remove the harness cover (A).



- 4) Disconnect the connector from fuel pump relay.



B: INSTALLATION

Install in the reverse order of removal.

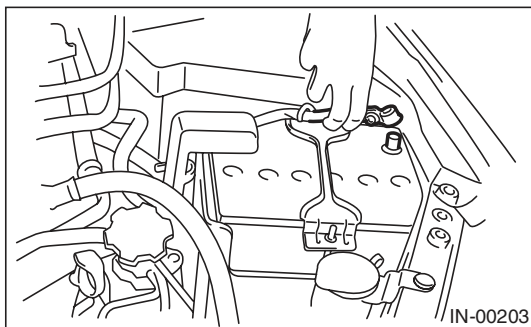
Electronic Throttle Control Relay

FUEL INJECTION (FUEL SYSTEMS)

22. Electronic Throttle Control Relay

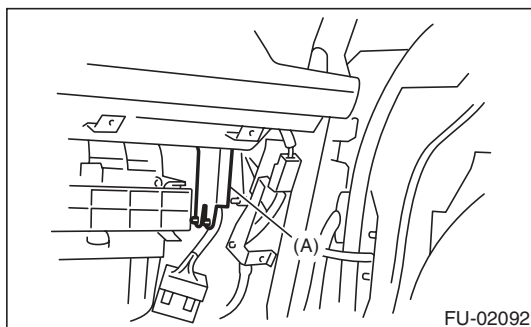
A: REMOVAL

- 1) Disconnect the ground cable from battery.

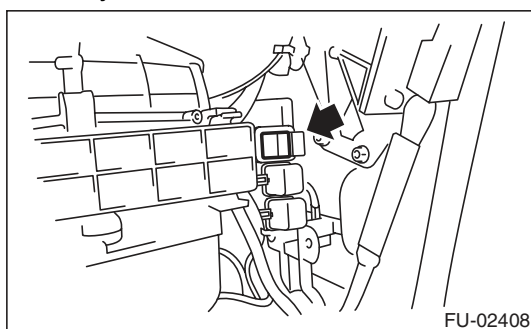


- 2) Remove the glove box. <Ref. to EI-52, REMOVAL, Glove Box.>

- 3) Remove the harness cover (A).



- 4) Disconnect the connector from electronic throttle control relay.



B: INSTALLATION

Install in the reverse order of removal.

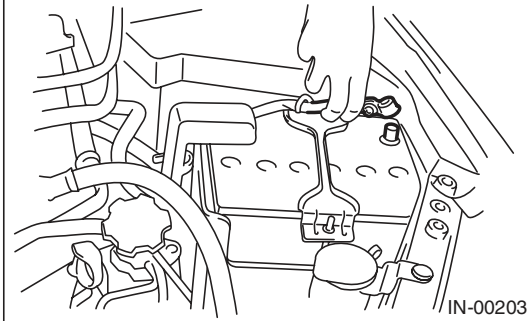
Fuel Pump Control Unit

FUEL INJECTION (FUEL SYSTEMS)

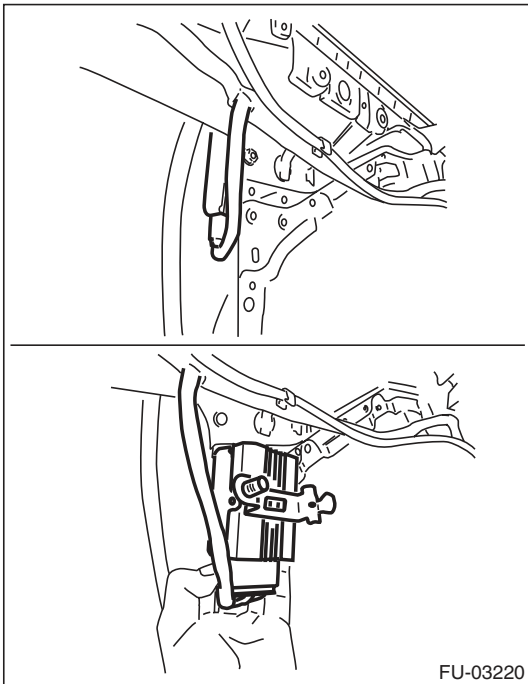
23. Fuel Pump Control Unit

A: REMOVAL

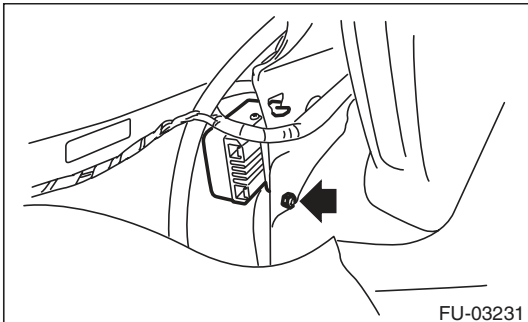
- 1) Disconnect the ground cable from battery.



- 2) Remove the rear quarter trim of the left side. (Wagon model) <Ref. to EI-63, REMOVAL, Rear Quarter Trim.>
 - 3) Peel the trunk side trim of the left side. (Sedan model)
 - 4) Remove the fuel pump control unit.
- Wagon model



- Sedan model



- 5) Disconnect the connector from fuel pump control unit.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

5 N·m (0.5 kgf-m, 3.7 ft-lb)

24.Fuel

A: PROCEDURE

1. RELEASING OF FUEL PRESSURE

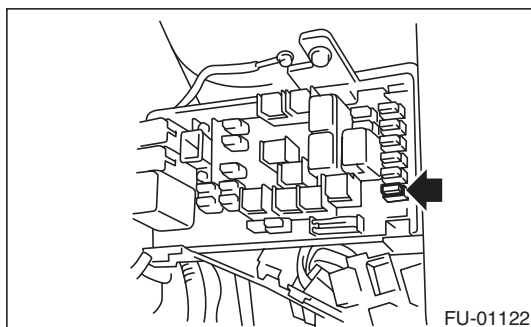
WARNING:

Place “NO OPEN FLAMES” signs near the working area.

CAUTION:

Be careful not to spill fuel.

- 1) Remove the fuse of fuel pump from main fuse box.



- 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 (WITH SUBARU SELECT MONITOR)

WARNING:

Place “NO OPEN FLAMES” signs near the working area.

CAUTION:

Be careful not to spill fuel.

NOTE:

- If the fuel pump cannot be actuated, refer to DRAINING FUEL (THROUGH THE FUEL FILLER HOSE). <Ref. to FU(H6DO)-44, DRAINING FUEL (THROUGH THE FUEL FILLER HOSE), PROCEDURE, Fuel.>

- Be careful not to let the battery run-out.

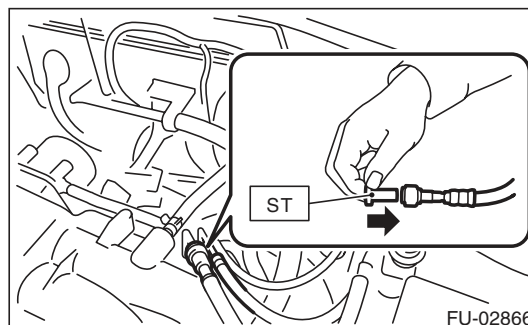
- 1) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

- 2) Attach ST to the fuel delivery pipe and push ST in the direction of arrow mark to disconnect the fuel delivery hose.

ST 42099AE000 QUICK CONNECTOR
RELEASE

CAUTION:

- **Be careful not to spill fuel.**
- **Catch the fuel from hoses using a container or cloth.**



- 3) Connect ST to the fuel delivery hose.
ST 18471AA000 FUEL PIPE ADAPTER
- 4) Connect the gasoline proof hose to ST and put the end of the hose in the container.
- 5) Drive the fuel pump and drain the fuel using Subaru Select Monitor. <Ref. to EN(H6DO)(diag)-54, FUEL PUMP CONTROL (ON/OFF OPERATION), OPERATION, System Operation Check Mode.>

CAUTION:

Be careful not to spill fuel.

3. DRAINING FUEL (THROUGH THE FUEL FILLER HOSE)

WARNING:

Place “NO OPEN FLAMES” signs near the working area.

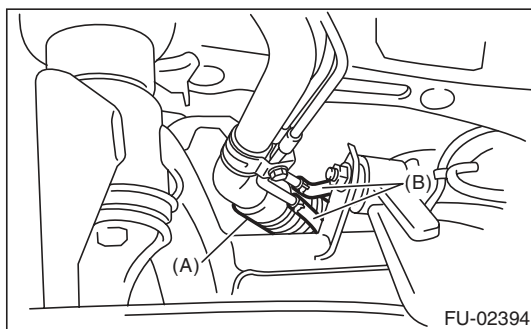
CAUTION:

- Be careful not to spill fuel.
- Fuel may remain in the fuel filler pipe. Draining the fuel from the fuel filler pipe through the fill opening using the gasoline proof pump and the gasoline proof hose (ø10 or less) before the operation.

- 1) Set the vehicle on a lift.
- 2) Lift up the vehicle.
- 3) Remove the rear exhaust pipe and muffler.
<Ref. to EX(H6DO)-7, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H6DO)-9, REMOVAL, Muffler.>
- 4) Open the fuel filler lid, and remove the fuel filler cap.
- 5) Drain the fuel from the fuel filler pipe through the filler opening using the gasoline proof pump and the gasoline proof hose (ø10 or less).
- 6) Disconnect the fuel filler hose (A) from the fuel filler pipe.

CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.



- (A) Fuel filler hose
(B) Evaporation hose

- 7) Set the container under the vehicle and insert the gasoline proof hose (ø10 or less) into the fuel filler hose to drain the fuel.

CAUTION:

Be careful not to spill fuel.

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

25. Fuel Tank

A: REMOVAL

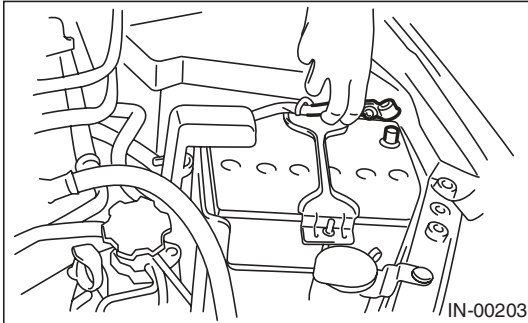
WARNING:

Place "NO OPEN FLAMES" signs near the working area.

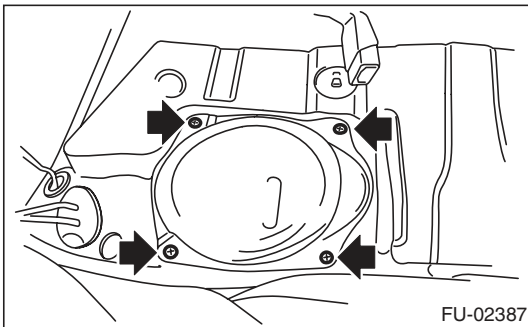
CAUTION:

Be careful not to spill fuel.

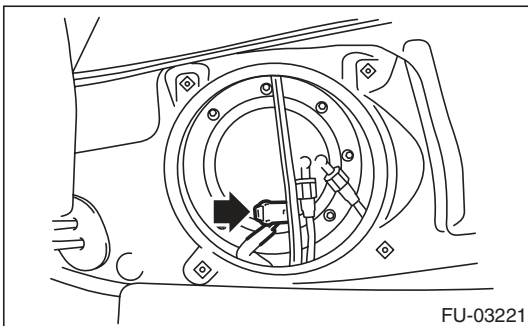
- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Drain fuel. <Ref. to FU(H6DO)-43, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>
- 4) Disconnect the ground cable from battery.



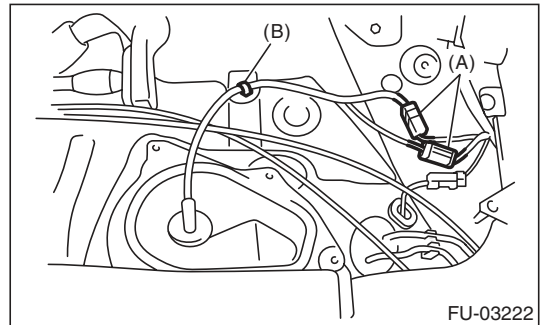
- 5) Remove the rear seat.
- 6) Remove the service hole cover of fuel pump.



- 7) Disconnect the connector from fuel pump.

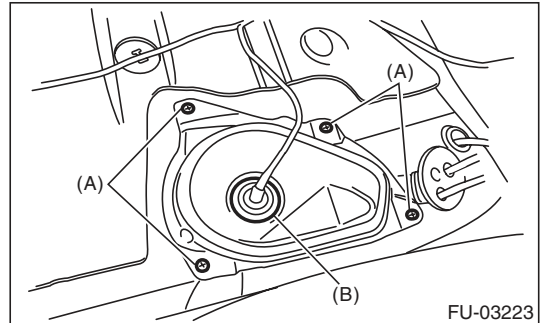


- 8) Remove the connector (A) and clip (B).



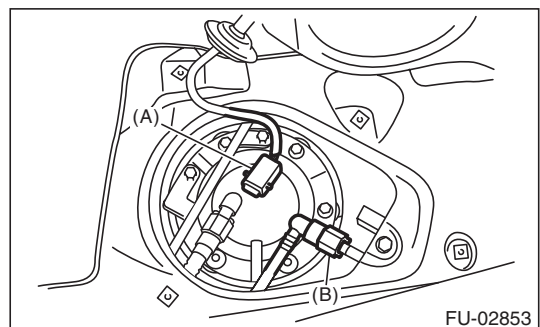
- 9) Remove the service hole cover of fuel sub level sensor.

- (1) Remove the bolt (A).
- (2) Push the grommet (B) down and remove the service hole cover.



- 10) Disconnect connector (A) from fuel sub level sensor.

- 11) Disconnect the quick connector on the fuel delivery hose (B). <Ref. to FU(H6DO)-65, REMOVAL, Fuel Delivery and Evaporation Lines.>

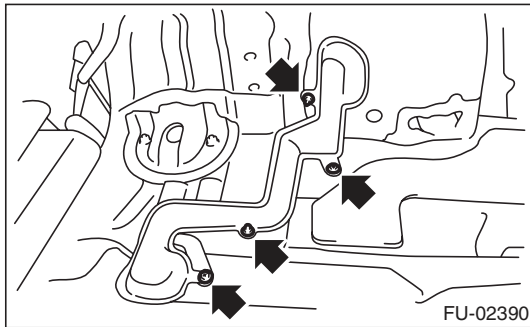


- 12) Remove the trunk room trim. (Sedan model) <Ref. to EI-70, REMOVAL, Trunk Room Trim.>
- 13) Remove the rear quarter trim. (Wagon model) <Ref. to EI-63, WAGON MODEL, REMOVAL, Rear Quarter Trim.>

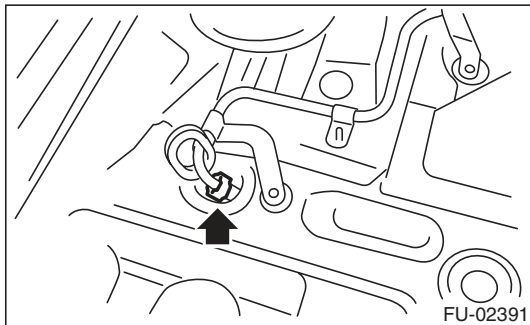
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

- 14) Remove the pipe protector.



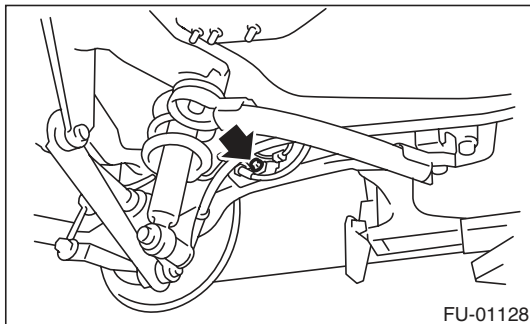
- 15) Remove the grommet and disconnect the quick connector of the evaporation pipe. <Ref. to FU(H6DO)-65, REMOVAL, Fuel Delivery and Evaporation Lines.>



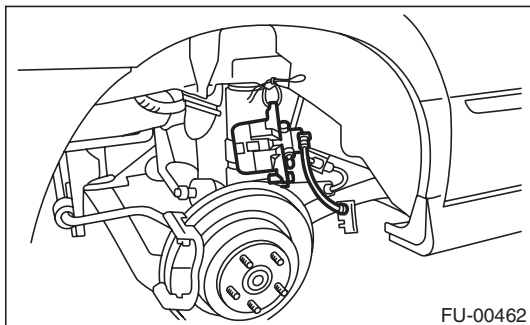
- 16) Remove the rear wheels.

- 17) Lift up the vehicle.

- 18) Remove the bolts which secure the rear brake hose mounting bracket.



- 19) Remove the rear disc brake assembly and tie it to the body side of the vehicle.



- 20) Remove the parking brake cable from parking brake assembly. <Ref. to PB-6, REMOVAL, Parking Brake Assembly (Rear Disc Brake).>

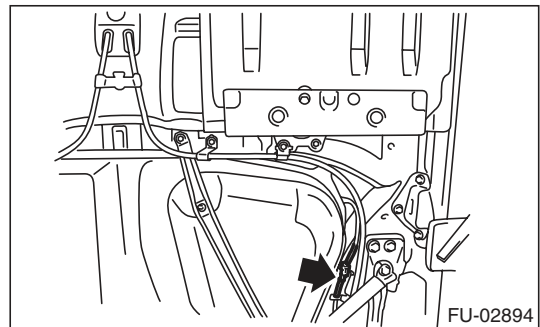
- 21) Lift up the vehicle.

- 22) Remove the rear exhaust pipe. <Ref. to EX(H6DO)-7, REMOVAL, Rear Exhaust Pipe.>

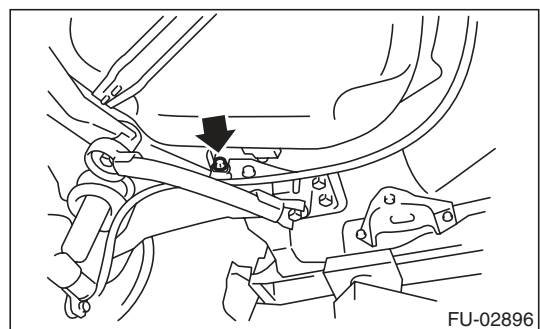
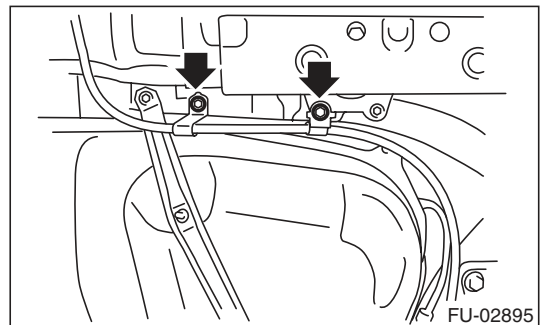
- 23) Remove the propeller shaft. <Ref. to DS-10, REMOVAL, Propeller Shaft.>

- 24) Remove the heat shield cover and fuel tank protector.

- 25) Disconnect the connector from the rear ABS wheel speed sensor.



- 26) Remove the bolts securing the parking brake cable clamp.



Fuel Tank

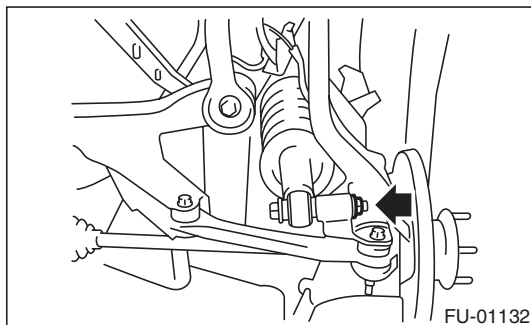
FUEL INJECTION (FUEL SYSTEMS)

27) Remove the rear suspension assembly.

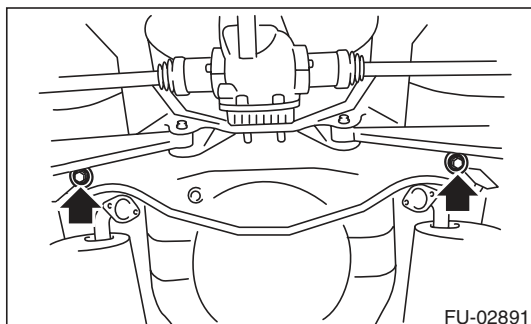
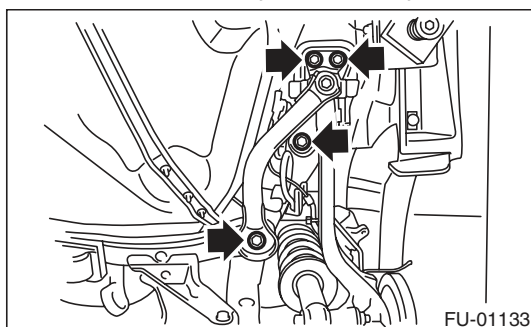
CAUTION:

A helper is required to perform this work.

- (1) Support the rear suspension assembly with the transmission jack.
- (2) Remove the bolts which hold the rear shock absorber to the rear suspension arm.

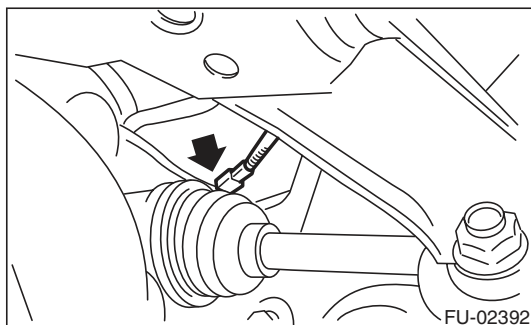


- (3) Remove the bolts which secure the rear suspension assembly to the body.

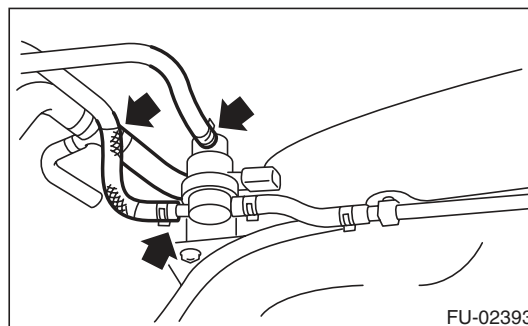


- (4) Remove the rear suspension assembly.

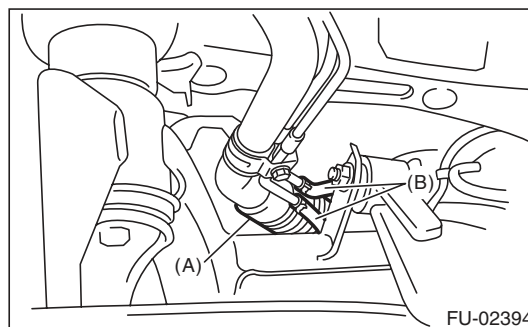
28) Disconnect the connector.



29) Disconnect the evaporation hose.



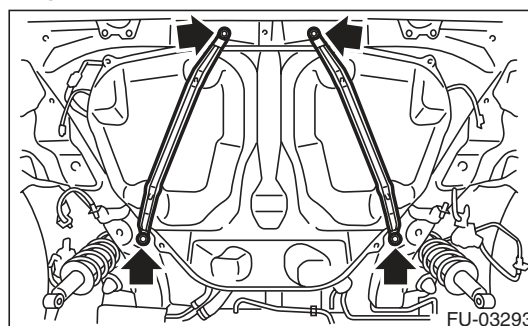
30) Disconnect the fuel filler hose (A) and evaporation hose (B).



31) Support the fuel tank with a transmission jack, remove the bolts from the fuel tank band, and remove the fuel tank from the vehicle.

WARNING:

- A helper is required to perform this work.
- Fuel may remain in the fuel tank. This will cause the left and right sides to be unbalanced. Be careful not to drop the fuel tank when removing.



Fuel Tank

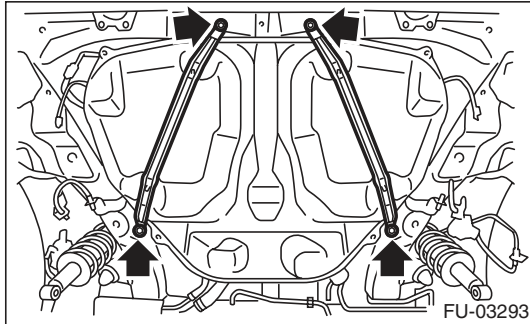
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

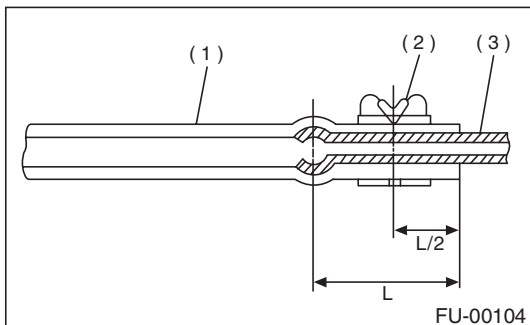
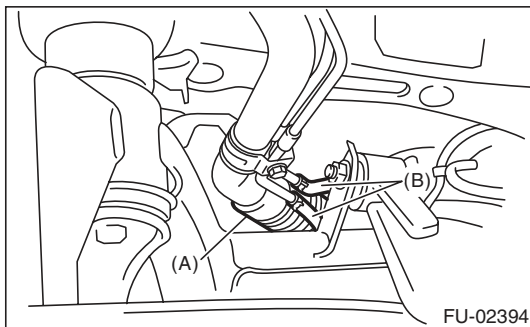
1) Support the fuel tank with a transmission jack, set the fuel tank in place, and temporarily tighten the bolts of the fuel tank band.

WARNING:

A helper is required to perform this work.

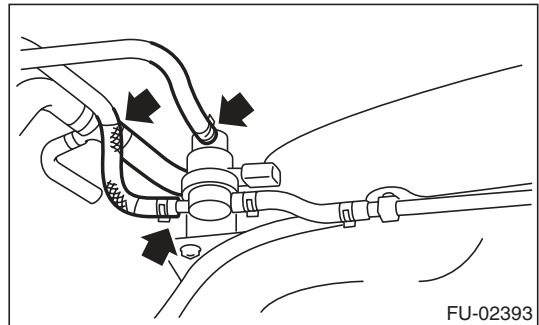


2) Securely insert the fuel filler hose (A) and evaporation hose (B) to the specified position, then tighten the clip or clamp.



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

3) Connect the evaporation hose.

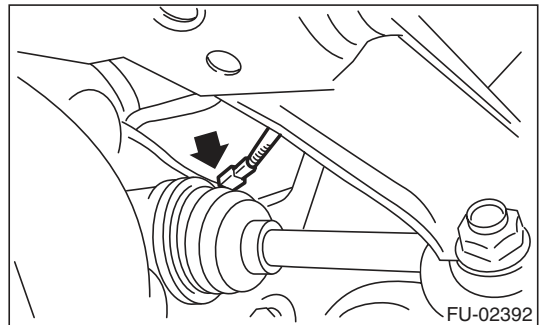


4) Tighten the fuel tank band bolts.

Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)

5) Connect the connector.



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

6) Install the rear suspension assembly.

CAUTION:

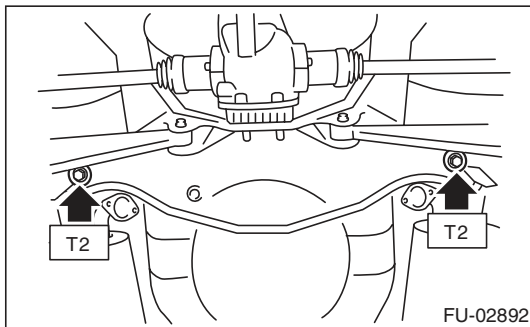
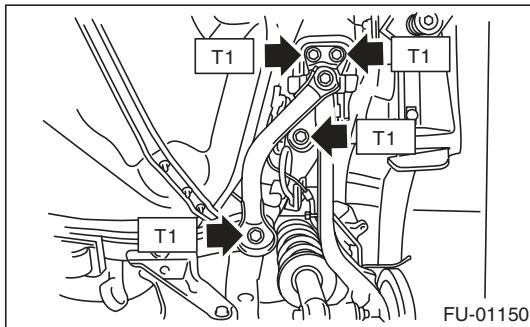
A helper is required to perform this work.

- (1) Support the rear suspension assembly with a transmission jack.
- (2) Support the rear suspension assembly, and tighten the bolts which secure the rear suspension assembly to the body.

Tightening torque:

T1: 125 N·m (12.7 kgf-m, 92.2 ft-lb)

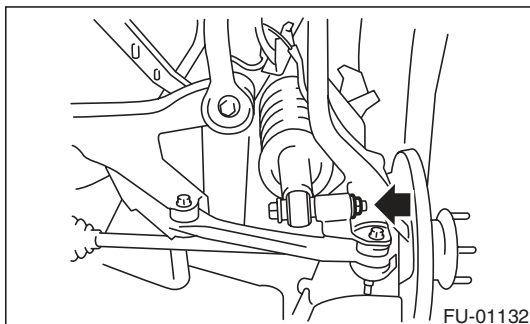
T2: 175 N·m (17.8 kgf-m, 129.1 ft-lb)



- (3) Tighten the bolts which hold the rear shock absorber to the rear suspension arm. <Ref. to RS-10, INSTALLATION, Rear Arm.>

Tightening torque:

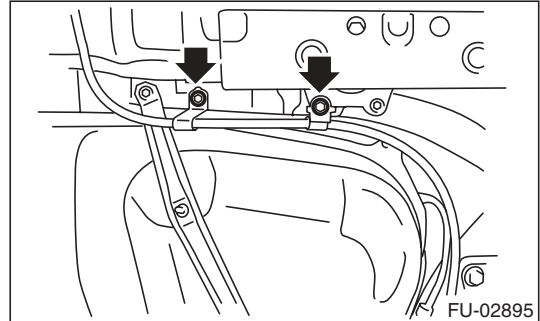
62 N·m (6.3 kgf-m, 45.7 ft-lb)



- 7) Tighten the bolts holding the parking brake cable clamp.

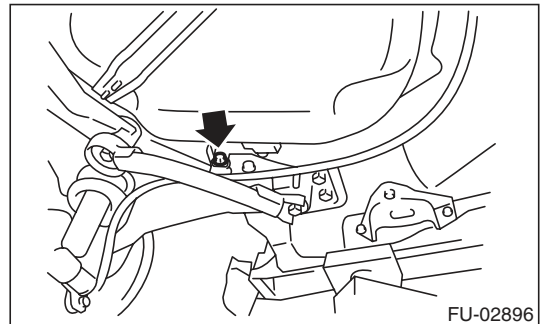
Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)

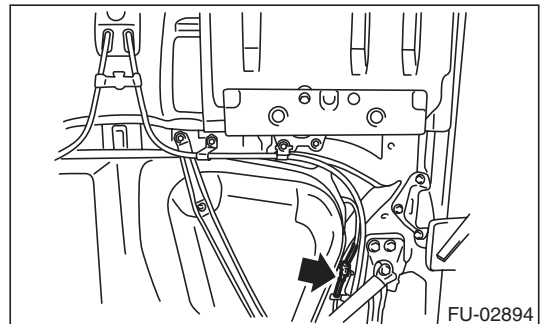


Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)



- 8) Connect the connector to the rear ABS wheel speed sensor.



- 9) Install the heat shield cover.

Tightening torque:

17.5 N·m (1.8 kgf-m, 12.9 ft-lb)

- 10) Install the fuel tank protector.

Tightening torque:

Nut: 9 N·m (0.9 kgf-m, 6.6 ft-lb)

Bolt: 17.5 N·m (1.8 kgf-m, 12.9 ft-lb)

- 11) Install the propeller shaft. <Ref. to DS-11, INSTALLATION, Propeller Shaft.>

- 12) Install the rear exhaust pipe. <Ref. to EX(H6DO)-8, INSTALLATION, Rear Exhaust Pipe.>

- 13) Lower the vehicle.

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

14) Connect the parking brake cable to the parking brake assembly. <Ref. to PB-7, INSTALLATION, Parking Brake Assembly (Rear Disc Brake).>

15) Install the rear disc brake assembly.

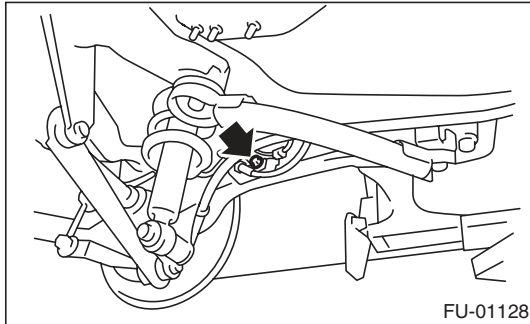
Tightening torque:

66 N·m (6.7 kgf-m, 48.7 ft-lb)

16) Tighten the bolts which secure the rear brake hose mounting bracket.

Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)

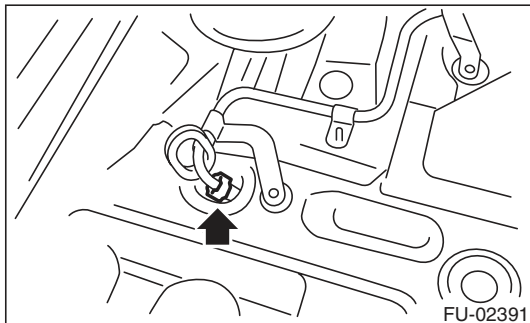


17) Install the rear wheels.

Tightening torque:

120 N·m (12.2 kgf-m, 88.5 ft-lb)

18) Connect the quick connector of the evaporation pipe. <Ref. to FU(H6DO)-66, INSTALLATION, Fuel Delivery and Evaporation Lines.>

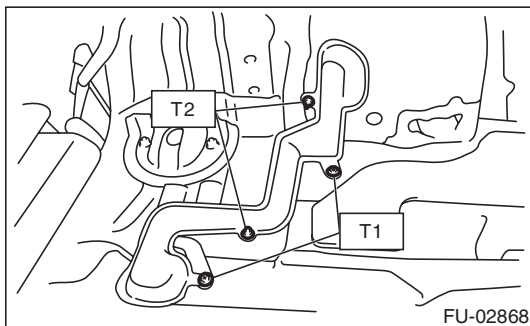


19) Install the pipe protector.

Tightening torque:

T1: 1 N·m (0.1 kgf-m, 0.7 ft-lb)

T2: 7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

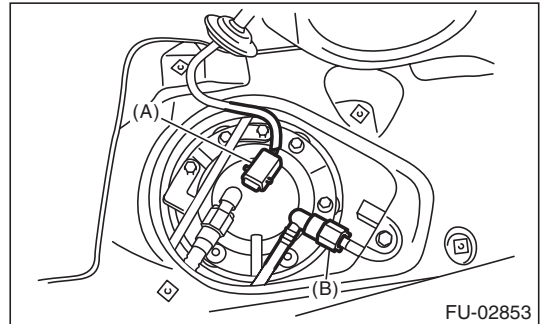


20) Install the trunk room trim. (Sedan model) <Ref. to EI-71, INSTALLATION, Trunk Room Trim.>

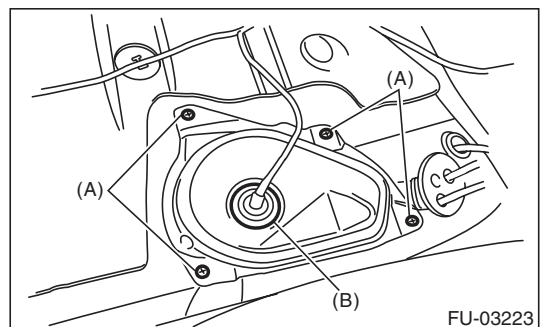
21) Install the rear quarter trim. (Wagon model) <Ref. to EI-64, INSTALLATION, Rear Quarter Trim.>

22) Connect connector (A) to the fuel sub level sensor.

23) Connect the quick connector of the fuel delivery hose (B). <Ref. to FU(H6DO)-66, INSTALLATION, Fuel Delivery and Evaporation Lines.>



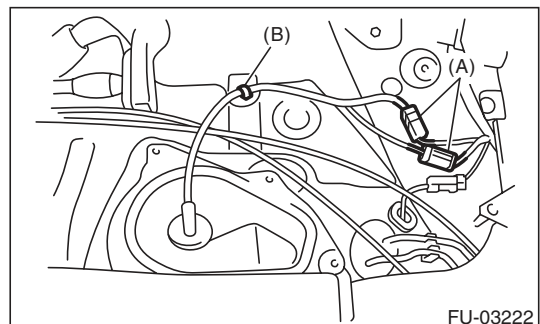
24) Install the service hole cover of fuel sub level sensor.



(A) Bolt

(B) Grommet

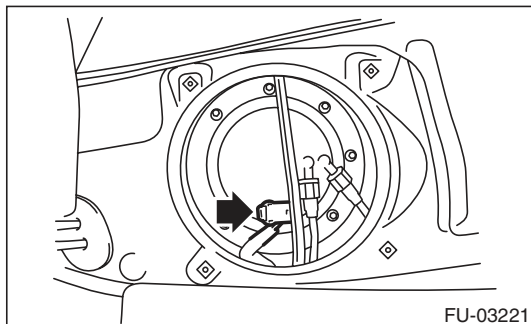
25) Connect connector (A) and install clip (B).



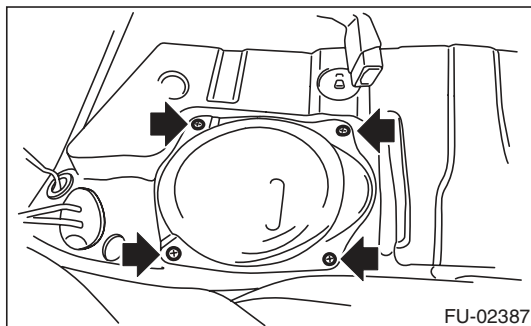
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

26) Connect the connector to the fuel pump.



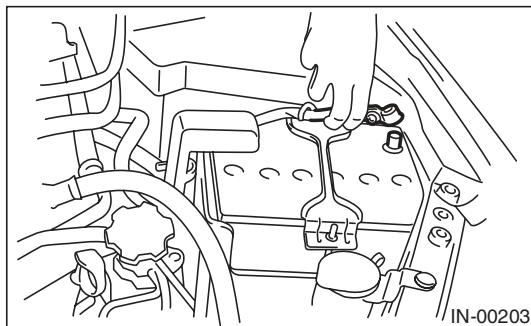
27) Install the service hole cover of fuel pump.



28) Install the rear seat.

29) Install the fuse of fuel pump to the main fuse box.

30) Connect the ground cable to battery.



31) Inspect the wheel alignment and adjust if necessary.

C: INSPECTION

1) Check that the fuel tank does not have holes, cracks or is damaged in any way.

2) Make sure that the fuel pipe and fuel hose are not cracked and that the connections are tight.

Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

26. Fuel Filler Pipe

A: REMOVAL

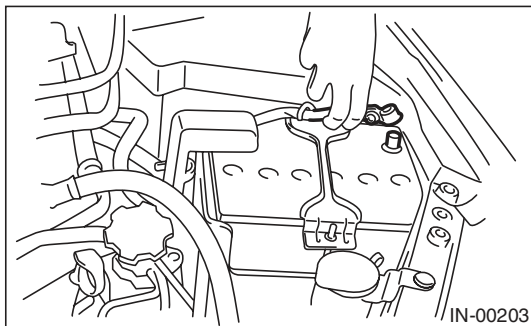
WARNING:

Place "NO OPEN FLAMES" signs near the working area.

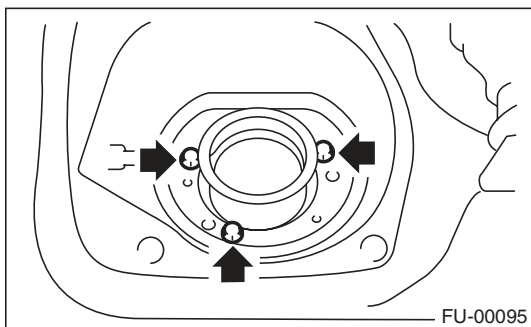
CAUTION:

Be careful not to spill fuel.

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Drain fuel. <Ref. to FU(H6DO)-43, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>
- 4) Disconnect the ground cable from battery.

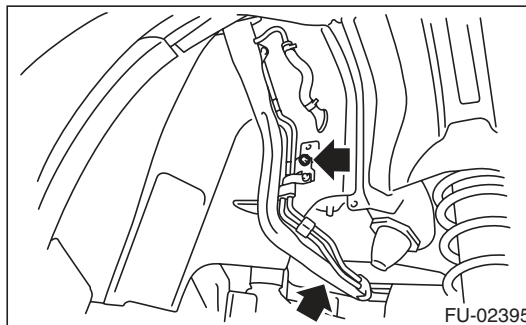


- 5) Open the fuel filler lid, and remove the filler cap.
- 6) Remove the screws which secure gasket.

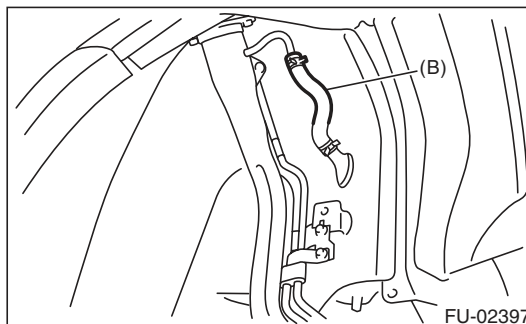
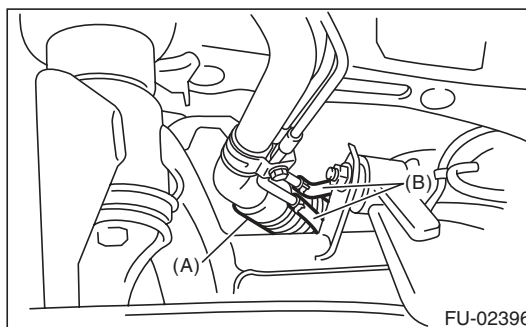


- 7) Remove the rear wheel RH.
- 8) Lift up the vehicle.
- 9) Remove the mud guard. <Ref. to EI-29, REMOVAL, Mud Guard.>
- 10) Remove the rear sub frame. <Ref. to RS-21, REMOVAL, Rear Sub Frame.>

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



- 12) Disconnect the fuel filler hose (A) and evaporation hose (B).



- 13) Remove the fuel filler pipe to the underside of the vehicle.

Fuel Filler Pipe

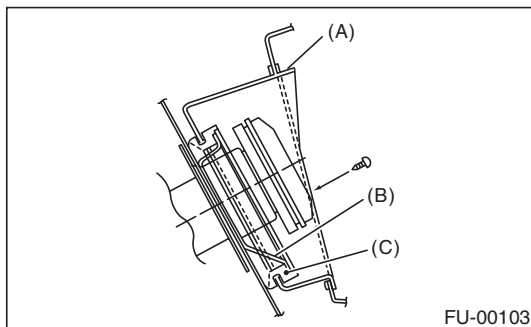
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

- 1) Open the fuel filler lid.
- 2) Set the fuel saucer (A) with rubber gasket (C), and insert the fuel filler pipe into hole from the inner side of apron.
- 3) Align the holes in fuel filler pipe neck and set the cup (B), and tighten the screws.

NOTE:

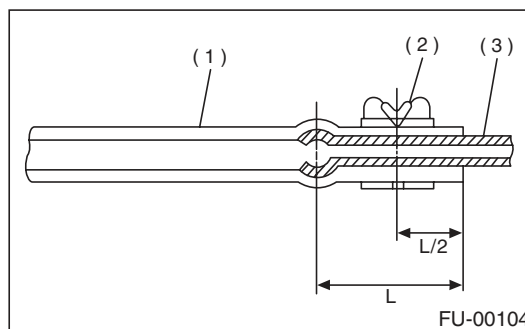
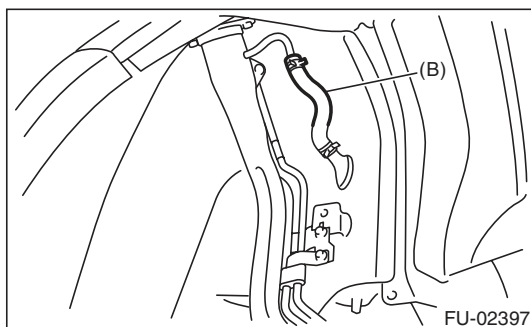
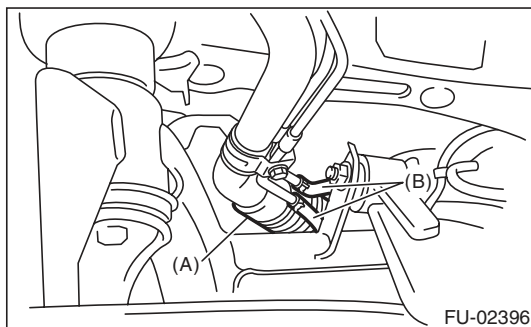
If the edges of rubber gasket are folded toward inside, straighten it with a flat tip screwdriver.



- 4) Securely insert the fuel filler hose (A) and evaporation hose (B) into the specified position, then tighten the clamp or clip as shown in the figure.

Tightening torque:

2.5 N·m (0.3 kgf-m, 1.8 ft-lb)

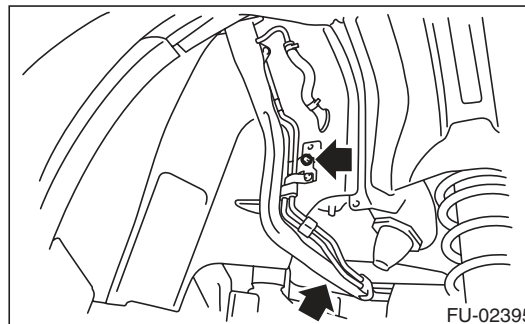


- (1) Hose
- (2) Clip or clamp
- (3) Pipe

- 5) Tighten the bolts which hold fuel filler pipe bracket on the body.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

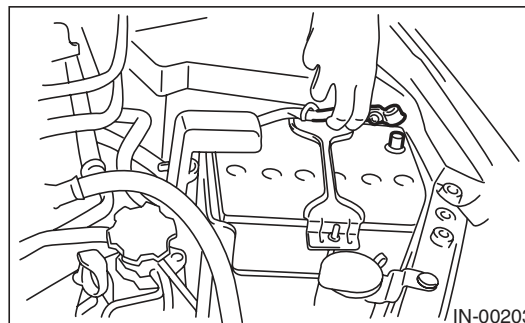


- 6) Install the rear sub frame. <Ref. to RS-21, INSTALLATION, Rear Sub Frame.>
- 7) Install the mud guard. <Ref. to EI-29, INSTALLATION, Mud Guard.>
- 8) Lower the vehicle.
- 9) Install the rear wheel RH.

Tightening torque:

120 N·m (12.2 kgf-m, 88.5 ft-lb)

- 10) Connect the ground cable to battery.



- 11) Inspect the wheel alignment and adjust if necessary.

Fuel Filler Pipe

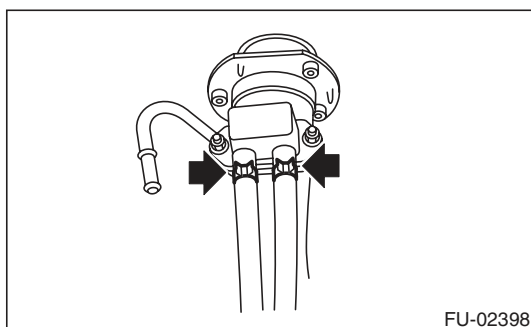
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

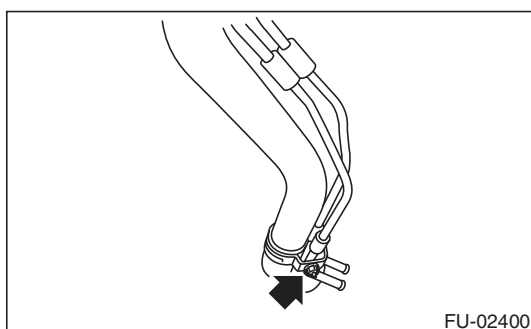
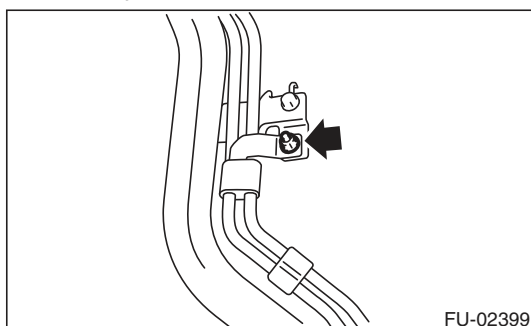
- 1) Check that the fuel tank does not have holes, cracks or is damaged in any way.
- 2) Make sure that the fuel hose is not cracked and that the connections are tight.

D: DISASSEMBLY

- 1) Move the clip and disconnect the evaporation hose from the shut valve.



- 2) Remove the nut which holds the evaporation pipe assembly to the fuel filler pipe.



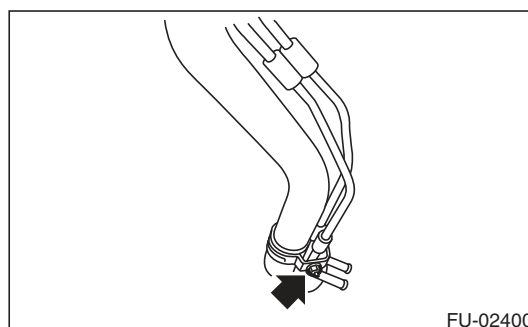
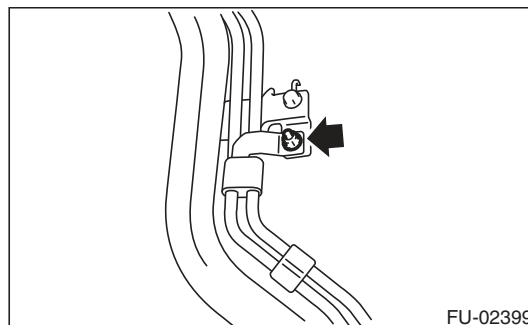
- 3) Remove the shut valve from the fuel filler pipe. <Ref. to EC(H4SO)-15, REMOVAL, Shut Valve.>

E: ASSEMBLY

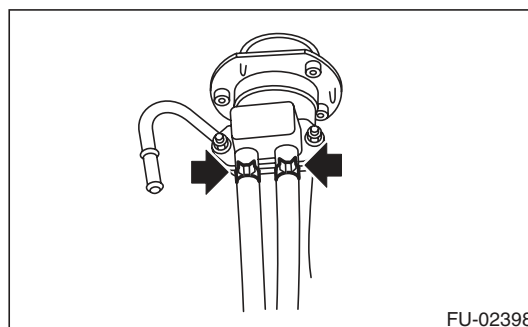
- 1) Install the shut valve to the fuel filler pipe. <Ref. to EC(H4SO)-15, INSTALLATION, Shut Valve.>
- 2) Tighten the nuts which secure the evaporation pipe assembly to the fuel filler pipe.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



- 3) Connect the evaporation hose to the shut valve.



Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

27. Fuel Pump

A: REMOVAL

WARNING:

Place "NO OPEN FLAMES" signs near the working area.

CAUTION:

- Be careful not to spill fuel.
- If the fuel gauge indicates that two thirds or more of the fuel is remaining, be sure to drain fuel before starting work to avoid the fuel to spill.

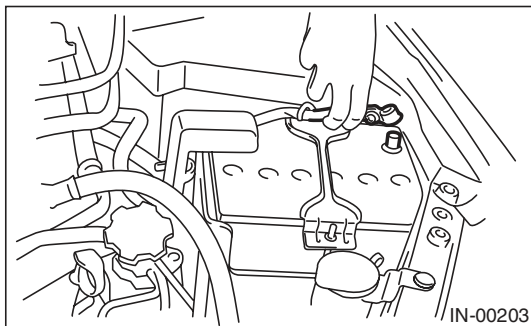
NOTE:

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

1) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

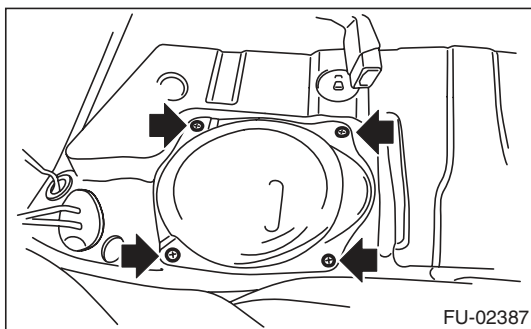
2) Drain fuel. <Ref. to FU(H6DO)-43, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>

3) Disconnect the ground cable from battery.

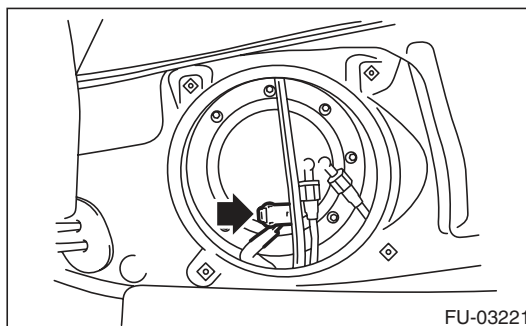


4) Remove the rear seat.

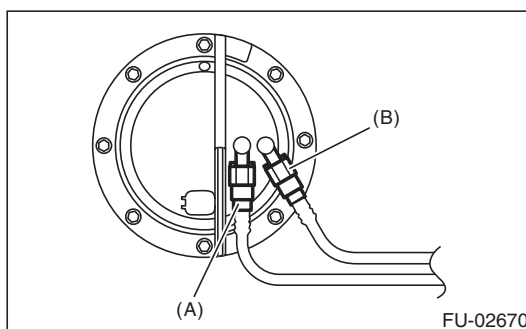
5) Remove the service hole cover.



6) Disconnect the connector from fuel pump.



7) Disconnect the quick connector on the fuel delivery hose and jet pump hose. <Ref. to FU(H6DO)-65, REMOVAL, Fuel Delivery and Evaporation Lines.>



(A) Fuel delivery hose

(B) Jet pump hose

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

9) Remove the fuel pump assembly from the fuel tank.

Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

Install in the reverse order of removal while being careful of the following.

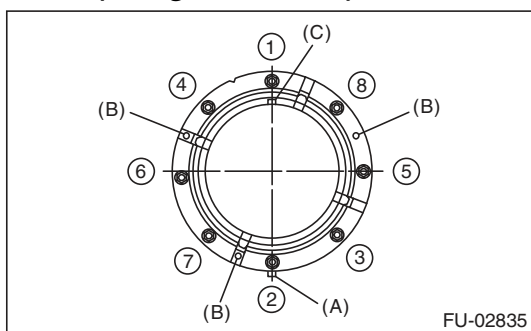
- Make sure the sealing portion is free from fuel or foreign matter before installation.
- When assembling, point the protrusion of the gasket (A) towards the front of the vehicle.
- Insert the protrusion (B) of the gasket into the upper plate. (3 places)
- Align the protrusion (C) of the fuel pump assembly to the cut out in the upper plate.
- Tighten the nuts to the specified torque in the order as shown in the figure.

NOTE:

Use new gasket and retainer.

Tightening torque:

4.4 N·m (0.4 kgf-m, 3.2 ft-lb)

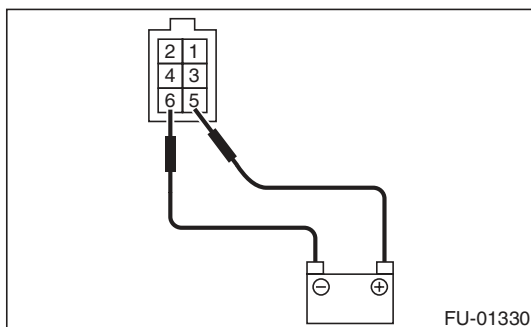


C: INSPECTION

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

CAUTION:

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



28. Fuel Level Sensor

A: REMOVAL

WARNING:

Place “NO OPEN FLAMES” signs near the working area.

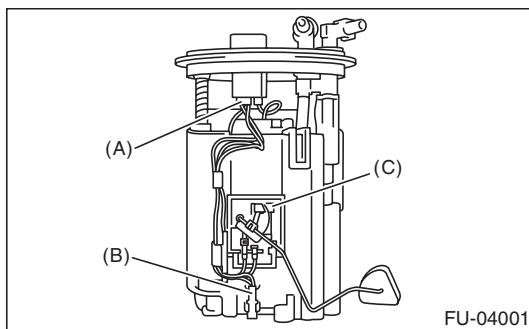
CAUTION:

- Be careful not to spill fuel.
- If the fuel gauge indicates that two thirds or more of the fuel is remaining, be sure to drain fuel before starting work to avoid the fuel to spill.

NOTE:

The fuel level sensor is built in fuel pump assembly.

- 1) Remove the fuel pump assembly. <Ref. to FU(H6DO)-55, REMOVAL, Fuel Pump.>
- 2) Disconnect the connector from fuel pump bracket.
- 3) Remove the fuel temperature sensor.
- 4) Remove the fuel level sensor.



- (A) Connector
(B) Fuel temperature sensor
(C) Fuel level sensor

B: INSTALLATION

Install in the reverse order of removal.

Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

29. Fuel Sub Level Sensor

A: REMOVAL

WARNING:

Place "NO OPEN FLAMES" signs near the working area.

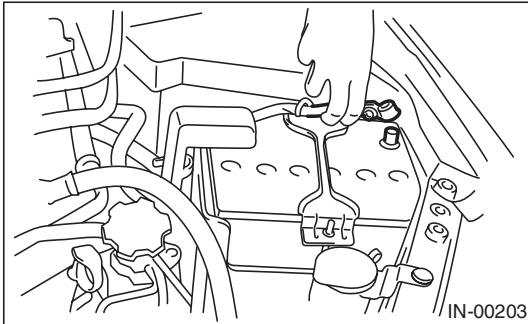
CAUTION:

- Be careful not to spill fuel.
- If the fuel gauge indicates that two thirds or more of the fuel is remaining, be sure to drain fuel before starting work to avoid the fuel to spill.

1) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

2) Drain fuel. <Ref. to FU(H6DO)-43, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>

3) Disconnect the ground cable from battery.

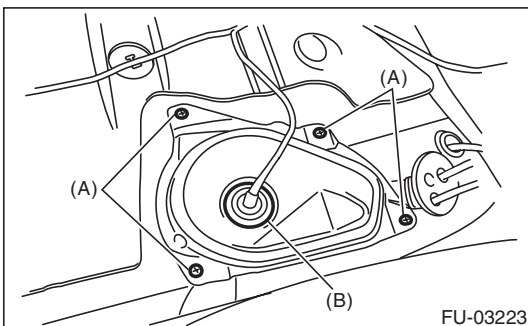


4) Remove the rear seat.

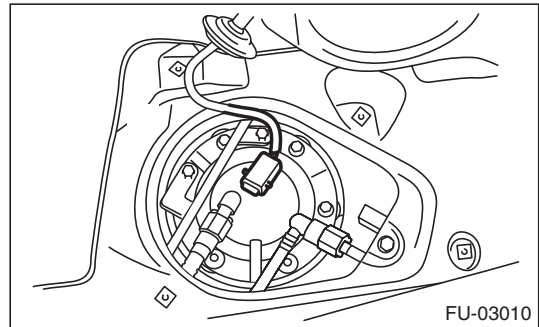
5) Remove the service hole cover.

(1) Remove bolt (A).

(2) Push the grommet (B) down and remove the service hole cover.

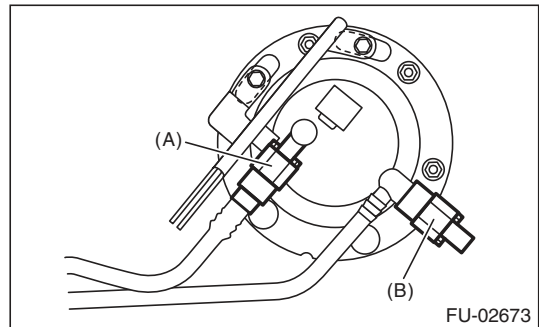


6) Disconnect the connector from the fuel sub level sensor.



7) Disconnect the quick connector on the fuel delivery hose and jet pump hose. <Ref. to FU(H6DO)-65, REMOVAL, Fuel Delivery and Evaporation Lines.>

8) Remove the nuts and bolts which install fuel sub level sensor on fuel tank.



(A) Jet pump hose

(B) Fuel delivery hose

9) Remove the fuel sub level sensor.

B: INSTALLATION

Install in the reverse order of removal while being careful of the following.

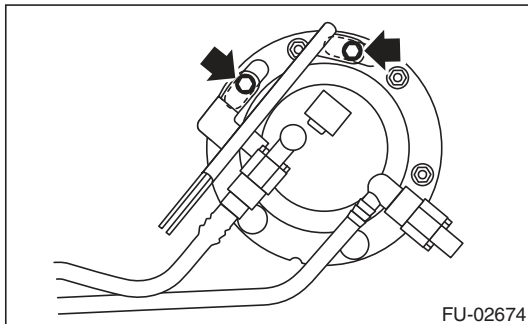
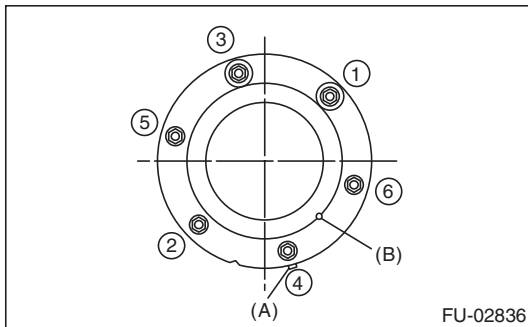
- Make sure the sealing portion is free from fuel or foreign matter before installation.
- Align protrusion (A) of the gasket to the position shown in the following figure.
- Align the protrusion (B) of fuel sub level sensor with the cutout on the upper plate of fuel sub level sensor.
- Tighten the nuts and bolts to the specified torque in the order as shown in the figure.

NOTE:

Use a new gasket and retainer.

Tightening torque:

4.4 N·m (0.4 kgf-m, 3.2 ft-lb)



Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

30. Fuel Filter

A: REMOVAL

WARNING:

Place “NO OPEN FLAMES” signs near the working area.

CAUTION:

- Be careful not to spill fuel.
- If the fuel gauge indicates that two thirds or more of the fuel is remaining, be sure to drain fuel before starting work to avoid the fuel to spill.
- Be careful not to drop or apply any impact to the fuel pump during work. This may deteriorate its performance.

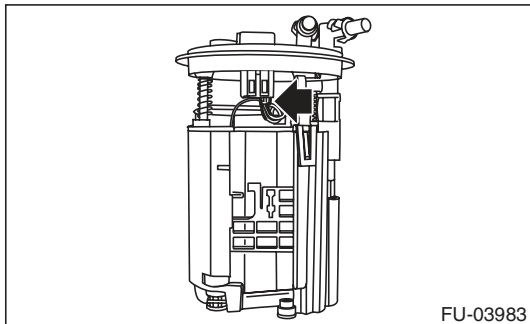
NOTE:

The fuel filter is built in fuel pump assembly.

1) Remove the fuel pump assembly. <Ref. to FU(H6DO)-55, REMOVAL, Fuel Pump.>

2) Remove the fuel level sensor and fuel temperature sensor. <Ref. to FU(H6DO)-57, REMOVAL, Fuel Level Sensor.>

3) Disconnect the pump assembly connector from the sub tank bracket assembly.



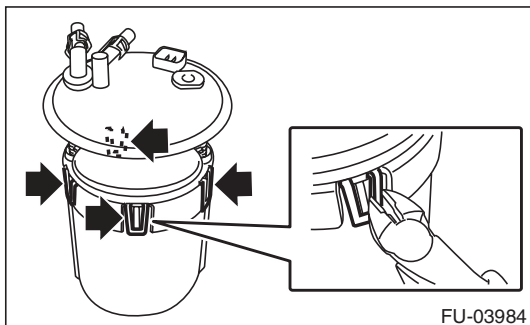
4) Cut off the tab holders connecting the sub tank bracket assembly and the sub tank in four locations, and separate the two.

CAUTION:

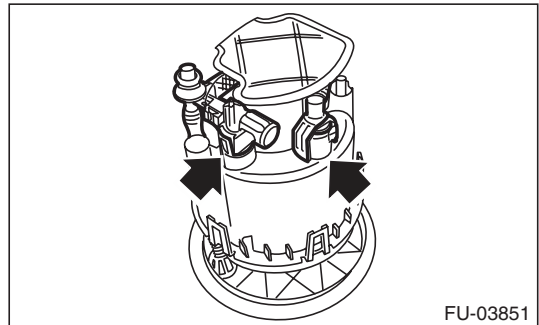
Be careful not to damage the sub tank.

NOTE:

If the O-ring is remaining on the sub tank, remove.



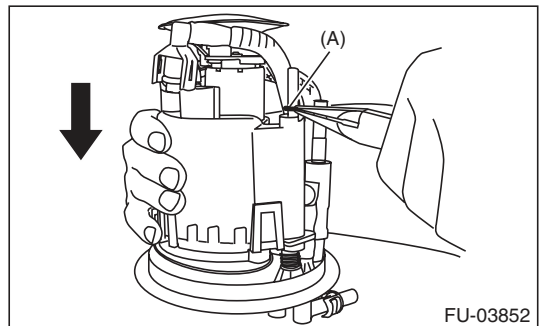
5) Disconnect the fuel piping connector from the fuel filter assembly in two locations.



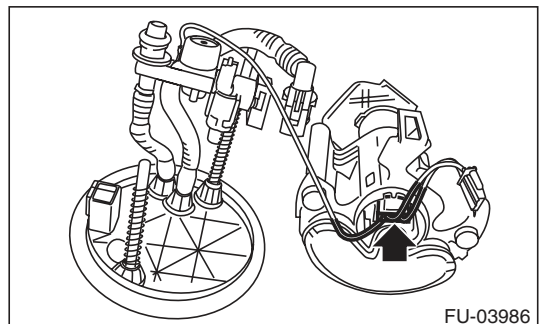
6) Push to compress the fuel filter assembly in the direction of the arrow, remove clip (A), and separate the sub tank bracket assembly and the fuel filter assembly.

CAUTION:

When separating the sub tank bracket assembly and the fuel filter assembly, be careful not to damage the ground wire.



7) Disconnect the connector from the pump assembly.



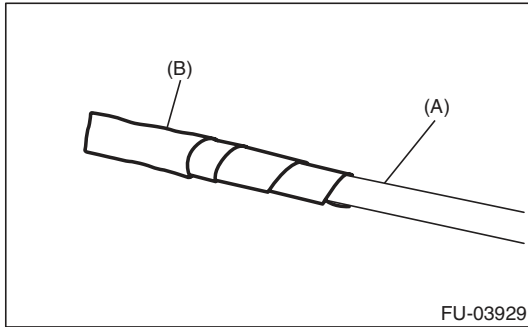
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

8) Lift the two tab holders connecting the pump assembly to the fuel filter using a flat tip screwdriver [with a shaft diameter of approx. 3 mm (0.12 in)], etc., and separate the fuel filter and pump assembly.

CAUTION:

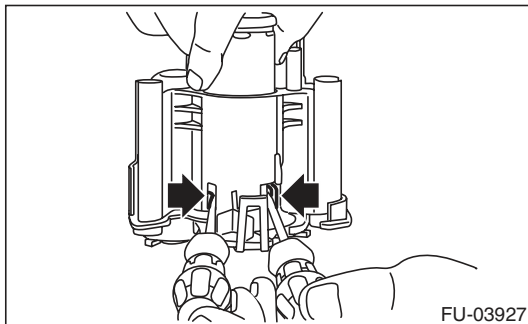
- To prevent damaging the tabs of the pump assembly, wrap the tip of flat tip screwdriver (A), etc. with tape (B).



- Be careful not to drop or apply any impact to the pump assembly.

NOTE:

If the spacer and O-ring is remaining on the pump assembly, remove these.

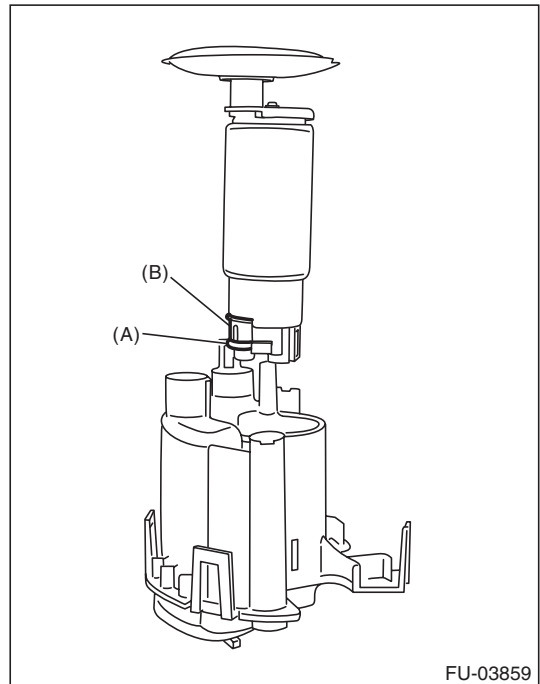


B: INSTALLATION

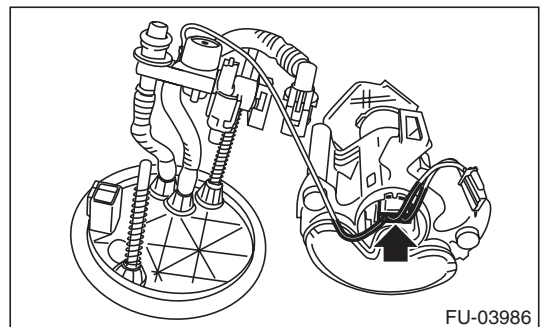
1) Assemble o-ring (A) and spacer (B) to the fuel pump, and attach the pump assembly to the fuel filter.

NOTE:

- Use new O-rings [8 mm (0.31 in) inner diameter].
- Use a new spacer.
- Apply gasoline to the o-ring.
- Insert the pump assembly until a “pop” is heard.



2) Connect the connector to the pump assembly.



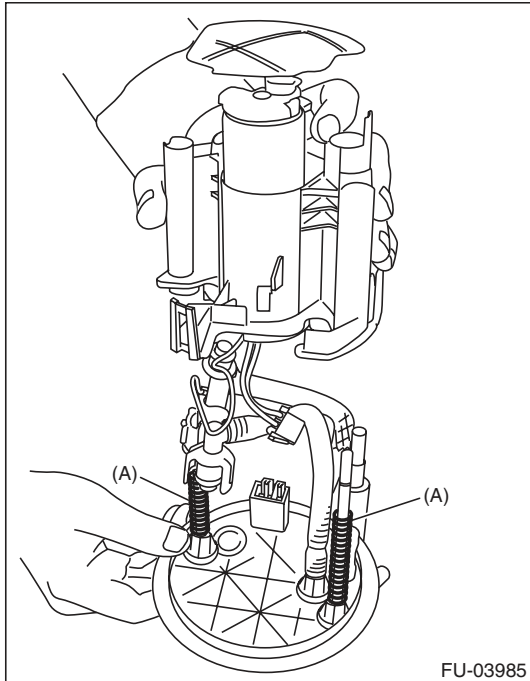
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

3) Attach spring (A) to the metal rod of the sub tank bracket assembly, and assemble the fuel filter assembly.

NOTE:

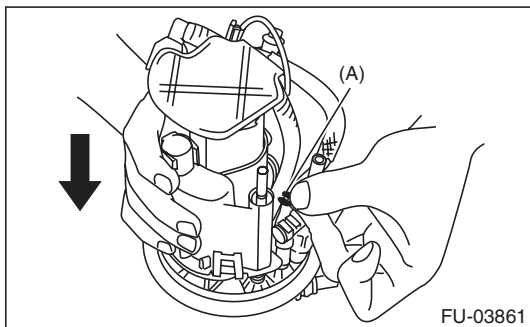
Use a new spring.



4) Push the fuel filter assembly in the direction of the arrow to compress, and attach clip (A).

NOTE:

Use a new clip.



5) Connect the fuel piping connector to the fuel filter assembly.

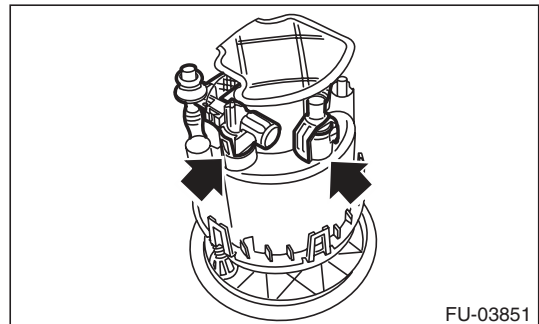
NOTE:

- Use new O-rings.
- Apply gasoline to the o-ring.
- The O-rings of the black and white connectors are identified by a difference in diameter. Be careful not to confuse the two during assembly.

O-ring inner diameter:

Black connector O-ring [Approx. 7 mm (0.28 in)]

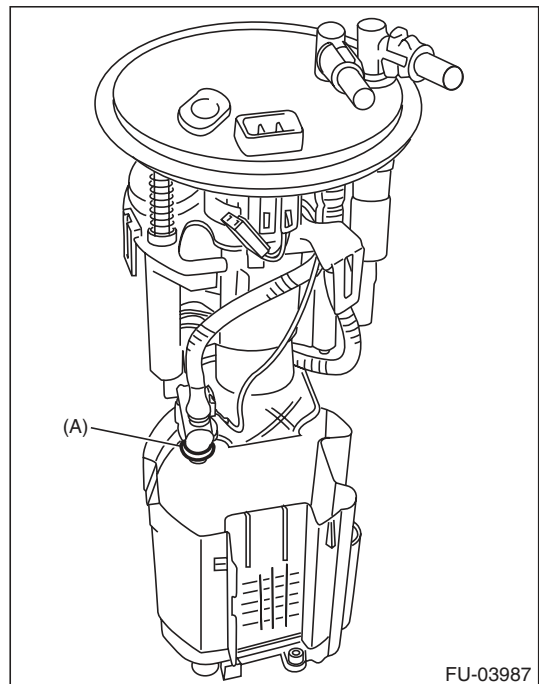
White connector O-ring [Approx. 8 mm (0.31 in)]



6) Attach the O-ring (A) to the fuel filter assembly, and attach the sub tank to the sub tank bracket assembly.

NOTE:

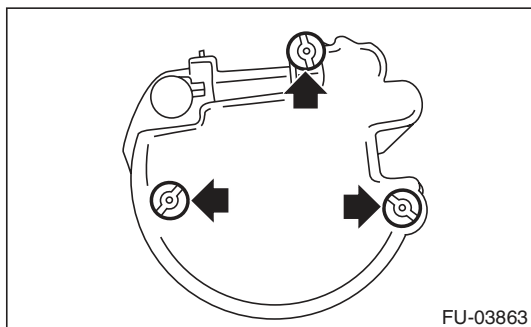
- Use new O-rings [8 mm (0.31 in) inner diameter].
- Apply gasoline to the o-ring.
- Insert the pump assembly until a “pop” is heard.



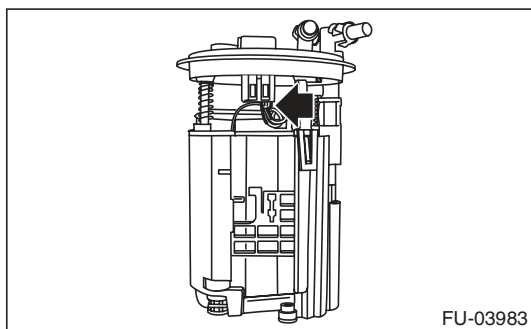
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

7) Replace the cushion on the rear face of the sub tank with a new cushion.



8) Connect the pump assembly connector to the sub tank bracket assembly.



9) Install the fuel level sensor and fuel temperature sensor. <Ref. to FU(H6DO)-57, INSTALLATION, Fuel Level Sensor.>

10) Install the fuel pump assembly. <Ref. to FU(H6DO)-56, INSTALLATION, Fuel Pump.>

Fuel Damper

FUEL INJECTION (FUEL SYSTEMS)

31.Fuel Damper

A: REMOVAL

WARNING:

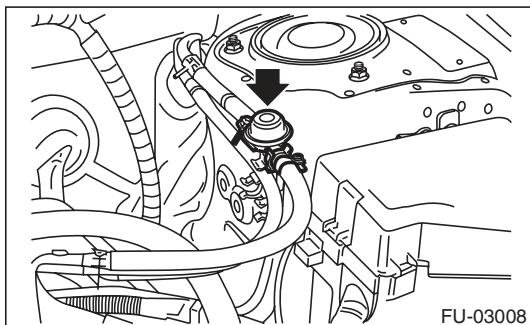
Place “NO OPEN FLAMES” signs near the working area.

CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.

1) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

2) Remove the fuel damper from the fuel delivery line.



B: INSTALLATION

CAUTION:

If fuel hoses or clamps are damaged, replace them with new parts.

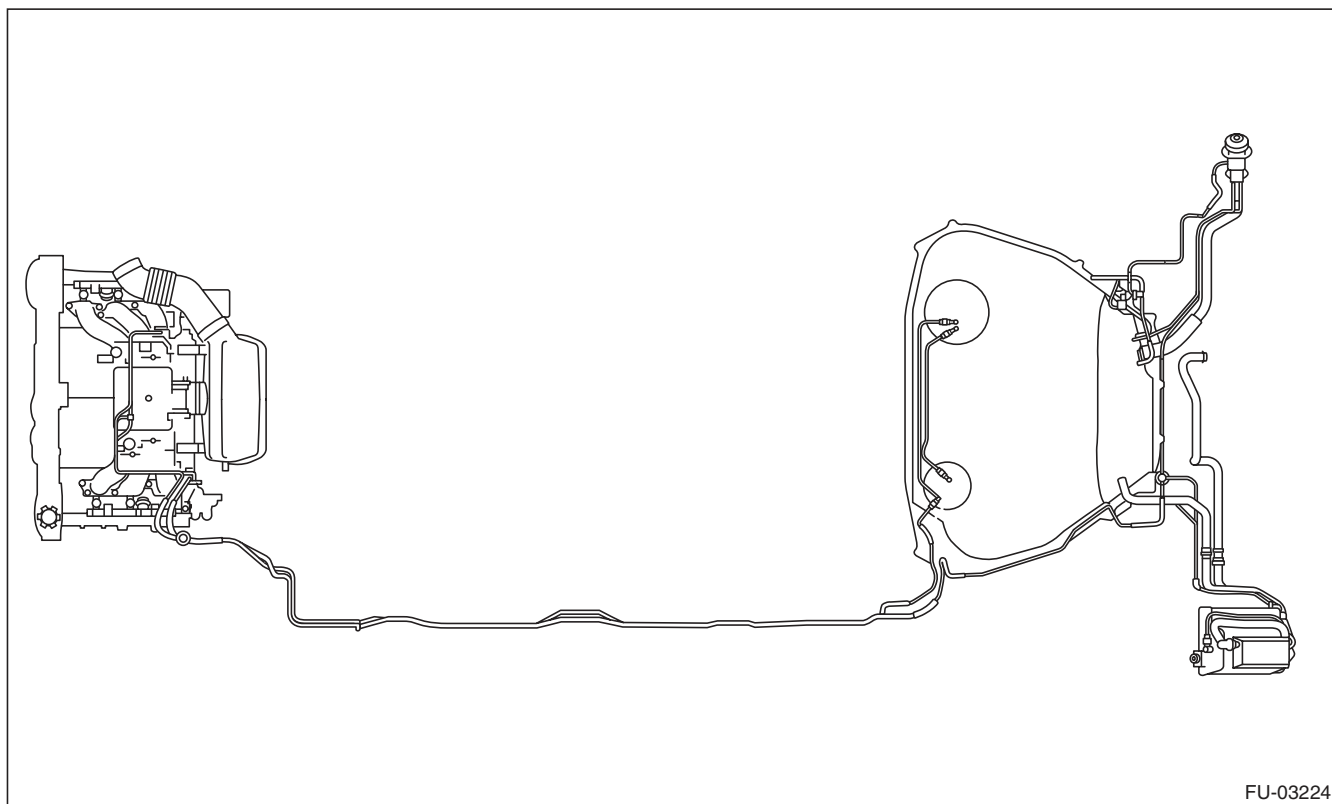
Install in the reverse order of removal.

Tightening torque:

1.25 N·m (0.1 kgf-m, 0.9 ft-lb)

32. Fuel Delivery and Evaporation Lines

A: REMOVAL



WARNING:

Place “NO OPEN FLAMES” signs near the working area.

CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-43, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler lid, and remove the fuel filler cap.
- 4) Remove the floor mat. <Ref. to EI-72, REMOVAL, Floor Mat.>
- 5) In the engine compartment, disconnect the fuel delivery hoses and evaporation hose.

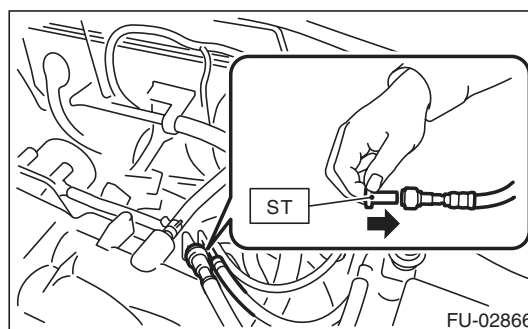
- (1) Disconnect the quick connector of the fuel delivery line by pushing the ST in the direction of the arrow.

ST 42099AE000 QUICK CONNECTOR
RELEASE

- (2) Remove the clip and disconnect the evaporation hose from the pipe.

CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.



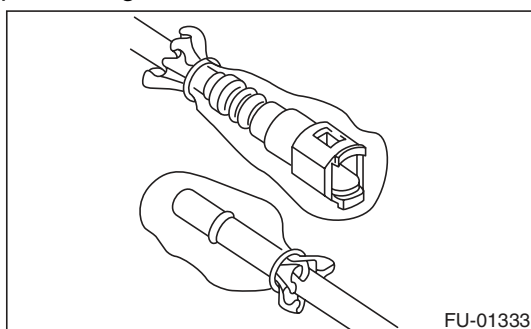
Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

- 6) Lift up the vehicle.
- 7) Remove the canister. <Ref. to EC(H6DO)-6, REMOVAL, Canister.>
- 8) Remove the fuel tank. <Ref. to FU(H6DO)-45, REMOVAL, Fuel Tank.>
- 9) Remove the fuel pipe assembly.
- 10) Disconnect the quick connector, and then disconnect the fuel delivery hose and jet pump hose.

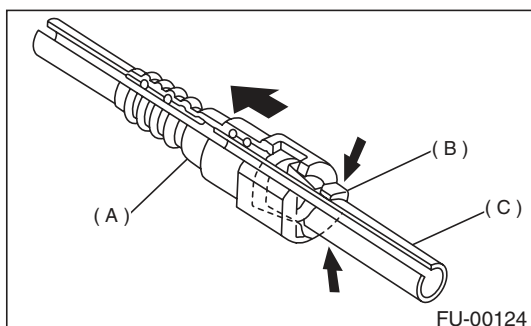
(1) Clean the pipe and connector, if they are covered with dust.

(2) To prevent from damaging or entering foreign matter, wrap the pipes and connectors with plastic bag etc.



(3) Hold the connector (A) and push the retainer (B) down.

(4) Pull out the connector (A) from the retainer (B).



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

B: INSTALLATION

Install in the reverse order of removal while being careful of the following.

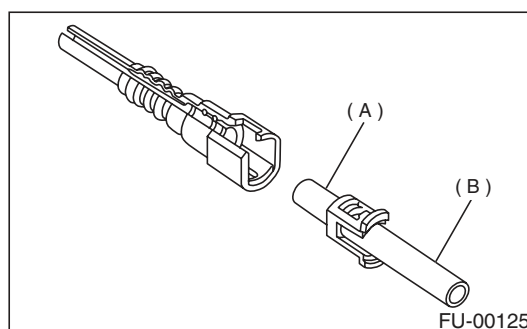
1. CONNECTING THE FUEL LINE QUICK CONNECTOR

CAUTION:

Make sure there is no damage or dust on the connections. If necessary, clean seal surface of pipe.

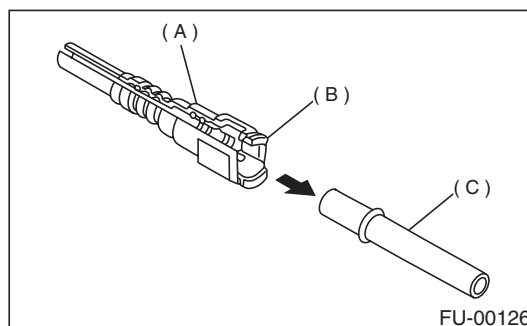
NOTE:

Use a new retainer.



- (A) Seal surface
(B) Pipe

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



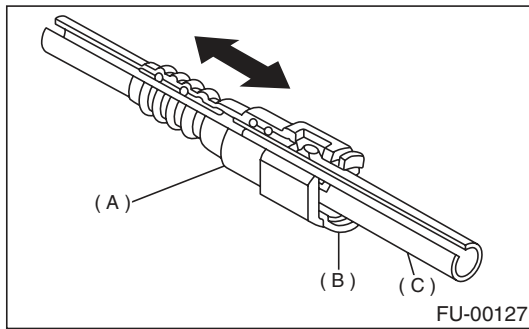
- (A) Connector
(B) Retainer
(C) Pipe

CAUTION:

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

Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)



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

2. CONNECTING THE FUEL DELIVERY HOSE

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

Type A: When the amount to be inserted is specified.

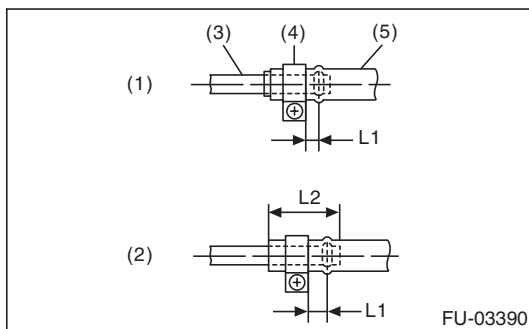
Type B: When the amount to be inserted is not specified.

L1: 2.5 ± 1.5 mm (0.098 ± 0.059 in)

L2: 22.5 ± 2.5 mm (0.886 ± 0.098 in)

CAUTION:

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

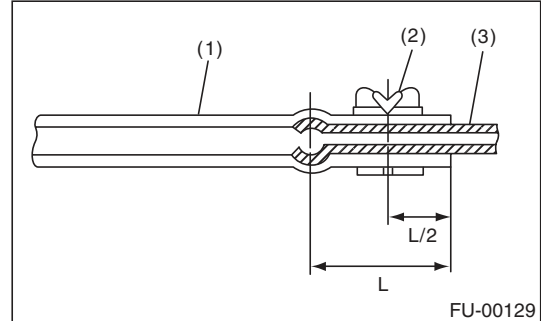


- (1) Type A
- (2) Type B
- (3) Pipe
- (4) Clamp
- (5) Hose

3. CONNECTING THE EVAPORATION HOSE

Connect the evaporation hose to the pipe with an overlap of 15 to 20 mm (0.59 to 0.79 in).

L = 17.5 ± 2.5 mm (0.689 ± 0.098 in)



- (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 the fuel pipe and fuel hose connections are tightened firmly.

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)

33. Fuel System Trouble in General

A: INSPECTION

Trouble and possible cause		Corrective action
1. Insufficient fuel supply to injector		
1)	Fuel pump does not operate.	
	○ Defective terminal contact	Inspect contact, especially ground, and tighten it securely.
	○ Trouble in electromagnetic or electronic circuit parts	Replace the faulty parts.
2)	Decline of fuel pump function	Replace the fuel pump.
3)	Clogged fuel filter	Replace the fuel filter. Clean or replace the fuel tank if necessary.
4)	Clogged or bent fuel pipe or hose	Clean, correct or replace fuel pipe or hose.
5)	Air is mixed in the fuel system.	Inspect or retighten each connection part.
6)	Clogged or bent air 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 of fuel		
1)	Loose joints of the fuel pipe	Retighten.
2)	Cracked fuel pipe, hose and fuel tank	Replace.
3)	Defective welding part on the fuel tank	Replace.
4)	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	Retighten.
2)	Problem in tightening of the fuel saucer gasket air	Correct or replace the gasket.
3)	Inoperative fuel pump modulator or circuit	Replace.
4. Defective fuel meter indicator		
1)	Defective operation of fuel level sensor	Replace.
2)	Defective operation of fuel meter	Replace.
5. Noise		
1)	Large operation noise or vibration of fuel pump	Replace.

NOTE:

- When the vehicle is left unattended for an extended period of time, water may accumulate in the fuel tank. Fill the fuel tank fully to prevent this.
- In snow-covered areas, mountainous areas, skiing areas, etc. where ambient temperatures drop to 0°C (32°F) or less throughout the winter season, use a water removing agent in the fuel system to prevent freezing fuel system and accumulating water.
- When water is accumulated in fuel filter, fill the water removing agent in the fuel tank.
- Before using water removing agent, follow the cautions noted on the bottle.