

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(H6DO)

**EMISSION CONTROL
(AUX. EMISSION CONTROL DEVICES) EC(H6DO)**

INTAKE (INDUCTION) IN(H6DO)

MECHANICAL ME(H6DO)

EXHAUST EX(H6DO)

COOLING CO(H6DO)

LUBRICATION LU(H6DO)

SPEED CONTROL SYSTEMS SP(H6DO)

IGNITION IG(H6DO)

STARTING/CHARGING SYSTEMS SC(H6DO)

ENGINE (DIAGNOSTICS) EN(H6DO)(diag)

FUEL INJECTION (FUEL SYSTEMS)

FU(H6DO)

	Page
1. General Description	2
2. Throttle Body	11
3. Intake Manifold	12
4. Engine Coolant Temperature Sensor	18
5. Crankshaft Position Sensor	19
6. Camshaft Position Sensor	20
7. Knock Sensor	21
8. Throttle Position Sensor	22
9. Manifold Absolute Pressure Sensor	23
10. Mass Air Flow and Intake Air Temperature Sensor	24
11. EGR Valve	25
12. Fuel Injector	26
13. Variable Valve Lift Diagnosis Oil Pressure Switch	28
14. Oil Temperature Sensor	29
15. Front Oxygen (A/F) Sensor	30
16. Rear Oxygen Sensor	32
17. Engine Control Module (ECM)	34
18. Main Relay	35
19. Fuel Pump Relay	36
20. Electronic Throttle Control Relay	37
21. Fuel Pump Control Unit	38
22. Fuel	39
23. Fuel Tank	40
24. Fuel Filler Pipe	46
25. Fuel Pump	48
26. Fuel Level Sensor	50
27. Fuel Sub Level Sensor	51
28. Fuel Filter	52
29. Fuel Bypass Valve	53
30. Fuel Delivery, Return and Evaporation Lines	54
31. Fuel System Trouble in General	57

General Description

FUEL INJECTION (FUEL SYSTEMS)

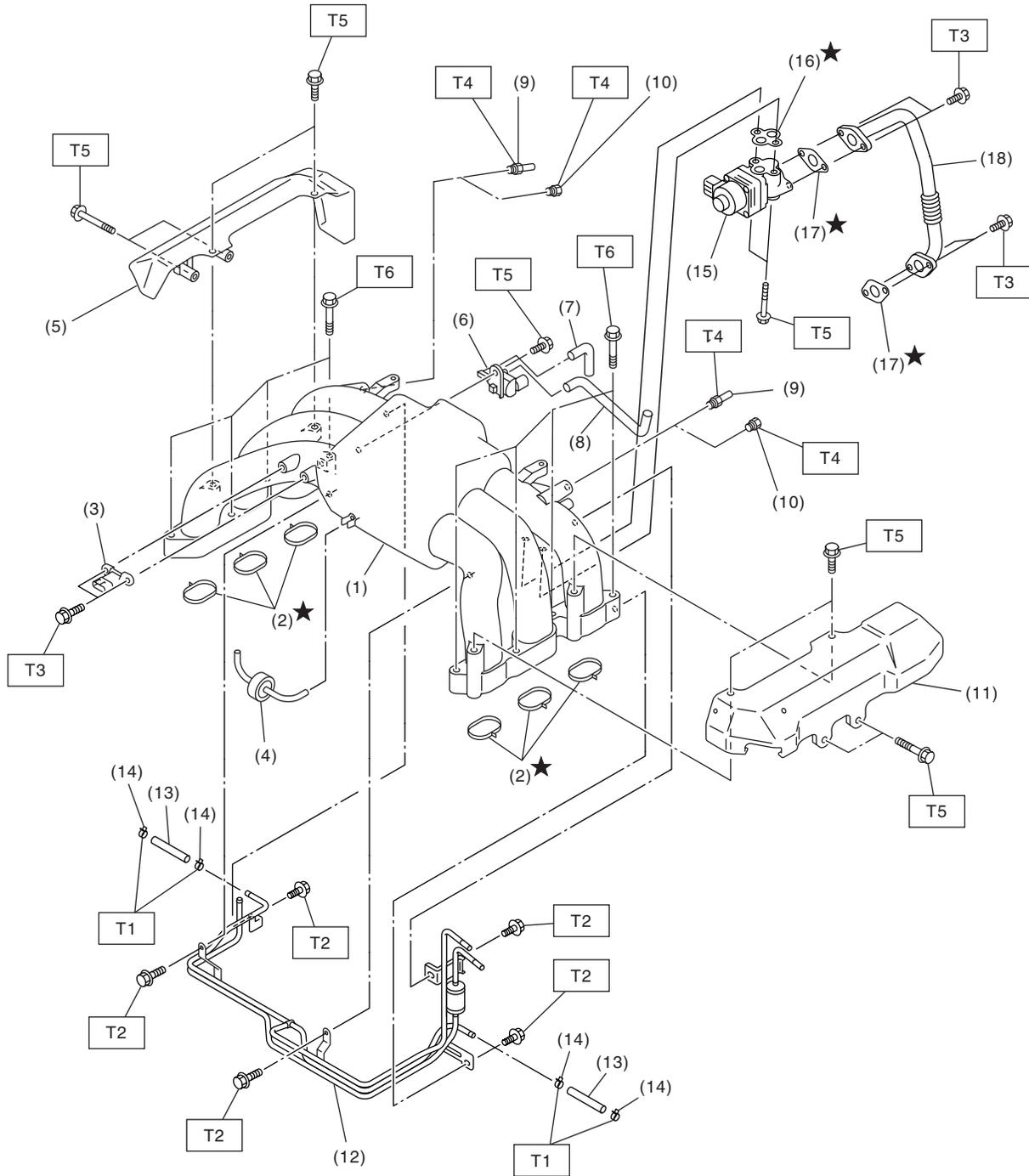
1. General Description

A: SPECIFICATION

Fuel tank	Capacity	64 ℓ (16.9 US gal, 14.1 Imp gal)
	Location	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	125 ℓ (33 US gal, 27.5 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-02107

General Description

FUEL INJECTION (FUEL SYSTEMS)

- | | |
|----------------------------------|--------------------------------------|
| (1) Intake manifold | (10) Plug |
| (2) O-ring | (11) Fuel pipe protector LH |
| (3) Manifold 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 (Except for KA model) |
| (7) Hose | (16) Gasket (Except for KA model) |
| (8) Hose | (17) Gasket (Except for KA model) |
| (9) Nipple | (18) EGR pipe (Except for KA model) |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 1.5 (0.15, 1.1)

T2: 5 (0.5, 3.6)

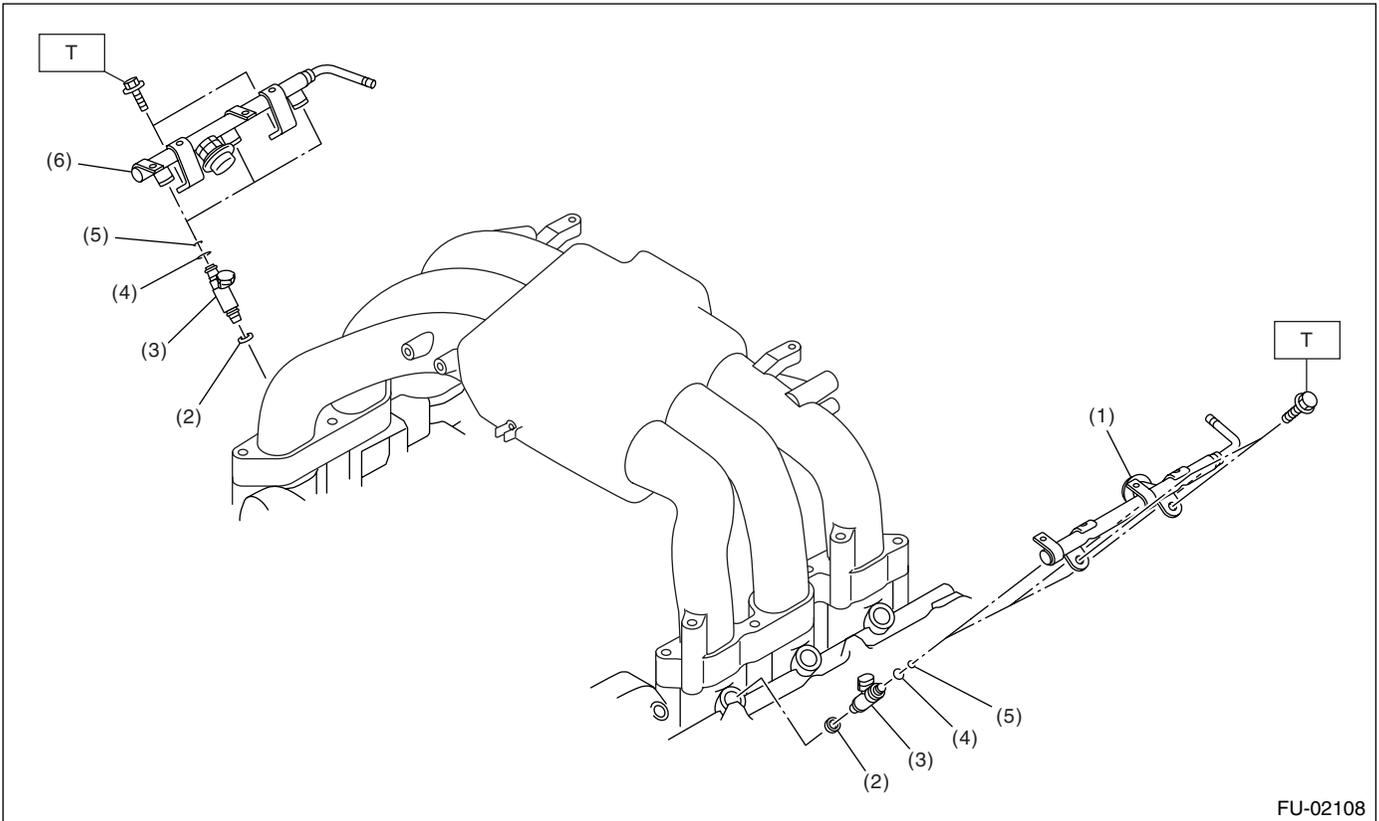
T3: 6.4 (0.65, 4.7)

T4: 17 (1.7, 12.5)

T5: 19 (1.9, 13.7)

T6: 25 (2.5, 18.1)

2. FUEL INJECTOR



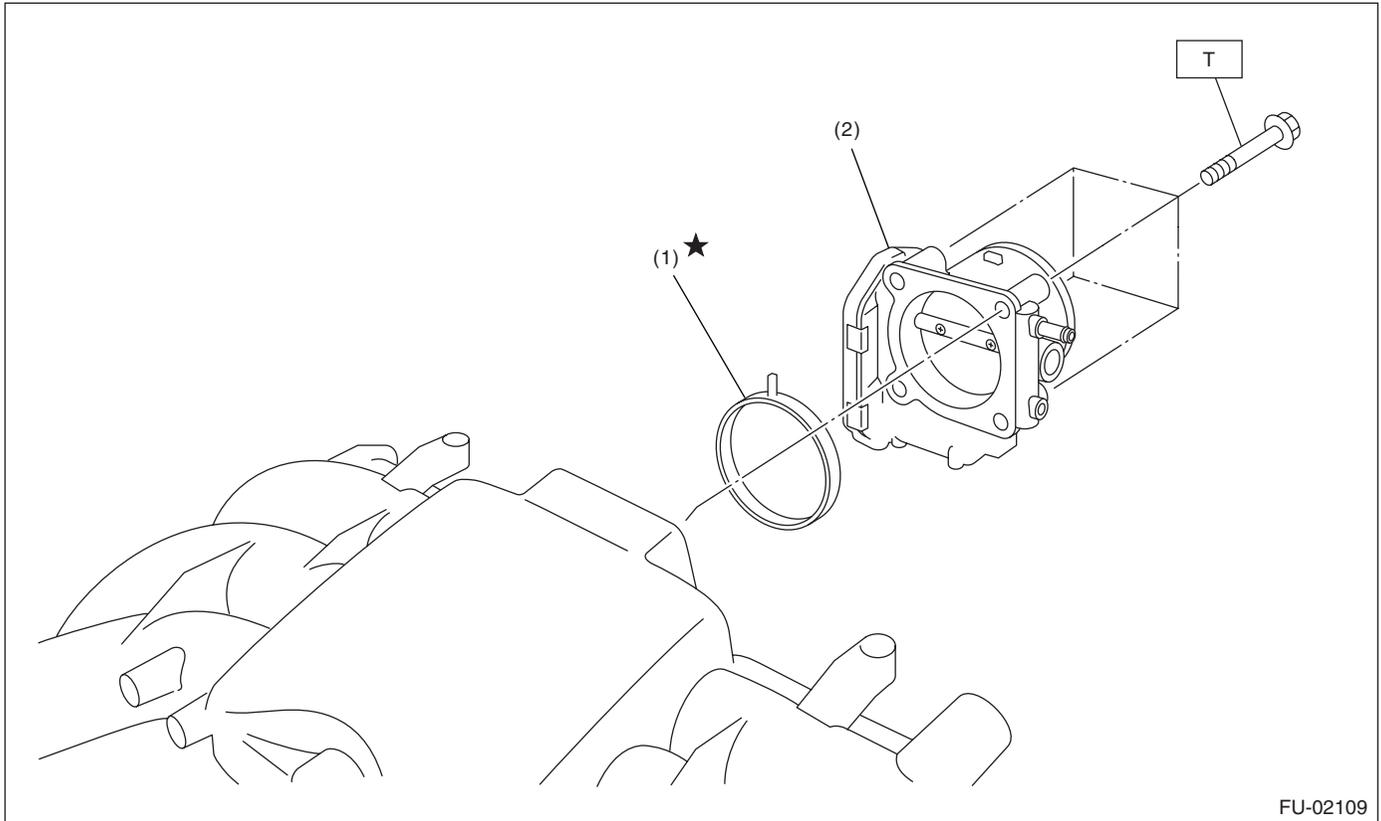
FU-02108

- | | |
|---------------------------|---------------------------|
| (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)

3. AIR INTAKE SYSTEM



FU-02109

- (1) O-ring
- (2) Throttle body

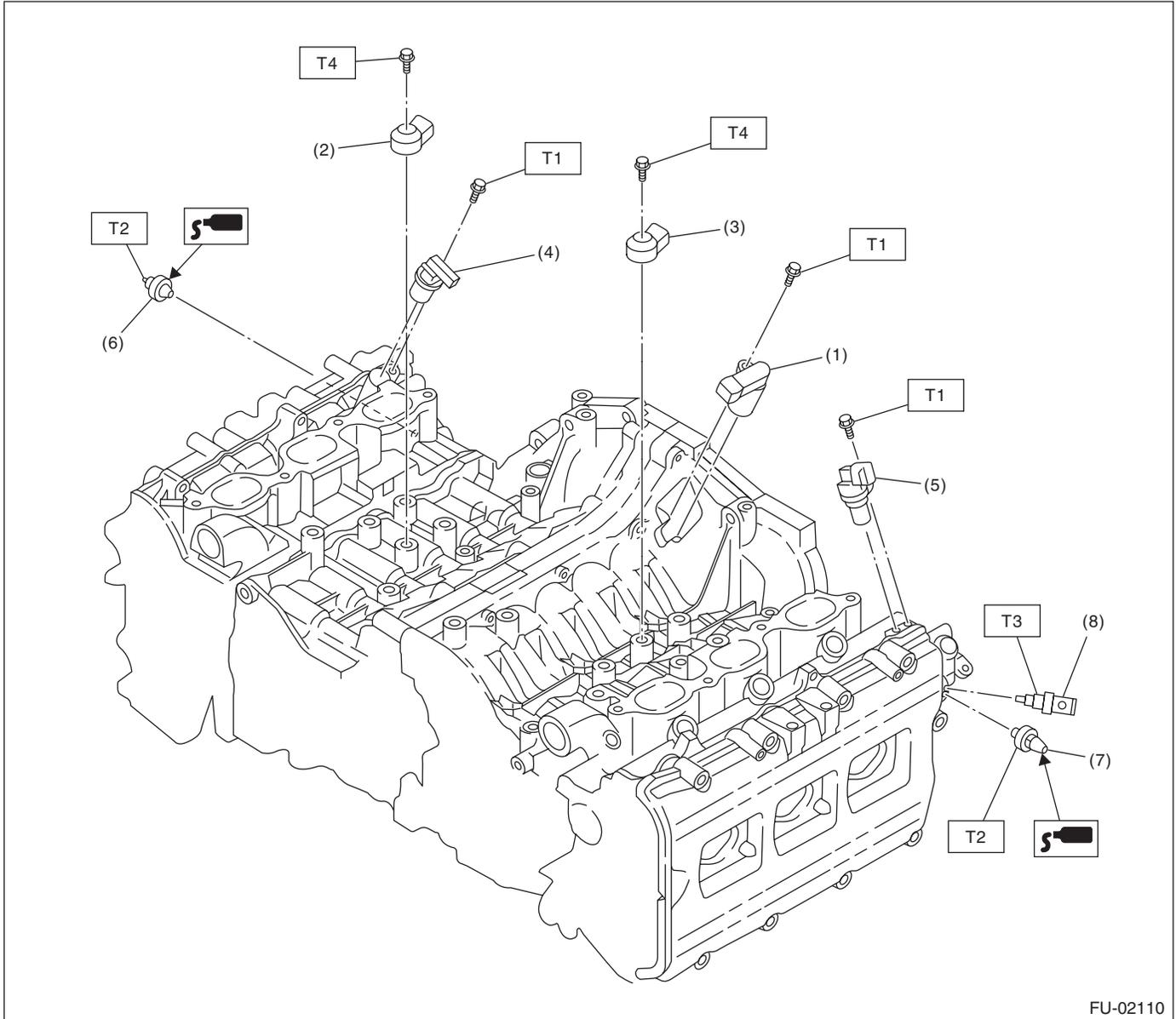
Tightening torque: N·m (kgf·m, ft·lb)

T: 8 (0.8, 5.8)

General Description

FUEL INJECTION (FUEL SYSTEMS)

4. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



- | | |
|---------------------------------|--|
| (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)

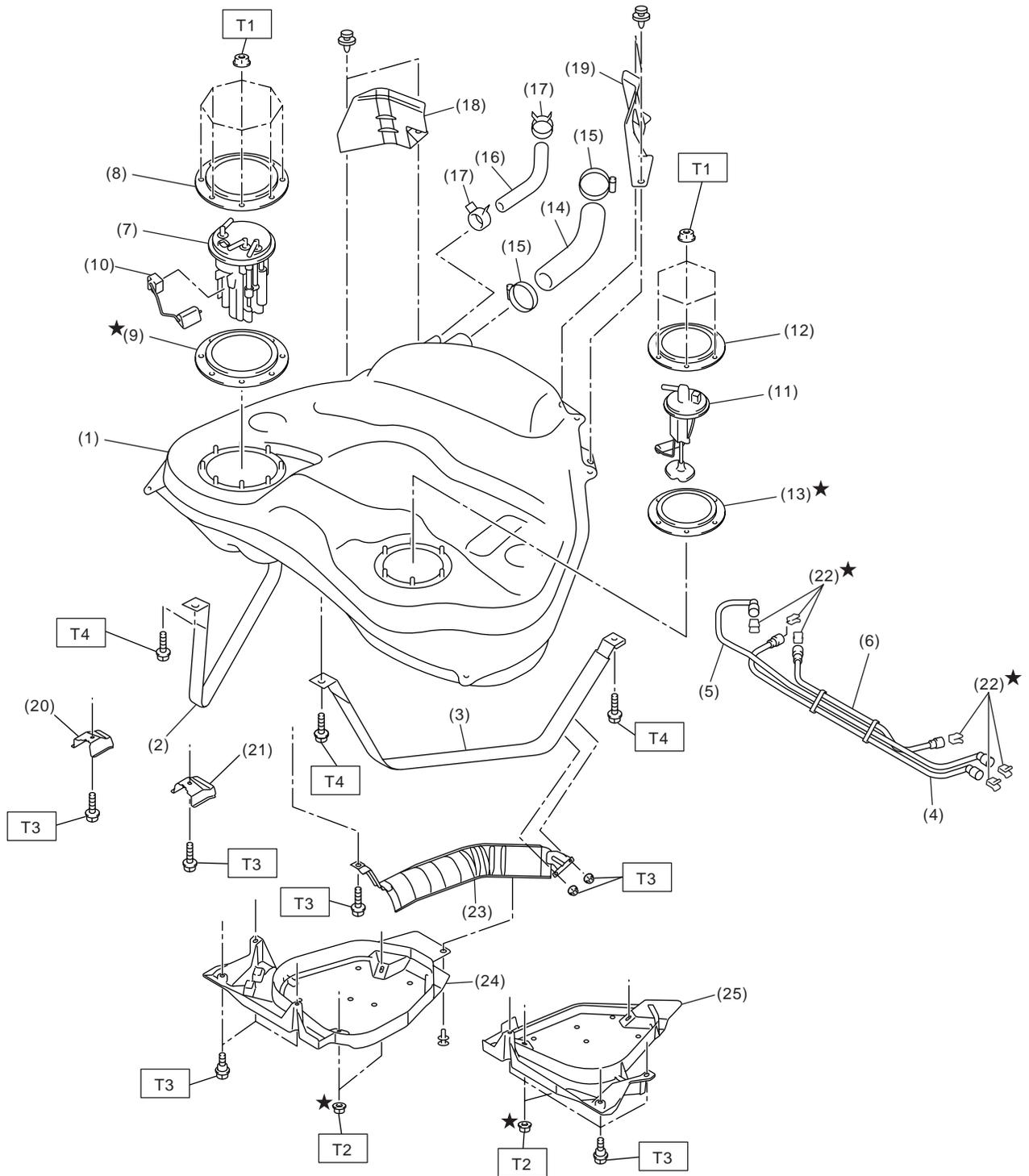
T1: 6.4 (0.65, 4.7)

T2: 17 (1.7, 12.5)

T3: 18 (1.8, 13.3)

T4: 25 (2.5, 18)

5. FUEL TANK



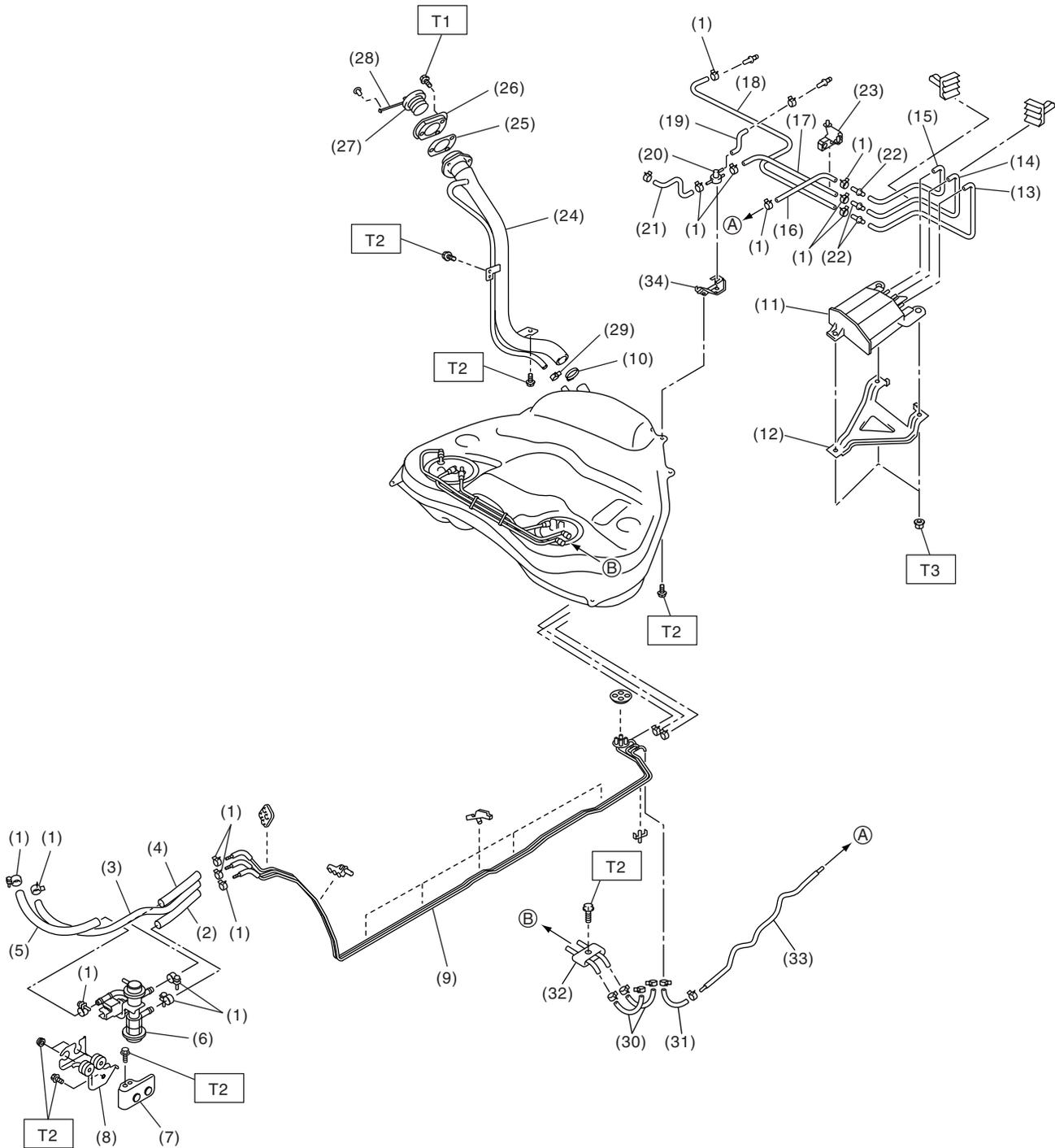
FU-01080

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel tank	(12) Fuel sub level sensor upper plate	(22) Retainer
(2) Fuel tank band RH	(13) Fuel sub level sensor gasket	(23) Heat shield cover
(3) Fuel tank band LH	(14) Fuel filler hose	(24) Fuel tank protector RH (Front)
(4) Delivery tube	(15) Clamp	(25) Fuel tank protector LH (Front)
(5) Return tube	(16) Vent hose	
(6) Jet pump tube	(17) Clip	
(7) Fuel pump ASSY	(18) Fuel tank protector RH (Rear)	Tightening torque: N·m (kgf-m, ft-lb)
(8) Fuel pump upper plate	(19) Fuel tank protector LH (Rear)	T1: 4.4 (0.45, 3.3)
(9) Fuel pump gasket	(20) Stopper RH	T2: 9.0 (0.92, 6.6)
(10) Fuel level sensor	(21) Stopper LH	T3: 17.5 (1.78, 12.9)
(11) Fuel sub level sensor		T4: 33 (3.4, 25)

6. FUEL LINE



FU-02182

General Description

FUEL INJECTION (FUEL SYSTEMS)

- | | | |
|---------------------------------------|-------------------------------|----------------------------|
| (1) Clip | (14) Two-way valve hose A | (27) Filler cap |
| (2) Fuel return hose | (15) Purge hose A | (28) Tether |
| (3) Evaporation hose | (16) Purge hose B | (29) Clip |
| (4) Fuel delivery hose A | (17) Two-way valve hose B | (30) Fuel hose |
| (5) Fuel delivery hose B | (18) Canister drain hose B | (31) Purge hose C |
| (6) Fuel bypass valve | (19) Two-way valve drain hose | (32) Connector |
| (7) Bracket | (20) Two-way valve | (33) Purge pipe |
| (8) Bracket | (21) Two-way valve hose C | (34) Two-way valve bracket |
| (9) Fuel pipe ASSY | (22) Connector | |
| (10) Clamp | (23) Evaporation hose holder | |
| (11) Canister | (24) Fuel filler pipe ASSY | |
| (12) Canister protector (Sedan model) | (25) Filler pipe packing | |
| (13) Canister drain hose A | (26) Filler ring | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 4.4 (0.45, 3.2)

T2: 7.5 (0.76, 5.53)

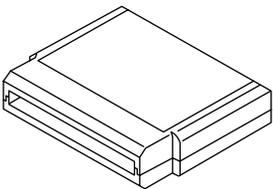
T3: 8.3 (0.85, 6.1)

C: CAUTION

- Wear work 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 and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.

- Be careful not to burn yourself, 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 rigid racks 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.

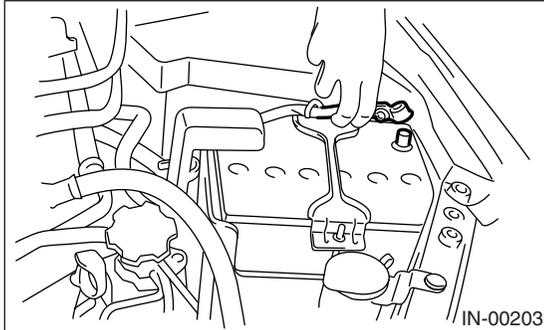
D: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST24082AA230</p>	24082AA230	CARTRIDGE	Troubleshooting for electrical system.
 <p>ST22771AA030</p>	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical system. <ul style="list-style-type: none"> • English: 22771AA030 (Without printer) • German: 22771AA070 (Without printer) • French: 22771AA080 (Without printer) • Spanish: 22771AA090 (Without printer)

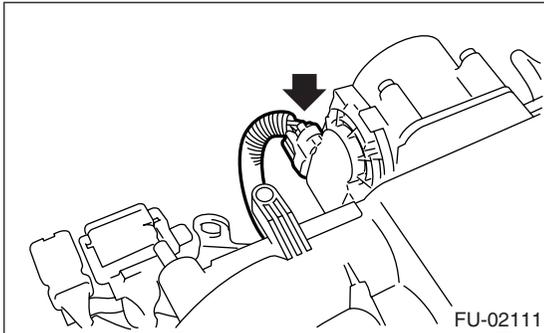
2. Throttle Body

A: REMOVAL

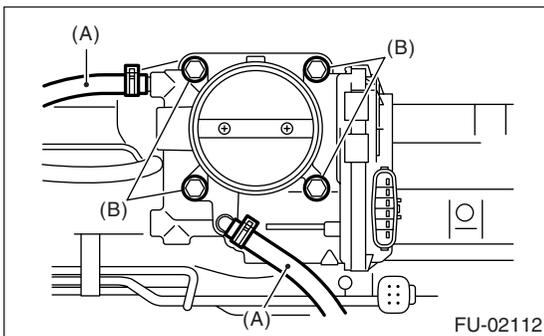
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



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



- 5) Disconnect the engine coolant hoses (A) from 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 a new O-ring.

Tightening torque:

8 N·m (0.8 kgf·m, 5.8 ft·lb)

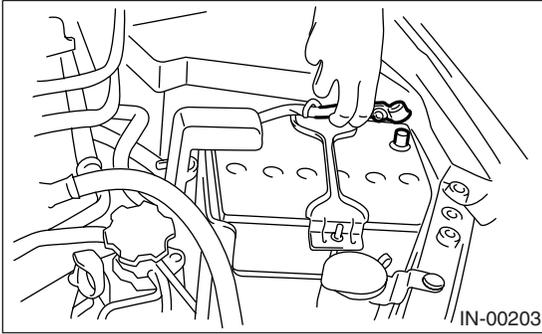
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

3. Intake Manifold

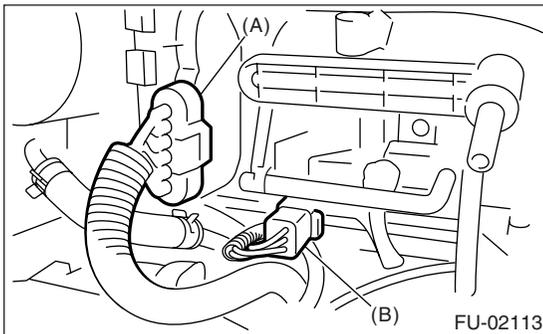
A: REMOVAL

- 1) Remove the collector cover.
- 2) Release the fuel pressure.
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler flap lid, and remove the fuel filler cap.
- 4) Disconnect the ground cable from battery.

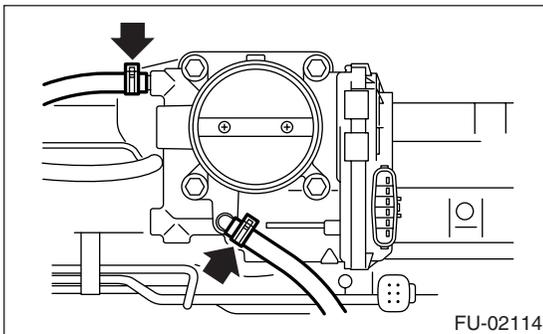


- 5) Remove the air cleaner case and air intake chamber. <Ref. to IN(H6DO)-5, REMOVAL, Air Cleaner Case.> <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>

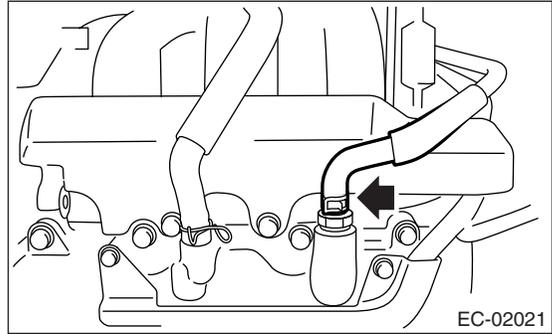
- 6) Disconnect the connector (A) and (B).



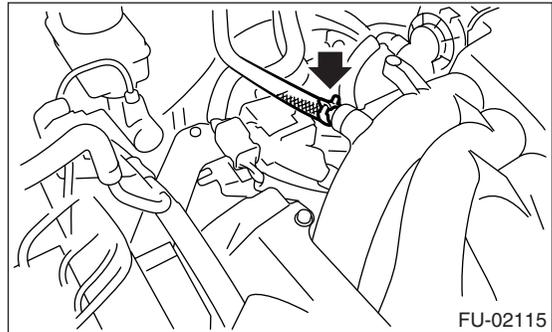
- 7) Disconnect the engine coolant hoses from throttle body.



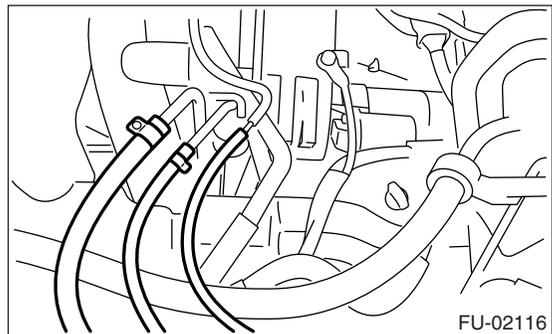
- 8) Disconnect the PCV hose.



- 9) Disconnect the brake booster hose.

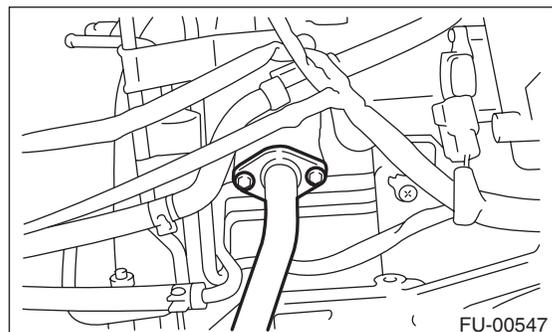


- 10) Disconnect the fuel hoses from fuel pipe.



- 11) Remove the EGR pipe from EGR valve. (Except for KA model)

CAUTION:
Be careful not to drop gaskets.

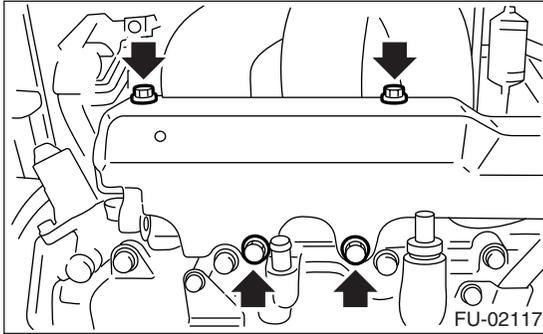


- 12) Disconnect the connector from EGR valve. (Except for KA model)

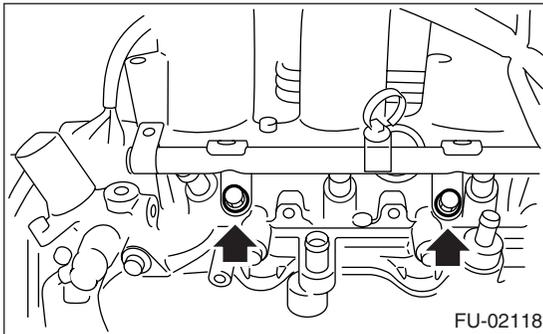
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

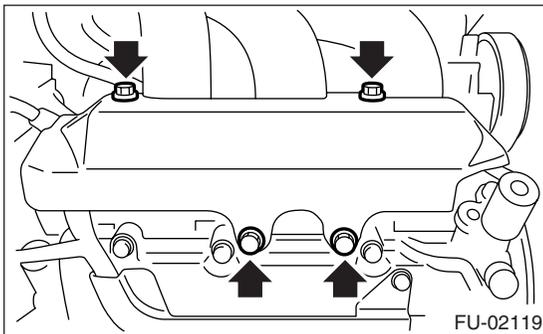
13) Remove the fuel pipe protector LH.



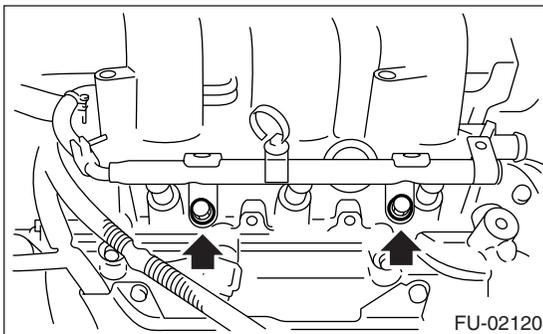
14) Remove the bolts, which hold fuel injector pipe LH onto cylinder head.



15) Remove the fuel pipe protector RH.

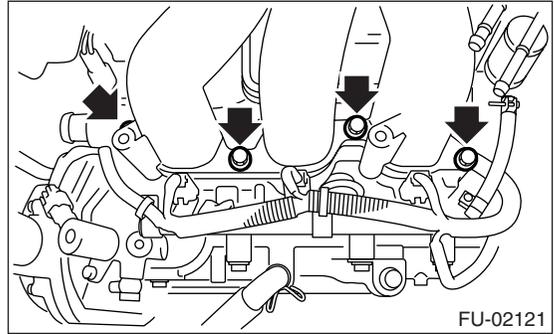


16) Remove the bolts, which hold fuel injector pipe RH onto cylinder head.

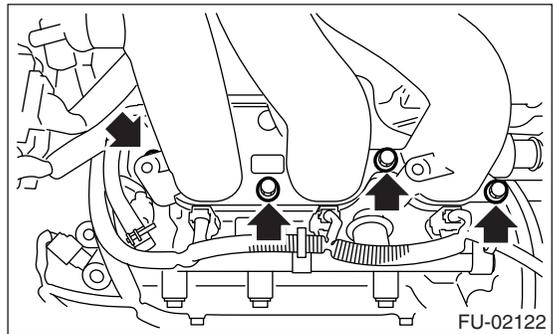


17) Remove bolts which hold intake manifold onto cylinder heads.

• LH side



• RH side



18) Remove the intake manifold.

B: INSTALLATION

1) Install the intake manifold onto cylinder heads.

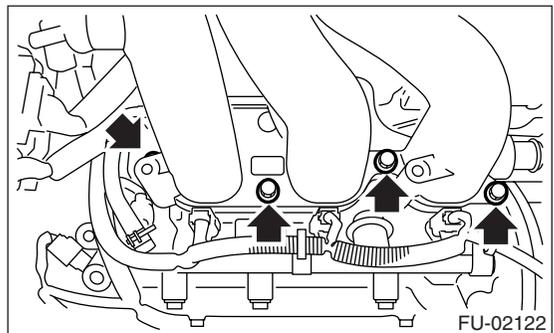
NOTE:

Use a new O-ring.

Tightening torque:

25 N·m (2.5 kgf-m, 18.1 ft-lb)

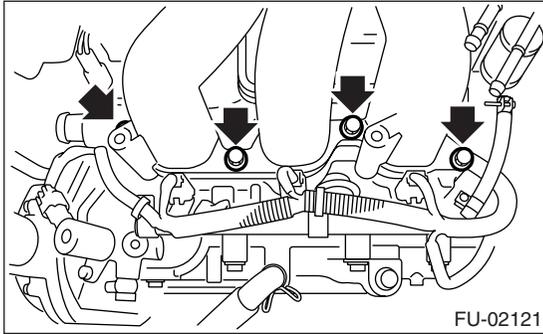
• RH side



Intake Manifold

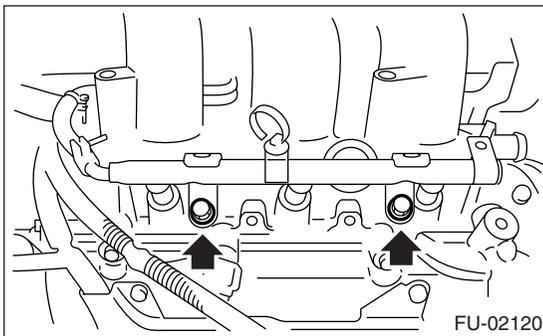
FUEL INJECTION (FUEL SYSTEMS)

- LH side



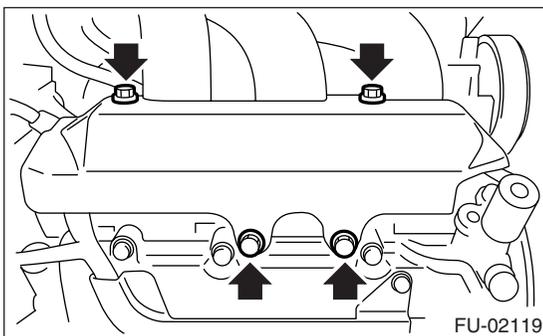
- 2) Install the bolts, which hold fuel injector pipe RH onto cylinder head.

Tightening torque:
19 N·m (1.9 kgf-m, 14 ft-lb)



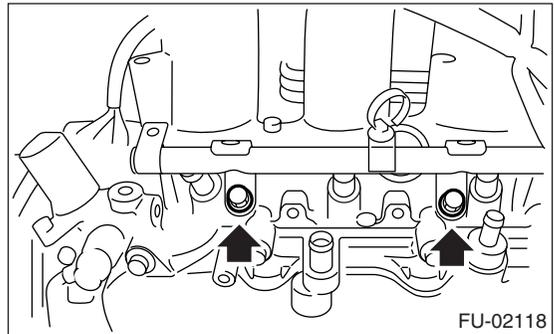
- 3) Install the fuel pipe protector RH.

Tightening torque:
19 N·m (1.9 kgf-m, 14 ft-lb)



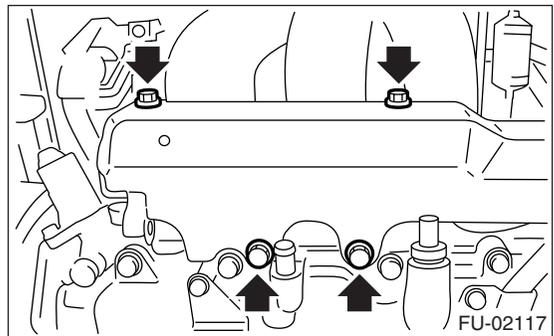
- 4) Install the bolts which hold fuel injector pipe LH onto cylinder head.

Tightening torque:
19 N·m (1.9 kgf-m, 14 ft-lb)



- 5) Install the fuel pipe protector LH.

Tightening torque:
19 N·m (1.9 kgf-m, 14 ft-lb)

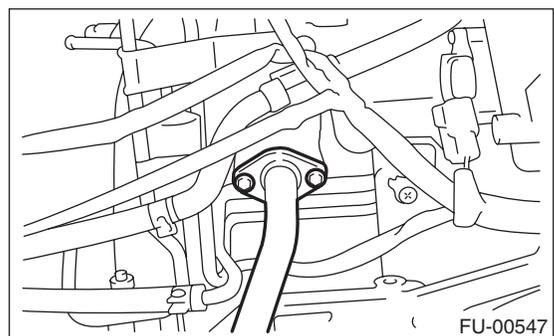


- 6) Connect the connector to EGR valve. (Except for KA model)

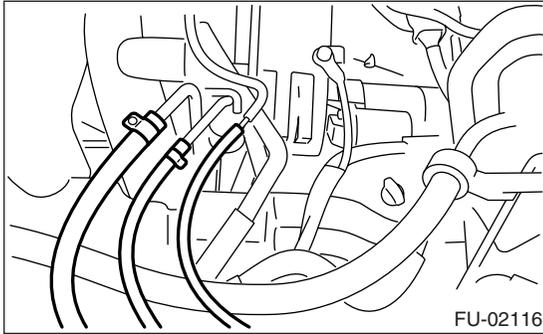
- 7) Install the EGR pipe to EGR valve. (Except for KA model)

NOTE:
Always use new gasket.

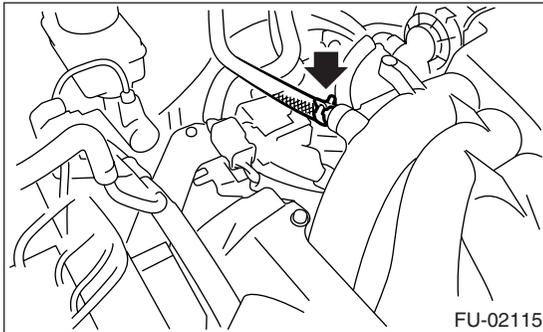
Tightening torque:
6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



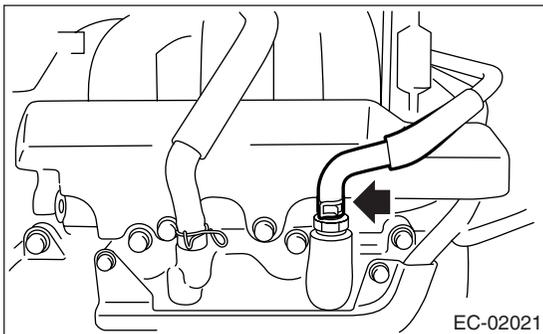
8) Connect the fuel hoses to fuel pipe.



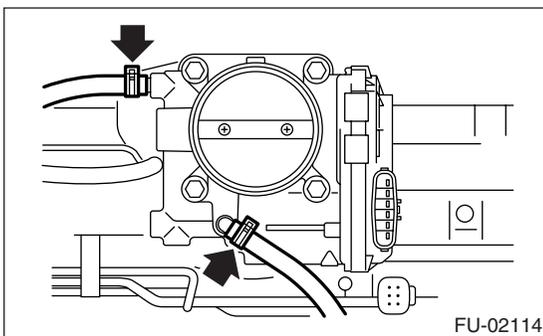
9) Connect the brake booster hose.



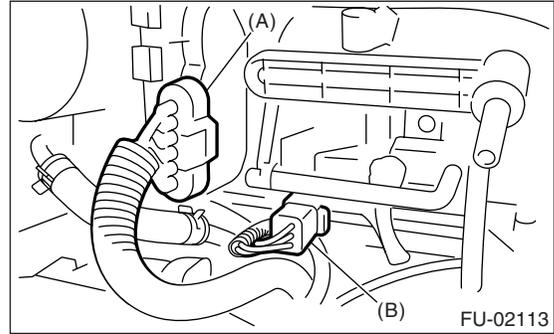
10) Connect the PCV hose.



11) Connect the engine coolant hoses to throttle body.



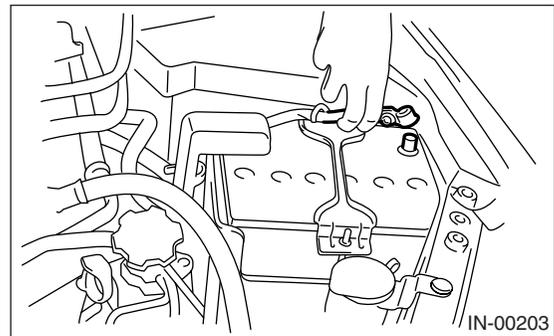
12) Connect the connector (A) and (B).



13) 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.>

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

15) Connect the battery ground cable to battery.



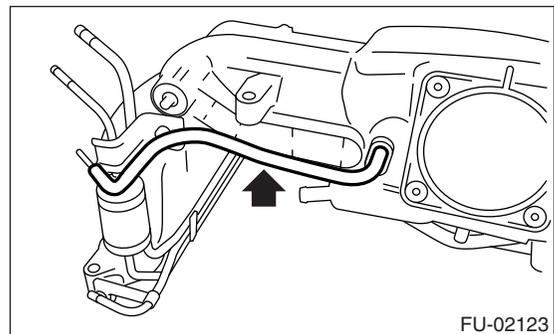
16) Install the collector cover.

C: DISASSEMBLY

1) Remove the throttle body. <Ref. to FU(H6DO)-11, REMOVAL, Throttle Body.>

2) Remove the EGR valve. <Ref. to FU(H6DO)-25, REMOVAL, EGR Valve.>

3) Disconnect the pressure regulator vacuum hose from intake manifold.



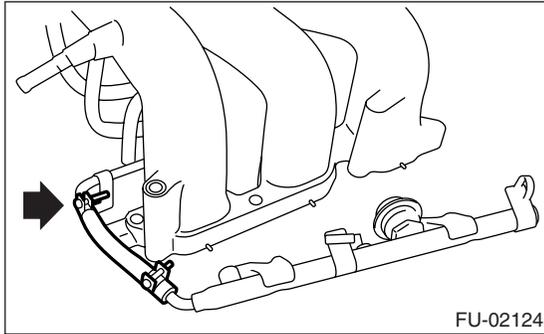
4) Remove the manifold absolute pressure sensor. <Ref. to FU(H6DO)-23, REMOVAL, Manifold Absolute Pressure Sensor.>

5) Remove the purge control solenoid valve. <Ref. to EC(H6DO)-7, REMOVAL, Purge Control Solenoid Valve.>

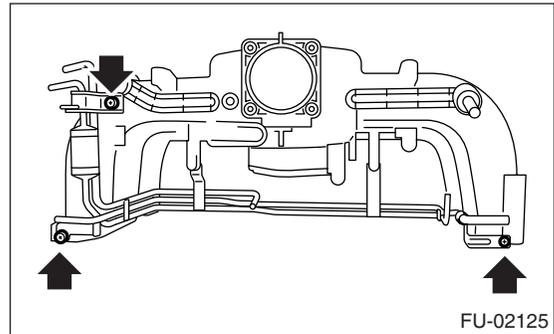
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

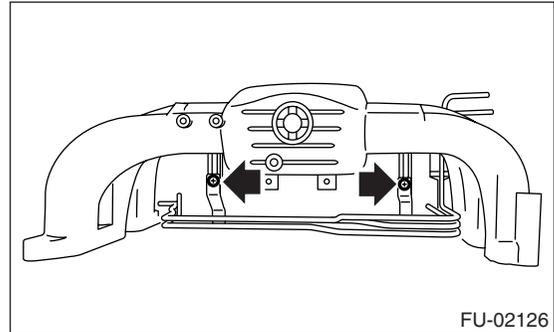
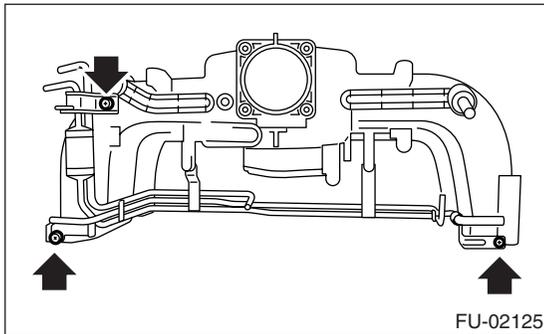
6) Loosen the clamp which holds fuel injector pipe to fuel hose, and then disconnect the pipe from fuel hose.



Tightening torque:
5 N·m (0.5 kgf-m, 3.6 ft-lb)

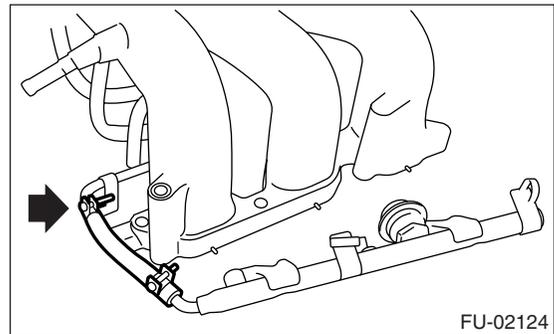
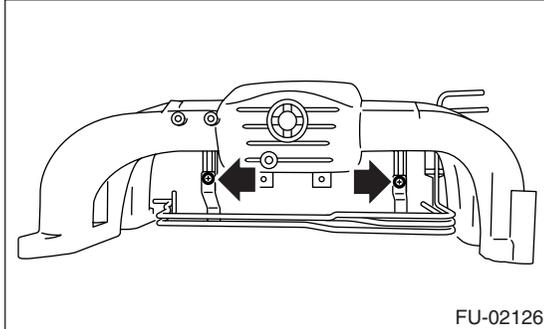


7) Remove the bolts which install fuel pipes on intake manifold.



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

Tightening torque:
1.5 N·m (0.15 kgf-m, 1.1 ft-lb)



D: ASSEMBLY

NOTE:
When assembling the nipple, apply liquid gasket.

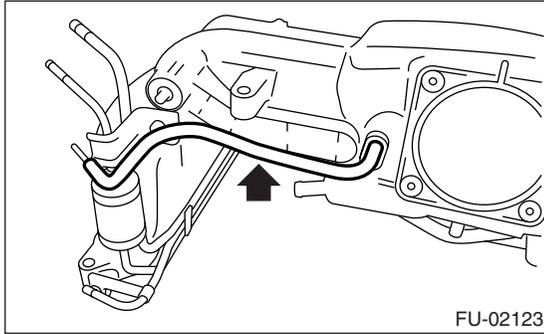
Liquid gasket:
THREE BOND 1105 (Part No. 004403010)

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

3) Install the purge control solenoid valve. <Ref. to EC(H6DO)-7, INSTALLATION, Purge Control Solenoid Valve.>

4) Install the manifold absolute pressure sensor. <Ref. to FU(H6DO)-23, INSTALLATION, Manifold Absolute Pressure Sensor.>

5) Connect the pressure regulator vacuum hose to intake manifold.



6) Install the EGR valve. <Ref. to **FU(H6DO)-25**, INSTALLATION, **EGR Valve.**>

7) Install the throttle body to intake manifold. <Ref. to **FU(H6DO)-11**, INSTALLATION, **Throttle Body.**>

E: INSPECTION

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

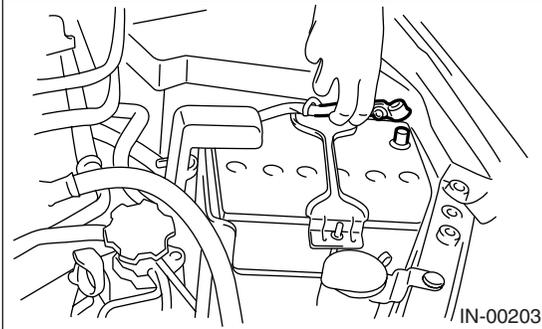
Engine Coolant Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

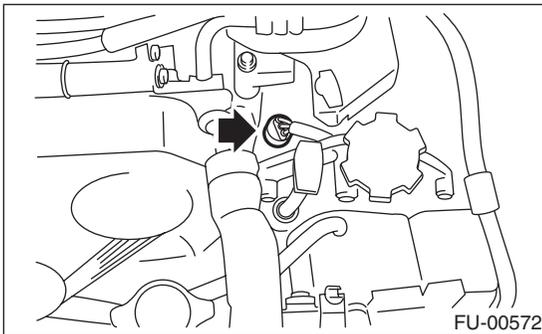
4. Engine Coolant Temperature Sensor

A: REMOVAL

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



- 3) Disconnect the connector from engine coolant temperature sensor.
- 4) Remove the engine coolant temperature sensor.

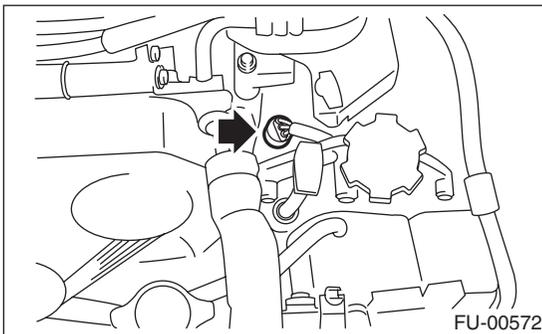


B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

16 N·m (1.6 kgf·m, 12 ft·lb)



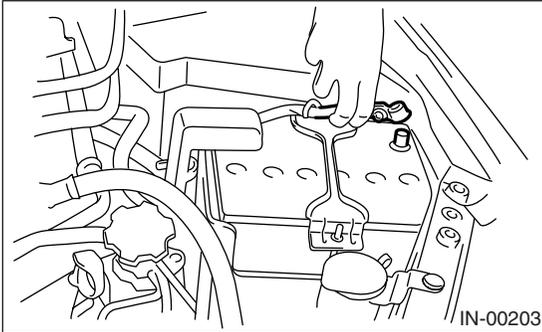
Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

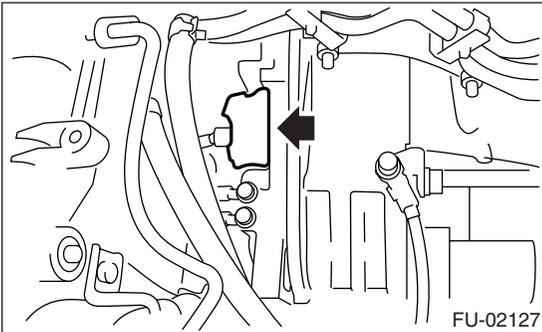
5. Crankshaft Position Sensor

A: REMOVAL

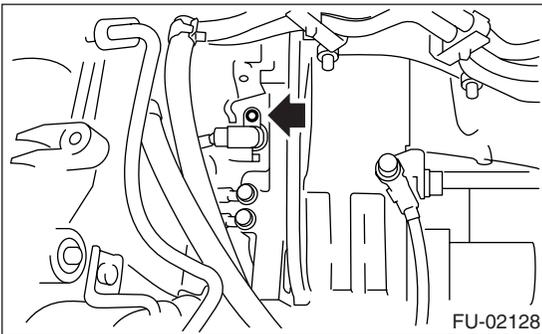
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 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.



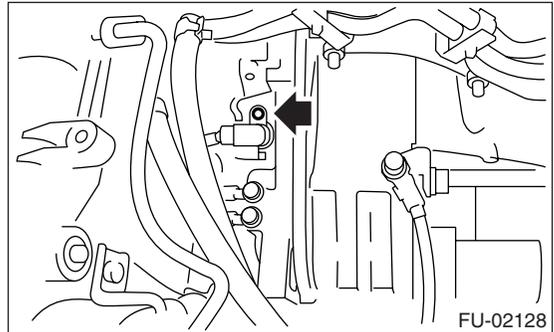
- 6) Disconnect the connector from crankshaft position sensor.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



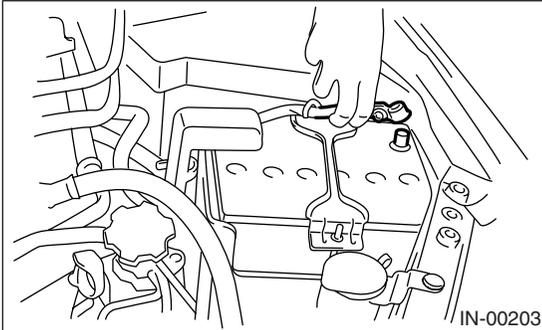
Camshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

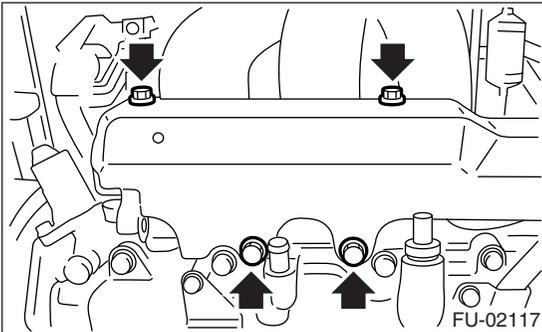
6. Camshaft Position Sensor

A: REMOVAL

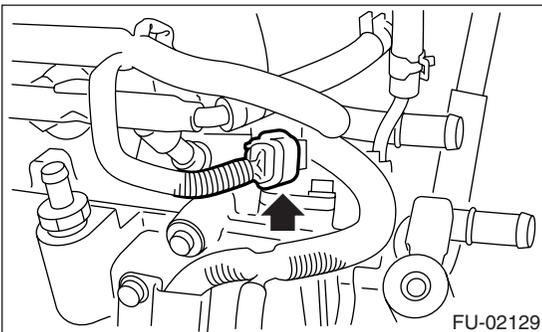
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



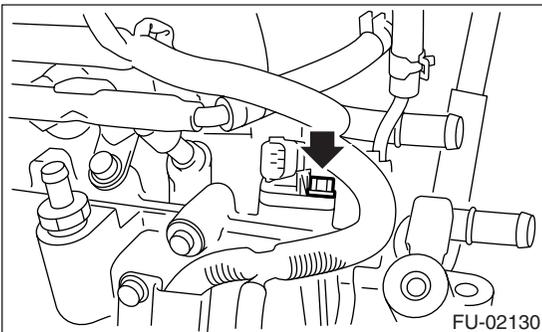
- 3) Remove the generator harness from fuel pipe protector LH.
- 4) Remove the fuel pipe protector LH.



- 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 (0.65 kgf-m, 4.7 ft-lb)

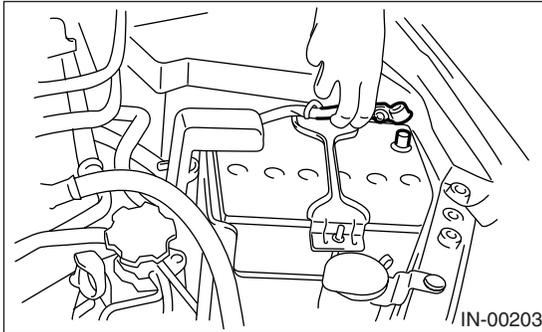
Fuel pipe protector

19 N·m (1.9 kgf-m, 14 ft-lb)

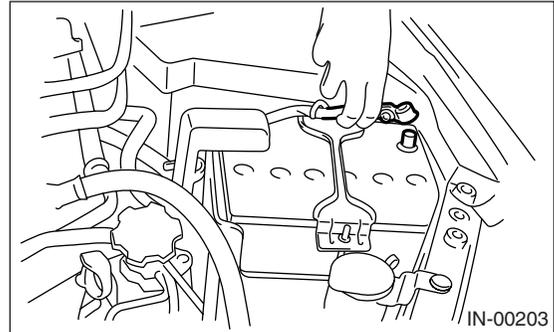
7. Knock Sensor

A: REMOVAL

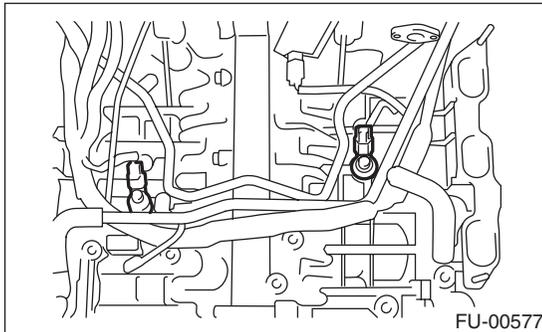
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Install the intake manifold. <Ref. to FU(H6DO)-13, INSTALLATION, Intake Manifold.>
- 4) Connect the battery ground cable to battery.



- 3) Remove the intake manifold. <Ref. to FU(H6DO)-12, REMOVAL, Intake Manifold.>
- 4) Disconnect the knock sensor connector.
- 5) Remove the knock sensor from cylinder block.



- 5) Install the collector cover.

B: INSTALLATION

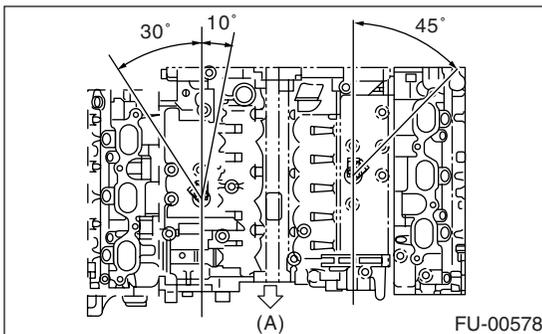
- 1) Install the knock sensor to cylinder block.

Tightening torque:

25 N·m (2.5 kgf·m, 18 ft·lb)

NOTE:

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



(A) Front side

- 2) Connect the knock sensor connector.

8. Throttle Position Sensor

A: SPECIFICATION

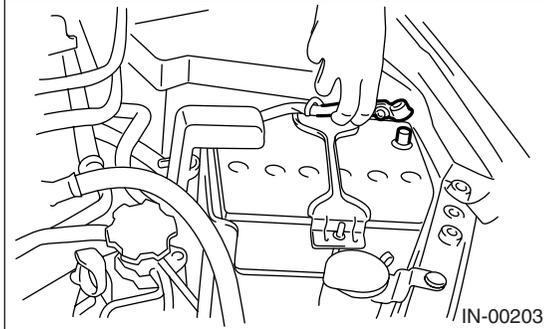
Throttle body is a non-disassembled part, so do not remove the throttle position sensor from throttle body.

Refer to “Throttle Body” for removal and installation procedure. <Ref. to FU(H6DO)-11, REMOVAL, Throttle Body.> <Ref. to FU(H6DO)-11, INSTALLATION, Throttle Body.>

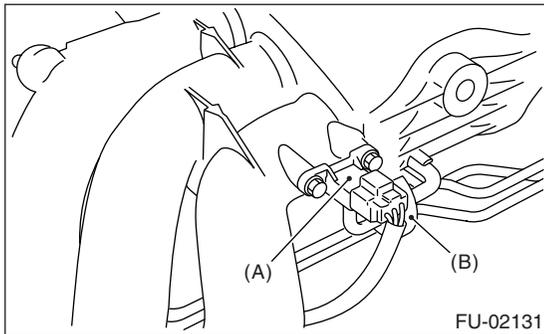
9. Manifold Absolute Pressure Sensor

A: REMOVAL

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



- 3) Disconnect the connector from manifold absolute pressure sensor (A), and remove the filter assembly (B) from 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 (0.65 kgf-m, 4.7 ft-lb)

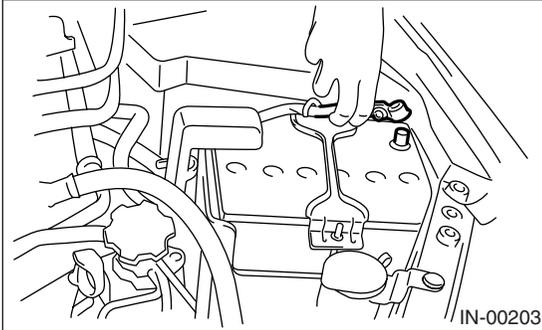
Mass Air Flow and Intake Air Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

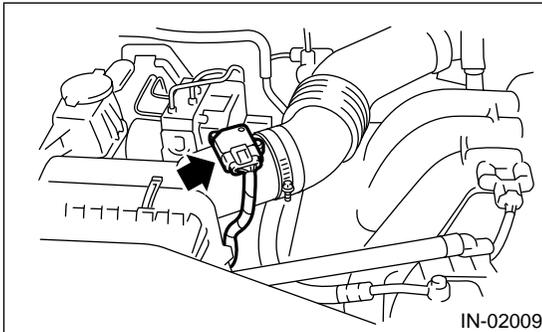
10. Mass Air Flow and Intake Air Temperature Sensor

A: REMOVAL

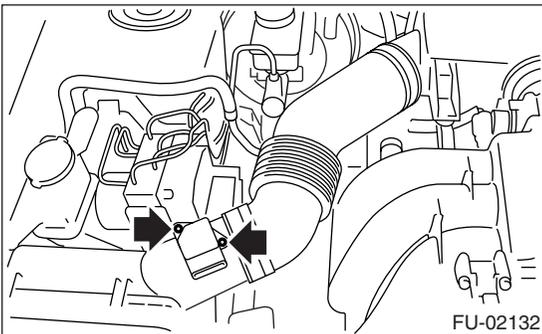
1) Disconnect the ground cable from battery.



2) Disconnect the connector from 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:

1.0 N·m (0.10 kgf-m, 0.74 ft-lb)

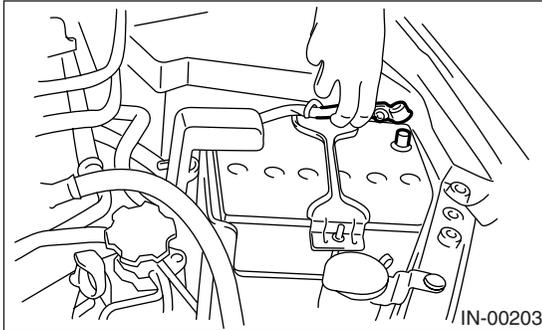
11.EGR Valve

A: REMOVAL

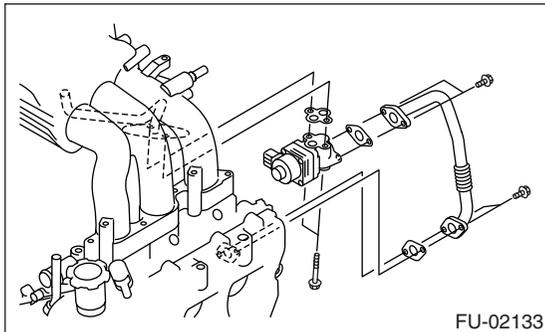
NOTE:

Model except for KA is equipped with EGR valve.

- 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(H6DO)-6, REMOVAL, Starter.>
- 5) Remove the EGR pipe from the EGR valve and cylinder head.
- 6) Remove the EGR valve from intake manifold.



- 7) Disconnect the connector from EGR valve.

B: INSTALLATION

Install in the reverse of removal.

NOTE:

Replace the old gaskets with new ones.

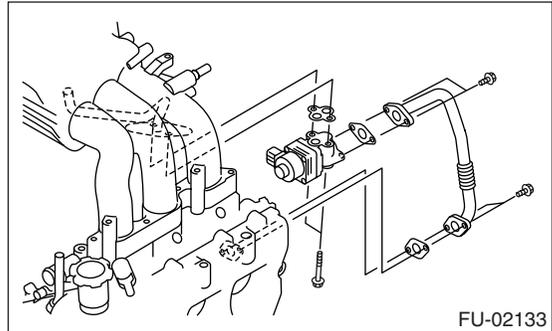
Tightening torque:

EGR valve

19 N·m (1.9 kgf-m, 14 ft-lb)

EGR pipe

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



Fuel Injector

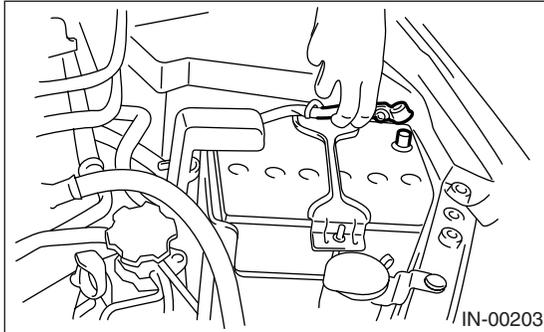
FUEL INJECTION (FUEL SYSTEMS)

12. Fuel Injector

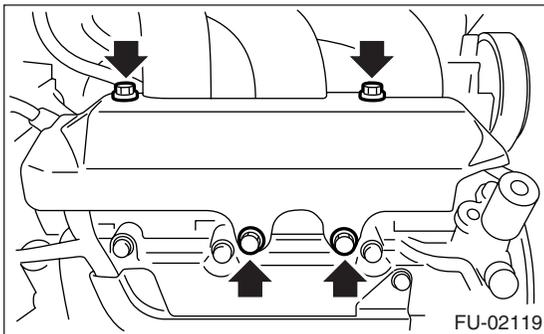
A: REMOVAL

1. RH SIDE

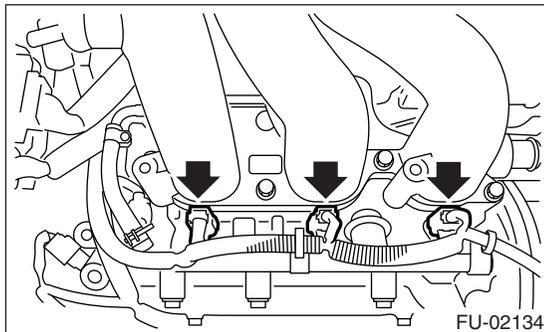
- 1) Remove the collector cover.
- 2) Release the fuel pressure.
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler flap lid, and remove the fuel filler cap.
- 4) Disconnect the ground cable from battery.



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

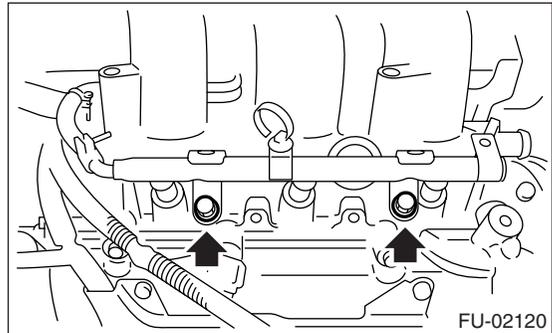


- 7) Disconnect the connectors from fuel injector.



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

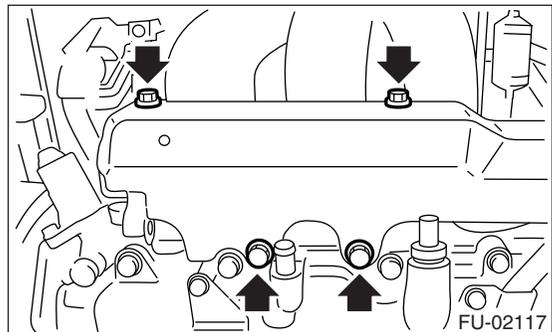
- 9) Remove the bolts which hold fuel injector pipe onto intake manifold.



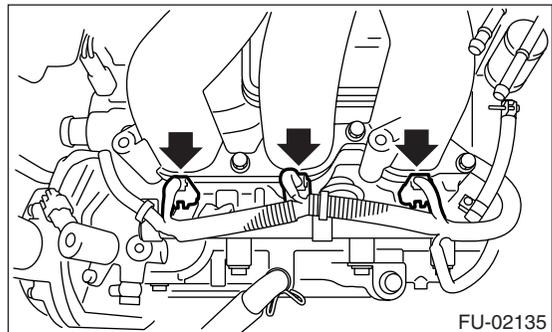
- 10) Remove the fuel injector while lifting up the fuel injector pipe.

2. LH SIDE

- 1) Remove the collector cover.
- 2) Release the fuel pressure.
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler flap lid, and remove the fuel filler cap.
- 4) Remove the battery.
- 5) Remove the generator harness from fuel pipe protector LH.
- 6) Remove the fuel pipe protector LH.

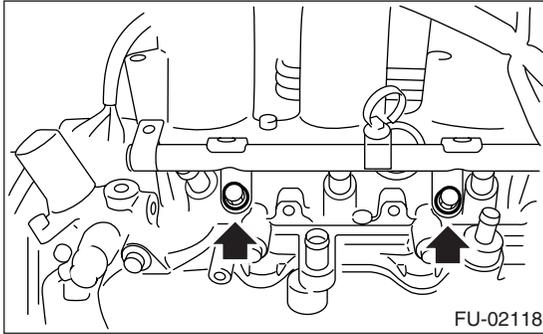


- 7) Disconnect the connectors from fuel injector.



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

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



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

B: INSTALLATION

1. RH SIDE

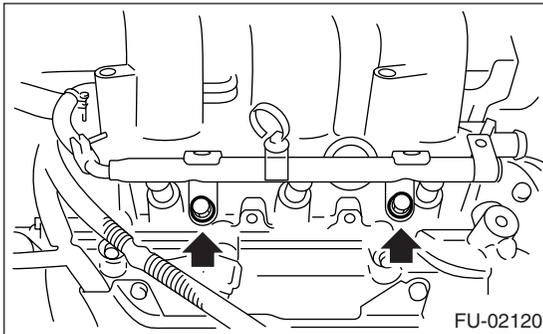
Install in the reverse order of removal.

NOTE:

Use new O-rings.

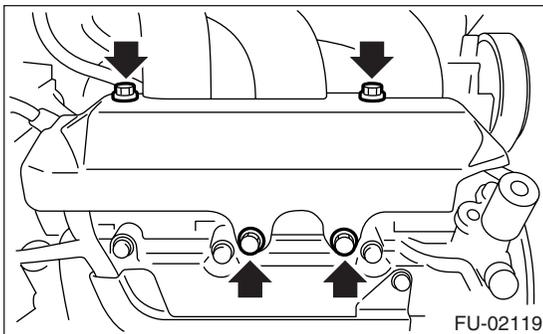
Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



2. LH SIDE

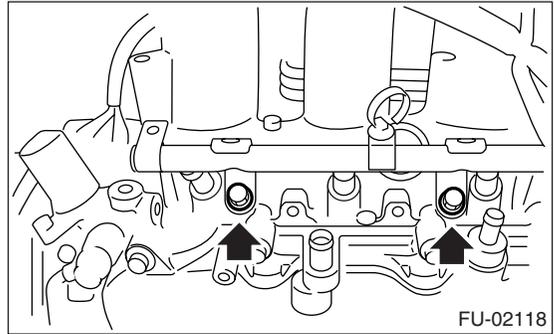
Install in the reverse order of removal.

NOTE:

Use new O-rings.

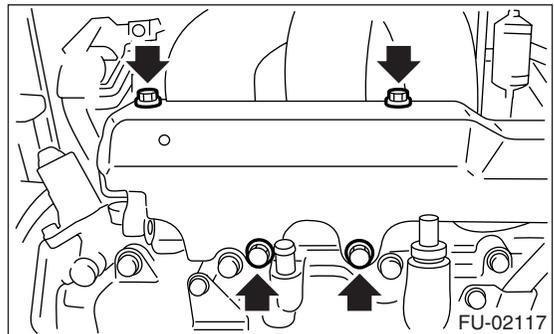
Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



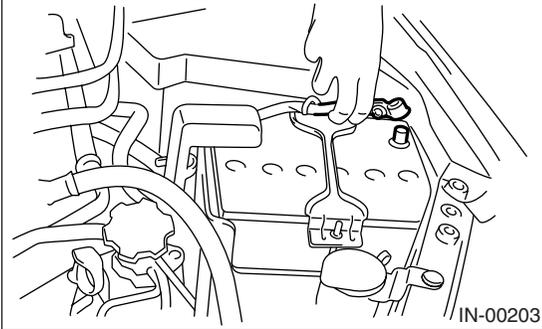
Variable Valve Lift Diagnosis Oil Pressure Switch

FUEL INJECTION (FUEL SYSTEMS)

13. Variable Valve Lift Diagnosis Oil Pressure Switch

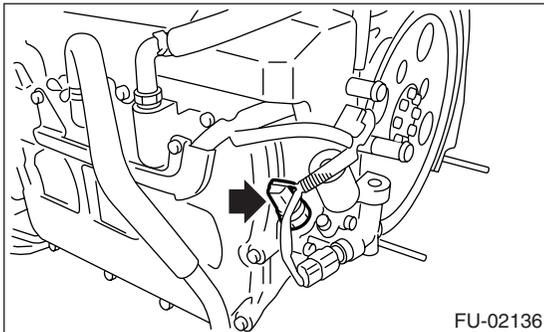
A: REMOVAL

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

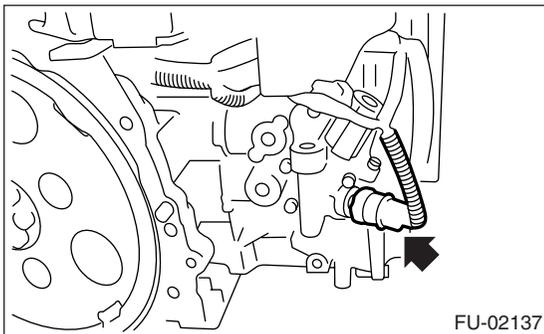


- 3) Remove the air intake chamber. <Ref. to IN(H6DO)-7, REMOVAL, Air Intake Chamber.>
- 4) Disconnect the connector from variable valve lift diagnosis oil pressure switch.
- 5) Remove the variable valve lift diagnosis oil pressure switch.

- LH side



- RH side



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

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

Liquid gasket:

THREE BOND 1324 (Part No. 004403042) or equivalent

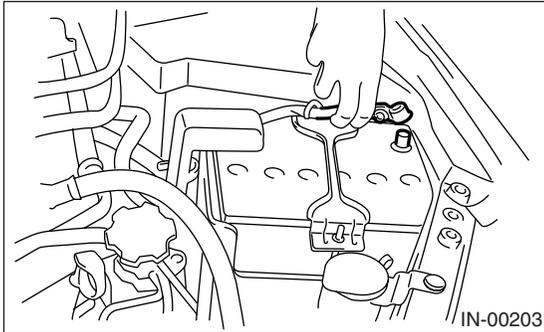
Tightening torque:

17 N·m (1.7 kgf-m, 12.5 ft-lb)

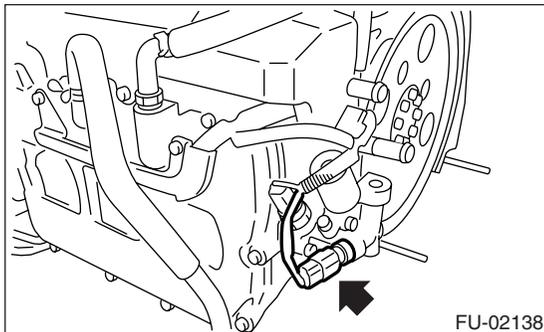
14. Oil Temperature Sensor

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 oil temperature sensor.
- 5) Remove the oil temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

18 N·m (1.8 kgf·m, 13.3 ft·lb)

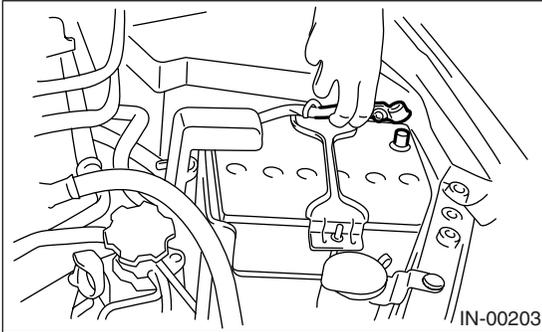
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

15. Front Oxygen (A/F) Sensor

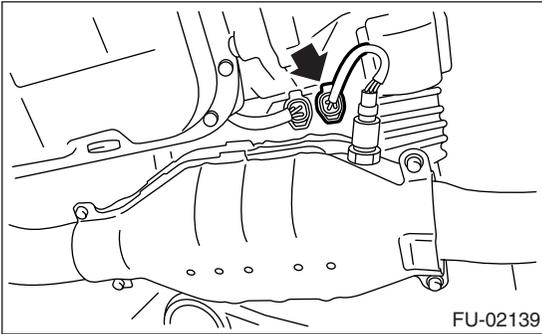
A: REMOVAL

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

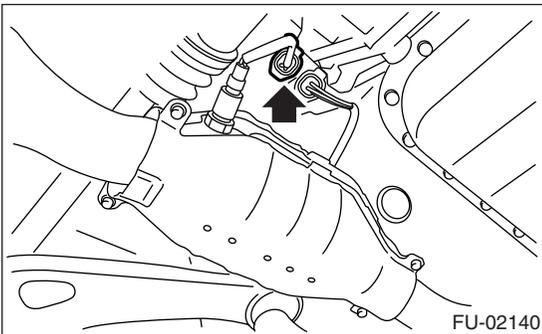


- 3) Lift-up the vehicle.
- 4) Disconnect the connector of front oxygen (A/F) sensor.

- LH side



- RH side

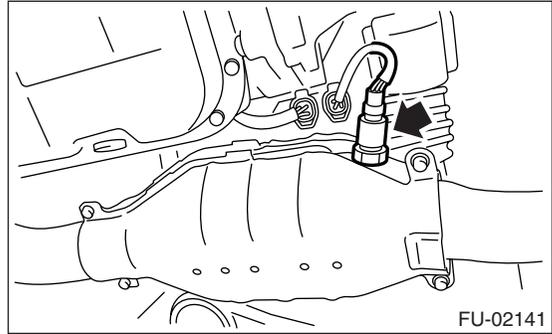


- 5) Apply spray-type lubricant to the threaded portion of front oxygen (A/F) sensor, and leave it for one minute or more.
- 6) Remove the front oxygen (A/F) sensor.

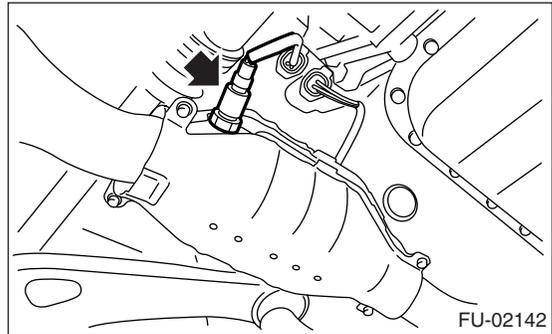
CAUTION:

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

- LH side



- RH side



B: INSTALLATION

- 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.

Anti-seize compound:
SS-30 JET LUBE

CAUTION:

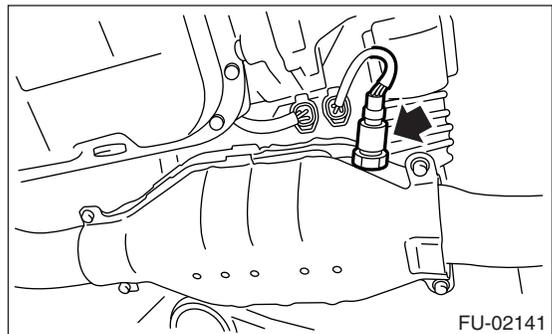
Never apply anti-seize compound to the protector of front oxygen (A/F) sensor.

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

Tightening torque:

21 N·m (2.1 kgf-m, 15.2 ft-lb)

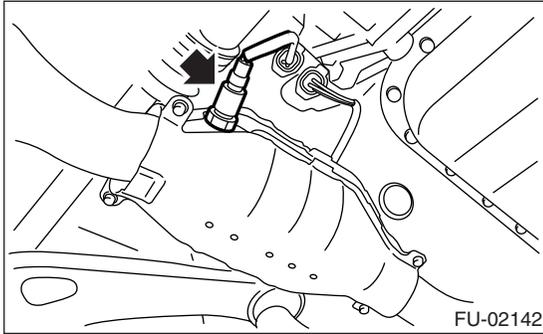
- LH side



Front Oxygen (A/F) Sensor

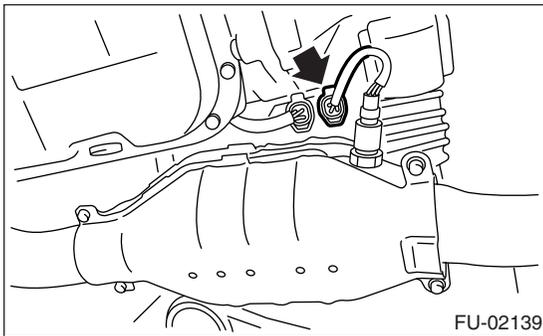
FUEL INJECTION (FUEL SYSTEMS)

- RH side

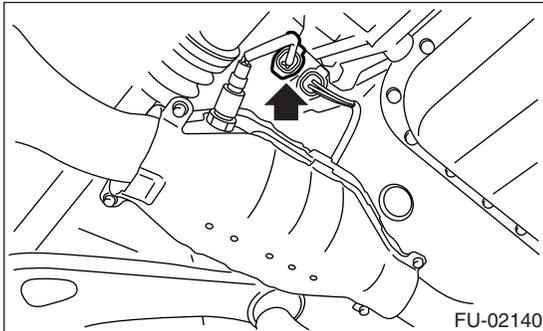


3) Connect the connector of front oxygen (A/F) sensor.

- LH side

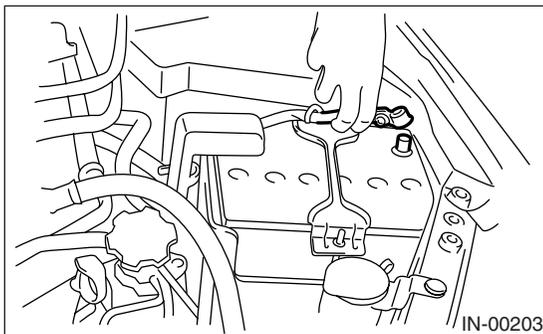


- RH side



4) Lower the vehicle.

5) Connect the battery ground cable to battery.



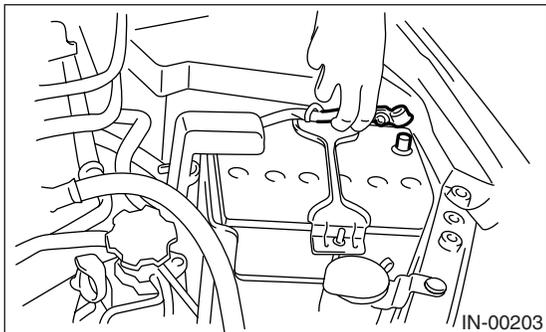
Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

16.Rear Oxygen Sensor

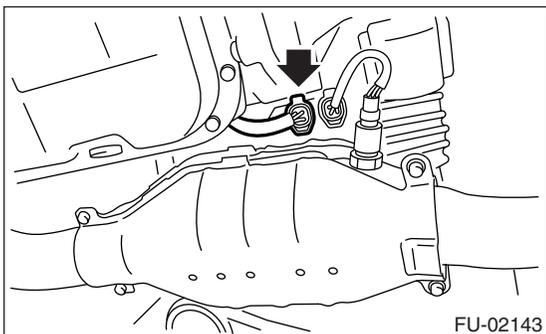
A: REMOVAL

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

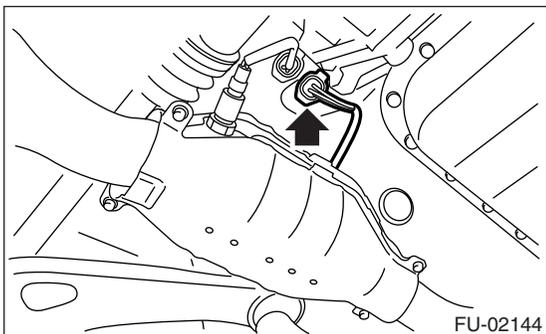


- 3) Lift-up the vehicle.
- 4) Disconnect the connector from rear oxygen sensor.

- LH side



- RH side

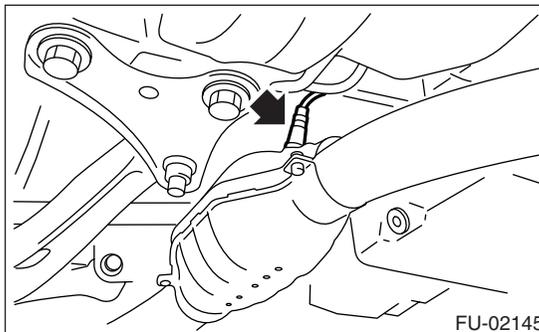


- 5) Remove the clip holding harness.
- 6) Apply spray-type lubricant to the threaded portion of rear oxygen sensor, and leave it for one minute or more.
- 7) Remove the rear oxygen sensor.

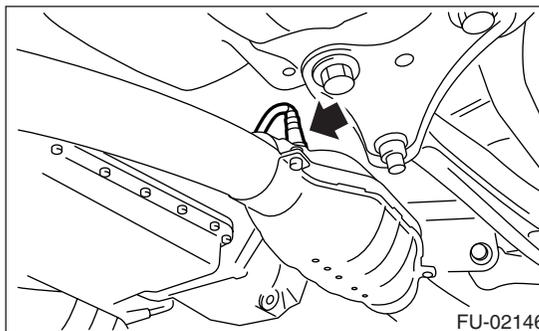
CAUTION:

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

- LH side



- RH side



B: INSTALLATION

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

Anti-seize compound:
SS-30 JET LUBE

CAUTION:

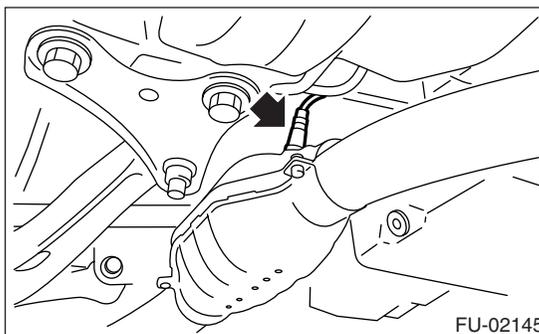
Never apply anti-seize compound to the protector of rear oxygen sensor.

- 2) Install the rear oxygen sensor.

Tightening torque:

21 N·m (2.1 kgf·m, 15.2 ft·lb)

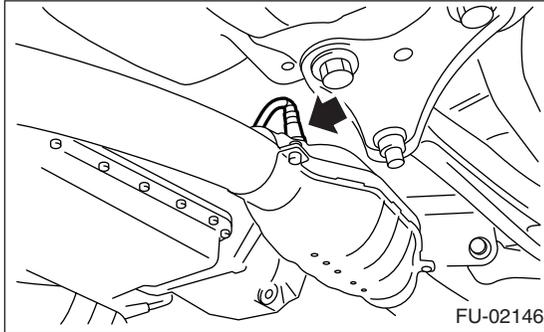
- LH side



Rear Oxygen Sensor

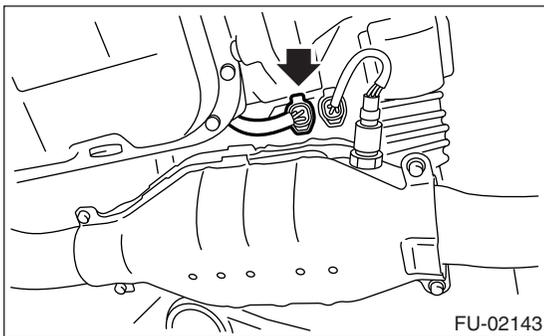
FUEL INJECTION (FUEL SYSTEMS)

- RH side

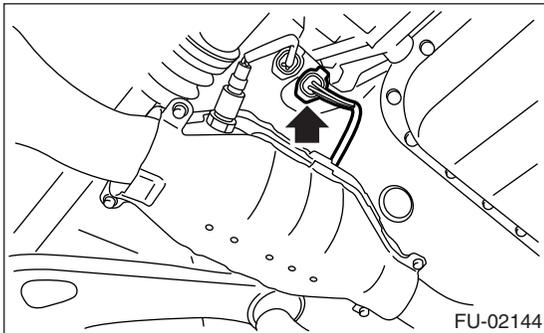


- 3) Hold the harness with clip.
- 4) Connect the connector to rear oxygen sensor.

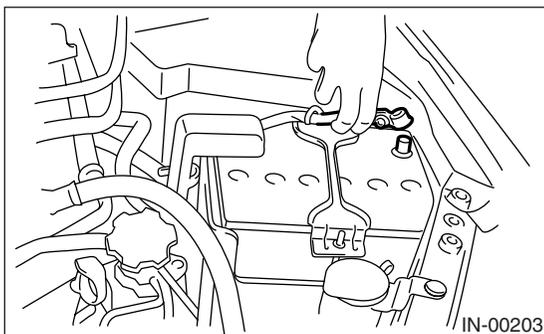
- LH side



- RH side



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



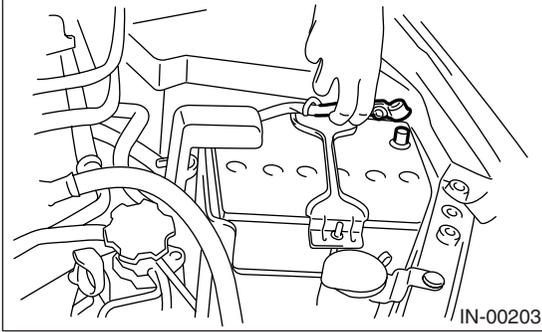
Engine Control Module (ECM)

FUEL INJECTION (FUEL SYSTEMS)

17.Engine Control Module (ECM)

A: REMOVAL

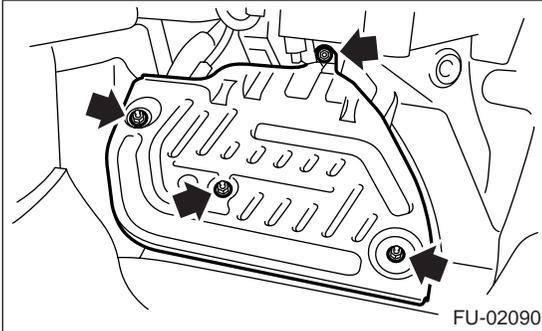
1) Disconnect the ground cable from battery.



2) Remove the lower inner trim of passenger's side. <Ref. to EI-60, REMOVAL, Lower Inner Trim.>

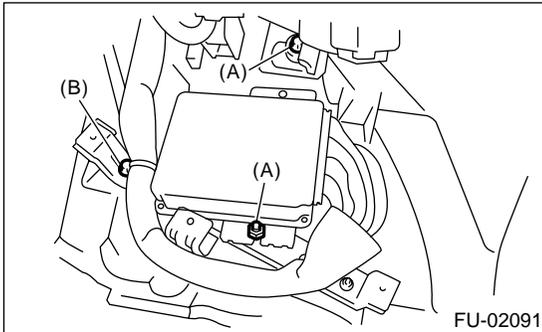
3) Detach the floor mat of front passenger seat.

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.

CAUTION:

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

- When replacing the ECM, immobilizer system must be registered. For doing so, all ignition keys and ID cards should be prepared. Refer to "REGISTRATION MANUAL FOR IMMOBILIZER".

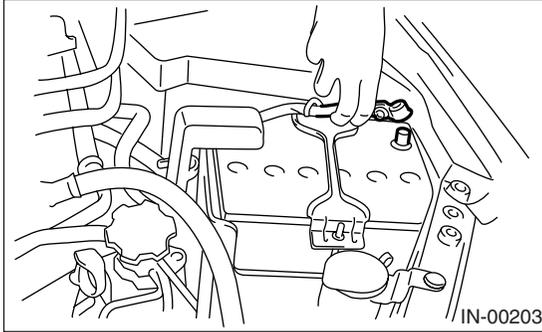
Tightening torque:

5 N·m (0.5 kgf-m, 3.6 ft-lb)

18.Main Relay

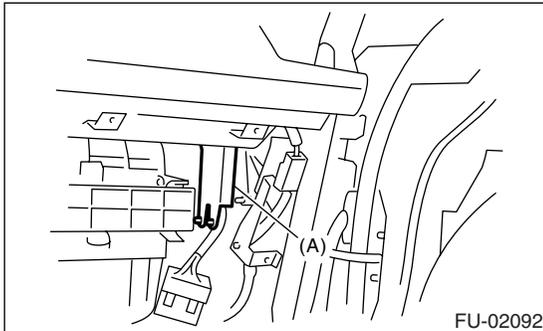
A: REMOVAL

1) Disconnect the ground cable from battery.

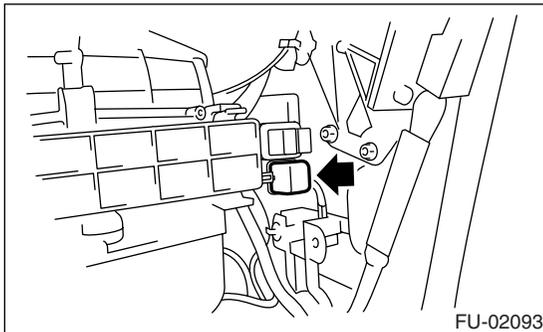


2) Remove the glove box. <Ref. to EI-51, REMOVAL, Glove Box.>

3) Remove the harness cover (A).



4) Disconnect the connector from main relay.



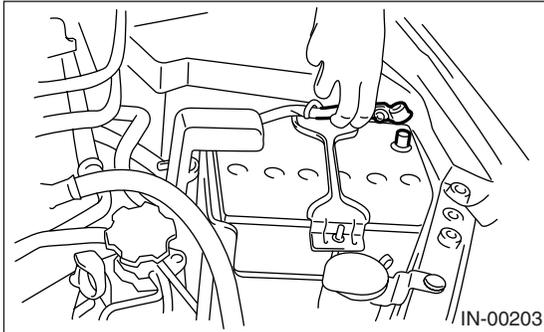
B: INSTALLATION

Install in the reverse order of removal.

19. Fuel Pump Relay

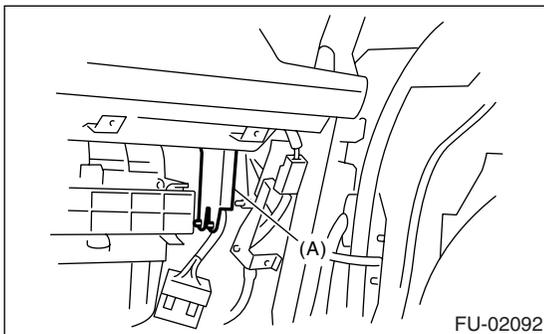
A: REMOVAL

1) Disconnect the ground cable from battery.

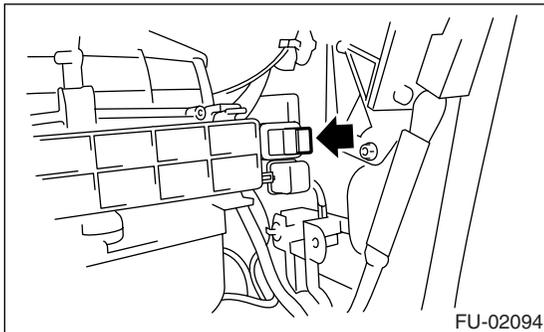


2) Remove the glove box. <Ref. to EI-51, REMOVAL, Glove Box.>

3) Remove the harness cover (A).



4) Disconnect the connector from fuel pump relay.



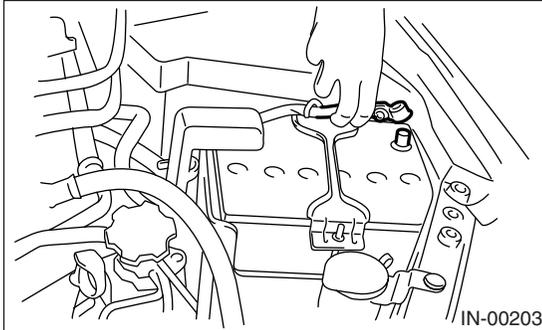
B: INSTALLATION

Install in the reverse order of removal.

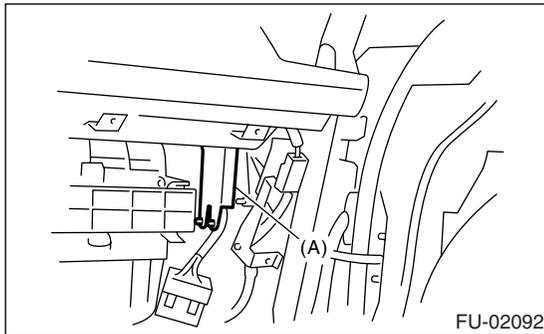
20. Electronic Throttle Control Relay

A: REMOVAL

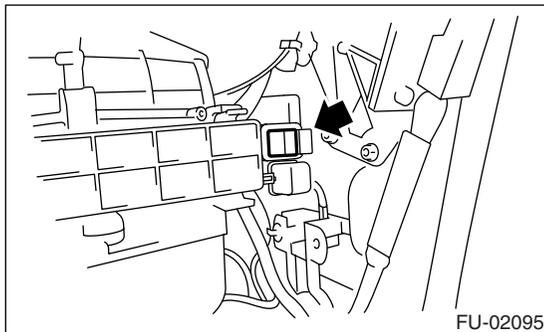
- 1) Disconnect the ground cable from battery.



- 2) Remove the glove box. <Ref. to EI-51, 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.

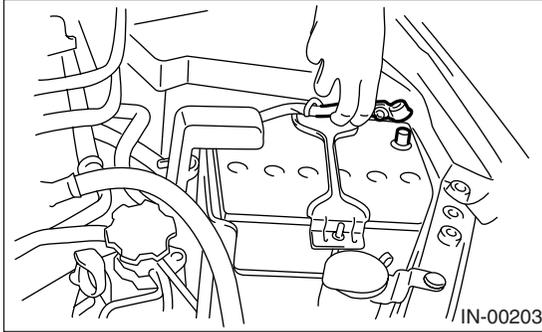
Fuel Pump Control Unit

FUEL INJECTION (FUEL SYSTEMS)

21. Fuel Pump Control Unit

A: REMOVAL

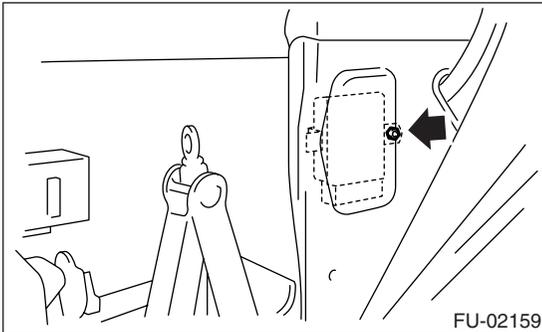
1) Disconnect the ground cable from battery.



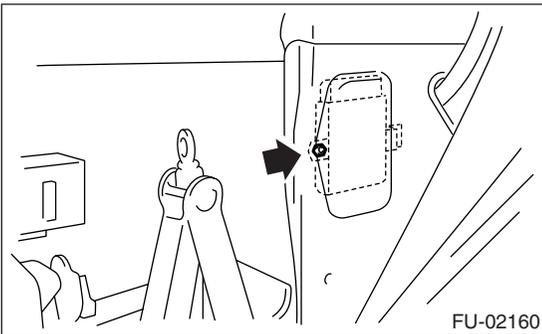
2) Remove the rear quarter trim. <Ref. to EI-63, REMOVAL, Rear Quarter Trim.>

3) Remove the fuel pump control unit.

- Wagon model



- Sedan model



4) Disconnect the connector from fuel pump control unit.

B: INSTALLATION

Install in the reverse order of removal.

22. Fuel

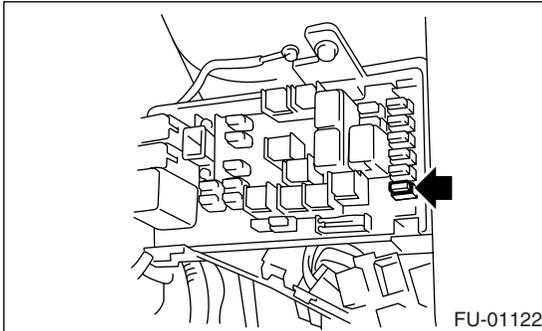
A: PROCEDURE

1. RELEASING OF FUEL PRESSURE

WARNING:

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

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



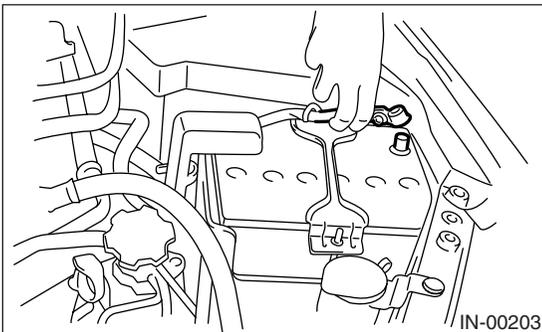
- 2) Start the engine and run until it stalls.
- 3) After the engine stalls, crank it for five more seconds.
- 4) Turn the ignition switch to OFF.

2. DRAINING FUEL

WARNING:

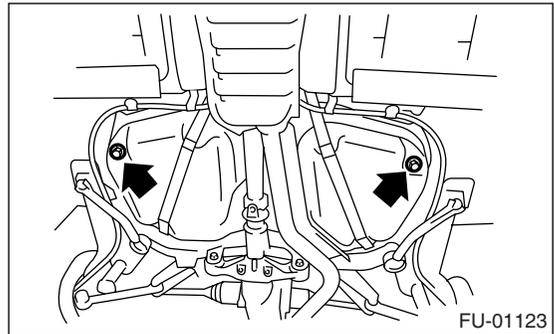
- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.

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



- 3) Open the fuel filler flap lid, and remove the fuel filler cap.
- 4) Lift-up the vehicle.
- 5) Remove the fuel tank protector.

6) Set a container under the vehicle, and remove the drain plugs from fuel tank to drain the fuel from fuel tank.



7) Tighten the fuel drain plug.

NOTE:

Use a new gasket.

Tightening torque:

26 N·m (2.65 kgf-m, 19.2 ft-lb)

8) Install the fuel tank protector.

NOTE:

Use a new nut.

Tightening torque:

Nut

9.0 N·m (0.92 kgf-m, 6.6 ft-lb)

Bolt

17.5 N·m (1.78 kgf-m, 12.9 ft-lb)

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

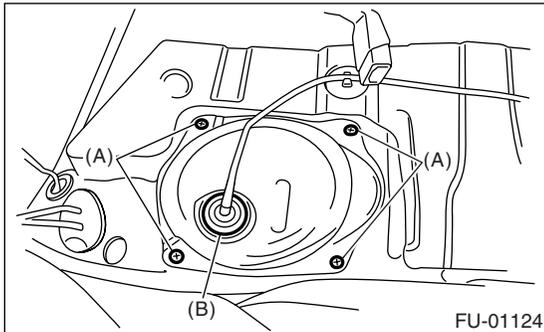
23. Fuel Tank

A: REMOVAL

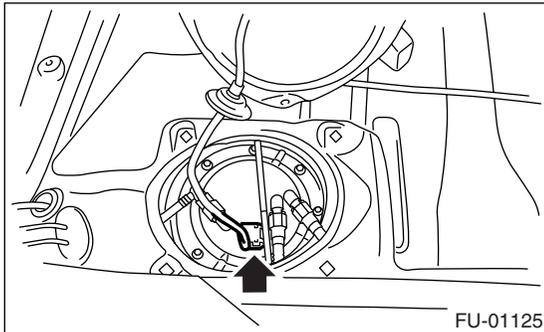
WARNING:

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

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure.
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Drain fuel from fuel tank.
<Ref. to FU(H6DO)-39, DRAINING FUEL, PROCEDURE, Fuel.>
- 4) Remove the rear seat.
- 5) Remove the service hole cover from fuel pump.
 - (1) Remove the bolts (A).
 - (2) Push the grommet (B) down under the body and remove the service hole cover.

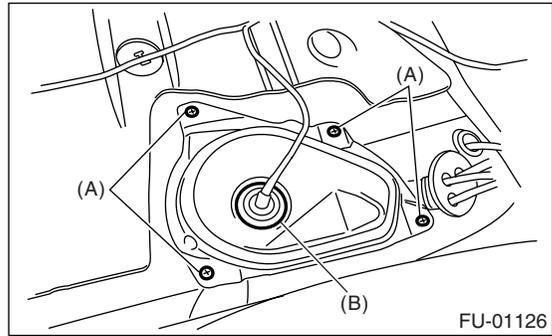


- 6) Disconnect the connector from fuel pump.

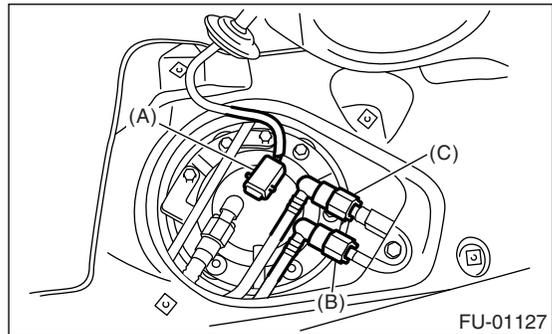


- 7) Remove the service hole cover from fuel sub level sensor.
 - (1) Remove the bolts (A).

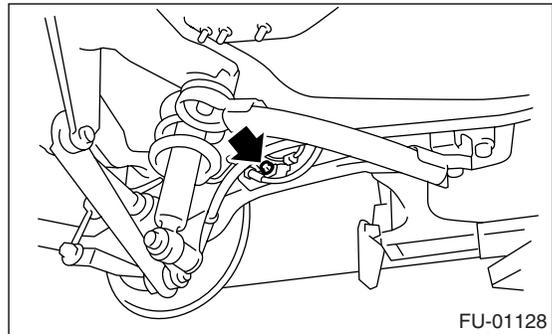
- (2) Push the grommet (B) down under the body and remove the service hole cover.



- 8) Disconnect the connector (A) from fuel sub level sensor.
- 9) Disconnect the quick connector from the fuel delivery (B) and return hose (C). <Ref. to FU(H6DO)-54, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>



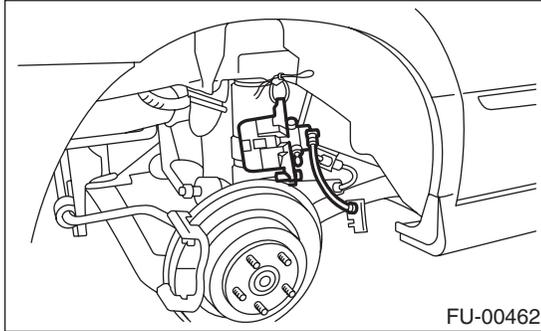
- 10) Remove the rear wheels.
- 11) Remove the bolts which secure the rear brake hose installation bracket.



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

12) Remove the rear brake caliper and tie it to the side of vehicle body.



13) Remove the parking brake cable from parking brake assembly. <Ref. to PB-7, REMOVAL, Parking Brake Assembly (Rear Disc Brake).>

14) Lift-up the vehicle.

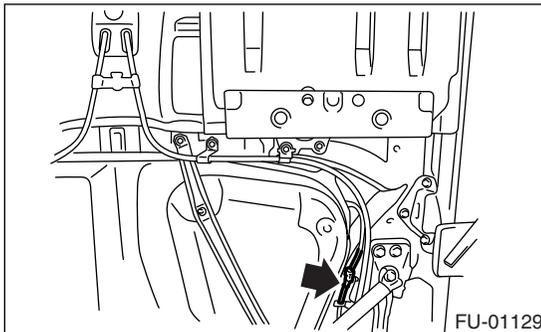
15) Remove the rear exhaust pipe.

<Ref. to EX(H6DO)-8, REMOVAL, Rear Exhaust Pipe.>

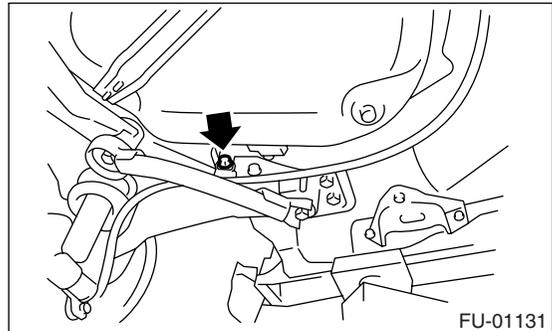
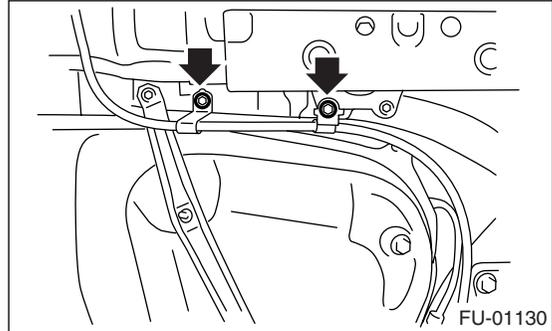
16) Remove the propeller shaft. <Ref. to DS-10, REMOVAL, Propeller Shaft.>

17) Remove the heat shield cover.

18) Disconnect the connector from rear ABS wheel speed sensor.



19) Remove the bolts which install parking brake cable clamp.

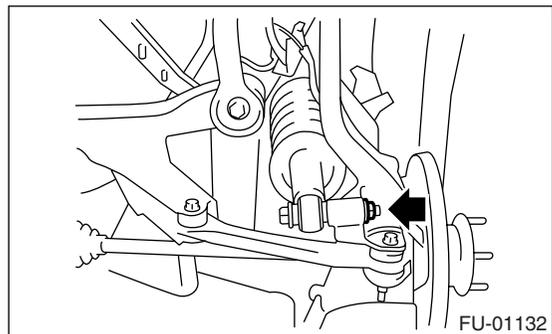


20) Remove the rear suspension assembly.

CAUTION:

A helper is required to perform this work.

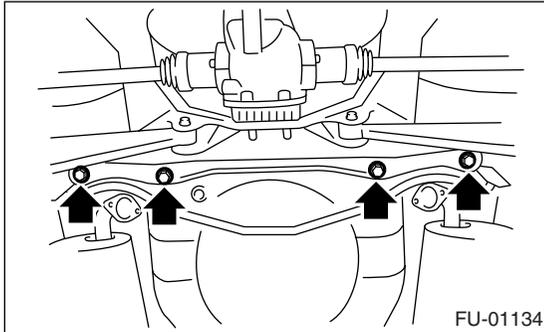
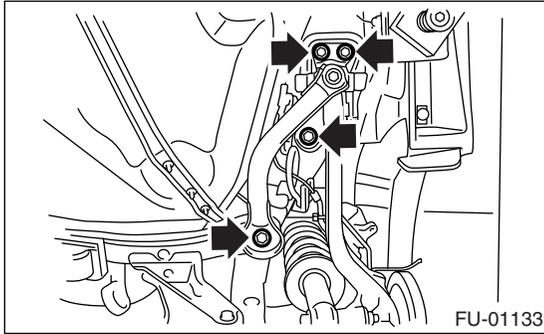
- (1) Support the rear differential with transmission jack.
- (2) Remove the bolt which installs rear shock absorber to rear suspension arm.



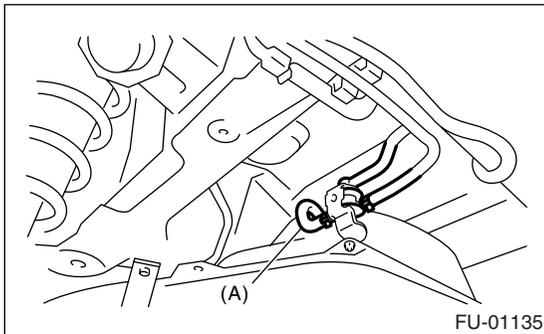
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

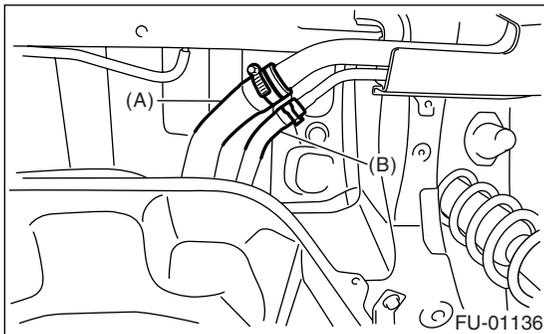
(3) Remove the bolts which secure rear suspension assembly to body.



(4) Remove the rear suspension assembly.
21) Disconnect the two-way valve hose (A) from two-way valve, and then remove the two-way valve from bracket.

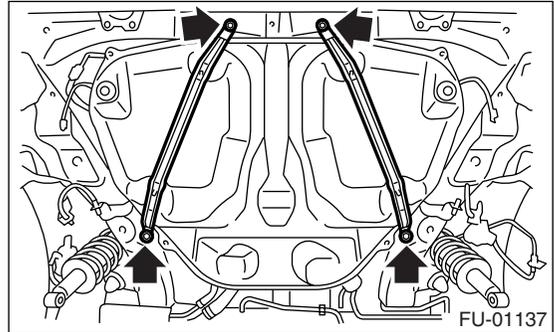


22) Loosen the clamp, and disconnect the fuel filler hose (A) and vent hose (B) from fuel filler pipe.



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

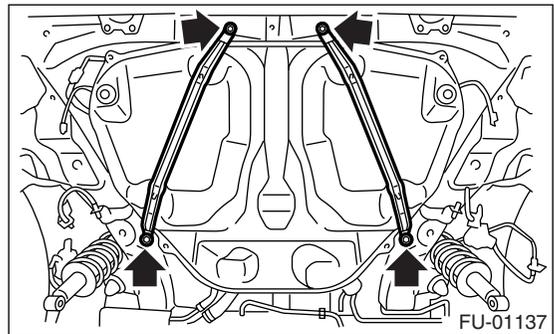
WARNING:
A helper is required to perform this work.



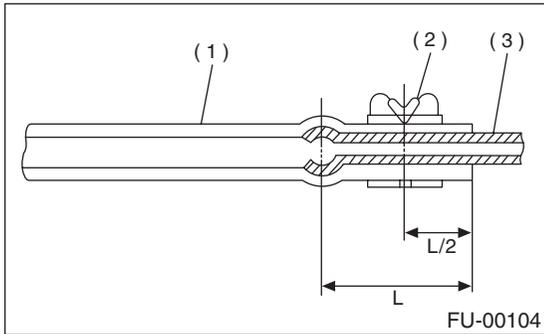
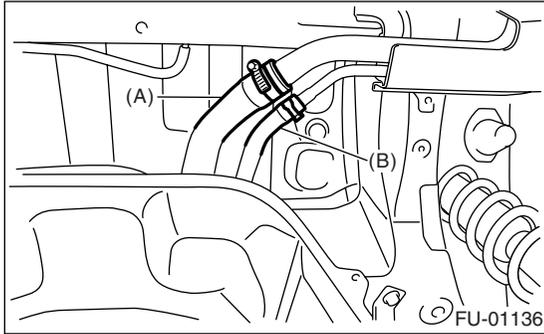
B: INSTALLATION

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

WARNING:
A helper is required to perform this work.

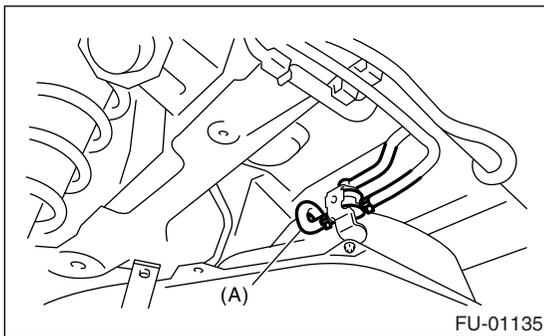


2) Correctly insert the fuel filler hose (A) and vent hose (B) to specified position, and then tighten the clamp.



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

3) Install the two-way valve to bracket, and connect the two-way valve hose (A) to two-way valve.



4) Tighten the bolts of fuel tank band.

Tightening torque:

33 N·m (3.4 kgf-m, 25 ft-lb)

5) Install the rear suspension assembly.

CAUTION:

A helper is required to perform this work.

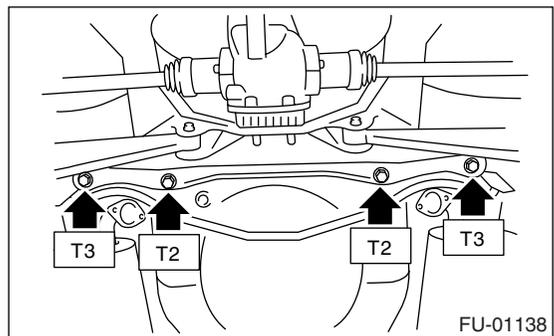
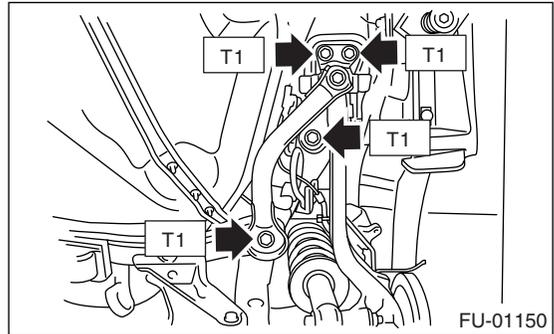
- (1) Support the rear differential with transmission jack.
- (2) Support the rear suspension assembly, and then tighten the bolts which secure rear suspension assembly to body.

Tightening torque:

T1: 125 N·m (12.7 kgf-m, 92.2 ft-lb)

T2: 65 N·m (6.2 kgf-m, 48 ft-lb)

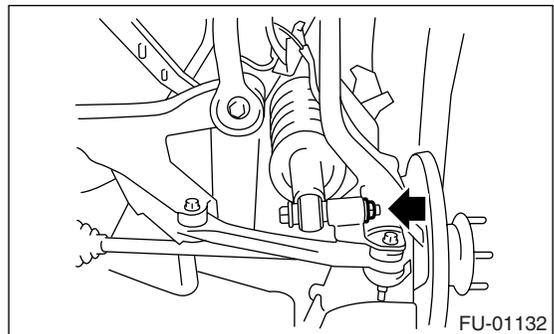
T3: 175 N·m (17.8 kgf-m, 129 ft-lb)



(3) Tighten the bolts which install rear shock absorber to rear suspension arm. <Ref. to RS-11, INSTALLATION, Rear Arm.>

Tightening torque:

62 N·m (6.3 kgf-m, 46 ft-lb)



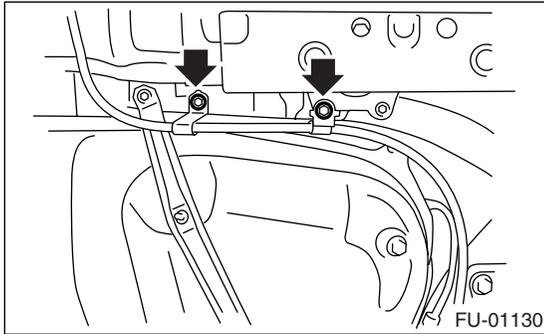
6) Tighten the bolts which install parking brake cable clamp.

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

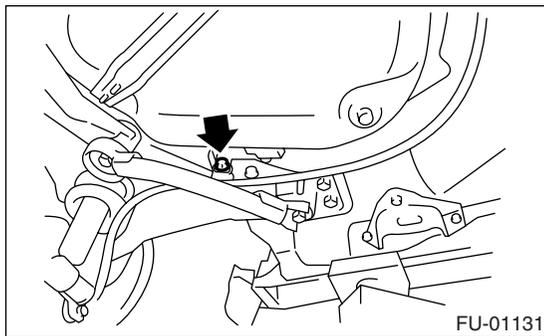
Tightening torque:

18 N·m (1.8 kgf·m, 13.0 ft·lb)

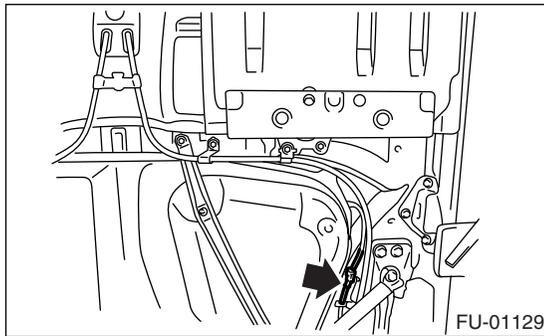


Tightening torque:

32 N·m (3.3 kgf·m, 23.9 ft·lb)



7) Connect the connector to ABS wheel speed sensor.



8) Install the heat shield cover.

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

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

11) Lower the vehicle.

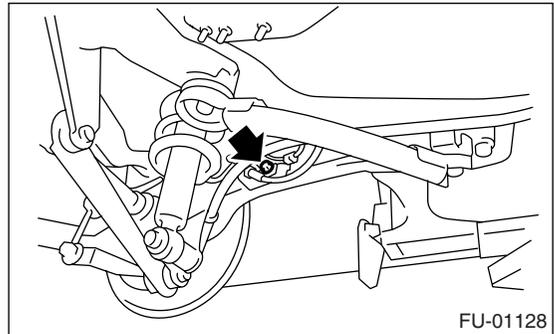
12) Connect the parking brake cable to parking brake assembly. <Ref. to PB-8, INSTALLATION, Parking Brake Assembly (Rear Disc Brake).>

13) Install the rear brake caliper.

14) Tighten the bolt which secures rear brake hose installation bracket.

Tightening torque:

33 N·m (3.4 kgf·m, 25 ft·lb)



15) Install the rear wheels.

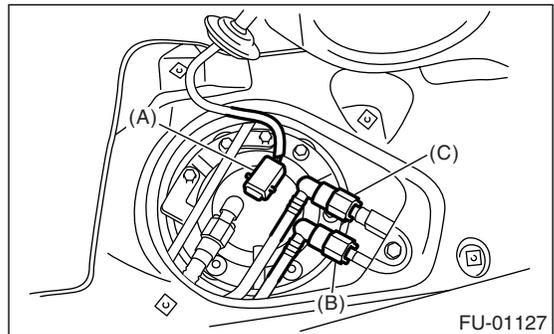
16) Lower the vehicle.

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

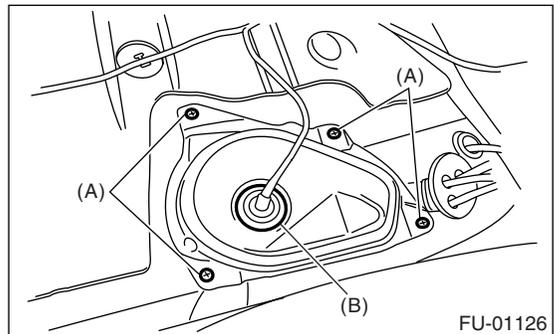
18) Connect the quick connector of the fuel delivery (B) and return hose (C). <Ref. to FU(H6DO)-55, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

NOTE:

Be careful not to misconnect the delivery side and return side.



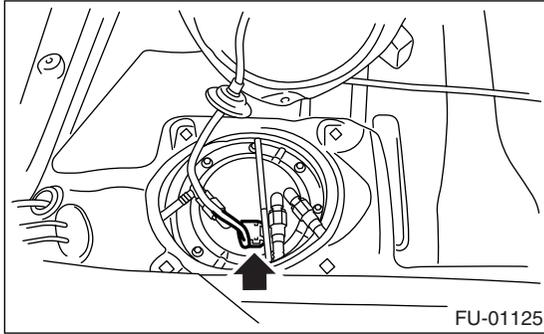
19) Install the service hole cover of fuel sub level sensor.



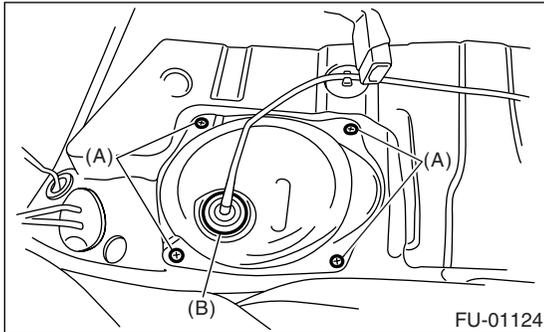
(A) Bolt

(B) Grommet

20) Connect the connector to fuel pump.



21) Install the service hole cover of fuel pump.



(A) Bolt

(B) Grommet

22) Install the rear seat.

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

C: INSPECTION

1) Check that the fuel tank is not holed, cracked, or otherwise damaged.

2) Make sure that the fuel hoses and fuel pipes are not cracked and those connections are tight.

Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

24. Fuel Filler Pipe

A: REMOVAL

WARNING:

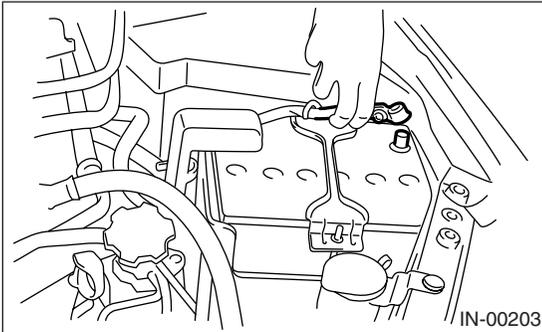
- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.

1) Release the fuel pressure.

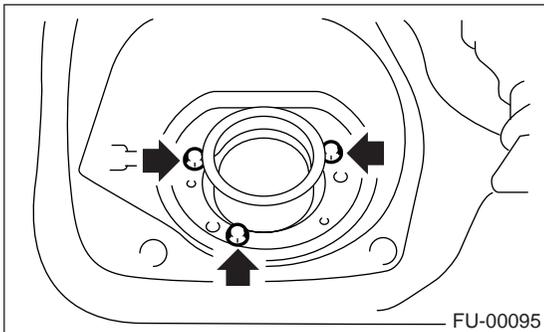
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

3) Disconnect the ground cable from battery.

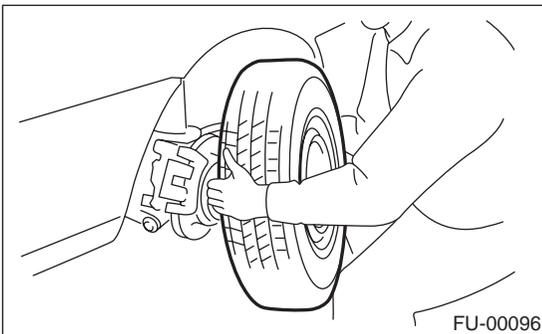


4) Remove the screws which secure packing.

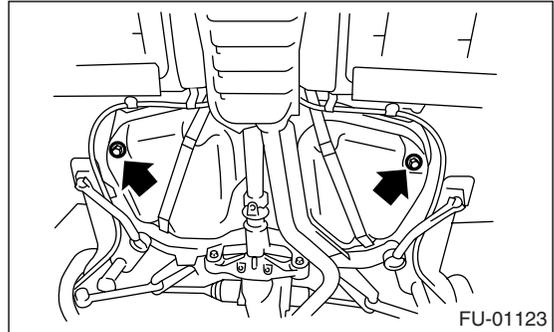


5) Lift-up the vehicle.

6) Remove the rear wheel RH.



7) Set a container under the vehicle, and remove the drain plug from fuel tank to drain the fuel from fuel tank.



8) Tighten the fuel drain plug.

NOTE:

Use a new gasket.

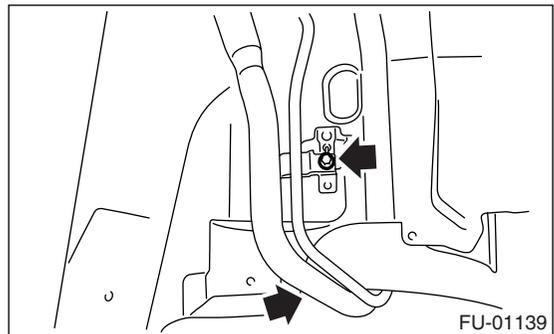
Tightening torque:

26 N·m (2.65 kgf-m, 19.2 ft-lb)

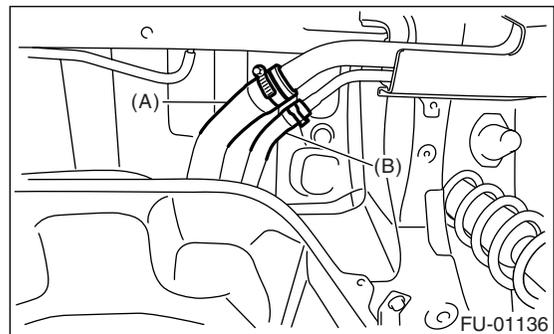
9) Remove the mud guard. <Ref. to EI-29, REMOVAL, Mud Guard.>

10) Remove the rear sub frame. <Ref. to RS-23, REMOVAL, Rear Sub Frame.>

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



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



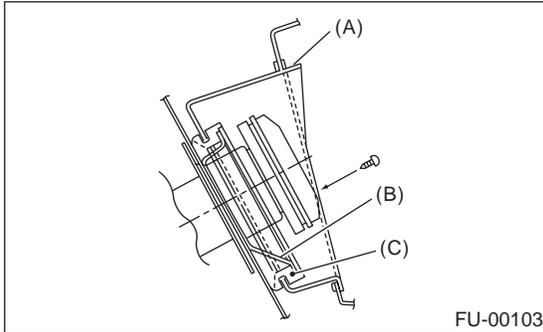
13) Remove the fuel filler pipe to under side of the vehicle.

B: INSTALLATION

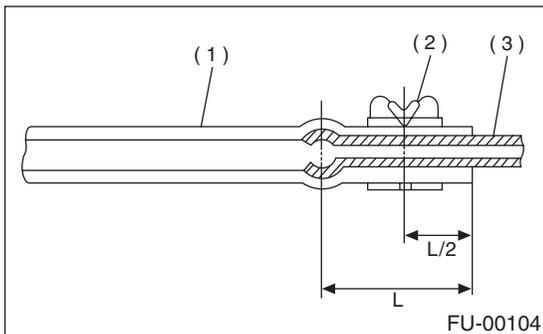
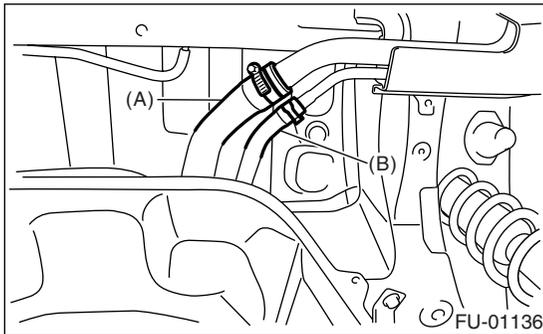
- 1) Open the fuel filler flap lid.
- 2) Set the fuel saucer (A) with rubber packing (C), and insert the fuel filler pipe into hole from the inner side of apron.
- 3) Align the holes in fuel filler pipe neck and set the cup (B), and tighten the screws.

NOTE:

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



- 4) Correctly insert the fuel filler hose (A) and vent hose (B) to specified position, and then tighten the clamp.

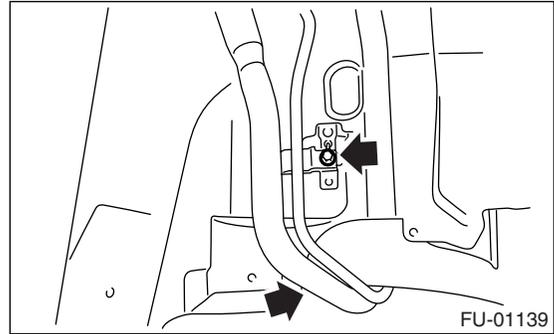


- (1) Hose
- (2) Clip or clamp
- (3) Pipe

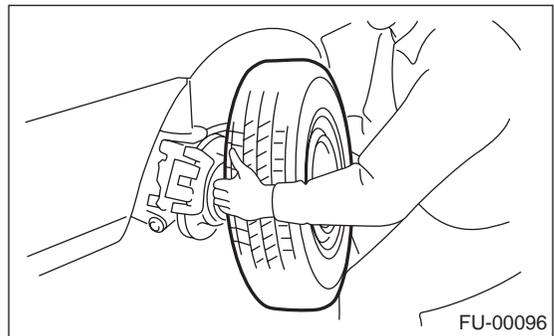
- 5) Tighten the bolts which hold fuel filler pipe bracket on the body.

Tightening torque:

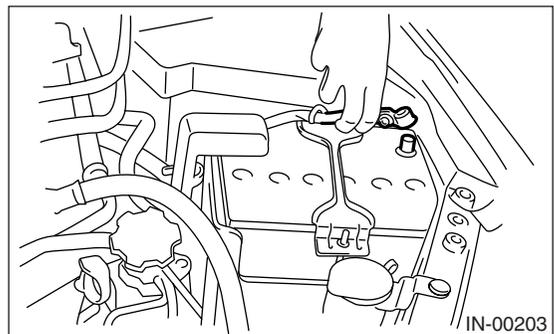
7.5 N·m (0.75 kgf-m, 5.4 ft-lb)



- 6) Install the rear sub frame. <Ref. to RS-23, INSTALLATION, Rear Sub Frame.>
- 7) Install the mud guard. <Ref. to EI-29, INSTALLATION, Mud Guard.>
- 8) Install the rear wheel RH.



- 9) Lower the vehicle.
- 10) Install the fuse of fuel pump to main fuse box.
- 11) Connect the battery ground cable to battery.



Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

25. Fuel Pump

A: REMOVAL

WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.
- Reduce the fuel in the fuel tank to less than 3/4 beforehand. Be careful that fuel may spill when the fuel is more than 3/4.

NOTE:

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

1) Release the fuel pressure.

<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

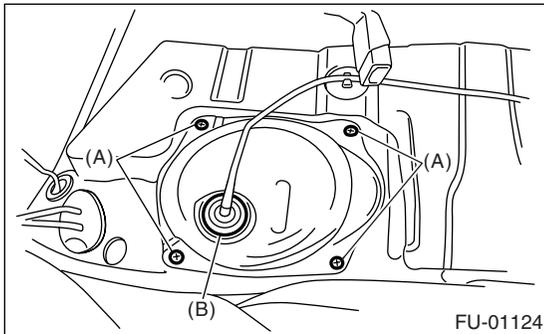
2) Drain the fuel. <Ref. to FU(H6DO)-39, DRAINING FUEL, PROCEDURE, Fuel.>

3) Remove the rear seat.

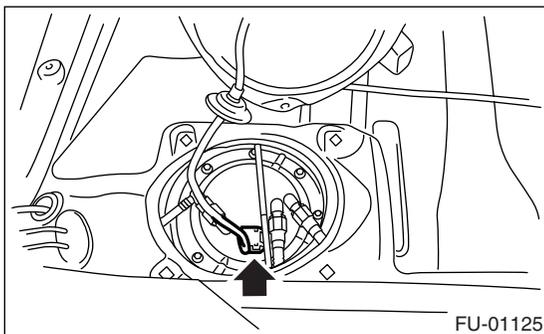
4) Remove the service hole cover.

(1) Remove the bolts (A).

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

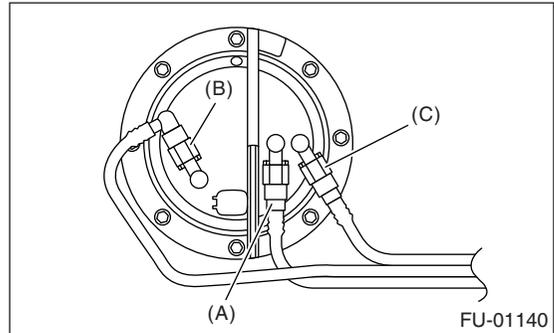


5) Disconnect the connector from fuel pump.



6) Disconnect the quick connector, and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H6DO)-54, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>

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



(A) Delivery hose

(B) Return hose

(C) Jet pump hose

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

B: INSTALLATION

Install in the reverse order of removal.

NOTE:

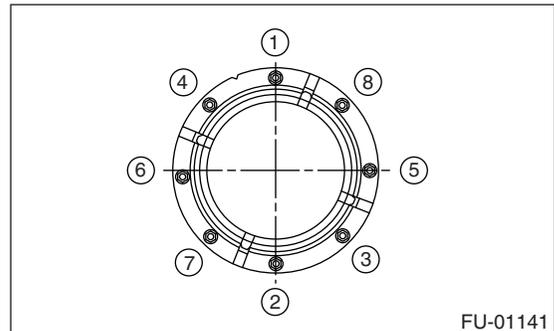
Use a new gasket.

(1) Ensure the sealing portion is free from fuel or foreign particles before installation.

(2) Tighten the nuts to specified torque in the order as shown in the figure.

Tightening torque:

4.4 N·m (0.45 kgf·m, 3.3 ft·lb)



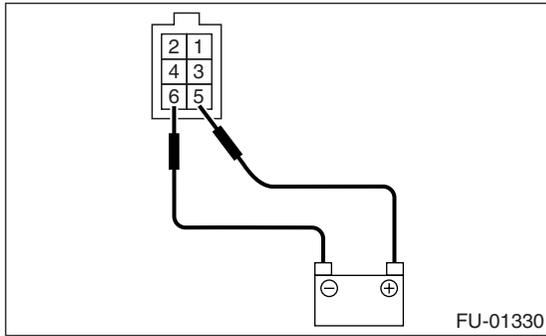
C: INSPECTION

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

WARNING:

- Wipe off the fuel completely.
- Keep battery as far apart from fuel pump as possible.
- Be sure to turn the battery supply to ON and OFF on the battery side.

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



26. Fuel Level Sensor

A: REMOVAL

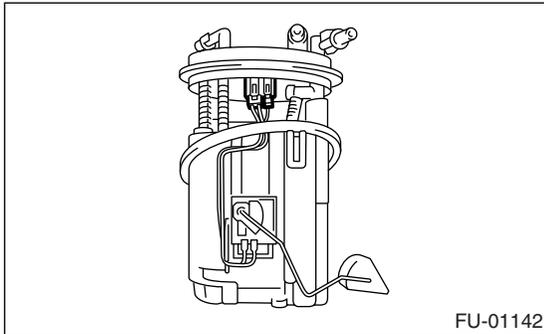
WARNING:

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

NOTE:

Fuel level sensor is built in fuel pump assembly.

- 1) Remove the fuel pump assembly. <Ref. to **FU(H6DO)-48, REMOVAL, Fuel Pump.**>
- 2) Disconnect the connector from fuel pump bracket.



- 3) Remove the fuel level sensor.

B: INSTALLATION

Install in the reverse order of removal.

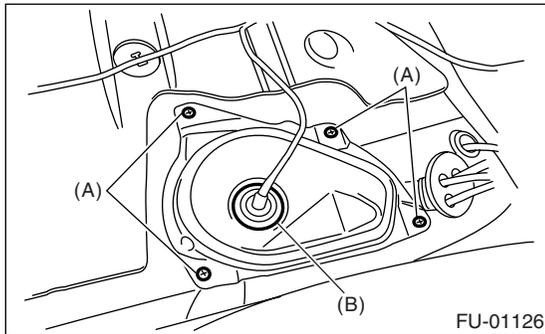
27. Fuel Sub Level Sensor

A: REMOVAL

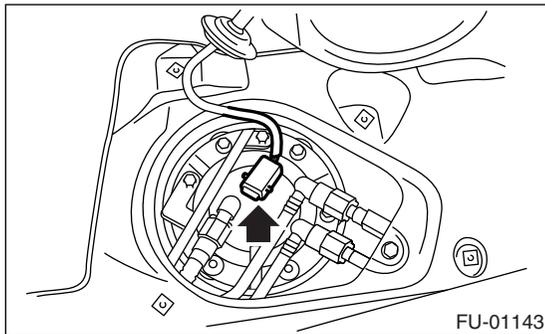
WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.
- Reduce the fuel in the fuel tank to less than 3/4 beforehand. Be careful that fuel may spill when the fuel is more than 3/4.

- 1) Drain the fuel. <Ref. to FU(H6DO)-39, DRAINING FUEL, PROCEDURE, Fuel.>
- 2) Remove the rear seat.
- 3) Remove the service hole cover.
 - (1) Remove the bolts (A).
 - (2) Push the grommet (B) down under the body and remove the service hole cover.

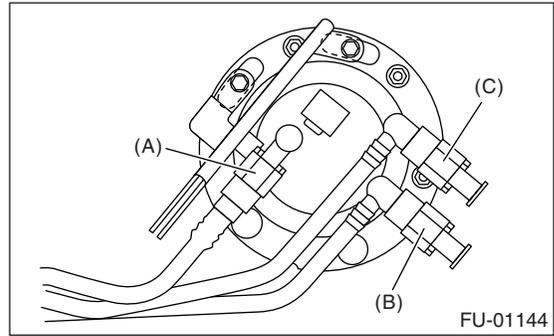


- 4) Disconnect the connector from fuel sub level sensor.



- 5) Disconnect the quick connector, and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H6DO)-54, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>

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



- (A) Jet pump hose
- (B) Delivery hose
- (C) Return hose

- 7) Remove the fuel sub level sensor.

B: INSTALLATION

Install in the reverse order of removal.

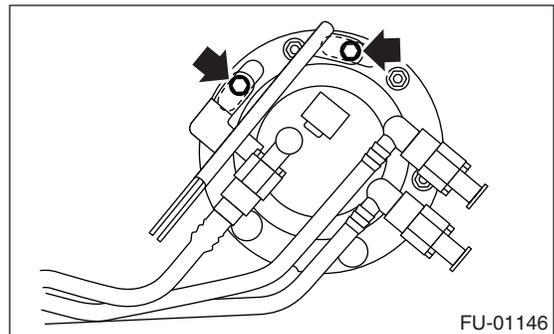
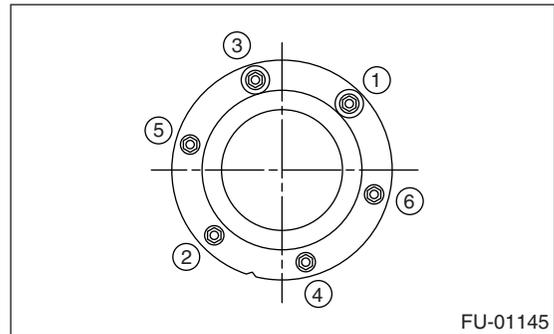
NOTE:

Use a new gasket.

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

Tightening torque:

4.4 N·m (0.45 kgf·m, 3.3 ft·lb)



28.Fuel Filter

A: SPECIFICATION

Fuel filter forms a unit with fuel pump.

Refer to "Fuel Pump" for removal and installation.

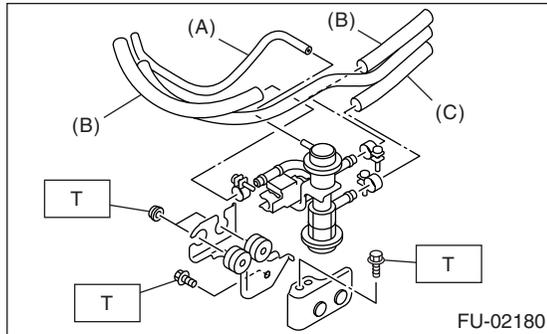
<Ref. to FU(H6DO)-48, REMOVAL, Fuel Pump.>

<Ref. to FU(H6DO)-48, INSTALLATION, Fuel Pump.>

29. Fuel Bypass Valve

A: REMOVAL

- 1) Release the fuel pressure.
<Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the pressure regulator vacuum hose.
- 3) Disconnect the fuel delivery line and return line from fuel bypass valve.
- 4) Remove the fuel bypass valve from vehicle body.



- (A) Pressure regulator vacuum hose
- (B) Fuel delivery line
- (C) Fuel return line

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

7.5 N·m (0.76 kgf-m, 5.53 ft-lb)

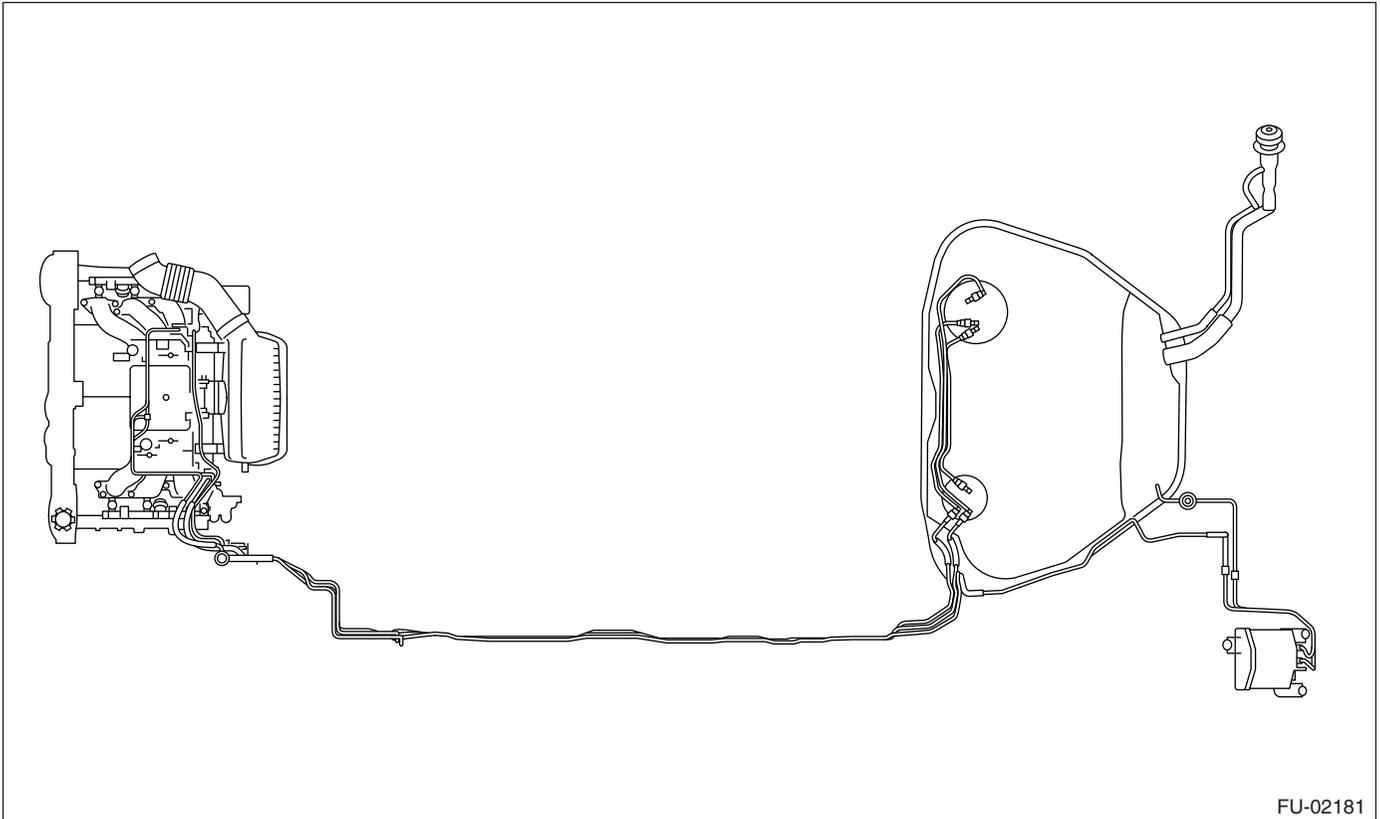
Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

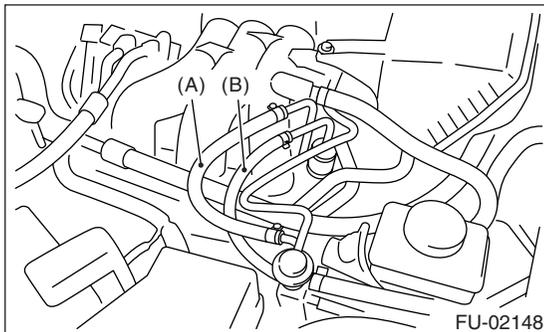
30. Fuel Delivery, Return and Evaporation Lines

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H6DO)-39, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Open the fuel filler flap lid, and remove the fuel filler cap.
- 4) Remove the floor mat. <Ref. to EI-73, REMOVAL, Floor Mat.>
- 5) Disconnect the fuel delivery pipes and hoses, and then disconnect the fuel return pipes and hoses, evaporation pipes and hoses.



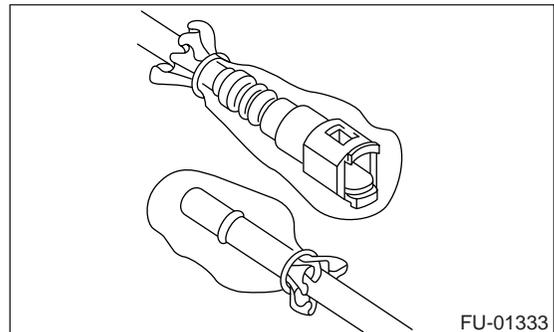
6) In the engine compartment, disconnect the fuel delivery hoses, return hoses and evaporation hose.



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

- 7) Lift-up the vehicle.
- 8) Remove the fuel tank. <Ref. to FU(H6DO)-40, REMOVAL, Fuel Tank.>

- 9) Separate the quick connector on fuel line.
 - (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.



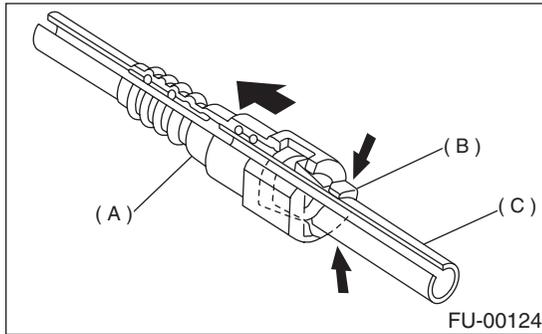
- (3) Hold the connector and push retainer down.
- (4) Pull out the connector from retainer.

Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

CAUTION:

Always use a new retainer.



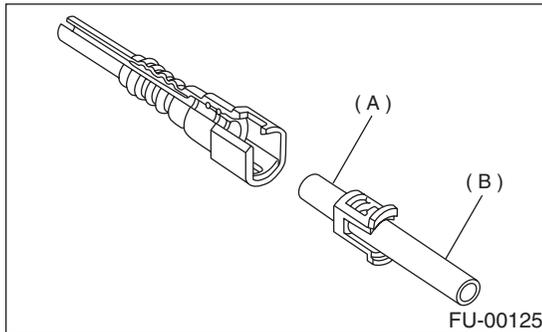
- (A) Connector
- (B) Retainer
- (C) Pipe

B: INSTALLATION

1) Connect the quick connector on fuel line.

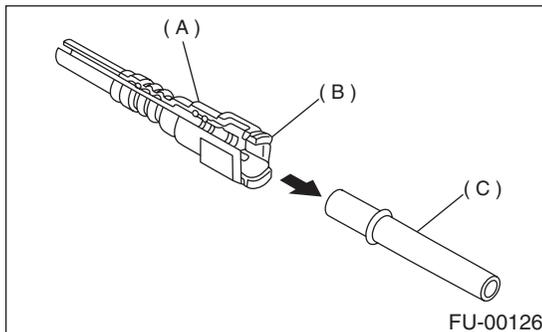
CAUTION:

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



- (A) Seal surface
- (B) Pipe

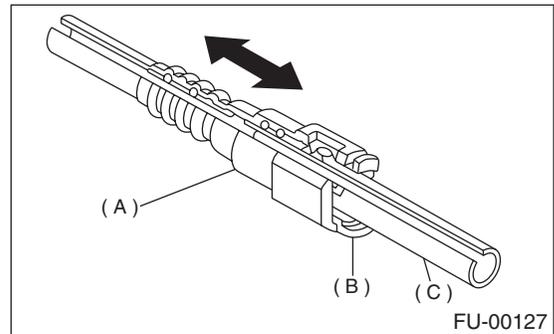
- (1) Set the new retainer to connector.
- (2) Push the pipe into the connector completely.



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

CAUTION:

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



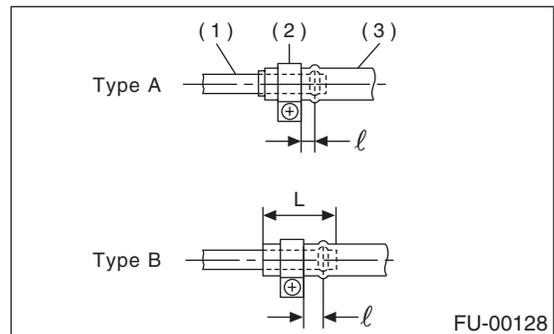
- (A) Connector
- (B) Retainer
- (C) Pipe

2) 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 of inserting is specified.
Type B: When the amount of inserting is not specified.

$\varnothing : 2.5 \pm 1.5 \text{ mm } (0.098 \pm 0.059 \text{ in})$

$L : 22.5 \pm 2.5 \text{ mm } (0.886 \pm 0.098 \text{ in})$



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

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

Fuel return hose:

$L = 22.5 \pm 2.5 \text{ mm } (0.885 \pm 0.098 \text{ in})$

Fuel evaporation hose:

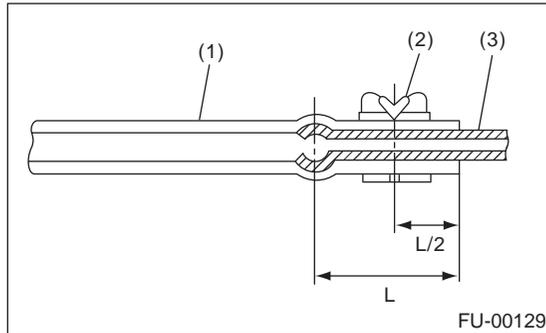
$L = 17.5 \pm 2.5 \text{ mm } (0.689 \pm 0.098 \text{ in})$

Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

CAUTION:

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



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

C: INSPECTION

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

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)

31. 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 fuel pump.
2)	Decline of fuel pump function	Replace the fuel pump.
3)	Clogged dust or water in the fuel filter	Replace fuel filter, clean or replace fuel tank.
4)	Clogged or bent fuel pipe or hose	Clean, correct or replace the fuel pipe or hose.
5)	Air mixed in the fuel system	Inspect or retighten each connection part.
6)	Clogged or bent air breather tube or pipe	Clean, correct or replace air breather tube or pipe.
7)	Damaged diaphragm of pressure regulator	Replace.
2. Leakage or blow out of fuel		
1)	Loosened 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)	Defective drain packing of the fuel tank	Replace.
5)	Clogged or bent air breather tube or air vent tube	Clean, correct or replace 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)	Defective packing air tightness on the fuel saucer	Correct or replace the packing.
3)	Cracked fuel separator	Replace separator.
4)	Inoperative fuel pump modulator or circuit	Replace.
4. Defective fuel meter indicator		
1)	Defective operation of fuel level sensor	Replace.
2)	Defective operation of fuel meter	Replace.
3)	Defective body integrated unit	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 fuel fully to prevent those problem. And also drain the water condensation from fuel filter.
- In snow-covered areas, mountainous areas, skiing areas, etc. where ambient temperatures drop below 0°C (32°F) throughout the winter season, use water removing agent in the fuel system to prevent freezing fuel system and accumulating water. Fill the water removing agent at the time when the fuel reduced at half to maintain the advantage.
- When water condensation is noticed in the fuel filter, drain water from both the fuel filter and fuel tank or use a water removing agent in the fuel tank.
- Before using water removing agent, follow the cautions noted on the bottle.

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)
