

ENGINE SECTION 2

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(H4DOTC)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4DOTC)
INTAKE (INDUCTION)	IN(H4DOTC)
MECHANICAL	ME(H4DOTC)
EXHAUST	EX(H4DOTC)
COOLING	CO(H4DOTC)
LUBRICATION	LU(H4DOTC)
SPEED CONTROL SYSTEMS	SP(H4DOTC)
IGNITION	IG(H4DOTC)
STARTING/CHARGING SYSTEMS	SC(H4DOTC)
ENGINE (DIAGNOSTICS)	EN(H4DOTC)(diag)

FUEL INJECTION (FUEL SYSTEMS)

FU(H4DOTC)

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General Description

FUEL INJECTION (FUEL SYSTEMS)

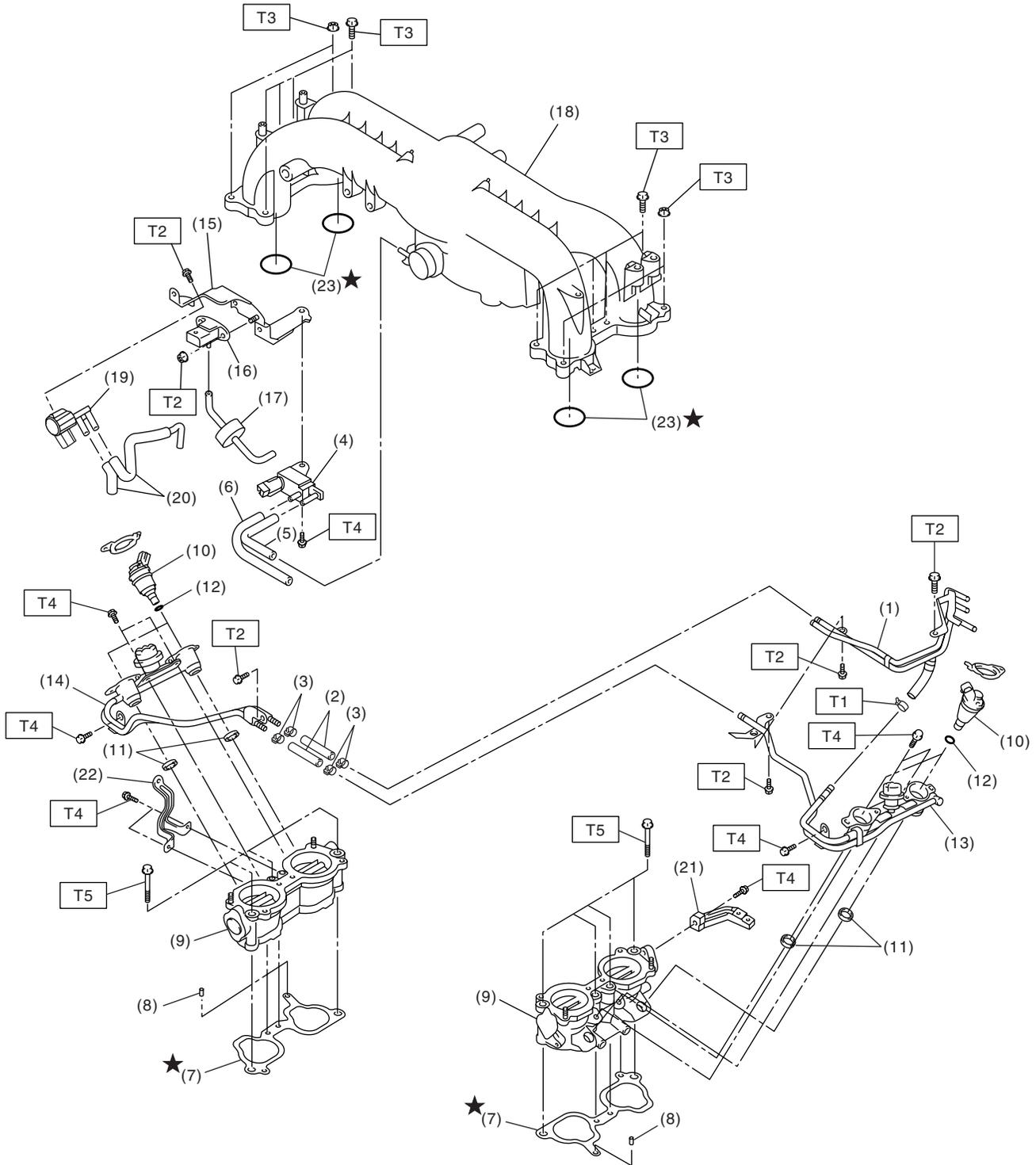
1. General Description

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	155 ℓ (40.9 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



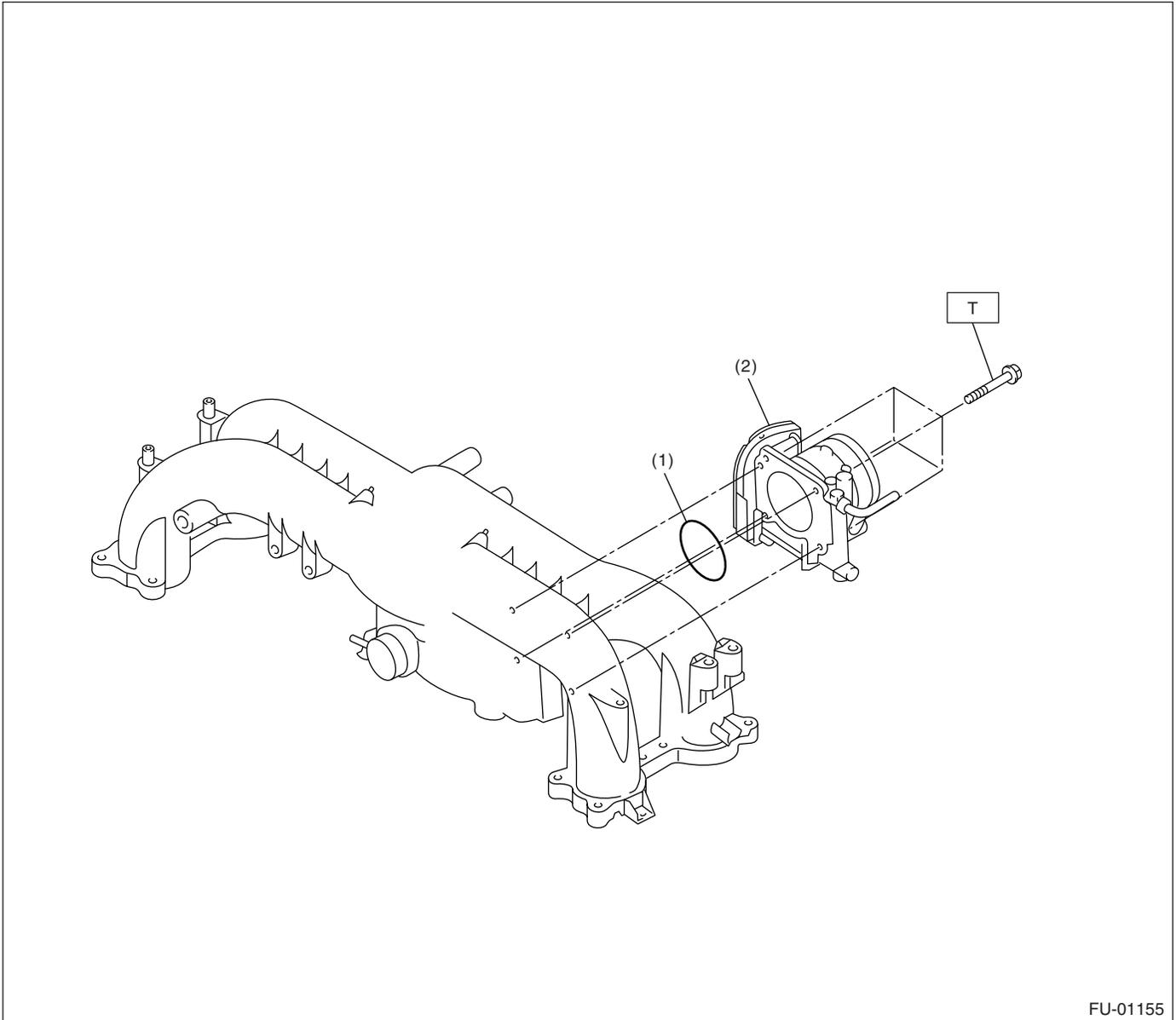
FU-01154

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel pipe ASSY	(12) O-ring	(22) Coolant filler tank stay
(2) Fuel hose	(13) Fuel injector pipe LH	(23) O-ring
(3) Clip	(14) Fuel injector pipe RH	
(4) Purge control solenoid valve	(15) Solenoid valve bracket	<hr/> Tightening torque: N·m (kgf·m, ft·lb)
(5) Vacuum hose	(16) Manifold absolute pressure sensor	T1: 1.5 (0.15, 1.1)
(6) Vacuum control hose	(17) Filter	T2: 6.5 (0.66, 4.8)
(7) Intake manifold gasket	(18) Intake manifold	T3: 8.3 (0.85, 6.1)
(8) Guide pin	(19) Wastegate control solenoid valve ASSY	T4: 19 (1.94, 13.7)
(9) Intake manifold (lower)		T5: 25 (2.5, 18.1) <hr/>
(10) Fuel injector	(20) Vacuum hose	
(11) Seal ring	(21) Ground stay	

2. AIR INTAKE SYSTEM



FU-01155

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

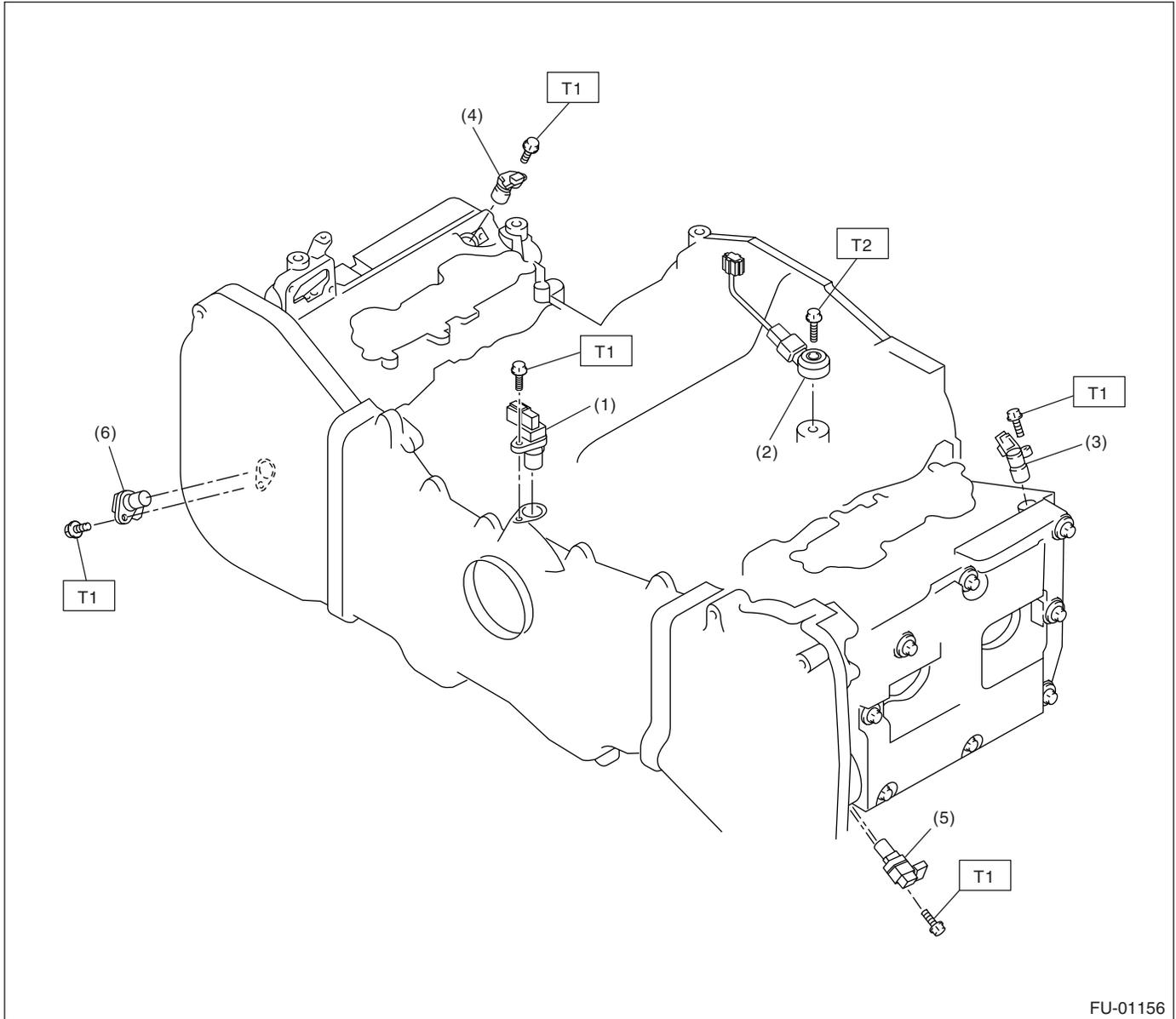
Tightening torque: N·m (kgf·m, ft·lb)

T: 8 (0.8, 5.9)

General Description

FUEL INJECTION (FUEL SYSTEMS)

3. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



FU-01156

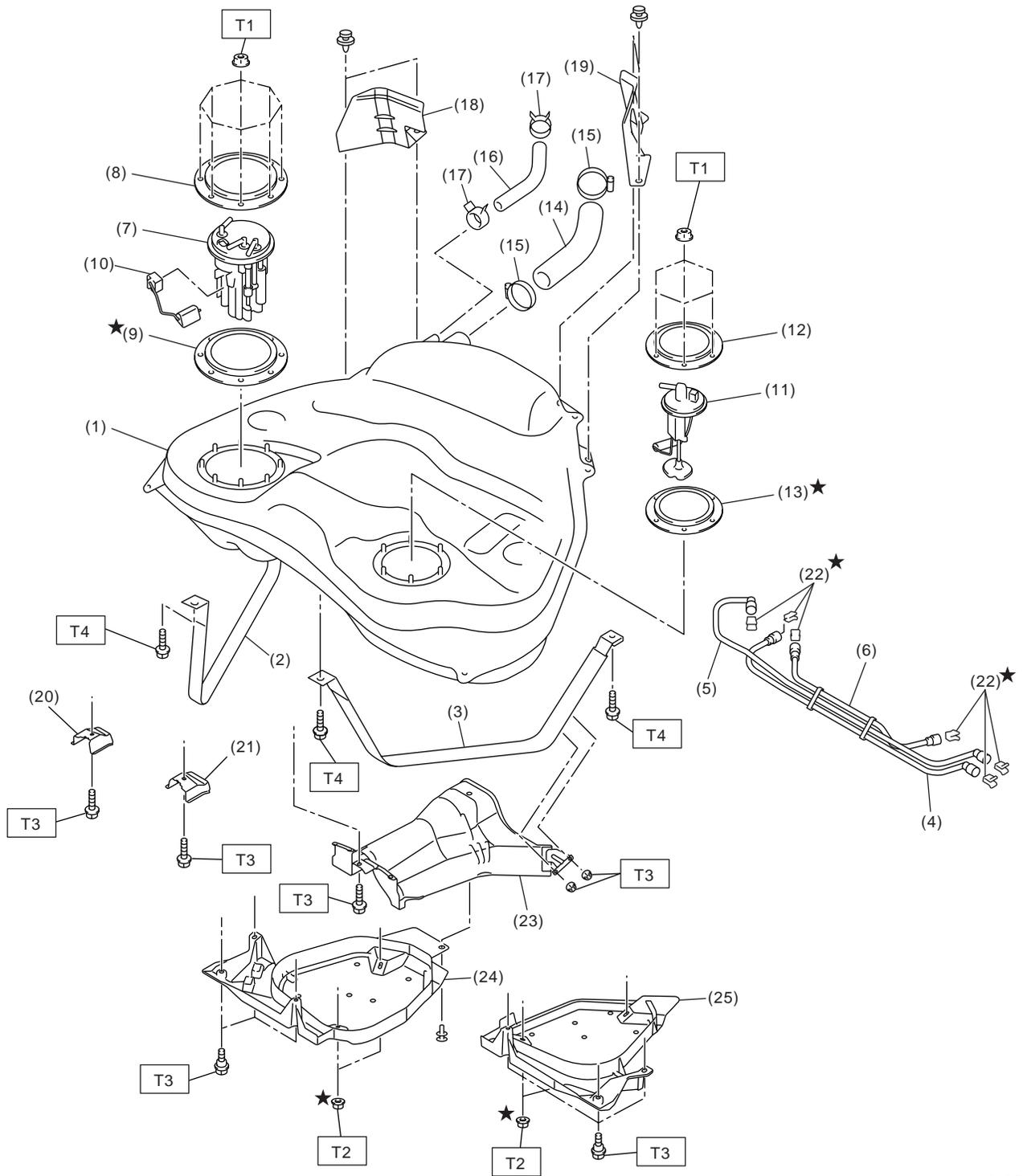
- | | |
|--|---|
| (1) Crankshaft position sensor | (5) Exhaust camshaft position sensor LH |
| (2) Knock sensor | (6) Exhaust camshaft position sensor RH |
| (3) Intake camshaft position sensor LH | |
| (4) Intake camshaft position sensor RH | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 6.4 (0.65, 4.7)

T2: 24 (2.4, 17.4)

4. FUEL TANK



FU-01328

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel tank	(12) Fuel sub level sensor upper plate	(23) Heat shield cover
(2) Fuel tank band RH	(13) Fuel sub level sensor gasket	(24) Fuel tank protector RH (Front)
(3) Fuel tank band LH	(14) Fuel filler hose	(25) Fuel tank protector LH (Front)
(4) Delivery tube	(15) Clamp	
(5) Return tube	(16) Vent hose	
(6) Jet pump tube	(17) Clip	
(7) Fuel pump ASSY	(18) Protector RH (Rear)	
(8) Fuel pump upper plate	(19) Protector LH (Rear)	
(9) Fuel pump gasket	(20) Stopper RH	
(10) Fuel level sensor	(21) Stopper LH	
(11) Fuel sub level sensor	(22) Retainer	

Tightening torque: N·m (kgf·m, ft·lb)**T1: 4.4 (0.45, 3.3)****T2: 9.0 (0.92, 6.6)****T3: 17.5 (1.78, 12.9)****T4: 33 (3.4, 25)**

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Clip	(14) Two-way valve hose A	(27) Filler cap
(2) Fuel return hose A	(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) Fuel hose connector
(7) Fuel bypass valve bracket	(20) Two-way valve	(33) Purge pipe
(8) Fuel return hose B	(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)**

General Description

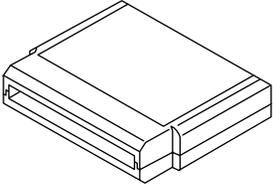
FUEL INJECTION (FUEL SYSTEMS)

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)

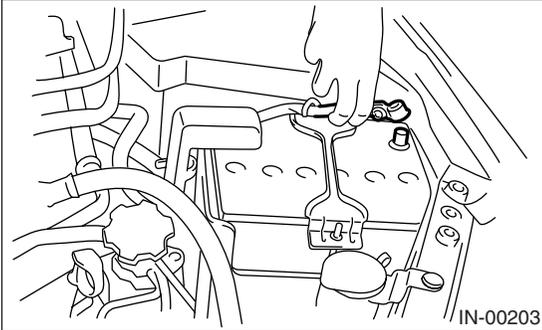
Throttle Body

FUEL INJECTION (FUEL SYSTEMS)

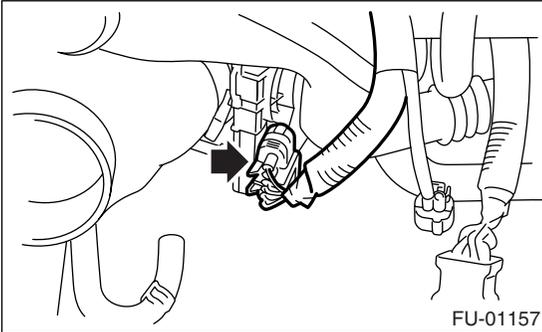
2. Throttle Body

A: REMOVAL

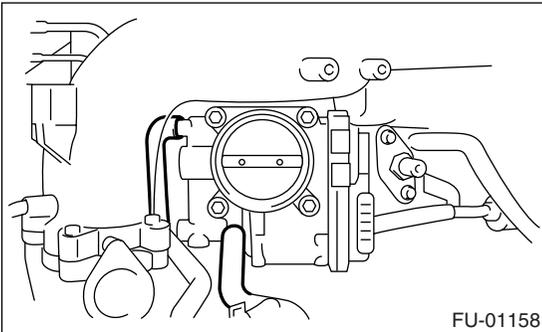
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the intercooler. <Ref. to IN(H4DOTC)-12, REMOVAL, Intercooler.>
- 4) Disconnect the connectors from throttle position sensor.



- 5) Disconnect the engine coolant hose from throttle body.



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

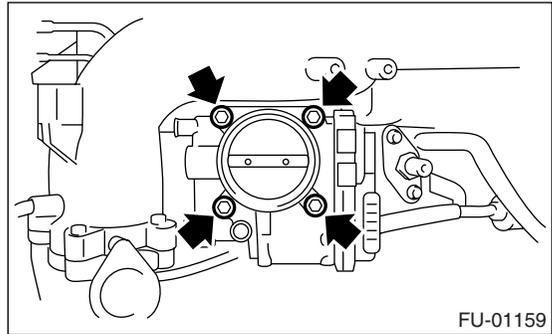
B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Always use new O-rings.

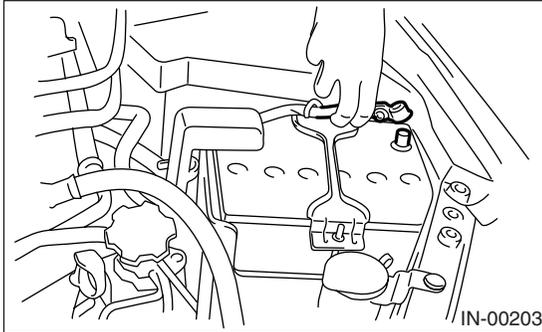
Tightening torque:
8 N·m (0.8 kgf-m, 5.9 ft-lb)



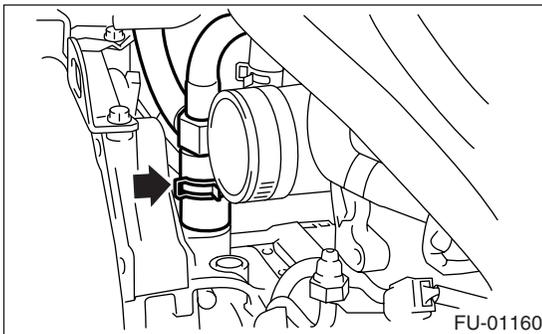
3. Intake Manifold

A: REMOVAL

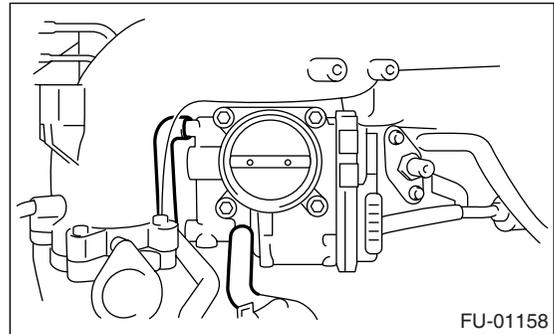
- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid, and remove the fuel filler cap.
- 3) Remove the collector cover.
- 4) Disconnect the ground cable from battery.



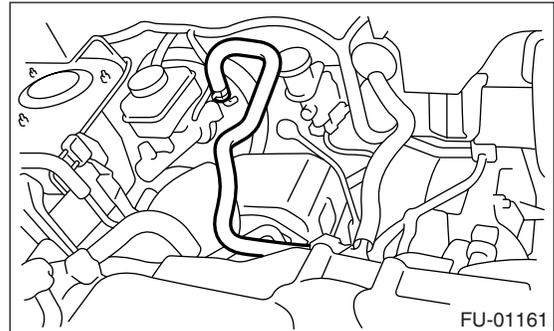
- 5) Lift-up the vehicle.
- 6) Remove the under cover.
- 7) Drain the coolant about 3.0 ℓ (3.2 US qt, 2.6 Imp qt).
- 8) Remove the intake duct from air cleaner case.
- 9) Remove the intercooler. <Ref. to IN(H4DOTC)-12, REMOVAL, Intercooler.>
- 10) Remove the generator. <Ref. to SC(H4SO 2.0)-14, REMOVAL, Generator.>
- 11) Remove the coolant filler tank.
<Ref. to CO(H4DOTC)-31, REMOVAL, Coolant Filler Tank.>
- 12) Disconnect the PCV hose assembly from cylinder block.



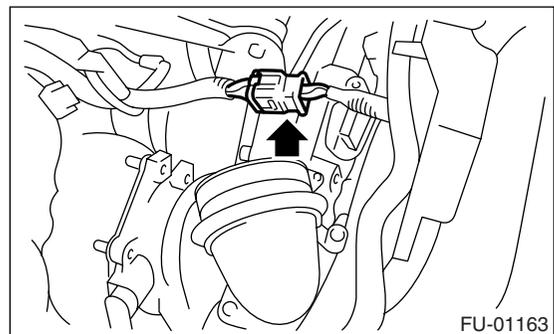
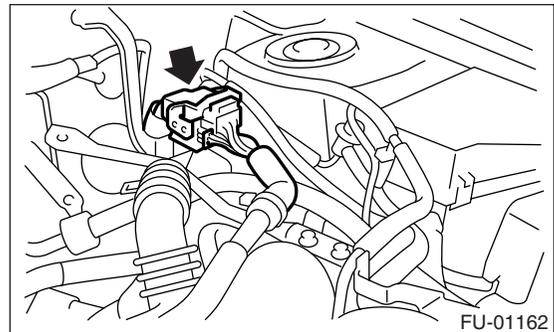
- 13) Disconnect the engine coolant hose from throttle body.



- 14) Disconnect the brake booster hose.



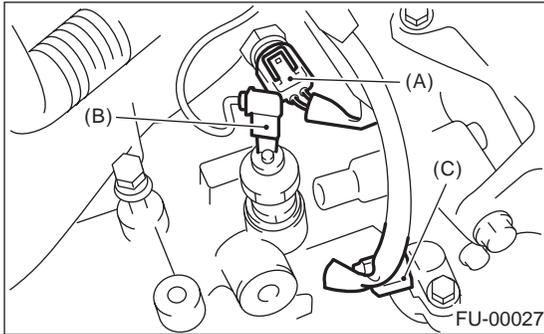
- 15) Disconnect the engine harness connectors from bulkhead harness connectors.



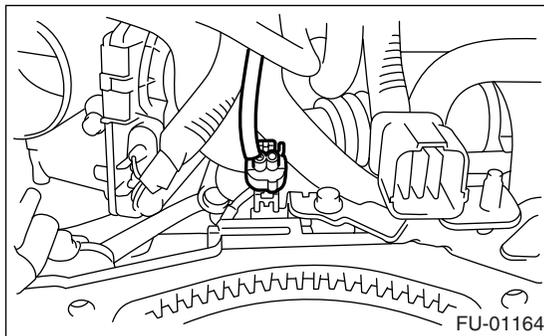
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

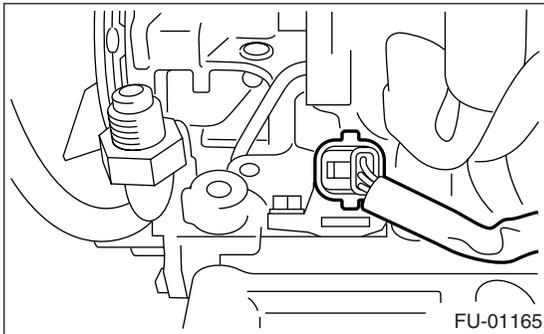
16) Disconnect the connectors from the engine coolant temperature sensor (A), oil pressure switch (B) and crankshaft position sensor (C).



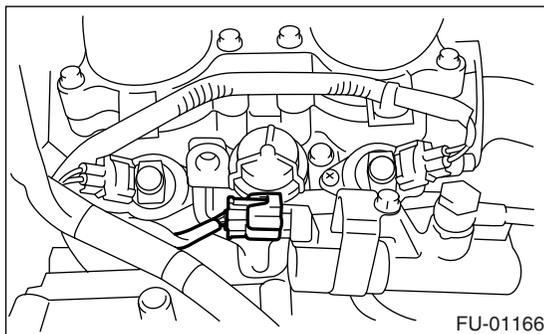
17) Disconnect the knock sensor connector.



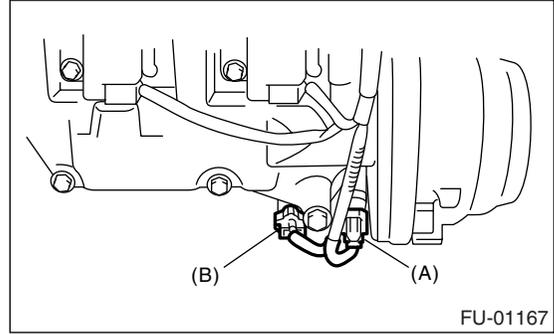
18) Disconnect the connector from intake camshaft position sensor.



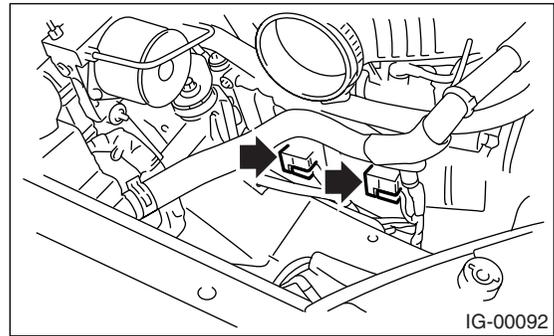
19) Disconnect the connector from the intake oil flow control solenoid valve.



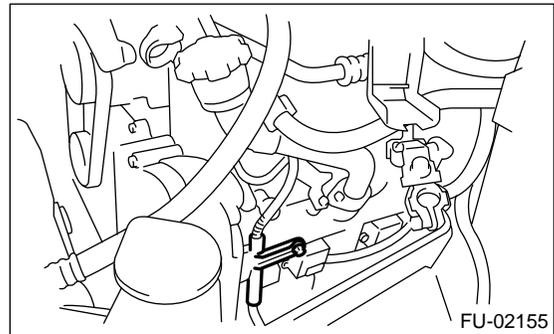
20) Disconnect the connector from the exhaust camshaft position sensor (A) and exhaust oil flow control solenoid valve (B).



21) Disconnect the connector from ignition coil.



22) Remove the engine harness bracket from rocker cover.



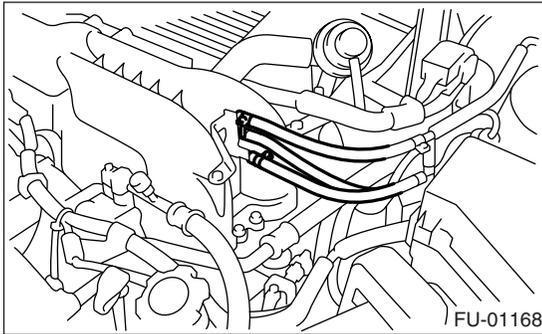
23) Disconnect the fuel delivery hose, return hose and evaporation hose.

Intake Manifold

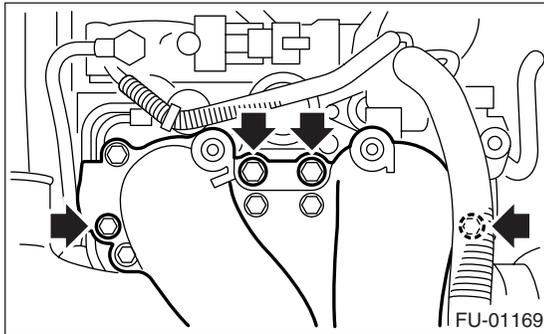
FUEL INJECTION (FUEL SYSTEMS)

CAUTION:

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



24) Remove the bolts which hold intake manifold onto the cylinder heads.



25) Remove the intake manifold.

B: INSTALLATION

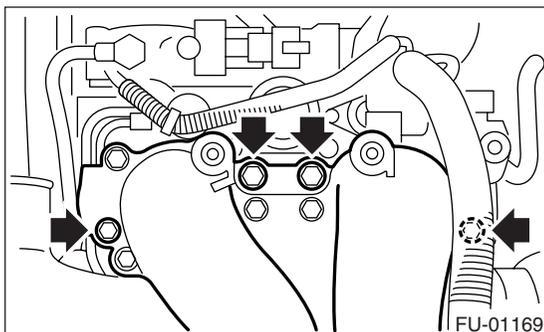
1) Install the intake manifold onto cylinder heads.

NOTE:

Use a new gasket.

Tightening torque:

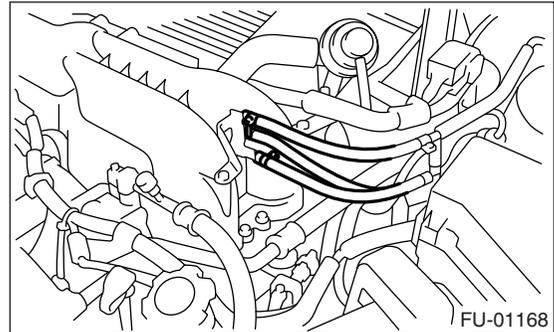
25 N·m (2.5 kgf·m, 18.1 ft·lb)



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

NOTE:

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

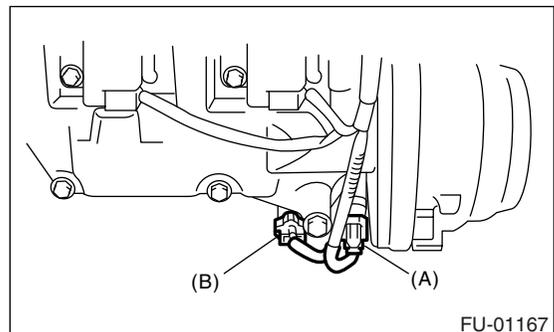


3) Tighten the hose clamp screws.

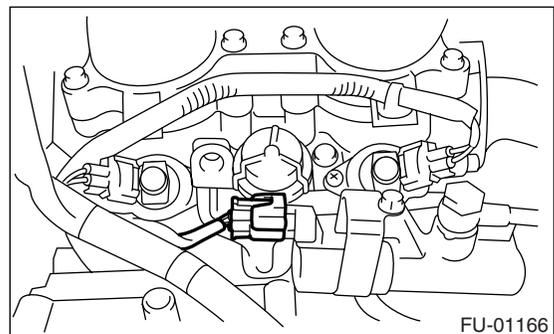
Tightening torque:

1.25 N·m (0.13 kgf·m, 0.94 ft·lb)

4) Connect the connector to the exhaust camshaft position sensor (A) and exhaust oil flow control solenoid valve (B).



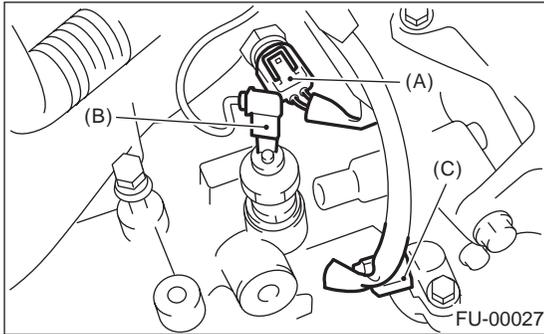
5) Connect the connector to intake oil flow control solenoid valve.



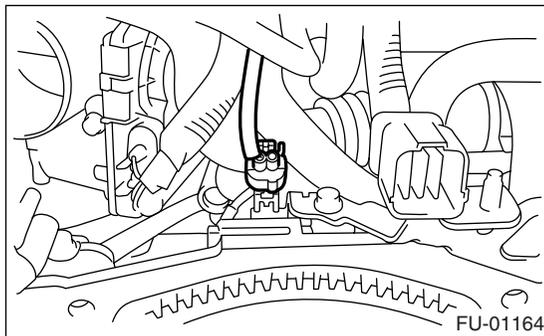
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

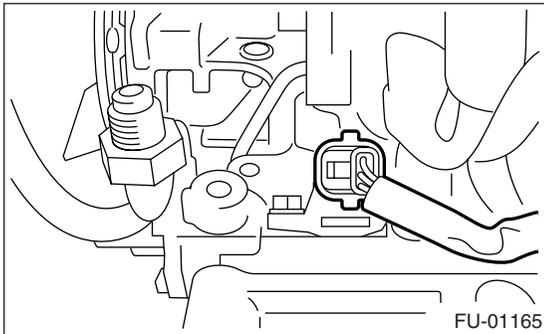
6) Connect the connector to the engine coolant temperature sensor (A), oil pressure switch (B) and crankshaft position sensor (C).



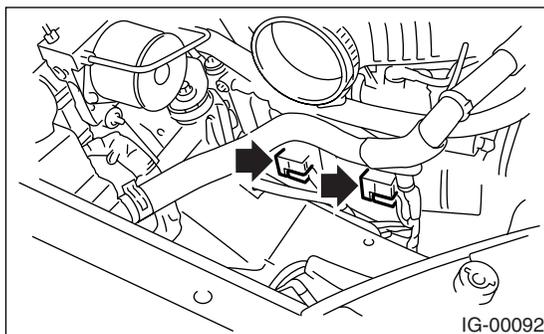
7) Connect the connector to knock sensor.



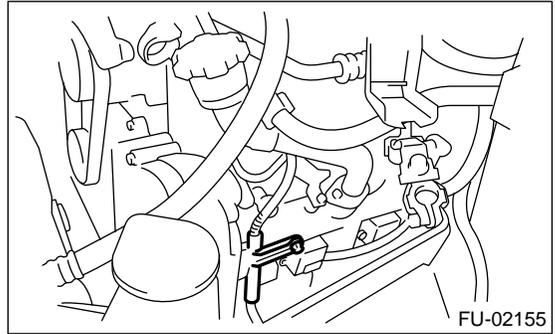
8) Connect the connector to intake camshaft position sensor.



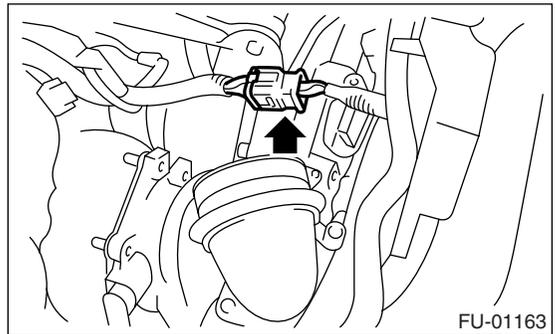
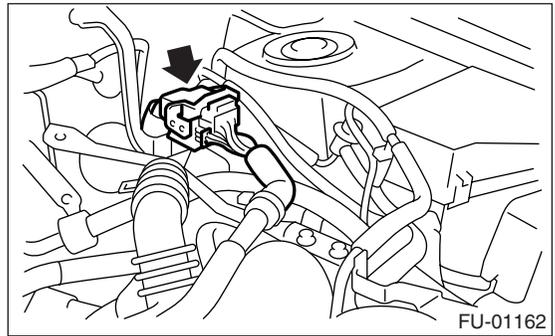
9) Connect the connector to ignition coil.



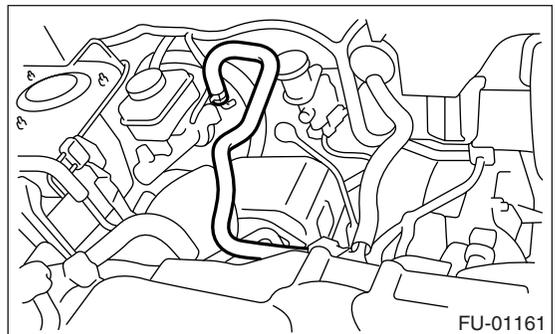
10) Install the engine harness bracket to rocker cover.



11) Connect the engine harness connector to bulk-head harness connector.



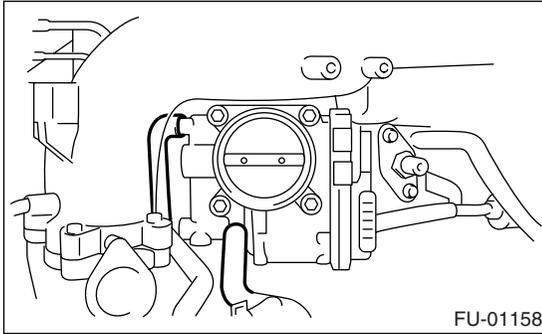
12) Connect the brake booster hose.



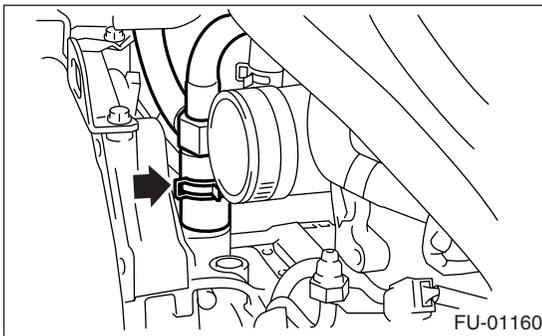
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

13) Connect the engine coolant hose to throttle body.



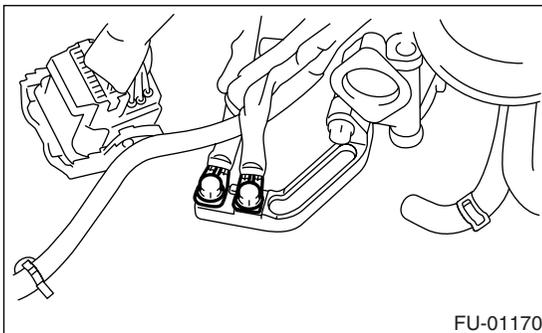
14) Connect the PCV hose assembly to cylinder block.



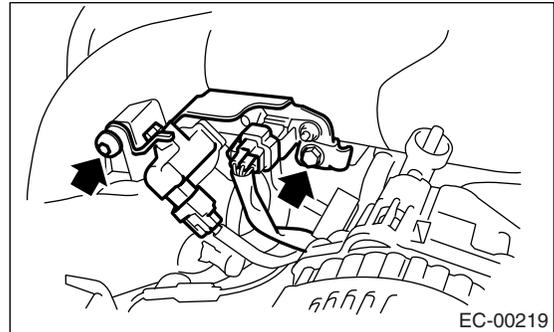
- 15) Install the coolant filler tank.
<Ref. to CO(H4DOTC)-31, INSTALLATION, Coolant Filler Tank.>
- 16) Install the intercooler. <Ref. to IN(H4DOTC)-12, INSTALLATION, Intercooler.>
- 17) Install the intake duct to air cleaner case.
- 18) Install the fuse of fuel pump to main fuse box.
- 19) Connect the battery ground cable to battery.
- 20) Lift-up the vehicle.
- 21) Install the under cover.
- 22) Fill with engine coolant.
<Ref. to CO(H4DOTC)-13, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 23) Install the collector cover.

C: DISASSEMBLY

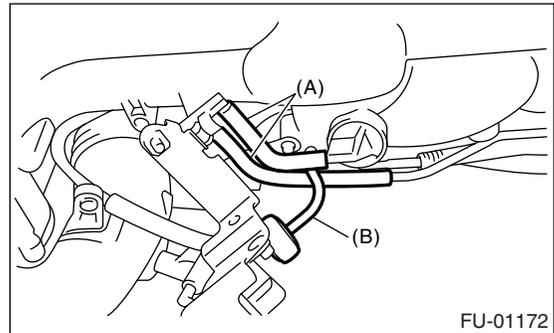
1) Disconnect the engine ground terminal from ground stay.



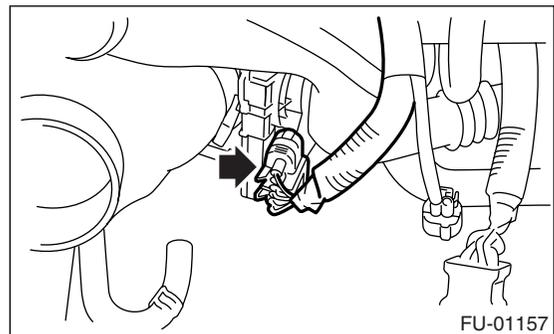
2) Remove the solenoid valve bracket assembly from intake manifold, and disconnect the connector from the wastegate control solenoid valve, manifold absolute pressure sensor and purge control solenoid valve.



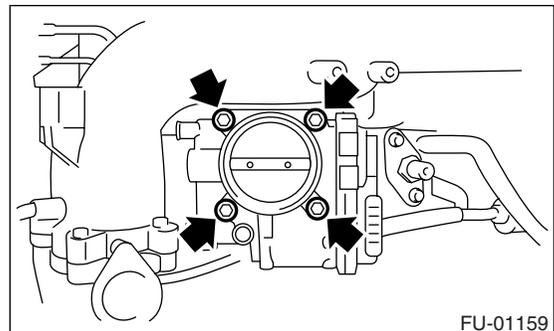
3) Disconnect the evaporation hoses (A) and filter assembly (B).



4) Disconnect the connectors from throttle position sensor.



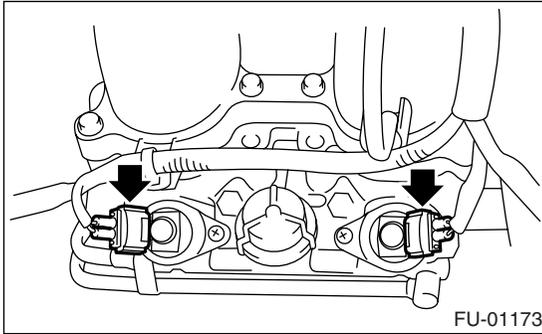
5) Remove the throttle body from intake manifold.



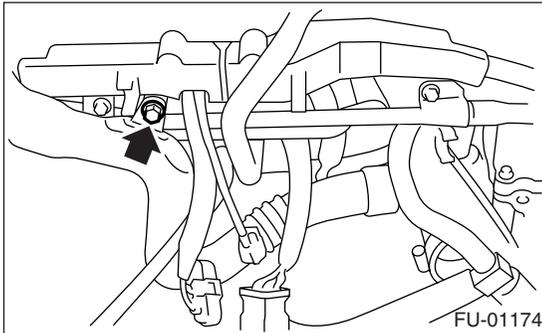
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

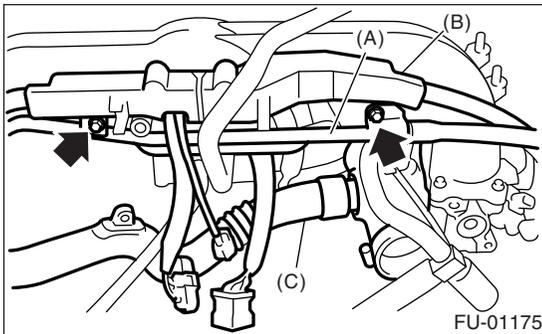
6) Disconnect the connectors from fuel injector.



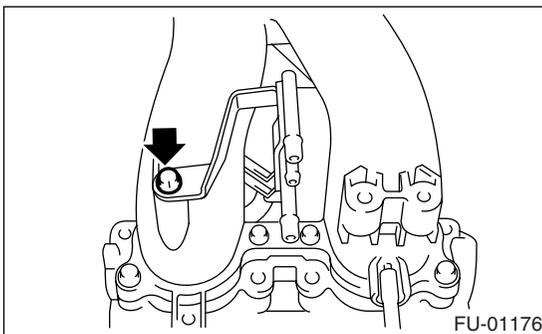
7) Remove the bolt which secures the air bypass pipe to intake manifold.



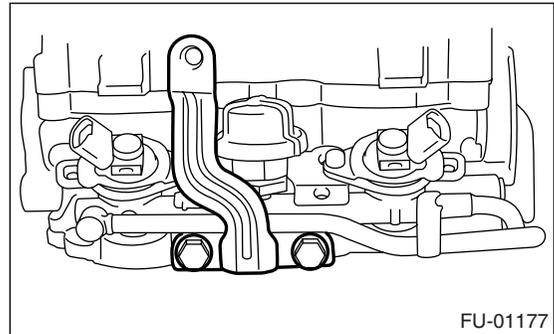
8) Disconnect the PCV pipe (A), harness assembly (B) and intake duct (C) from intake manifold.



9) Remove the bolt which holds fuel injector pipe LH onto the front side of intake manifold.

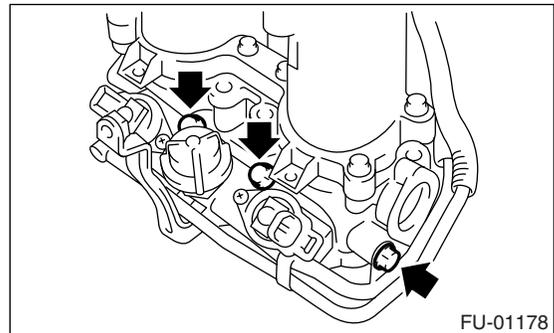


10) Remove the coolant filler tank stay from intake manifold.

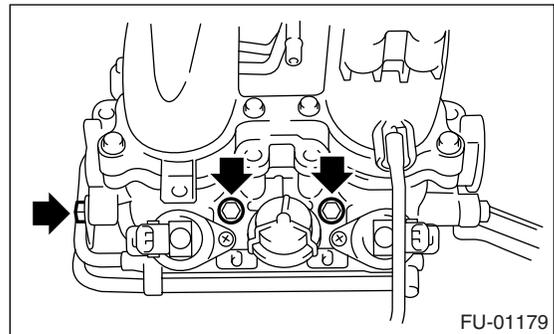


11) Remove the bolts which hold fuel injector pipe onto intake manifold.

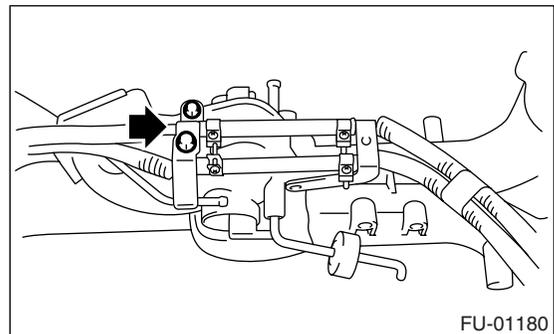
• RH side



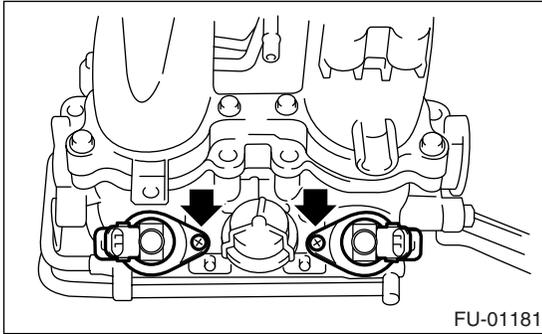
• LH side



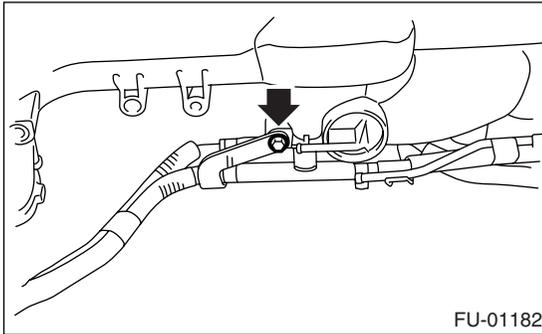
12) Remove the bolt which holds the fuel pipe to intake manifold.



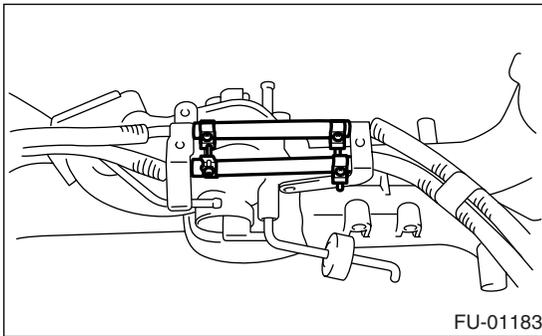
13) Remove the fuel injectors.



14) Remove the bolts which hold the fuel injector pipe RH onto the lower side of intake manifold.

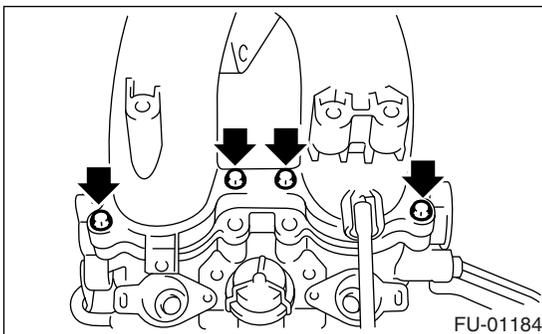


15) Loosen the clamp which holds fuel hose to injector pipe, and then disconnect the pipe from fuel hose.



16) Remove the fuel injector pipe.

17) Remove the intake manifold (upper) from intake manifold (lower).

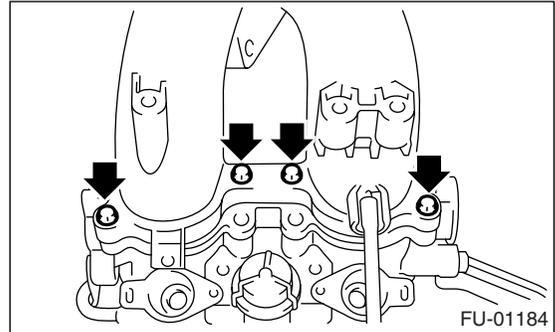


D: ASSEMBLY

1) Install the intake manifold (lower) to intake manifold (upper).

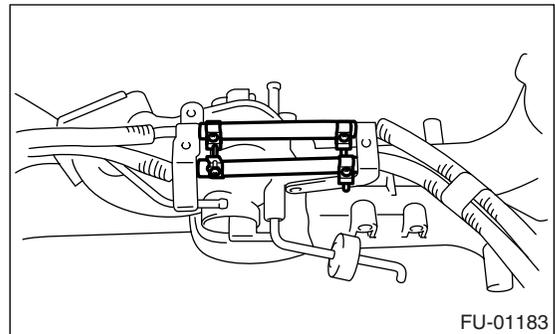
NOTE:
Use new O-rings.

Tightening torque:
8.3 N·m (0.85 kgf·m, 6.1 ft·lb)



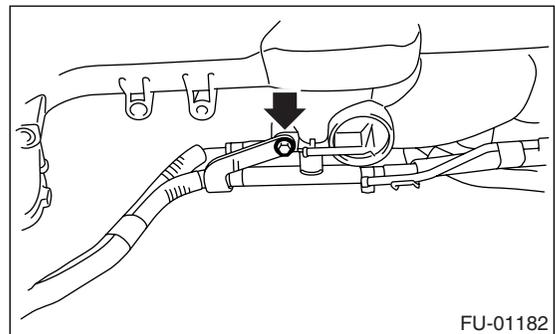
2) Install the fuel injector pipe.

3) Connect the both fuel injector pipes with a fuel hose and secure them with clamps.



4) Tighten the bolt which secures the fuel injector pipe RH onto the lower side of intake manifold.

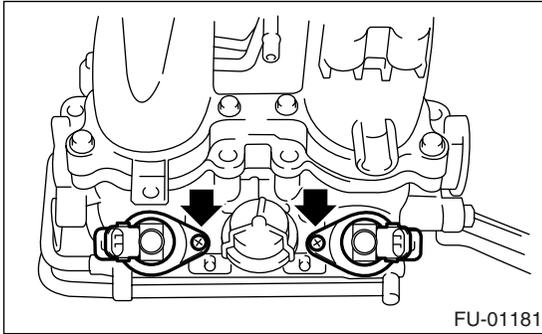
Tightening torque:
6.5 N·m (0.66 kgf·m, 4.8 ft·lb)



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

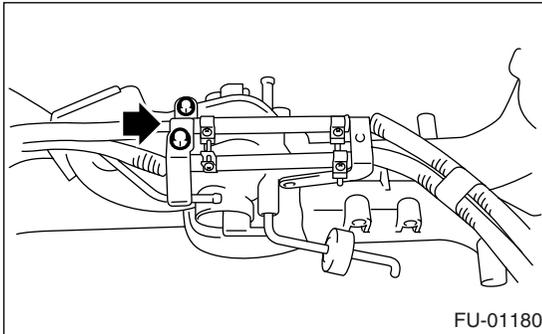
5) Install the fuel injectors.



6) Tighten the bolt which secures fuel pipe onto intake manifold.

Tightening torque:

6.5 N·m (0.66 kgf-m, 4.8 ft-lb)

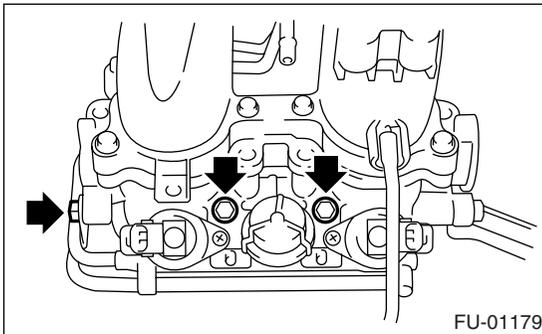


7) Tighten the bolts which secure fuel injector pipe onto intake manifold.

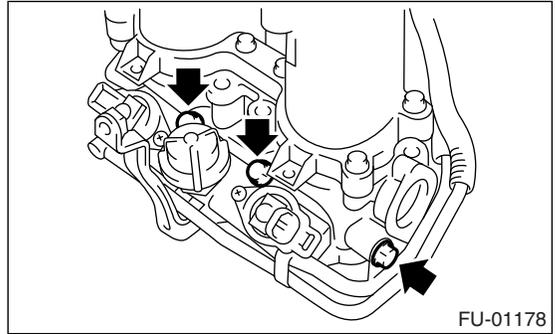
Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)

• LH side



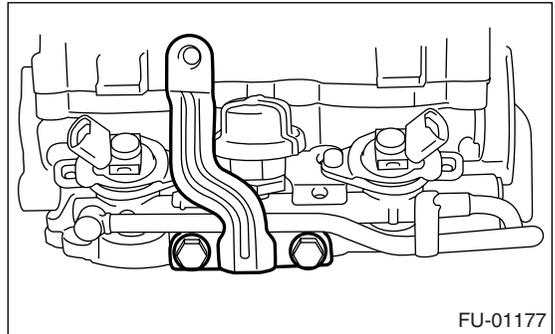
• RH side



8) Install the coolant filler tank stay to intake manifold.

Tightening torque:

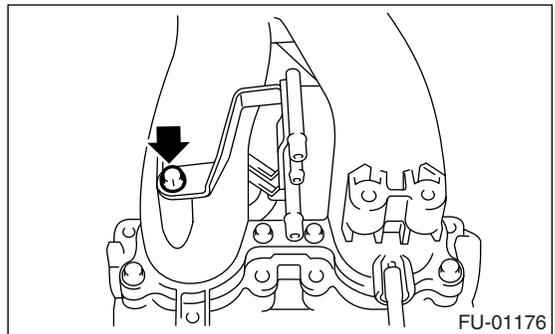
19 N·m (1.94 kgf-m, 13.7 ft-lb)



9) Tighten the bolt which installs fuel injector pipe LH on the front side of intake manifold.

Tightening torque:

6.5 N·m (0.66 kgf-m, 4.8 ft-lb)



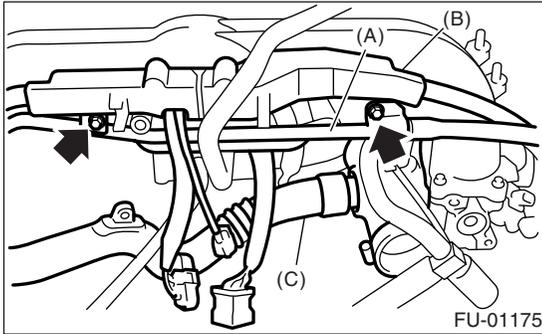
10) Install the PCV pipe (A), harness assembly (B) and intake duct (C) to intake manifold.

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

Tightening torque:

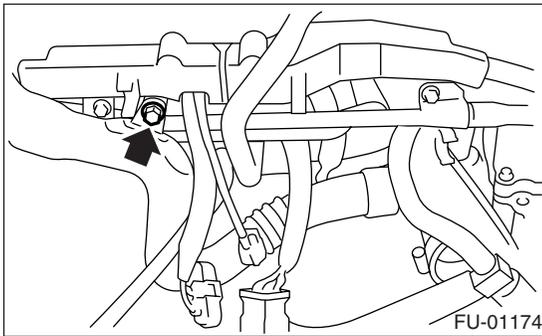
6.5 N·m (0.66 kgf-m, 4.8 ft-lb)



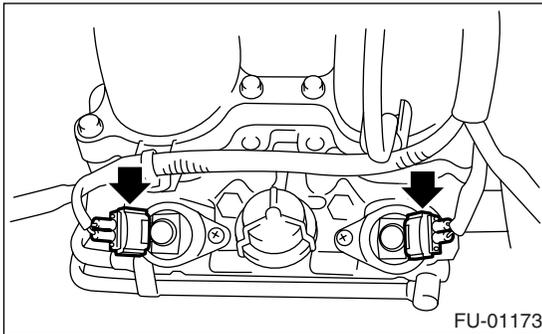
11) Tighten the bolt which secures air bypass pipe onto intake manifold.

Tightening torque:

6.5 N·m (0.66 kgf-m, 4.8 ft-lb)



12) Connect the connectors to fuel injector.



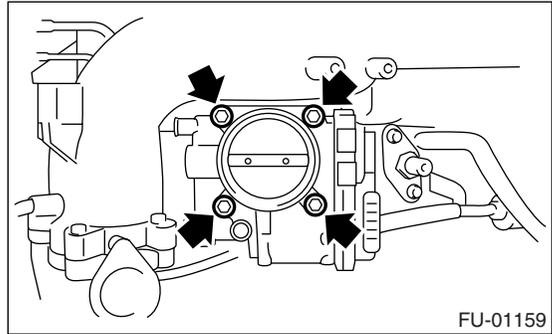
13) Install the throttle body to intake manifold.

NOTE:

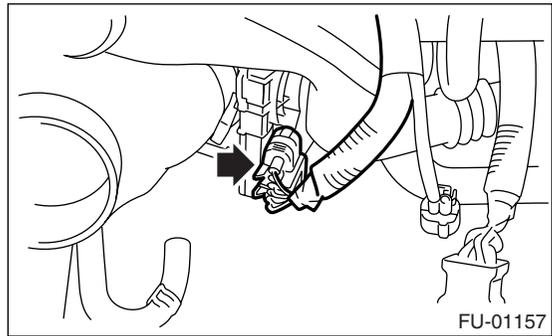
Use new O-rings.

Tightening torque:

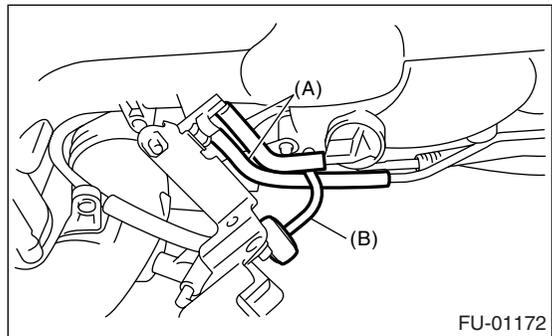
8 N·m (0.8 kgf-m, 5.9 ft-lb)



14) Connect the connector to throttle position sensor.



15) Connect the evaporation hoses (A) and filter assembly (B).

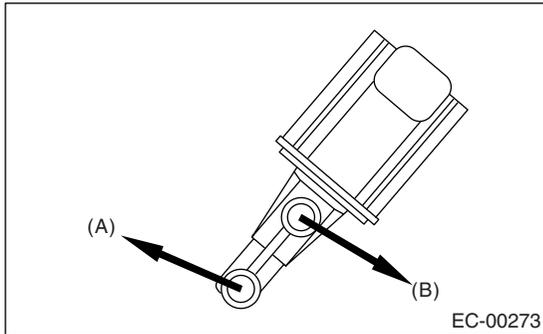


Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

NOTE:

Connect the evaporation hose as shown in the figure.

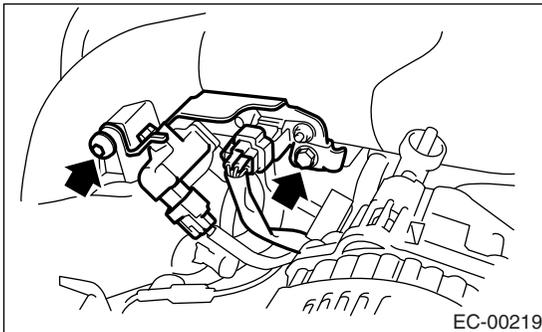


- (A) To intake manifold
- (B) To evaporation pipe

16) Connect the connector to the wastegate control solenoid valve, manifold absolute pressure sensor and purge control solenoid valve, and install the solenoid bracket assembly to intake manifold.

Tightening torque:

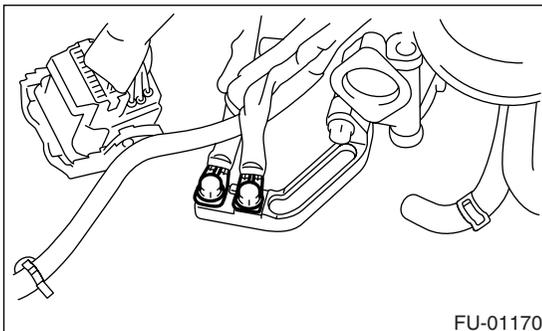
19 N·m (1.94 kgf-m, 13.7 ft-lb)



17) Install the engine ground terminal to ground stay.

Tightening torque:

19 N·m (1.94 kgf-m, 13.7 ft-lb)



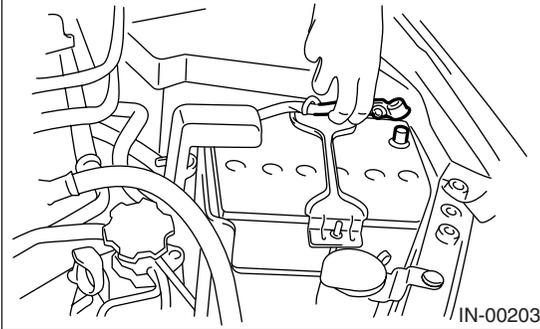
E: INSPECTION

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

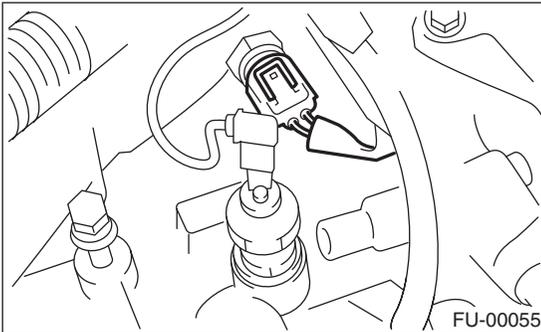
4. Engine Coolant Temperature Sensor

A: REMOVAL

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



- 3) Remove the generator. <Ref. to SC(H4SO 2.0)-14, REMOVAL, Generator.>
- 4) Drain coolant. <Ref. to CO(H4DOTC)-13, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 5) Disconnect the connectors from engine coolant temperature sensor.



- 6) Remove the engine coolant temperature sensor.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

18 N·m (1.8 kgf·m, 13.3 ft·lb)

Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

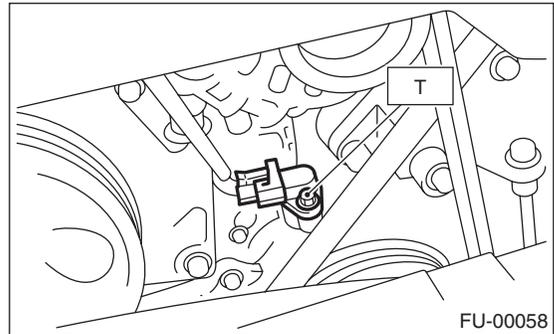
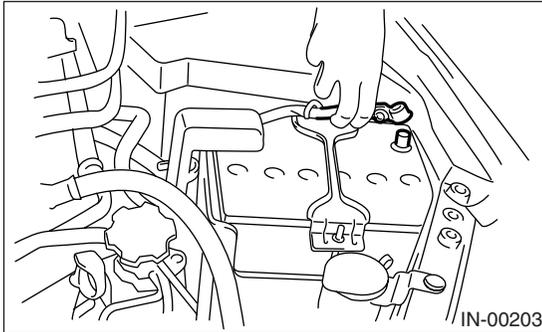
5. Crankshaft Position Sensor

Tightening torque:

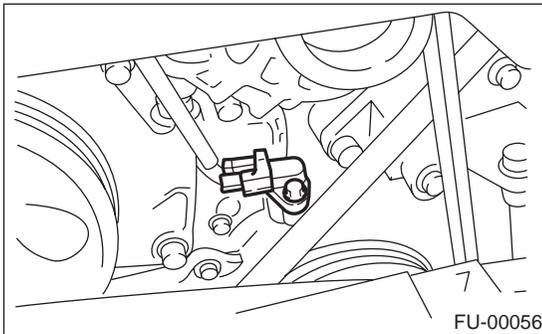
T: 6.4 N·m (0.65 kgf·m, 4.7 ft·lb)

A: REMOVAL

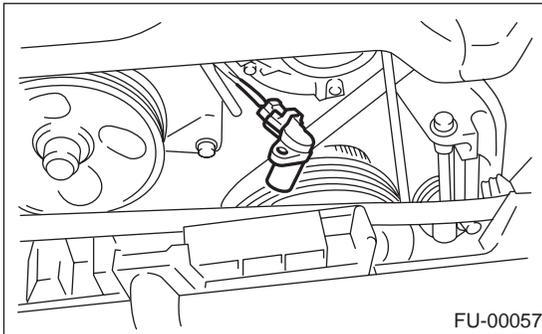
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



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



- 4) Remove the crankshaft position sensor, and disconnect the connector from it.



B: INSTALLATION

Install in the reverse order of removal.

Camshaft Position Sensor

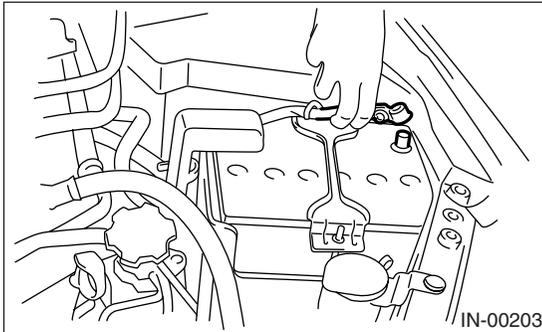
FUEL INJECTION (FUEL SYSTEMS)

6. Camshaft Position Sensor

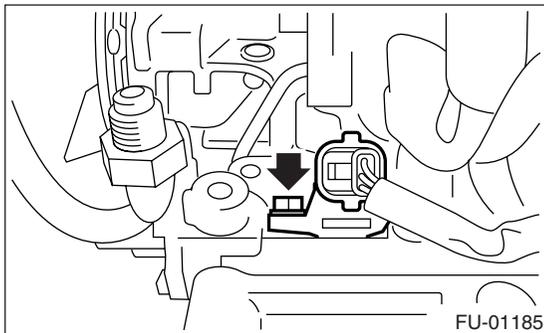
A: REMOVAL

1. INTAKE SIDE

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



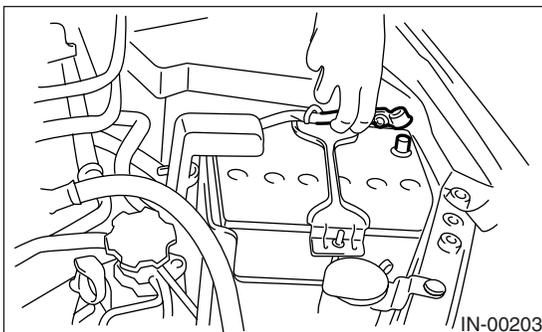
- 3) Disconnect the connector from camshaft position sensor RH.
- 4) Remove the camshaft position sensor RH from the rear side of cylinder head.



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

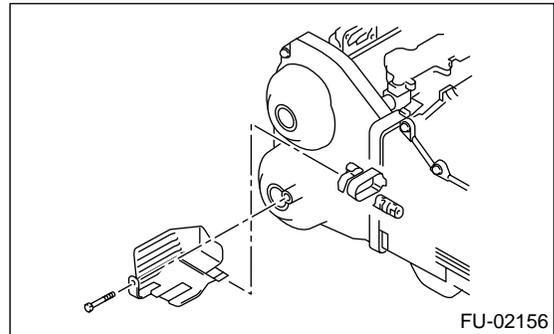
2. EXHAUST SIDE

- 1) Disconnect the ground cable from battery.

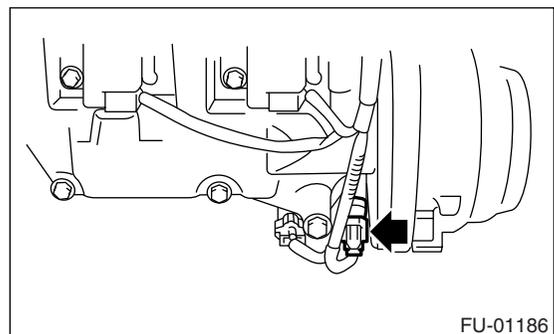


- 2) Lift-up the vehicle.
- 3) Remove the under cover.

- 4) Remove the sensor cover.



- 5) Disconnect the connector from camshaft position sensor RH.
- 6) Remove the camshaft position sensor RH from the lower side of cylinder head.



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

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)

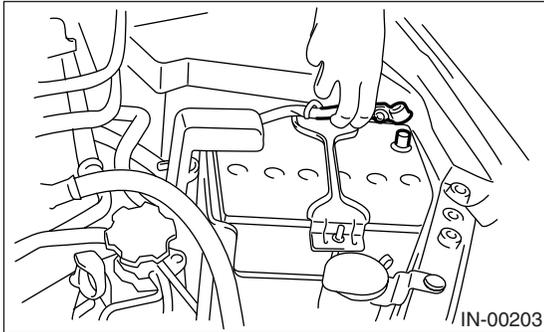
Knock Sensor

FUEL INJECTION (FUEL SYSTEMS)

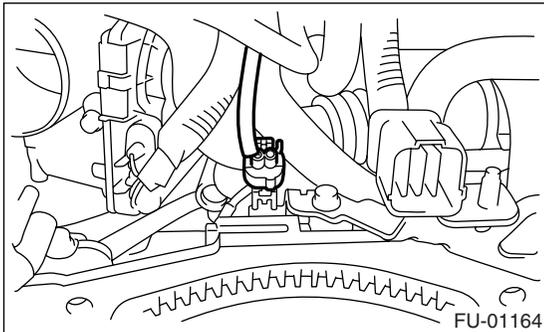
7. Knock Sensor

A: REMOVAL

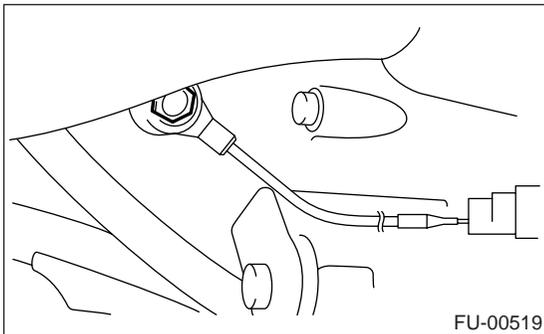
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



- 3) Remove the intercooler. <Ref. to IN(H4DOTC)-12, REMOVAL, Intercooler.>
- 4) Disconnect the knock sensor connector.



- 5) Remove the knock sensor from cylinder block.



B: INSTALLATION

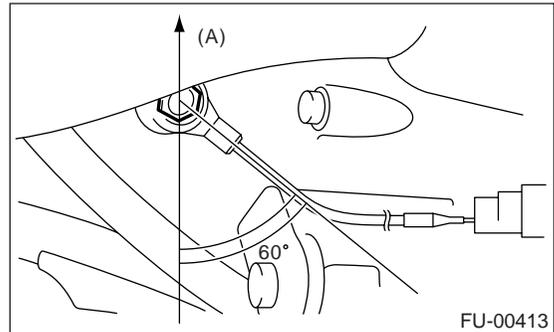
- 1) Install the knock sensor to cylinder block.

NOTE:

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

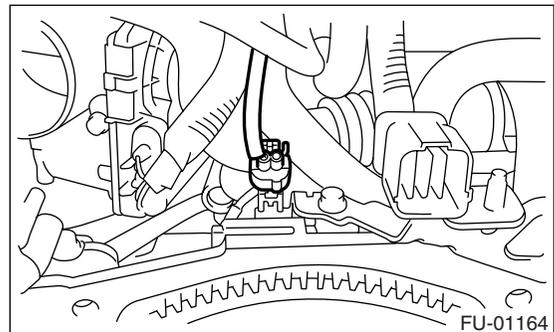
Tightening torque:

24 N·m (2.4 kgf-m, 17.4 ft-lb)

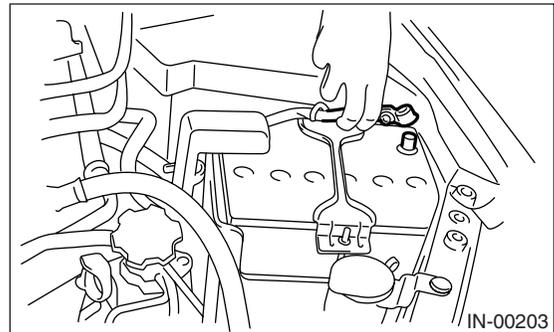


(A) Front side

- 2) Connect the knock sensor connector.



- 3) Install the intercooler. <Ref. to IN(H4DOTC)-12, INSTALLATION, Intercooler.>
- 4) Connect the battery ground cable to battery.



- 5) Install the collector cover.

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. <Ref. to FU(H4DOTC)-12, REMOVAL, Throttle Body.> <Ref. to FU(H4DOTC)-12, INSTALLATION, Throttle Body.>

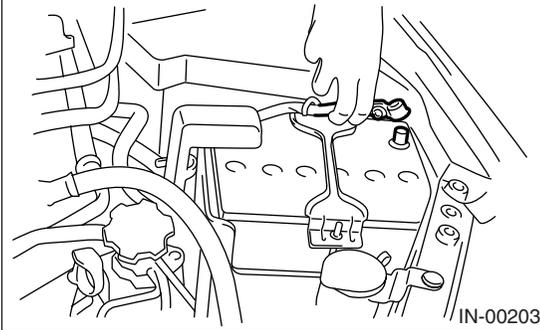
Mass Air Flow and Intake Air Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

9. Mass Air Flow and Intake Air Temperature Sensor

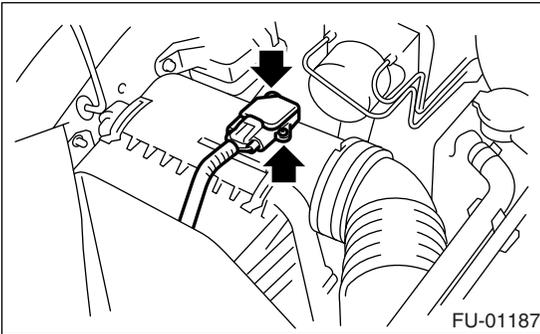
A: REMOVAL

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.

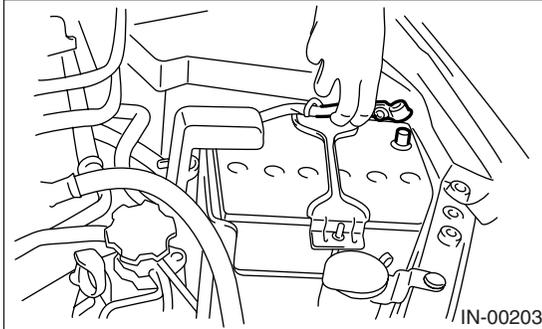
Tightening torque:

1.0 N·m (0.10 kgf·m, 0.74 ft·lb)

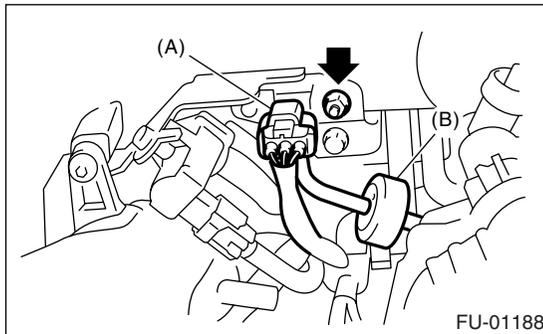
10. Manifold Absolute Pressure Sensor

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 solenoid valve bracket.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.5 N·m (0.66 kgf-m, 4.8 ft-lb)

Fuel Injector

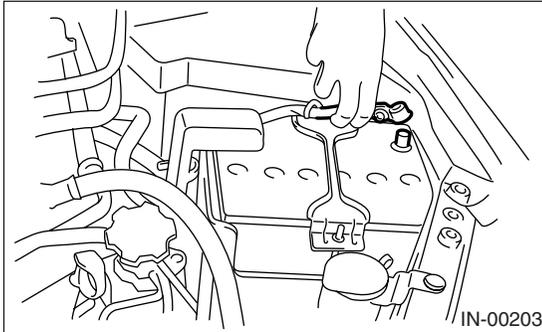
FUEL INJECTION (FUEL SYSTEMS)

11. Fuel Injector

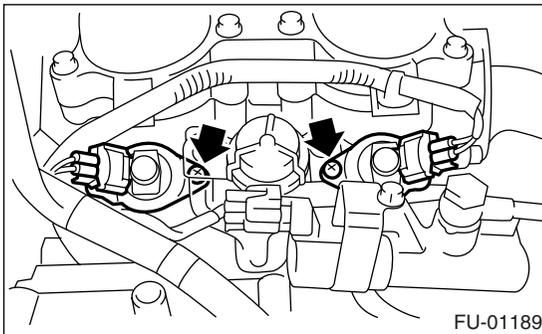
A: REMOVAL

1. RH SIDE

- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid, and remove the fuel filler cap.
- 3) Remove the collector cover.
- 4) Disconnect the ground cable from battery.



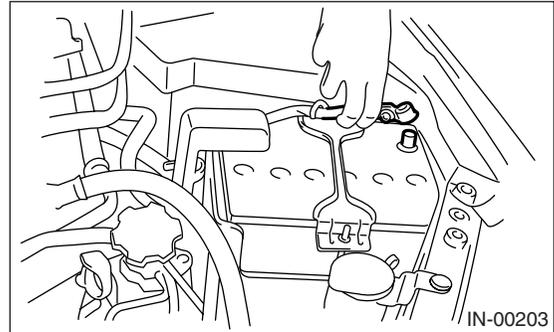
- 5) Remove the coolant filler tank.
<Ref. to CO(H4DOTC)-31, REMOVAL, Coolant Filler Tank.>
- 6) Disconnect the connector from fuel injector.
- 7) Remove the screw and remove the fuel injector.



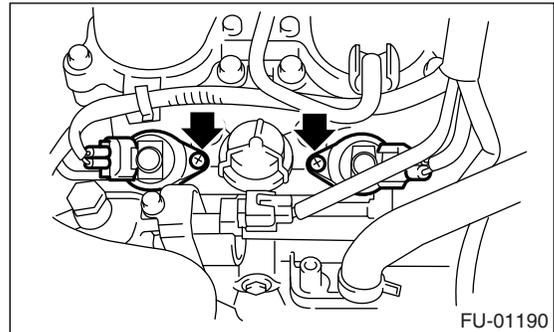
2. LH SIDE

- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid, and remove the fuel filler cap.
- 3) Remove the collector cover.

- 4) Disconnect the ground cable from battery.



- 5) Disconnect the connector from fuel injector.
- 6) Remove the screw and remove the fuel injector.



B: INSTALLATION

1. RH SIDE

Install in the reverse order of removal.

NOTE:

Use new O-rings.

Tightening torque:

3.5 N·m (0.36 kgf-m, 2.6 ft-lb)

2. LH SIDE

Install in the reverse order of removal.

NOTE:

Use new O-rings.

Tightening torque:

3.5 N·m (0.36 kgf-m, 2.6 ft-lb)

12. Oil Flow Control Solenoid Valve

A: REMOVAL

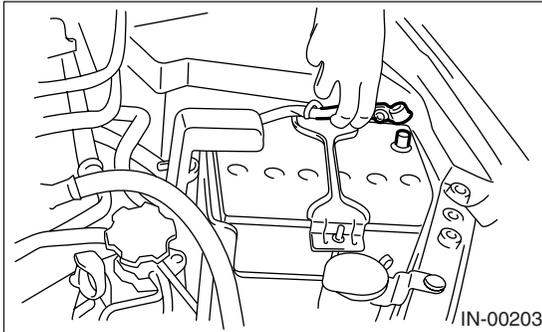
1. INTAKE SIDE

Oil flow control solenoid valve forms a unit with camshaft cap.

Refer to "Camshaft" for removal. <Ref. to ME(H4DOTC)-53, REMOVAL, Camshaft.>

2. EXHAUST SIDE

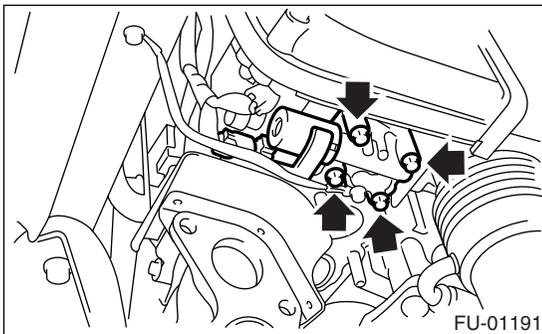
1) Disconnect the ground cable from battery.



2) Lift-up the vehicle.

3) Remove the under cover.

4) Remove the oil flow control solenoid valve from cylinder head.



B: INSTALLATION

1. INTAKE SIDE

Install in the reverse order of removal.

2. EXHAUST SIDE

Install in the reverse order of removal.

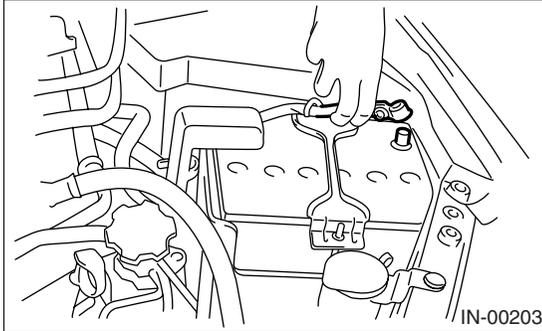
Wastegate Control Solenoid Valve

FUEL INJECTION (FUEL SYSTEMS)

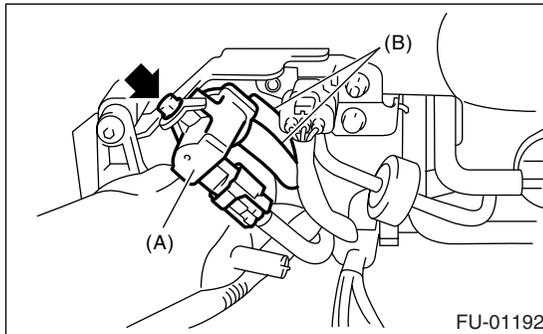
13. Wastegate Control Solenoid Valve

A: REMOVAL

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



- 3) Disconnect the connector from wastegate control solenoid valve (A).
- 4) Disconnect the pressure hose (B) from wastegate control solenoid valve.
- 5) Remove the wastegate control solenoid valve from bracket.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

6.5 N·m (0.66 kgf·m, 4.8 ft·lb)

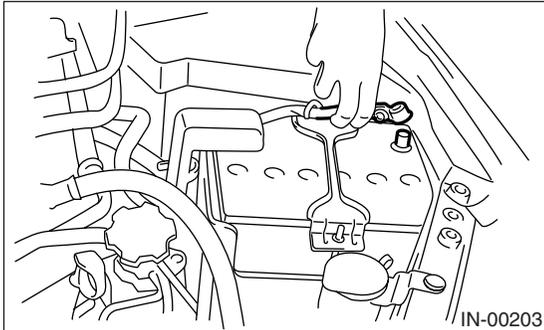
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

14. Front Oxygen (A/F) Sensor

A: REMOVAL

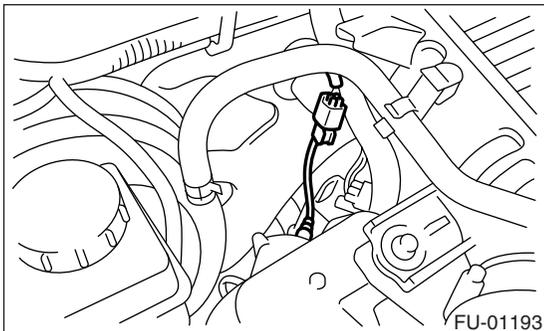
- 1) Remove the collector cover.
- 2) Disconnect the ground cable from battery.



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

CAUTION:

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



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:

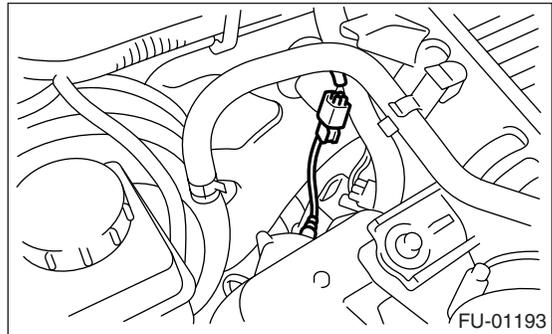
Never apply anti-seize compound to protector of front oxygen (A/F) sensor.

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

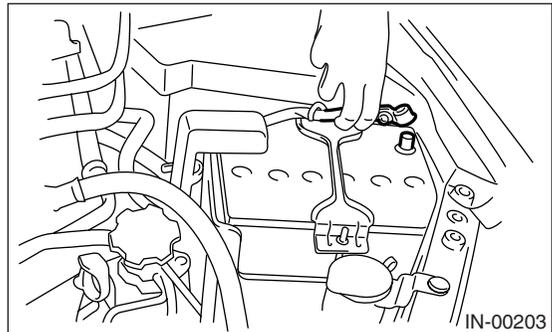
Tightening torque:

21 N·m (2.1 kgf·m, 15.2 ft·lb)

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



- 4) Connect the battery ground cable to battery.



- 5) Install the collector cover.

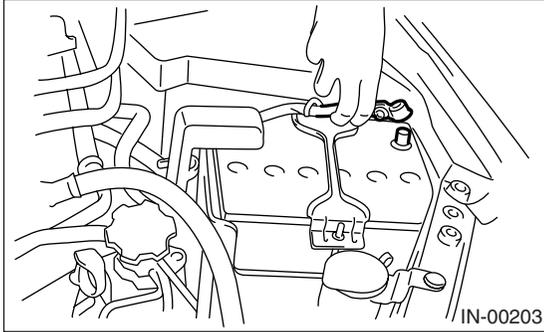
Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

15.Rear Oxygen Sensor

A: REMOVAL

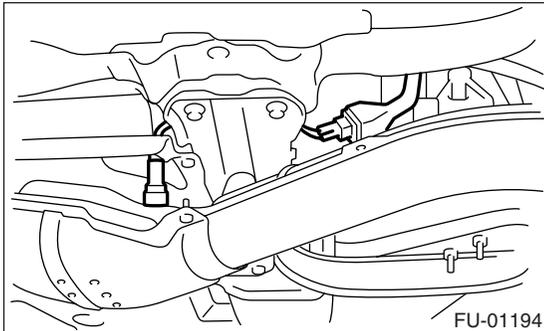
- 1) Disconnect the ground cable from battery.



- 2) Lift-up the vehicle.
- 3) Disconnect the connector from rear oxygen sensor.
- 4) Apply spray-type lubricant to the threaded portion of rear oxygen sensor, and leave it for one minute or more.
- 5) Remove the rear oxygen sensor.

CAUTION:

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



B: INSTALLATION

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

Anti-seize compound:
SS-30 JET LUBE

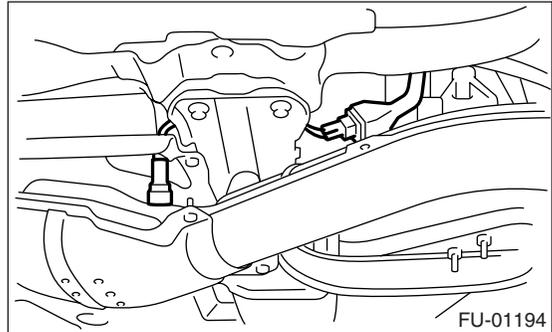
CAUTION:

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

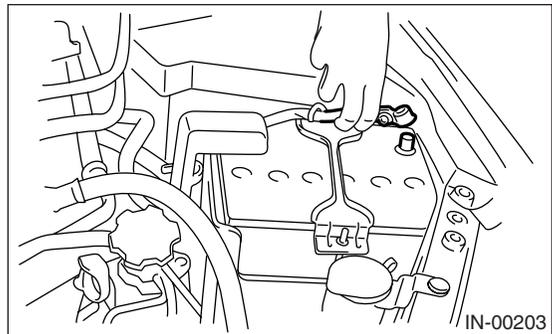
- 2) Install the rear oxygen sensor.

Tightening torque:

21 N·m (2.1 kgf-m, 15.2 ft-lb)



- 3) Connect the connector to rear oxygen sensor.
- 4) Lower the vehicle.
- 5) Connect the battery ground cable to battery.



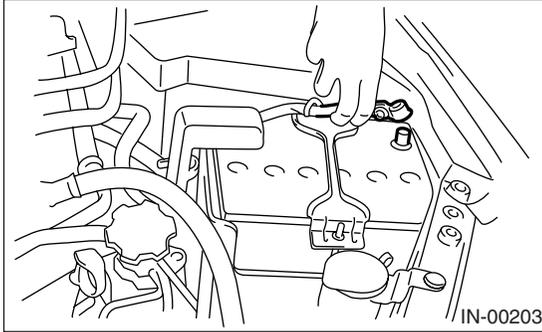
16.Engine Control Module (ECM)

Tightening torque:

5 N·m (0.5 kgf-m, 3.6 ft-lb)

A: REMOVAL

1) Disconnect the ground cable from battery.

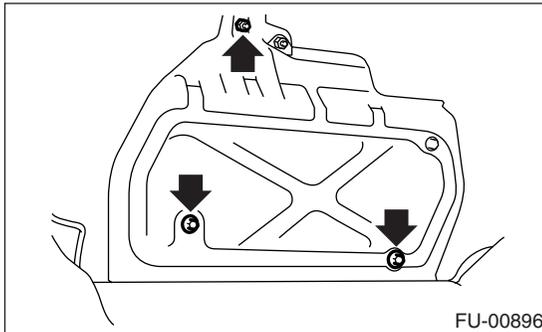


2) Remove the lower inner trim of passenger side.

<Ref. to EI-60, REMOVAL, Lower Inner Trim.>

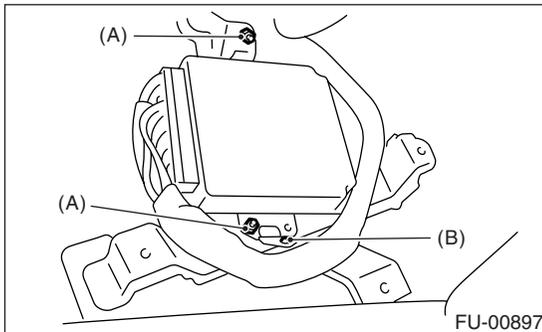
3) Detach the floor mat of front passenger's seat.

4) Remove the protect cover.



5) Remove the nuts (A) which hold the 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.

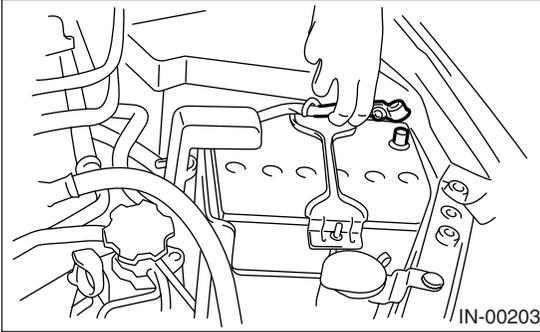
CAUTION:

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

17.Main Relay

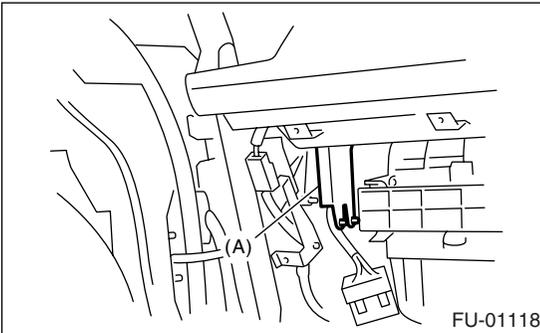
A: REMOVAL

1) Disconnect the ground cable from battery.

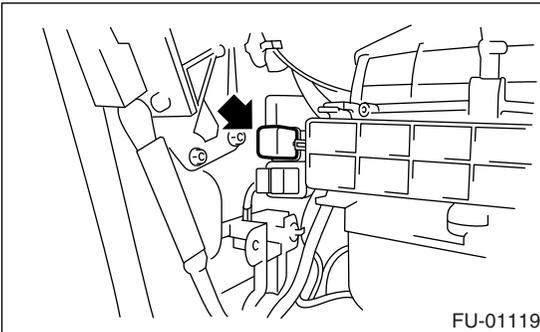


2) Remove the glove box. <Ref. to EI-51, REMOVAL, Glove Box.>

3) Remove the harness cover (A).



4) Disconnect the connector from main relay.



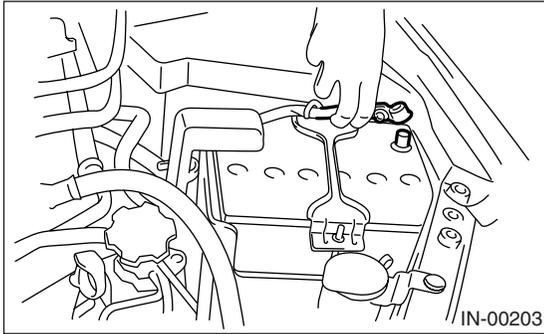
B: INSTALLATION

Install in the reverse order of removal.

18. Fuel Pump Relay

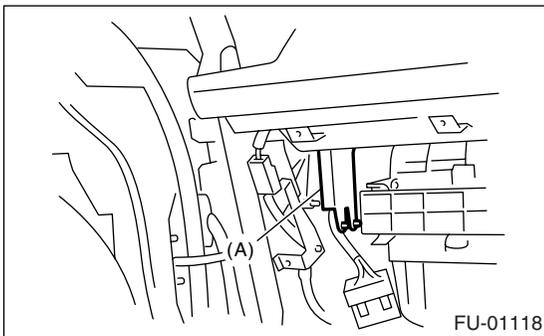
A: REMOVAL

1) Disconnect the ground cable from battery.

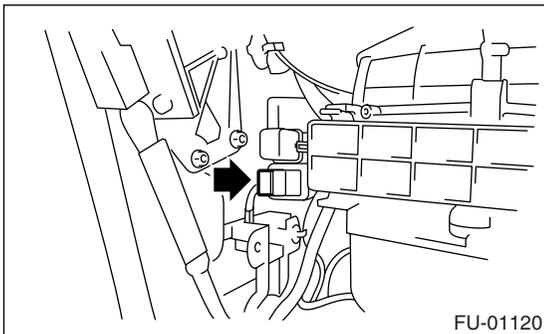


2) Remove the glove box. <Ref. to EI-51, REMOVAL, Glove Box.>

3) Remove the harness cover (A).



4) Disconnect the connector from fuel pump relay.



B: INSTALLATION

Install in the reverse order of removal.

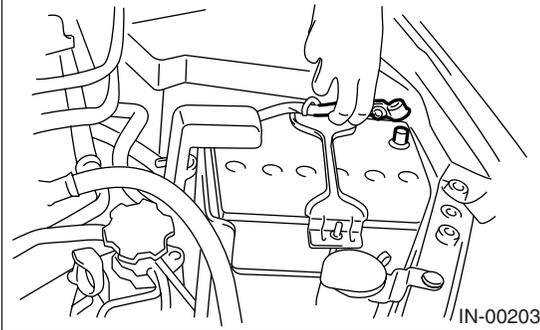
Electronic Throttle Control Relay

FUEL INJECTION (FUEL SYSTEMS)

19. Electronic Throttle Control Relay

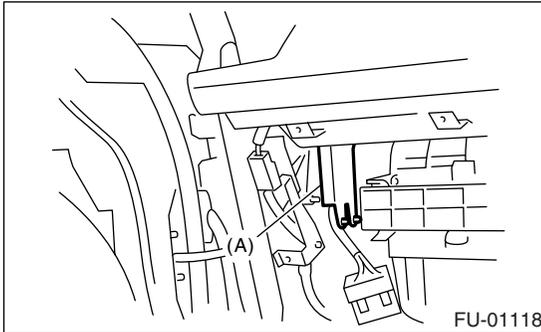
A: REMOVAL

1) Disconnect the ground cable from battery.

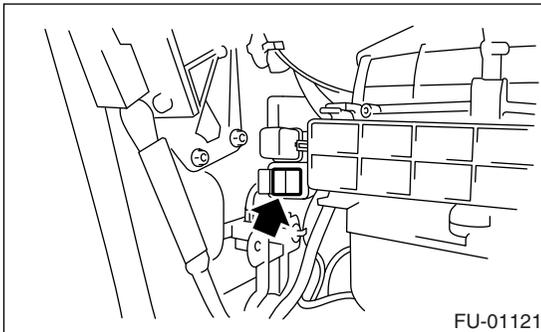


2) Remove the glove box. <Ref. to EI-51, REMOVAL, Glove Box.>

3) Remove the harness cover (A).



4) Disconnect the connector from electronic throttle control relay.



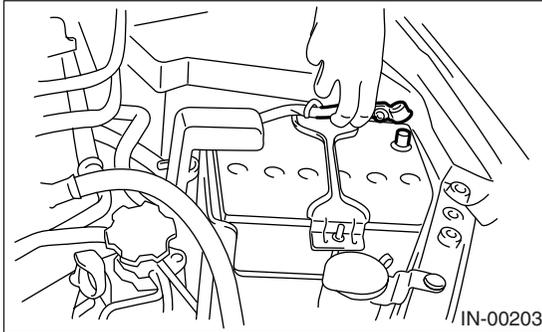
B: INSTALLATION

Install in the reverse order of removal.

20. Fuel Pump Control Unit

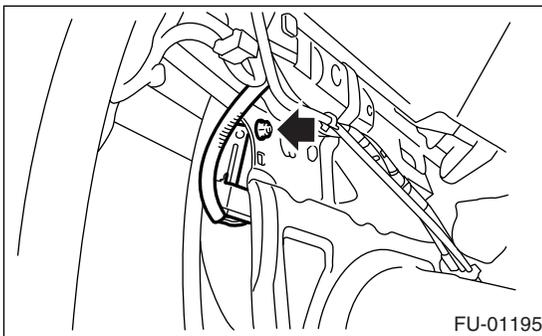
A: REMOVAL

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.



4) Disconnect the connector from fuel pump control unit.

B: INSTALLATION

Install in the reverse order of removal.

21. Fuel

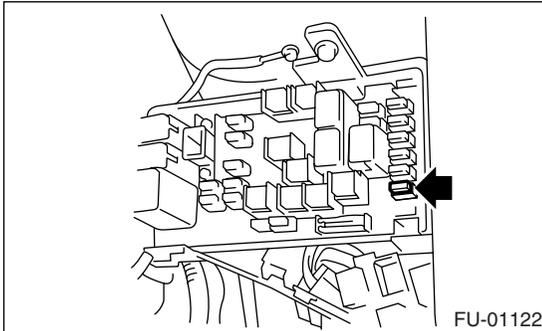
A: PROCEDURE

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.



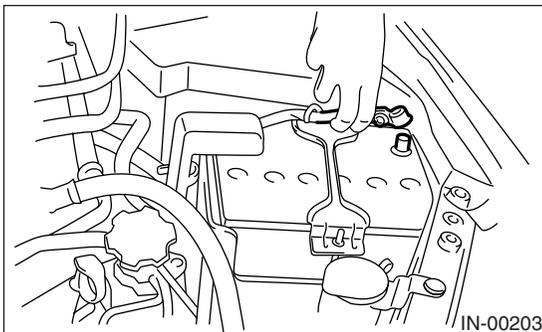
- 2) Start the engine and run it until it stalls.
- 3) After the engine stalls, crank it for five more seconds.
- 4) Turn the ignition switch to OFF.

2. DRAINING FUEL

WARNING:

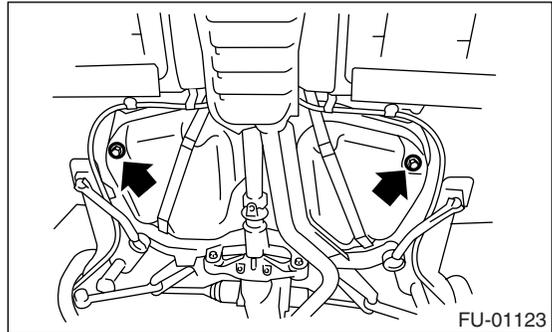
- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.

- 1) Set the vehicle on 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 drain plug from fuel tank to drain fuel from the 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)

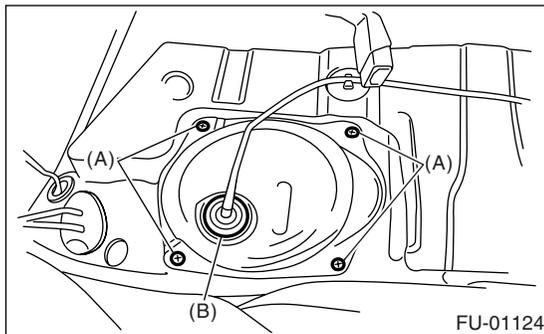
22. Fuel Tank

A: REMOVAL

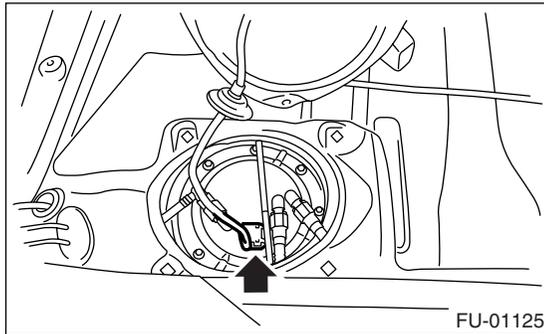
WARNING:

- 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(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 3) Drain fuel from the fuel tank.
<Ref. to FU(H4DOTC)-40, DRAINING FUEL, PROCEDURE, Fuel.>
- 4) Remove the rear seat.
- 5) Remove the service hole cover from fuel pump.
 - (1) Remove the bolt (A).
 - (2) Push the grommet (B) down under the body and remove the service hole cover.

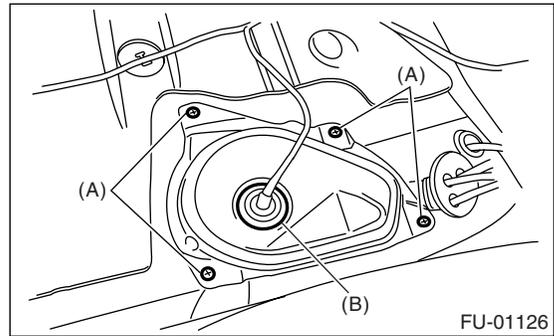


- 6) Disconnect the connector from fuel pump.

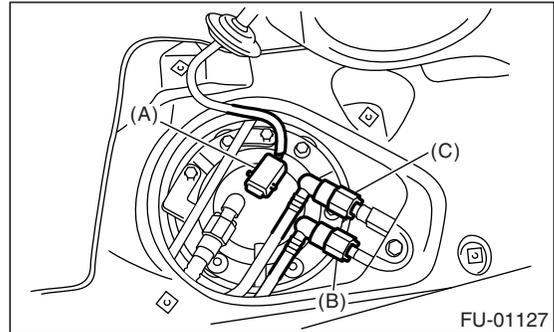


- 7) Remove the service hole cover from fuel sub level sensor.
 - (1) Remove the bolt (A).

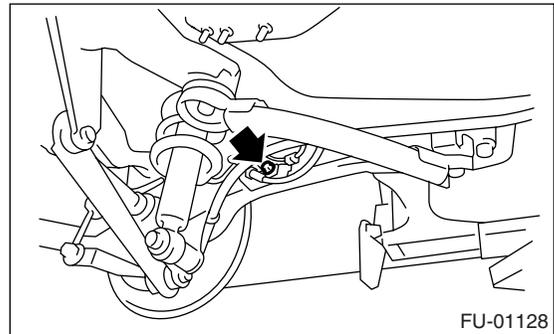
- (2) Push the grommet (B) down under the body and remove the service hole cover.



- 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(H4DOTC)-56, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>



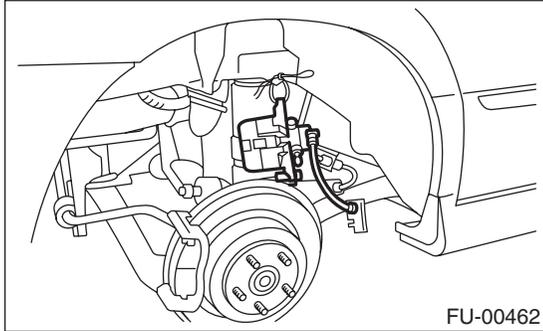
- 10) Remove the rear wheel.
- 11) Remove the bolts which secure rear brake hose installation bracket.



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.

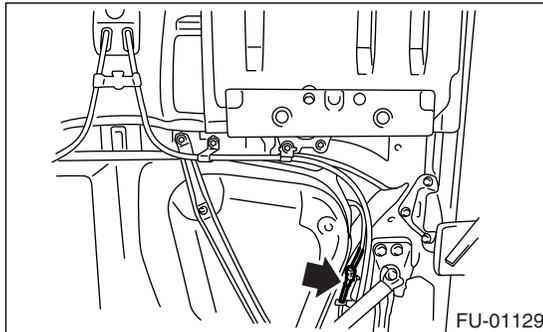
15) Remove the rear exhaust pipe.

<Ref. to EX(H4DOTC)-11, REMOVAL, Rear Exhaust Pipe.>

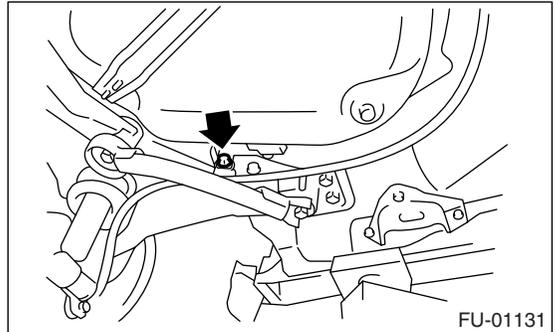
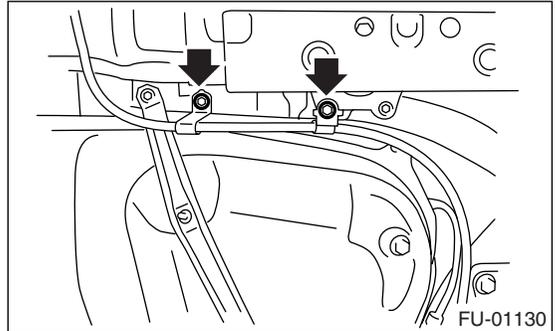
16) Remove the propeller shaft. <Ref. to DS-10, REMOVAL, Propeller Shaft.>

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.

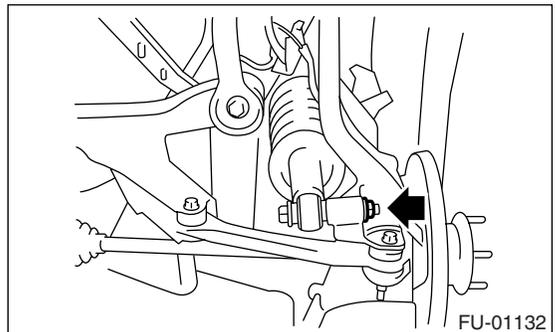


20) Remove the rear suspension assembly.

CAUTION:

A helper is required to perform this work.

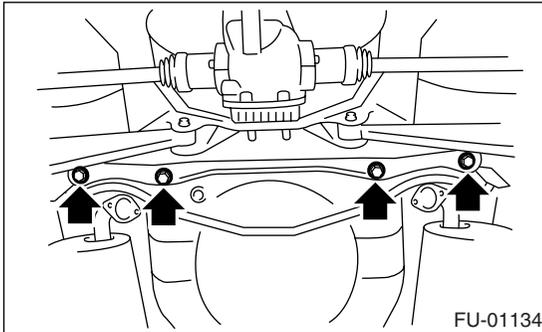
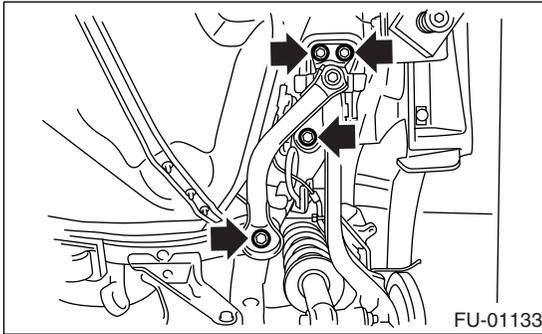
- (1) Support the rear differential with transmission jack.
- (2) Remove the bolt which installs the rear shock absorber to rear suspension arm.



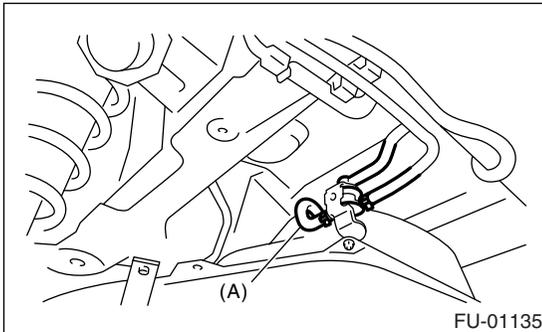
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

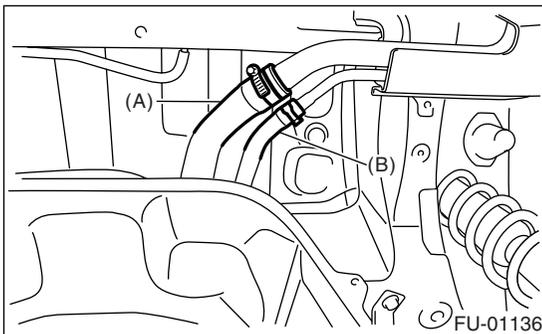
(3) Remove the bolts which secure the rear suspension assembly to body.



(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.

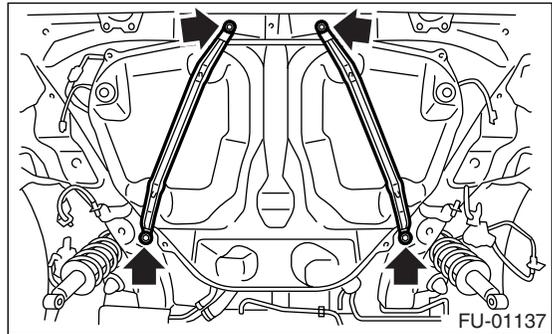


22) Loosen the clamp and disconnect the fuel filler hose (A) and vent hose (B) from fuel filler pipe.



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

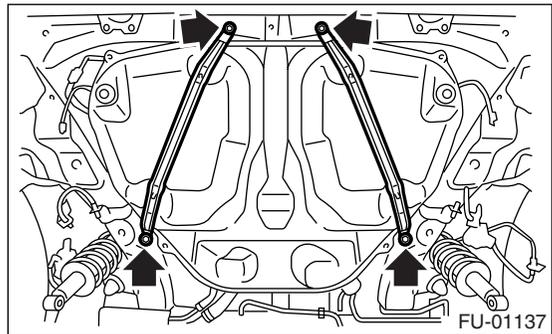
WARNING:
A helper is required to perform this work.



B: INSTALLATION

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

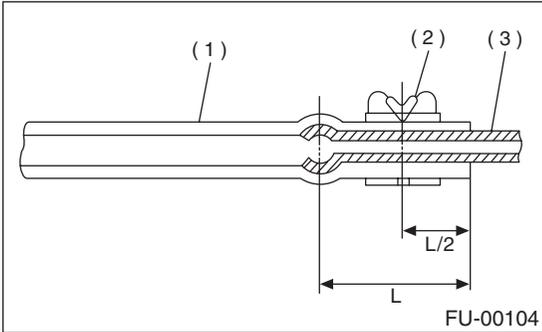
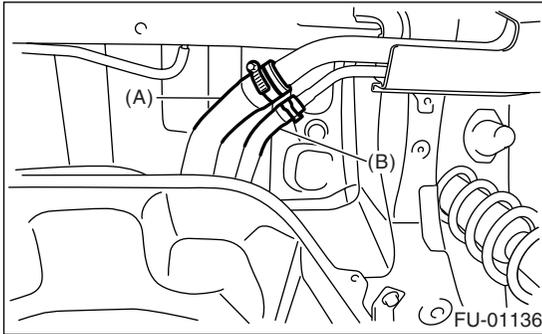
WARNING:
A helper is required to perform this work.



Fuel Tank

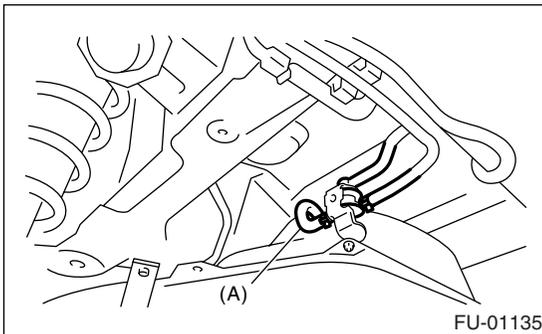
FUEL INJECTION (FUEL SYSTEMS)

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) Pipes

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



4) Tighten the bolt 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.

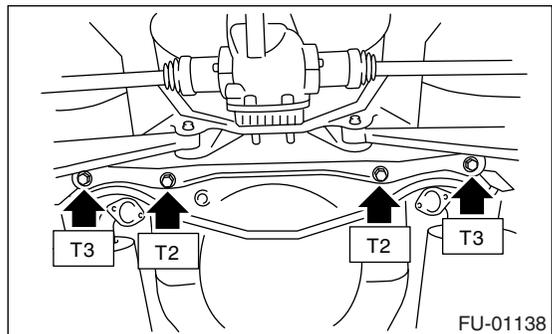
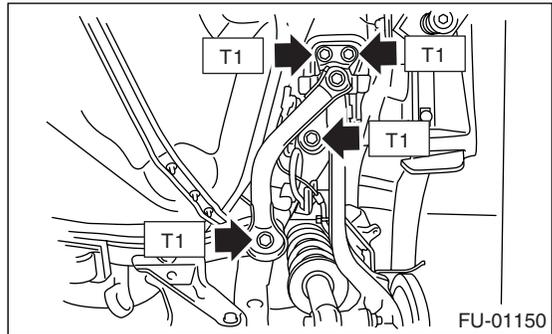
- (1) Support the rear differential with transmission jack.
- (2) Support the rear suspension assembly, and then tighten the bolts which secure the rear suspension assembly to body.

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)

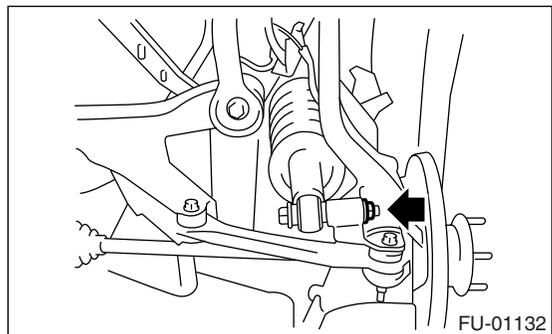
T3: 175 N·m (17.8 kgf-m, 129 ft-lb)



(3) Tighten the bolt which installs the 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)



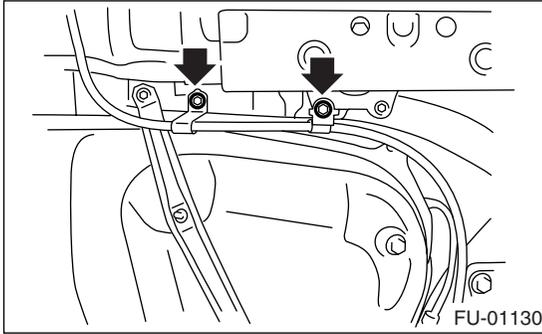
6) Tighten the bolts which install parking brake cable clamp.

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

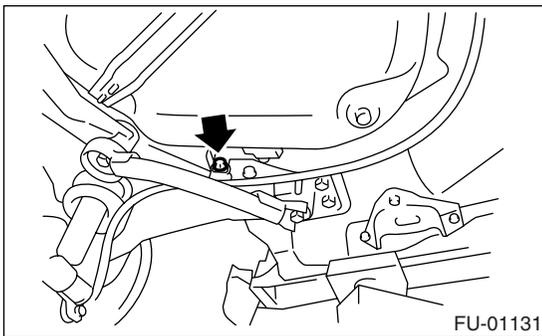
Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

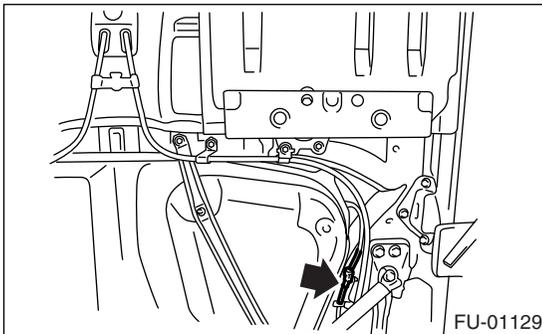


Tightening torque:

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.

Tightening torque:

17.5 N·m (1.78 kgf-m, 12.9 ft-lb)

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

10) Install the rear exhaust pipe.

<Ref. to EX(H4DOTC)-11, INSTALLATION, Rear Exhaust Pipe.>

11) Lower the vehicle.

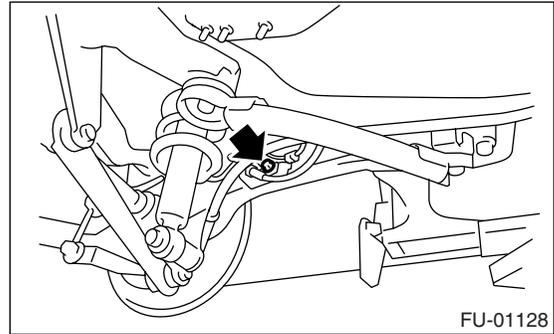
12) Connect the parking brake cable to parking brake assembly. <Ref. to PB-8, INSTALLATION, Parking Brake Assembly (Rear Disc Brake).>

13) Install the rear brake caliper.

14) Tighten the bolts which secure the rear brake hose installation bracket.

Tightening torque:

33 N·m (3.4 kgf-m, 25 ft-lb)



15) Install the rear wheel.

16) Lower the vehicle.

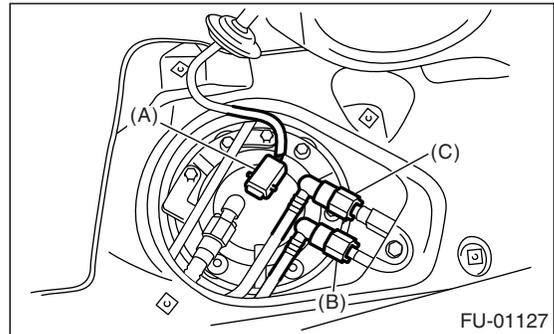
17) Connect the connector (A) to fuel sub level sensor.

18) Connect the quick connector to the fuel delivery (B) and return hose (C).

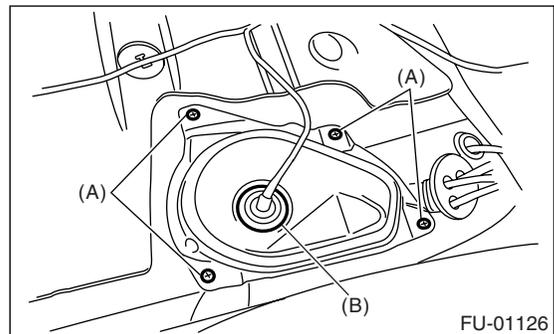
<Ref. to FU(H4DOTC)-57, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

NOTE:

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



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



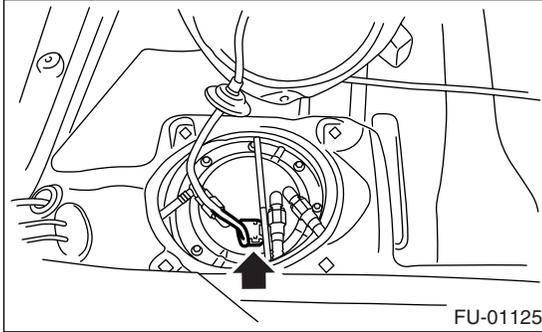
(A) Bolt

(B) Grommet

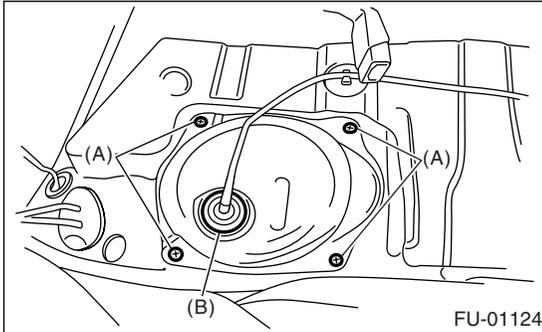
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

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 that connections are tight.

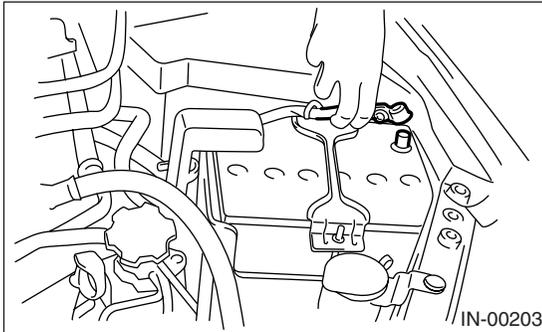
23. Fuel Filler Pipe

A: REMOVAL

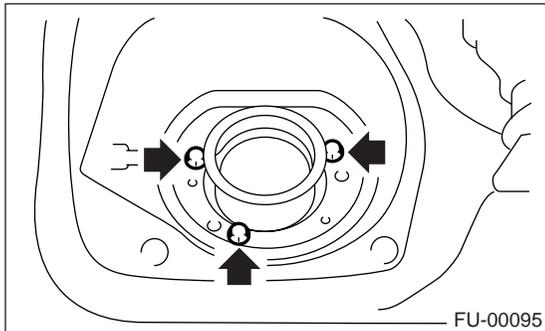
WARNING:

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

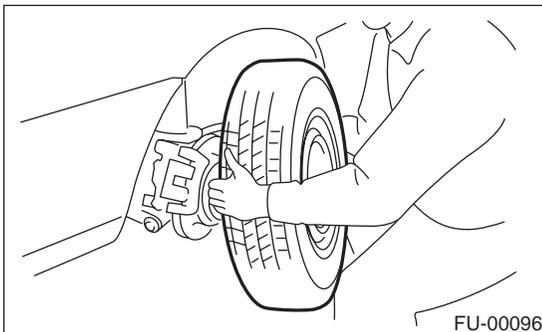
- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid and remove the filler cap.
- 3) Disconnect the ground cable from battery.



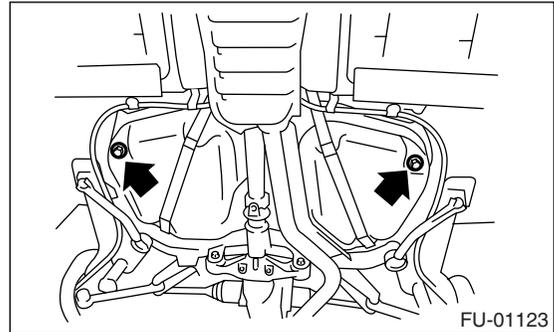
- 4) Remove the screws which secure packing.



- 5) Lift-up the vehicle.
- 6) Remove the rear wheel RH.



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



- 8) Tighten the fuel drain plug.

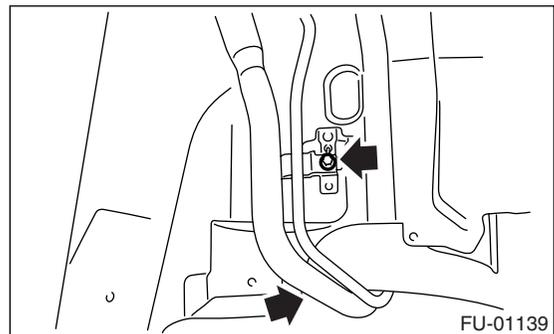
NOTE:

Use a new gasket.

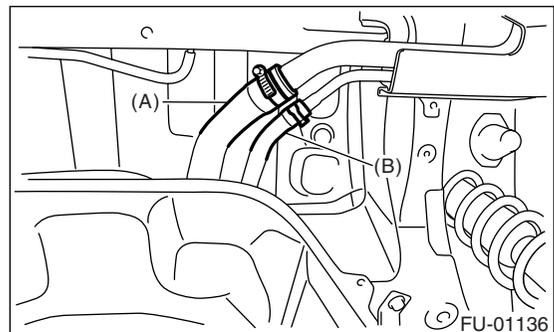
Tightening torque:

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 the 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.

Fuel Filler Pipe

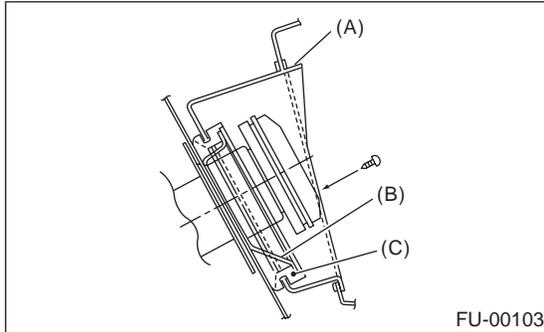
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

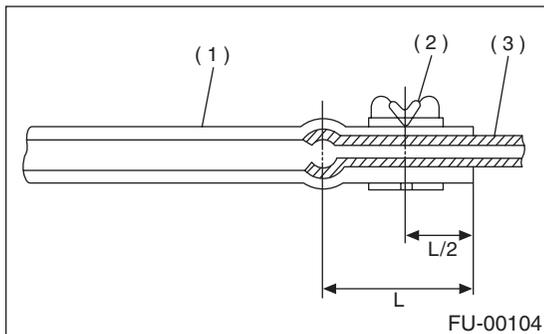
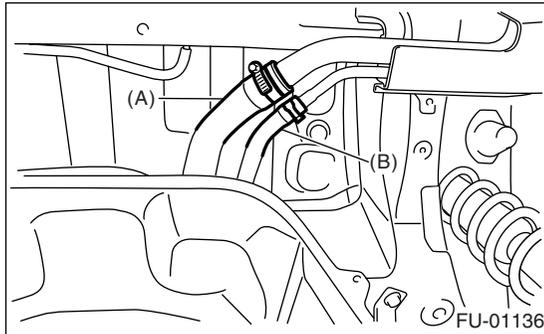
- 1) Open the fuel filler flap lid.
- 2) Set the fuel saucer (A) with rubber packing (C) and insert the fuel filler pipe into hole from the inner side of apron.
- 3) Align the holes in fuel filler pipe neck and set the cup (B), and tighten the screws.

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 pipe (B) to specified position, and then tighten the clamp.

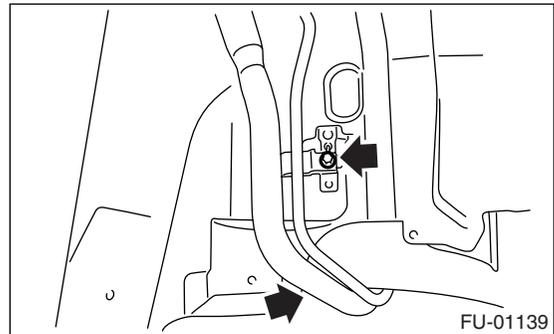


- (1) Hose
- (2) Clip or clamp
- (3) Pipes

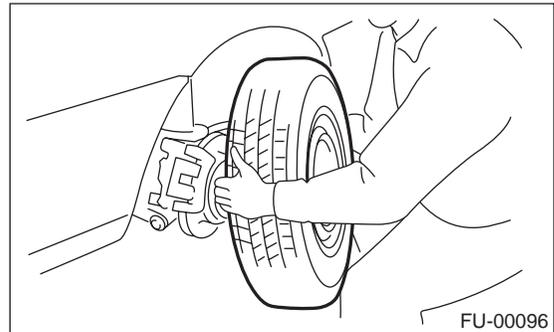
- 5) Tighten the bolts which hold the fuel filler pipe bracket on the body.

Tightening torque:

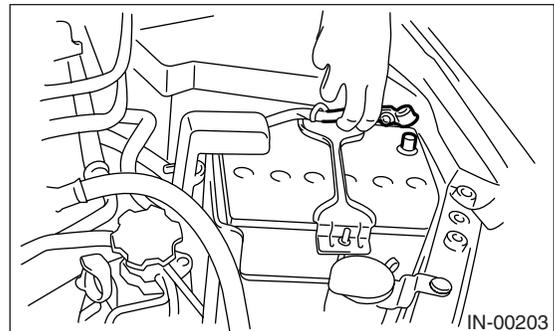
7.5 N·m (0.75 kgf-m, 5.4 ft-lb)



- 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.



24. Fuel Pump

A: REMOVAL

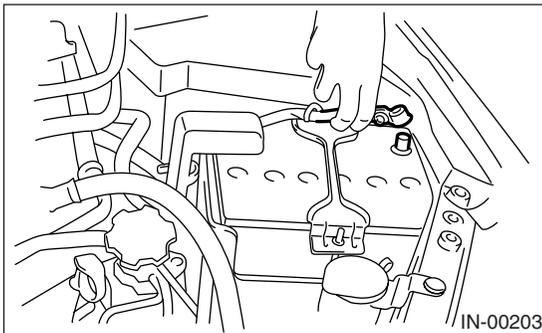
WARNING:

- 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.

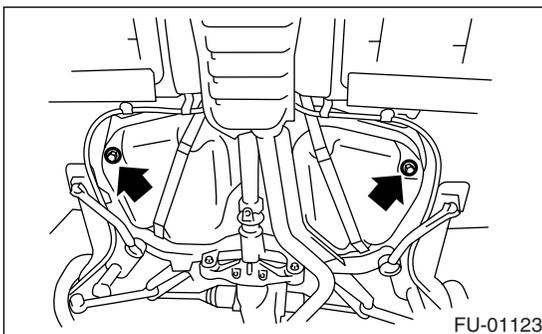
NOTE:

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

- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid and remove the fuel filler cap.
- 3) Disconnect the ground cable from battery.



- 4) Lift-up the vehicle.
- 5) Remove the fuel tank protector.
- 6) Set a container under the vehicle and remove the drain plug from fuel tank to drain fuel from the fuel tank.



- 7) Tighten the fuel drain plug.

NOTE:

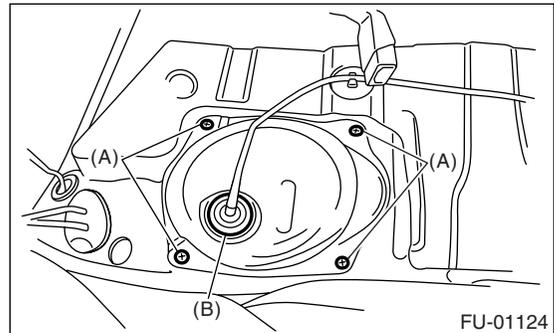
Use a new gasket.

Tightening torque:

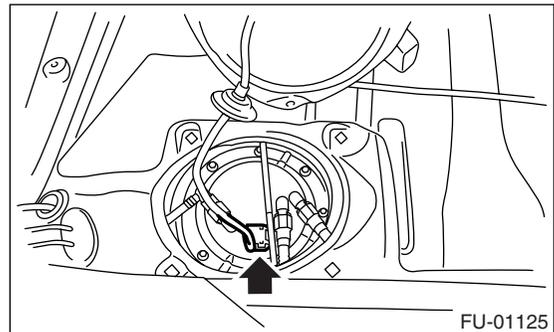
26 N·m (2.65 kgf·m, 19.2 ft·lb)

- 8) Remove the rear seat.
- 9) Remove the service hole cover.
 - (1) Remove the bolt (A).

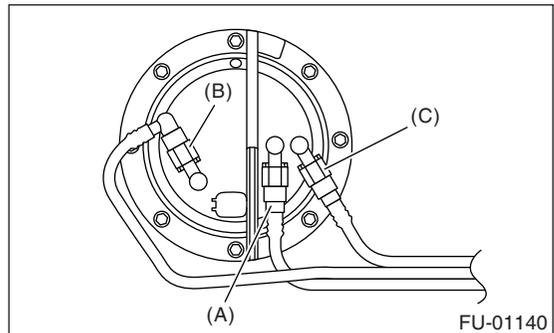
- (2) Push the grommet (B) down under the body and remove the service hole cover.



- 10) Disconnect the connector from fuel pump.



- 11) Disconnect the quick connector and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H4DOTC)-56, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>
- 12) Remove the nuts which install the fuel pump assembly onto fuel tank.



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

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

Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

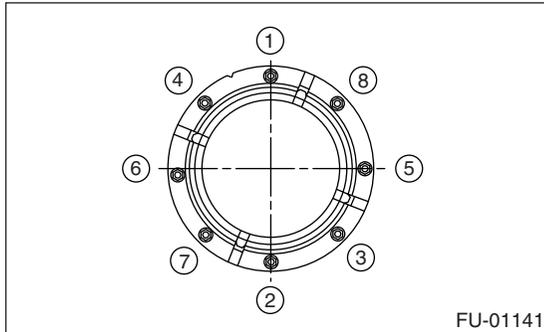
Install in the reverse order of removal.

NOTE:

- Use a new gasket.
- Ensure the sealing portion is free from fuel or foreign particles before installation.
- Tighten the nuts in the order as shown in the figure.

Tightening torque:

4.4 N·m (0.45 kgf-m, 3.3 ft-lb)

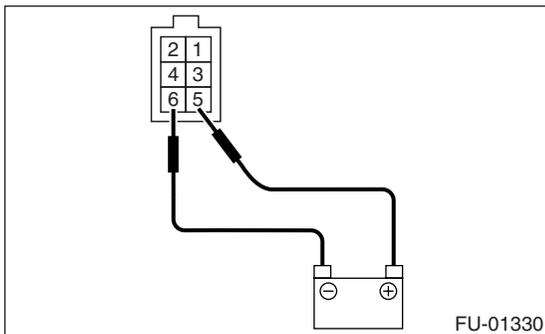


C: INSPECTION

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

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.



25. Fuel Level Sensor

A: REMOVAL

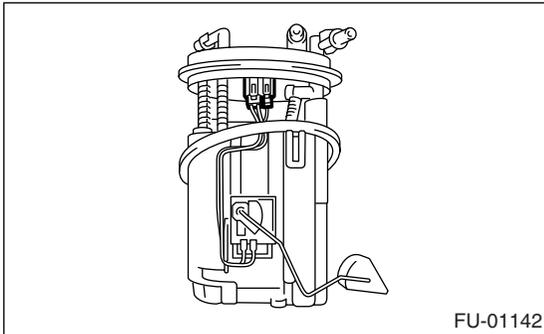
WARNING:

- 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(H4DOTC)-49, 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.

Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

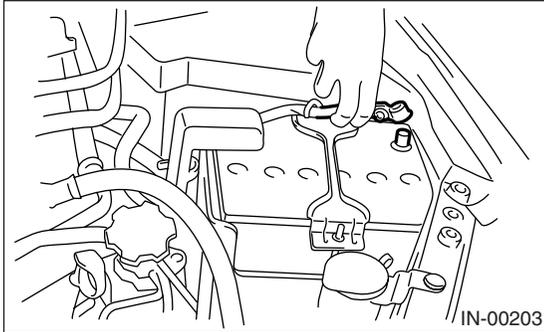
26. Fuel Sub Level Sensor

A: REMOVAL

WARNING:

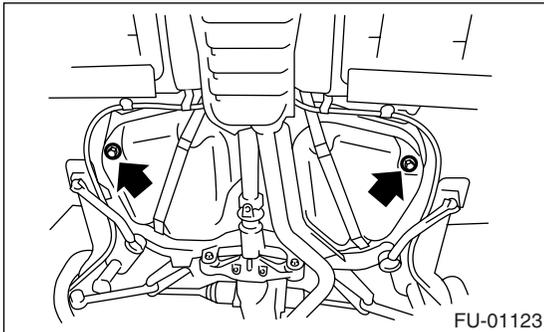
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel on the floor.
- Reduce the fuel in the fuel tank to less than 3/4 beforehand. Be careful that fuel may spill when the fuel is more than 3/4.

1) Disconnect the ground cable from battery.



2) Lift-up the vehicle.

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



4) Tighten the fuel drain plug.

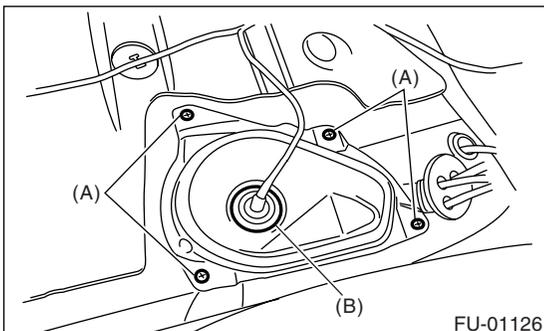
Tightening torque:

26 N·m (2.65 kgf·m, 19.2 ft·lb)

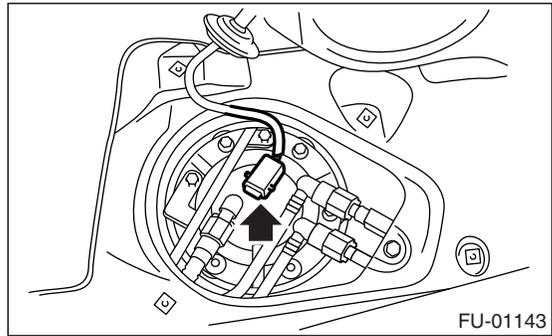
5) Remove the rear seat.

6) Remove the service hole cover.

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

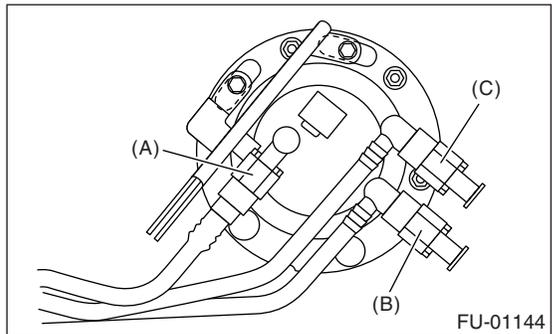


7) Disconnect the connector from fuel sub level sensor.



8) Disconnect the quick connector and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H4DOTC)-56, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>

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



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

10) Remove the fuel sub level sensor.

B: INSTALLATION

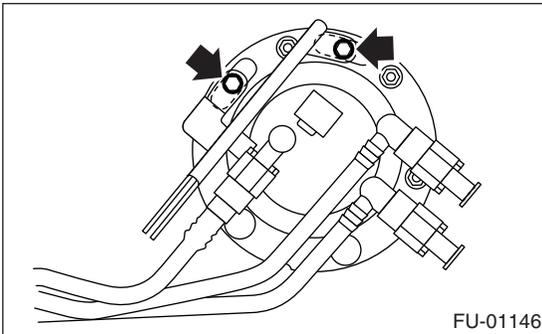
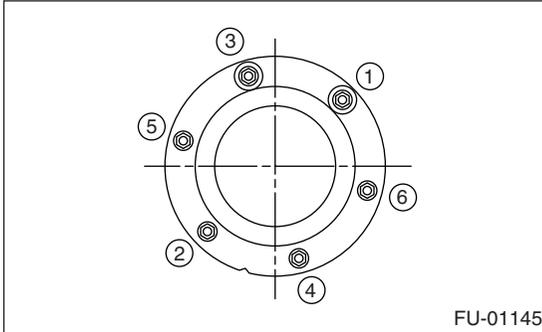
Install in the reverse order of removal.

NOTE:

- Use a new gasket.
- Ensure the sealing portion is free from fuel and foreign particles before installation.
- 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)



27. Fuel Filter

A: SPECIFICATION

Fuel filter forms a unit with fuel pump.

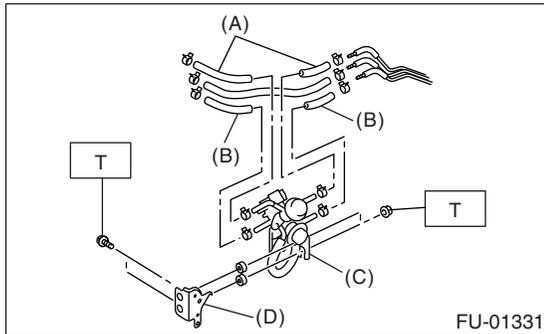
Refer to "Fuel Pump" for removal and installation.

<Ref. to FU(H4DOTC)-49, REMOVAL, Fuel Pump.> <Ref. to FU(H4DOTC)-50, INSTALLATION, Fuel Pump.>

28. Fuel Bypass Valve

A: REMOVAL

- 1) Release the fuel pressure.
<Ref. to FU(H4DOTC)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the fuel return line and delivery line from fuel bypass valve.
- 3) Remove the fuel bypass valve from vehicle.



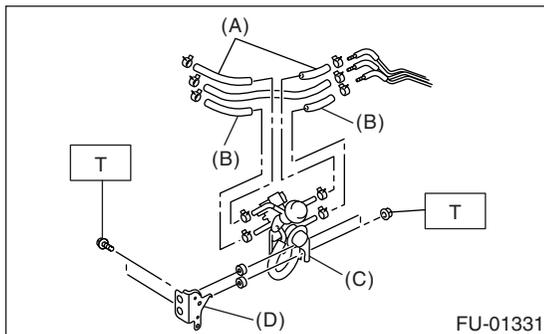
- (A) Fuel return line
- (B) Fuel delivery line
- (C) Fuel bypass valve
- (D) Fuel bypass valve bracket

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

7.5 N·m (0.76 kgf-m, 5.53 ft-lb)



- (A) Fuel return line
- (B) Fuel delivery line
- (C) Fuel bypass valve
- (D) Fuel bypass valve bracket

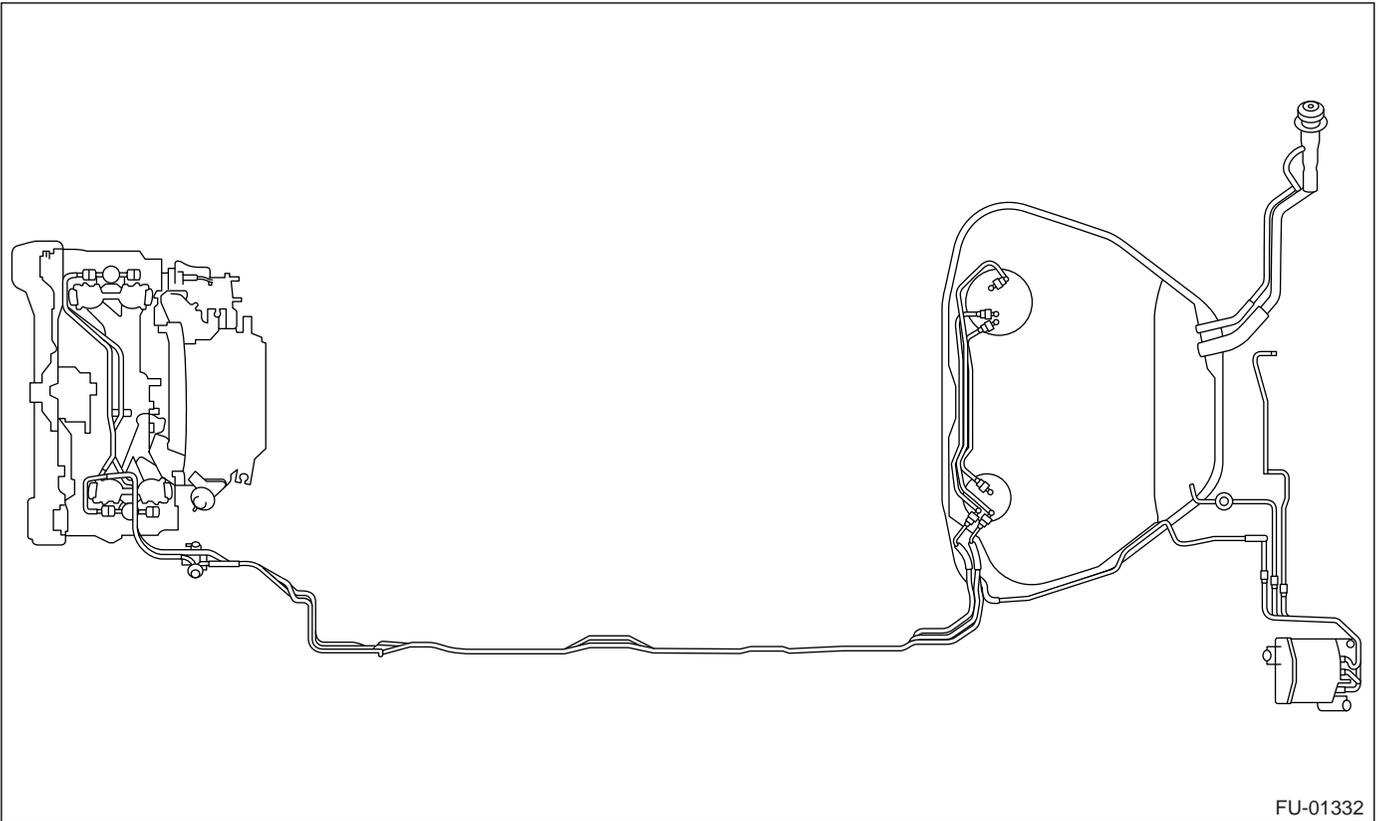
Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

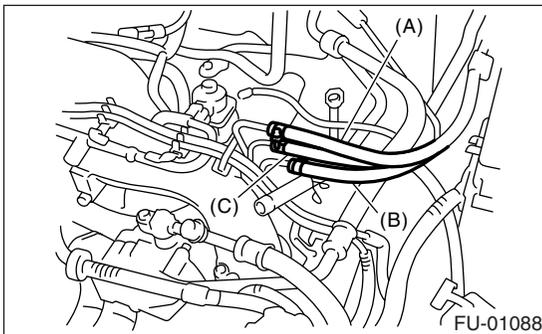
29. Fuel Delivery, Return and Evaporation Lines

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H4DOTC)-40, 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.



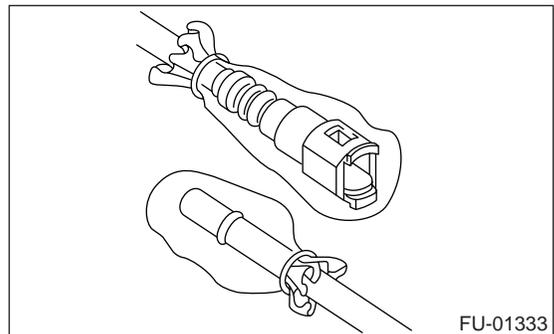
- 6) In the engine compartment, disconnect the fuel delivery hoses, return hoses and evaporation hose.



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

- 7) Lift-up the vehicle.
- 8) Remove the fuel tank. <Ref. to FU(H4DOTC)-41, REMOVAL, Fuel Tank.>

- 9) Separate the quick connector of 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.



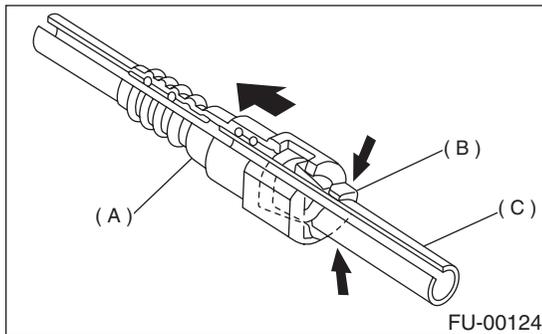
- (3) Hold the connector (A) and push retainer (B) down.
- (4) Pull out the connector (A) from retainer (B).

Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

CAUTION:

Always use a new retainer.



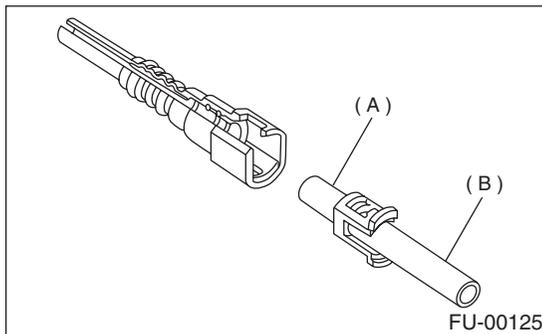
- (A) Connector
- (B) Retainer
- (C) Pipes

B: INSTALLATION

1) Connect the quick connector on fuel line.

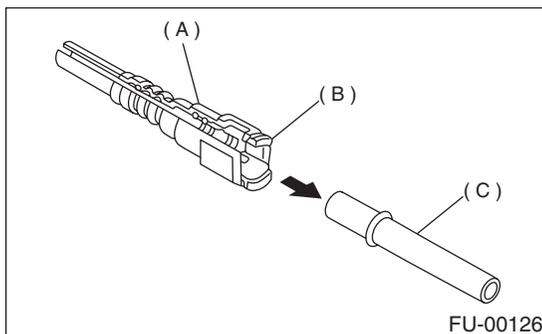
CAUTION:

- 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) Pipes

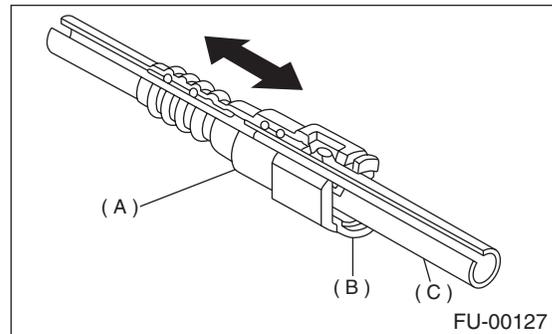
- (1) Set the new retainer (B) to connector (A).
- (2) Push the pipe into the connector completely.



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

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 hoses and their connections for fuel leakage.



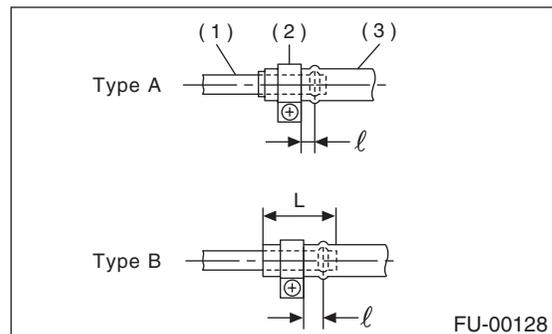
- (A) Connector
- (B) Retainer
- (C) Pipes

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.

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

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



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

3) Connect the return hose and evaporation hose to 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:

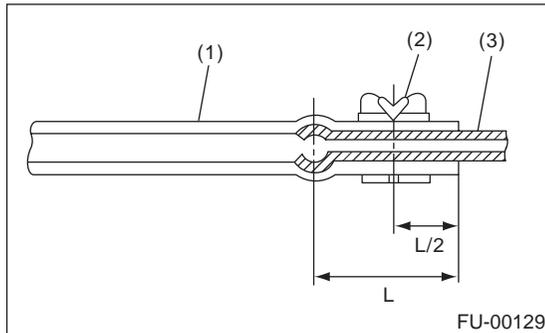
$L = 17.5 \pm 2.5 \text{ mm } (0.689 \pm 0.098 \text{ in})$

Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

CAUTION:

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



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

C: INSPECTION

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

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)

30. 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)	Lowering 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 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 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.	Retightening.
2)	Cracked fuel pipe, hose and fuel tank.	Replace.
3)	Defective welding part on the fuel tank.	Replace.
4)	Defective drain packing of the fuel tank.	Replace.
5)	Clogged 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.	Retightening.
2)	Defective packing air tightness on the fuel saucer.	Correct or replace the packing.
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 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 the water from both the fuel filter and fuel tank or use water removing agent in the fuel tank.
- Before using a water removing agent, follow the cautions that noted on the bottle.

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)
