

ENGINE SECTION 1

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(H4SO 2.0)
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EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SO 2.0)
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INTAKE (INDUCTION)	IN(H4SO 2.0)
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MECHANICAL	ME(H4SO 2.0)
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EXHAUST	EX(H4SO 2.0)
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COOLING	CO(H4SO 2.0)
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LUBRICATION	LU(H4SO 2.0)
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SPEED CONTROL SYSTEMS	SP(H4SO 2.0)
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IGNITION	IG(H4SO 2.0)
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STARTING/CHARGING SYSTEMS	SC(H4SO 2.0)
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ENGINE (DIAGNOSTICS)	EN(H4SO 2.0) (diag)
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FUEL INJECTION (FUEL SYSTEMS)	FU(H4SO 2.5)
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EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SO 2.5)
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INTAKE (INDUCTION)	IN(H4SO 2.5)
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EXHAUST	EX(H4SO 2.5)
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COOLING	CO(H4SO 2.5)
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ENGINE SECTION 1

LUBRICATION LU(H4SO 2.5)

SPEED CONTROL SYSTEMS SP(H4SO 2.5)

IGNITION IG(H4SO 2.5)

STARTING/CHARGING SYSTEMS SC(H4SO 2.5)

ENGINE (DIAGNOSTICS) EN(H4SO 2.5)
(diag)

FUEL INJECTION (FUEL SYSTEMS)

FU(H4SO 2.5)

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General Description

FUEL INJECTION (FUEL SYSTEMS)

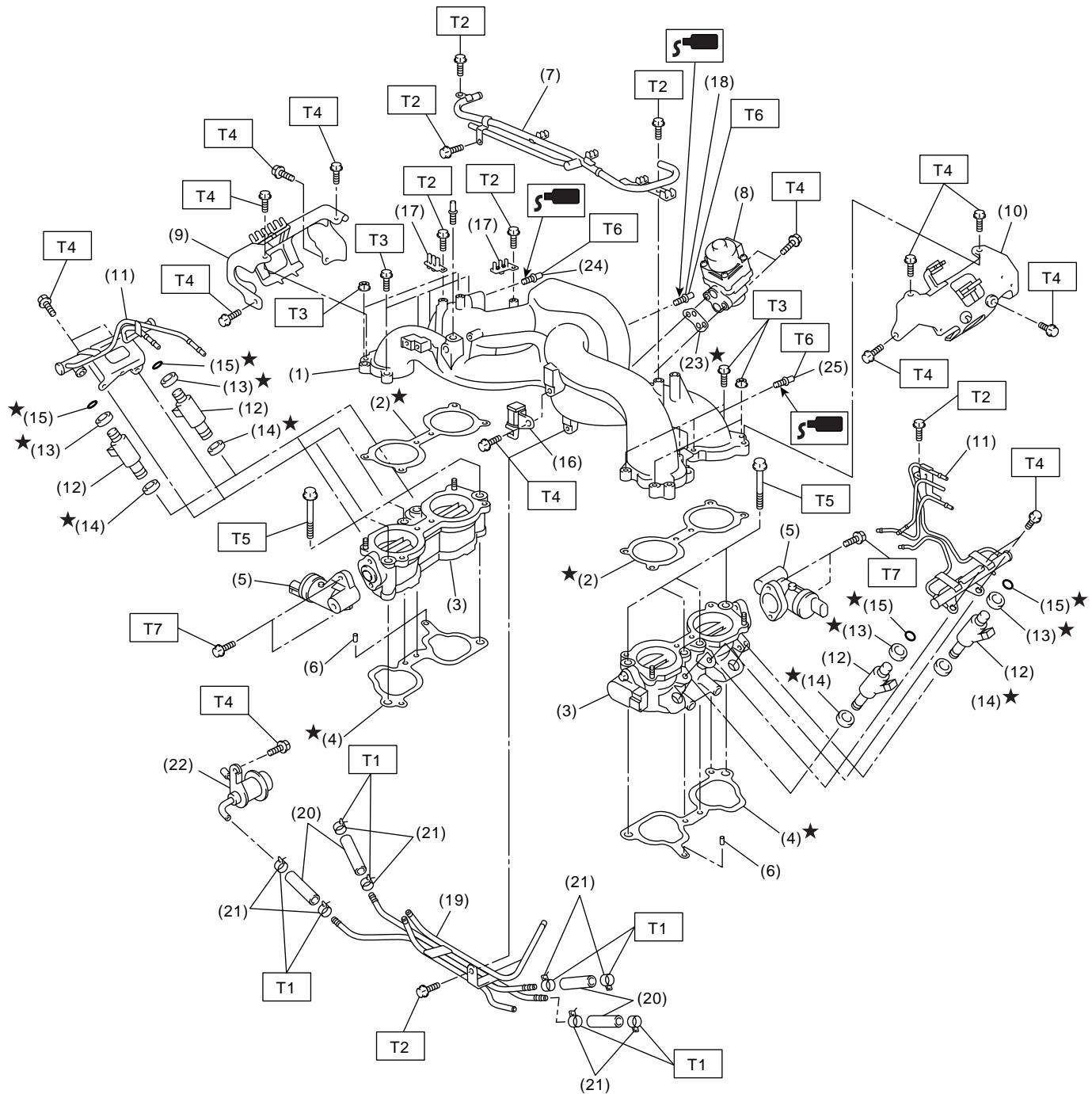
1. General Description

A: SPECIFICATION

Fuel tank	Capacity	64 ℥ (16.9 US gal, 14.1 Imp gal)
	Location	Under rear seat
Fuel pump	Type	Impeller
	Shutoff discharge pressure	441 — 686 kPa (4.50 — 7.00 kg/cm ² , 64.0 — 99.5 psi)
	Discharge	75 ℥ (19.8 US gal, 16.5 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



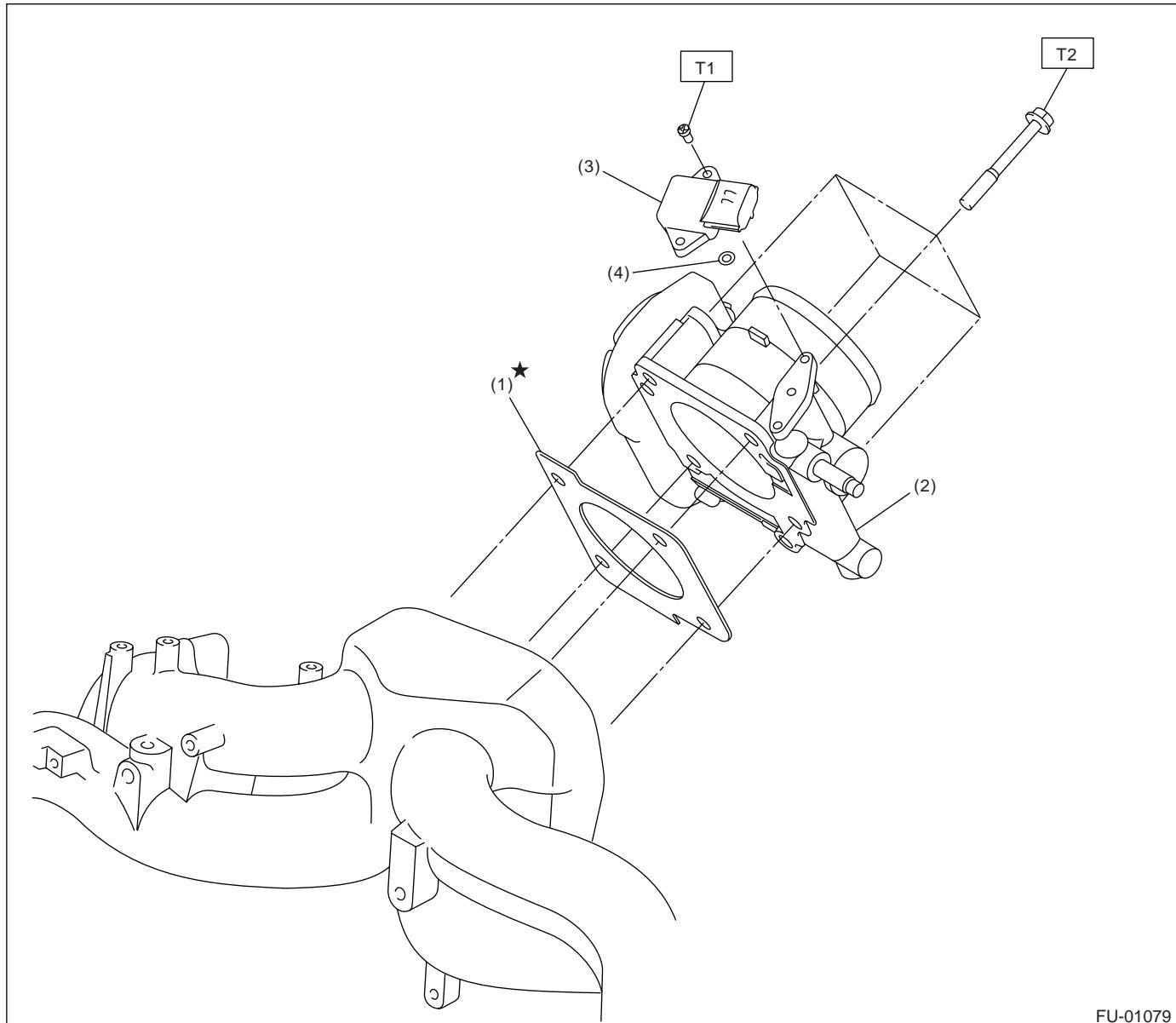
FU-02096

General Description

FUEL INJECTION (FUEL SYSTEMS)

- | | | |
|--|-----------------------------------|--|
| (1) Intake manifold | (11) Fuel injector pipe | (24) Nipple (RHD model) |
| (2) Gasket (EC, EK and K4 model) | (12) Fuel injector | (25) Nipple (LHD model) |
| (3) Tumble generator valve ASSY
(EC, EK and K4 model) | (13) O-ring | Tightening torque: N·m (kgf-m, ft-lb) |
| (4) Gasket | (14) O-ring | T1: 1.5 (0.15, 1.1) |
| (5) Tumble generator valve actuator
(EC, EK and K4 model) | (15) O-ring | T2: 6.4 (0.65, 4.7) |
| (6) Guide pin | (16) Purge control solenoid valve | T3: 8.75 (0.89, 6.5) |
| (7) PCV pipe (EC, EK and K4 model) | (17) Plug cord holder | T4: 19 (1.9, 13.7) |
| (8) EGR valve (EC, EK and K4
model) | (18) Nipple | T5: 25 (2.5, 18.1) |
| (9) Fuel pipe protector RH | (19) Fuel pipe ASSY | T6: 17 (1.7, 12.5) |
| (10) Fuel pipe protector LH | (20) Fuel hose | T7: 6 (0.61, 4.4) |
| | (21) Clip | |
| | (22) Pressure regulator | |
| | (23) Gasket (EC, EK and K4 model) | |

2. AIR INTAKE SYSTEM



FU-01079

- (1) Gasket
- (2) Throttle body
- (3) Manifold absolute pressure sensor

- (4) O-ring

Tightening torque: N·m (kgf-m, ft-lb)

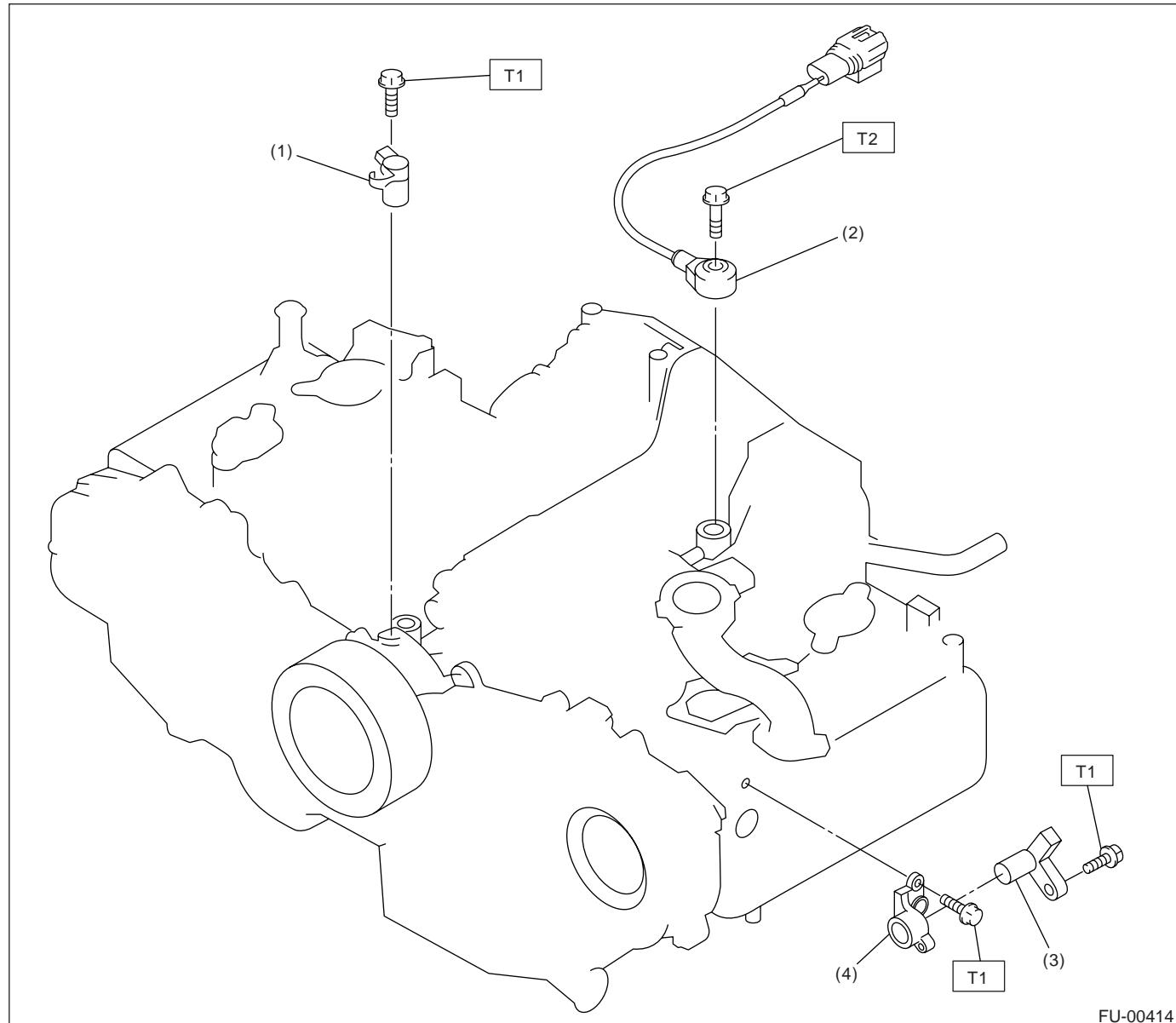
T1: 2.0 (0.2, 1.5)

T2: 8 (0.8, 5.8)

General Description

FUEL INJECTION (FUEL SYSTEMS)

3. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



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

- (4) Camshaft position sensor support

Tightening torque: N·m (kgf·m, ft-lb)

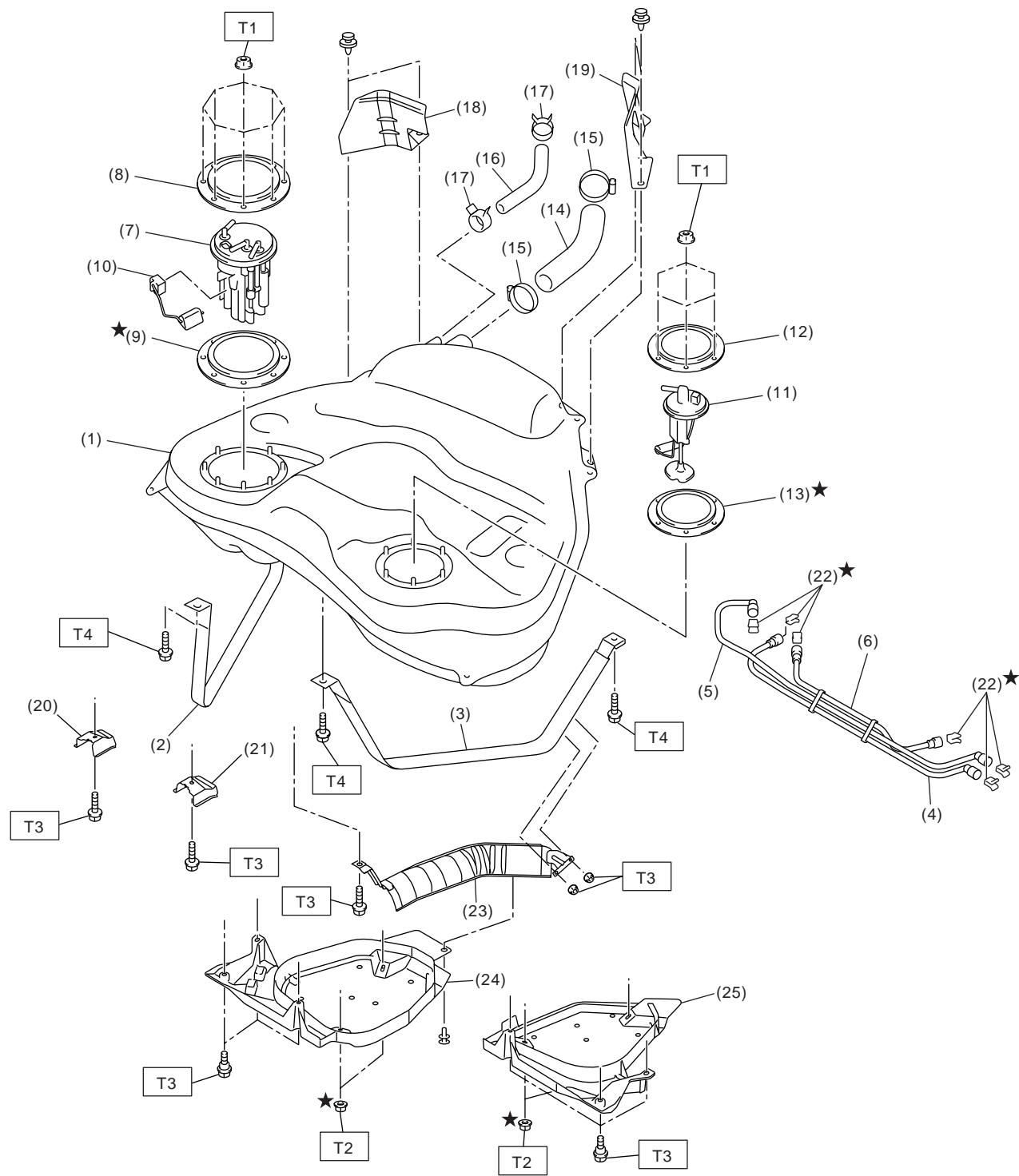
T1: 6.4 (0.65, 4.7)

T2: 24 (2.4, 17.4)

General Description

FUEL INJECTION (FUEL SYSTEMS)

4. FUEL TANK



FU-01080

General Description

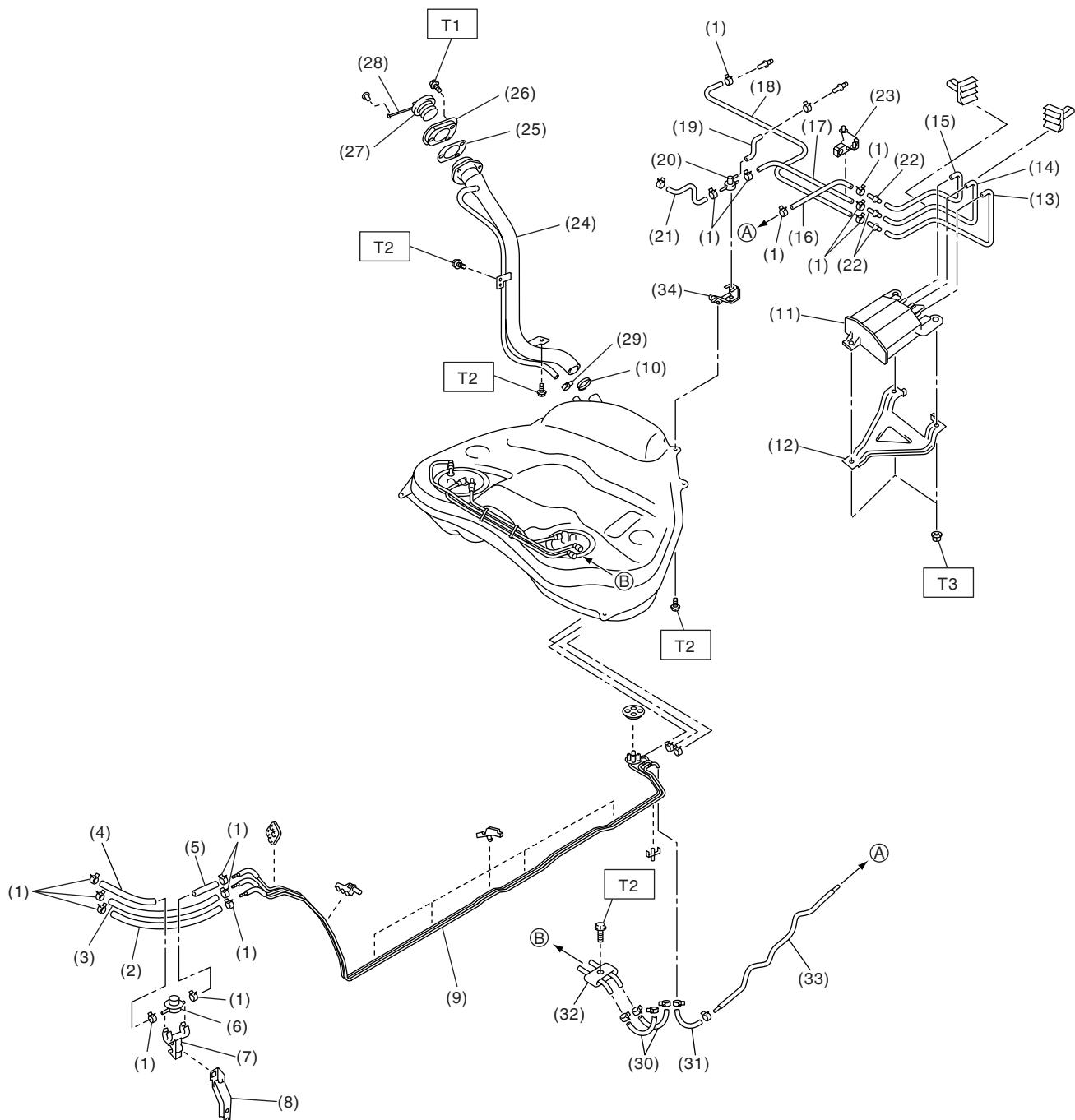
FUEL INJECTION (FUEL SYSTEMS)

(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 assembly	(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)

General Description

FUEL INJECTION (FUEL SYSTEMS)

5. FUEL LINE



FU-01081

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 A	(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 damper	(19) Two-way valve drain hose	(32) Connector
(7) Fuel damper holder	(20) Two-way valve	(33) Purge pipe
(8) Fuel damper 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)

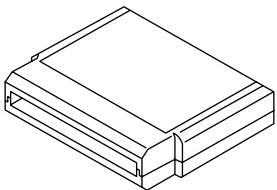
T3: 8.3 (0.85, 6.1)

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.

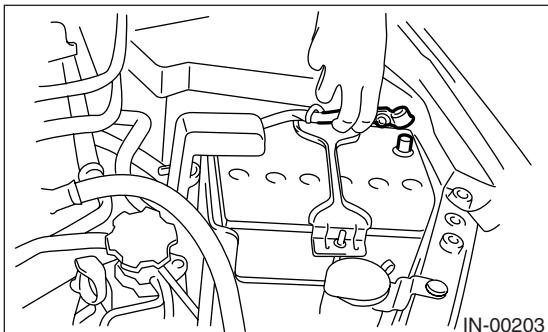
D: PREPARATION TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	24082AA230	CARTRIDGE	Troubleshooting for electrical system. ST24082AA230
	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) ST22771AA030

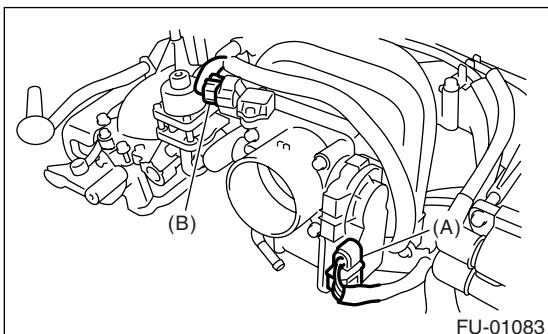
2. Throttle Body

A: REMOVAL

- 1) Disconnect the ground cable from battery.

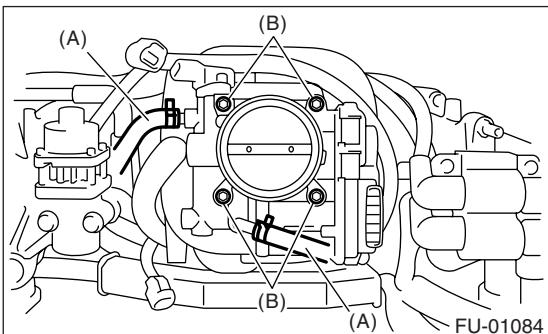


- 2) Remove the air intake chamber. <Ref. to IN(H4SO 2.0)-8, REMOVAL, Air Intake Chamber.>
- 3) Disconnect the connectors from the throttle position sensor and manifold absolute pressure sensor.



- (A) Throttle position sensor
- (B) Manifold absolute pressure sensor

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



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

8 N·m (0.8 kgf-m, 5.8 ft-lb)

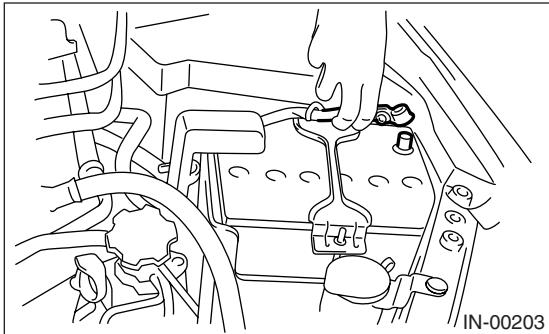
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

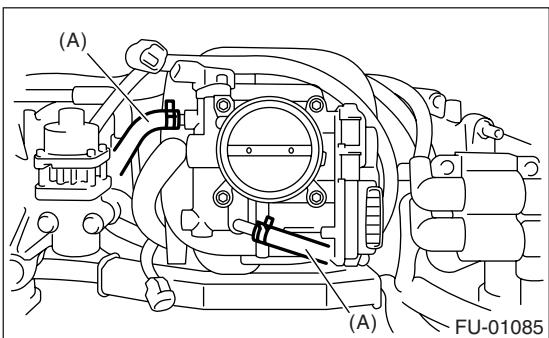
3. Intake Manifold

A: REMOVAL

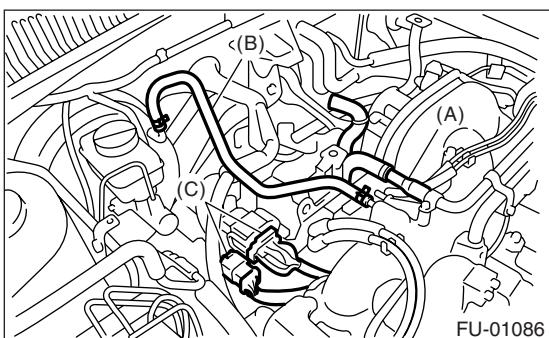
- 1) Release the fuel pressure. <Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler flap lid, and remove the fuel filler cap.
- 3) Disconnect the ground cable from battery.



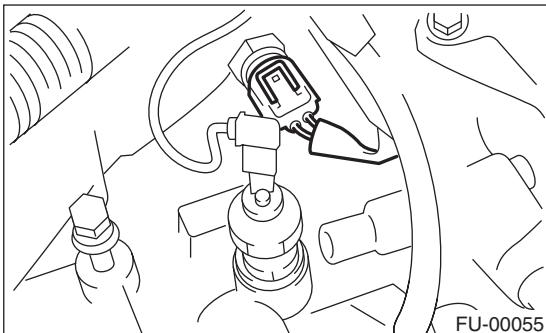
- 4) Remove the air cleaner case and air intake chamber. <Ref. to IN(H4SO 2.0)-6, REMOVAL, Air Cleaner Case.> <Ref. to IN(H4SO 2.0)-8, REMOVAL, Air Intake Chamber.>
- 5) Disconnect the spark plug cords from spark plugs.
- 6) Disconnect the engine coolant hoses (A) from throttle body.



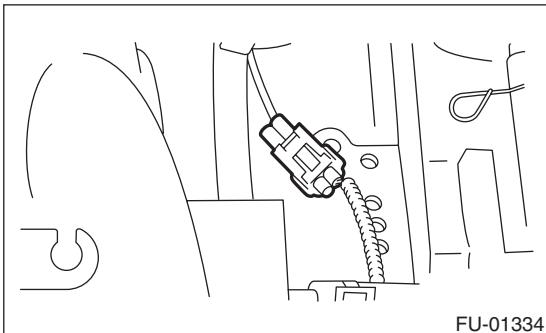
- 7) Disconnect the PCV hose (A) from intake manifold.
- 8) Disconnect the brake booster hose (B).
- 9) Disconnect the engine harness connectors (C) from bulkhead harness connectors.



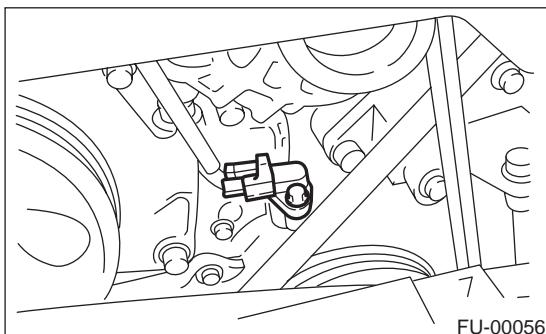
- 10) Disconnect the connectors from engine coolant temperature sensor.



- 11) Disconnect the knock sensor connector.

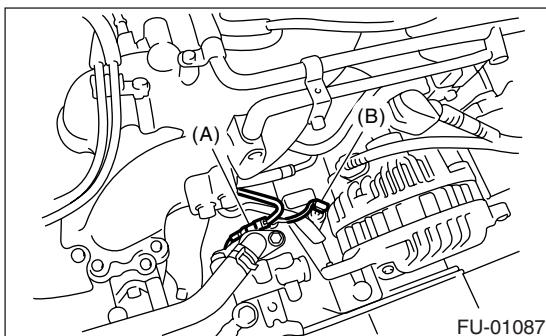


- 12) Disconnect the connector from crankshaft position sensor.

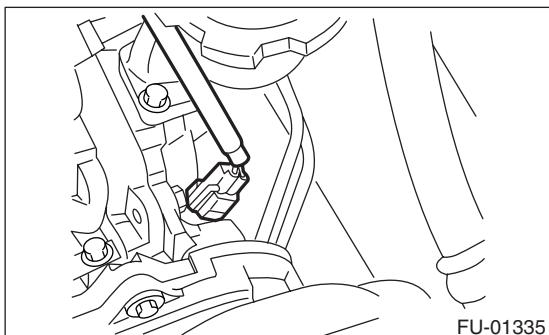


- 13) Disconnect the connector from power steering pump switch (A).

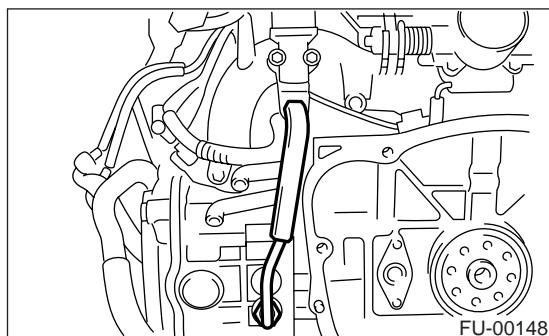
- 14) Disconnect the connector from oil pressure switch (B).



15) Disconnect the connector from camshaft position sensor.



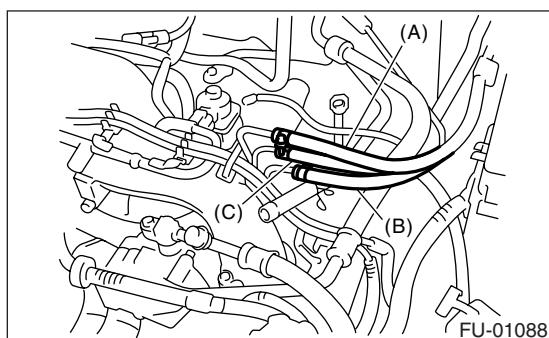
16) Remove the EGR pipe from intake manifold.
(EC, EK and K4 model)



17) Disconnect the fuel hoses from fuel pipes.

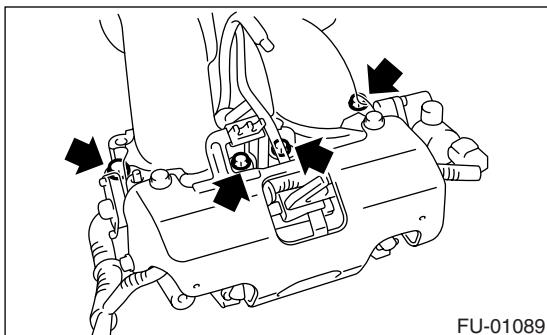
WARNING:

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



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

18) Remove the bolts which secure intake manifold to cylinder head.



19) Remove the intake manifold.

B: INSTALLATION

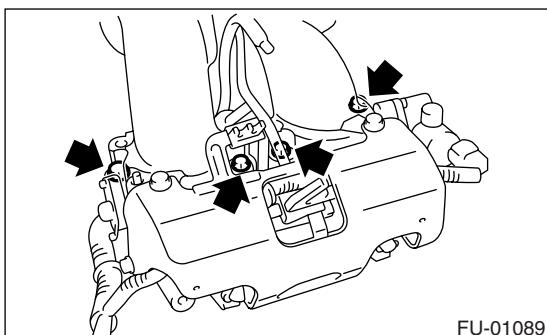
1) Install the intake manifold onto cylinder heads.

NOTE:

Use a new gasket.

Tightening torque:

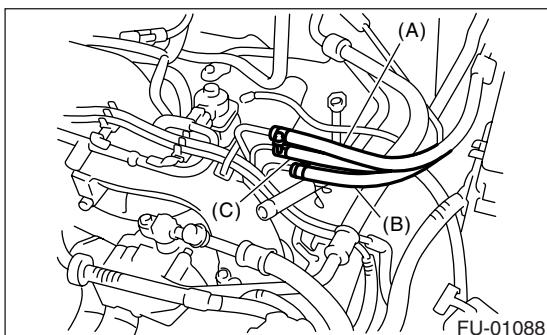
25 N·m (2.5 kgf-m, 18.1 ft-lb)



2) Connect the fuel hoses.

NOTE:

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



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

Tightening torque (Hose clamp screw):
1.25 N·m (0.13 kgf-m, 0.94 ft-lb)

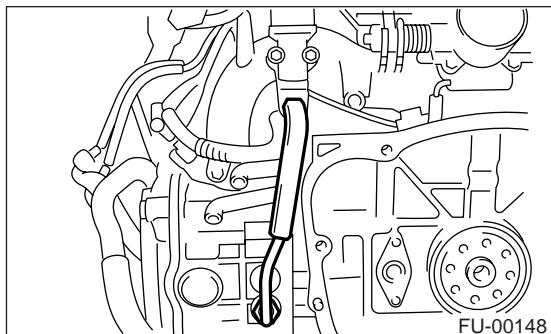
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

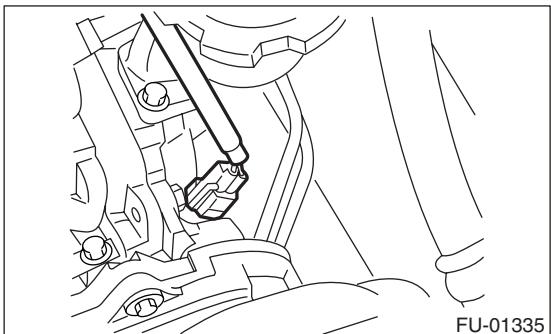
3) Install the EGR pipe to intake manifold. (EC, EK and K4 model)

Tightening torque:

34 N·m (3.4 kgf-m, 24.6 ft-lb)

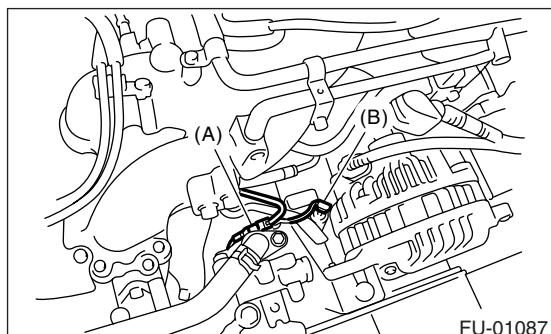


4) Connect the connector to camshaft position sensor.

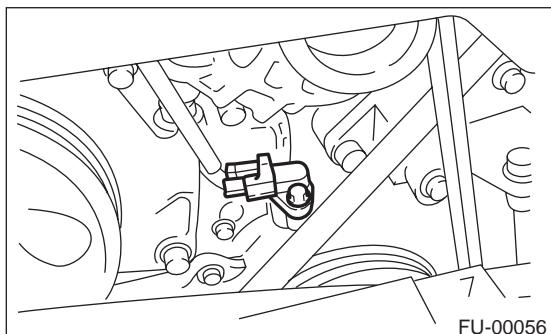


5) Connect the connector to power steering pump switch (A).

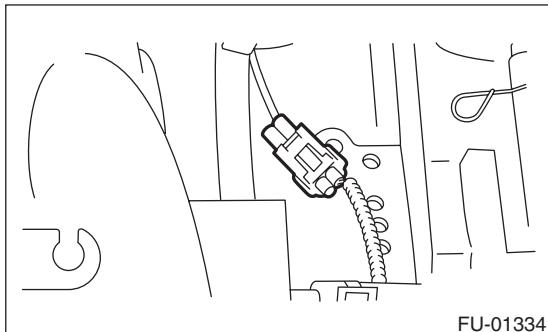
6) Connect the connector to oil pressure switch (B).



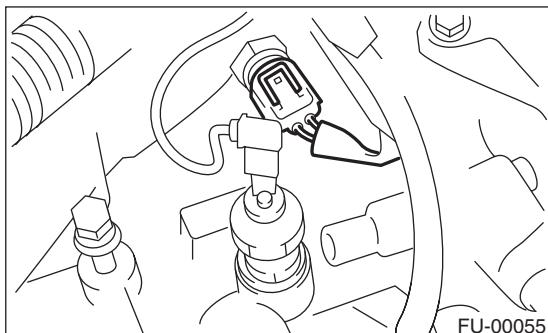
7) Connect the connector to crankshaft position sensor.



8) Connect the knock sensor connector.



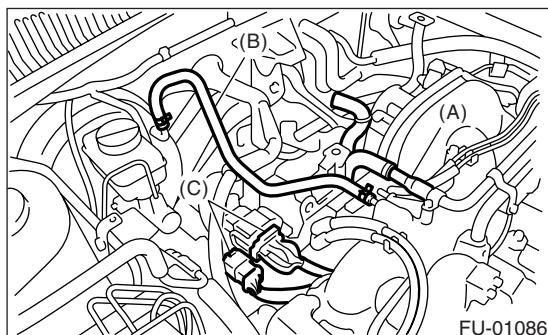
9) Connect the connectors to engine coolant temperature sensor.



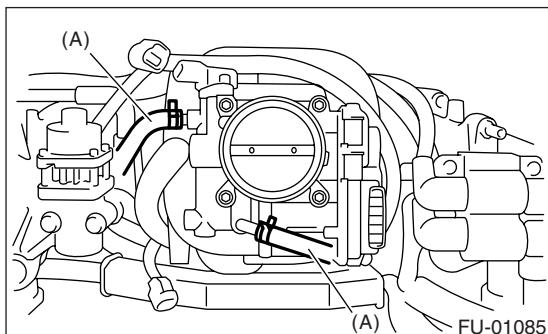
10) Connect the PCV hose (A) to intake manifold.

11) Connect the brake booster hose (B).

12) Connect the engine harness connectors (C) to bulkhead harness connectors.

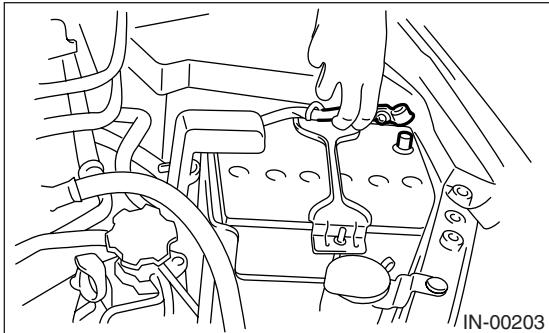


13) Connect the engine coolant hoses (A) to throttle body.



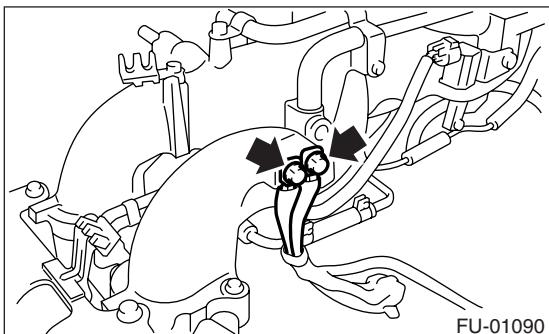
14) Connect the spark plug cords to spark plugs.

- 15) Install the air cleaner case and air intake chamber. <Ref. to IN(H4SO 2.0)-7, INSTALLATION, Air Cleaner Case.> <Ref. to IN(H4SO 2.0)-8, INSTALLATION, Air Intake Chamber.>
 16) Install the fuse of fuel pump to main fuse box.
 17) Connect the battery ground cable to battery.

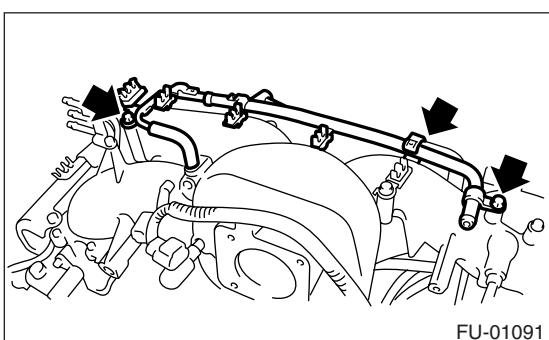


C: DISASSEMBLY

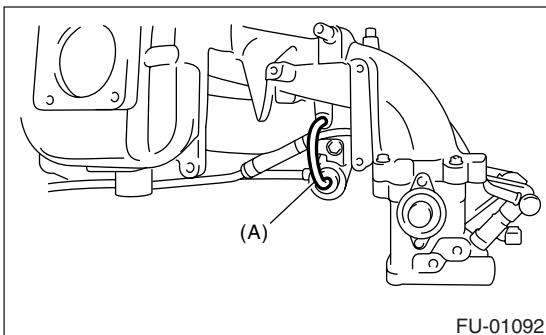
- 1) Disconnect the engine ground terminal from intake manifold.



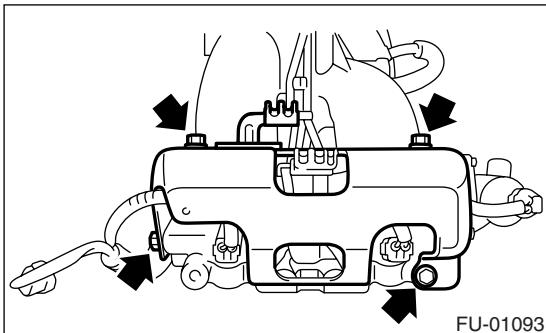
- 2) Remove the ignition coil & ignitor ASSY. <Ref. to IG(H4SO 2.0)-8, REMOVAL, Ignition Coil & Ignitor ASSY.>
 3) Remove the throttle body. <Ref. to FU(H4SO 2.5)-11, REMOVAL, Throttle Body.>
 4) Remove the EGR valve. (EC, EK and K4 model)
 <Ref. to FU(H4SO 2.5)-30, REMOVAL, EGR Valve.>
 5) Remove the PCV pipe. (EC, EK and K4 model)



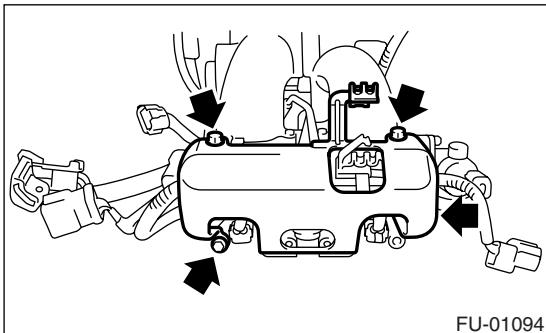
- 6) Disconnect the pressure regulator vacuum hose (A) from intake manifold.



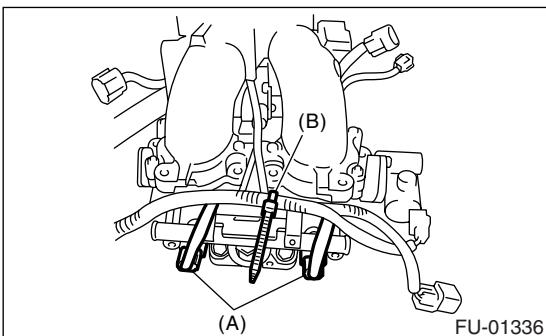
- 7) Remove the fuel pipe protector LH.



- 8) Remove the fuel pipe protector RH.



- 9) Disconnect the connectors (A) from fuel injector.
 10) Remove the harness band (B) which holds engine harness to injector pipe.

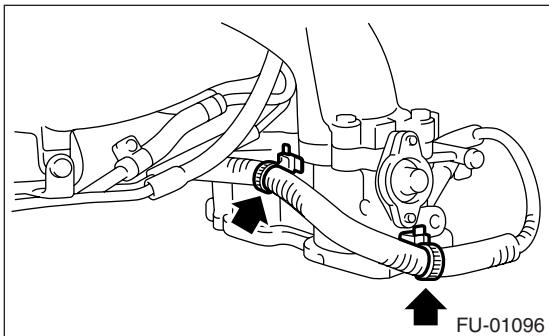


- 11) Remove the tumble generator valve actuator. (EC, EK and K4 model) <Ref. to FU(H4SO 2.5)-29, REMOVAL, Tumble Generator Valve Actuator.>

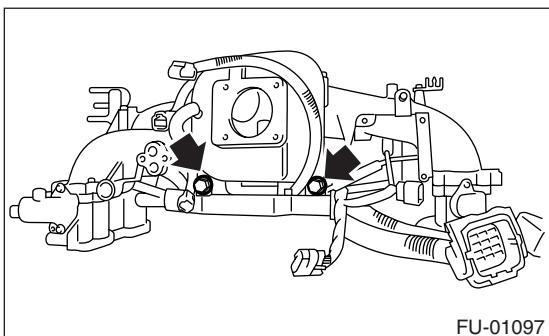
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

- 12) Remove the purge control solenoid valve.
<Ref. to EC(H4SO 2.0)-7, REMOVAL, Purge Control Solenoid Valve.>
- 13) Remove the harness band clips which install the engine harness.



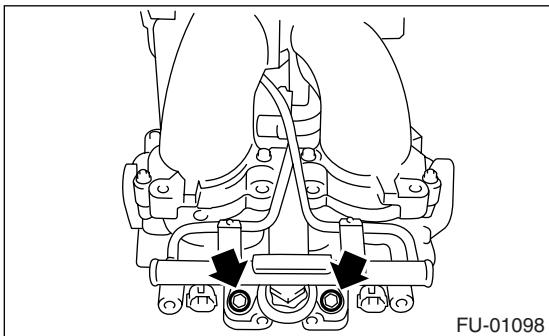
- 14) Remove the bolts which hold the engine harness to intake manifold.



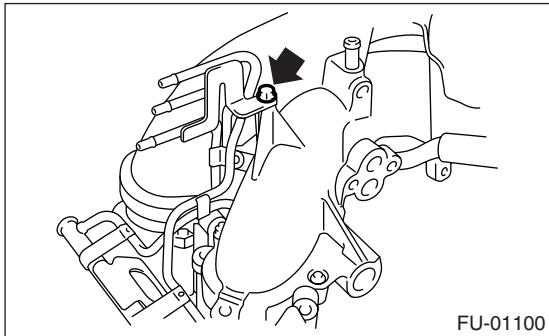
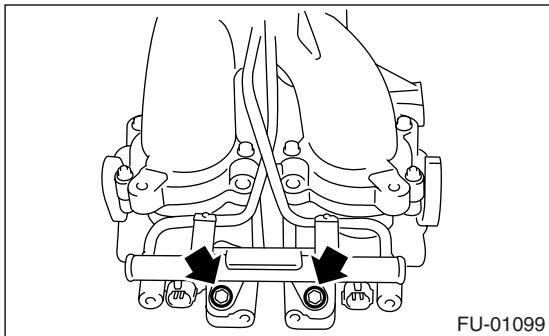
- 15) Remove the engine harness from intake manifold.

- 16) Remove the bolts which install injector pipe on the intake manifold as shown in the figure.

- RH side

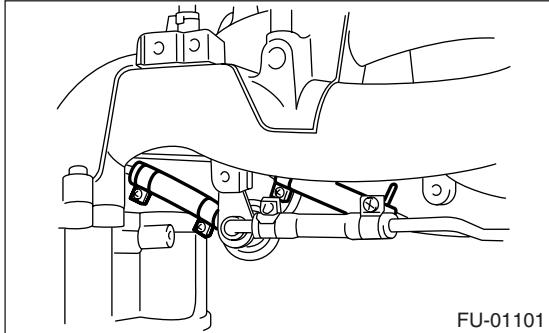


- LH side

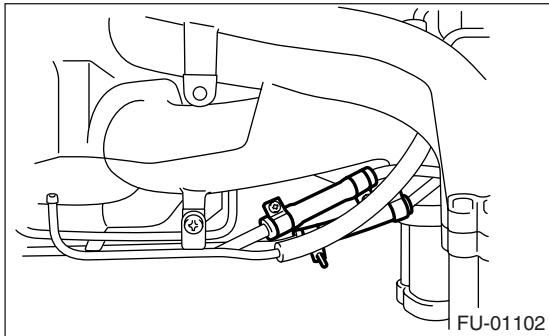


- 17) Remove the fuel injectors from injector pipe.

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



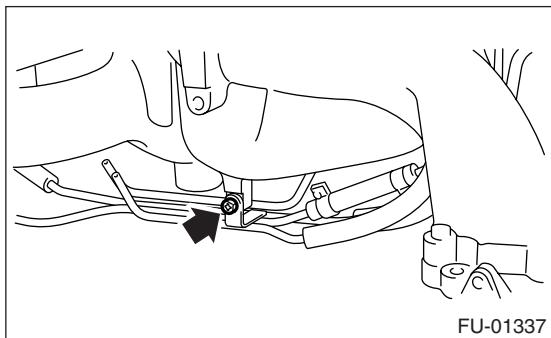
- 19) Loosen the clamp which holds fuel injector pipe LH to fuel hose, and then disconnect the pipe from fuel hose.



- 20) Remove the fuel injector pipe.

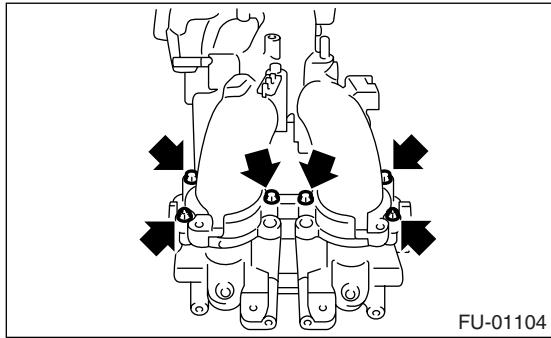
- 21) Remove the bolt which installs pressure regulator on intake manifold.

- 22) Remove the bolt which installs the fuel pipes on intake manifold.



FU-01337

- 23) Remove the fuel pipe assembly and pressure regulator, from intake manifold.
 24) Remove the intake manifold. (EC, EK and K4 model)



FU-01104

D: ASSEMBLY

- 1) Install the intake manifold. (EC, EK and K4 model)

NOTE:

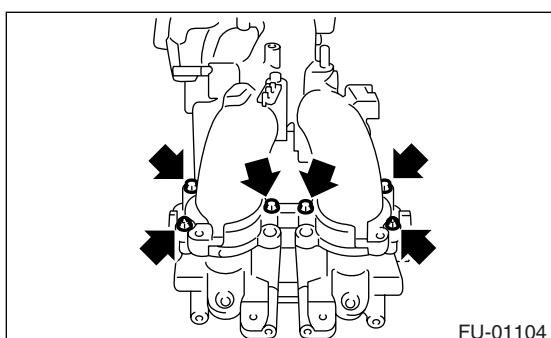
- Use a new gasket.
- When assembling the nipple, apply liquid gasket.

Liquid gasket:

THREE BOND 1105 (Part No. 004403010)

Tightening torque:

8.75 N·m (0.89 kgf-m, 6.5 ft-lb)

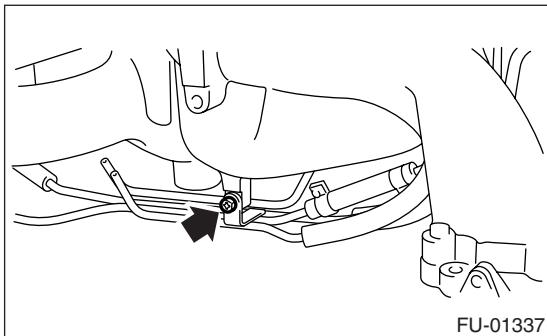


FU-01104

- 2) Tighten the bolt which installs the fuel pipes on intake manifold.

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



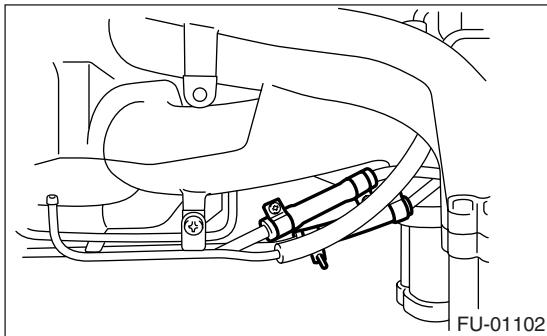
FU-01337

- 3) Tighten the bolt which installs pressure regulator on intake manifold.

Tightening torque:

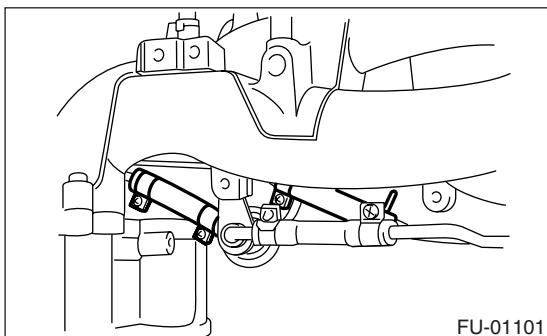
19 N·m (1.9 kgf-m, 13.7 ft-lb)

- 4) Connect the fuel injector pipe.
 5) Connect the fuel injector pipe LH to fuel hose, and tighten the clamp screw.



FU-01102

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



FU-01101

- 7) Install the fuel injectors.

Intake Manifold

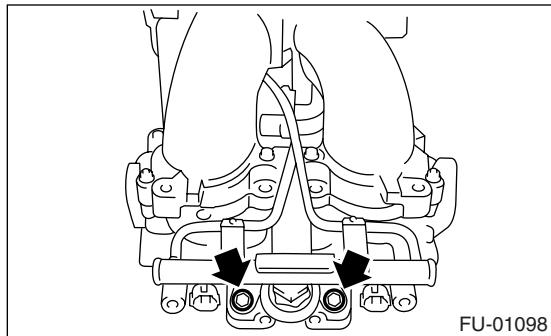
FUEL INJECTION (FUEL SYSTEMS)

8) Tighten the bolts which install injector pipe on intake manifold.

- RH side

Tightening torque:

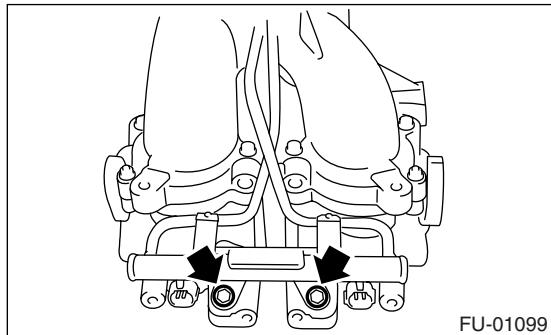
19 N·m (1.9 kgf-m, 13.7 ft-lb)



- LH side

Tightening torque:

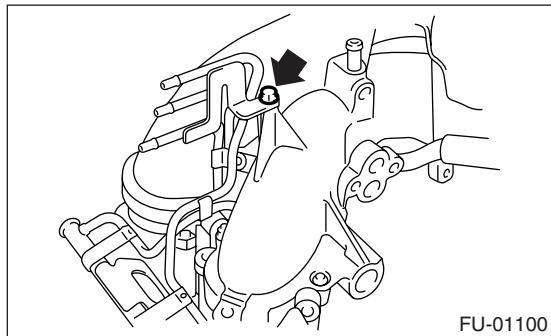
19 N·m (1.9 kgf-m, 13.7 ft-lb)



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

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)

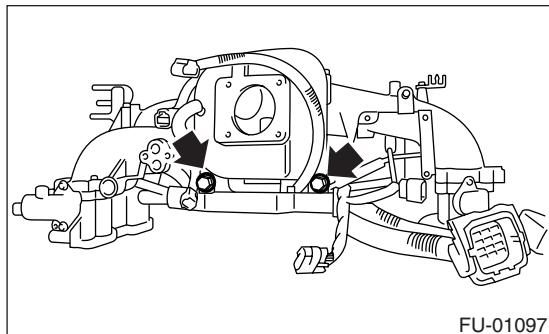


10) Install the engine harness onto intake manifold.

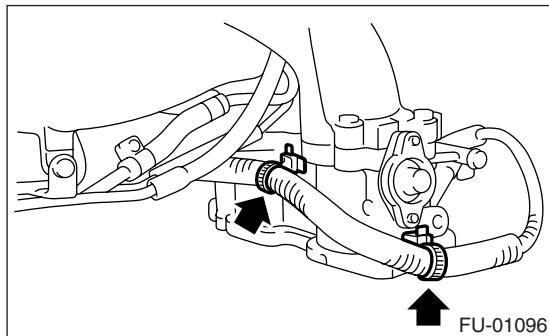
11) Tighten the bolts which install engine harness on intake manifold.

Tightening torque:

16 N·m (1.6 kgf-m, 11.8 ft-lb)



12) Hold the engine harness by harness band clips.

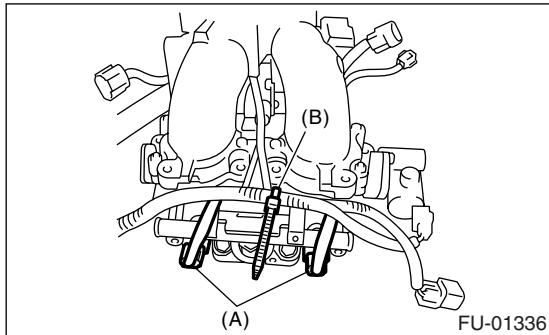


13) Install the purge control solenoid valve. <Ref. to EC(H4SO 2.0)-7, INSTALLATION, Purge Control Solenoid Valve.>

14) Install the tumble generator valve actuator. (EC, EK and K4 model) <Ref. to FU(H4SO 2.5)-29, INSTALLATION, Tumble Generator Valve Actuator.>

15) Connect the connectors (A) to fuel injector.

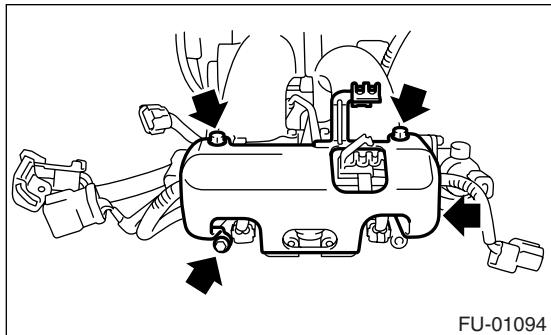
16) Hold the engine harness to injector pipe by harness band (B).



17) Install the fuel pipe protector RH.

Tightening torque:

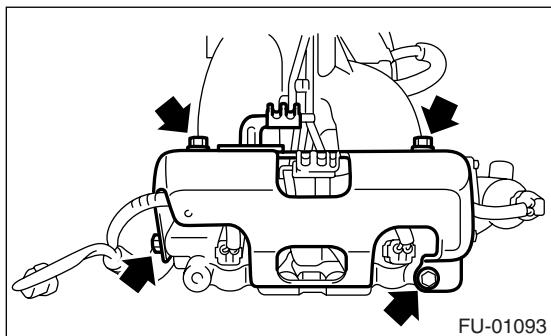
19 N·m (1.9 kgf-m, 13.7 ft-lb)



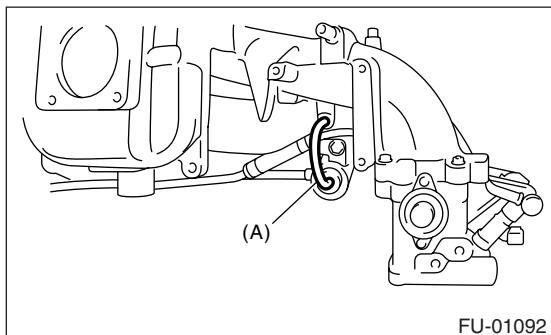
18) Install the fuel pipe protector LH.

Tightening torque:

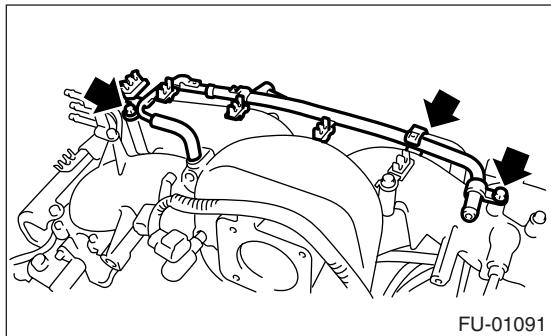
19 N·m (1.9 kgf-m, 13.7 ft-lb)



19) Connect the pressure regulator vacuum hose (A) to intake manifold.



20) Install the PCV pipe. (EC, EK and K4 model)



21) Install the EGR valve. (EC, EK and K4 model)
<Ref. to FU(H4SO 2.5)-30, INSTALLATION, EGR Valve.>

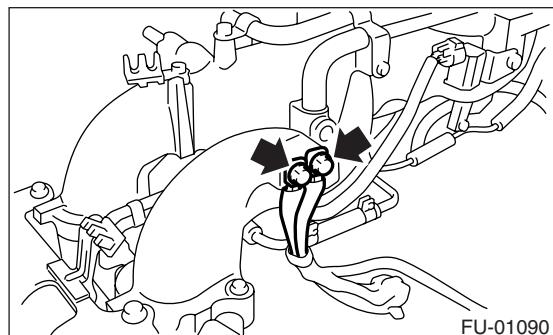
22) Install the throttle body to intake manifold.
<Ref. to FU(H4SO 2.5)-11, INSTALLATION, Throttle Body.>

23) Install the ignition coil & ignitor ASSY. **<Ref. to IG(H4SO 2.0)-8, INSTALLATION, Ignition Coil & Ignitor ASSY.>**

24) Install the engine ground terminal to intake manifold.

Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



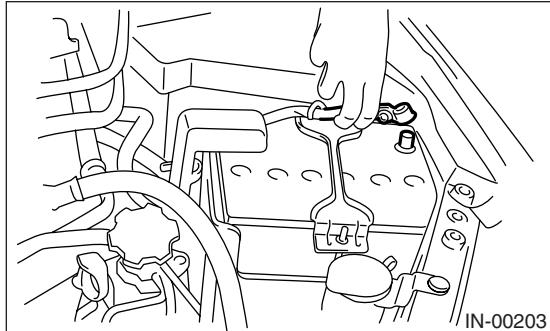
E: INSPECTION

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

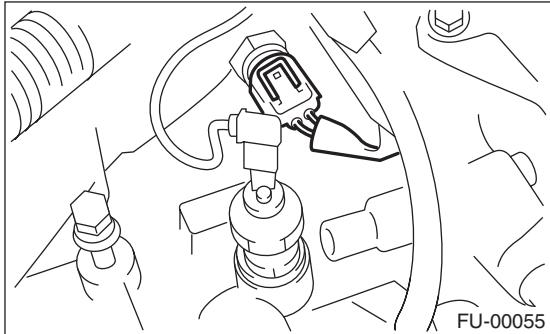
4. Engine Coolant Temperature Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



- 2) Remove the generator. <Ref. to SC(H4SO 2.0)-14, REMOVAL, Generator.>
- 3) Disconnect the connectors from engine coolant temperature sensor.



- 4) Remove the engine coolant temperature sensor.

B: INSTALLATION

Install in the reverse order of removal.

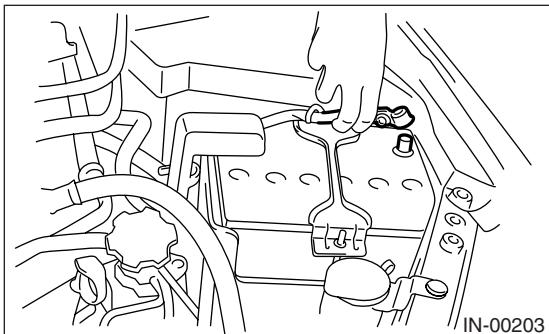
Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

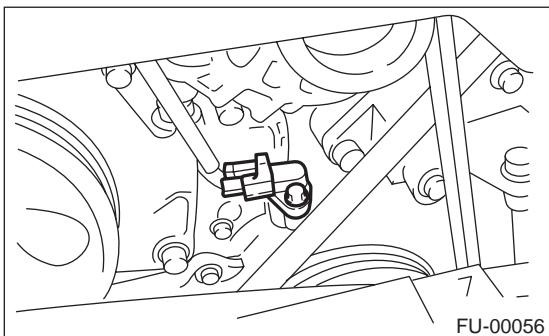
5. Crankshaft Position Sensor

A: REMOVAL

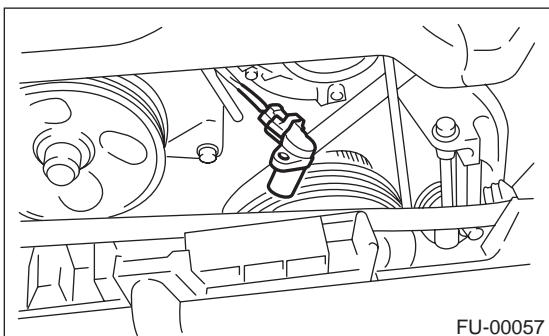
- 1) Disconnect the ground cable from battery.



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



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

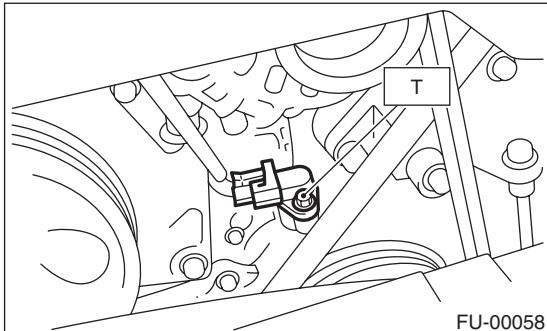


B: INSTALLATION

Install in the reverse order of removal.

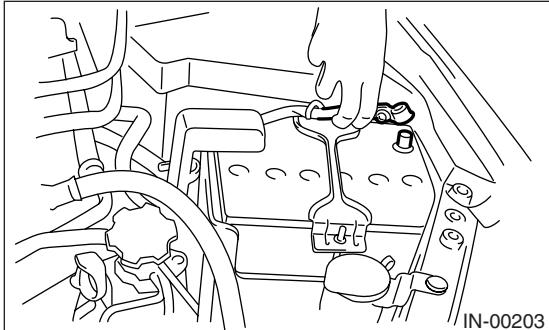
Tightening torque:

T: 6.4 N·m (0.65 kgf·m, 4.7 ft-lb)

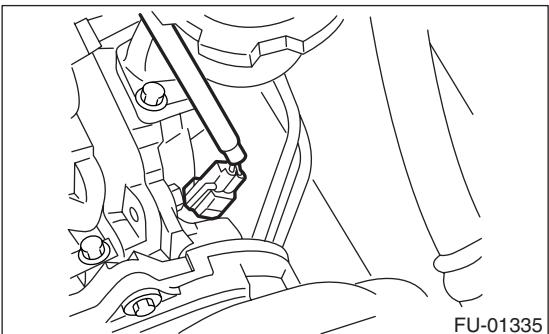


6. Camshaft Position Sensor**A: REMOVAL**

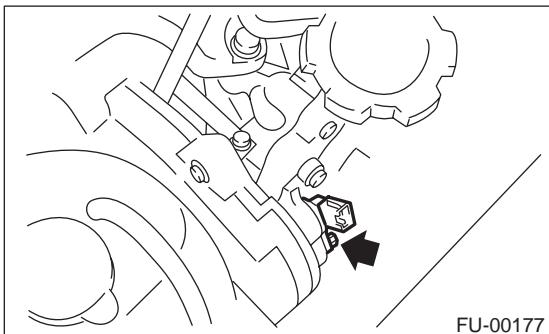
- 1) Disconnect the ground cable from battery.



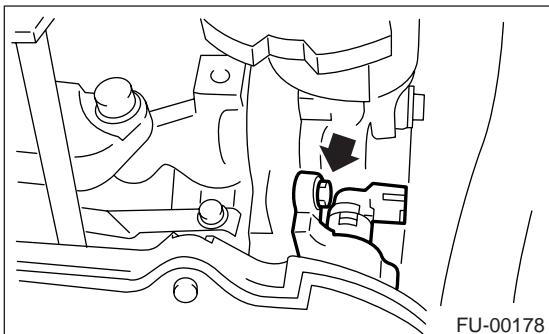
- 2) Disconnect the connector from camshaft position sensor.



- 3) Remove the bolt which installs camshaft position sensor to the support.

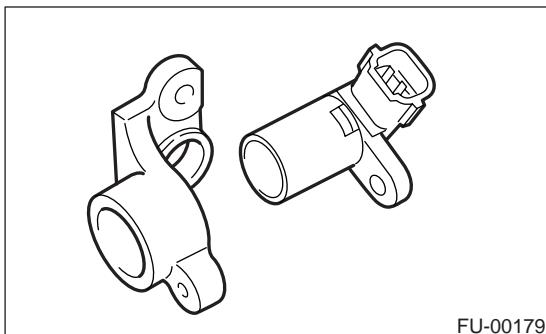


- 4) Remove the bolt which installs the camshaft position sensor support to camshaft cap LH.



- 5) Remove the camshaft position sensor and the support as a unit.

- 6) Remove the camshaft position sensor itself.

**B: INSTALLATION**

Install in the reverse order of removal.

Tightening torque:

Camshaft position sensor support

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)

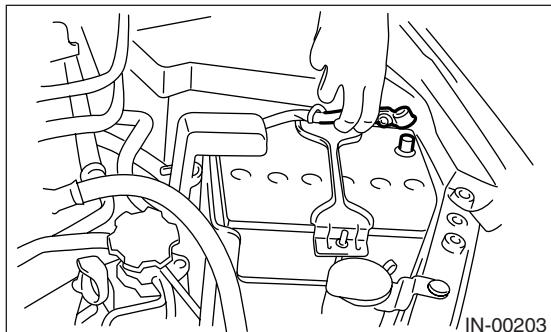
Camshaft position sensor

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)

7. Knock Sensor

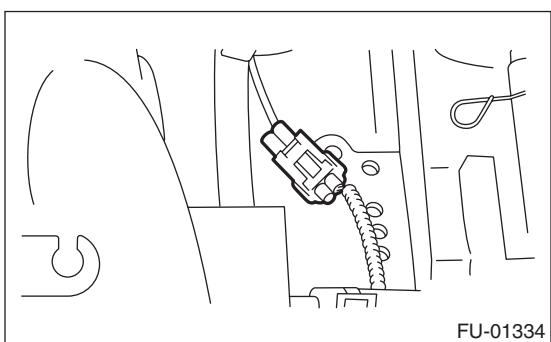
A: REMOVAL

1) Disconnect the ground cable from battery.

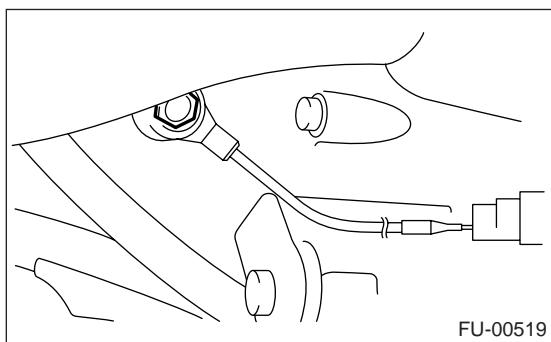


2) Remove the air cleaner case. <Ref. to IN(H4SO 2.0)-6, REMOVAL, Air Cleaner Case.>

3) Disconnect the knock sensor connector.



4) Remove the knock sensor from cylinder block.



B: INSTALLATION

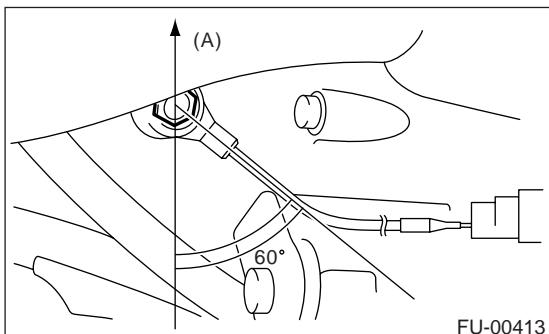
1) Install the knock sensor to cylinder block.

NOTE:

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

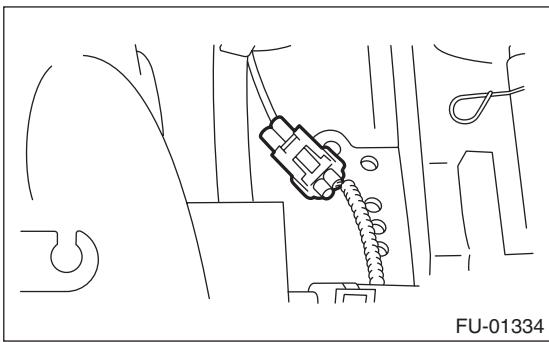
Tightening torque:

24 N·m (2.4 kgf-m, 17.4 ft-lb)



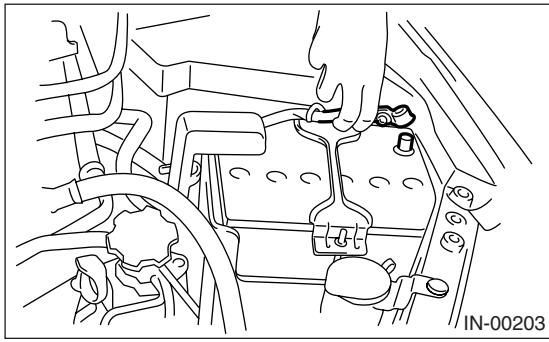
(A) Front side

2) Connect the knock sensor connector.



3) Install the air cleaner case. <Ref. to IN(H4SO 2.0)-7, INSTALLATION, Air Cleaner Case.>

4) Connect the battery ground cable to battery.



8. Throttle Position Sensor

A: SPECIFICATION

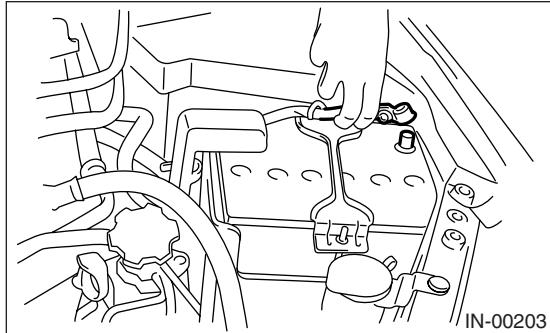
Throttle body is a non-disassembled part, so do not remove the throttle position sensor from throttle body.

Refer to "Throttle Body" for removal and installation procedure. <Ref. to FU(H4SO 2.5)-11, REMOVAL, Throttle Body.> <Ref. to FU(H4SO 2.5)-11, INSTALLATION, Throttle Body.>

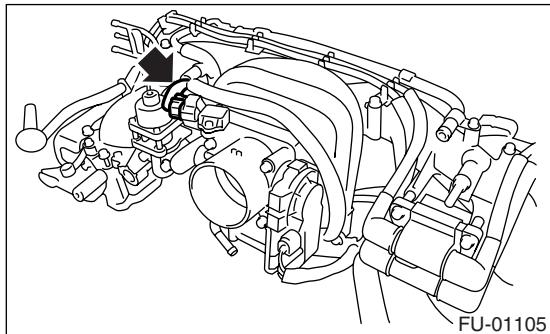
9. Manifold Absolute Pressure Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



- 2) Disconnect the connector from manifold absolute pressure sensor.



- 3) Remove the manifold absolute pressure sensor from throttle body.

B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use new O-rings.

Tightening torque:

2.0 N·m (0.2 kgf·m, 1.5 ft-lb)

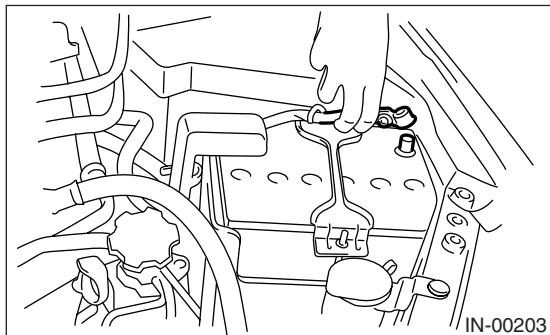
10. Mass Air Flow and Intake Air Temperature Sensor

A: REMOVAL

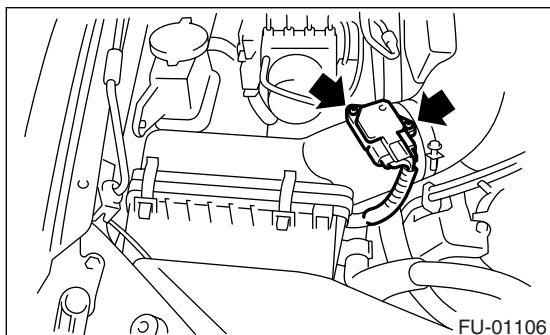
NOTE:

Mass air flow and intake air temperature sensor is installed to EC, EK and K4 model.

- 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)

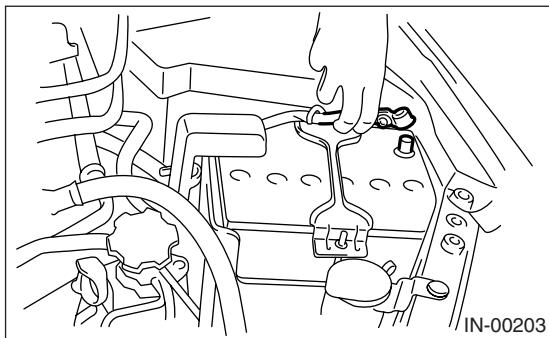
11. Intake Air Temperature Sensor

A: REMOVAL

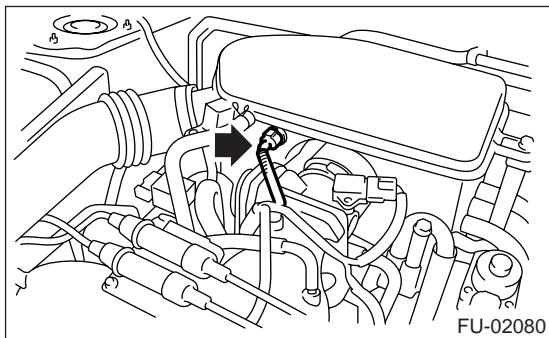
NOTE:

Intake air temperature sensor is installed to models except for EC, EK and K4.

- 1) Disconnect the ground cable from battery.



- 2) Disconnect the connector from intake air temperature sensor.
- 3) Remove the intake air temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

12.Tumble Generator Valve Assembly

A: REMOVAL

NOTE:

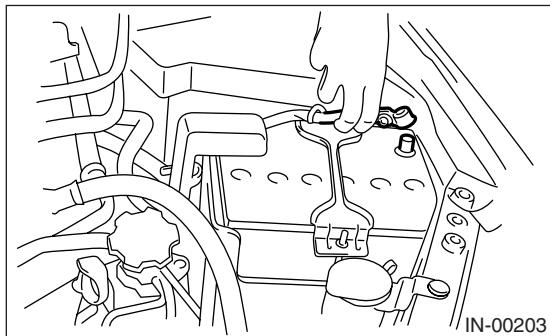
This component is installed to EC, EK and K4 model.

1) Release the fuel pressure.

<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

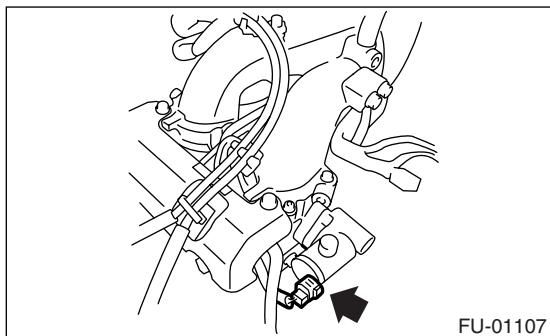
3) Disconnect the ground cable from battery.



4) Remove the intake manifold.

<Ref. to FU(H4SO 2.5)-12, REMOVAL, Intake Manifold.>

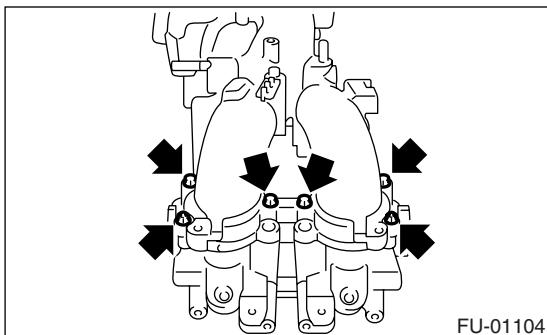
5) Disconnect the connector from tumble generator valve actuator.



6) Remove the fuel injectors.

<Ref. to FU(H4SO 2.5)-31, REMOVAL, Fuel Injector.>

7) Remove the tumble generator valve body from intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

8.75 N·m (0.89 kgf-m, 6.5 ft-lb)

13.Tumble Generator Valve Actuator

A: REMOVAL

1. RH SIDE

NOTE:

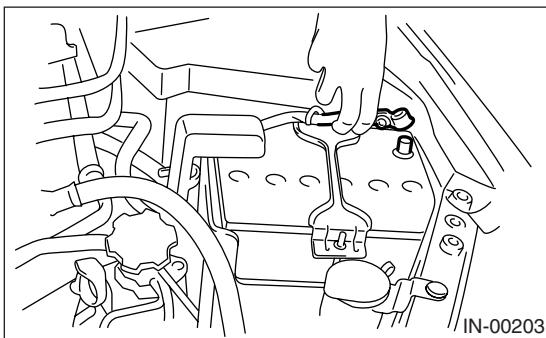
This component is installed to EC, EK and K4 model.

- 1) Release the fuel pressure.

<Ref. to FU(H4SO 2.5)-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.



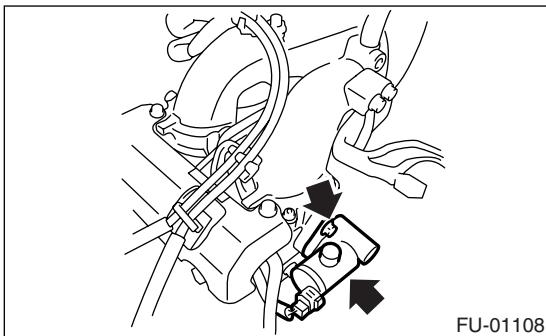
IN-00203

- 4) Remove the intake manifold.

<Ref. to FU(H4SO 2.5)-12, REMOVAL, Intake Manifold.>

- 5) Disconnect the connector from tumble generator valve RH.

- 6) Remove the tumble generator valve RH.



FU-01108

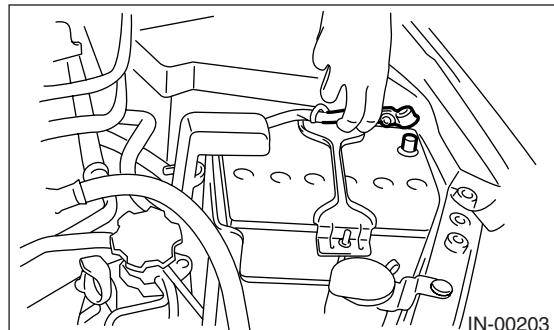
2. LH SIDE

- 1) Release the fuel pressure.

<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

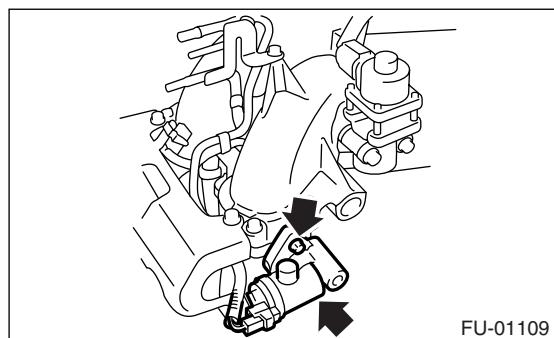
- 3) Disconnect the ground cable from battery.



IN-00203

- 4) Disconnect the connector from tumble generator valve LH.

- 5) Remove the tumble generator valve LH.



FU-01109

B: INSTALLATION

1. RH SIDE

Install in the reverse order of removal.

Tightening torque:

6 N·m (0.61 kgf-m, 4.4 ft-lb)

2. LH SIDE

Install in the reverse order of removal.

Tightening torque:

6 N·m (0.61 kgf-m, 4.4 ft-lb)

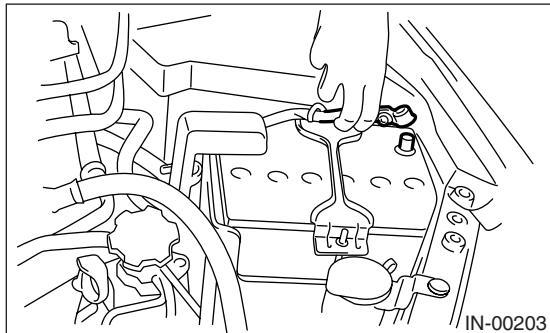
14. EGR Valve

A: REMOVAL

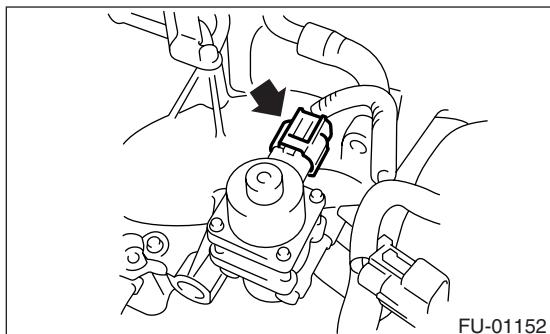
NOTE:

EGR valve is installed to EC, EK and K4 model.

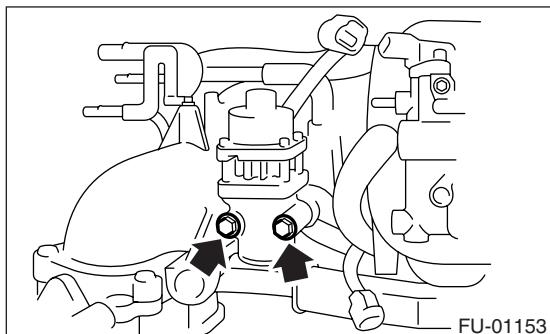
- 1) Disconnect the ground cable from battery.



- 2) Disconnect the connector from EGR valve.



- 3) Remove the EGR valve from intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

19 N·m (1.9 kgf·m, 13.7 ft-lb)

15. Fuel Injector

A: REMOVAL

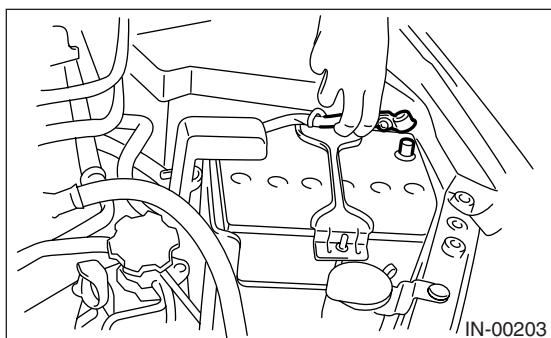
1. RH SIDE

1) Release the fuel pressure.

<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

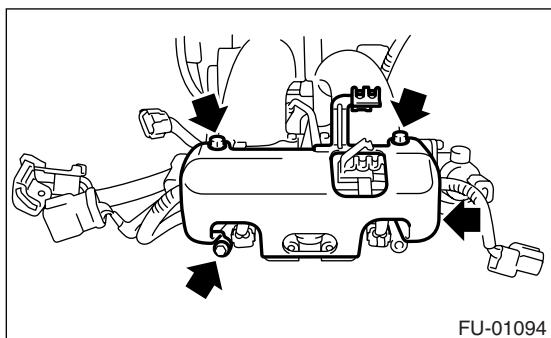
3) Disconnect the ground cable from battery.



4) Remove the air cleaner case. <Ref. to IN(H4SO 2.0)-6, REMOVAL, Air Cleaner Case.>

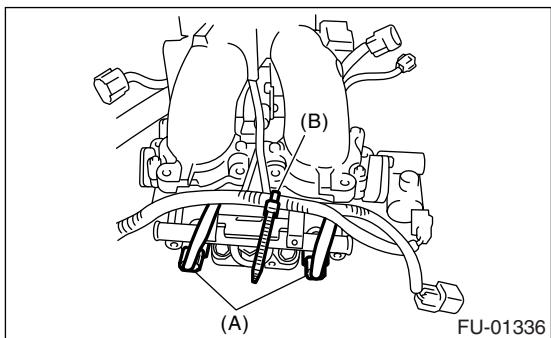
5) Remove the spark plug cords from spark plugs (#1 and #3 cylinders).

6) Remove the fuel pipe protector RH.

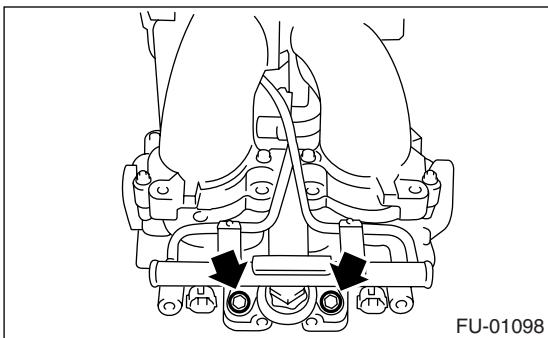


7) Disconnect the connector (A) from fuel injector.

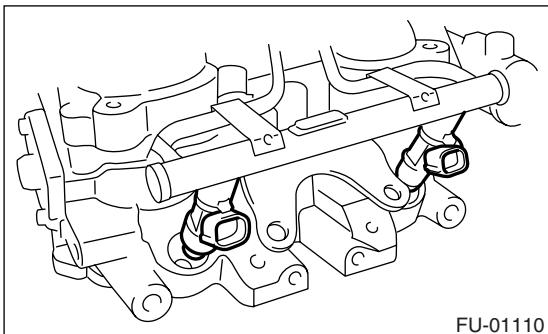
8) Remove the harness band (B) which holds engine harness to injector pipe.



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) Release the fuel pressure.

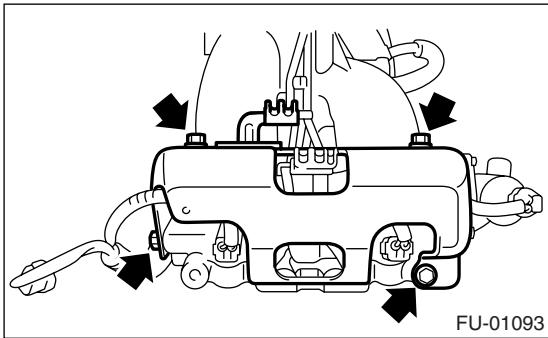
<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

3) Remove the battery.

4) Remove the spark plug cords from spark plugs (#2 and #4 cylinders).

5) Remove the fuel pipe protector LH.

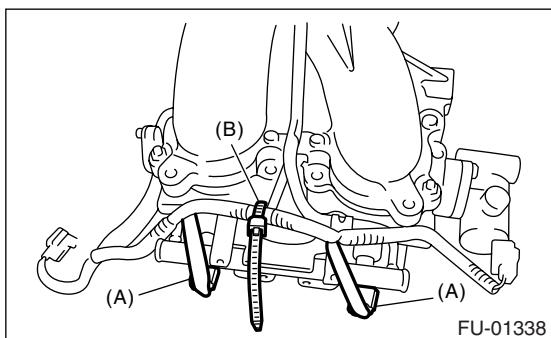


6) Disconnect the connector (A) from fuel injector.

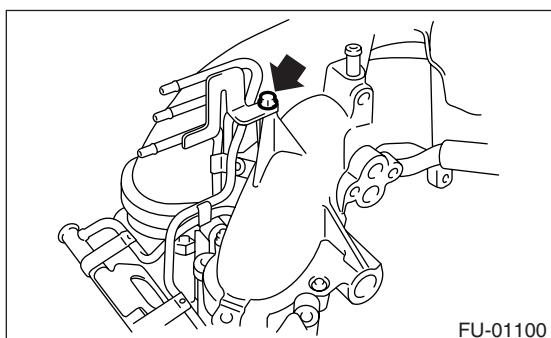
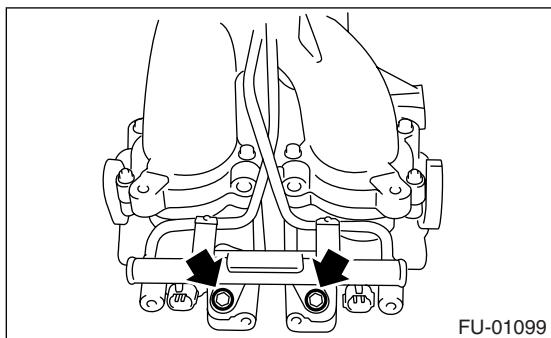
Fuel Injector

FUEL INJECTION (FUEL SYSTEMS)

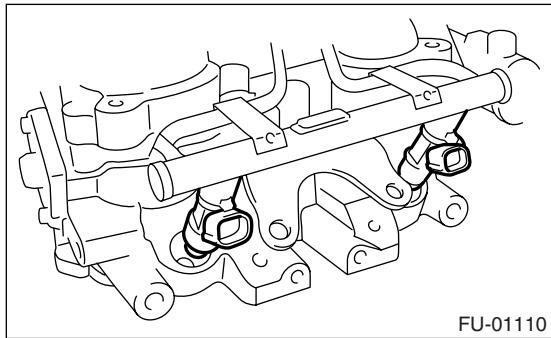
- 7) Remove the harness band (B) which holds engine harness to injector pipe.



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



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



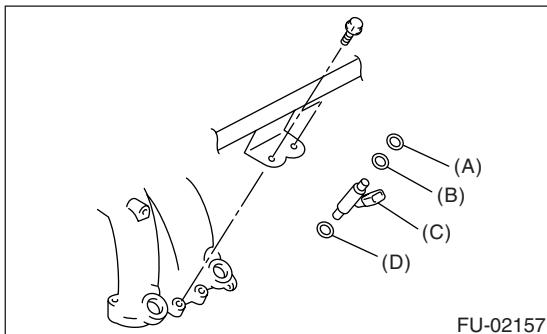
B: INSTALLATION

1. RH SIDE

Install in the reverse order of removal.

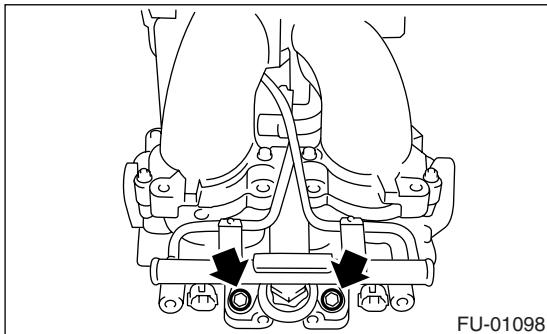
NOTE:

- Use new O-rings.
- O-ring (B) is used for EC, EK and K4 model.

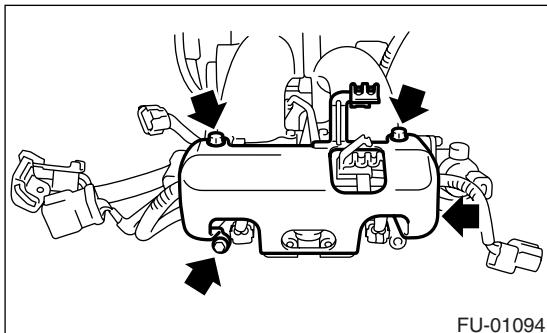


- (A) O-ring
- (B) O-ring
- (C) Fuel injector
- (D) O-ring

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)

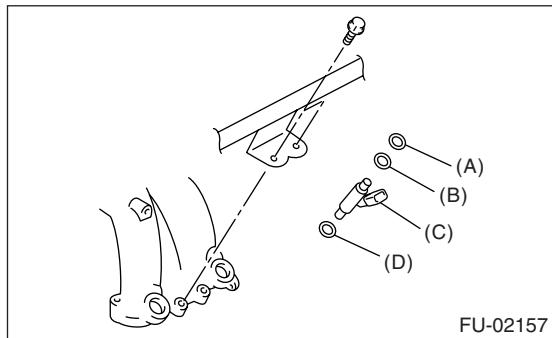


2. LH SIDE

Install in the reverse order of removal.

NOTE:

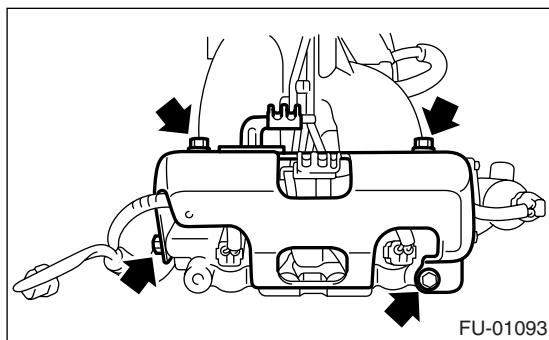
- Use new O-rings.
- O-ring (B) is used for EC, EK and K4 model.



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

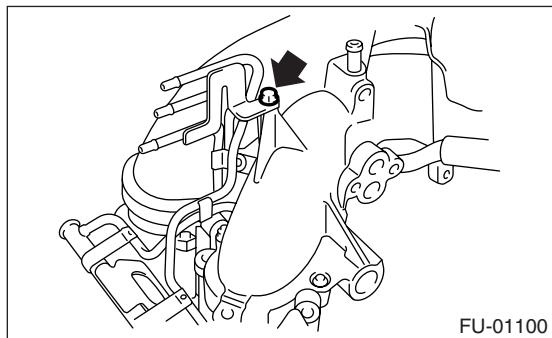
Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)



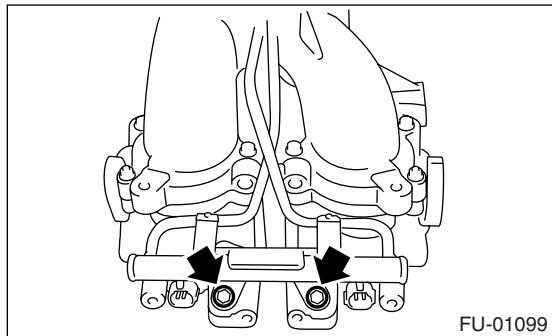
Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



Tightening torque:

19 N·m (1.9 kgf-m, 13.7 ft-lb)

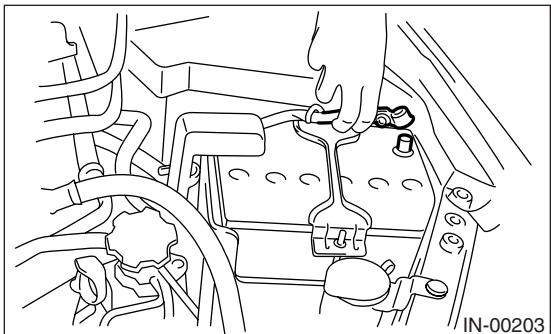


Front Oxygen (A/F) Sensor

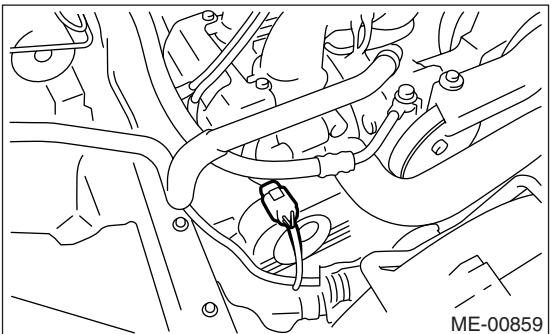
16. Front Oxygen (A/F) Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.



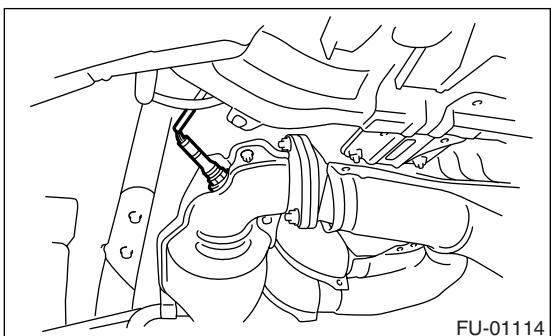
- 2) Remove the air intake duct. <Ref. to IN(H4SO 2.0)-9, REMOVAL, Air Intake Duct.>
- 3) Remove the connector of front oxygen (A/F) sensor.



- 4) Remove the clip holding harness.
- 5) Lift-up the vehicle.
- 6) Remove the under cover.
- 7) Apply spray-type lubricant to the threaded portion of front oxygen (A/F) sensor, and leave it for one minute or more.
- 8) 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.



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.

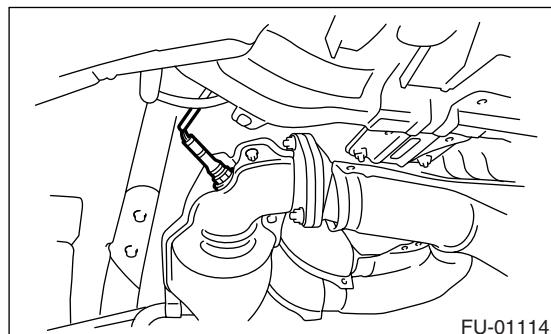
**Anti-seize compound:
SS-30 JET LUBE**

CAUTION:

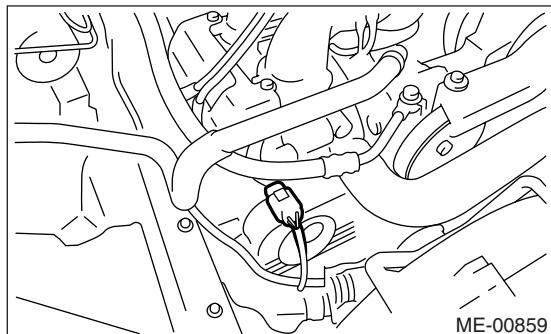
Never apply anti-seize compound to the protector of front oxygen (A/F) sensor.

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

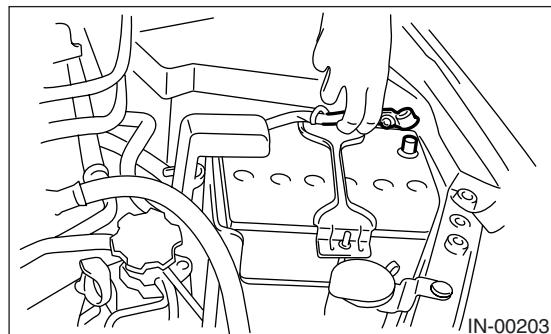
**Tightening torque:
21 N·m (2.1 kgf-m, 15.2 ft-lb)**



- 3) Install the under cover.
- 4) Lower the vehicle.
- 5) Hold the harness with clip.
- 6) Connect the connector of front oxygen (A/F) sensor.



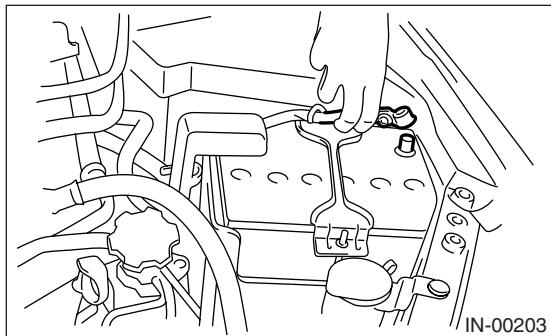
- 7) Install the air intake duct. <Ref. to IN(H4SO 2.0)-9, INSTALLATION, Air Intake Duct.>
- 8) Connect the battery ground cable to battery.



17. Rear Oxygen Sensor

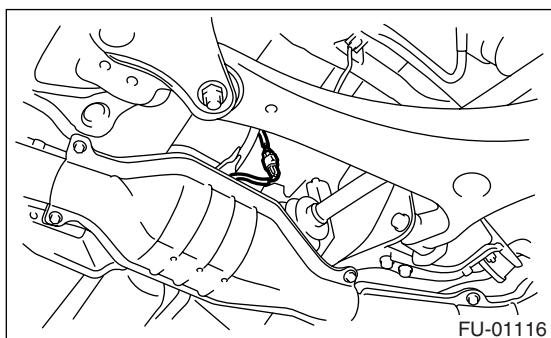
A: REMOVAL

1) Disconnect the ground cable from battery.



2) Lift-up the vehicle.

3) Disconnect the connector from rear oxygen sensor.



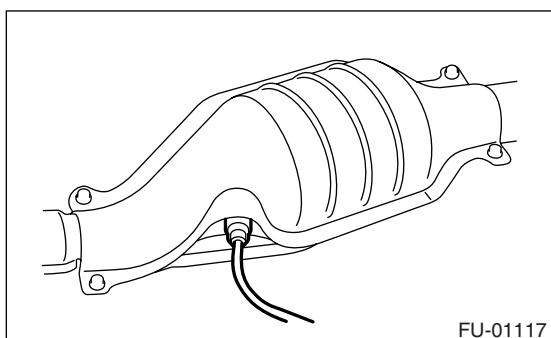
4) Remove the clip holding harness.

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

6) Remove the rear oxygen sensor.

CAUTION:

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



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.

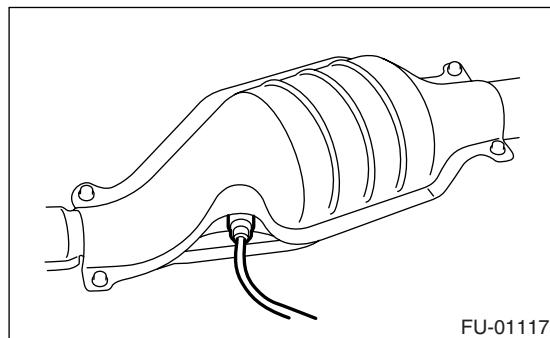
**Anti-seize compound:
SS-30 JET LUBE**

CAUTION:

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

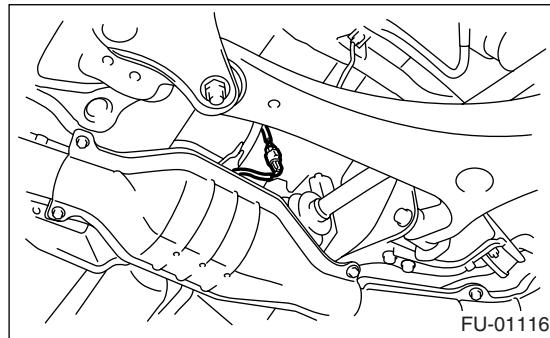
2) Install the rear oxygen sensor.

**Tightening torque:
21 N·m (2.1 kgf-m, 15.2 ft-lb)**



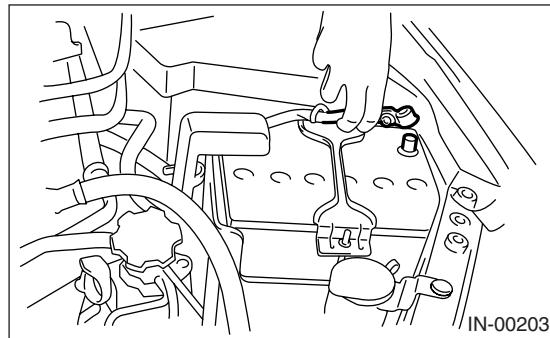
3) Hold the harness with clip.

4) Connect the connector to rear oxygen sensor.



5) Lower the vehicle.

6) Connect the battery ground cable to battery.



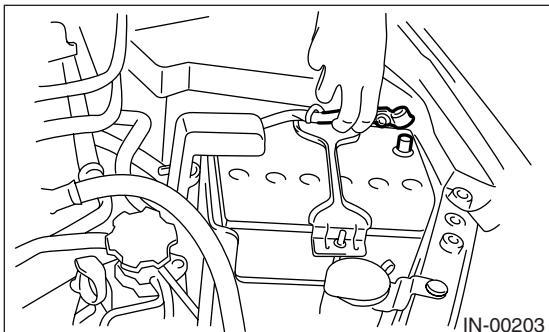
Engine Control Module (ECM)

FUEL INJECTION (FUEL SYSTEMS)

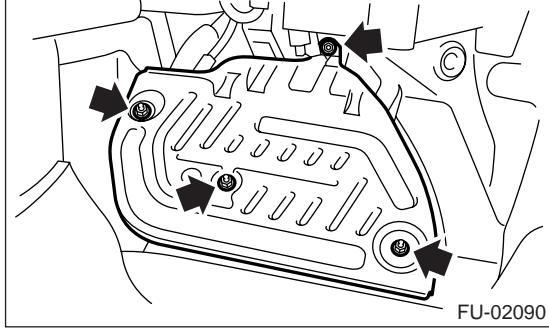
18.Engine Control Module (ECM)

A: REMOVAL

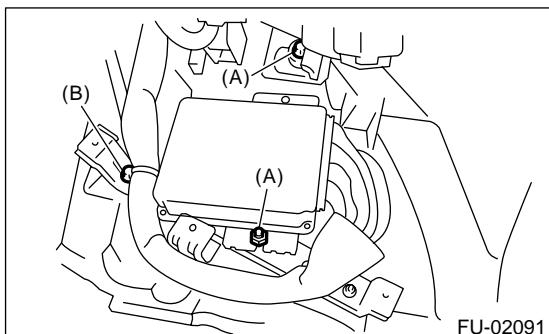
- 1) Disconnect the ground cable from battery.



- 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 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 fuel injection system.
- When replacing the ECM, be careful not to damage the harnesses and connectors.

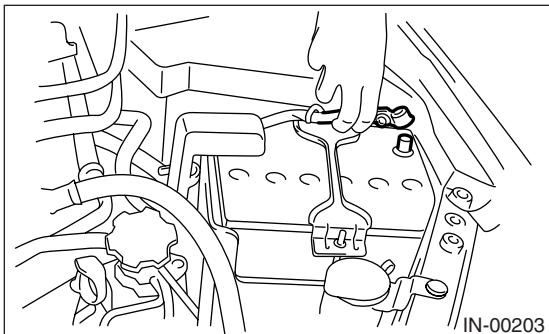
Tightening torque:

5 N·m (0.5 kgf-m, 3.6 ft-lb)

19. Main Relay

A: REMOVAL

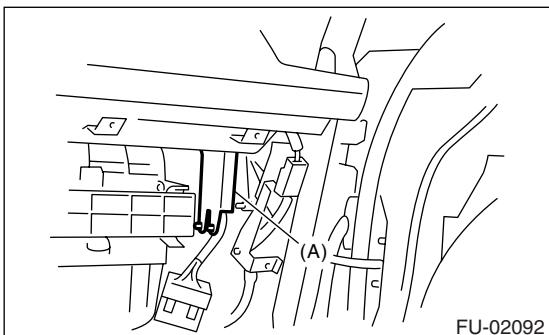
- 1) Disconnect the ground cable from battery.



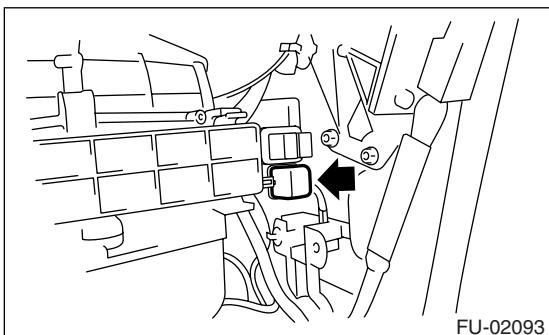
- 2) Remove the glove box. <Ref. to EI-51, REMOV-

AL, Glove Box.>

- 3) Remove the harness cover (A).



- 4) Disconnect the connector from main relay.



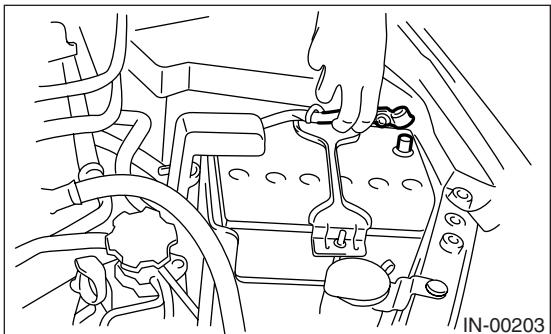
B: INSTALLATION

Install in the reverse order of removal.

20. Fuel Pump Relay

A: REMOVAL

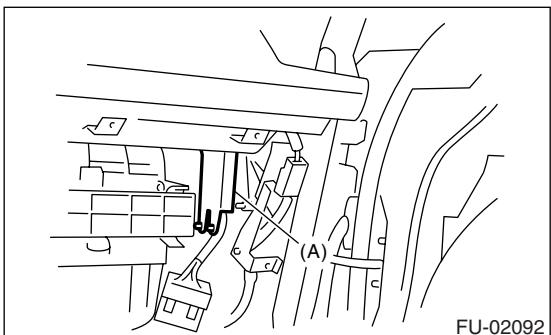
- 1) Disconnect the ground cable from battery.



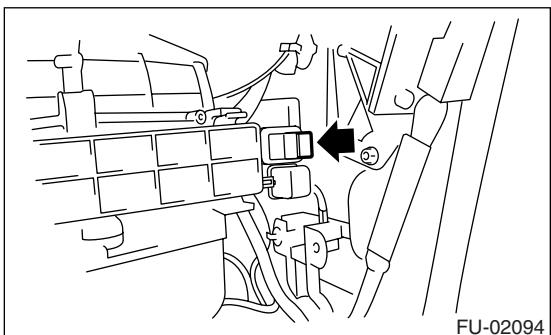
- 2) Remove the glove box. <Ref. to EI-51, REMOV-

AL, Glove Box.>

- 3) Remove the harness cover (A).



- 4) Disconnect the connector from fuel pump relay.



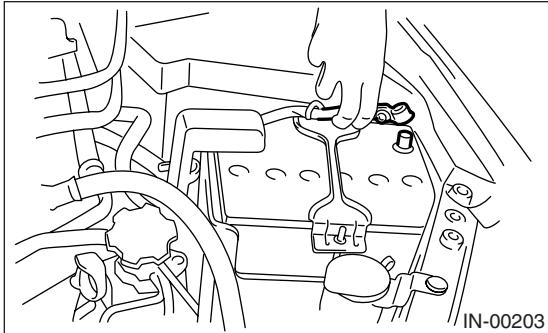
B: INSTALLATION

Install in the reverse order of removal.

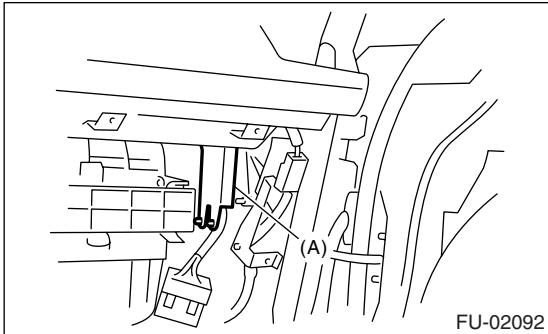
21. Electronic Throttle Control Relay

A: REMOVAL

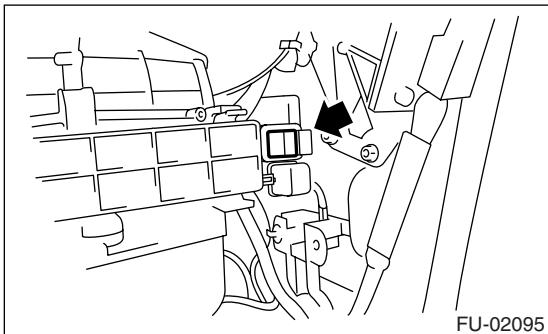
- 1) Disconnect the ground cable from battery.



- 2) Remove the glove box. <Ref. to EI-51, REMOV-
AL, Glove Box.>
- 3) Remove the harness cover (A).



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



B: INSTALLATION

Install in the reverse order of removal.

22. Fuel

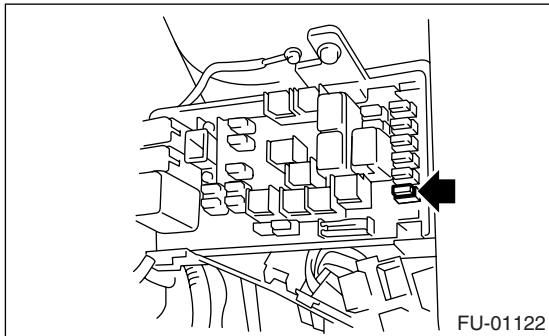
A: PROCEDURE

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.



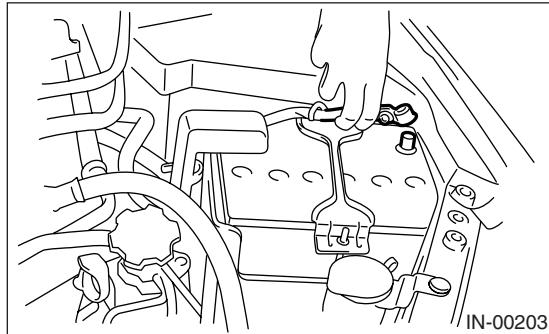
- 2) Start the engine and run it until it stalls.
- 3) After the engine stalls, crank it for five more seconds.
- 4) Turn the ignition switch to OFF.

2. DRAINING FUEL

WARNING:

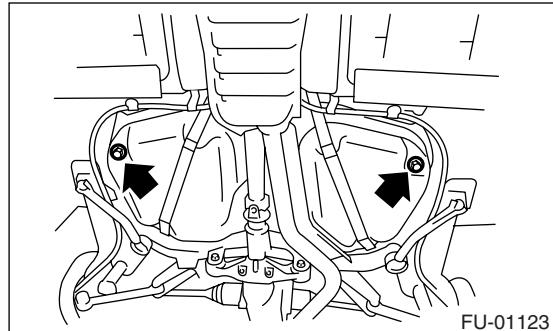
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel on the floor.

- 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 the drain plug from fuel tank to drain 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)

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(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

3) Drain fuel from the fuel tank.

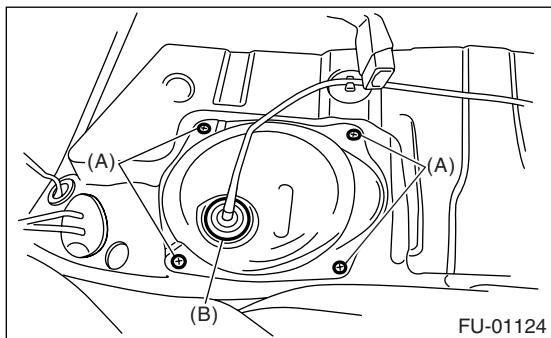
<Ref. to FU(H4SO 2.5)-40, DRAINING FUEL, PROCEDURE, Fuel.>

4) Remove the rear seat.

5) Remove the service hole cover from fuel pump.

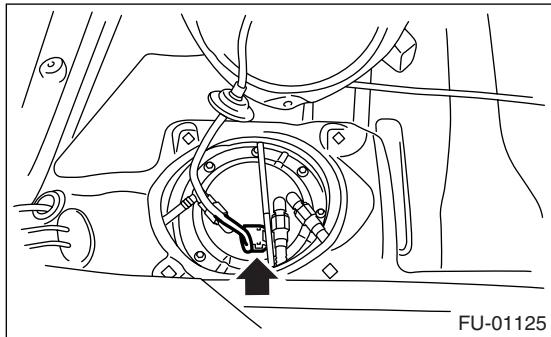
(1) Remove the bolts (A).

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



FU-01124

6) Disconnect the connector from fuel pump.

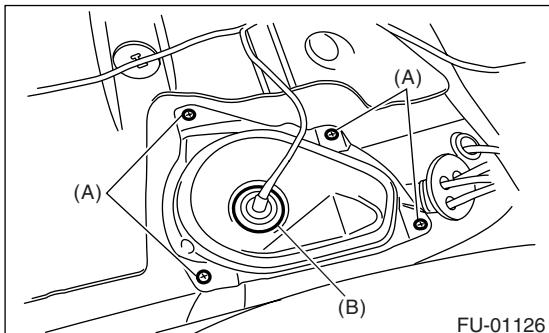


FU-01125

7) Remove the service hole cover from fuel sub level sensor.

(1) Remove the bolts (A).

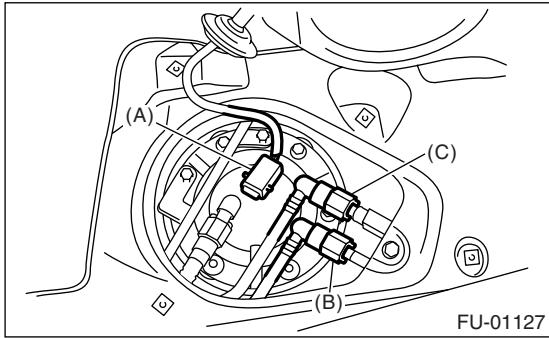
- (2) Push the grommet (B) down under the body and remove service hole cover.



FU-01126

8) Disconnect the connector (A) from fuel sub level sensor.

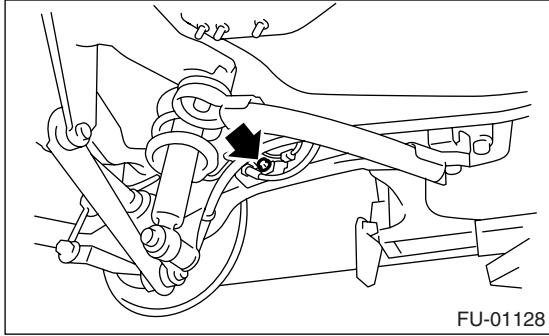
9) Disconnect the quick connector from the fuel delivery (B) and return hose (C). <Ref. to FU(H4SO 2.5)-55, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>



FU-01127

10) Remove the rear wheels.

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

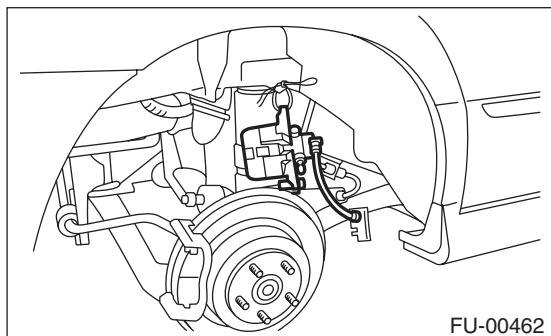


FU-01128

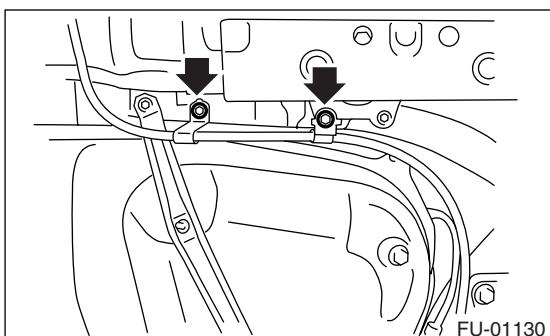
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

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



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



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.

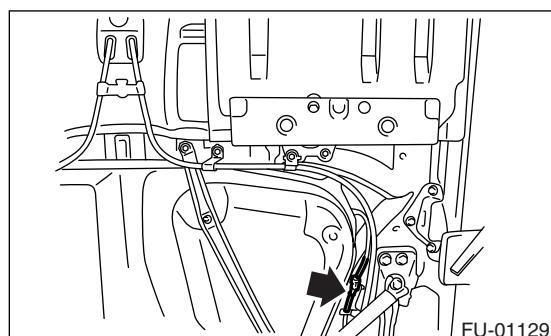
15) Remove the rear exhaust pipe.

<Ref. to EX(H4SO 2.0)-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.



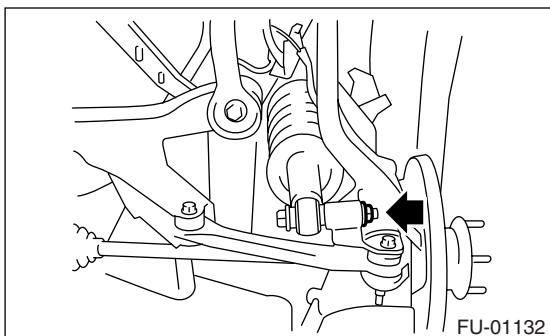
20) Remove the rear suspension assembly.

CAUTION:

A helper is required to perform this work.

(1) Support the rear differential with transmission jack.

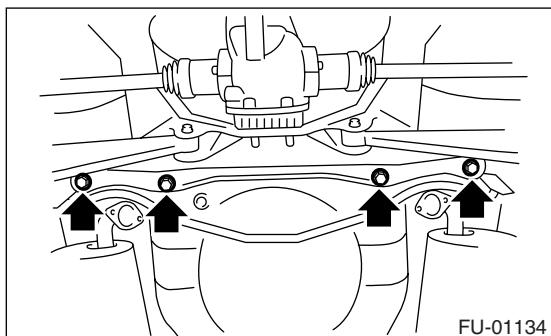
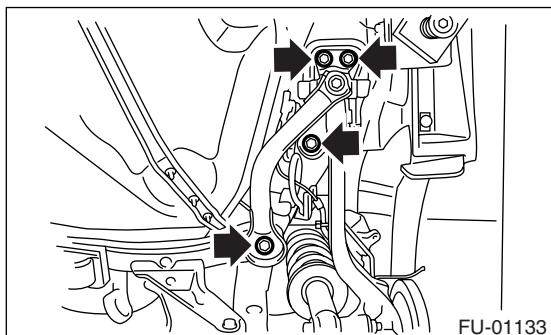
(2) Remove the bolt which installs the rear shock absorber to rear suspension arm.



Fuel Tank

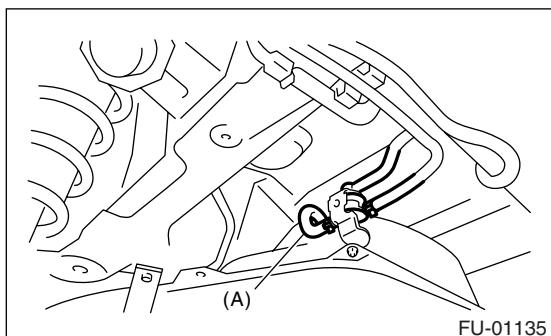
FUEL INJECTION (FUEL SYSTEMS)

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

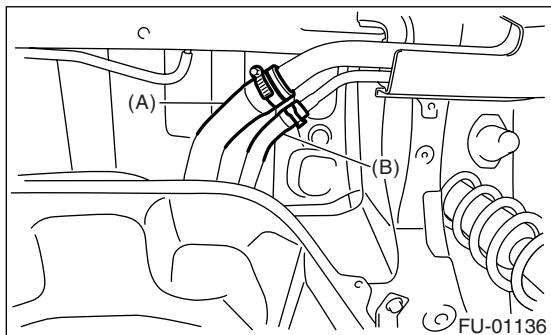


(4) Remove the rear suspension assembly.

21) Disconnect the two-way valve hose (A) from two-way valve, and then remove the two-way valve from bracket.

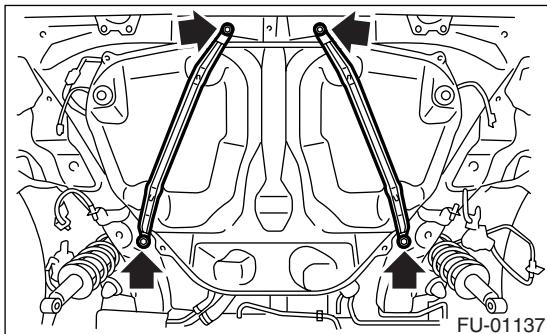


22) Loosen the clamp and disconnect the fuel filler hose (A) and vent hose (B) from fuel filler pipe.



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

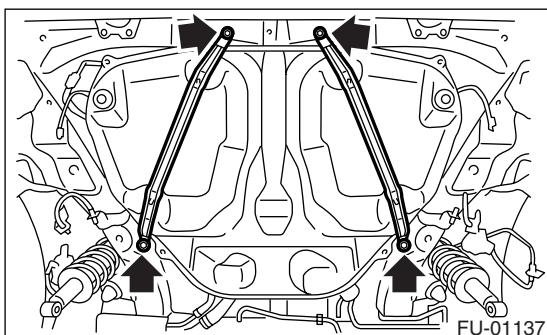
WARNING:
A helper is required to perform this work.



B: INSTALLATION

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

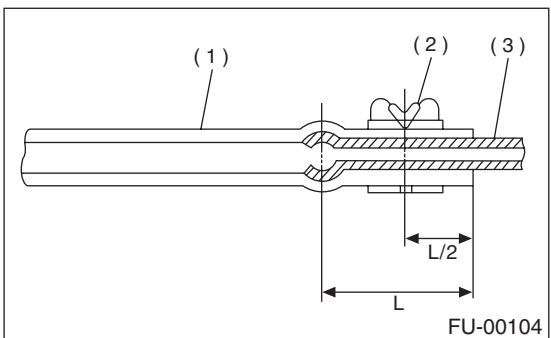
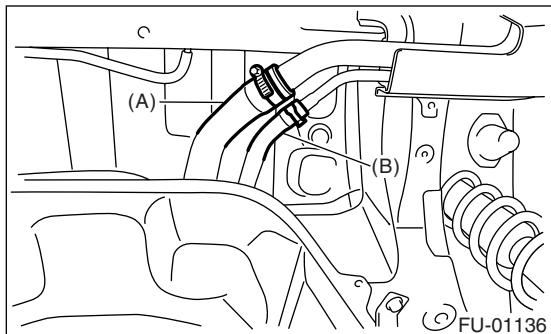
WARNING:
A helper is required to perform this work.



Fuel Tank

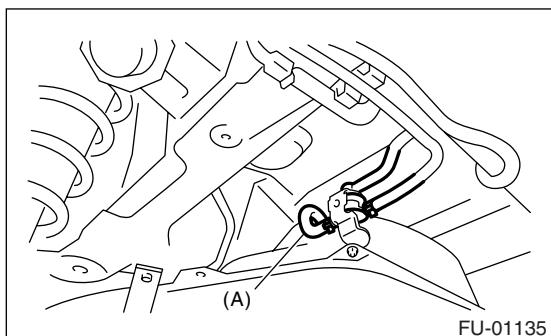
FUEL INJECTION (FUEL SYSTEMS)

- 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) 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.

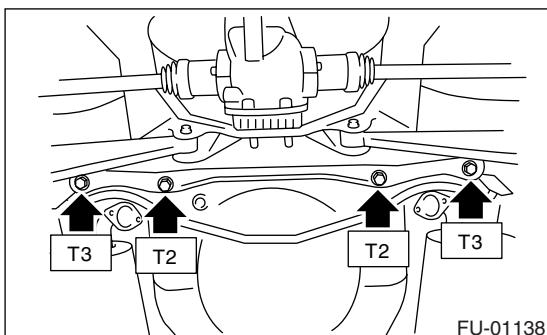
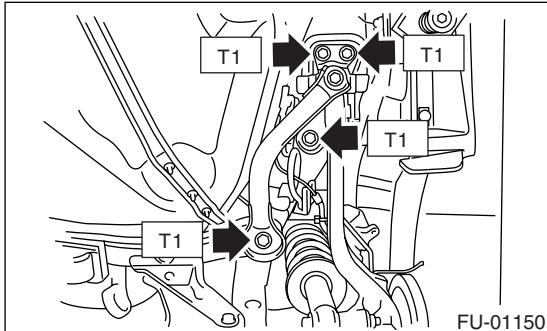
(2) Support the rear suspension assembly, and then tighten the bolts which secure the rear suspension assembly to body.

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)

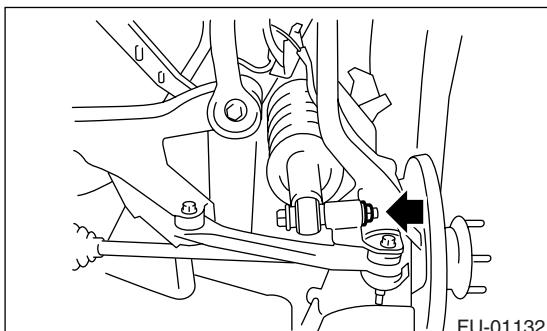
T3: 175 N·m (17.8 kgf-m, 129 ft-lb)



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

Tightening torque:

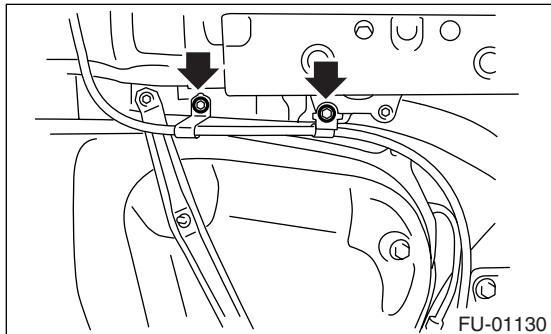
62 N·m (6.3 kgf-m, 46 ft-lb)



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

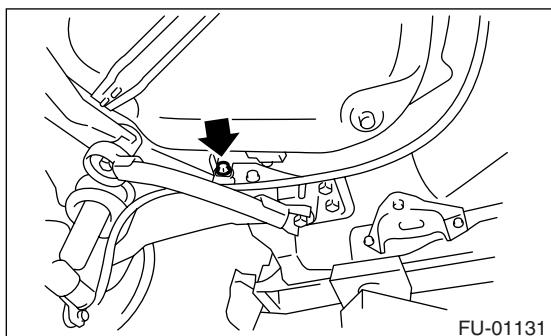
Tightening torque:

18 N·m (1.8 kgf-m, 13.0 ft-lb)

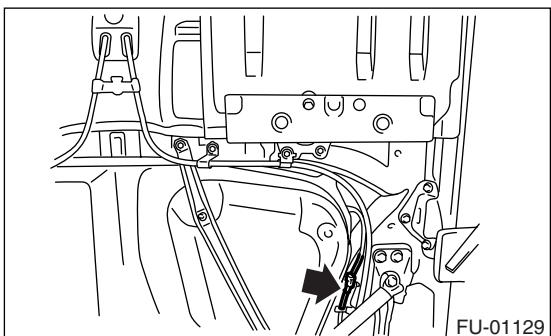


Tightening torque:

32 N·m (3.3 kgf-m, 23.9 ft-lb)



7) Connect the connector to rear 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(H4SO 2.0)-11, INSTALLATION, Rear Exhaust Pipe.>

11) Lower the vehicle.

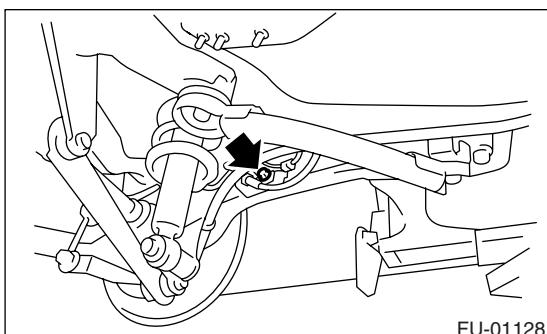
12) Connect the parking brake cable to parking brake assembly. <Ref. to PB-8, INSTALLATION, Parking Brake Assembly (Rear Disc Brake).>

13) Install the rear brake caliper.

14) Tighten the 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.

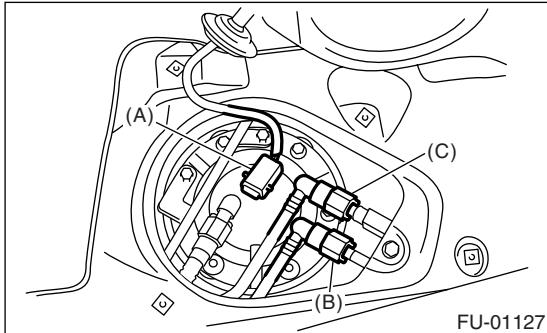
16) Lower the vehicle.

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

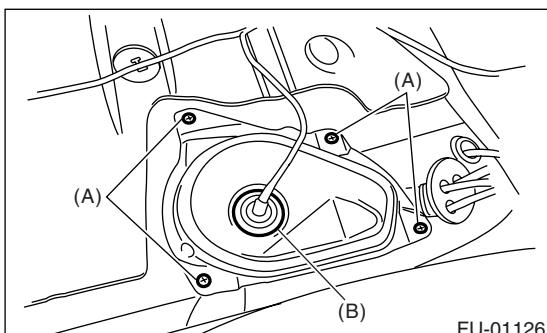
18) Connect the quick connector to the fuel delivery (B) and return hose (C). <Ref. to FU(H4SO 2.5)-56, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

NOTE:

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



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



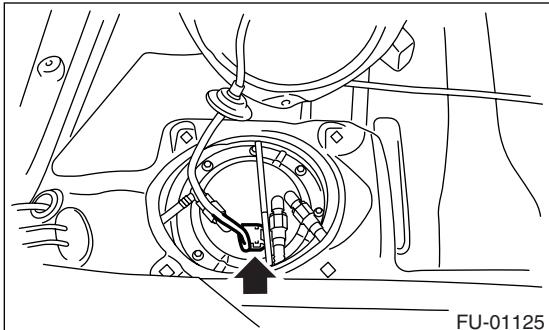
(A) Bolt

(B) Grommet

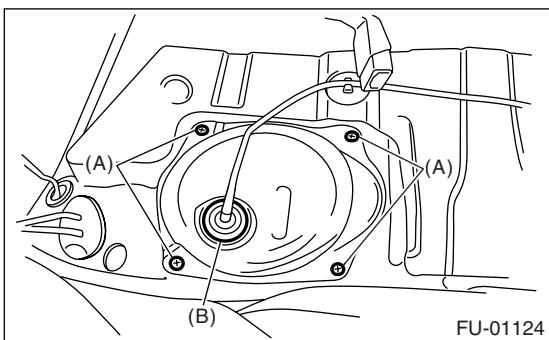
Fuel Tank

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 those connections are tight.

24. Fuel Filler Pipe

A: REMOVAL

WARNING:

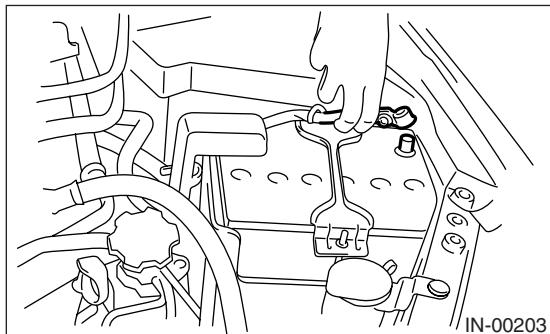
- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel on the floor.

1) Release the fuel pressure.

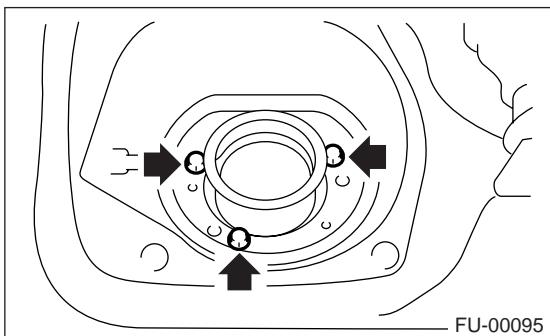
<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

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

3) Disconnect the ground cable from battery.

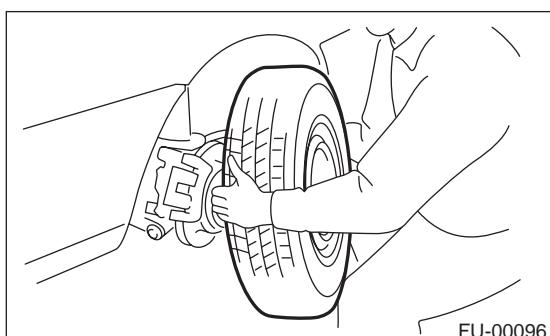


4) Remove the screws which secure the packing.

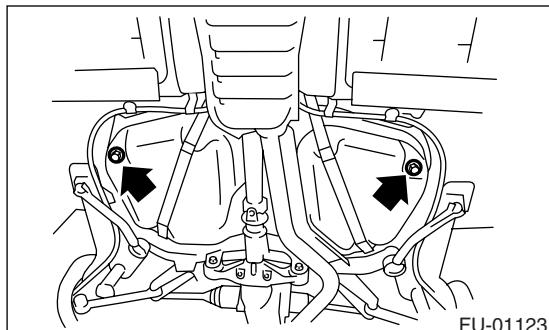


5) Lift-up the vehicle.

6) Remove the rear wheel RH.



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



8) Tighten the fuel drain plug.

NOTE:

Use a new gasket.

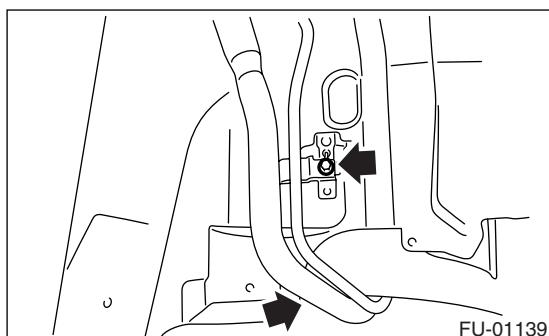
Tightening torque:

26 N·m (2.65 kgf·m, 19.2 ft·lb)

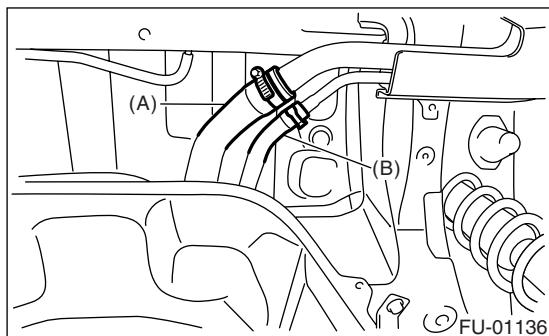
9) Remove the mud guard. <Ref. to EI-29, REMOVAL, Mud Guard.>

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

11) Remove the bolts which hold 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

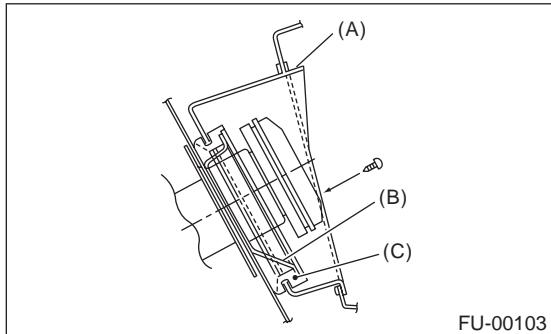
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

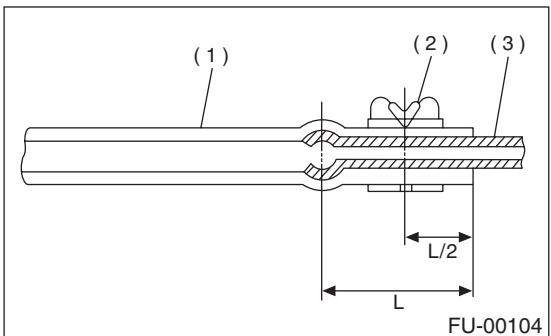
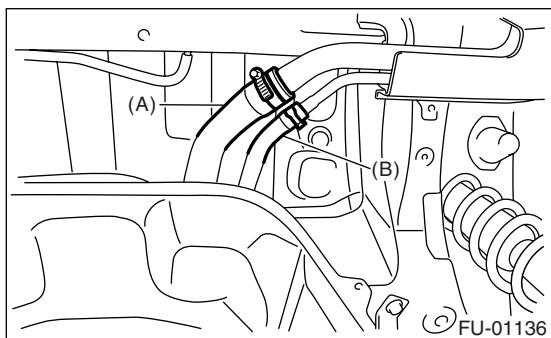
- 1) Open the fuel filler flap lid.
- 2) Set the fuel saucer (A) with rubber packing (C) and insert the fuel filler pipe into hole from the inner side of apron.
- 3) Align the holes in fuel filler pipe neck and set the cup (B), and tighten the screws.

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

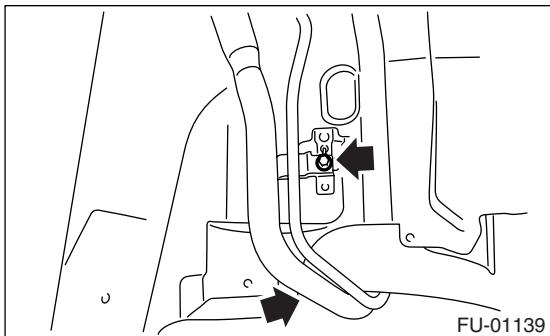


- (1) Hose
- (2) Clip or clamp
- (3) Pipe

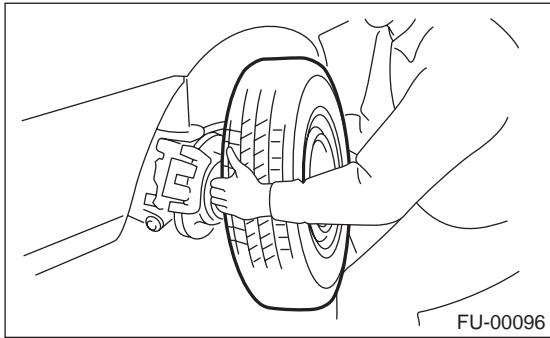
- 5) Tighten the bolts which hold the fuel filler pipe bracket on the body.

Tightening torque:

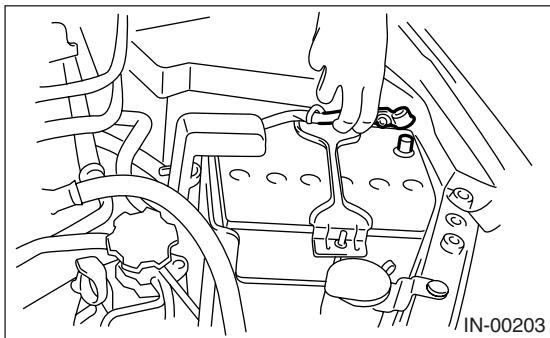
7.5 N·m (0.75 kgf-m, 5.4 ft-lb)



- 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.



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(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

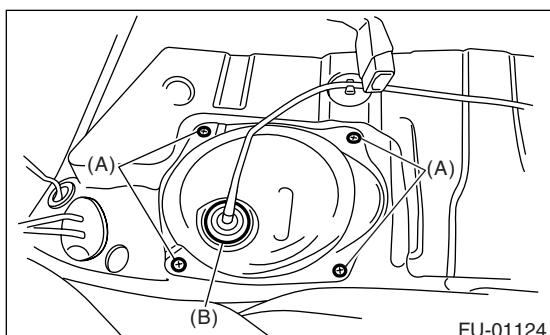
2) Drain the fuel. <Ref. to FU(H4SO 2.5)-40, DRAINING FUEL, PROCEDURE, Fuel.>

3) Remove the rear seat.

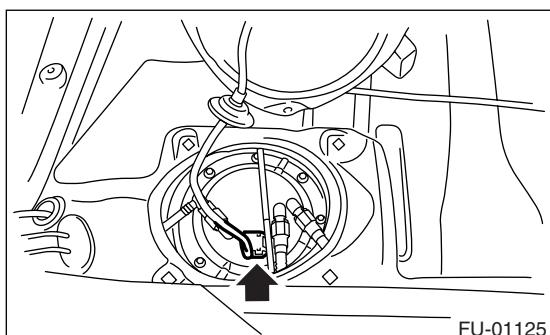
4) Remove the service hole cover.

(1) Remove the bolts (A).

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

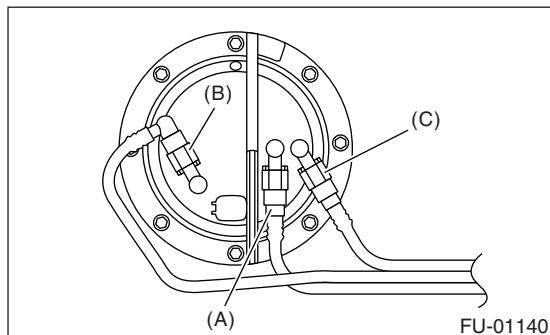


5) Disconnect the connector from fuel pump.



6) Disconnect the quick connector and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H4SO 2.5)-55, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>

7) Remove the nuts which install the 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:

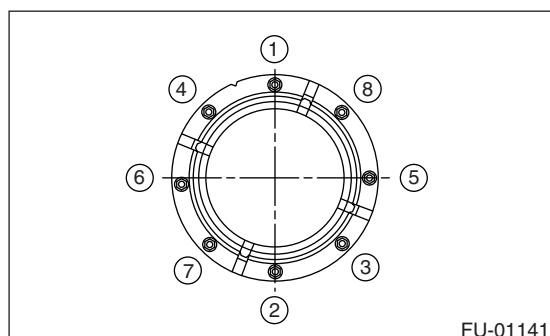
Use a new gasket.

(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.

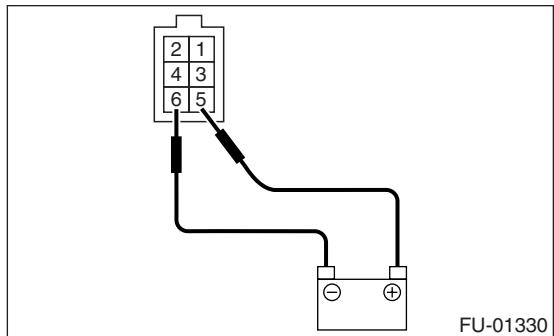
WARNING:

- 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.

Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

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



26.Fuel Level Sensor

A: REMOVAL

WARNING:

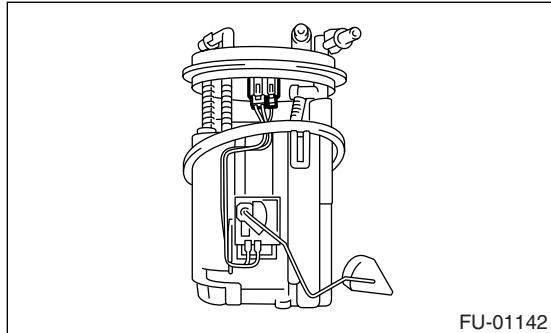
- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel on the floor.

NOTE:

Fuel level sensor is built in fuel pump assembly.

1) Remove the fuel pump assembly. <Ref. to FU(H4SO 2.5)-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)

27. Fuel Sub Level Sensor

A: REMOVAL

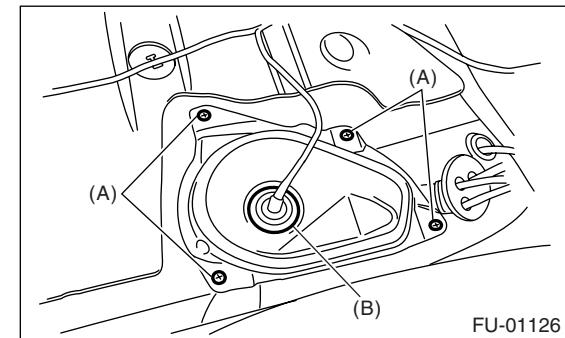
WARNING:

- 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 fuel. <Ref. to FU(H4SO 2.5)-40, DRAINING FUEL, PROCEDURE, Fuel.>

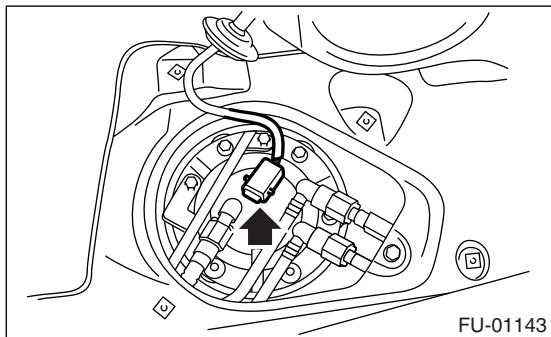
2) Remove the rear seat.

3) Remove the service hole cover.



FU-01126

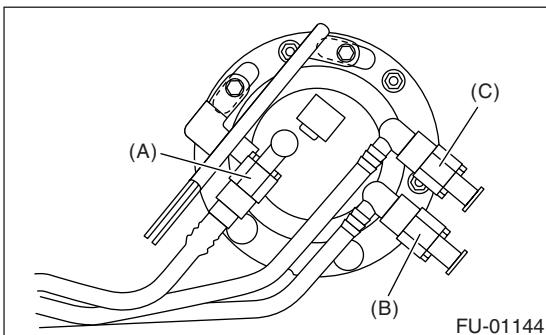
4) Disconnect the connector from fuel sub level sensor.



FU-01143

5) Disconnect the quick connector and then disconnect the fuel delivery hose, return hose and jet pump hose. <Ref. to FU(H4SO 2.5)-55, REMOVAL, Fuel Delivery, Return and Evaporation Lines.>

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



FU-01144

- (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:

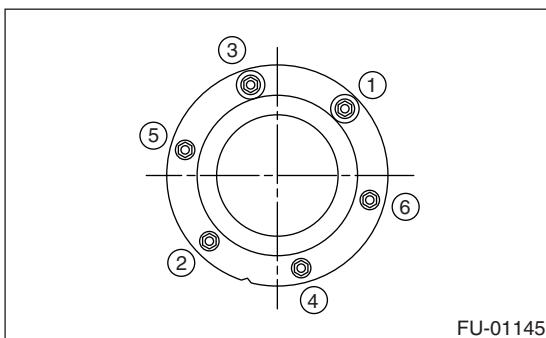
Use a new gasket.

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

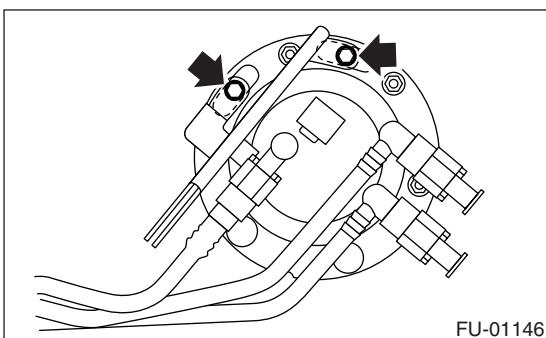
(2) Tighten the nuts and bolts to specified torque in the order as shown in the figure.

Tightening torque:

4.4 N·m (0.45 kgf-m, 3.3 ft-lb)



FU-01145



FU-01146

28.Fuel Filter

A: SPECIFICATION

Fuel filter forms a unit with fuel pump.

Refer to Fuel Pump for removal and installation.

<Ref. to FU(H4SO 2.5)-49, REMOVAL, Fuel Pump.>

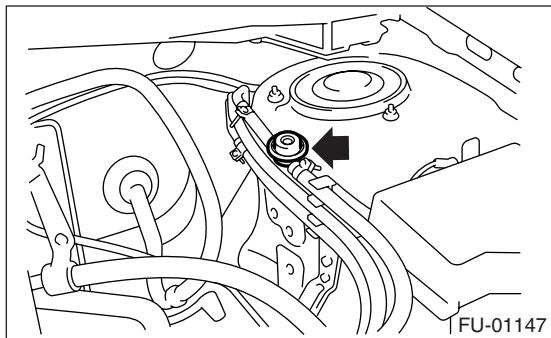
<Ref. to FU(H4SO 2.5)-49, INSTALLATION, Fuel Pump.>

29. Fuel Damper Valve

A: REMOVAL

1. DELIVERY SIDE

- 1) Release the fuel pressure.
<Ref. to FU(H4SO 2.5)-40, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Remove the fuel damper valve from fuel delivery line.



2. RETURN SIDE

Fuel damper valve forms a unit with fuel injector pipe RH.

Refer to "Intake Manifold" for removal. **<Ref. to FU(H4SO 2.5)-15, DISASSEMBLY, Intake Manifold.>**

B: INSTALLATION

1. DELIVERY SIDE

Install in the reverse order of removal.

Tightening torque:

1.25 N·m (0.13 kgf-m, 0.94 ft-lb)

2. RETURN SIDE

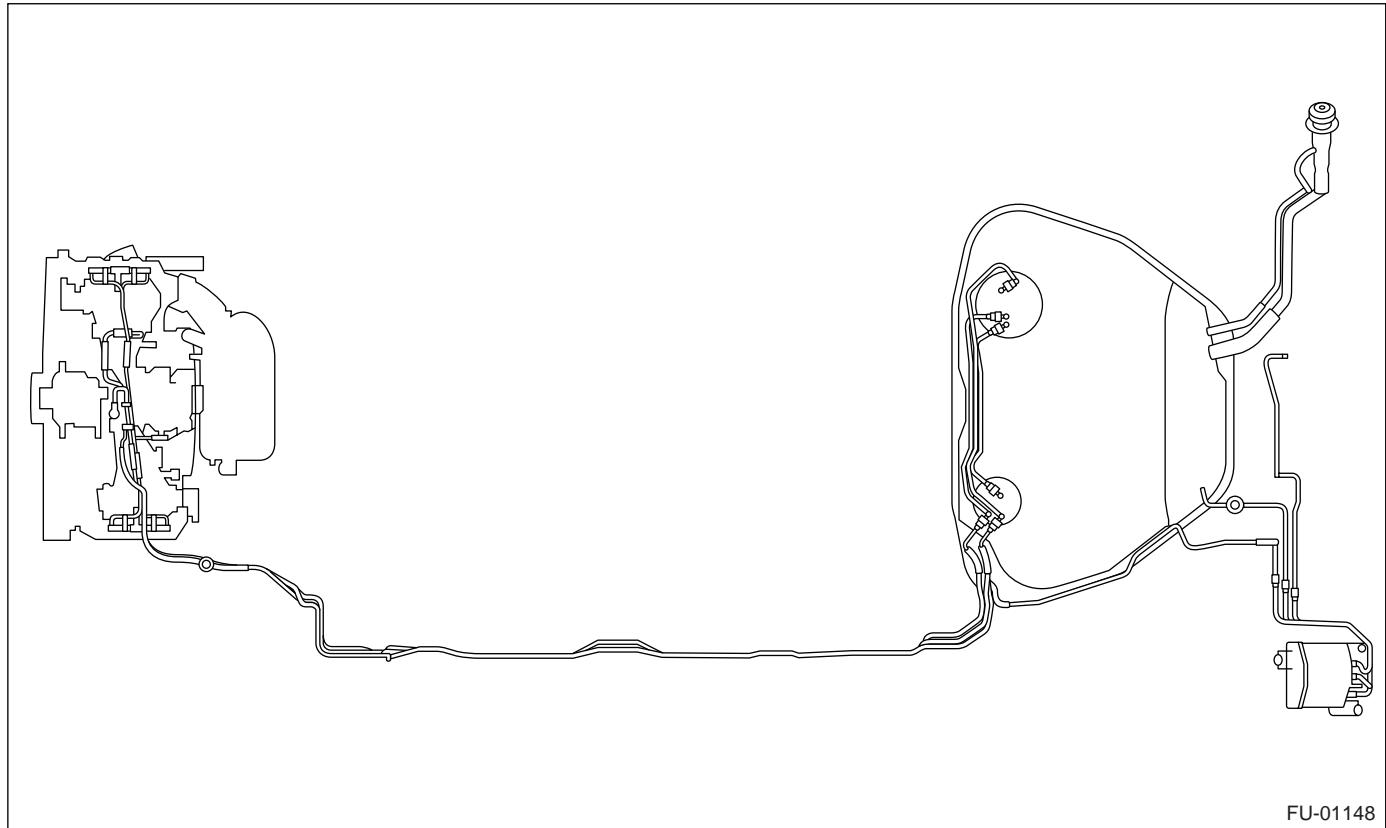
Fuel damper valve forms a unit with fuel injector pipe RH.

Refer to "Intake Manifold" for installation. **<Ref. to FU(H4SO 2.5)-17, ASSEMBLY, Intake Manifold.>**

30. Fuel Delivery, Return and Evaporation Lines

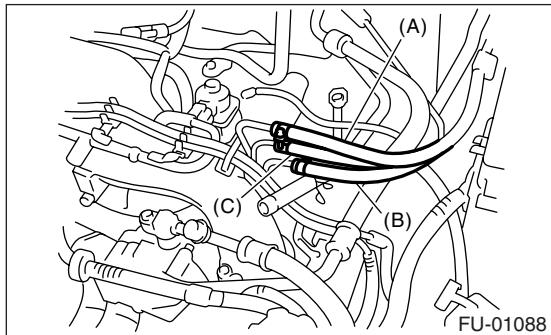
A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Release the fuel pressure. <Ref. to FU(H4SO 2.5)-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.



FU-01148

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

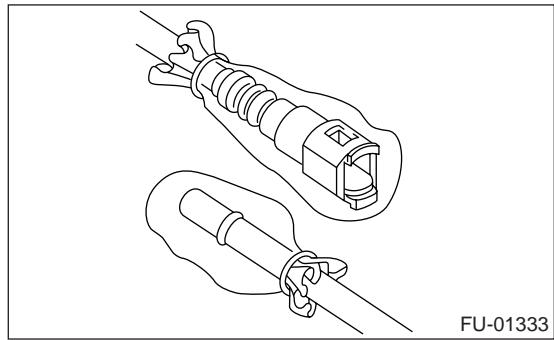
7) Lift-up the vehicle.

8) Remove the fuel tank. <Ref. to FU(H4SO 2.5)-41, 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.



FU-01333

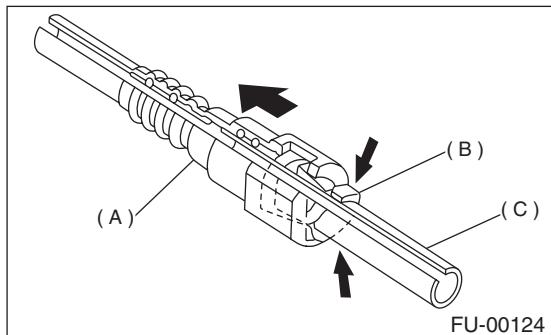
Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

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

CAUTION:

Always use a new retainer.



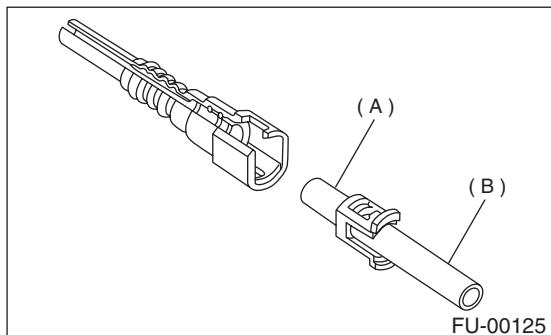
(A) Connector
(B) Retainer
(C) Pipe

B: INSTALLATION

- 1) Connect the quick connector on fuel line.

CAUTION:

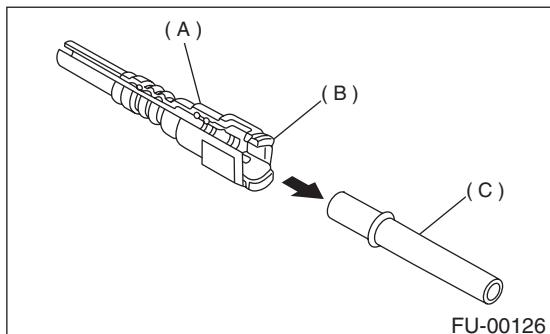
- Always use a new retainer.
- Make sure that the connected portion is not damaged or dust-covered. If necessary, clean the seal surface of pipe.



(A) Seal surface
(B) Pipe

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

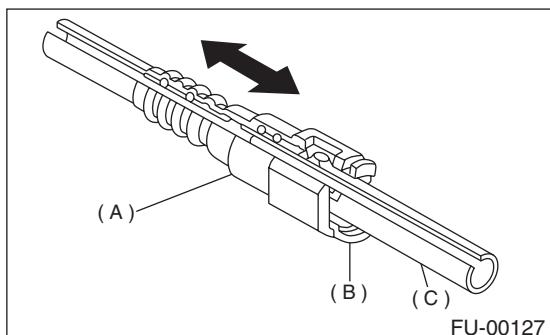
- (2) Push the pipe into the connector completely.



(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 to be inserted is specified.

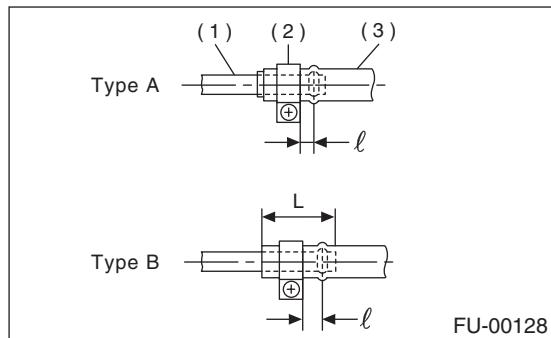
Type B: When the amount to be inserted is not specified.

Fuel Delivery, Return and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

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

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



- (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 hose end.

Fuel return hose:

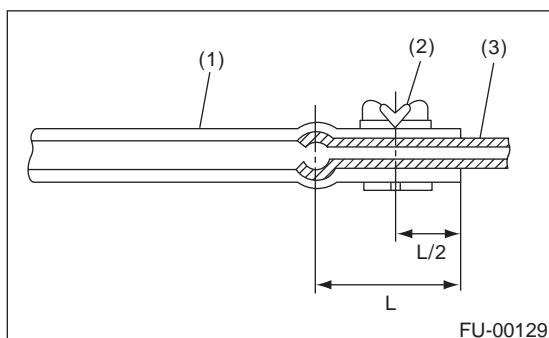
$L = 22.5 \pm 2.5 \text{ mm} (0.885 \pm 0.098 \text{ in})$

Fuel evaporation hose:

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

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 cracks on the fuel pipes and fuel hoses.
- 2) Make sure the fuel pipe and fuel hose connections are tightened firmly.

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)

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.	
<input type="radio"/> Defective terminal contact	Inspect contact, especially ground, and tighten it securely.
<input type="radio"/> Trouble in electromagnetic or electronic circuit parts	Replace the faulty parts.
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) 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 unused 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 each time the fuel is reduced to 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 water removing agent, follow the cautions noted on the bottle.