

FUEL INJECTION (FUEL SYSTEMS)

FU(H4DO)

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General Description

FUEL INJECTION (FUEL SYSTEMS)

1. General Description

A: SPECIFICATION

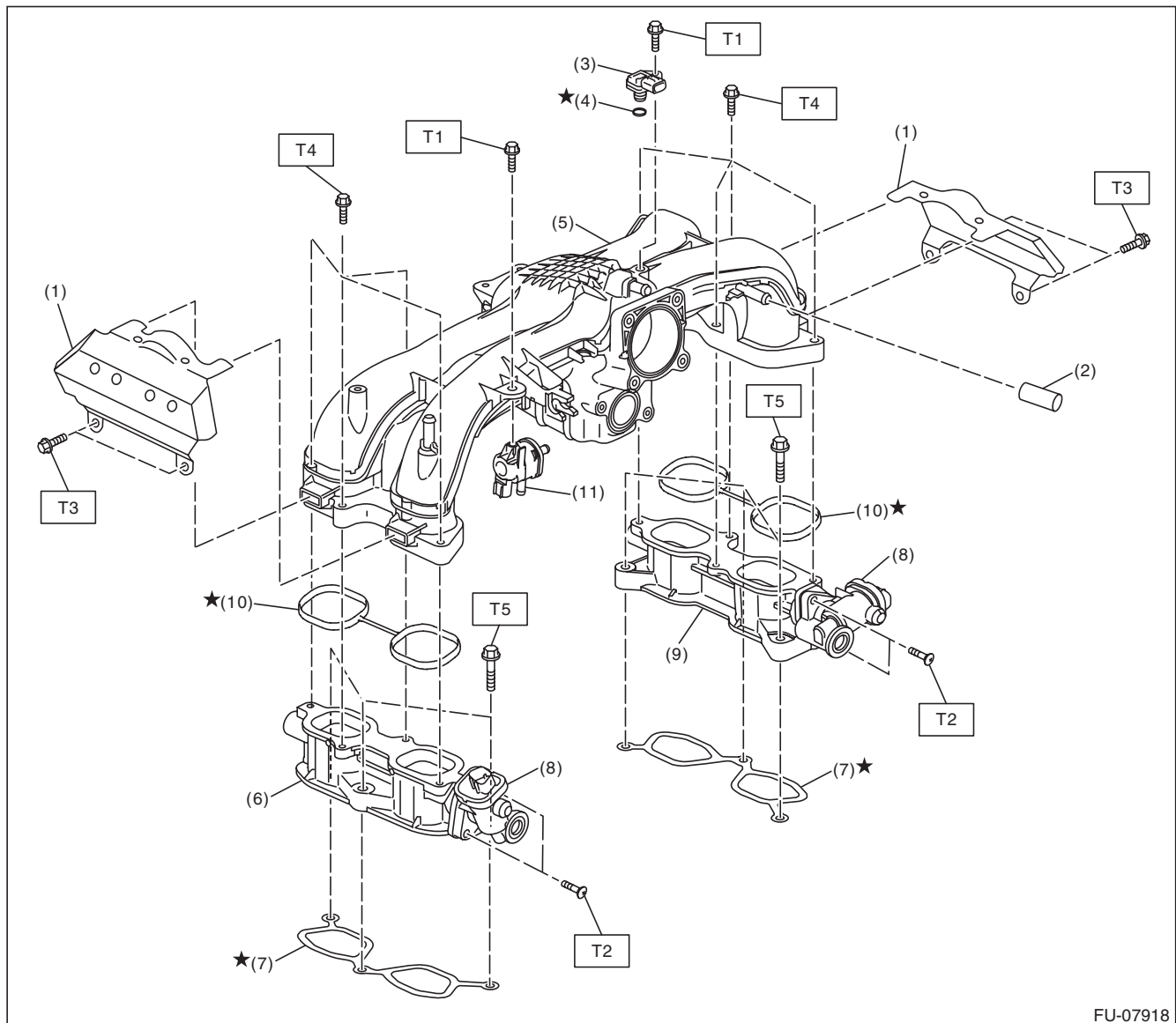
Fuel tank	Capacity	60 L (15.9 US gal, 13.2 Imp gal)
	Location	Under rear seat
Fuel pump	Type	Impeller
	Shutoff discharge pressure	840 kPa (8.6 kgf/cm ² , 121.8 psi) or less
	Discharge rate	114 L (30.1 US gal, 25.1 Imp gal)/h or more [12 V at 343 kPa (3.5 kgf/cm ² , 49.7 psi)]
Fuel filter		In-tank type

General Description

FUEL INJECTION (FUEL SYSTEMS)

B: COMPONENT

1. INTAKE MANIFOLD 1



FU-07918

- | | |
|---------------------------------------|-------------------------------------|
| (1) Intake manifold protector | (7) Gasket |
| (2) Cap | (8) Tumble generator valve actuator |
| (3) Manifold absolute pressure sensor | (9) Tumble generator valve RH |
| (4) O-ring | (10) Gasket |
| (5) Intake manifold | (11) Purge control solenoid valve |
| (6) Tumble generator valve LH | |

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

T1: 3.4 (0.3, 2.5)

T2: 6 (0.6, 4.4)

T3: 6.4 (0.7, 4.7)

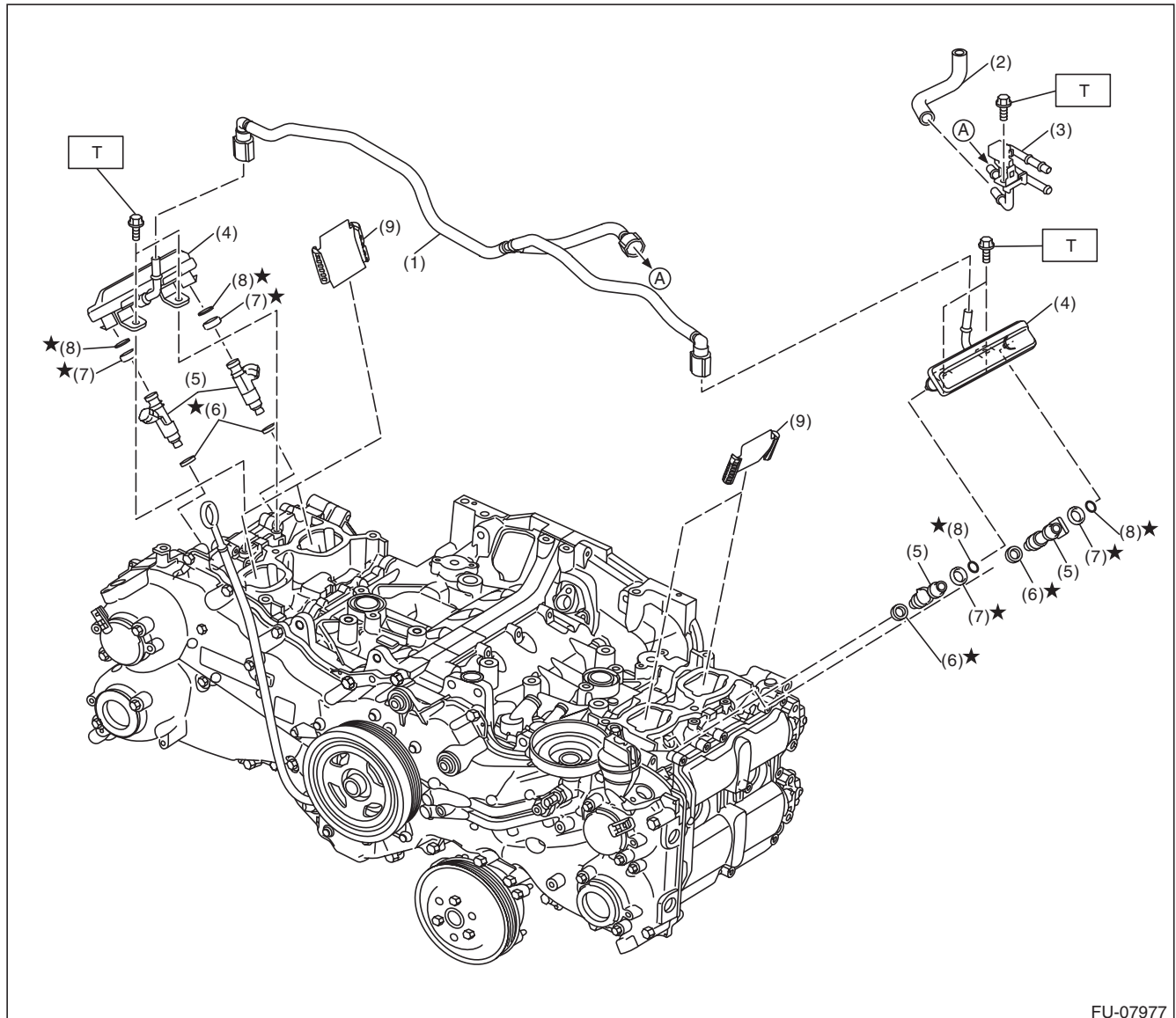
T4: 8.3 (0.8, 6.1)

T5: 25 (2.5, 18.4)

General Description

FUEL INJECTION (FUEL SYSTEMS)

2. INTAKE MANIFOLD 2



- | | |
|------------------------|-------------------------|
| (1) Fuel delivery pipe | (6) Seal ring |
| (2) Vacuum hose | (7) Rubber |
| (3) Fuel pipe A | (8) O-ring |
| (4) Fuel pipe B | (9) Cylinder head plate |
| (5) Fuel injector | |

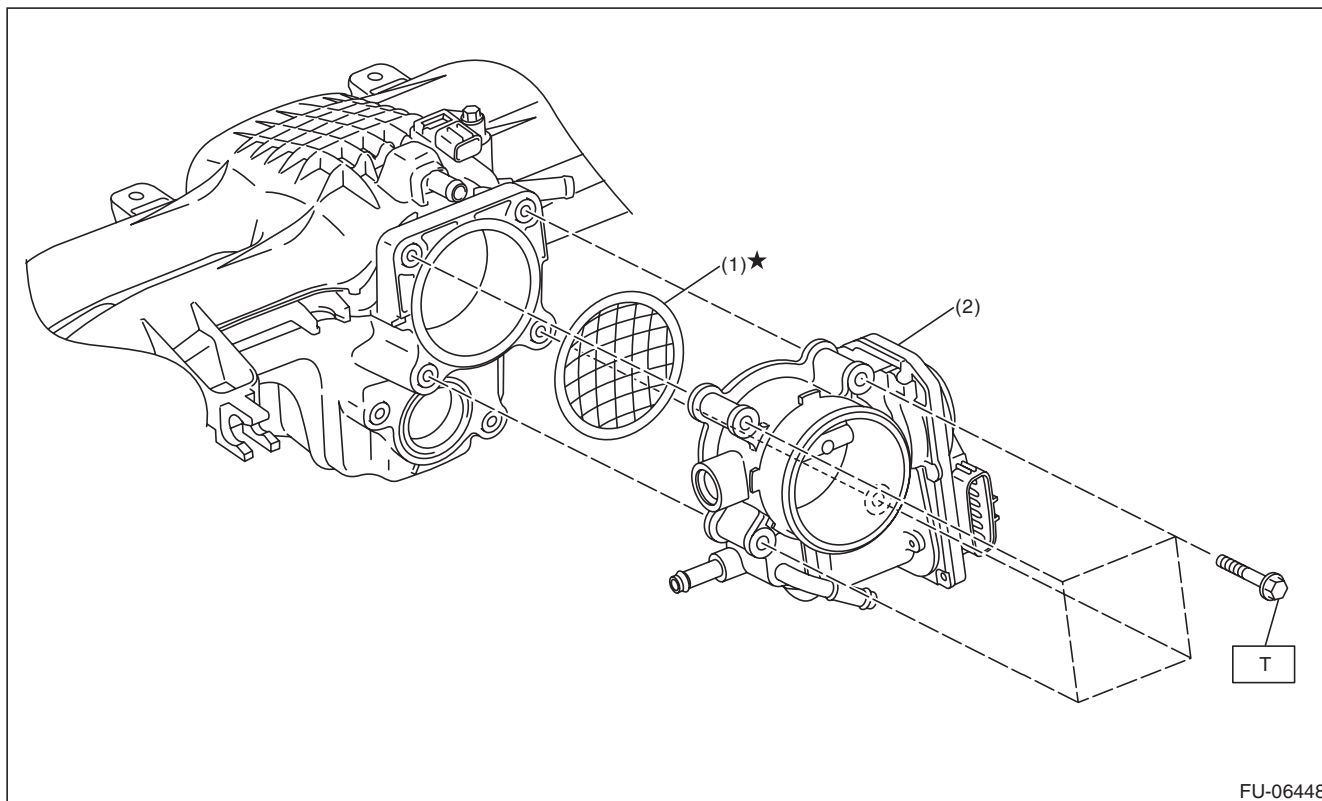
Tightening torque: N·m (kgf-m, ft-lb)

T: 6.4 (0.7, 4.7)

General Description

FUEL INJECTION (FUEL SYSTEMS)

3. THROTTLE BODY



(1) Gasket

(2) Throttle body

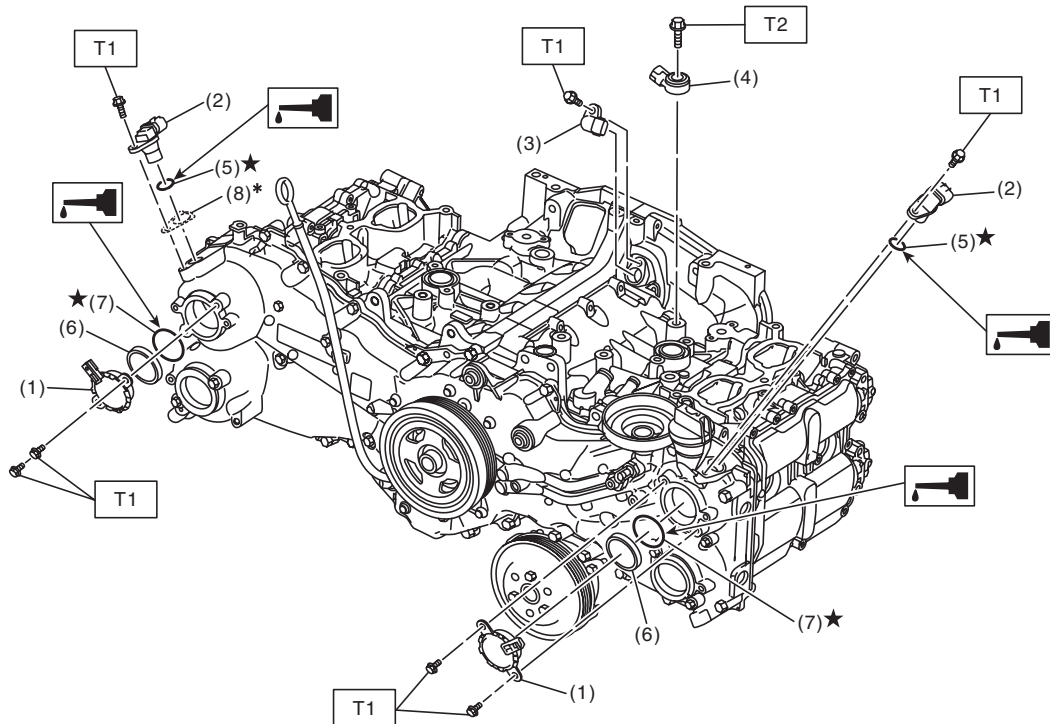
Tightening torque: N·m (kgf-m, ft-lb)

T: 8 (0.8, 5.9)

General Description

FUEL INJECTION (FUEL SYSTEMS)

4. CRANKSHAFT POSITION, CAMSHAFT POSITION AND KNOCK SENSORS



FU-08095

- | | |
|--------------------------------|------------------|
| (1) Oil control solenoid | (5) O-ring |
| (2) Camshaft position sensor | (6) Back-up ring |
| (3) Crankshaft position sensor | (7) O-ring |
| (4) Knock sensor | (8) Spacer |

* Use one or no spacer to adjust the gap.

Tightening torque: N·m (kgf-m, ft-lb)

T1: 6.4 (0.7, 4.7)

T2: 24 (2.4, 17.7)

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel tank	(15) Stopper LH	(29) Cushion
(2) Fuel tank band	(16) Heat shield cover	(30) Cushion
(3) Delivery tube	(17) Fuel tank protector RH	(31) Cushion
(4) Jet pump tube	(18) Fuel tank protector LH	
(5) Fuel pump ASSY	(19) Self-locking nut	
(6) Fuel pump upper plate	(20) Rubber cap	
(7) Fuel pump gasket	(21) Fuel filler hose	
(8) Fuel level sensor	(22) Clamp	
(9) Fuel sub level sensor	(23) Clamp	
(10) Fuel sub level sensor upper plate	(24) Air vent hose	
(11) Fuel sub level sensor gasket	(25) Clip	
(12) Fuel sub level sensor filter	(26) Tube clamp	
(13) Fuel sub level sensor protector	(27) Fuel pump upper plate cushion	
(14) Stopper RH	(28) Fuel sub level sensor upper plate cushion	

Tightening torque: N·m (kgf-m, ft-lb)

T1: 2 (0.2, 1.5)

T2: 2.5 (0.3, 1.8)

T3: 9 (0.9, 6.6)

T4: 18 (1.8, 13.3)

T5: <Ref. to FU(H4DO)-119, INSTALLATION, Fuel Tank.>

T6: <Ref. to FU(H4DO)-138, INSTALLATION, Fuel Pump.>

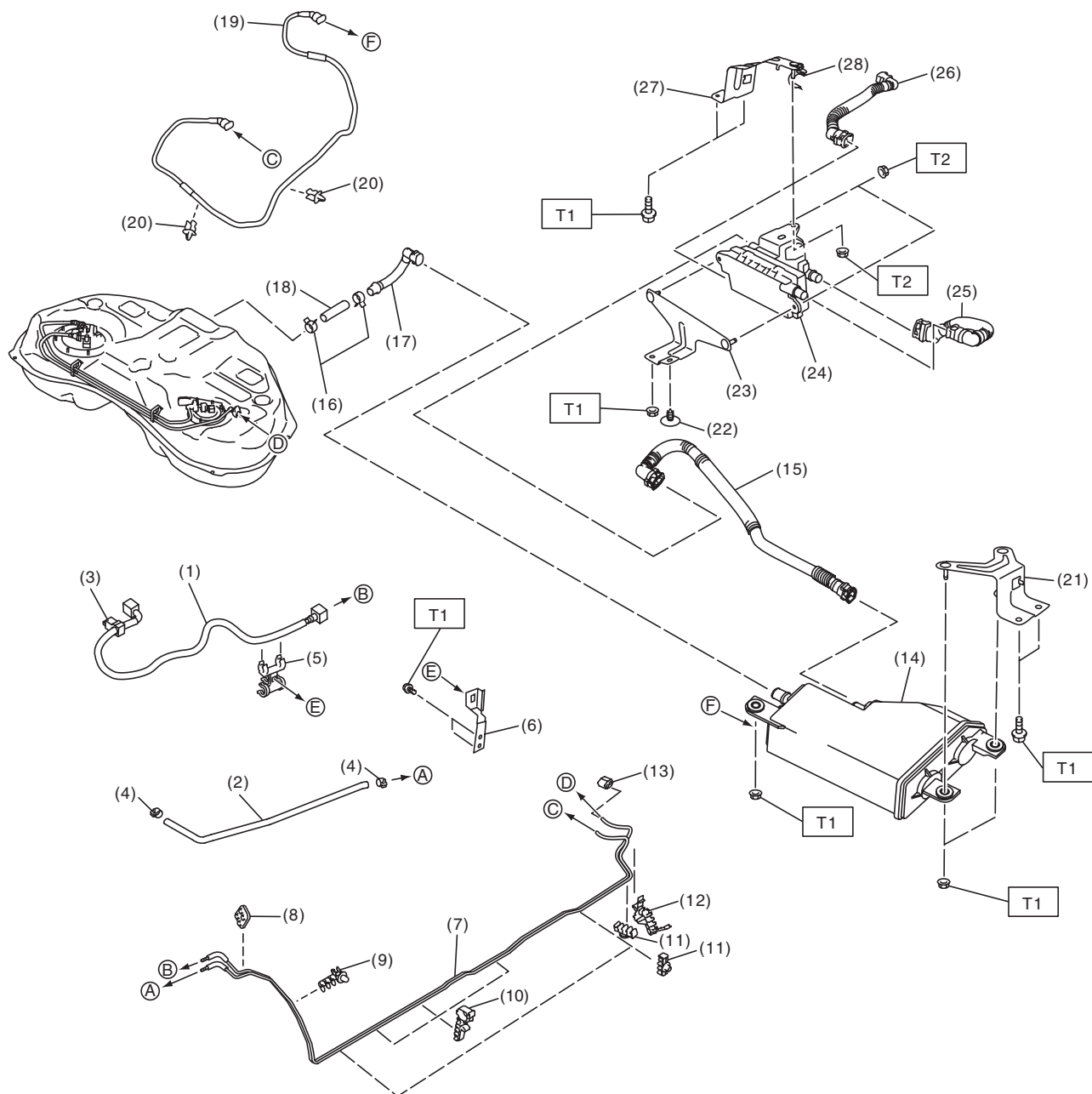
T7: <Ref. to FU(H4DO)-148, INSTALLATION, Fuel Sub Level Sensor.>



General Description

FUEL INJECTION (FUEL SYSTEMS)

6. FUEL LINE



FU-07857

FU(H4DO)-9

General Description

FUEL INJECTION (FUEL SYSTEMS)

(1) Fuel delivery tube	(12) Pipe clamp	(23) Leak check valve bracket A
(2) Evaporation hose	(13) Fuel pipe rear grommet	(24) Leak check valve ASSY
(3) Tube clamp	(14) Canister	(25) Drain tube B
(4) Clip	(15) Drain tube A	(26) Drain tube C
(5) Hose clamp	(16) Clip	(27) Leak check valve bracket B
(6) Hose clamp bracket	(17) Vent tube	(28) Tube clamp
(7) Fuel pipe ASSY	(18) Vent hose	
(8) Fuel pipe front grommet	(19) Purge pipe	
(9) Pipe clamp	(20) Pipe clamp	
(10) Pipe clamp	(21) Canister bracket	
(11) Pipe clamp	(22) Clip	

Tightening torque: N·m (kgf-m, ft-lb)

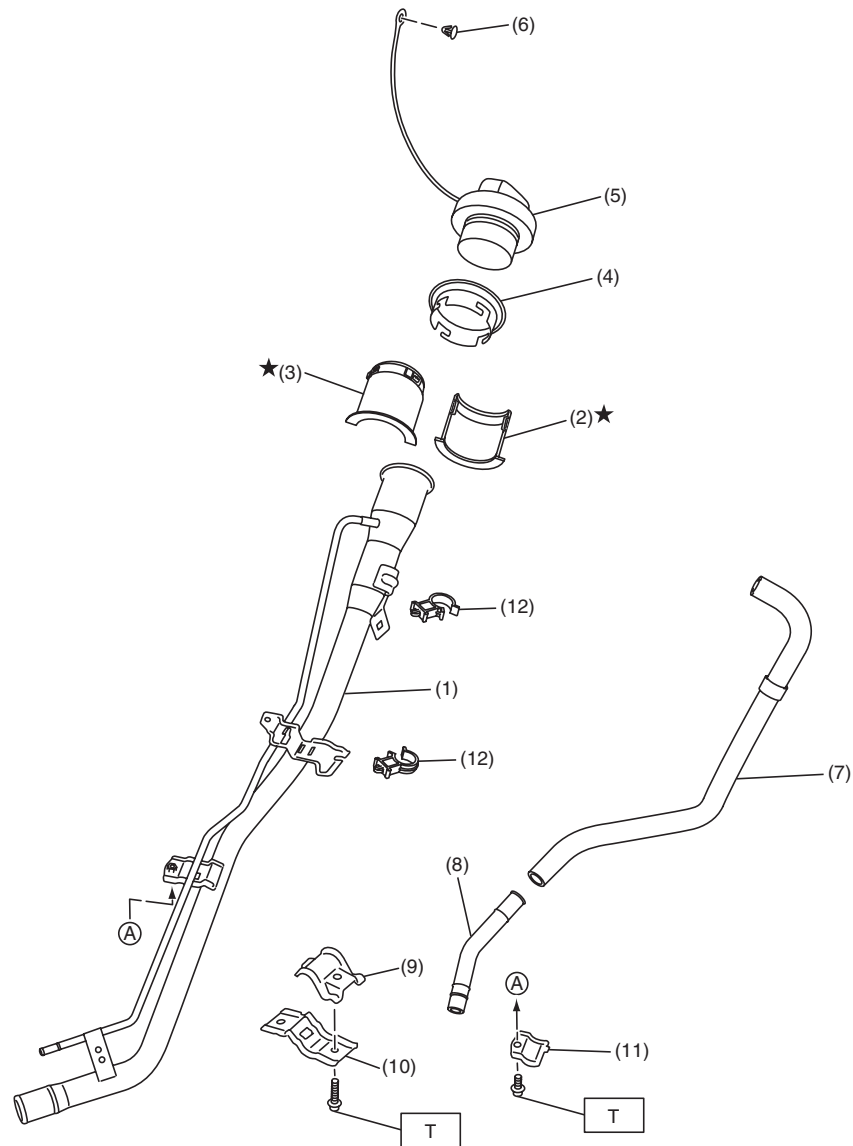
T1: 7.5 (0.8, 5.5)

T2: 18 (1.8, 13.3)

General Description

FUEL INJECTION (FUEL SYSTEMS)

7. FUEL FILLER PIPE



FU-07858

- (1) Fuel filler pipe ASSY
- (2) Neck holder A
- (3) Neck holder B
- (4) Fuel filler pipe protector
- (5) Fuel filler cap

- (6) Clip
- (7) Drain hose
- (8) Drain pipe
- (9) Upper bracket
- (10) Lower bracket

- (11) Drain lower bracket
- (12) Drain hose clamp

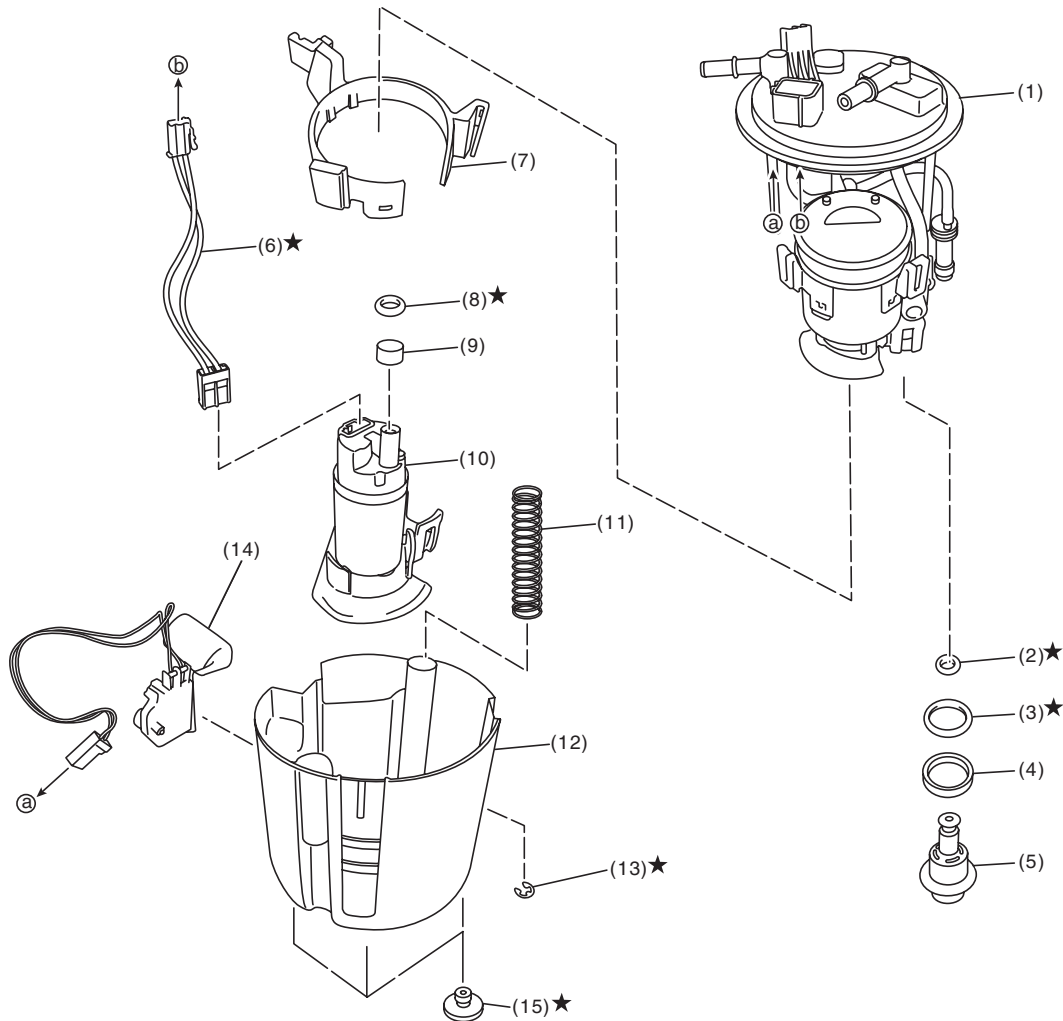
Tightening torque: N·m (kgf-m, ft-lb)
T: 7.5 (0.8, 5.5)

FU(H4DO)-11

General Description

FUEL INJECTION (FUEL SYSTEMS)

8. FUEL PUMP



FU-07727

- | | | |
|------------------------|----------------------|------------------------|
| (1) Fuel filter ASSY | (6) Connector cable | (11) Spring |
| (2) O-ring | (7) Fuel pump holder | (12) Fuel chamber ASSY |
| (3) O-ring | (8) O-ring | (13) Clip |
| (4) Back-up ring | (9) Spacer | (14) Fuel level sensor |
| (5) Pressure regulator | (10) Fuel pump | (15) Cushion |

General Description

FUEL INJECTION (FUEL SYSTEMS)

C: CAUTION

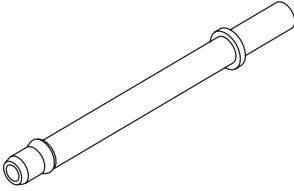
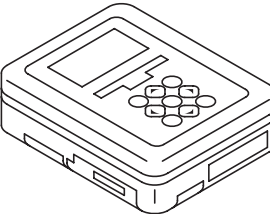
- Prior to starting work, pay special attention to the following:
 1. Always wear work clothes, a safety cap, protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
 2. Protect the vehicle using a seat cover, fender cover, etc.
 3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Place "NO OPEN FLAMES" signs near the working area.
- Prepare a container and cloth to prevent scattering of fuels when performing work where fuels can be spilled. If the oil spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.
- Keep the removed parts in order and protect them from dust and dirt.
- All removed parts, if to be reused, should be reinstalled in the original positions with attention to the correct directions, etc.
- Bolts, nuts and washers should be replaced with new parts as required.
- Follow all government and local regulations concerning disposal of refuse when disposing fuel.
- When the suspension-related components have been removed and installed, be sure to adjust the steering angle sensor. <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDC-CM&H/U).>

General Description

FUEL INJECTION (FUEL SYSTEMS)

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18471AA000	18471AA000	FUEL PIPE ADAPTER	Used for draining fuel.
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for draining fuel and each inspection.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.
Oscilloscope	Used for inspecting the waveform of each sensor.

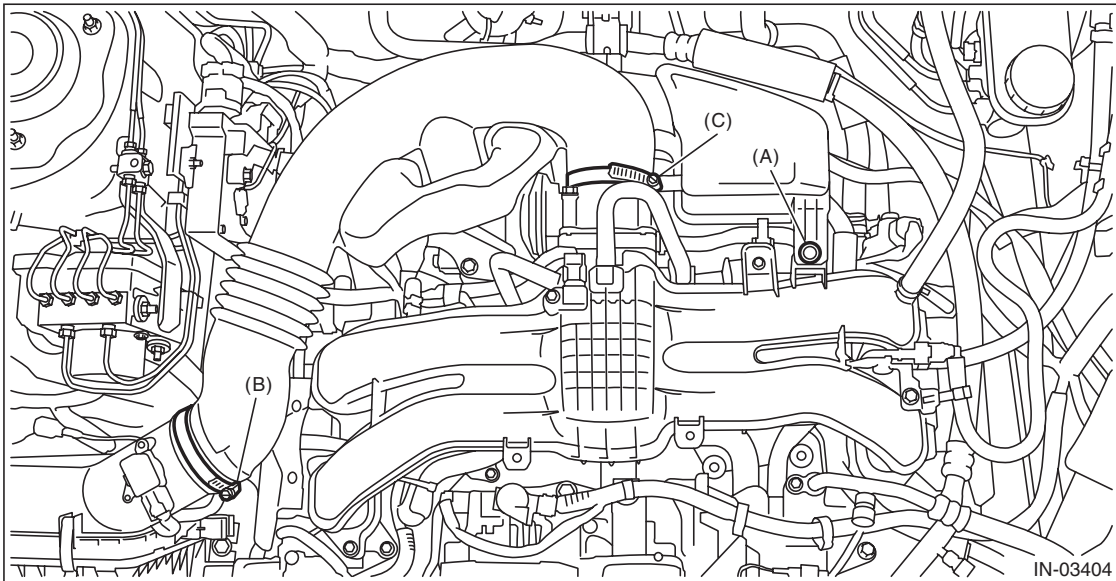
Throttle Body

FUEL INJECTION (FUEL SYSTEMS)

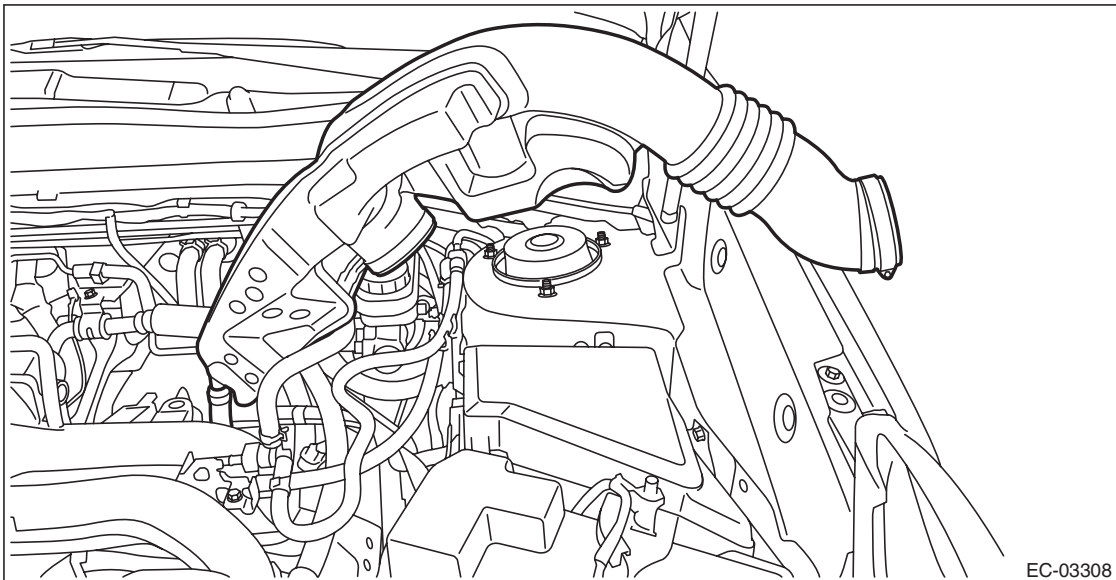
2. Throttle Body

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle.
- 3) Remove the under cover. <Ref. to EI-22, REMOVAL, Front Under Cover.>
- 4) Drain approximately 3.0 L (3.2 US qt, 2.6 Imp qt) of coolant. <Ref. to CO(H4DO)-14, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 5) Remove the clip (A) from the air intake boot.
- 6) Loosen the clamp (B) securing the air cleaner case (rear) to the air intake boot.
- 7) Loosen the clamp (C) which secures the throttle body to the air intake boot.



- 8) Remove the air intake boot from the throttle body, and move it to the left side wheel apron.

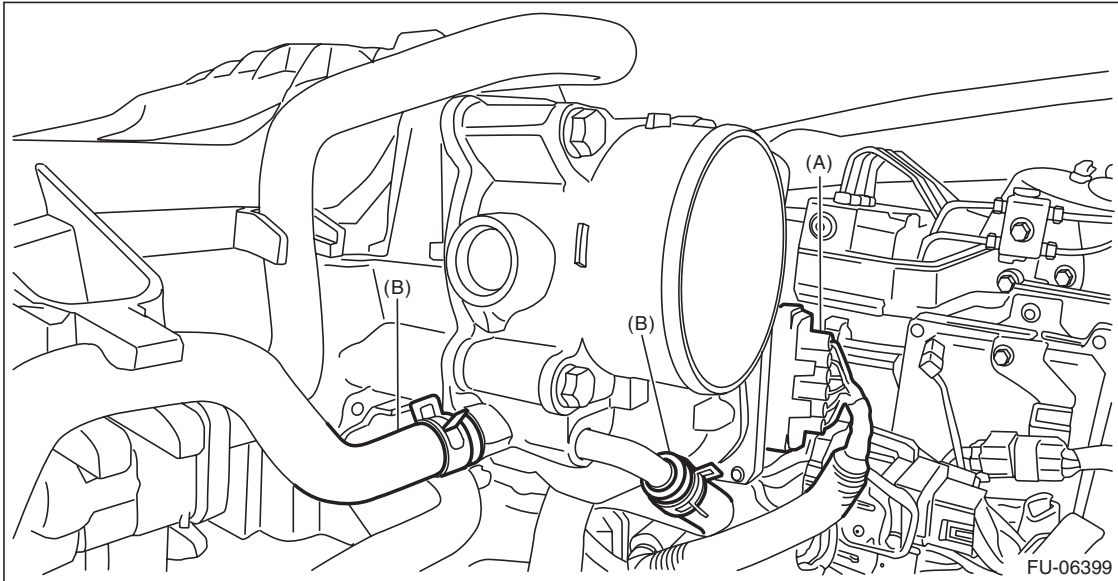


- 9) Disconnect the connectors (A) from the throttle position sensor.

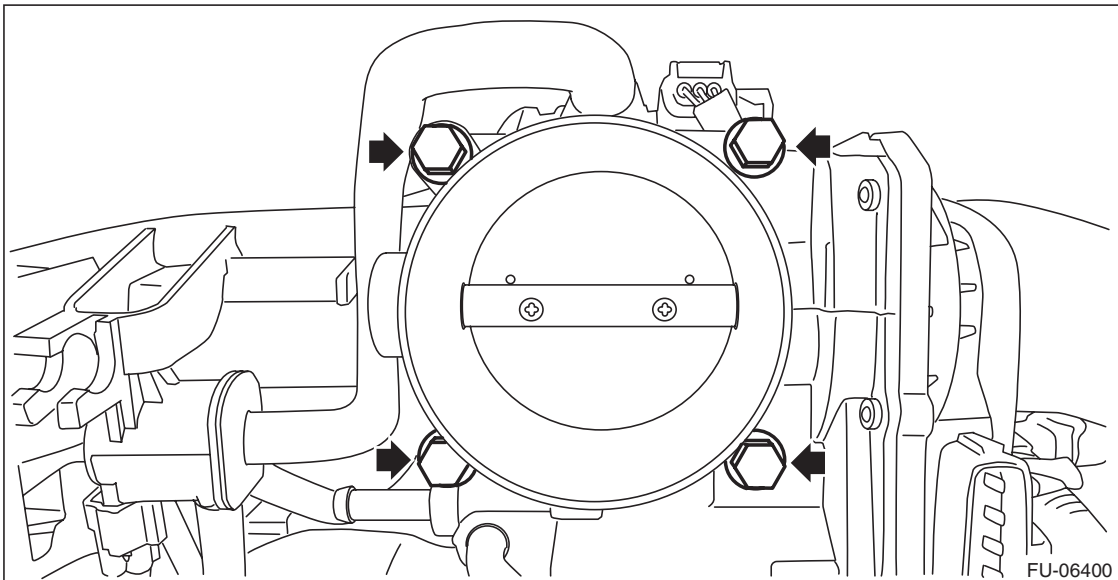
Throttle Body

FUEL INJECTION (FUEL SYSTEMS)

- 10) Disconnect the preheater hose (B) from the throttle body.



- 11) Remove the throttle body from the 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, 5.9 ft-lb)

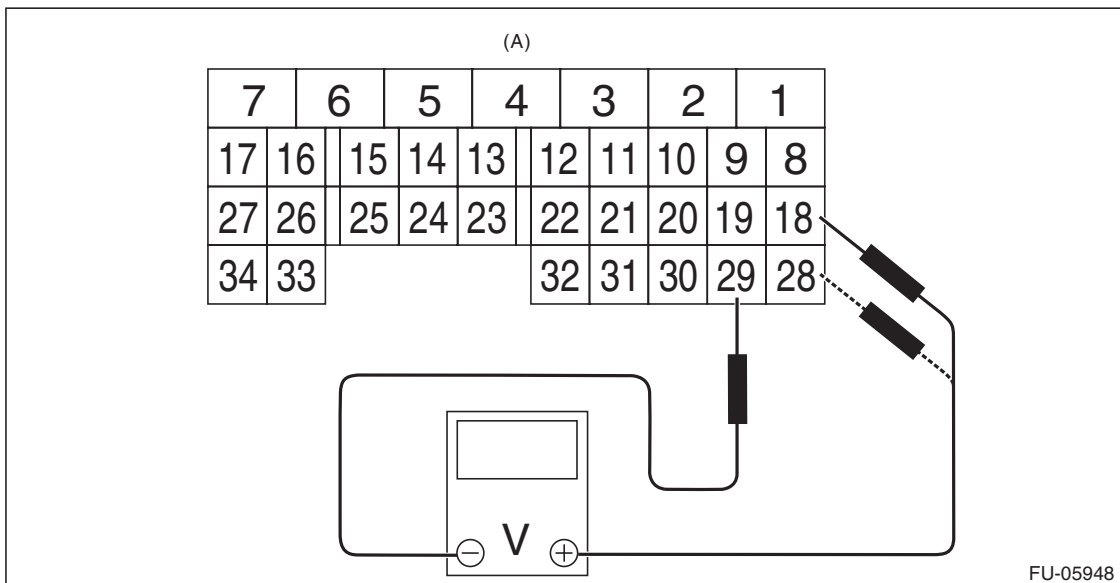
Throttle Body

FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

1. THROTTLE SENSOR (METHOD WITH CIRCUIT TESTER)

- 1) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 2) After warming-up the engine, turn the ignition switch to OFF.
- 3) Turn the ignition switch to ON. (engine OFF)
- 4) Measure the voltage between ECM connector terminals.



(A) To ECM connector

Throttle sensor	Accelerator pedal	Terminal No.	Standard
Main	Not depressed (full closed)	18 (+) and 29 (-)	Approx. 0.6 V
	Depressed (full opened)		Approx. 4.0 V
Sub	Not depressed (full closed)	28 (+) and 29 (-)	Approx. 1.5 V
	Depressed (full opened)		Approx. 4.2 V

- 5) After inspection, install the related parts in the reverse order of removal.

Throttle Body

FUEL INJECTION (FUEL SYSTEMS)

2. THROTTLE SENSOR (METHOD WITH SUBARU SELECT MONITOR)

- 1) After warming-up the engine, turn the ignition switch to OFF.
- 2) Turn the ignition switch to ON. (engine OFF)
- 3) Read the throttle opening angle signal and voltage of throttle sensor using Subaru Select Monitor. <Ref. to EN(H4DO)(diag)-36, DISPLAY CURRENT ENGINE DATA, OPERATION, Subaru Select Monitor.>

Throttle sensor	Throttle opening angle signal	Standard
Main	0.0%	Approx. 0.6 V
	100.0%	Approx. 4.0 V
Sub	0.0%	Approx. 1.5 V
	100.0%	Approx. 4.2 V

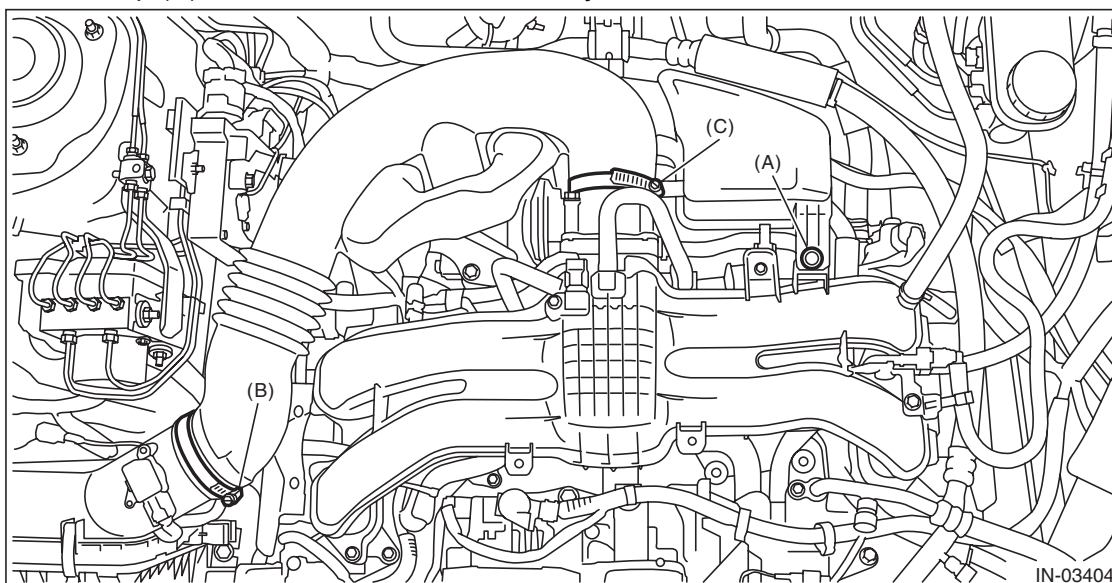
3. OTHER INSPECTIONS

- 1) Check that the throttle body has no deformation, cracks or other damages.
- 2) Check that the preheater hose has no cracks, damage or loose part.

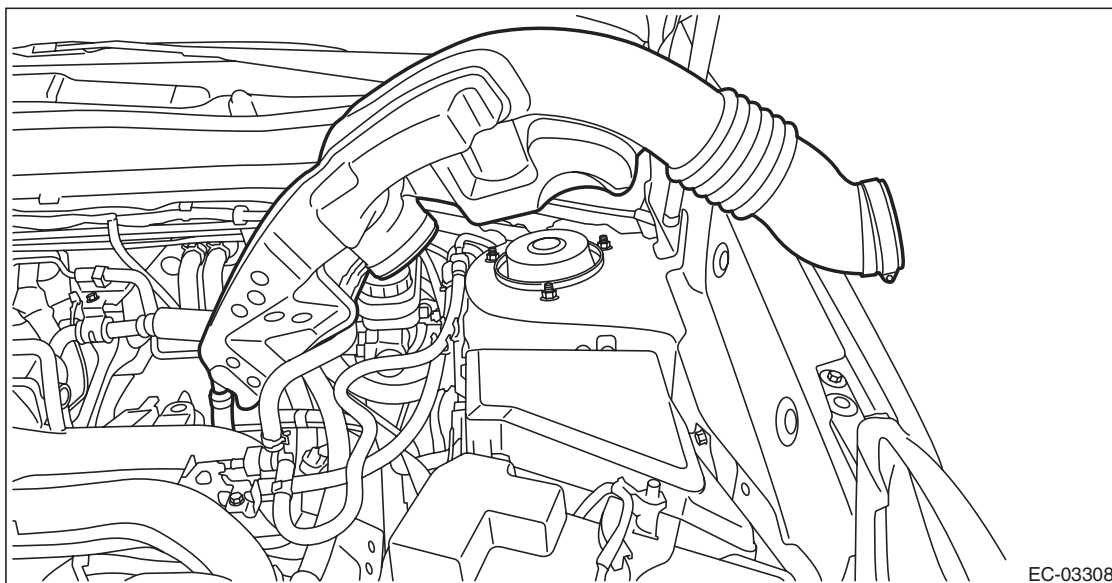
3. Intake Manifold

A: REMOVAL

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the ground cable from battery.
- 3) Open the fuel filler lid and remove the fuel filler cap.
- 4) Lift up the vehicle.
- 5) Remove the under cover. <Ref. to EI-22, REMOVAL, Front Under Cover.>
- 6) Drain approximately 3.0 L (3.2 US qt, 2.6 Imp qt) of coolant. <Ref. to CO(H4DO)-14, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 7) Remove the clip (A) from the air intake boot.
- 8) Loosen the clamp (B) securing the air cleaner case (rear) to the air intake boot.
- 9) Loosen the clamp (C) which secures the throttle body to the air intake boot.



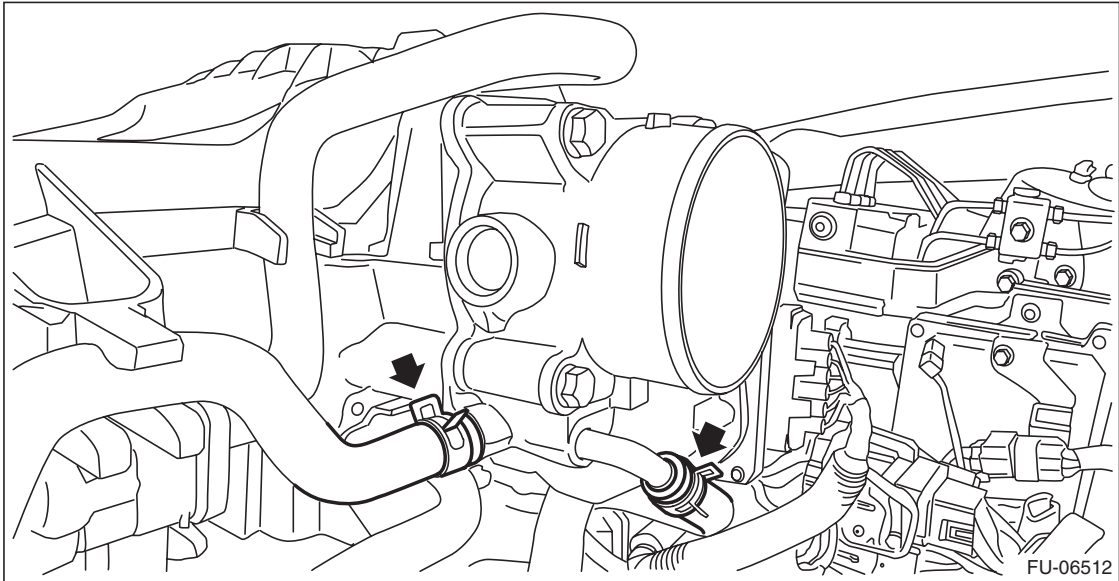
- 10) Remove the air intake boot from the throttle body, and move it to the left side wheel apron.



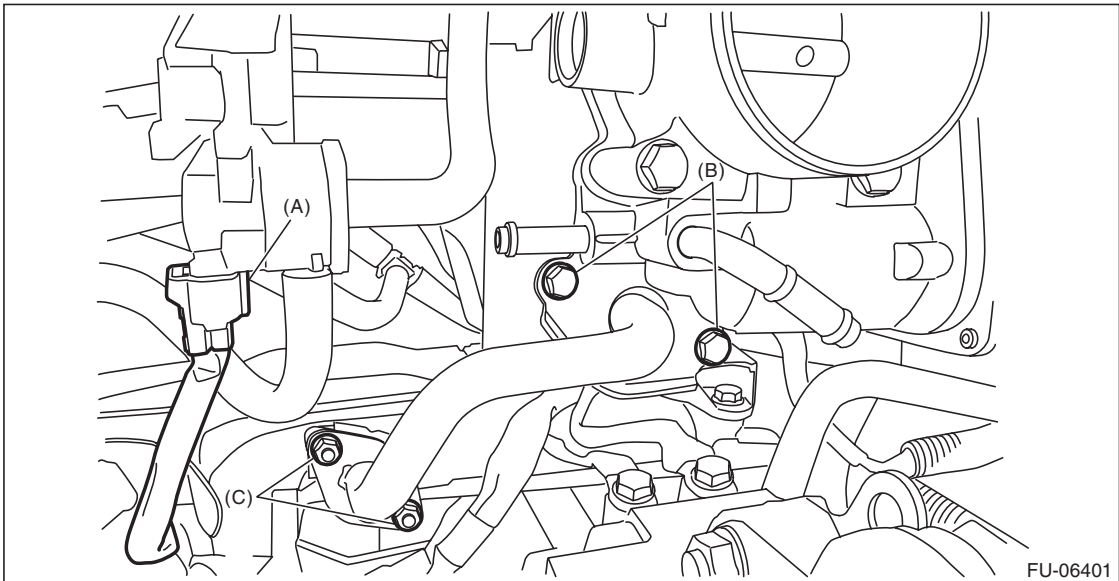
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

- 11) Disconnect the preheater hose from throttle body.



- 12) Disconnect the connector (A) from the purge control solenoid valve.
13) Loosen the bolt (B) which secures the EGR pipe to the intake manifold.
14) Remove the nut (C) which holds EGR pipe from the water pipe assembly.

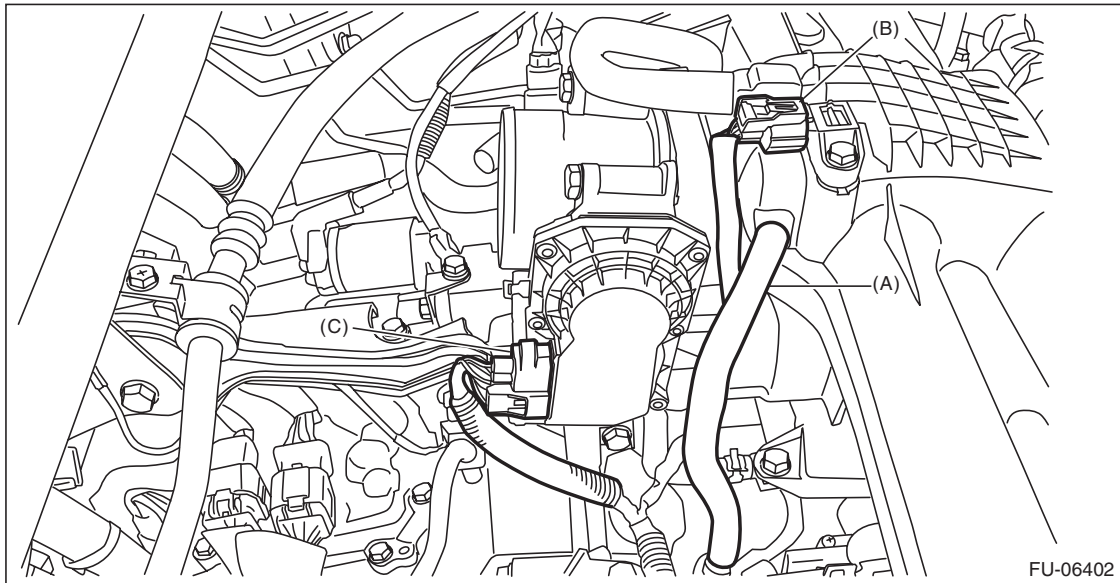


- 15) Disconnect the PCV hose (A) from intake manifold.
16) Disconnect the connector (B) from manifold absolute pressure sensor.

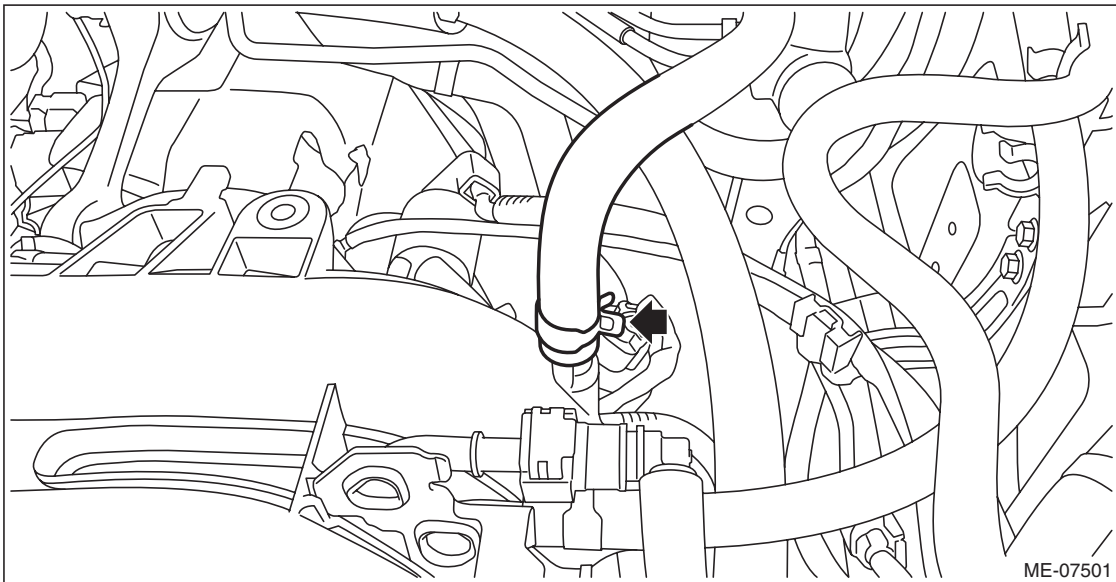
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

- 17) Disconnect the connector (C) from the throttle position sensor.



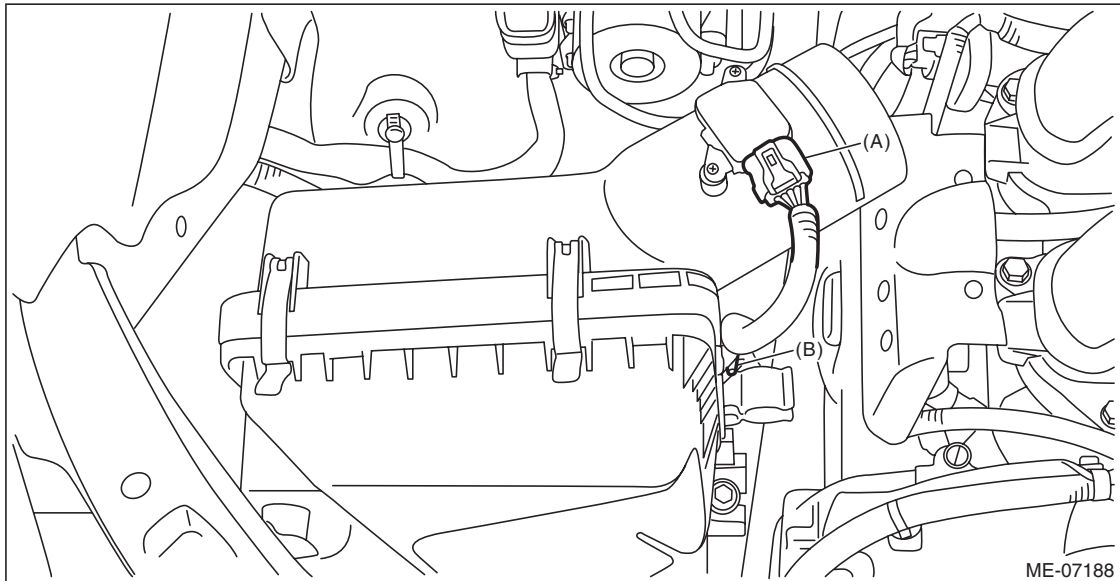
- 18) Disconnect the brake booster vacuum hose from the intake manifold.



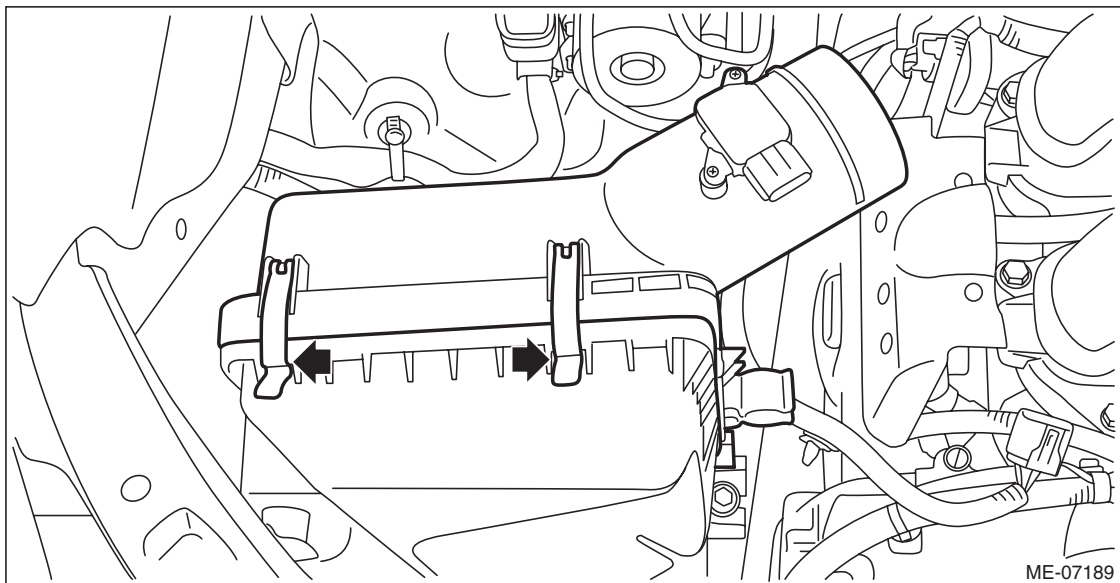
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

19) Disconnect the connector (A) from the mass air flow and intake air temperature sensor, and remove the clip (B) which holds the mass air flow and intake air temperature sensor harness.



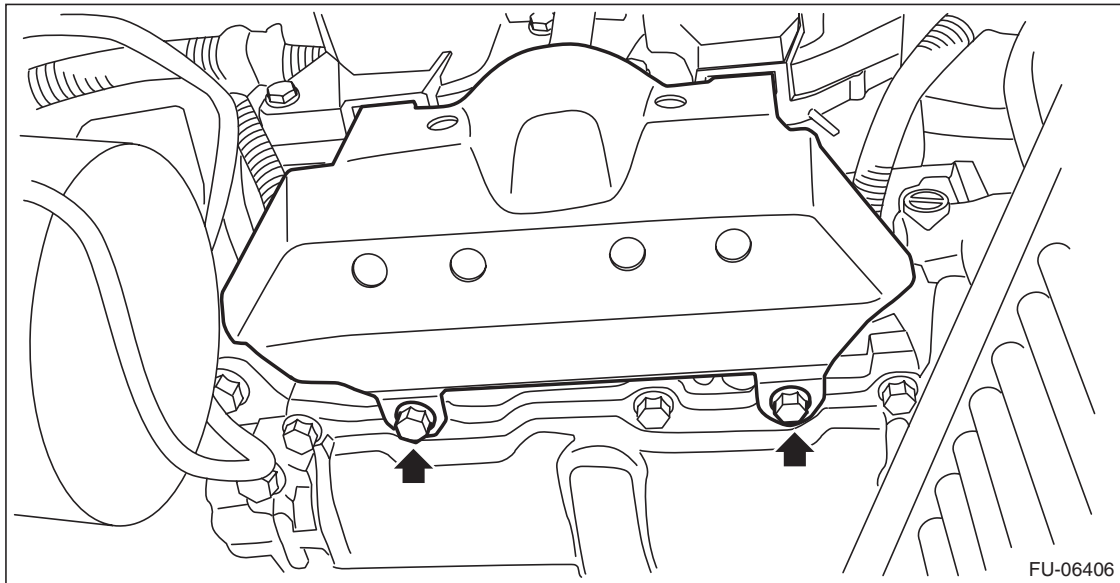
20) Remove the air cleaner case (rear).



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

21) Remove the intake manifold protector RH.



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

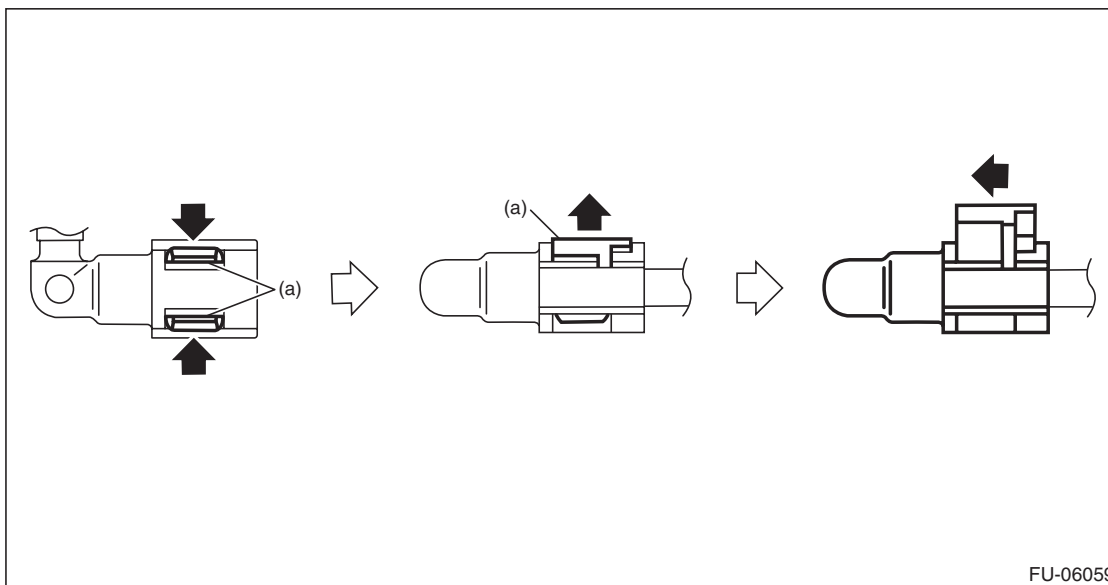
22) Disconnect the fuel delivery pipe from the fuel pipe RH.

CAUTION:

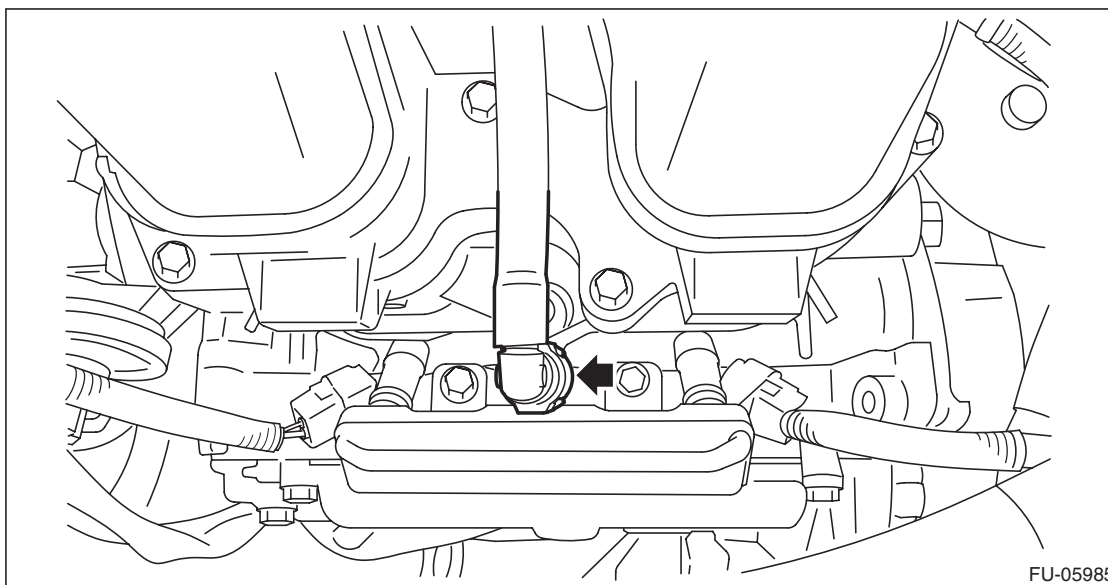
- Be careful not to spill fuel.
- Catch the fuel from the pipes using a container or cloth.

NOTE:

Disconnect the quick connector as shown in the figure.



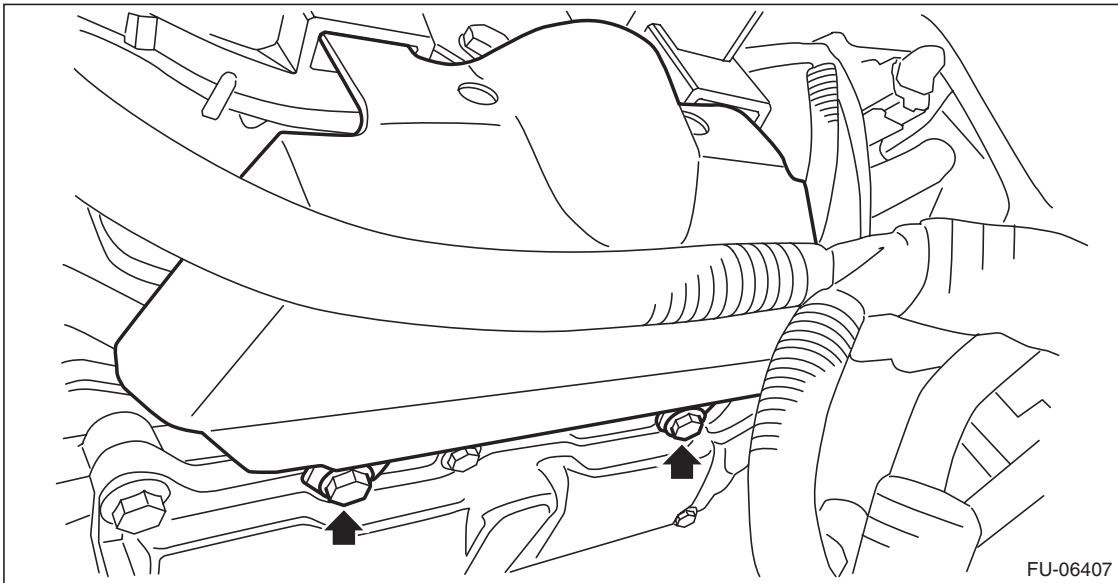
(a) Slider



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

23) Remove the intake manifold protector LH.



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

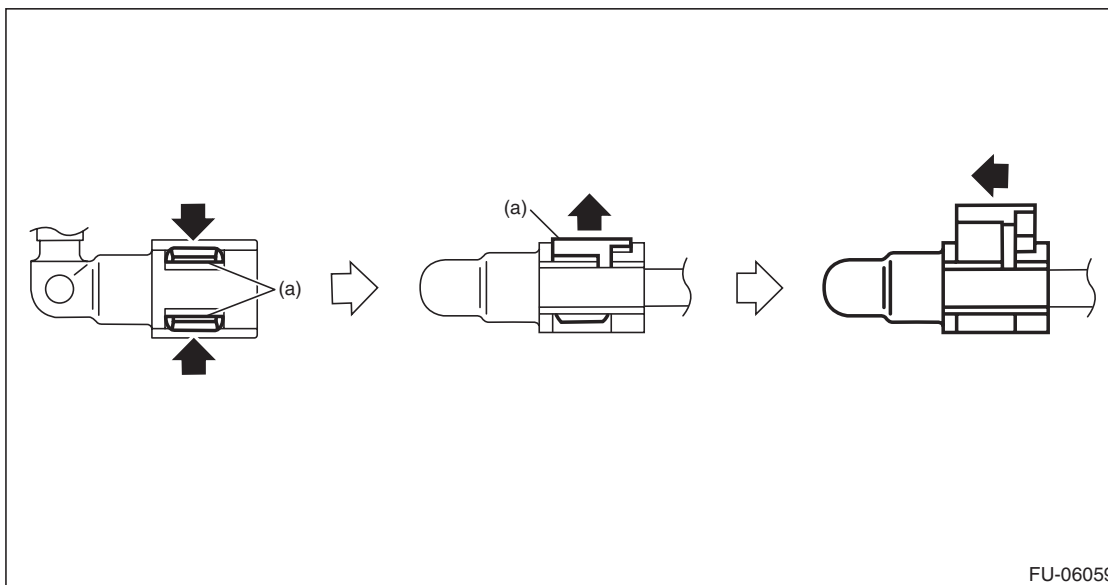
24) Disconnect the fuel delivery pipe from the fuel pipe LH.

CAUTION:

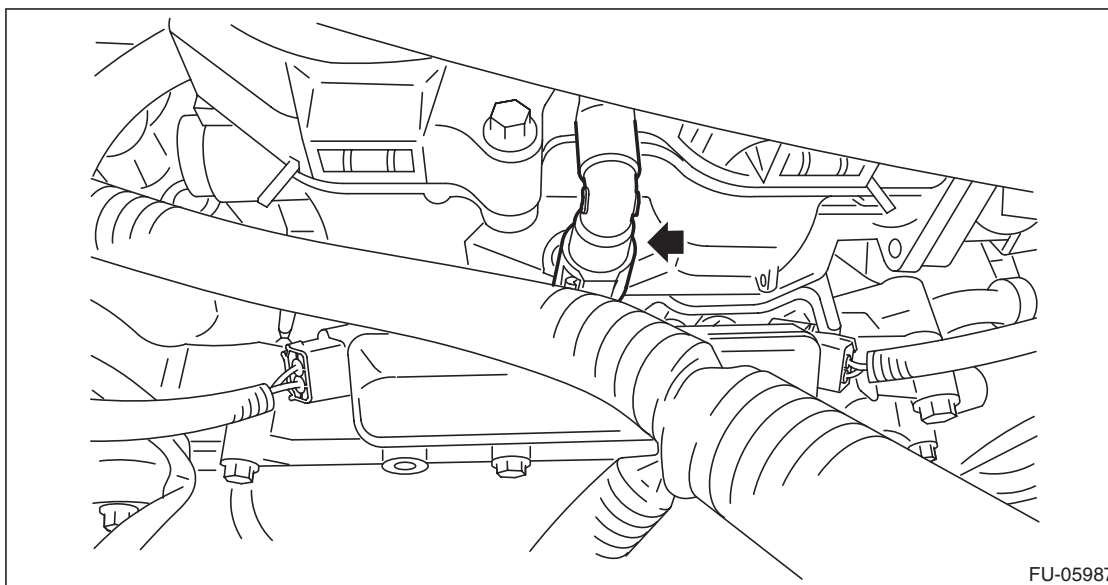
- Be careful not to spill fuel.
- Catch the fuel from the pipes using a container or cloth.

NOTE:

Disconnect the quick connector as shown in the figure.



(a) Slider



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

25) Disconnect the fuel delivery tube and evaporation hose.

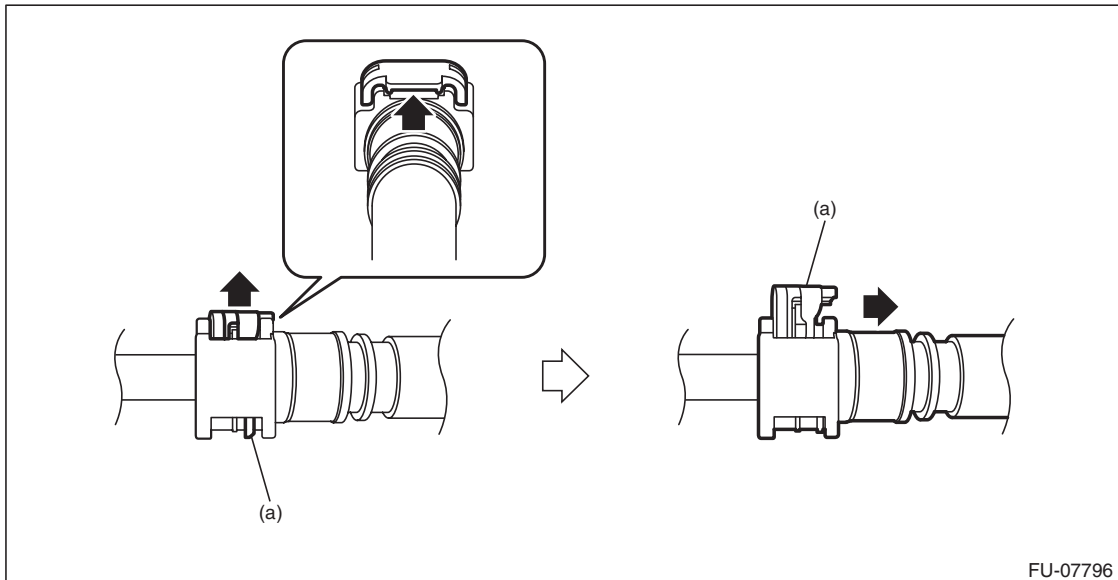
CAUTION:

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

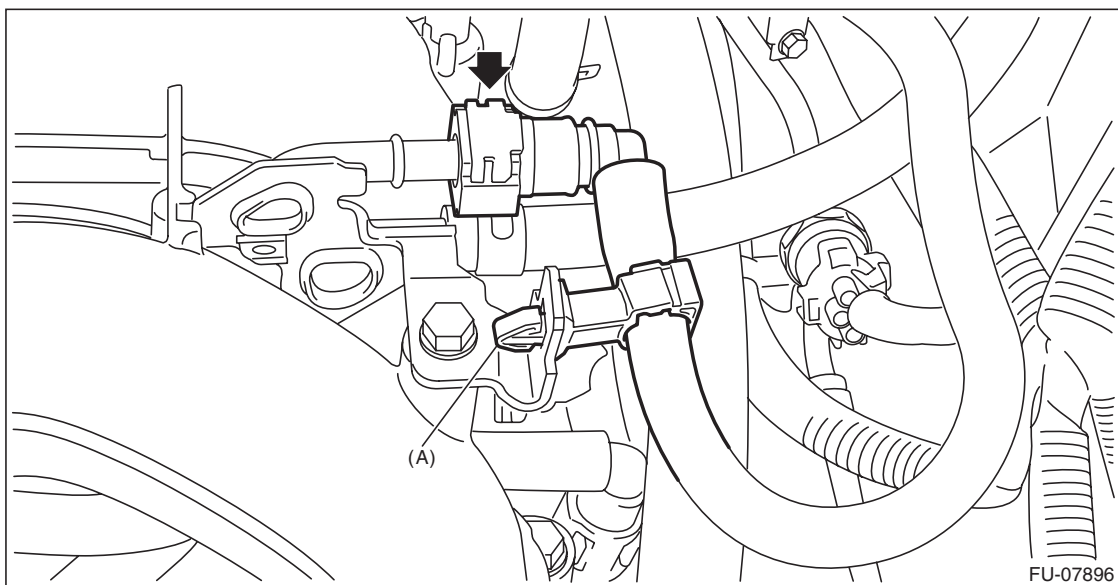
(1) Disconnect the quick connector on the fuel delivery tube from the fuel pipe assembly, and remove the clip (A) securing the fuel delivery tube.

NOTE:

Disconnect the quick connector as shown in the figure.



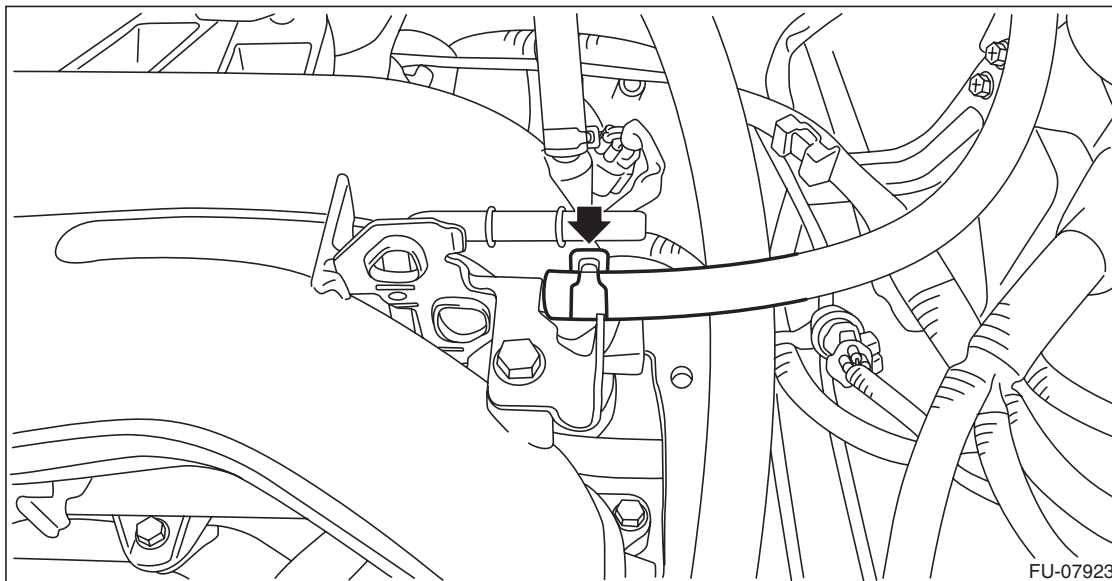
(a) Slider



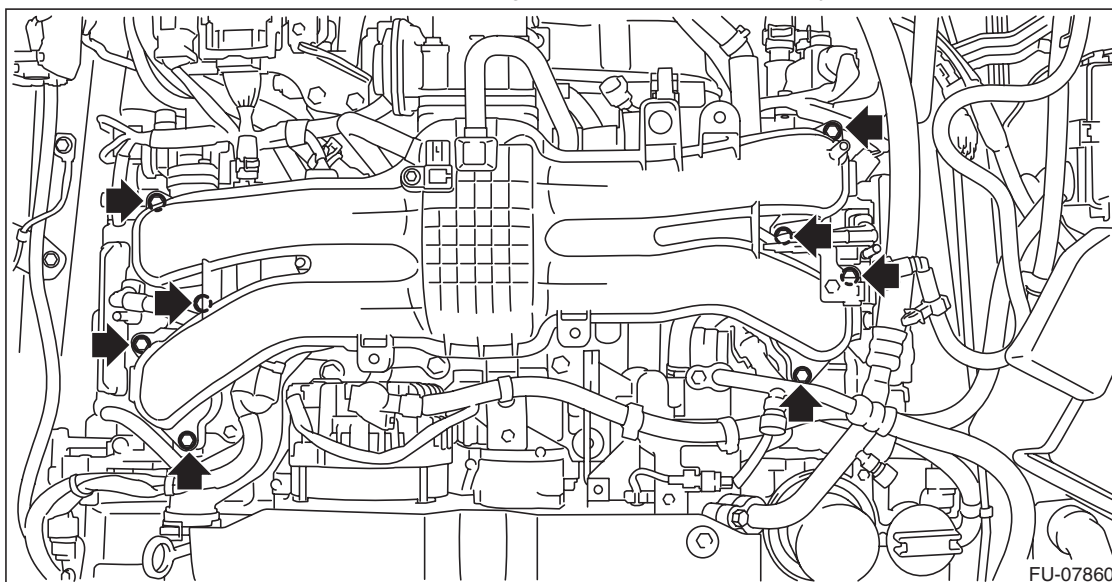
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

- (2) Disconnect the evaporation hose from the fuel pipe assembly.



- 26) Remove the intake manifold from the tumble generator valve assembly.



- 27) Remove the engine wiring harness. <Ref. to FU(H4DO)-42, REMOVAL, Engine Wiring Harness.>

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

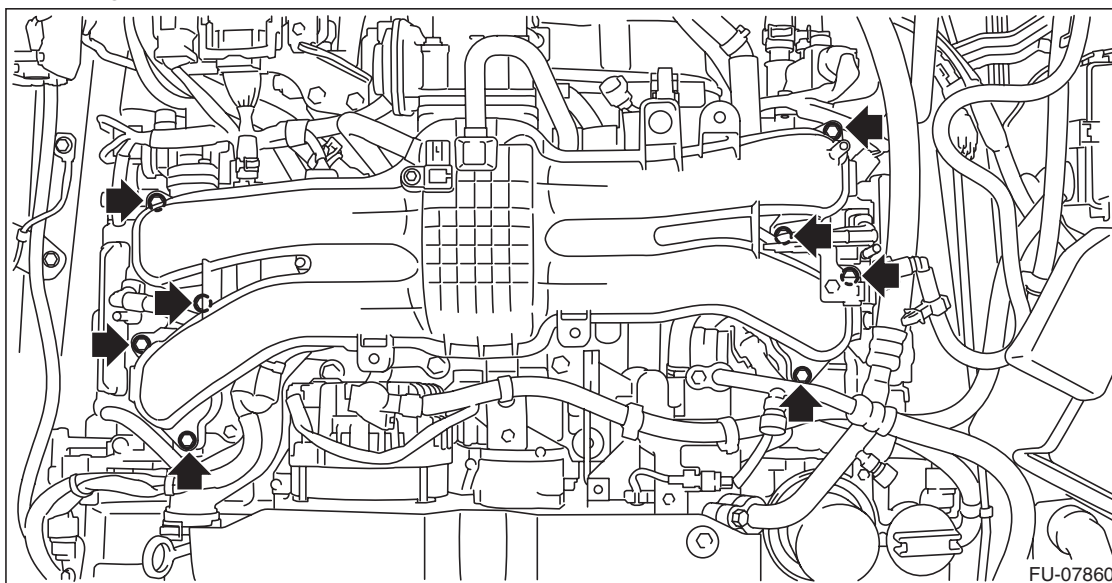
- 1) Install the engine wiring harness. <Ref. to FU(H4DO)-46, INSTALLATION, Engine Wiring Harness.>
- 2) Install the intake manifold to the tumble generator valve assembly.

NOTE:

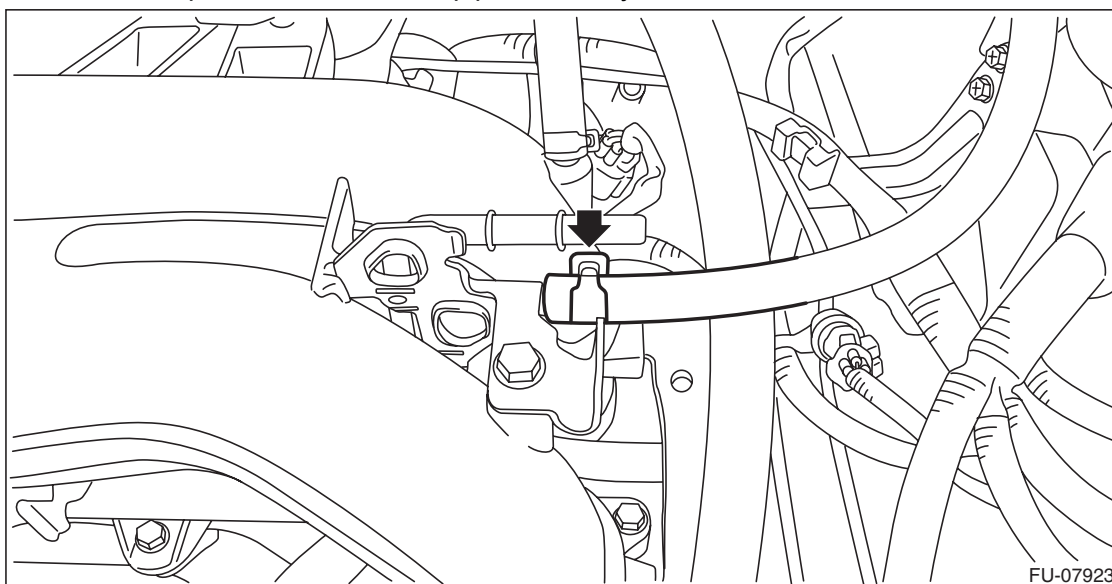
Use a new gasket.

Tightening torque:

8.3 N·m (0.8 kgf-m, 6.1 ft-lb)



- 3) Connect the fuel delivery tube and evaporation hose.
 - (1) Connect the evaporation hose to fuel pipe assembly.



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

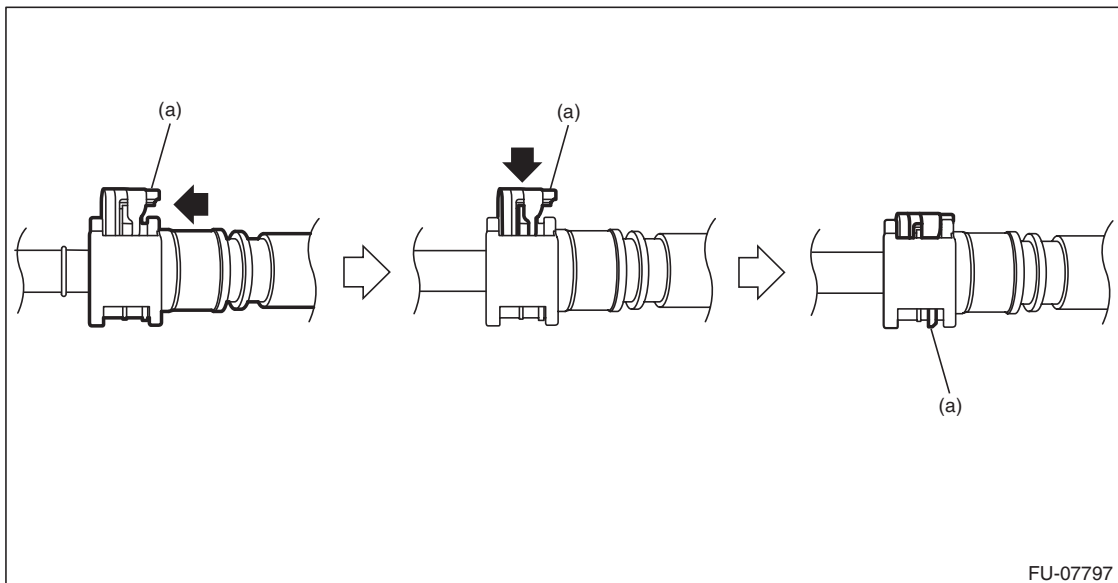
(2) Connect the quick connector on the fuel delivery tube to the fuel pipe assembly, and fix the fuel delivery tube using clip (A).

CAUTION:

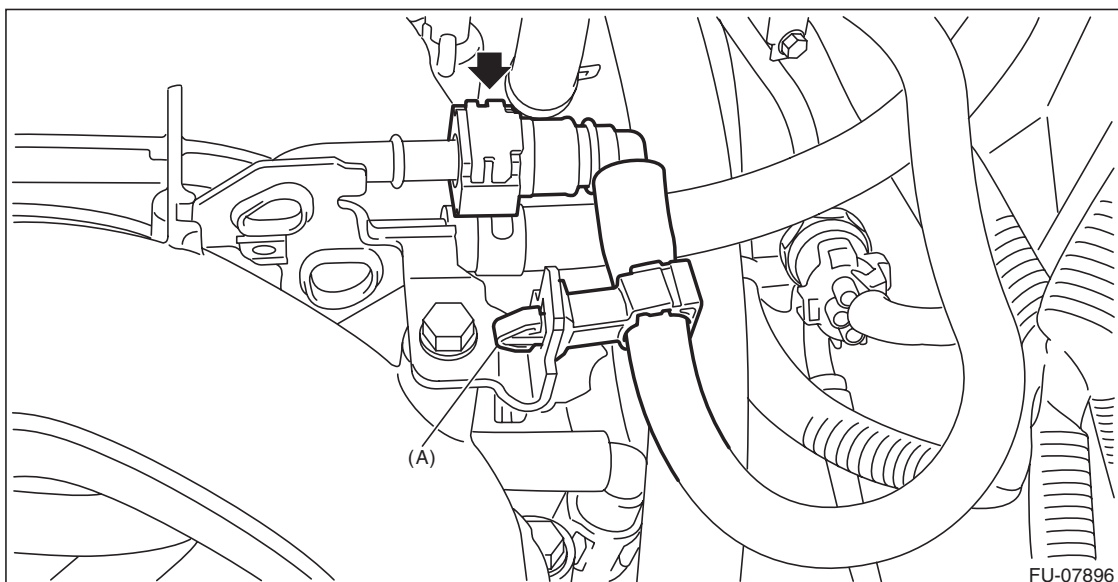
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



(a) Slider



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

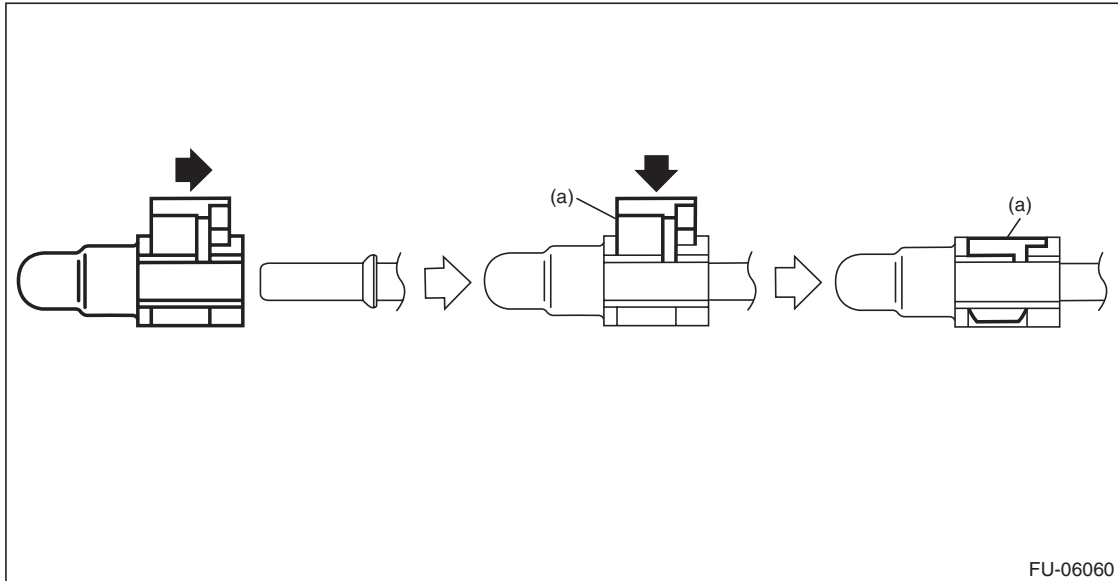
4) Connect the fuel delivery pipe to the fuel pipe LH.

CAUTION:

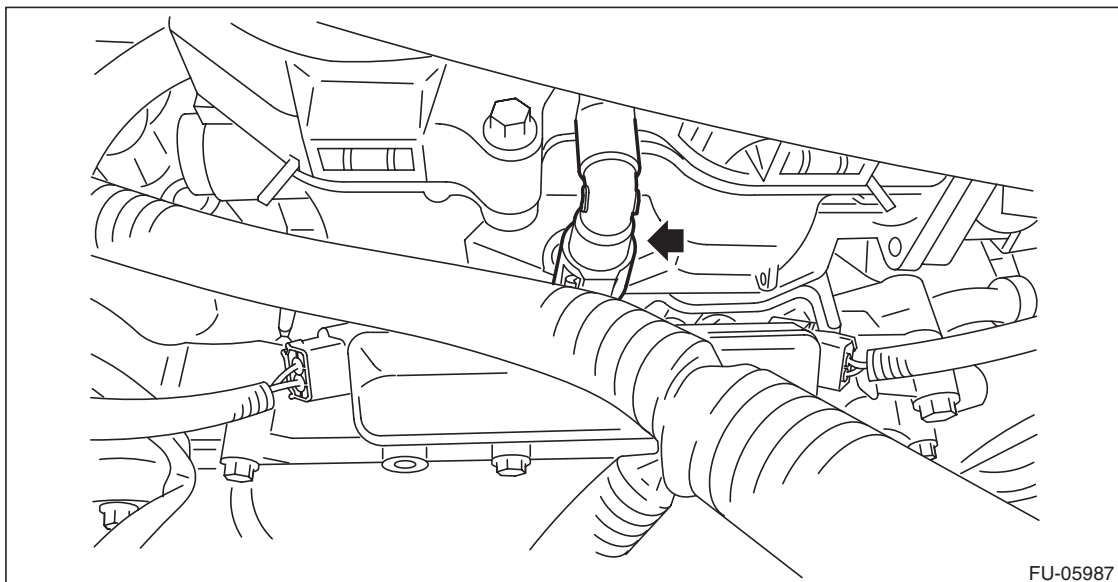
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



(a) Slider



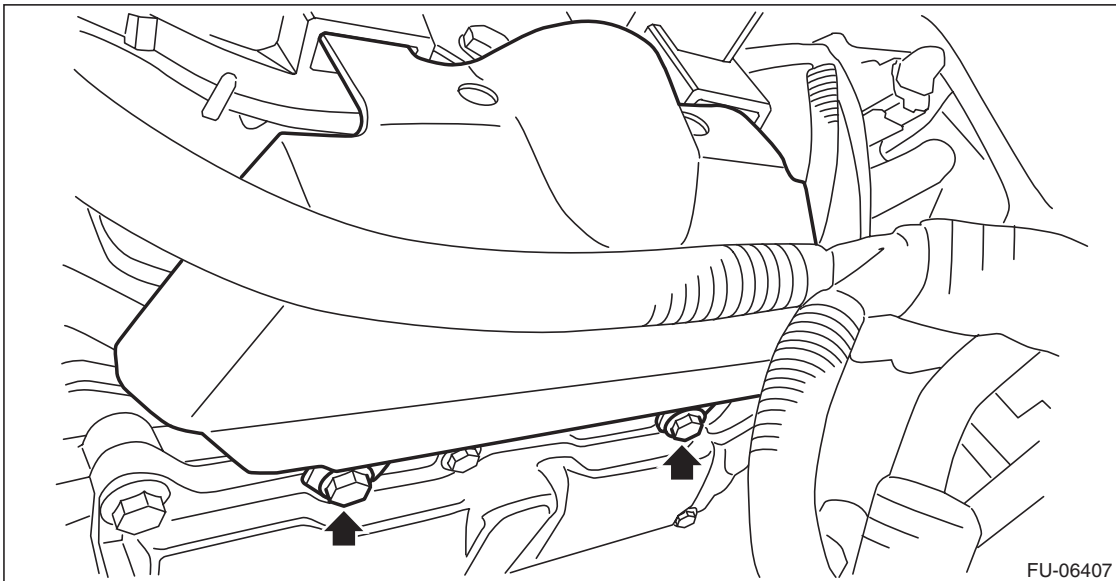
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

5) Install the intake manifold protector LH.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



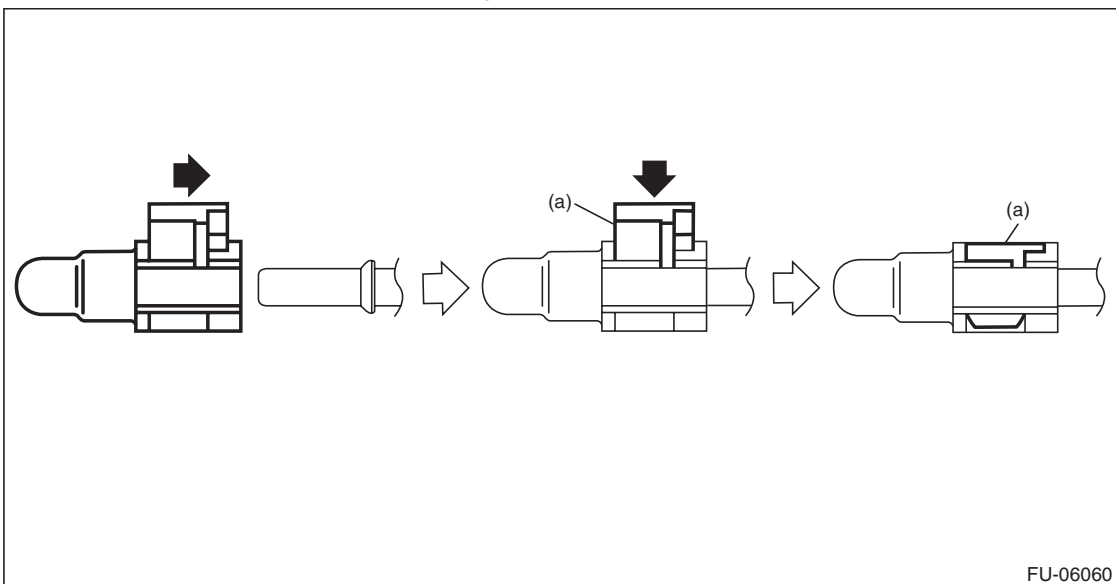
6) Connect the fuel delivery pipe to the fuel pipe RH.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

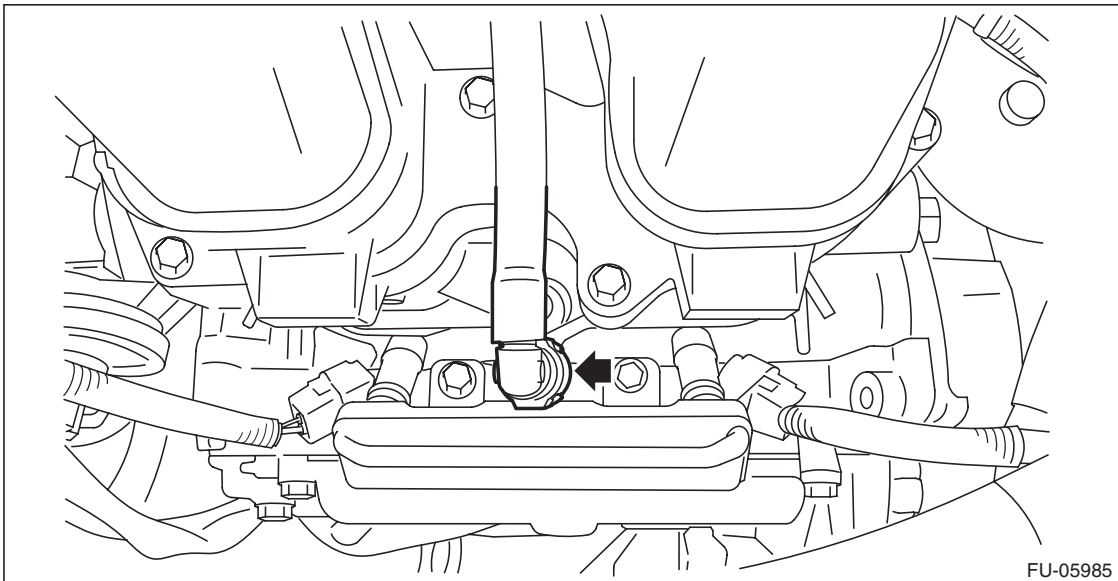
Connect the quick connector as shown in the figure.



(a) Slider

Intake Manifold

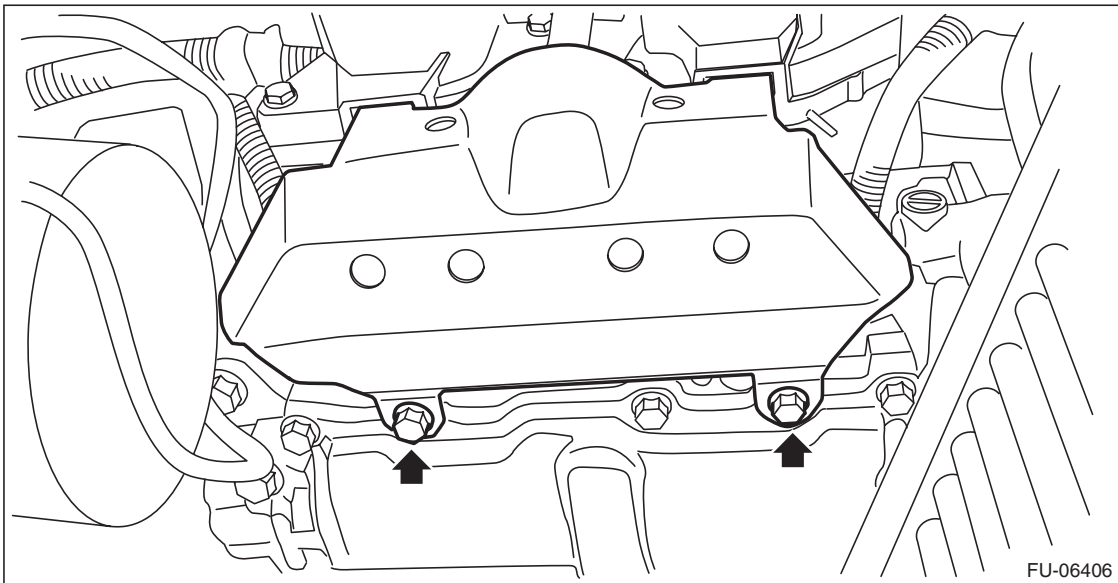
FUEL INJECTION (FUEL SYSTEMS)



7) Install the intake manifold protector RH.

Tightening torque:

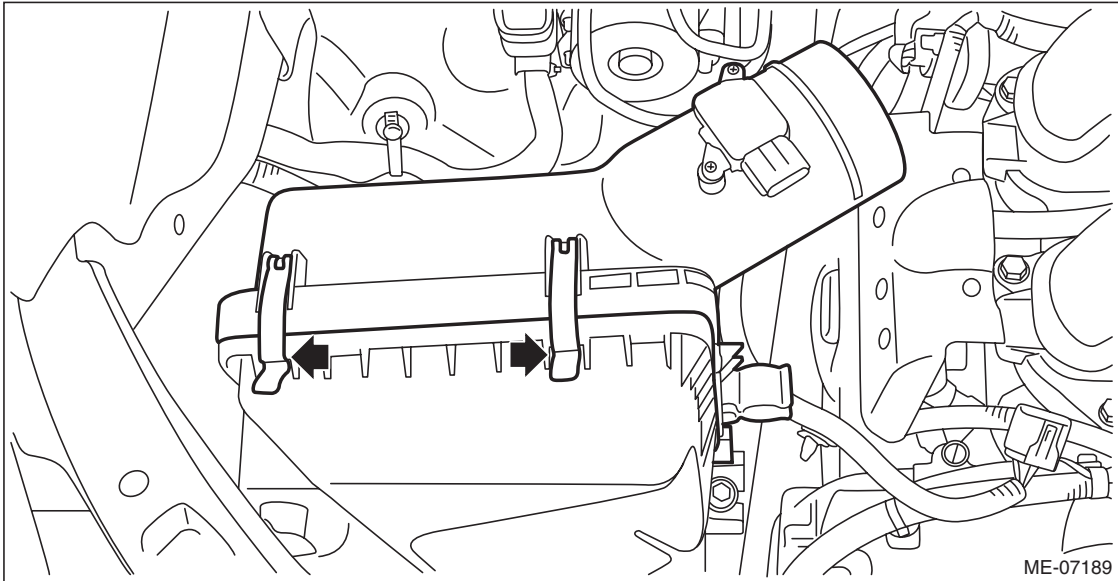
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



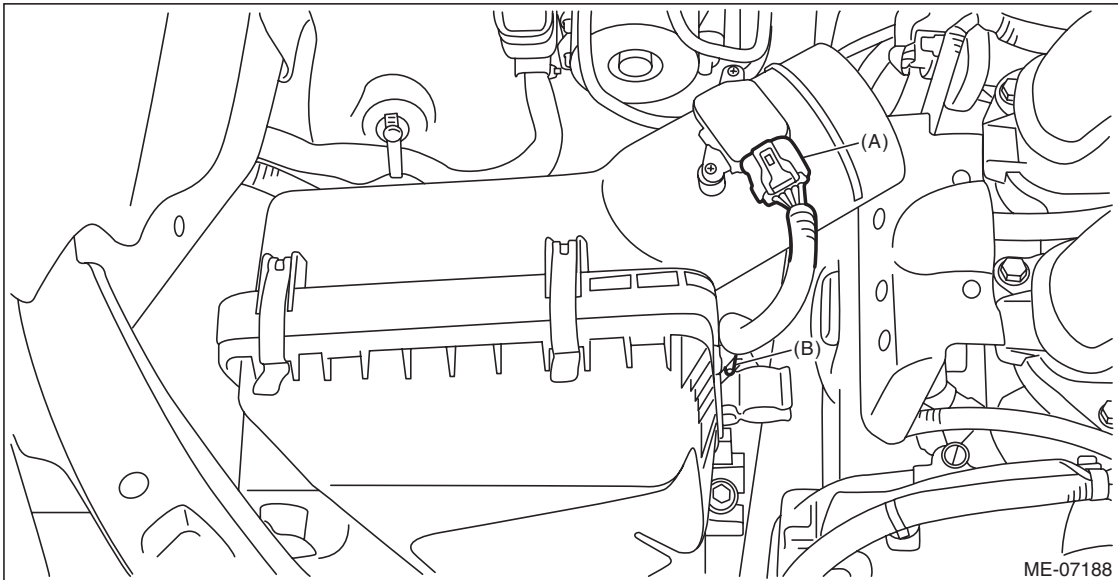
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

8) Install the air intake case (rear).



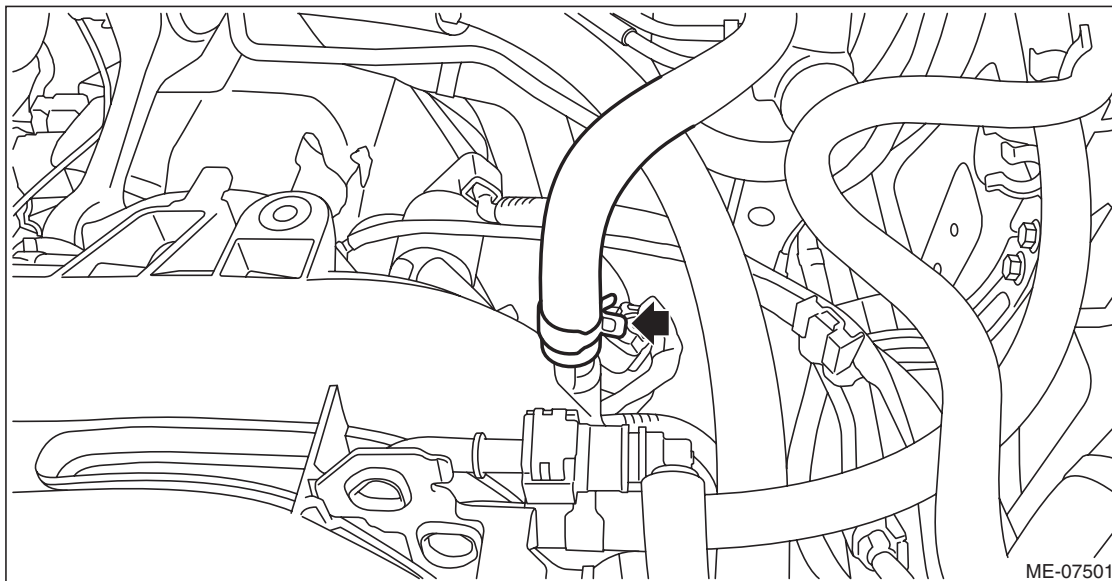
9) Install the clip (B) which secures the air flow and intake air temperature sensor harness, and connect the connector (A) to the air flow and intake air temperature sensor.



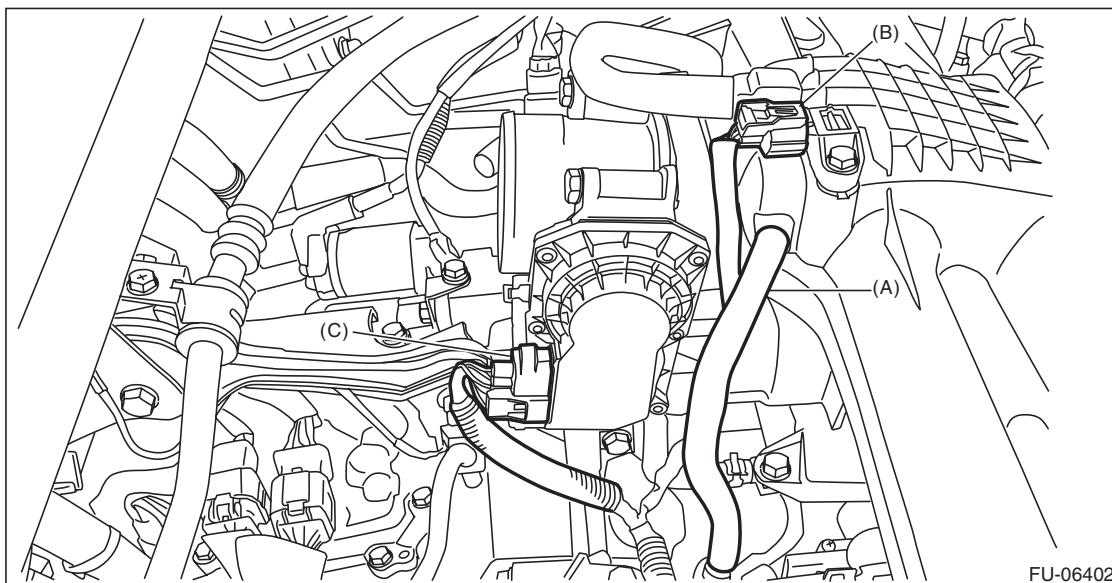
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

- 10) Connect the brake booster vacuum hose to the intake manifold.



- 11) Connect the PCV hose (A) to intake manifold.
12) Connect the connector (B) to the manifold absolute pressure sensor.
13) Connect the connector (C) to the throttle position sensor.



- 14) Connect the connector (A) to the purge control solenoid valve.

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

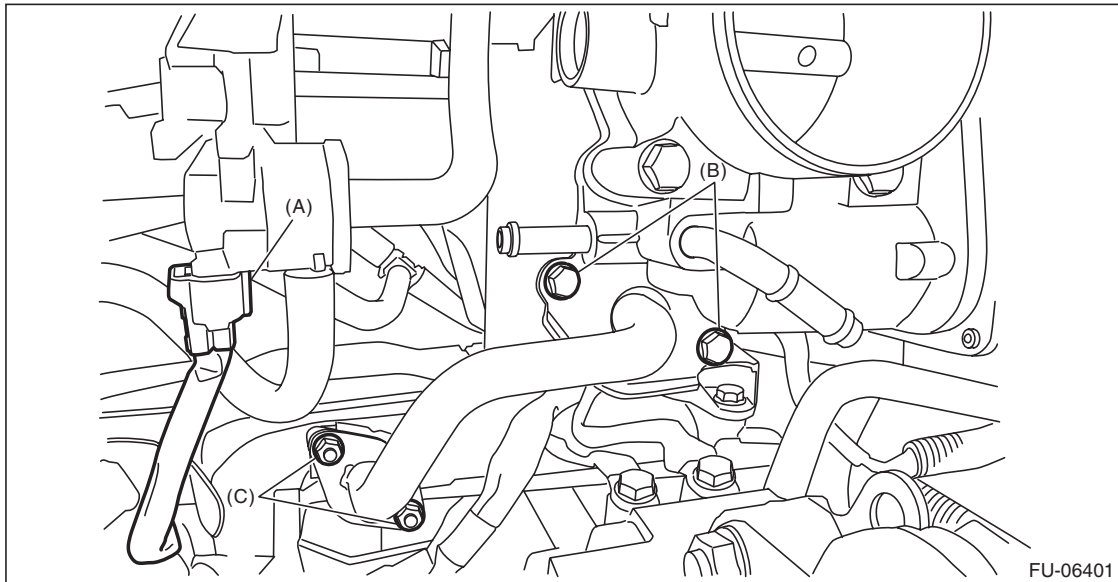
15) Tighten the nut (C) and bolt (B) which hold EGR pipe to the water pipe assembly.

NOTE:

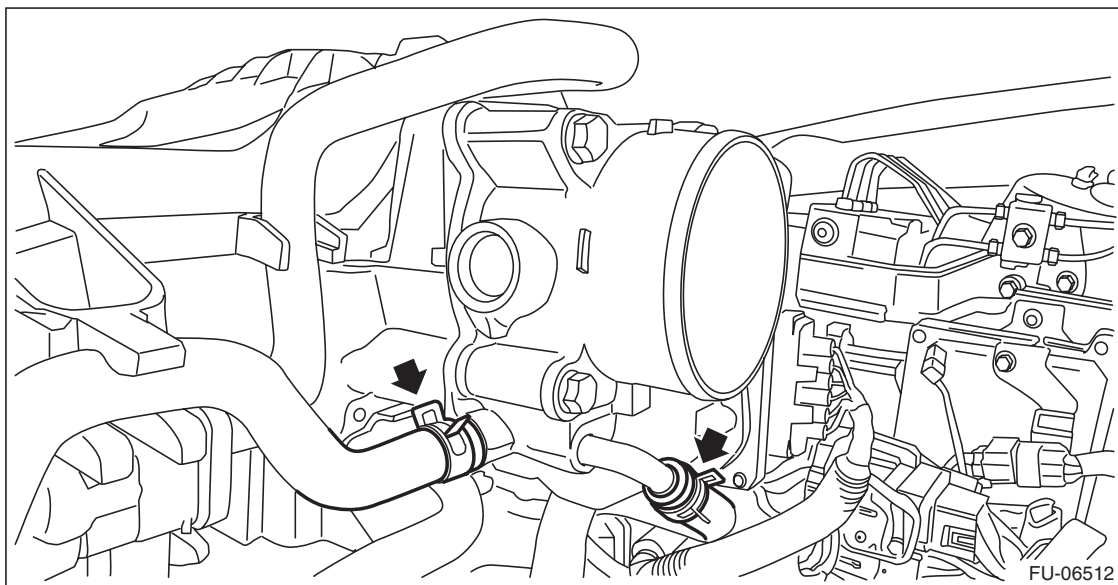
- Use a new gasket.
- Always tighten the EGR pipe at (C) first, and then (B).

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



16) Connect the preheater hoses to the throttle body.



17) Install the air intake boot. <Ref. to IN(H4DO)-11, INSTALLATION, Air Intake Boot.>

18) Lift up the vehicle.

19) Install the under cover. <Ref. to EI-22, INSTALLATION, Front Under Cover.>

20) Lower the vehicle.

21) Connect the battery ground terminal.

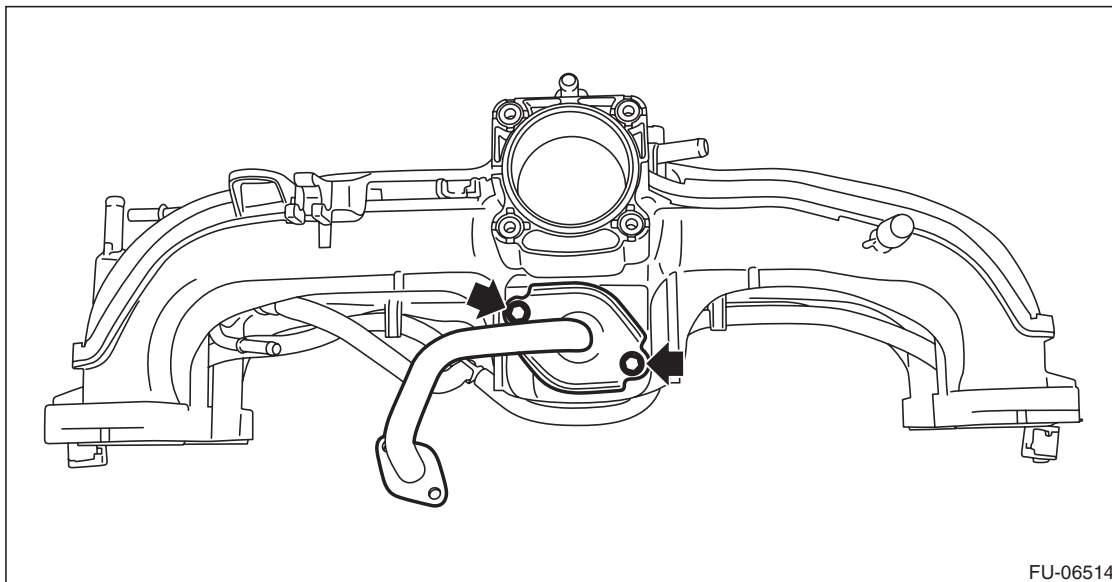
22) Fill engine coolant. <Ref. to CO(H4DO)-15, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

C: DISASSEMBLY

- 1) Remove the throttle body. <Ref. to FU(H4DO)-15, REMOVAL, Throttle Body.>
- 2) Remove the purge control solenoid valve. <Ref. to EC(H4DO)-17, REMOVAL, Purge Control Solenoid Valve.>
- 3) Remove the manifold absolute pressure sensor. <Ref. to FU(H4DO)-70, REMOVAL, Manifold Absolute Pressure Sensor.>
- 4) Remove the EGR pipe from intake manifold.



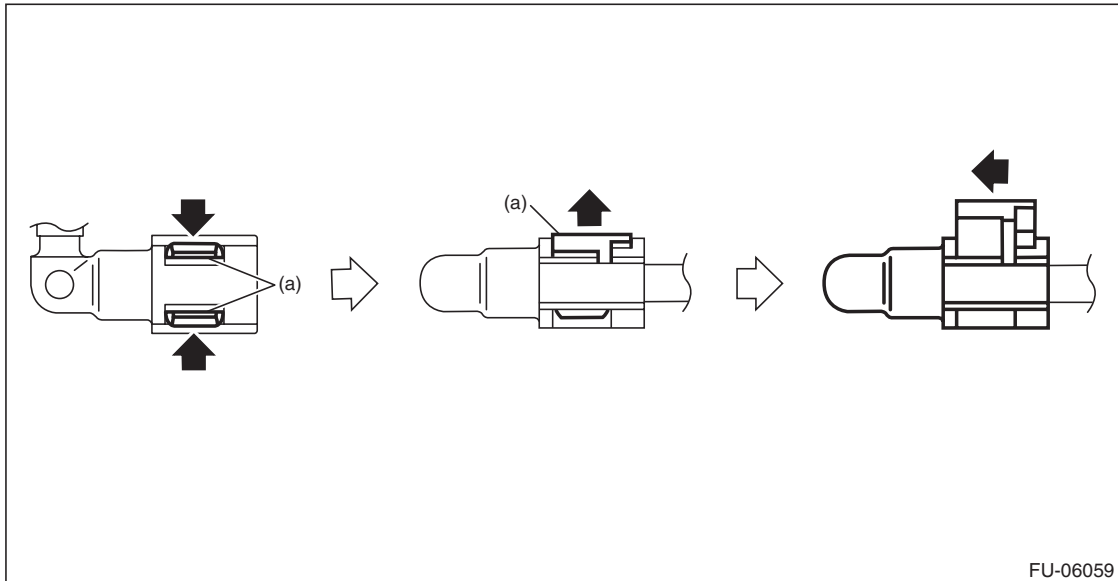
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

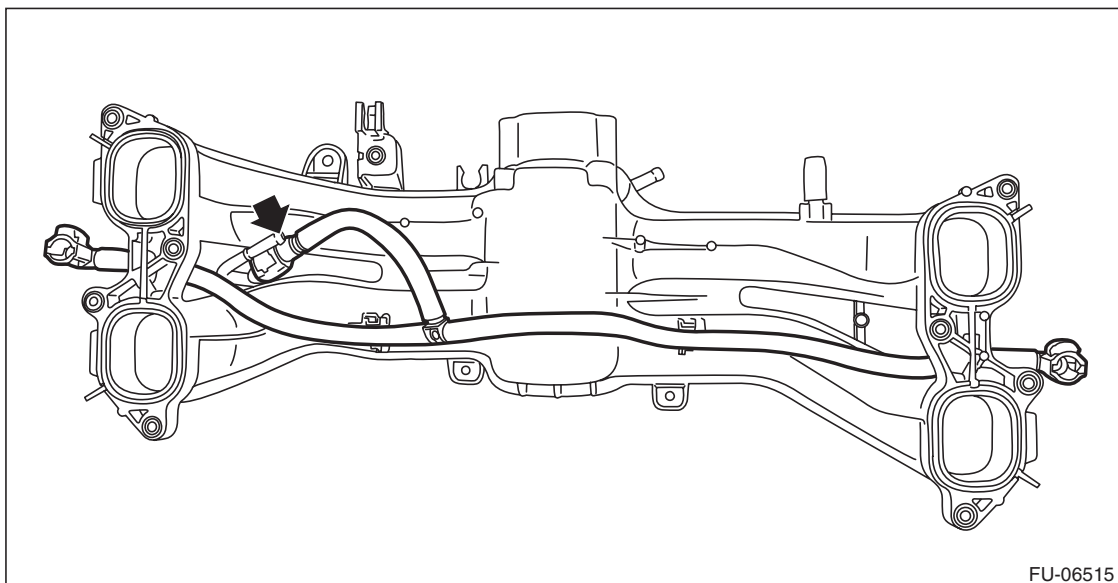
5) Remove the fuel delivery pipe from intake manifold.

NOTE:

Disconnect the quick connector as shown in the figure.



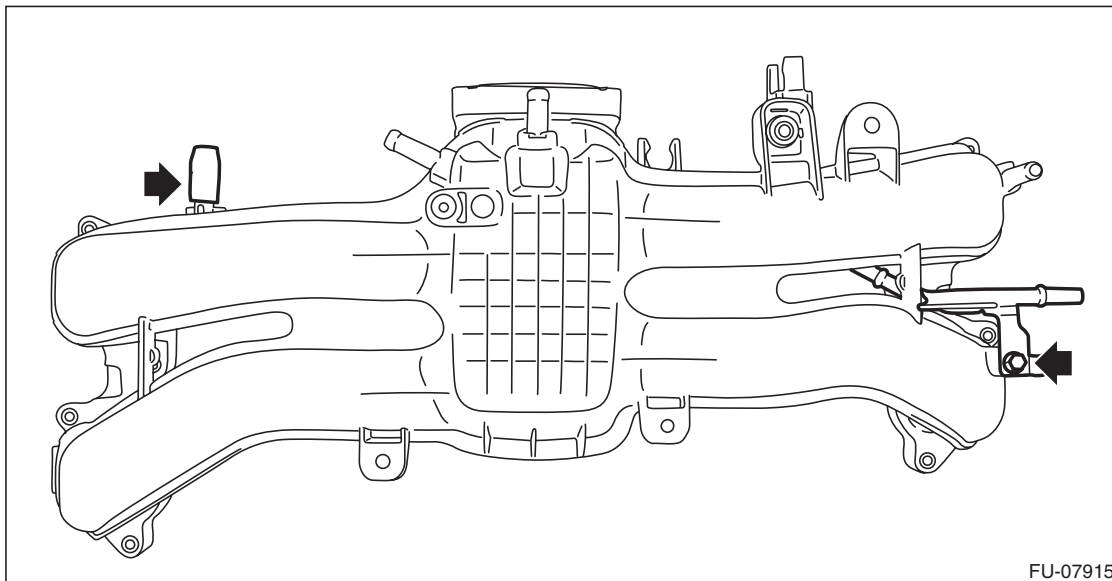
(a) Slider



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

6) Remove the fuel pipe and cap from the intake manifold.



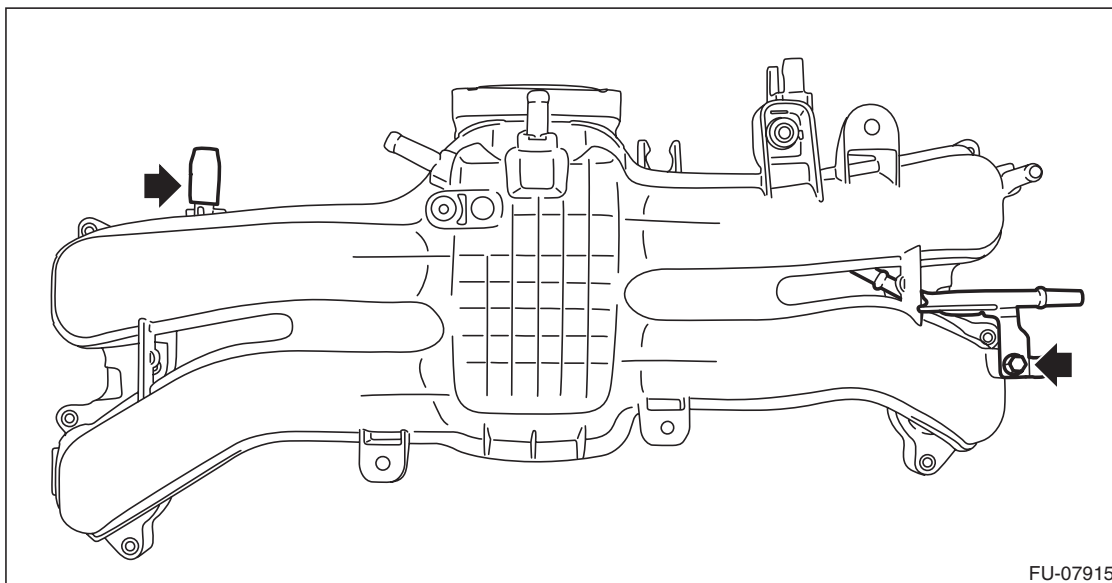
FU-07915

D: ASSEMBLY

1) Install the fuel pipe and cap to the intake manifold.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



FU-07915

Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

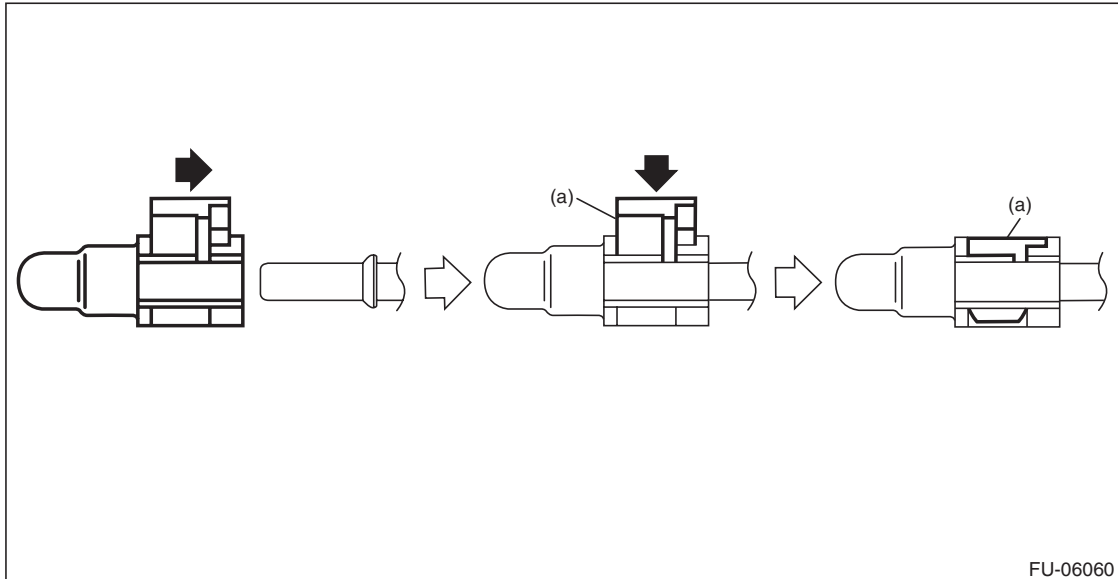
2) Install the fuel delivery pipe to the intake manifold.

CAUTION:

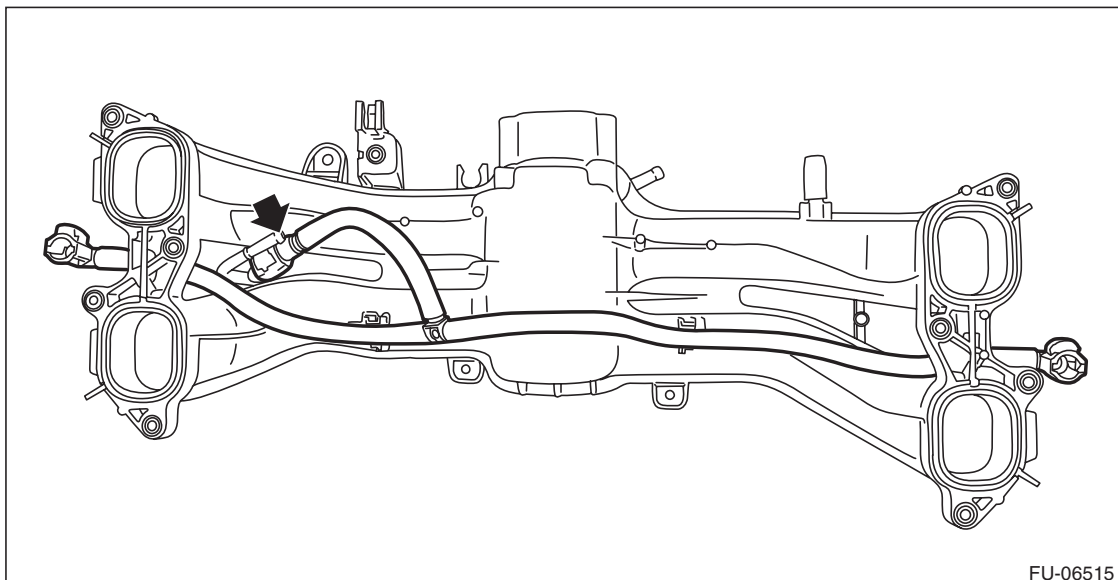
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



(a) Slider



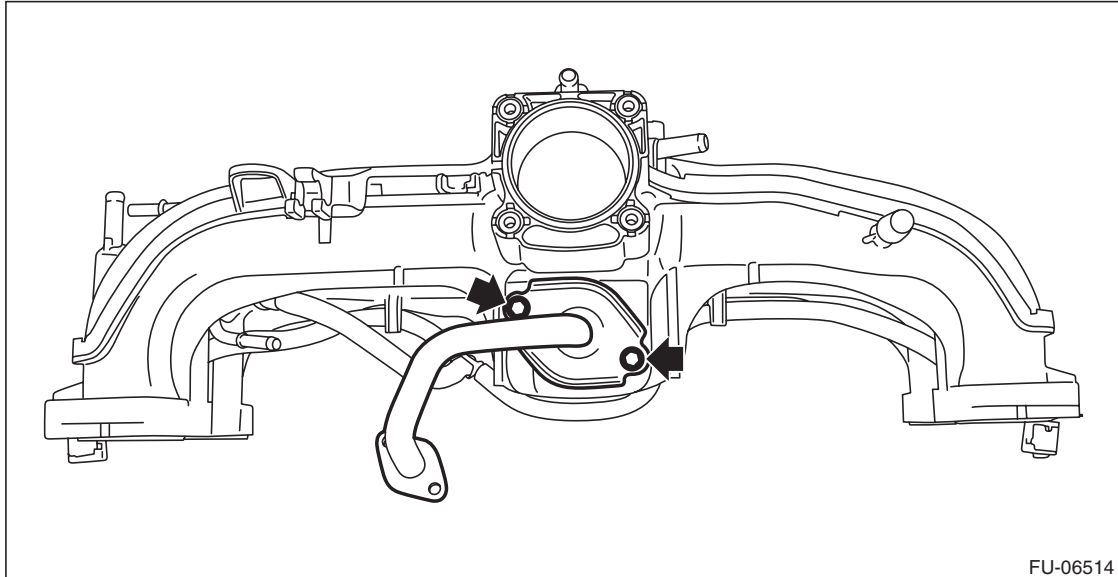
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

3) Temporarily install the EGR pipe to the intake manifold.

NOTE:

- Use a new gasket.
- Tighten the EGR pipe when installing the intake manifold.



4) Install the manifold absolute pressure sensor. <Ref. to FU(H4DO)-70, INSTALLATION, Manifold Absolute Pressure Sensor.>

5) Install the purge control solenoid valve. <Ref. to EC(H4DO)-19, INSTALLATION, Purge Control Solenoid Valve.>

6) Install the throttle body. <Ref. to FU(H4DO)-16, INSTALLATION, Throttle Body.>

E: INSPECTION

- 1) Check that the intake manifold and fuel pipe have no deformation, cracks and other damages.
- 2) Check that the hose has no cracks, damage or loose part.

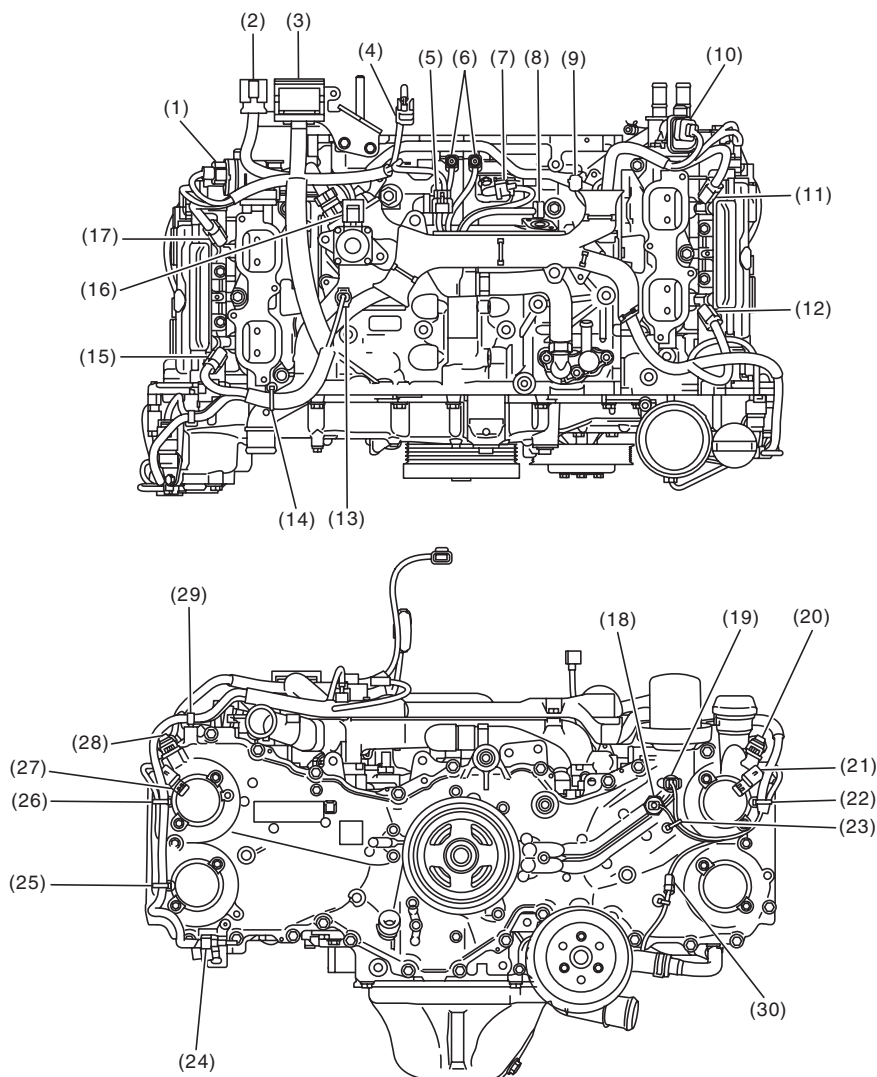
Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

4. Engine Wiring Harness

A: REMOVAL

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
 - 2) Disconnect the ground cable from battery.
 - 3) Open the fuel filler lid and remove the fuel filler cap.
 - 4) Remove the intake manifold. <Ref. to FU(H4DO)-19, REMOVAL, Intake Manifold.>
 - 5) Disconnect the connector from the engine.
- Structural diagram 1



FU-07875

Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

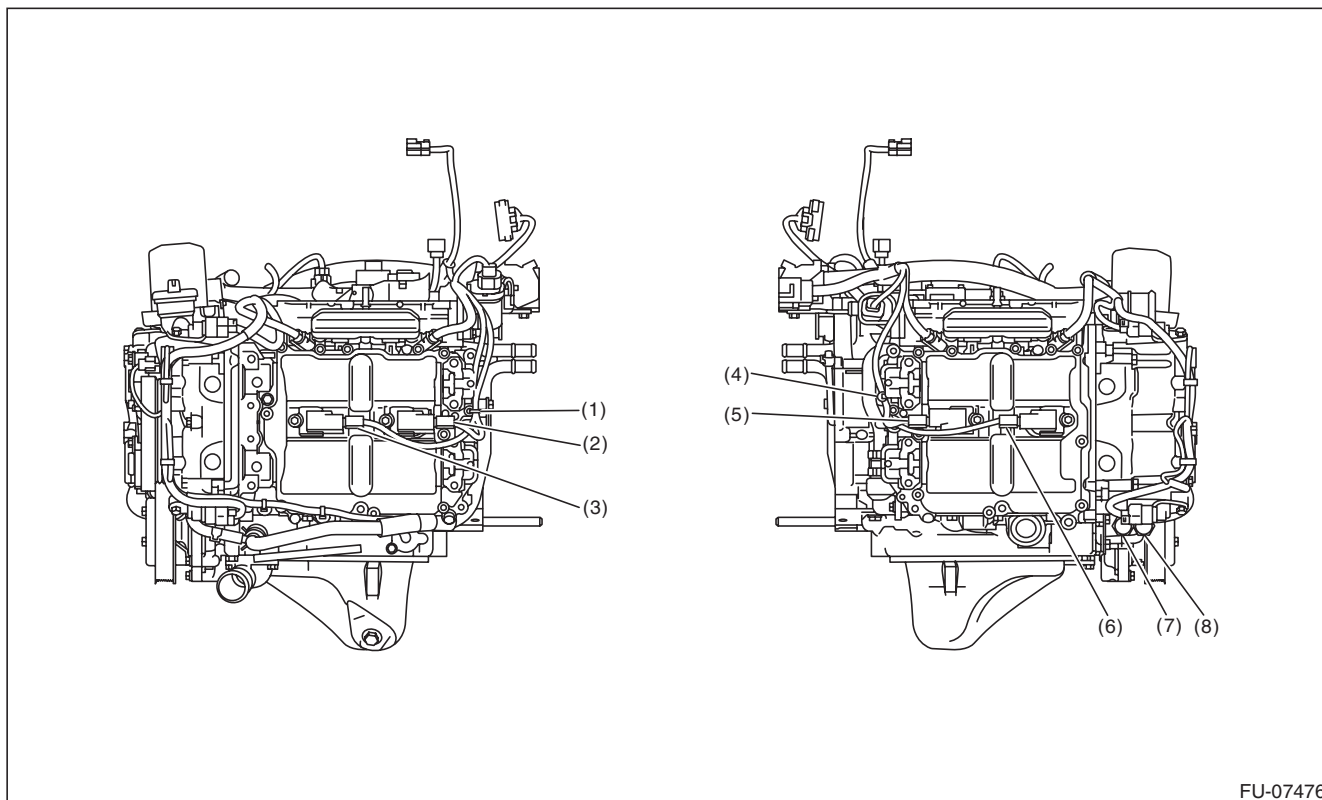
- (1) Tumble generator valve actuator RH
- (2) Engine harness connector (16P)
- (3) Engine harness connector (54P)
- (4) Throttle position sensor connector
- (5) Manifold pressure sensor connector
- (6) Engine ground (2 locations)
- (7) Crankshaft position sensor
- (8) Knock sensor
- (9) Purge control solenoid valve connector
- (10) Tumble generator valve actuator LH
- (11) Fuel injector (#4)
- (12) Fuel injector (#2)
- (13) Engine coolant temperature sensor
- (14) Remove the clip from the screw hole.
- (15) Fuel injector (#1)
- (16) EGR valve
- (17) Fuel injector (#3)
- (18) Oil pressure switch
- (19) Engine oil temperature sensor
- (20) Camshaft position sensor LH
- (21) Intake oil control solenoid LH
- (22) Remove the clip from the screw hole.
- (23) Remove the clip from the screw hole.
- (24) Remove the clip from the oval hole.
- (25) Remove the clip from the screw hole.
- (26) Remove the clip from the screw hole.
- (27) Intake oil control solenoid RH
- (28) Camshaft position sensor RH
- (29) Remove the clip from the screw hole.
- (30) Oil level switch



Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

- Structural diagram 2



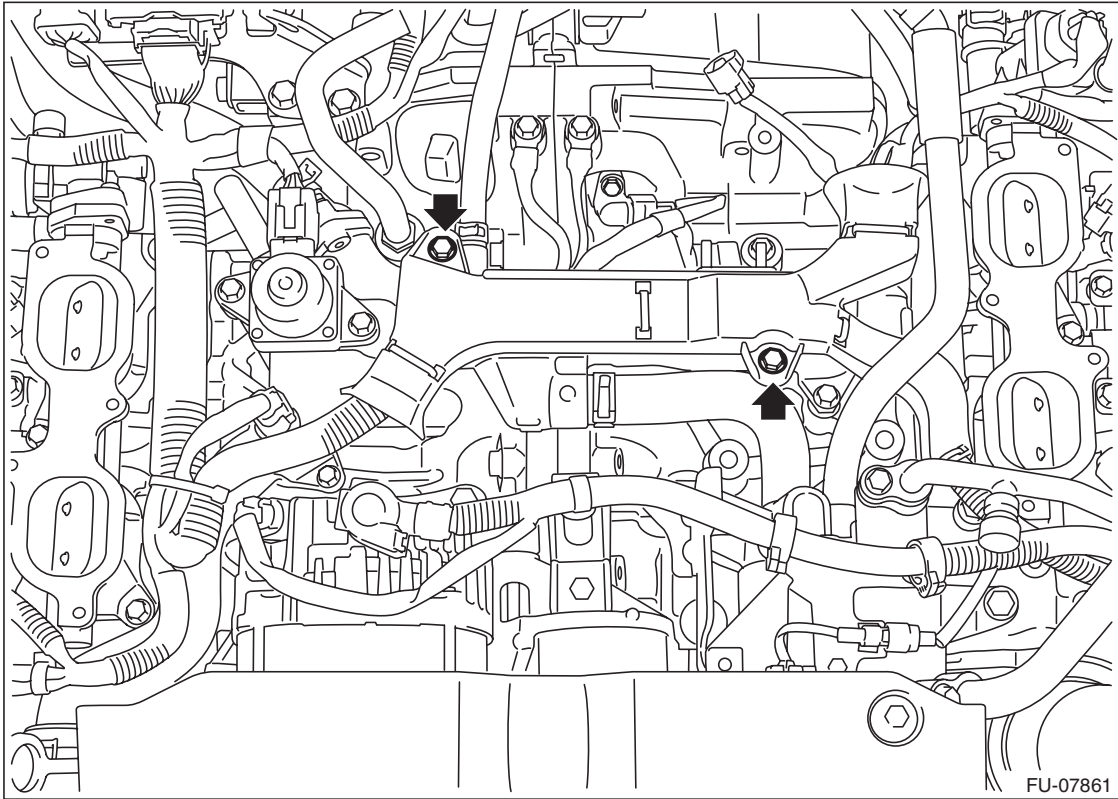
FU-07476

- (1) Remove the clip from the screw hole.
- (2) Ignition coil No. 4
- (3) Ignition coil No. 2
- (4) Remove the clip from the screw hole.
- (5) Ignition coil No. 3
- (6) Ignition coil No. 1
- (7) Front oxygen (A/F) sensor
- (8) Rear oxygen sensor

Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

6) Remove the engine wiring harness.



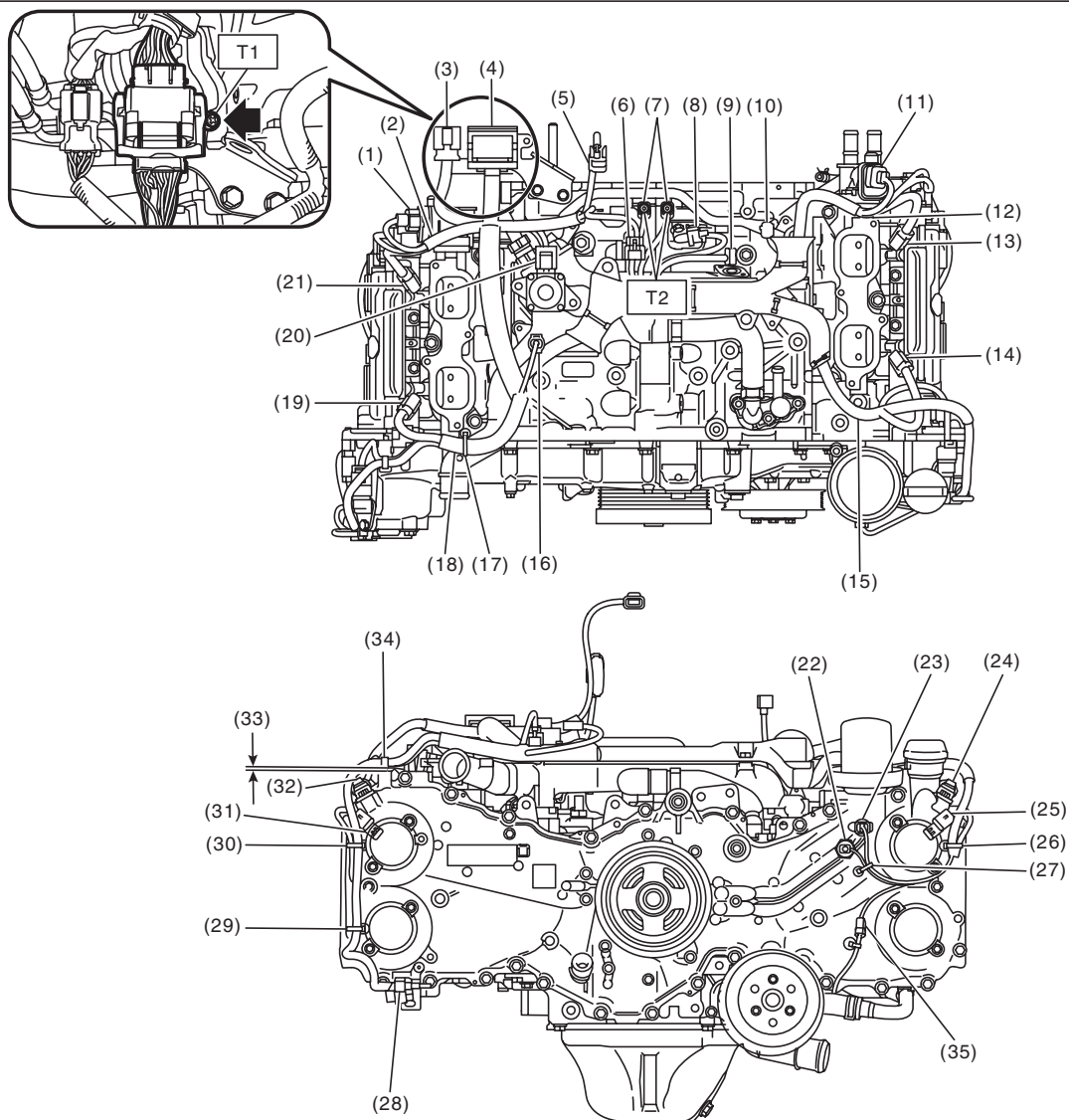
Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

1) Route the engine wiring harness around the engine and connect connectors.

- Structural diagram 1



FU-07870

Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

- (1) Tumble generator valve actuator RH
- (2) Be careful of pinching when installing the intake manifold.
- (3) Engine harness connector (16P)
- (4) Engine harness connector (54P)
- (5) Throttle position sensor connector
- (6) Manifold pressure sensor connector
- (7) Engine ground (2 locations)
- (8) Crankshaft position sensor
- (9) Knock sensor
- (10) Purge control solenoid valve connector
- (11) Tumble generator valve actuator LH
- (12) Be careful of pinching when installing the intake manifold.
- (13) Fuel injector (#4)
- (14) Fuel injector (#2)
- (15) Be careful of pinching when installing the intake manifold and A/C bracket.
- (16) Engine coolant temperature sensor
- (17) Secure the clip to the screw hole.
- (18) Be careful of pinching when installing the intake manifold.
- (19) Fuel injector (#1)
- (20) EGR valve
- (21) Fuel injector (#3)
- (22) Oil pressure switch
- (23) Engine oil temperature sensor
- (24) Camshaft position sensor LH
- (25) Intake oil control solenoid LH
- (26) Secure the clip to the screw hole.
- (27) Secure the clip to the screw hole.
- (28) Secure the clip to the oval hole.
- (29) Secure the clip to the screw hole.
- (30) Secure the clip to the screw hole.
- (31) Intake oil control solenoid RH
- (32) Camshaft position sensor RH
- (33) Maximum of 0 — 2 mm (0 — 0.079 in) gap is allowed.
- (34) Secure the clip to the screw hole.
- (35) Oil level switch

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.8, 5.5)

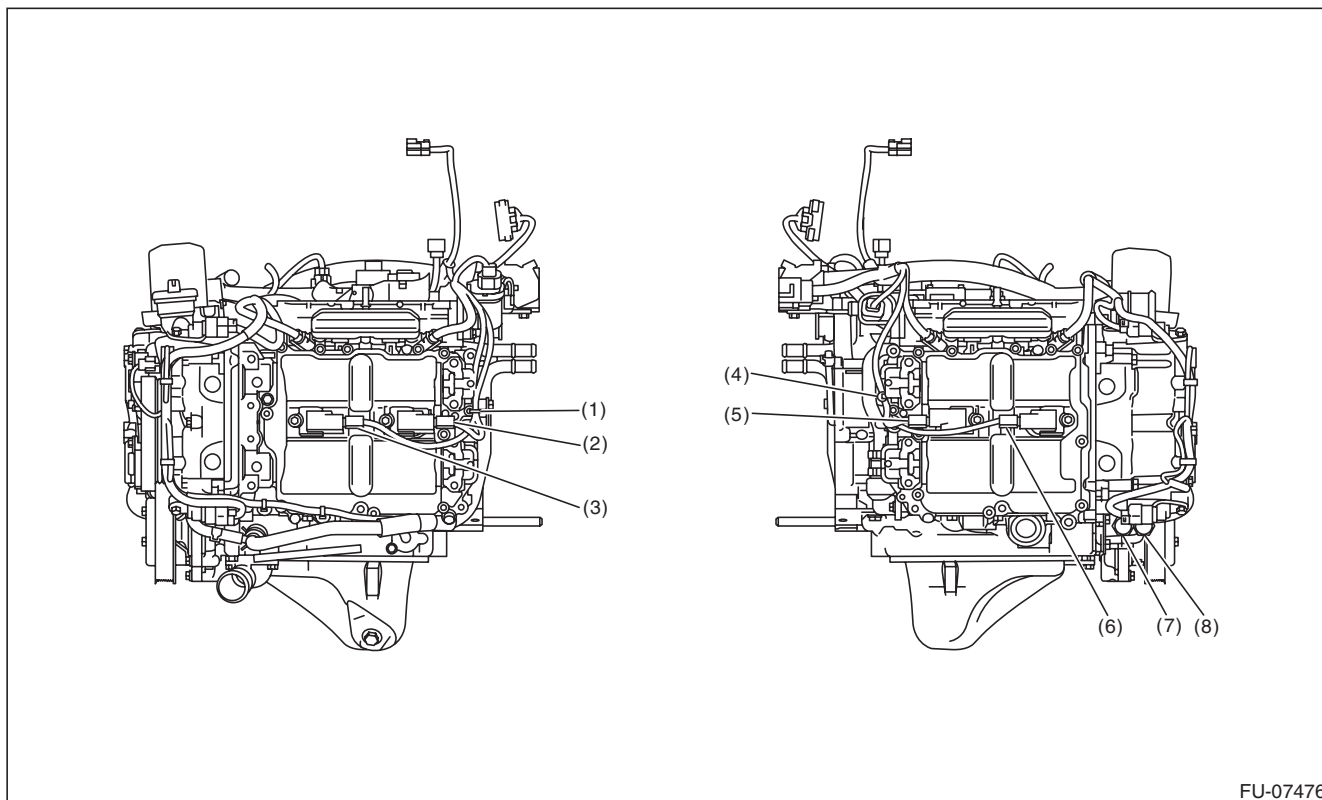
T2: 19 (1.9, 14.0)



Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

- Structural diagram 2



FU-07476

- (1) Secure the clip to the screw hole.
- (2) Ignition coil No. 4
- (3) Ignition coil No. 2
- (4) Secure the clip to the screw hole.
- (5) Ignition coil No. 3
- (6) Ignition coil No. 1
- (7) Front oxygen (A/F) sensor
- (8) Rear oxygen sensor

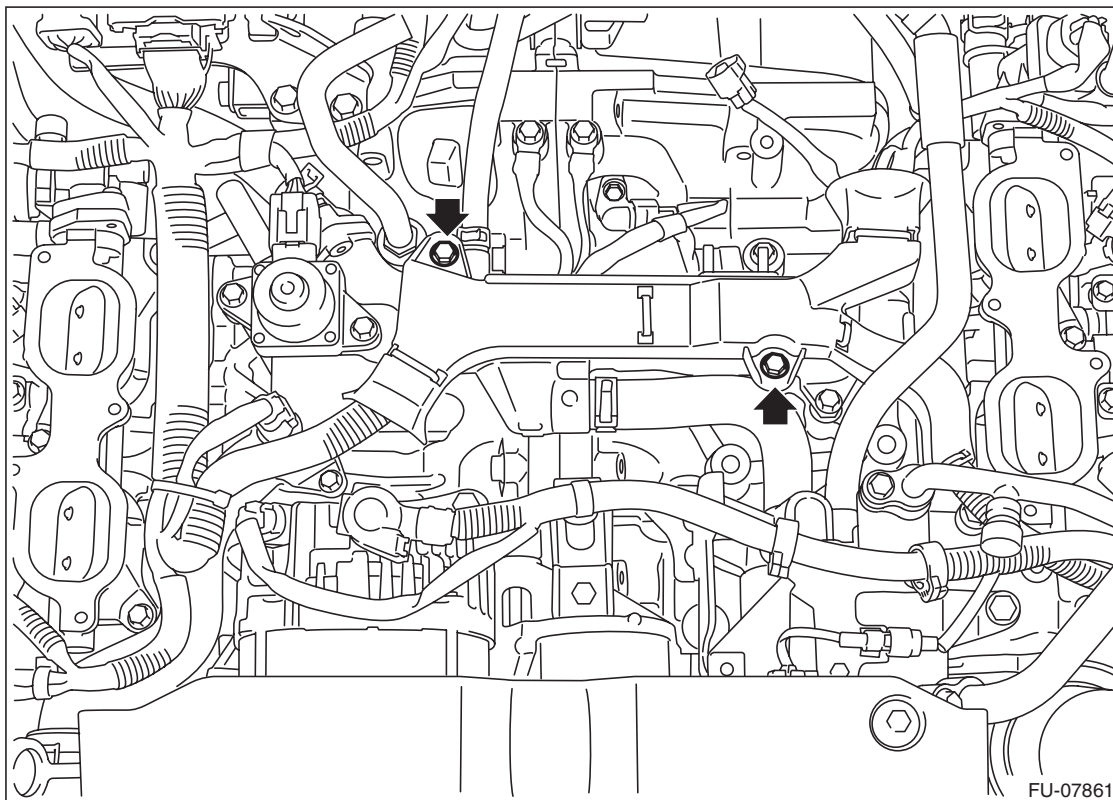
Engine Wiring Harness

FUEL INJECTION (FUEL SYSTEMS)

2) Install the engine wiring harness.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



3) Install the intake manifold. <Ref. to FU(H4DO)-29, INSTALLATION, Intake Manifold.>

4) Connect the battery ground terminal.

C: INSPECTION

- 1) Check that the engine wiring harness does not have deformation, cracks and any other damage.
- 2) Check the engine wiring harness for contamination or clogging.

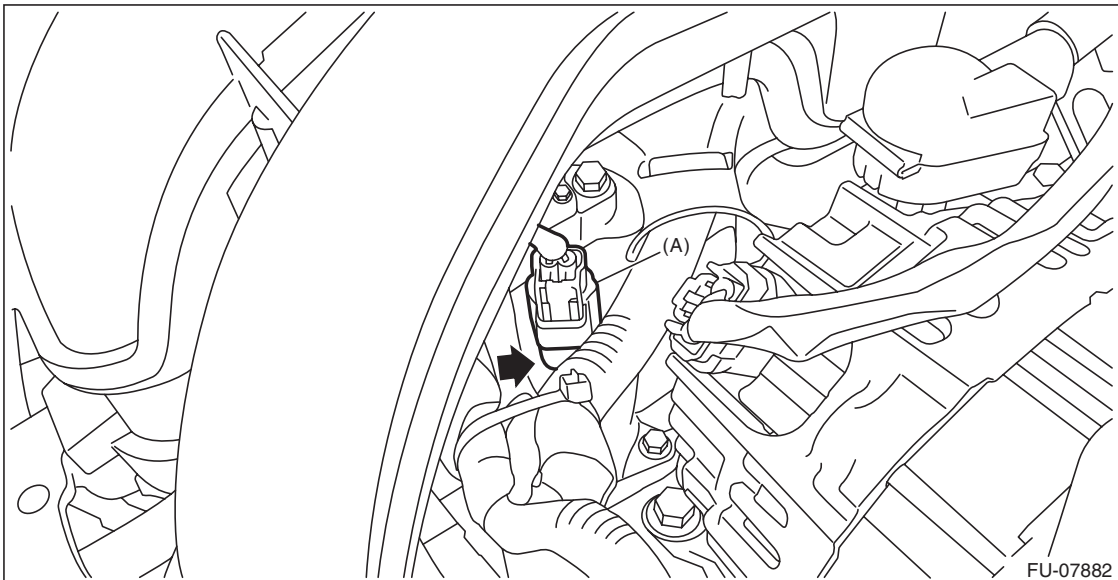
Engine Coolant Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

5. Engine Coolant Temperature Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Drain engine coolant. <Ref. to CO(H4DO)-14, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 3) Disconnect the connector (A) from the engine coolant temperature sensor, and remove the engine coolant temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)

Engine Coolant Temperature Sensor

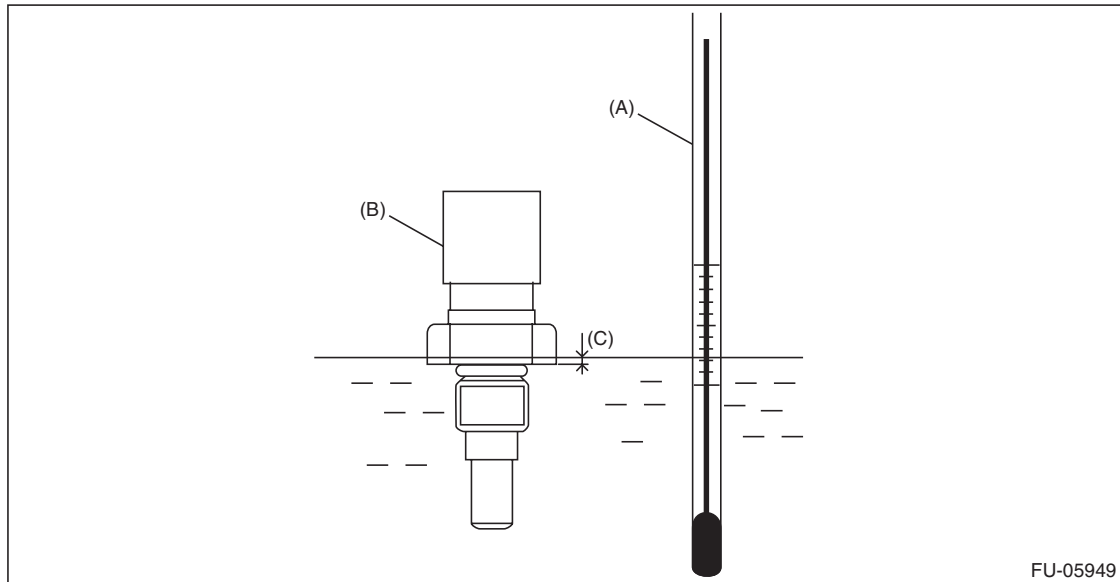
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the engine coolant temperature sensor has no deformation, cracks or other damages.
- 2) Immerse the engine coolant temperature sensor and a thermometer in water.

CAUTION:

Take care not to allow water to get into the engine coolant temperature sensor connector. Completely remove any water inside.



(A) Thermometer

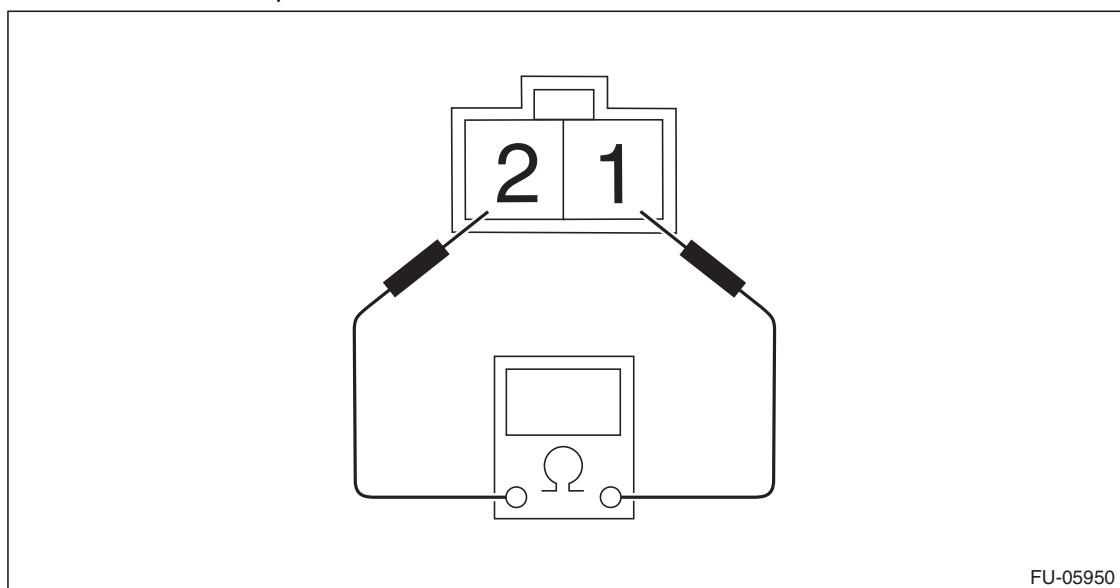
(B) Engine coolant temperature sensor

(C) Hexagonal part height:
To approx. $\frac{1}{3}$

- 3) Raise water temperature gradually, measure the resistance between the engine coolant temperature sensor terminals when the temperature is 20°C (68°F) and 80°C (176°F).

NOTE:

Agitate the water for even temperature distribution.



Water temperature	Terminal No.	Standard
20°C (68°F)	1 and 2	Approx. 2.45±0.2 kΩ
80°C (176°F)		Approx. 0.318±0.013 kΩ

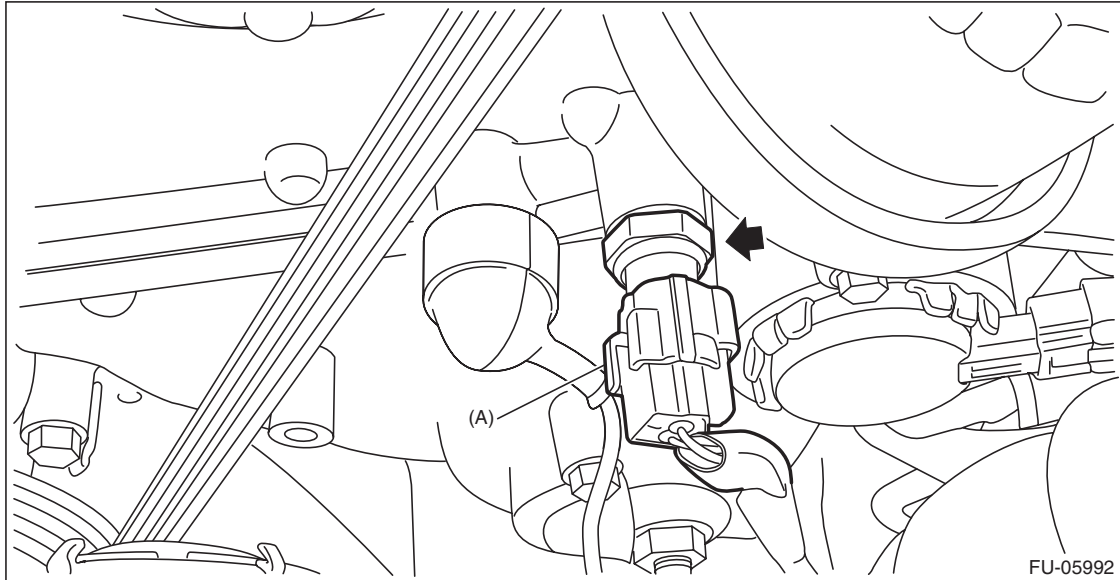
Engine Oil Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

6. Engine Oil Temperature Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector (A) from the engine oil temperature sensor, and remove the engine coolant temperature sensor from the chain cover.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)

Engine Oil Temperature Sensor

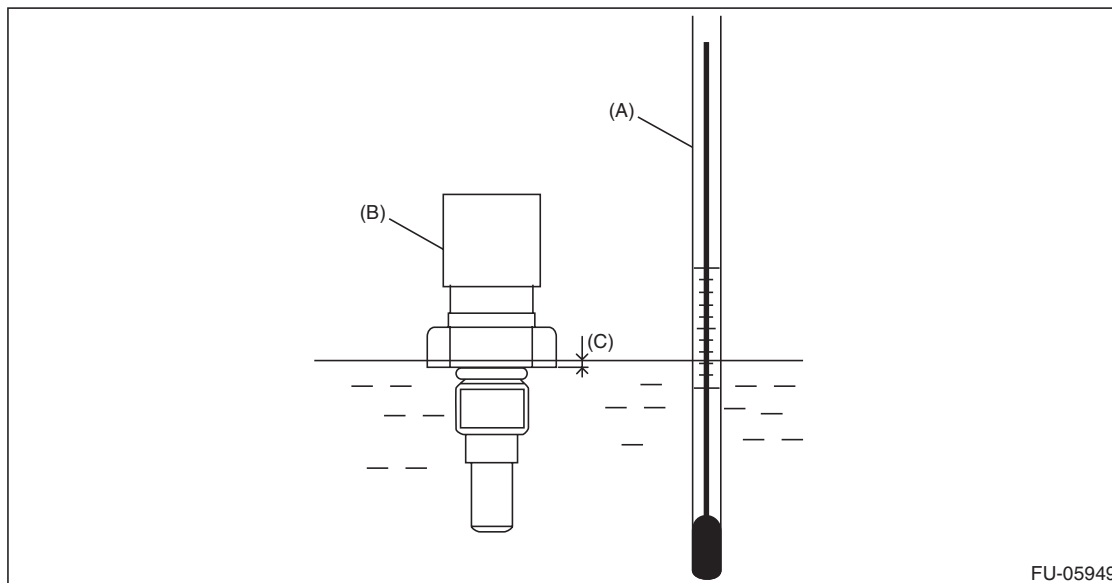
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the engine oil temperature sensor has no deformation, cracks or other damages.
- 2) Immerse the engine oil temperature sensor and a thermometer in water.

CAUTION:

Take care not to allow water to get into the engine oil temperature sensor connector. Completely remove any water inside.



(A) Thermometer

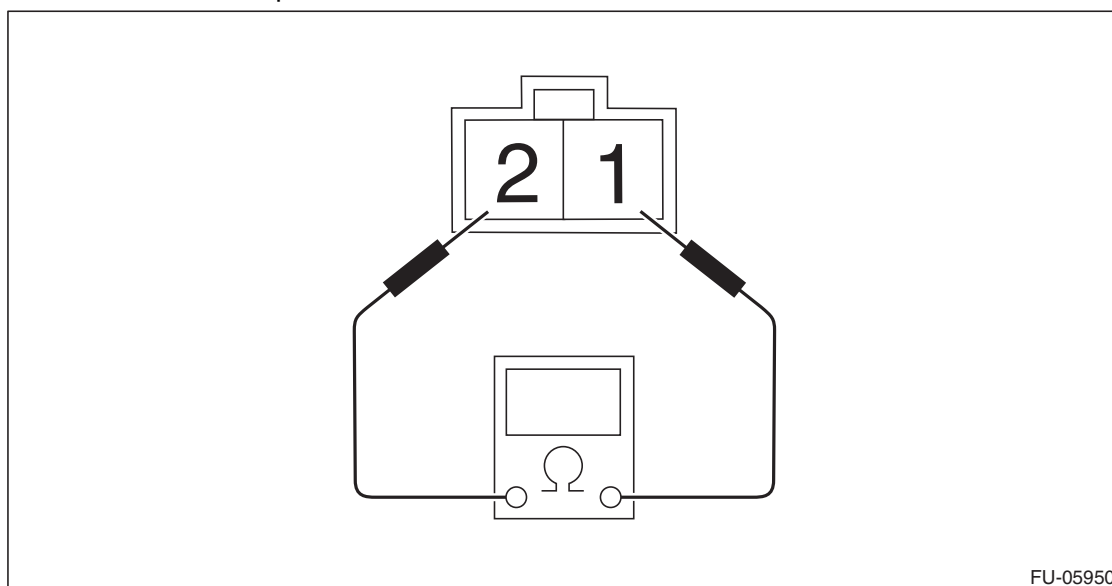
(B) Engine oil temperature sensor

(C) Hexagonal part height:
To approx. $\frac{1}{3}$

- 3) Raise water temperature gradually, measure the resistance between the engine oil temperature sensor terminals when the temperature is 20°C (68°F) and 80°C (176°F).

NOTE:

Agitate the water for even temperature distribution.



FU-05950

Water temperature	Terminal No.	Standard
20°C (68°F)	1 and 2	Approx. 2.45±0.2 kΩ
80°C (176°F)		Approx. 0.318±0.013 kΩ

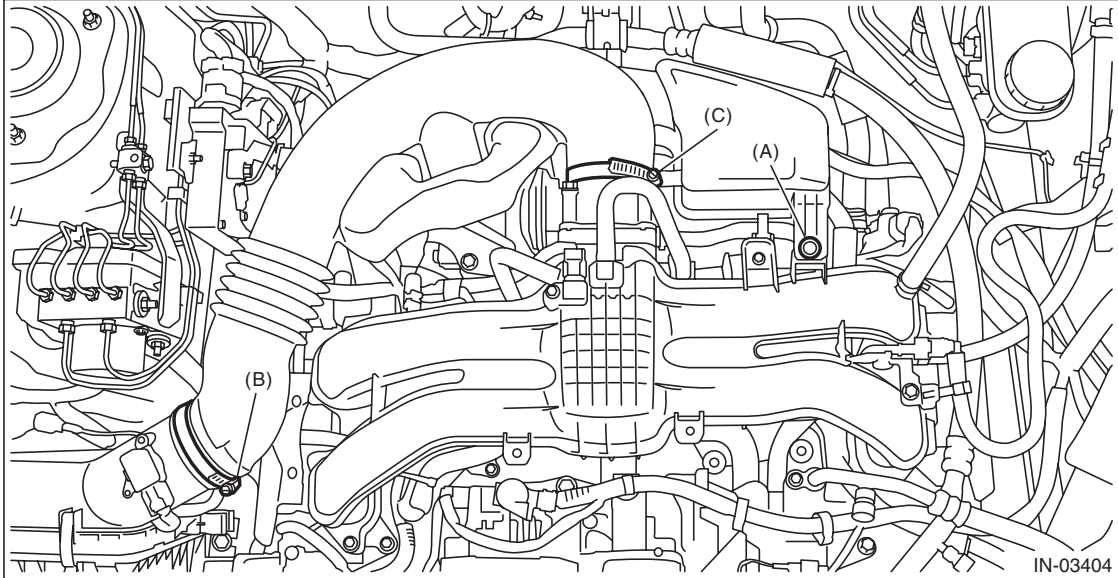
Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

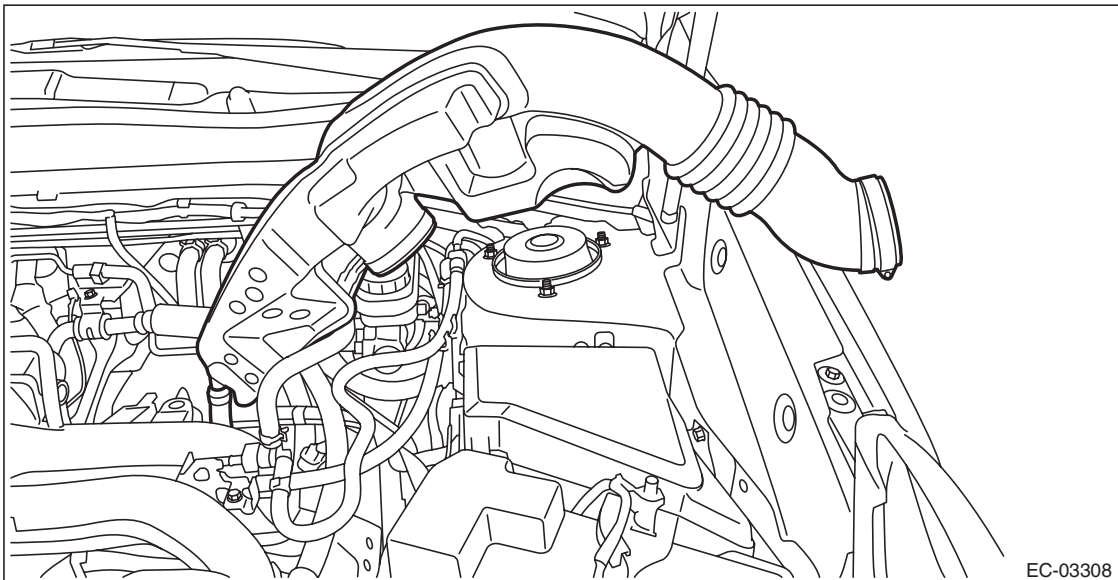
7. Crankshaft Position Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the clip (A) from the air intake boot.
- 3) Loosen the clamp (B) securing the air cleaner case (rear) to the air intake boot.
- 4) Loosen the clamp (C) which secures the throttle body to the air intake boot.



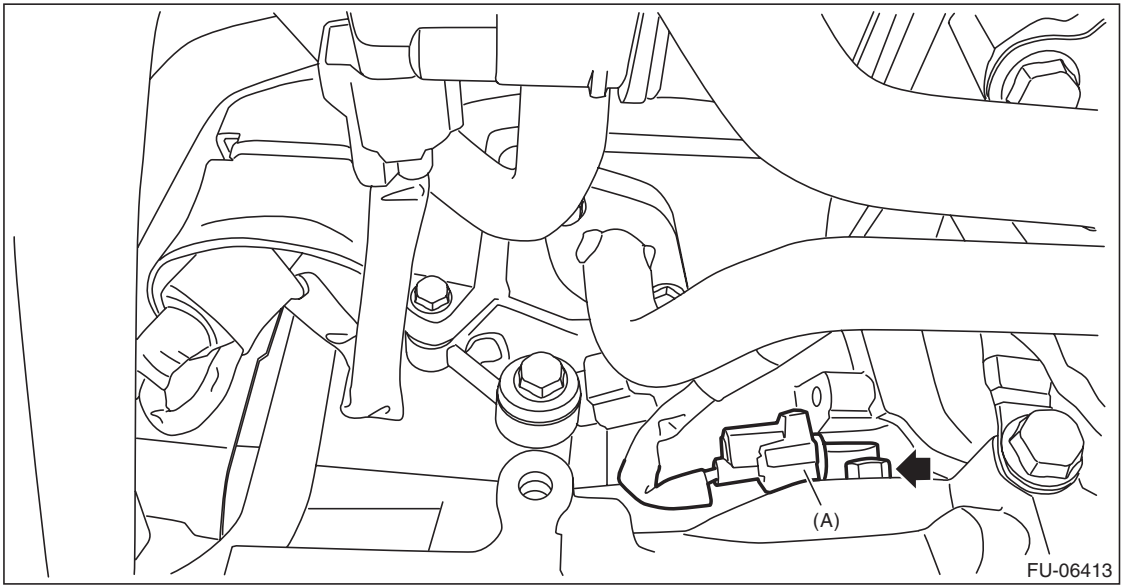
- 5) Remove the air intake boot from the throttle body, and move it to the left side wheel apron.



Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

6) Disconnect the connector (A) from the crankshaft position sensor, and remove the crankshaft position sensor from the cylinder block.



B: INSTALLATION

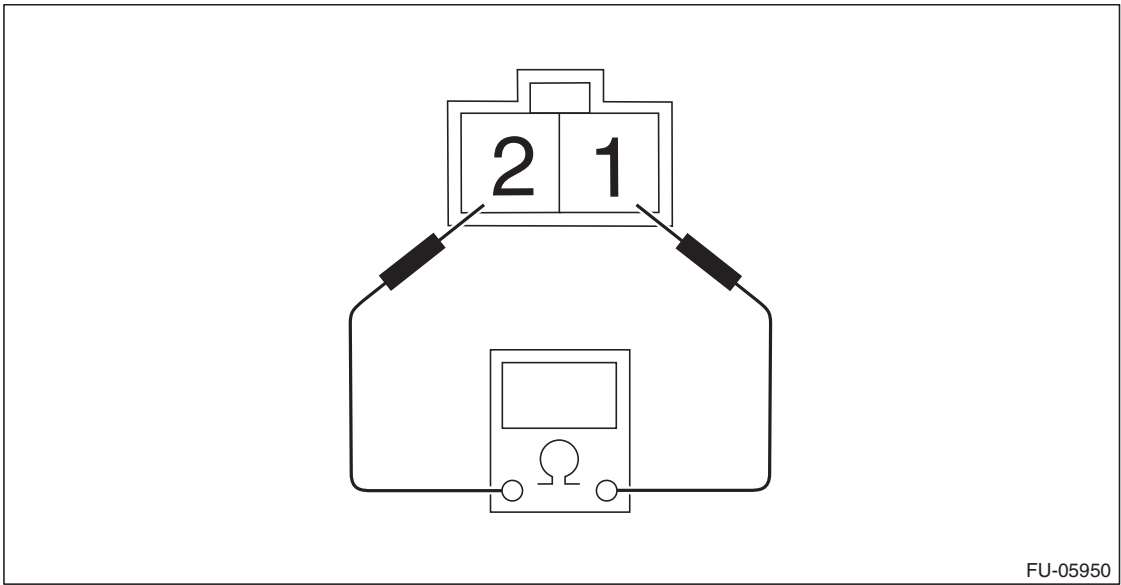
Install in the reverse order of removal.

Tightening torque:
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

C: INSPECTION

1. CRANKSHAFT POSITION SENSOR (METHOD WITH CIRCUIT TESTER)

Measure the resistance between crankshaft position sensor terminals.



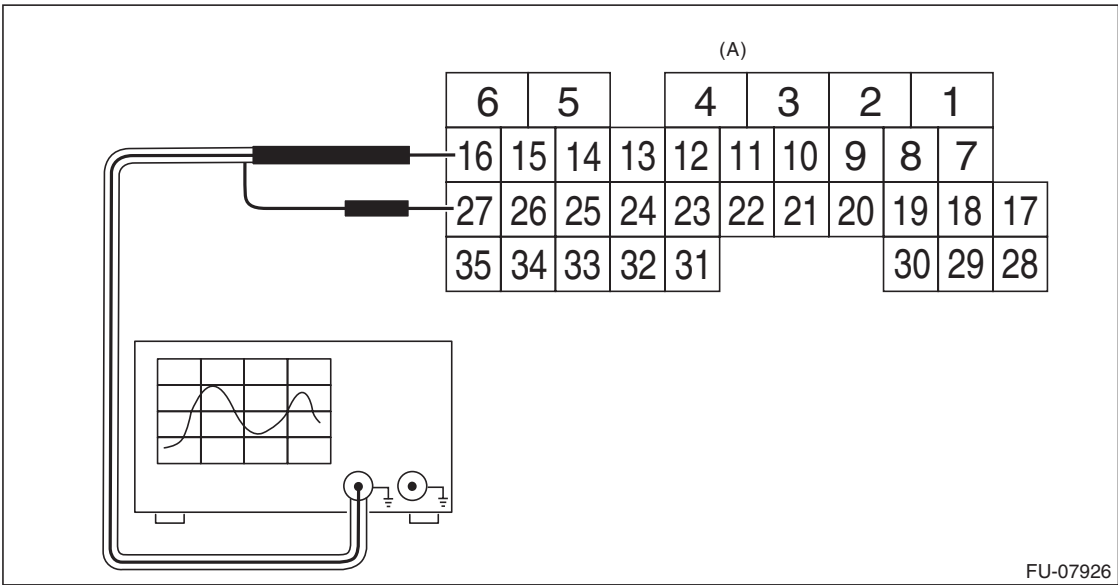
Terminal No.	Standard
1 and 2	2.04±0.204 kΩ

Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

2. CRANKSHAFT POSITION SENSOR (METHOD WITH OSCILLOSCOPE)

- 1) Prepare an oscilloscope.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Connect the probe to ECM connector.



(A) To ECM connector

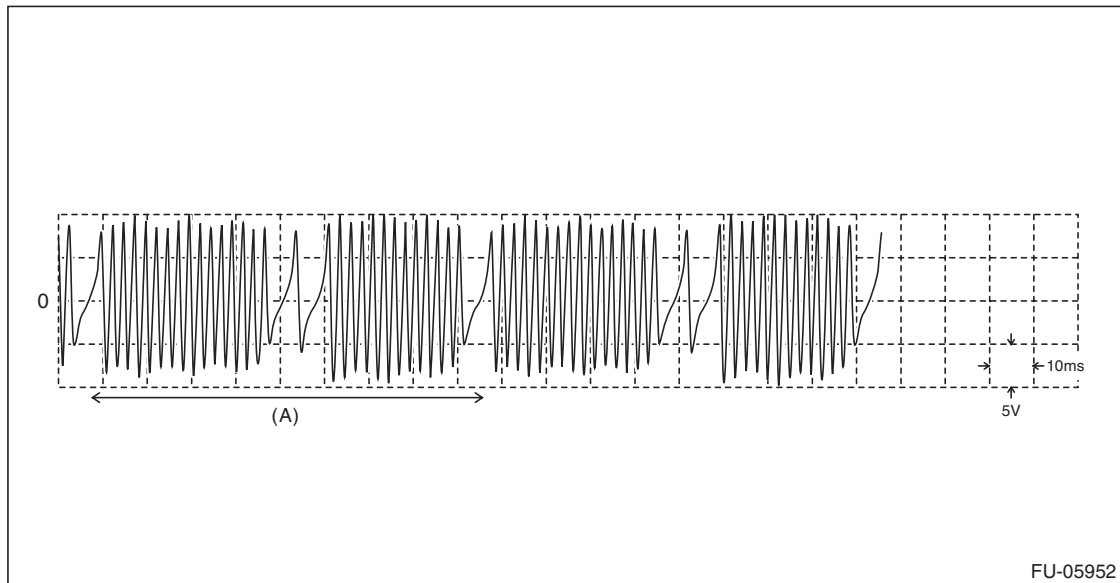
Terminal No.	Probe
16	+
27	-

- 4) Start the engine and let it idle.

Crankshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

5) Check the pattern is the same as the waveform and voltage shown below.



(A) One crankshaft rotation

6) After inspection, install the related parts in the reverse order of removal.

3. OTHER INSPECTIONS

Check that the crankshaft position sensor has no deformation, cracks or other damages.



Crankshaft Position Sensor Plate

FUEL INJECTION (FUEL SYSTEMS)

8. Crankshaft Position Sensor Plate

A: REMOVAL

The crankshaft position sensor plate is tightened together with the drive plate or flywheel; therefore, refer to "Drive Plate" or "Flywheel" for removal procedure. <Ref. to CVT(TR580)-161, REMOVAL, Drive Plate.> <Ref. to CL-13, REMOVAL, Flywheel.>

B: INSTALLATION

The crankshaft position sensor plate is tightened together with the drive plate or flywheel; therefore, refer to "Drive Plate" or "Flywheel" for installation procedure. <Ref. to CVT(TR580)-161, INSTALLATION, Drive Plate.> <Ref. to CL-13, INSTALLATION, Flywheel.>

C: INSPECTION

Check that the crankshaft position sensor plate has no deformation, cracks or other damages.

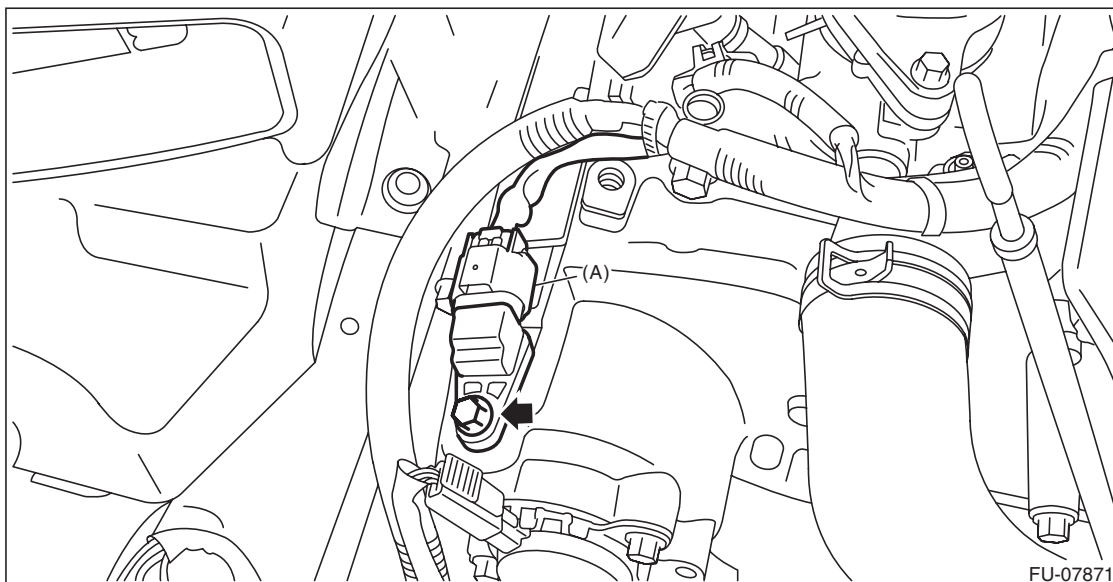
Camshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

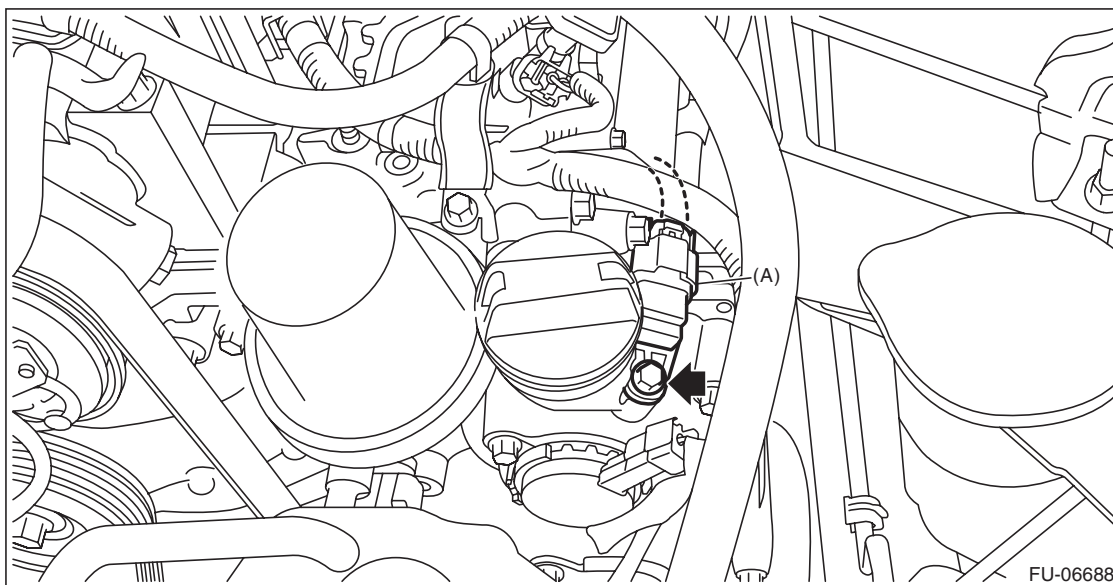
9. Camshaft Position Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
 - 2) Remove the air intake duct (rear). (RH side only) <Ref. to IN(H4DO)-12, REMOVAL, Air Intake Duct.>
 - 3) Disconnect the connector (A) from the camshaft position sensor, and remove the camshaft position sensor from the chain cover.
- RH side



- LH side



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

- Use new O-rings.
- Apply engine oil to O-ring.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

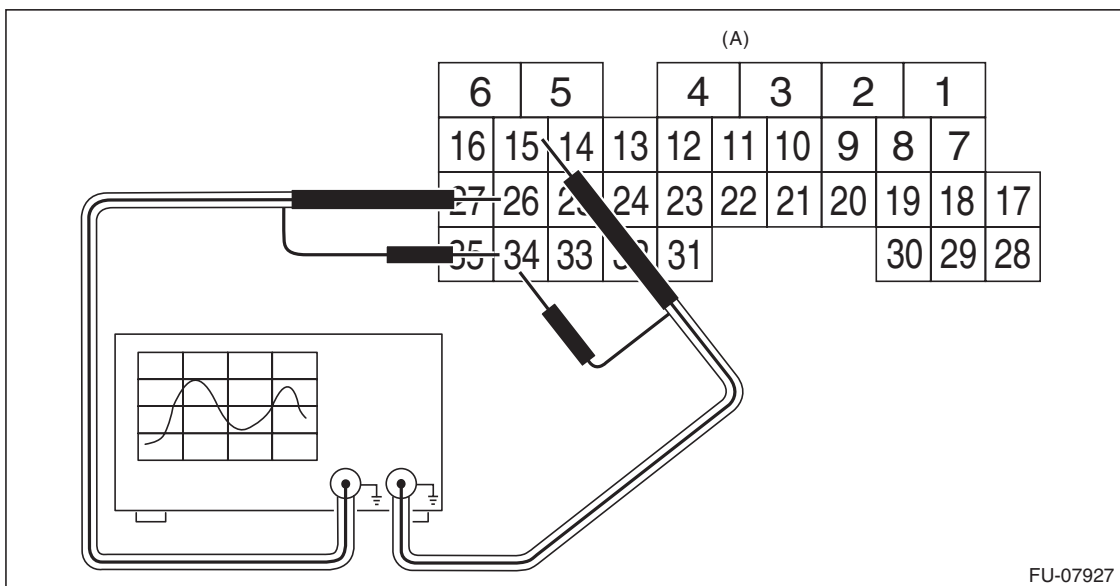
Camshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

1. CAMSHAFT POSITION SENSOR (METHOD WITH OSCILLOSCOPE)

- 1) Prepare an oscilloscope.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Connect the probe to ECM connector.



(A) To ECM connector

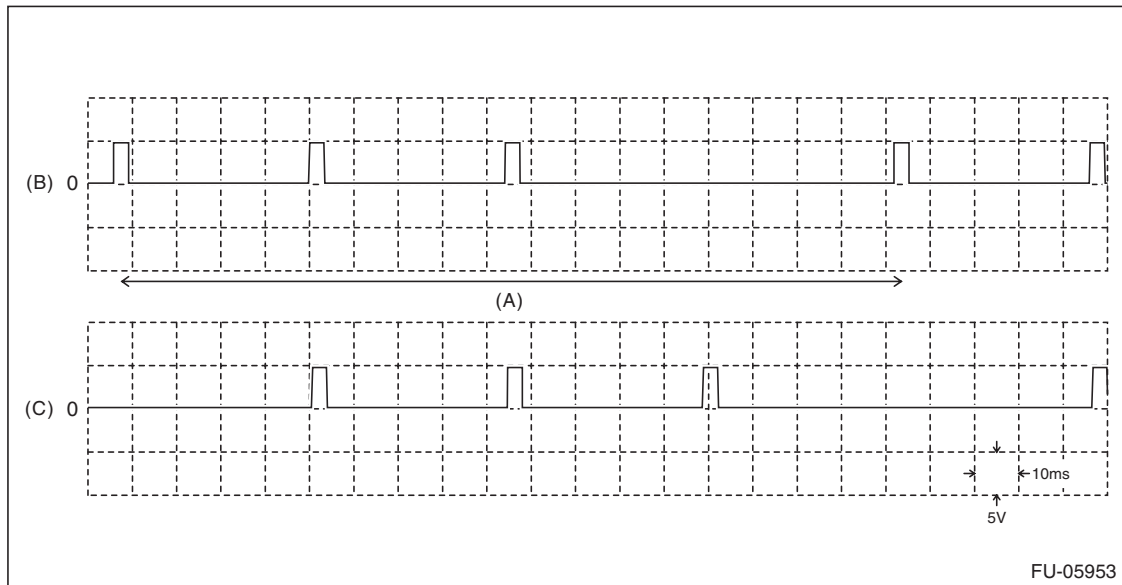
Camshaft position sensor	Terminal No.	Probe
RH	26	+
LH	15	+
RH and LH	34	-

- 4) Start the engine and let it idle.

Camshaft Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

5) Check the pattern is the same as the waveform and voltage shown below.



(A) One camshaft rotation

(B) Camshaft position sensor RH

(C) Camshaft position sensor LH

6) After inspection, install the related parts in the reverse order of removal.

2. OTHER INSPECTIONS

Check that the camshaft position sensor has no deformation, cracks or other damages.



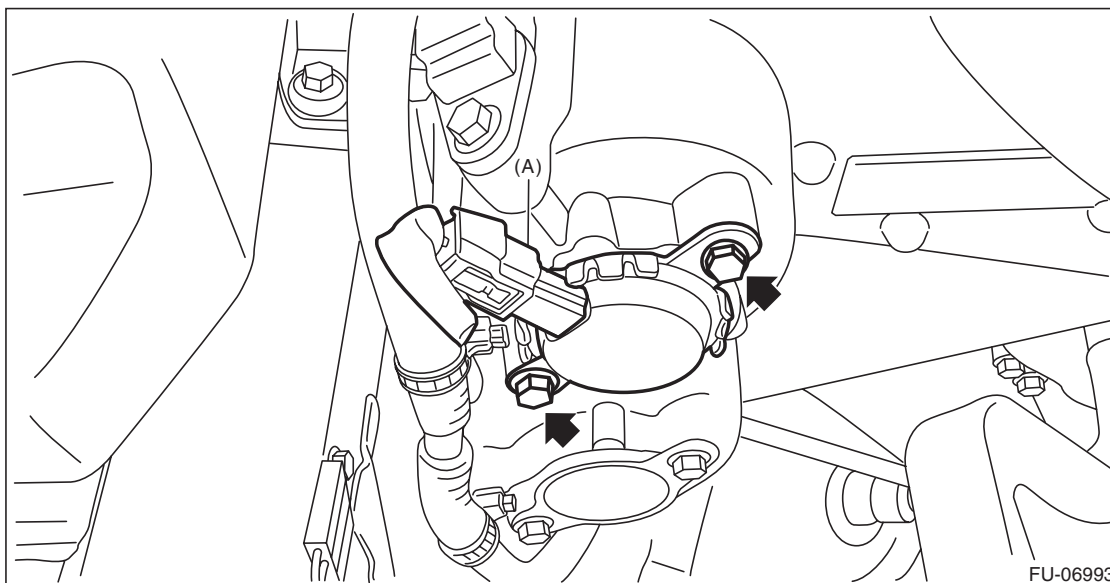
Oil Control Solenoid

FUEL INJECTION (FUEL SYSTEMS)

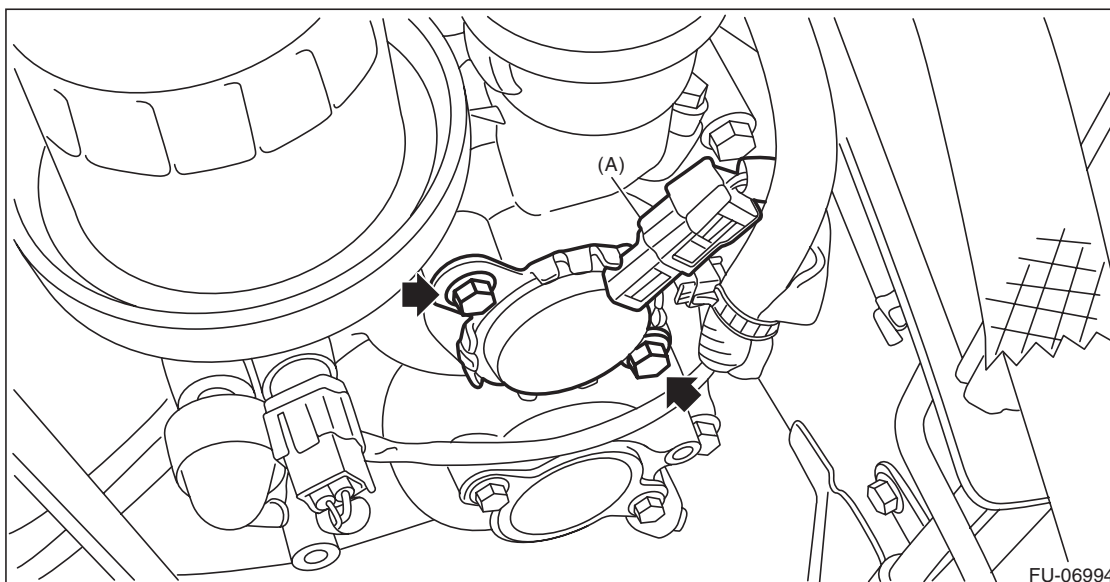
10.Oil Control Solenoid

A: REMOVAL

- 1) Disconnect the ground cable from battery.
 - 2) Remove the air intake duct (rear). (RH side only) <Ref. to IN(H4DO)-12, REMOVAL, Air Intake Duct.>
 - 3) Remove the reservoir tank. (LH side only) <Ref. to CO(H4DO)-70, REMOVAL, Reservoir Tank.>
 - 4) Disconnect the connector (A) from the oil control solenoid, and remove the oil control solenoid from the chain cover.
- RH side



- LH side



Oil Control Solenoid

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

Install in the reverse order of removal.

NOTE:

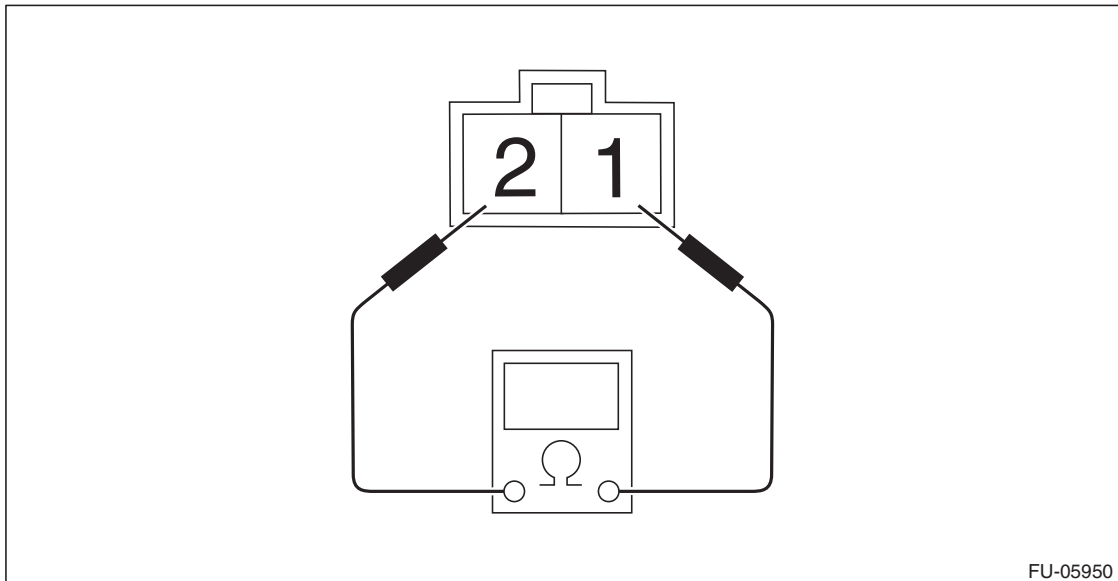
- Use new O-rings.
- Apply engine oil to O-ring.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

C: INSPECTION

- 1) Check that the oil control solenoid has no deformation, cracks or other damages.
- 2) Measure the resistance between the oil control solenoid terminals.



Terminal No.	Standard
1 and 2	7.25±0.4 Ω (when 20°C (68°F))

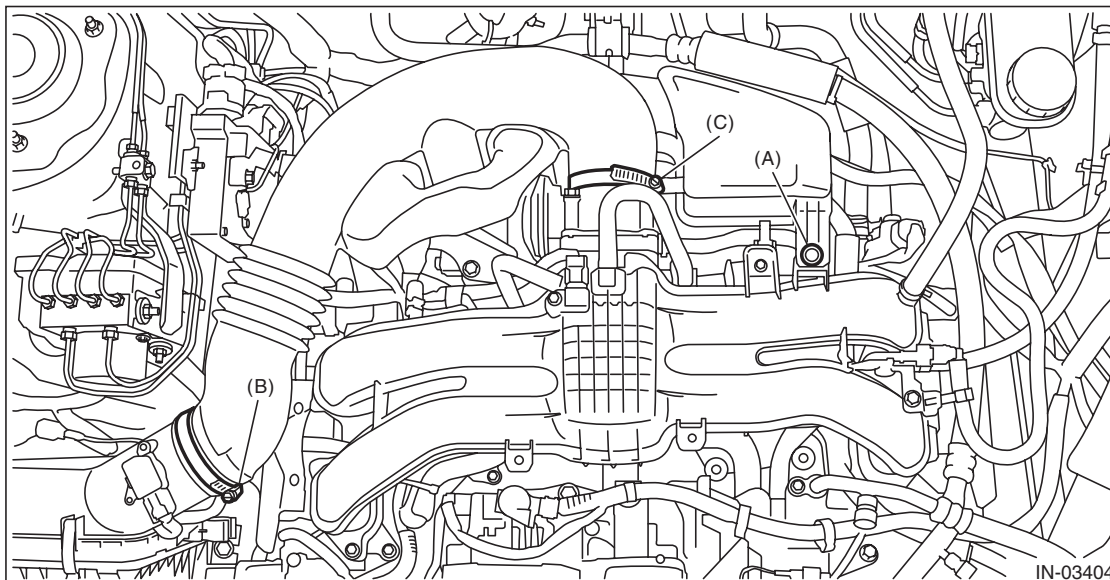
Knock Sensor

FUEL INJECTION (FUEL SYSTEMS)

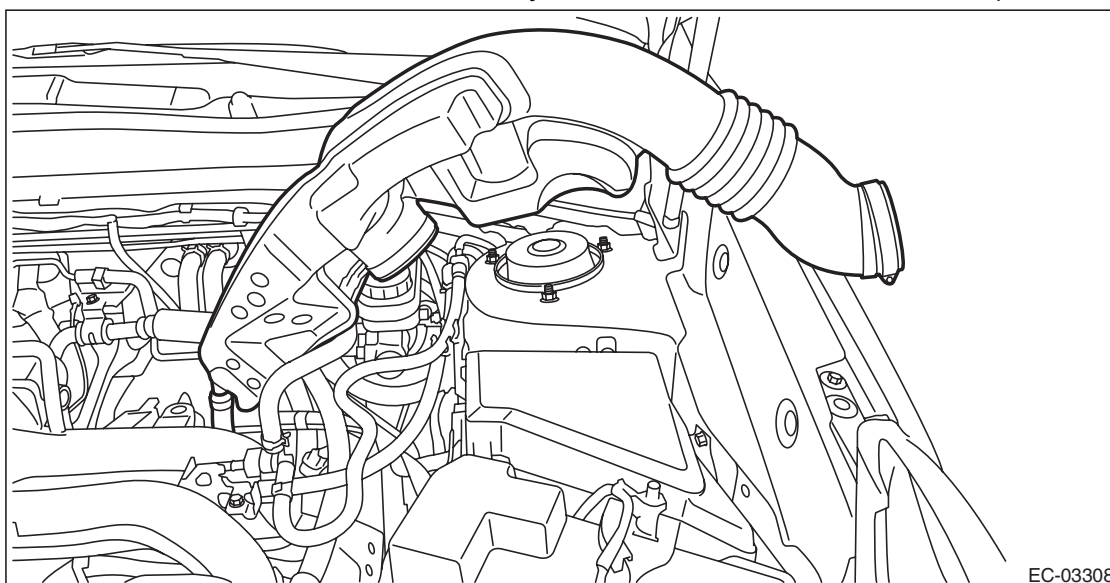
11. Knock Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the clip (A) from the air intake boot.
- 3) Loosen the clamp (B) securing the air cleaner case (rear) to the air intake boot.
- 4) Loosen the clamp (C) which secures the throttle body to the air intake boot.



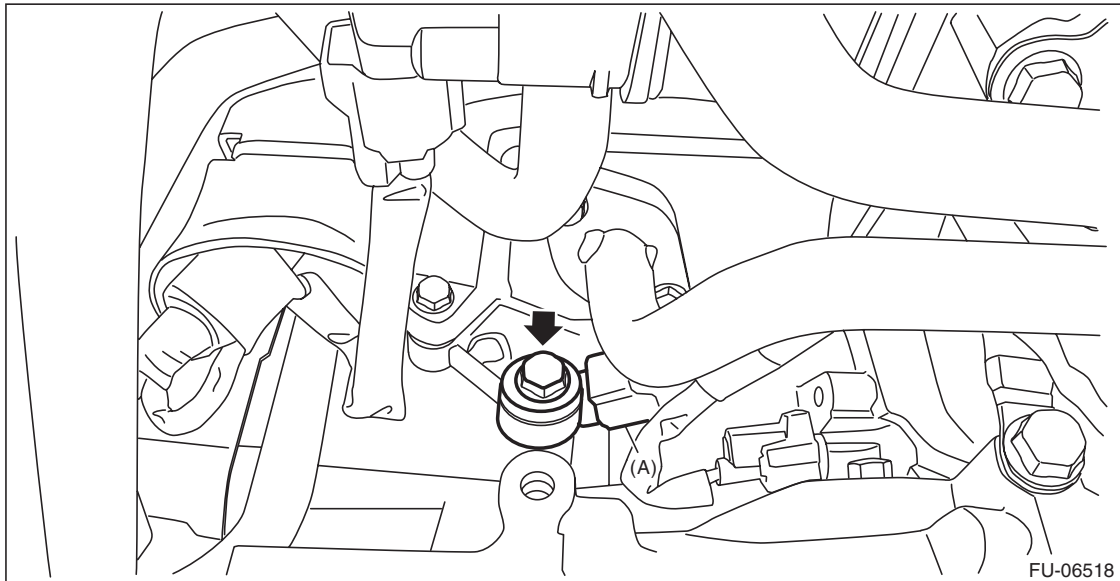
- 5) Remove the air intake boot from the throttle body, and move it to the left side wheel apron.



Knock Sensor

FUEL INJECTION (FUEL SYSTEMS)

6) Disconnect the connector (A) from the knock sensor, and remove the knock sensor from the cylinder block.



B: INSTALLATION

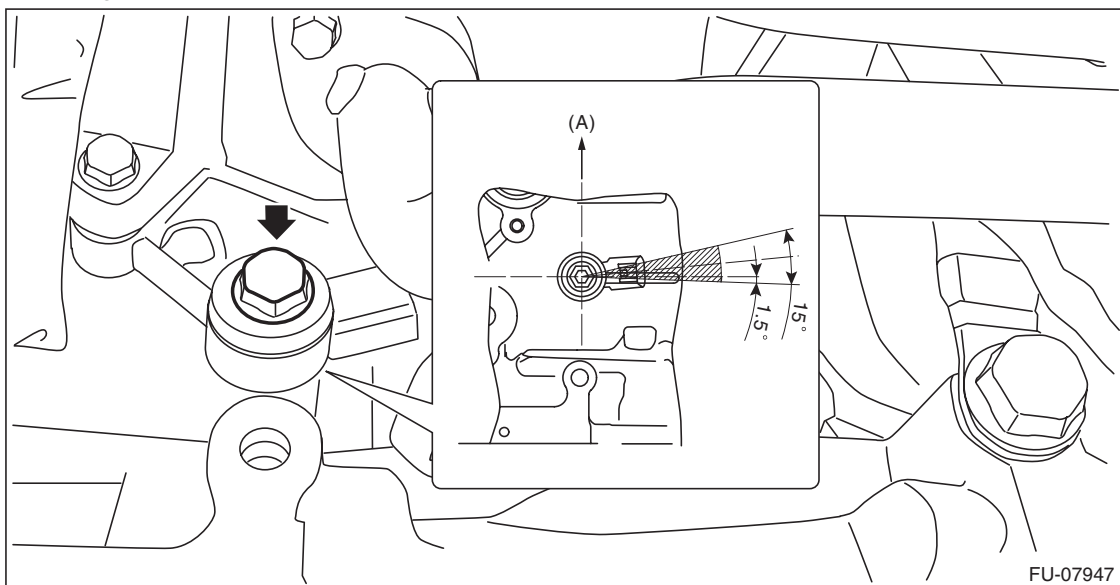
1) Install the knock sensor to the cylinder block.

NOTE:

The knock sensor should be installed so that the center of the connector is positioned at a 76.5° — 91.5° angle relative to the front of engine.

Tightening torque:

24 N·m (2.4 kgf-m, 17.7 ft-lb)

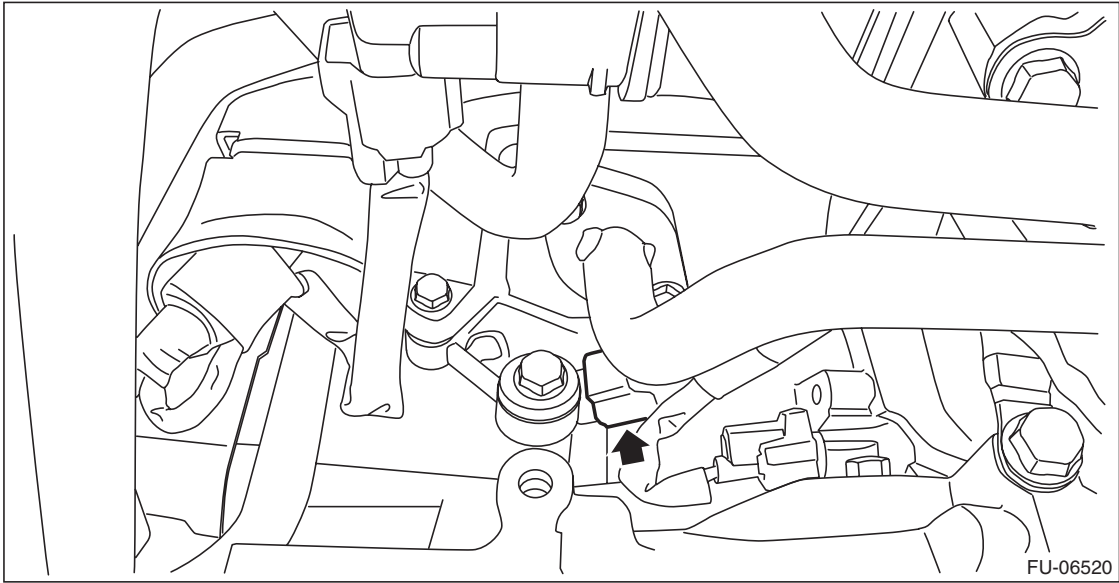


(A) Front of engine

Knock Sensor

FUEL INJECTION (FUEL SYSTEMS)

2) Connect the connector to the knock sensor.

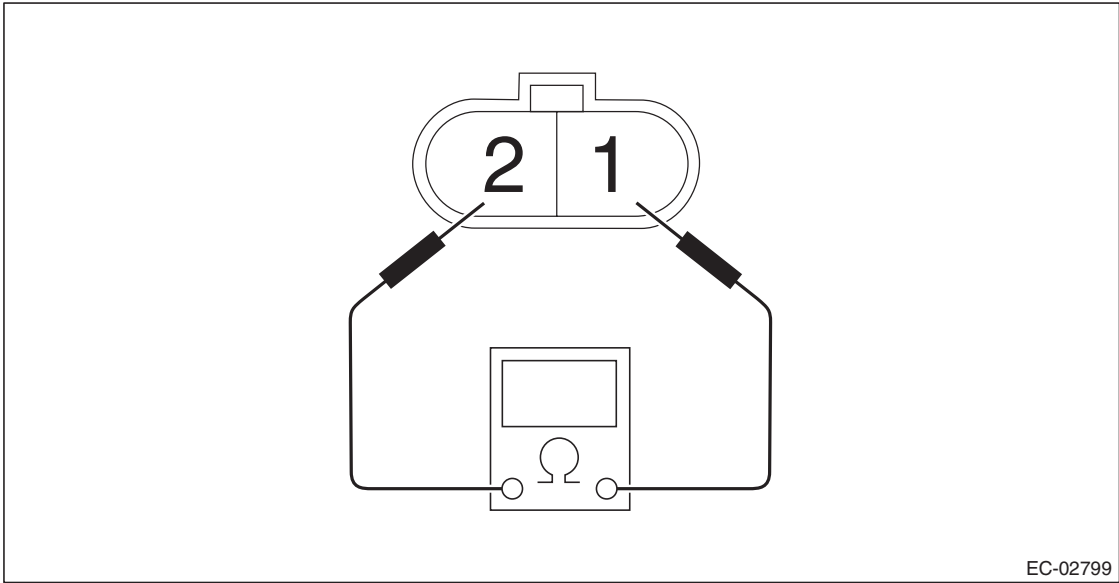


3) Install the air intake boot. <Ref. to IN(H4DO)-11, INSTALLATION, Air Intake Boot.>

4) Connect the battery ground terminal.

C: INSPECTION

- 1) Check that the knock sensor has no deformation, cracks or other damages.
- 2) Measure the resistance between knock sensor terminals.



Terminal No.	Standard
1 and 2	560±28 kΩ

Throttle Position Sensor

FUEL INJECTION (FUEL SYSTEMS)

12. 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(H4DO)-15, REMOVAL, Throttle Body.> <Ref. to FU(H4DO)-16, INSTALLATION, Throttle Body.>

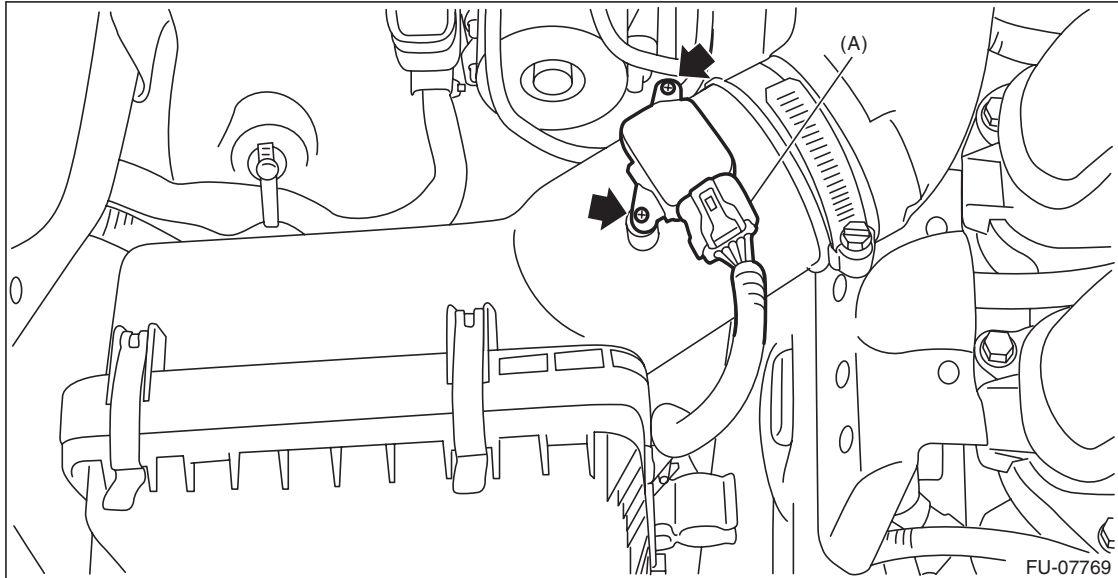
Mass Air Flow and Intake Air Temperature Sensor

FUEL INJECTION (FUEL SYSTEMS)

13. Mass Air Flow and Intake Air Temperature Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector (A) from the mass air flow and intake air temperature sensor, and remove the mass air flow and intake air temperature sensor.



B: INSTALLATION

Install in the reverse order of removal.

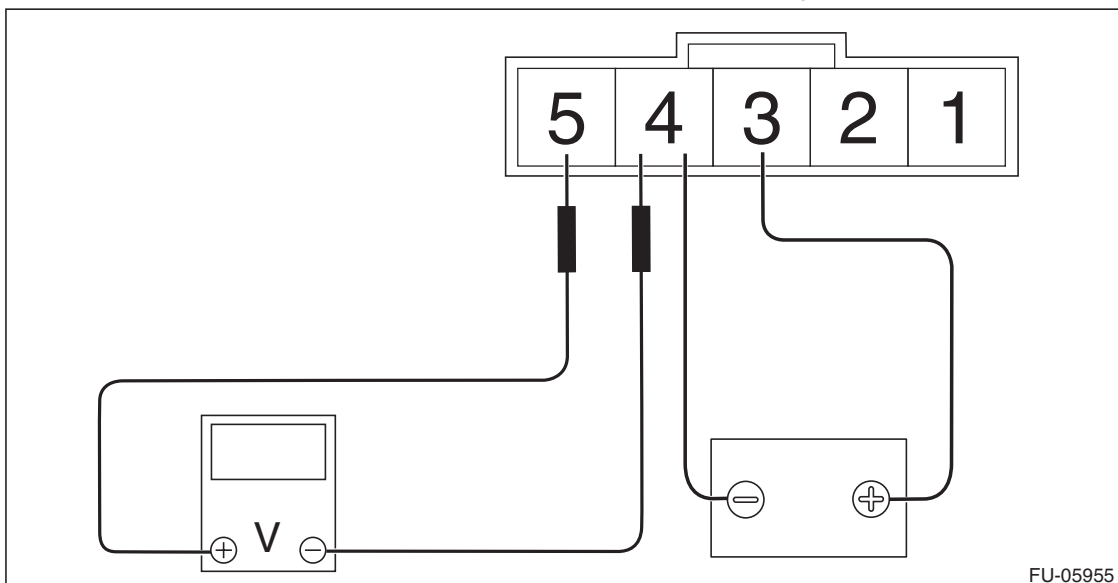
Tightening torque:

1 N·m (0.1 kgf-m, 0.7 ft-lb)

C: INSPECTION

1. CHECK THE MASS AIR FLOW SENSOR UNIT

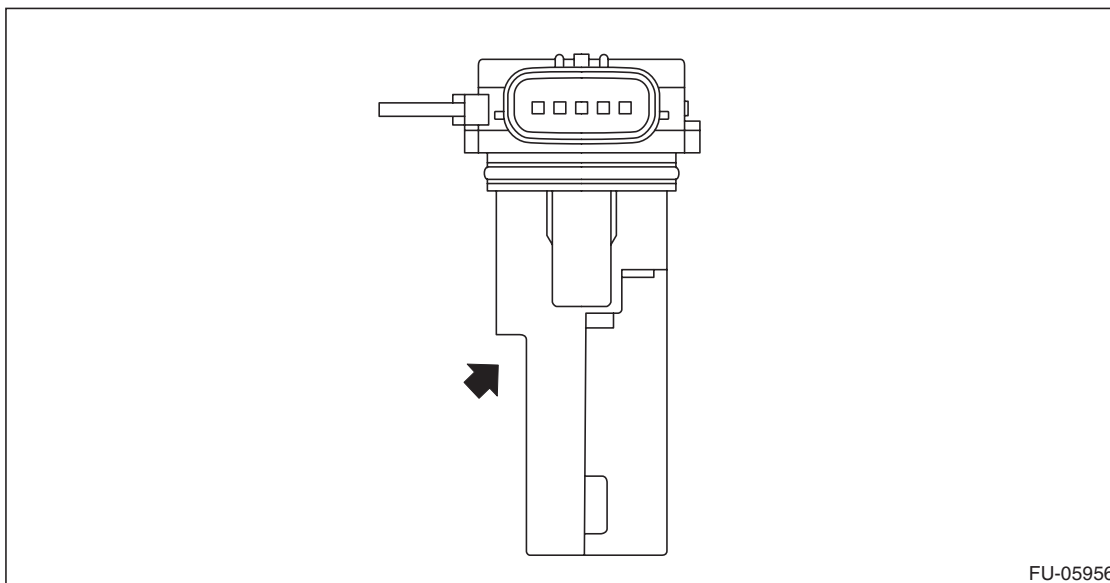
- 1) Connect the battery positive terminal to terminal No. 3 and the battery ground terminal to terminal No. 4, the circuit tester positive terminal to terminal No. 5 and the circuit tester ground terminal to terminal No. 4.



Mass Air Flow and Intake Air Temperature Sensor

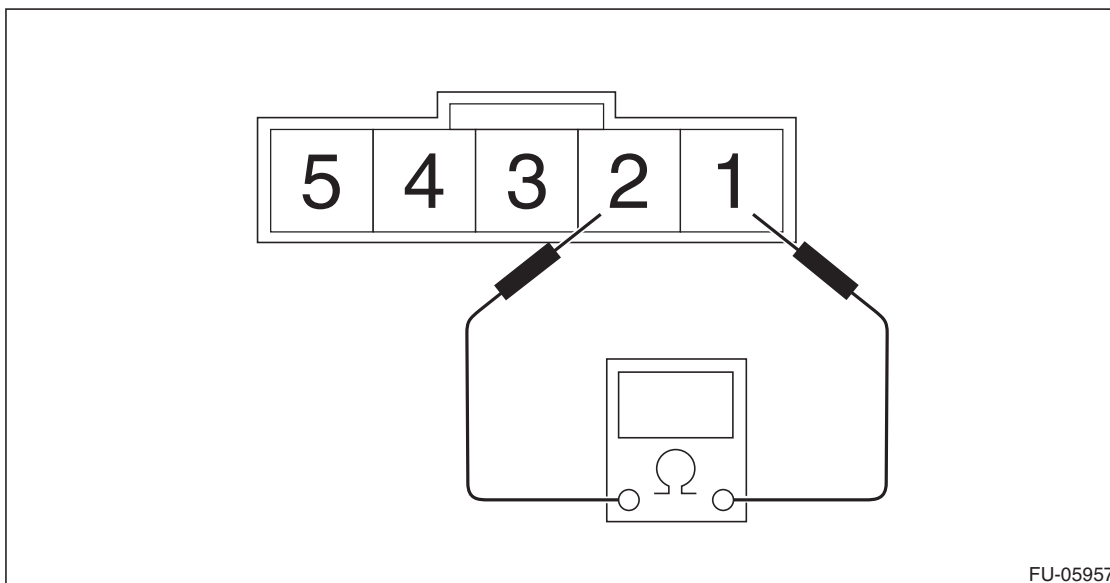
FUEL INJECTION (FUEL SYSTEMS)

- 2) Check the voltage changes when air is blown from the arrow pointing area to the mass air flow sensor unit.



2. CHECK THE INTAKE AIR TEMPERATURE SENSOR UNIT

Measure the resistance between intake air temperature sensor terminals.



Temperature	Terminal No.	Standard
-20°C (-4°F)	1 and 2	16.0±2.4 kΩ
20°C (68°F)		2.45±0.24 kΩ
60°C (140°F)		0.58±0.087 kΩ

3. OTHER INSPECTIONS

- 1) Check that the mass air flow and intake air temperature sensor has no deformation, cracks or other damages.
- 2) Check that the mass air flow and intake air temperature sensor has no dirt.

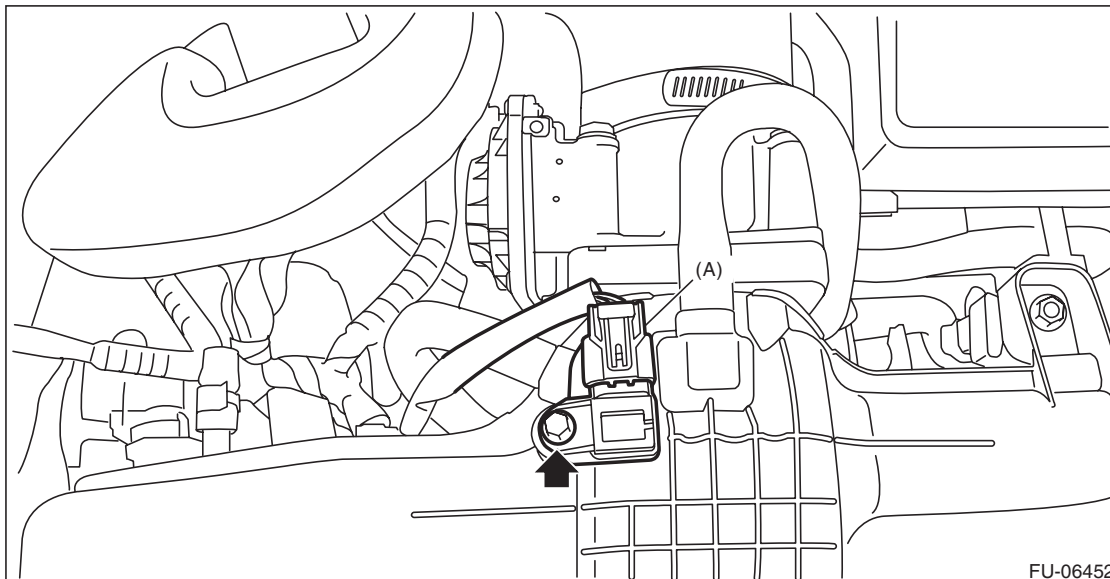
Manifold Absolute Pressure Sensor

FUEL INJECTION (FUEL SYSTEMS)

14. Manifold Absolute Pressure Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector (A) from the manifold absolute pressure sensor, and remove the manifold absolute pressure sensor from intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use new O-rings.

Tightening torque:

3.4 N·m (0.3 kgf-m, 2.5 ft-lb)

Manifold Absolute Pressure Sensor

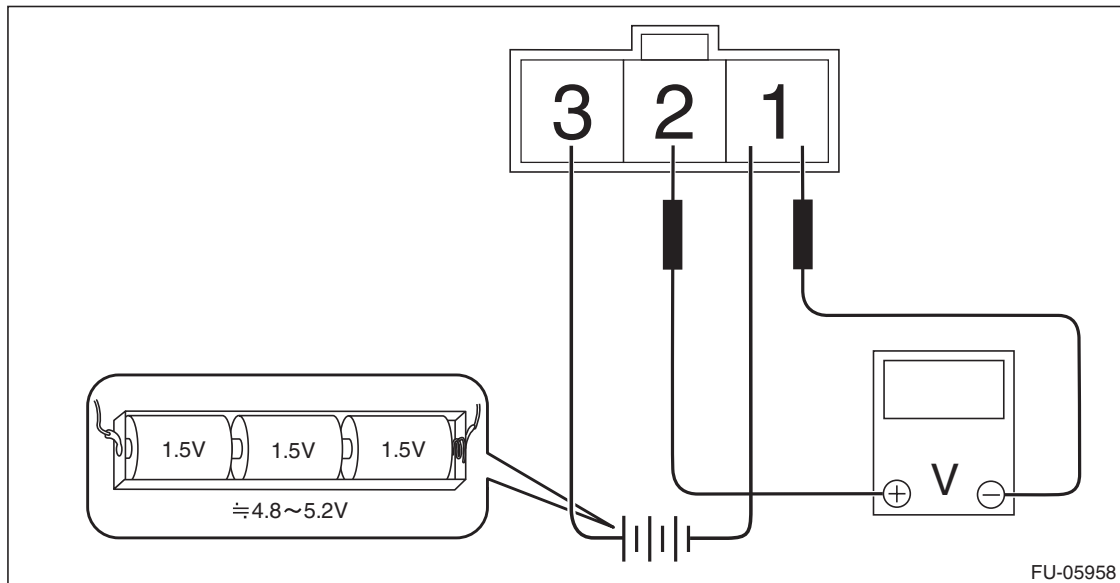
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the manifold absolute pressure sensor has no deformation, cracks or other damages.
- 2) Connect dry-cell battery positive terminal to terminal No. 3 and dry-cell battery ground terminal to terminal No. 1, circuit tester positive terminal to terminal No. 2 and the circuit tester negative terminal to terminal No. 1.

NOTE:

- Use new dry-cell batteries.
- Using circuit tester, check the voltage of a single dry-cell battery is 1.6 V or more. And also check the voltage of three batteries in series is between 4.8 V and 5.2 V.



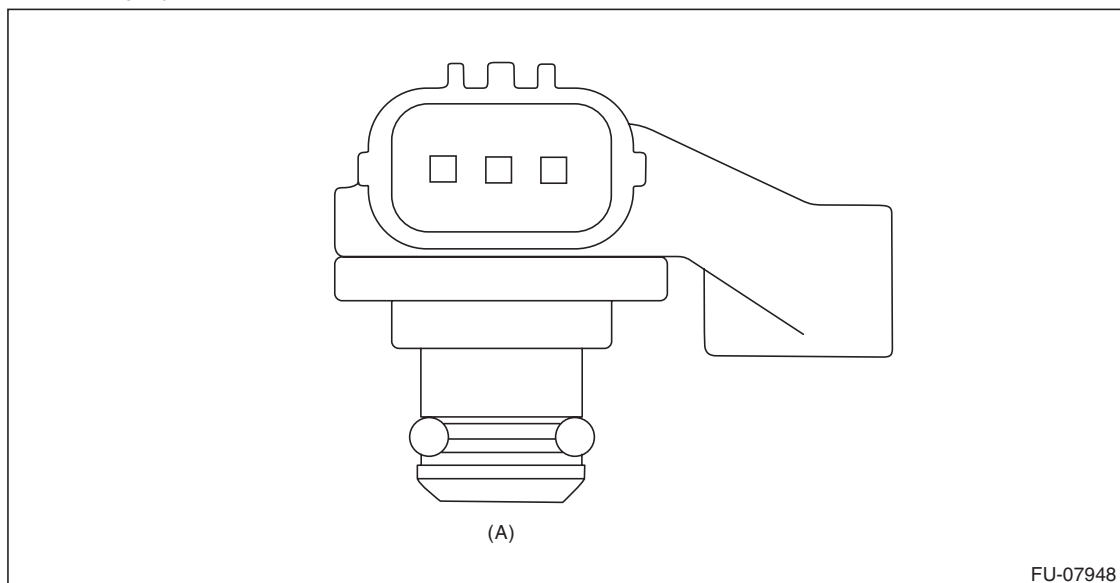
- 3) Check the voltage at a normal atmospheric pressure.

NOTE:

The atmospheric pressure at higher altitude is lower than normal. Therefore, the voltage is lower than the standard value.

Terminal No.	Standard
2 (+) and 1 (-)	Approx. 4.2 V (when 25°C (77°F))

- 4) Connect the Mighty Vac to the pressure port (A) of manifold absolute pressure sensor.



Manifold Absolute Pressure Sensor

FUEL INJECTION (FUEL SYSTEMS)

5) Check the voltage when generating vacuum and positive pressure using Mighty Vac.

CAUTION:

Do not apply vacuum of less than -88 kPa (-0.9 kgf/cm^2 , -12.8 psi). Doing so may damage the manifold absolute pressure sensor.

NOTE:

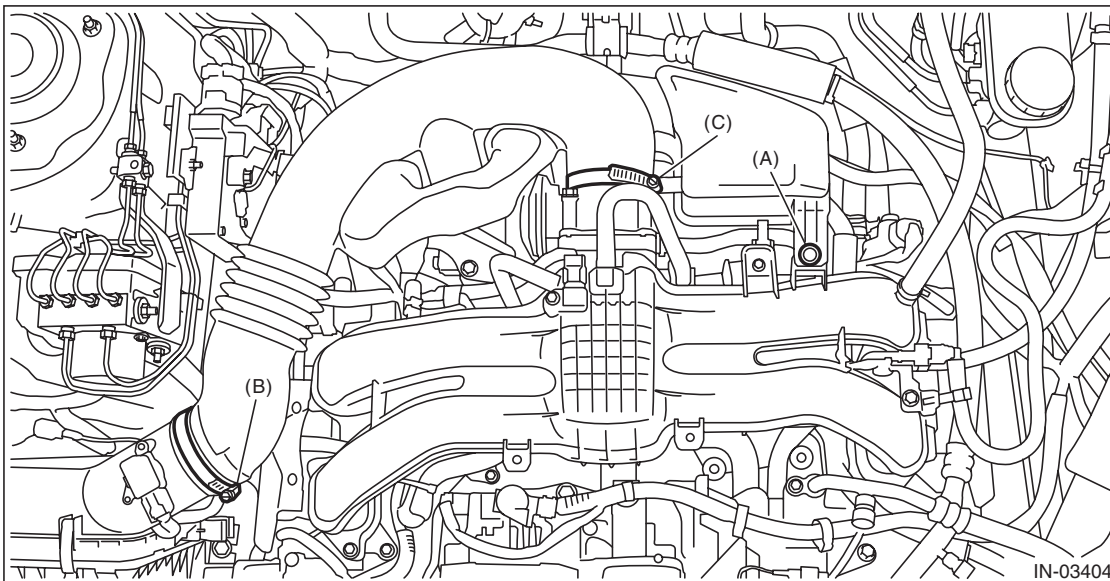
When vacuum occurs at the pressure port of manifold absolute pressure sensor, the voltage will drop from the value as in step 3). When positive pressure occurs, on the other hand, the voltage will rise.

Pressure	Terminal No.	Standard
-88 kPa (-0.9 kgf/cm^2 , -12.8 psi)	2 (+) and 1 (–)	Approx. 1 V (when 25°C (77°F))

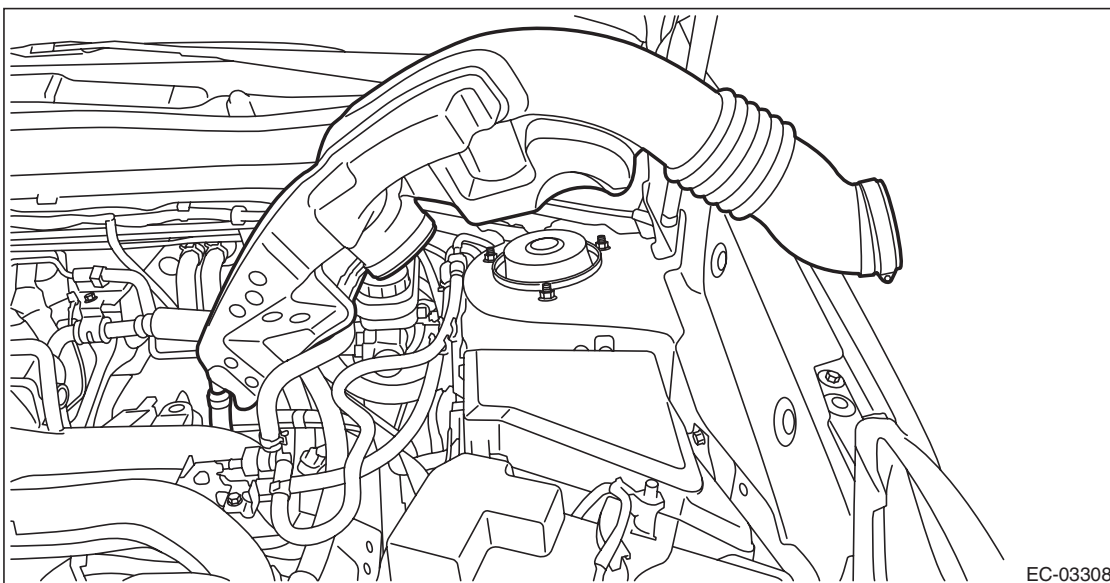
15. Fuel Injector

A: REMOVAL

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the ground cable from battery.
- 3) Open the fuel filler lid and remove the fuel filler cap.
- 4) Remove the clip (A) from the air intake boot. (RH side only)
- 5) Loosen the clamp (B) securing the air cleaner case (rear) to the air intake boot. (RH side only)
- 6) Loosen the clamp (C) which secures the throttle body to the air intake boot. (RH side only)



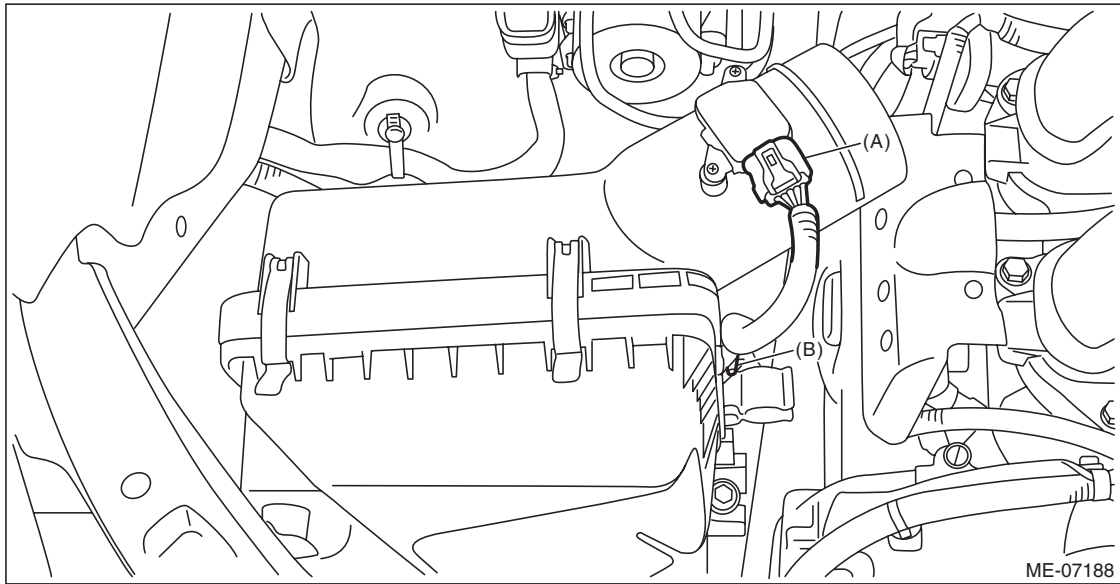
- 7) Remove the air intake boot from the throttle body, and move it to the left side wheel apron. (RH side only)



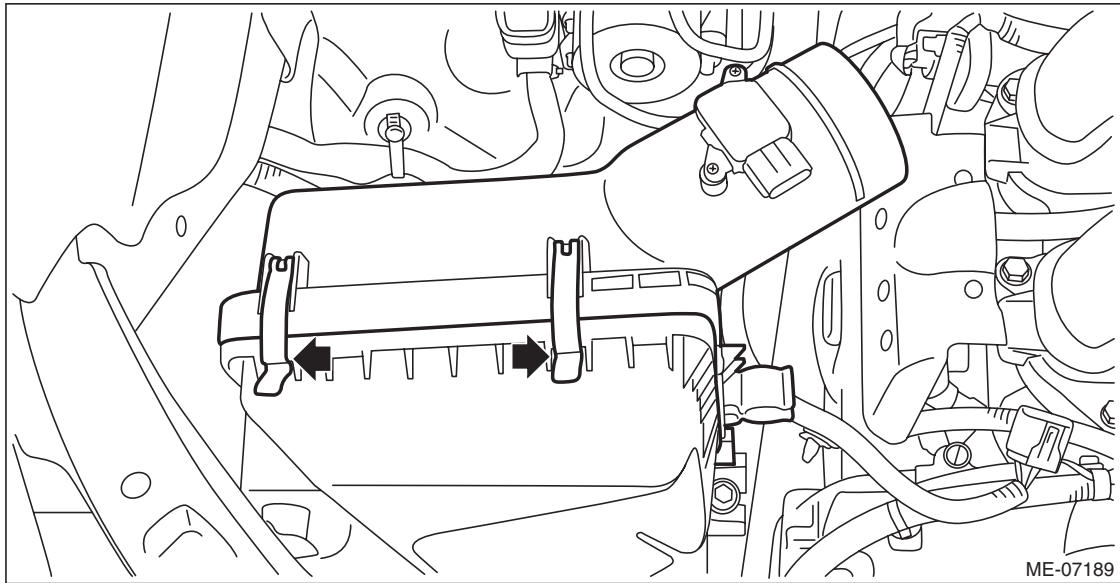
Fuel Injector

FUEL INJECTION (FUEL SYSTEMS)

8) Disconnect the connector (A) from the mass air flow and intake air temperature sensor, and remove the clip (B) which holds the mass air flow and intake air temperature sensor harness. (RH side only)



9) Remove the air cleaner case (rear). (RH side only)

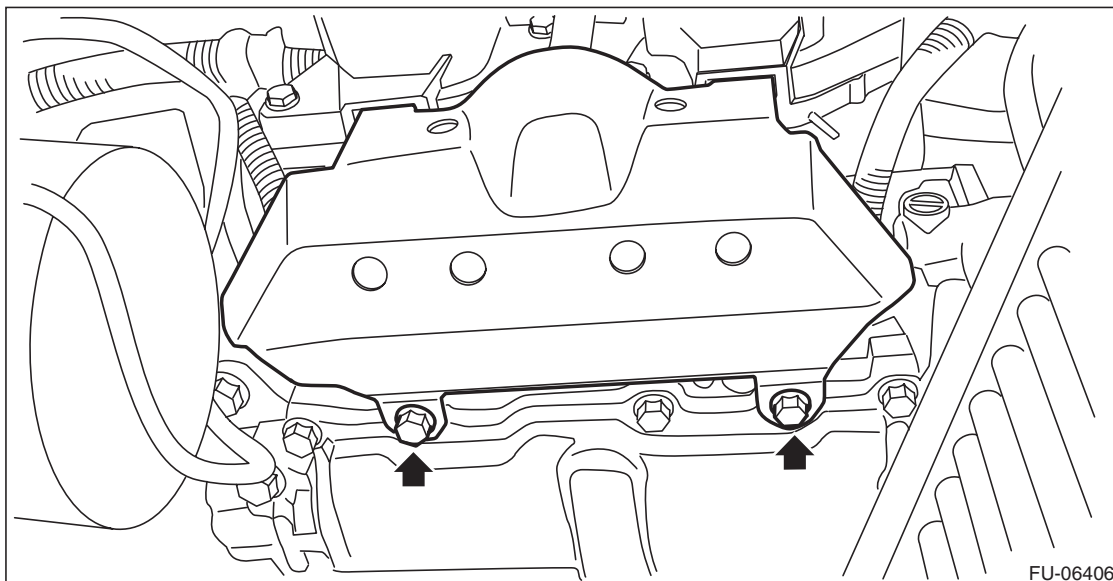


Fuel Injector

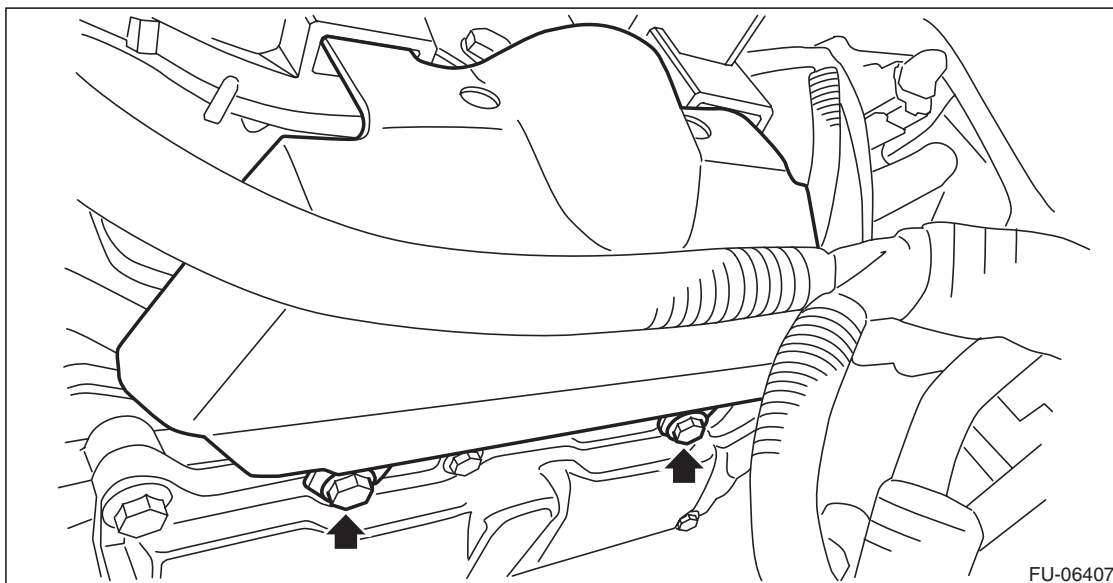
FUEL INJECTION (FUEL SYSTEMS)

10) Remove the intake manifold protector.

- RH side



- LH side

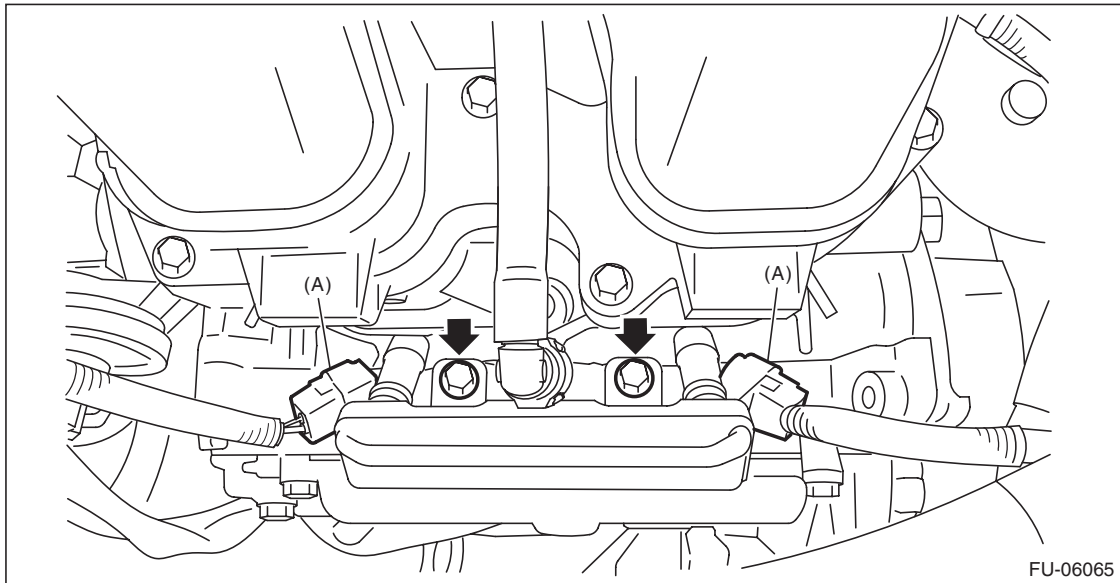


11) Disconnect the connectors (A) from fuel injector.

Fuel Injector

FUEL INJECTION (FUEL SYSTEMS)

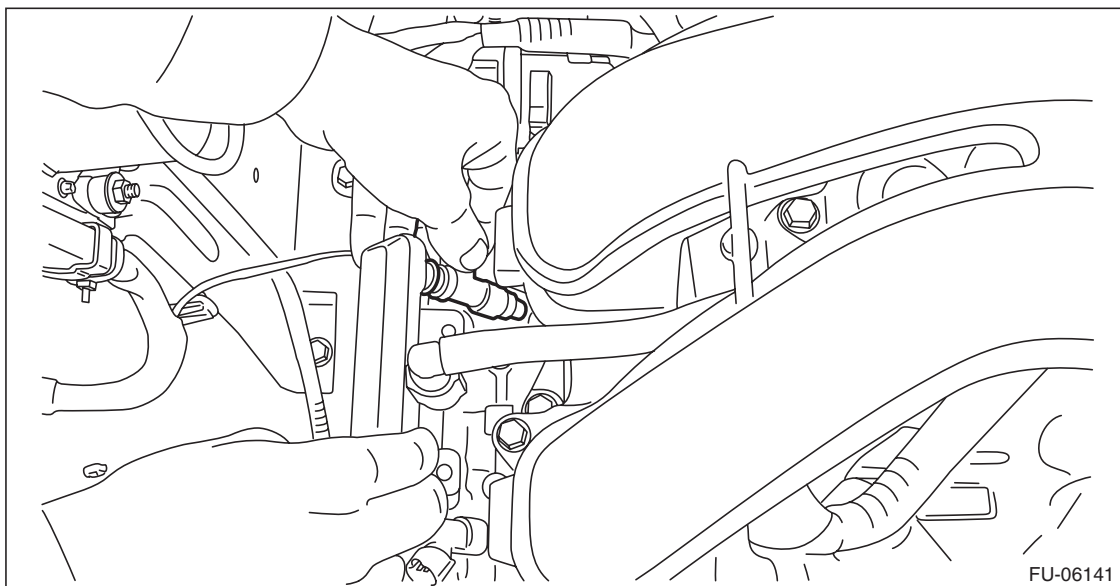
12) Remove the bolts which hold fuel pipe onto the cam carrier.



13) Remove the fuel injector.

CAUTION:

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



Fuel Injector

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

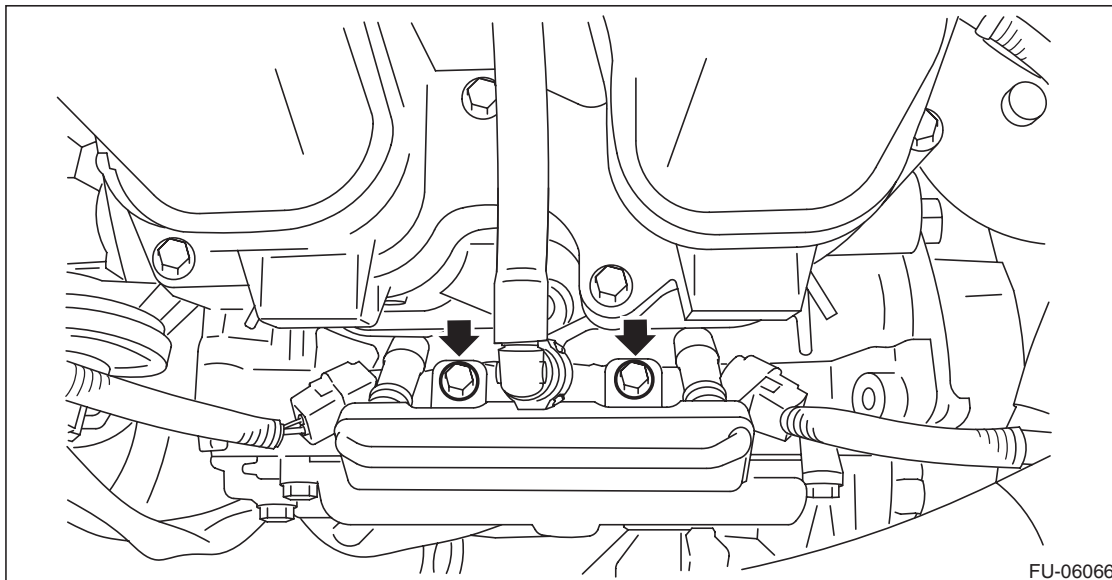
Install in the reverse order of removal.

NOTE:

Use new O-rings, rubbers and seal rings.

Tightening torque:

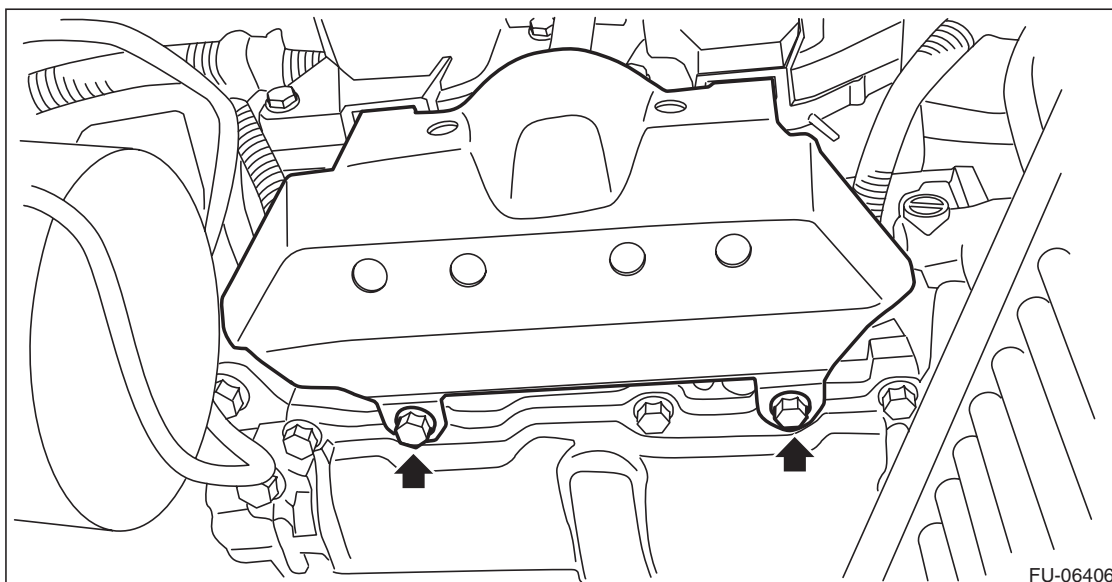
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

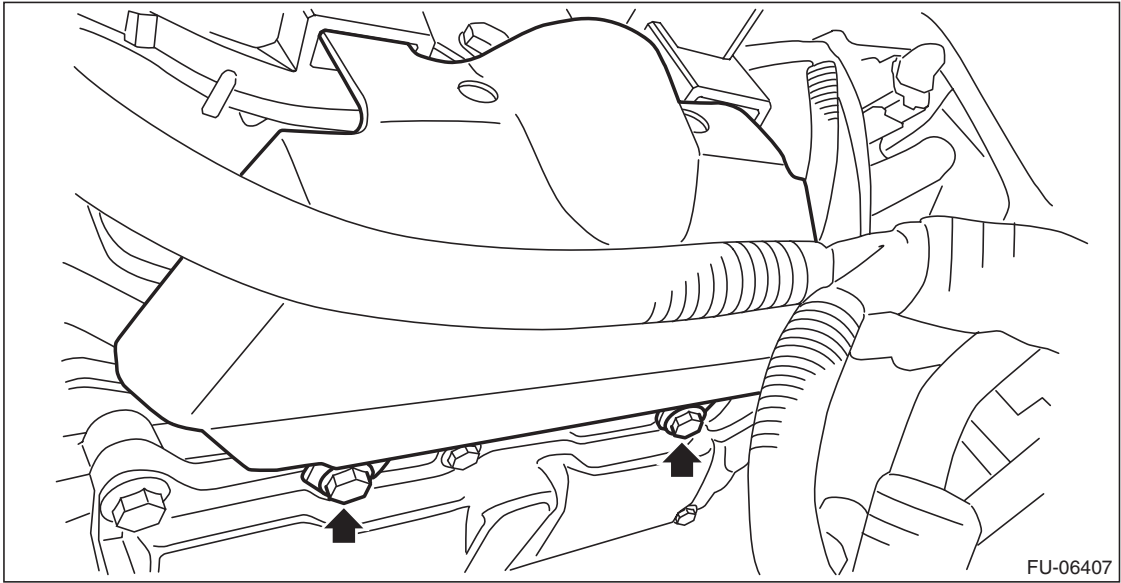
- RH side



Fuel Injector

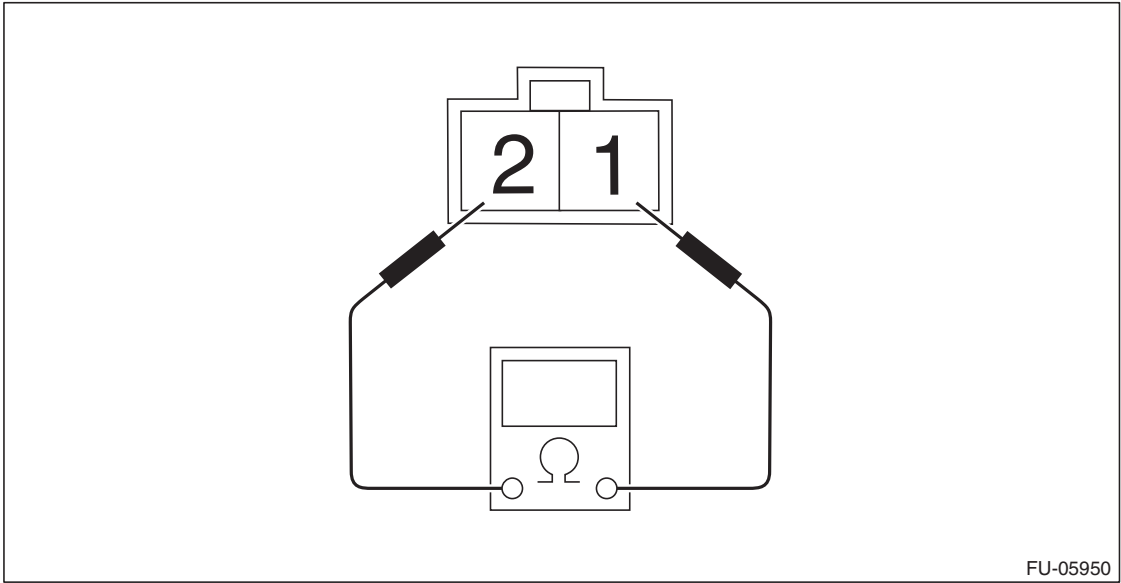
FUEL INJECTION (FUEL SYSTEMS)

- LH side



C: INSPECTION

- 1) Check that the fuel injector has no deformation, cracks or other damages.
- 2) Measure the resistance between fuel injector terminals.



Terminal No.	Standard
1 and 2	Approx. 12.0 Ω (when 20°C (68°F))

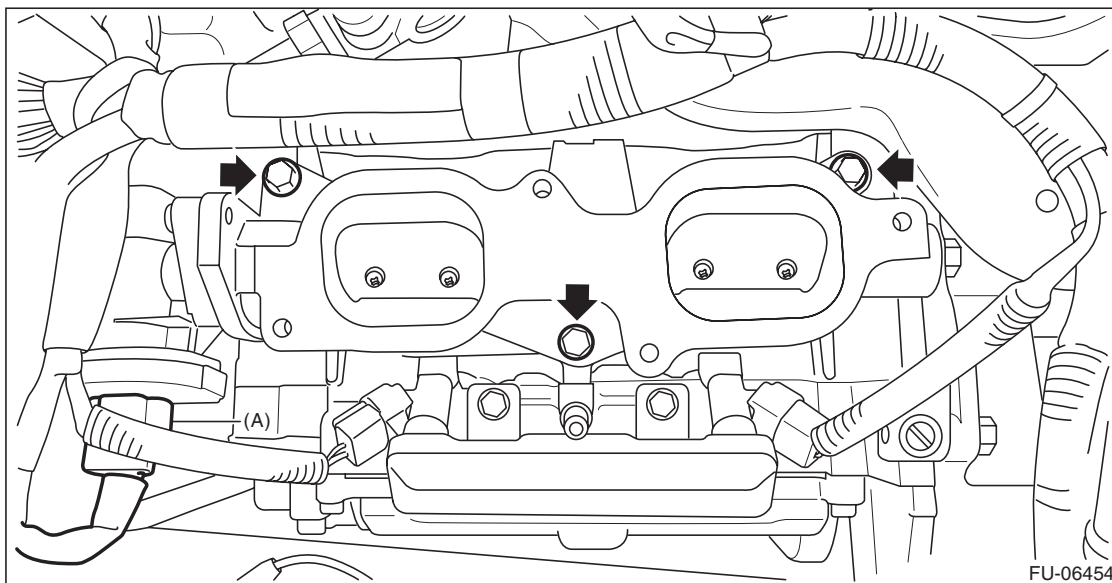
Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

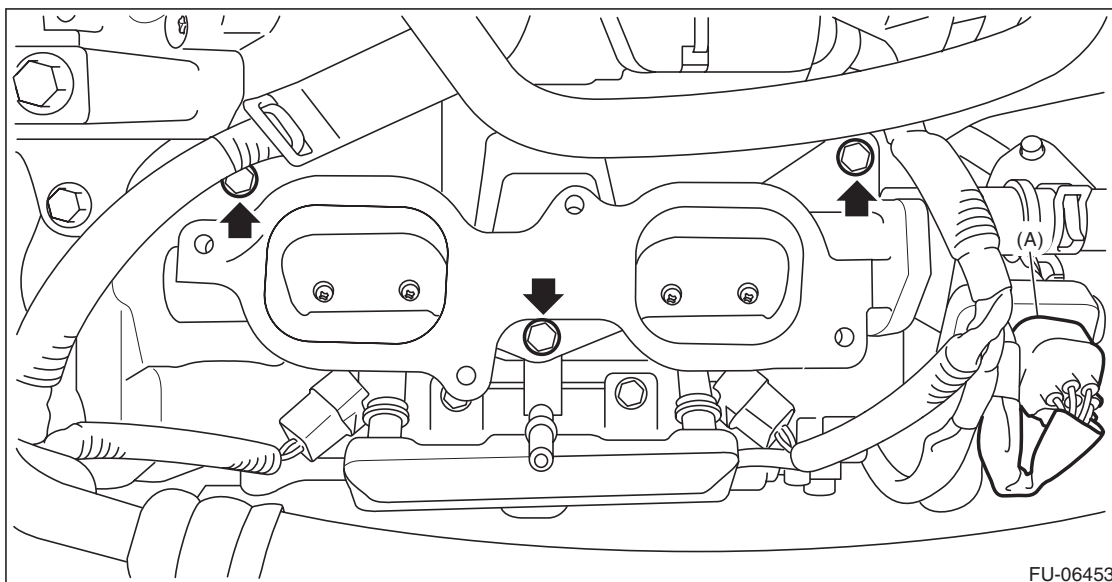
16. Tumble Generator Valve Assembly

A: REMOVAL

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
 - 2) Disconnect the ground cable from battery.
 - 3) Open the fuel filler lid and remove the fuel filler cap.
 - 4) Remove the intake manifold. <Ref. to FU(H4DO)-19, REMOVAL, Intake Manifold.>
 - 5) Disconnect the connector (A) from the tumble generator valve assembly.
 - 6) Remove the tumble generator valve assembly from the cylinder head.
- RH side



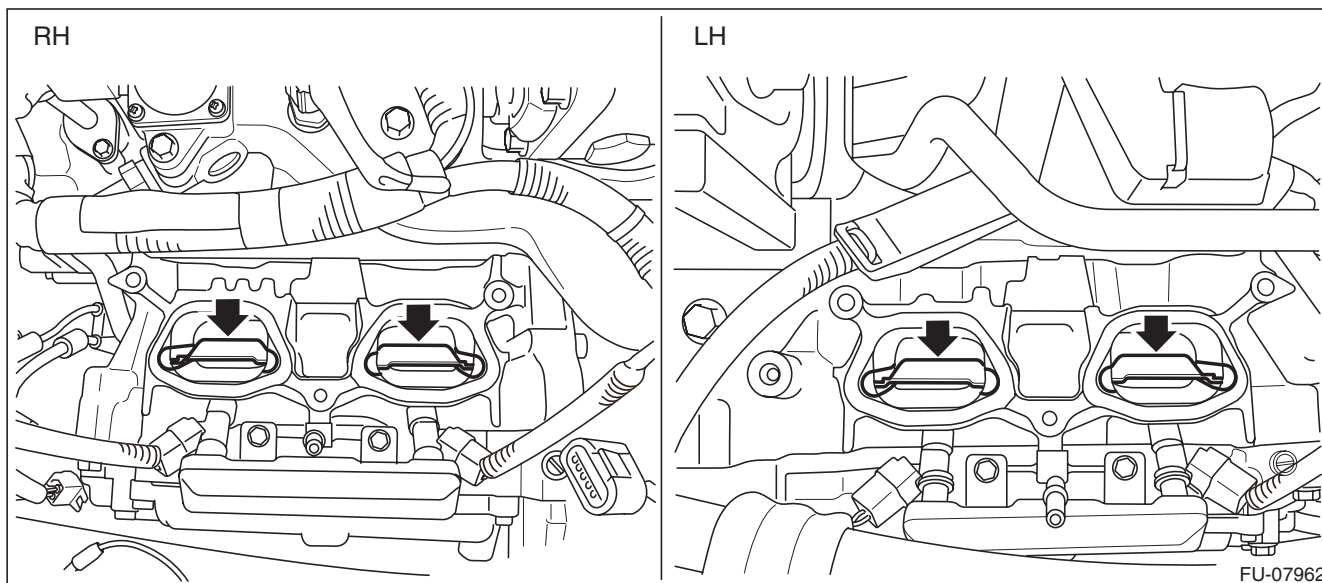
- LH side



Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

7) Remove the cylinder head plate from cylinder head.



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

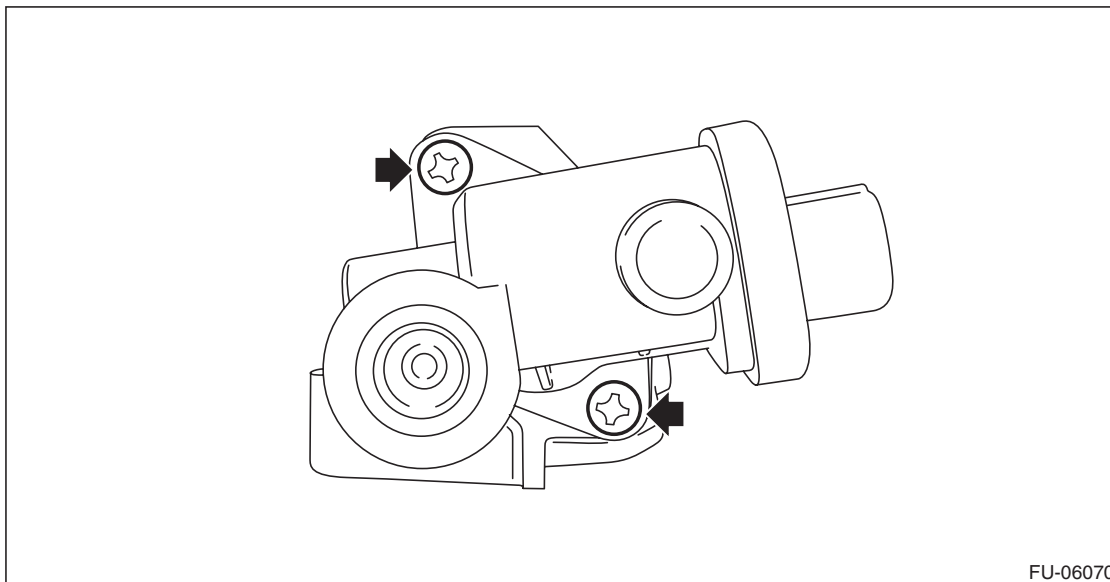
Tightening torque:

25 N·m (2.5 kgf-m, 18.4 ft-lb)

C: DISASSEMBLY

1) Remove the tumble generator valve actuator from the tumble generator valve.

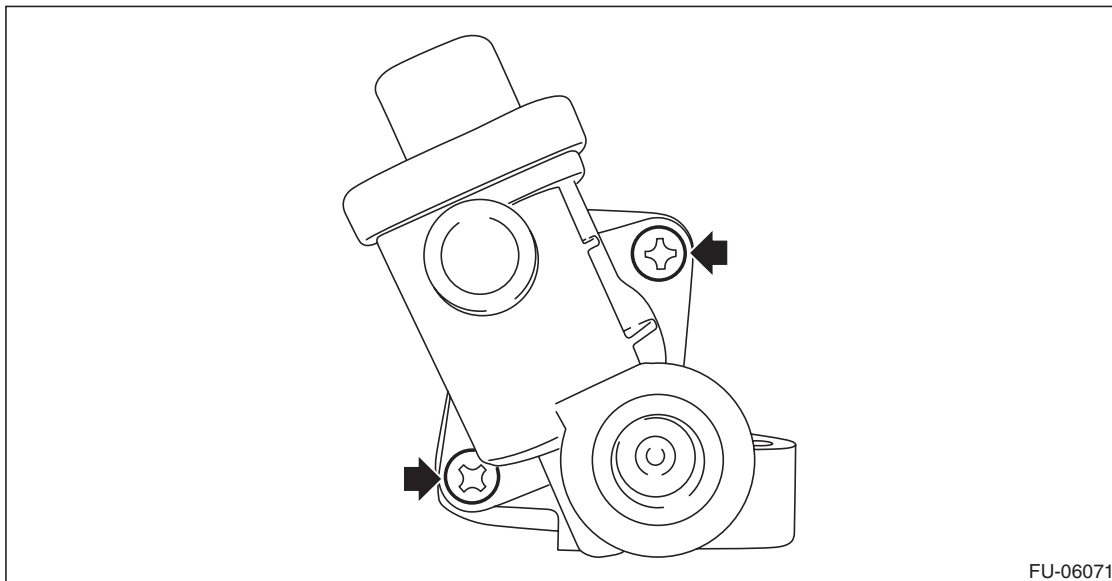
- RH side



Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

- LH side



D: ASSEMBLY

Assemble in the reverse order of disassembly.

NOTE:

Use a new gasket.

Tightening torque:

6 N·m (0.6 kgf-m, 4.4 ft-lb)

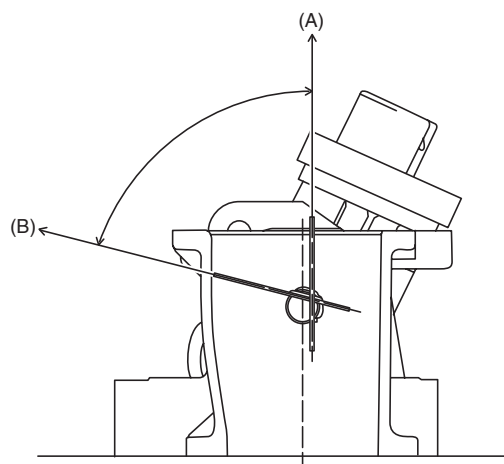
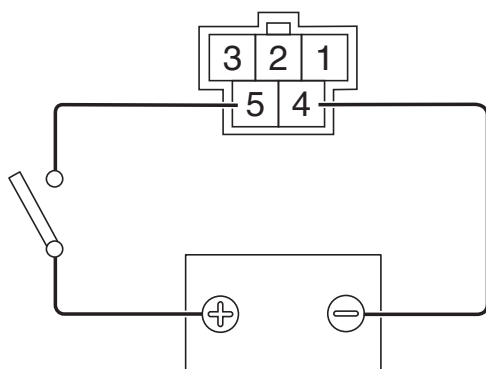
E: INSPECTION

1. CHECK MOTOR

1) Connect the battery positive terminal to terminal No. 5 and the battery ground terminal to terminal No. 4, and check that the valve is fully opened on LH side and the valve is fully closed on RH side.

CAUTION:

Do not power the motor for more than 10 seconds.



FU-06073

(A) Full open

(B) Full closed

FU(H4DO)-81

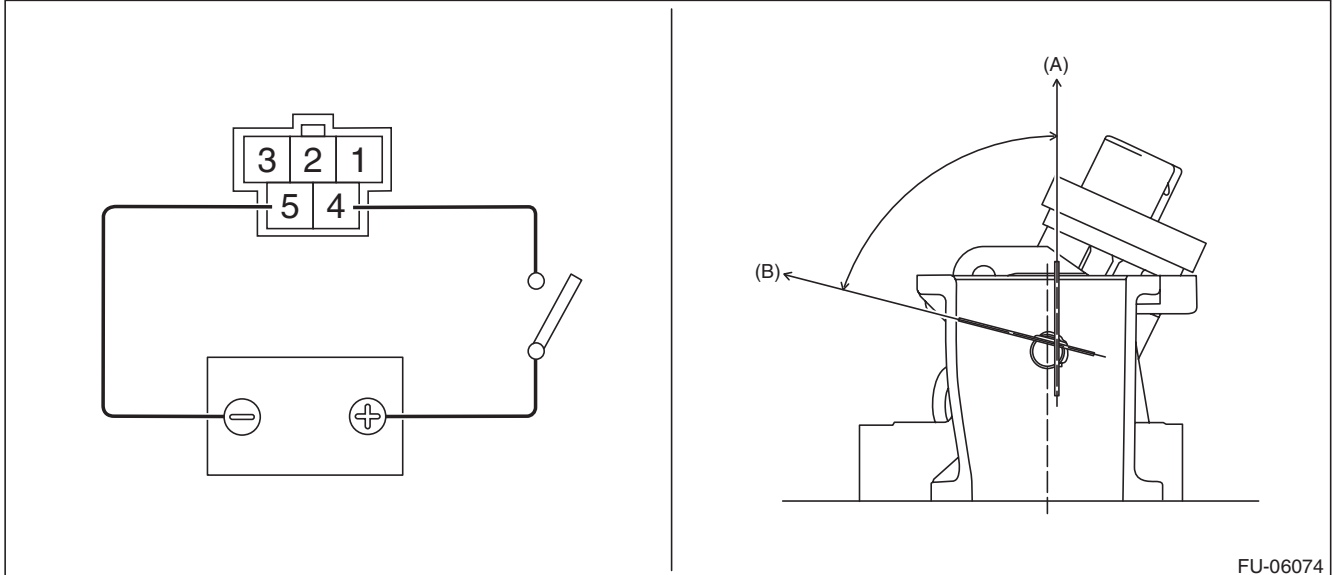
Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

2) Connect the battery positive terminal to terminal No. 4 and the battery ground terminal to terminal No. 5, and check that the valve is fully closed on LH side and the valve is fully opened on RH side.

CAUTION:

Do not power the motor for more than 10 seconds.



FU-06074

(A) Full open

(B) Full closed

2. CHECK SENSORS

1) Connect dry-cell battery positive terminal to terminal No. 3 and dry-cell battery ground terminal to terminal No. 2, and connect the resistance (0.5 — 2 k Ω) between dry-cell battery positive terminal and terminal No. 1.

NOTE:

- Use new dry-cell batteries.
- Using circuit tester, check the voltage of a single dry-cell battery is 1.6 V or more. And also check the voltage of three batteries in series is between 4.8 V and 5.2 V.

2) Connect the circuit tester positive terminal to terminal No. 1, and the circuit tester negative terminal to terminal No. 2.

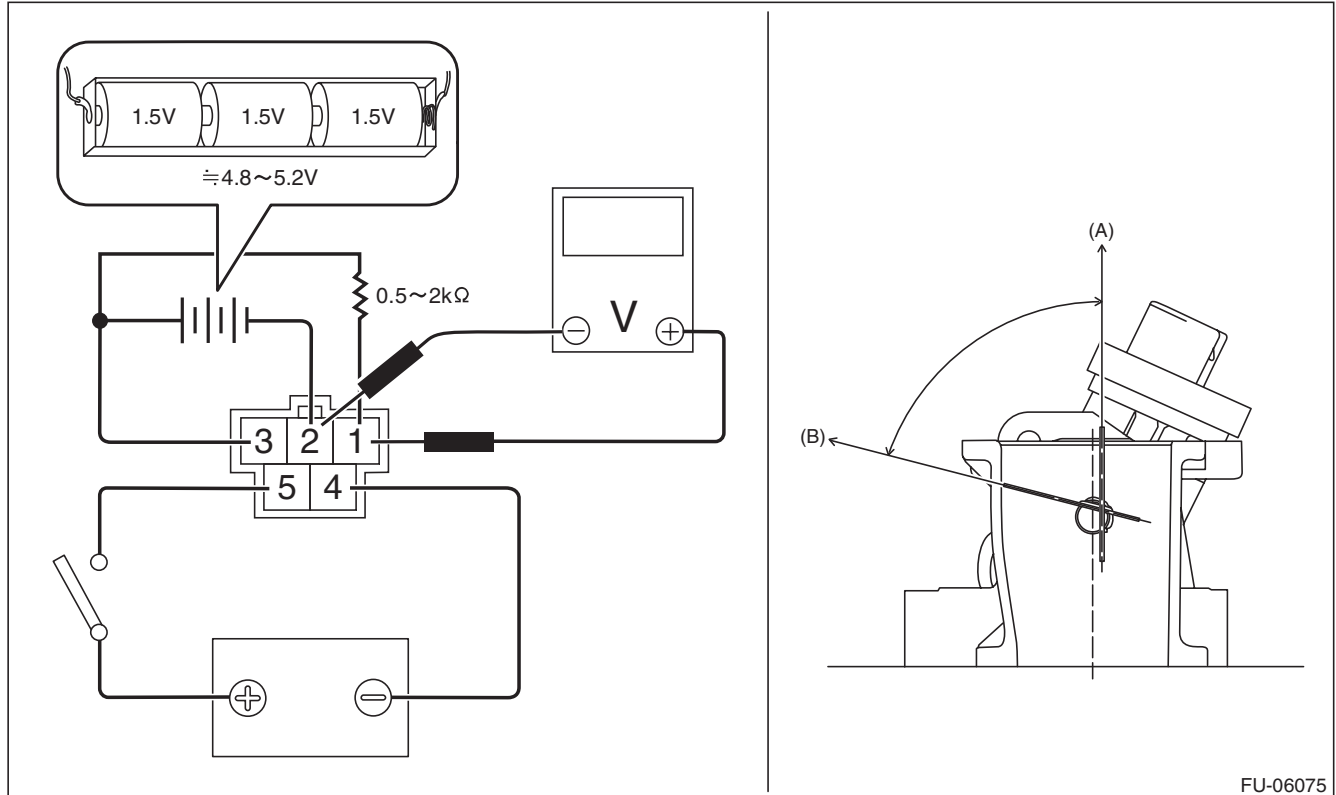
Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

3) Connect the battery positive terminal to terminal No. 5 and the battery ground terminal to terminal No. 4, and measure the voltages with the valve fully opened on LH side and with the valve fully closed on RH side.

CAUTION:

Do not power the motor for more than 10 seconds.



(A) Full open

(B) Full closed

Terminal No.	Standard
1 (+) and 2 (-)	LH side: Approx. 5 V (when 25°C (77°F)) RH side: Approx. 0 — 0.5 V (when 25°C (77°F))

4) Connect dry-cell battery positive terminal to terminal No. 3 and dry-cell battery ground terminal to terminal No. 2, and connect the resistance (0.5 — 2 kΩ) between dry-cell battery positive terminal and terminal No. 1.

NOTE:

- Use new dry-cell batteries.
- Using circuit tester, check the voltage of a single dry-cell battery is 1.6 V or more. And also check the voltage of three batteries in series is between 4.8 V and 5.2 V.

5) Connect the circuit tester positive terminal to terminal No. 1, and the circuit tester negative terminal to terminal No. 2.

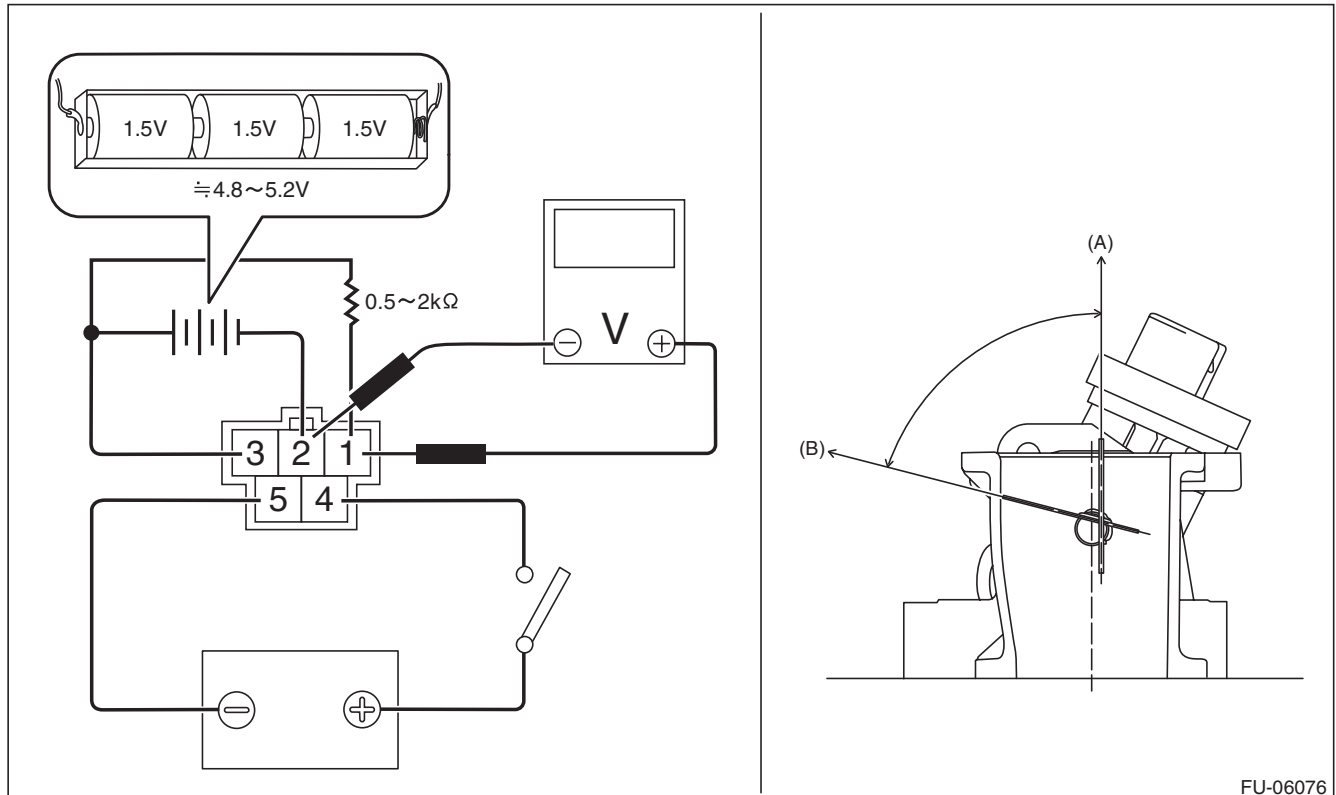
Tumble Generator Valve Assembly

FUEL INJECTION (FUEL SYSTEMS)

6) Connect the battery positive terminal to terminal No. 4 and the battery ground terminal to terminal No. 5, and measure the voltages with the valve fully closed on LH side and with the valve fully opened on RH side.

CAUTION:

Do not power the motor for more than 10 seconds.



FU-06076

(A) Full open

(B) Full closed

Terminal No.	Standard
1 (+) and 2 (-)	LH side: Approx. 0 — 0.5 V (when 25°C (77°F)) RH side: Approx. 5 V (when 25°C (77°F))

3. OTHER INSPECTIONS

- 1) Check that the tumble generator valve assembly has no deformation, cracks or other damages.
- 2) Check tumble generator valve assembly for contamination or clogging.

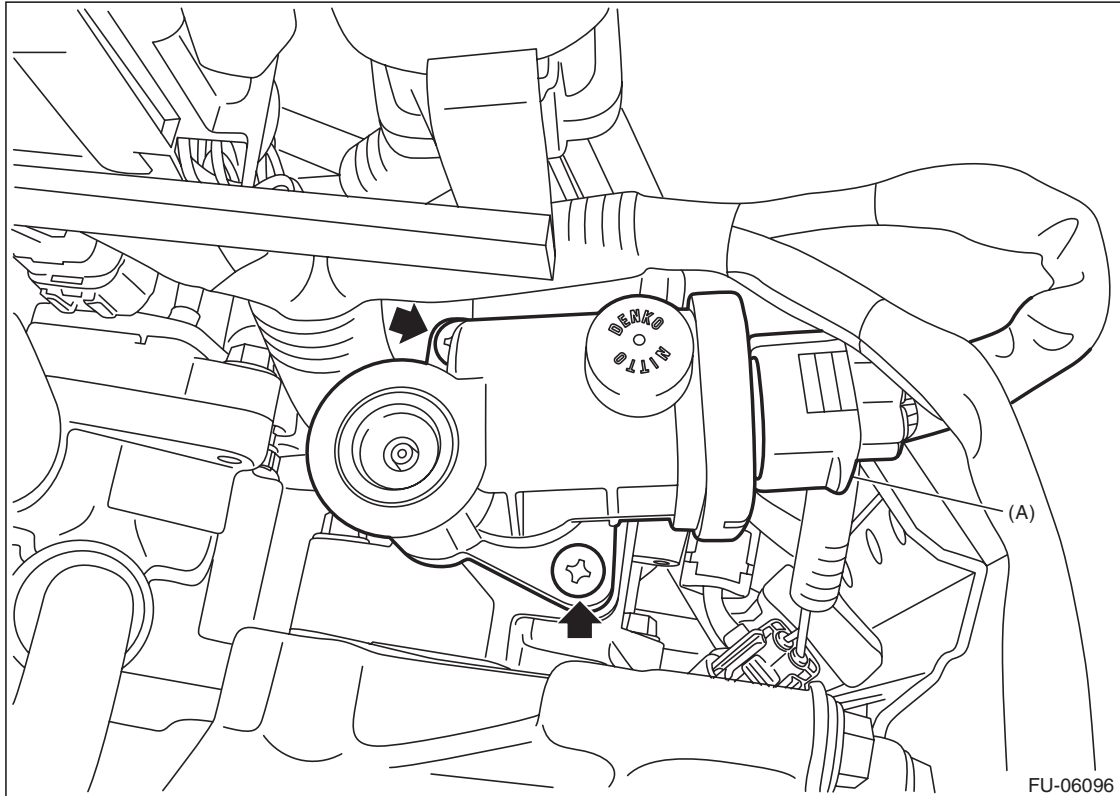
Tumble Generator Valve Actuator

FUEL INJECTION (FUEL SYSTEMS)

17. Tumble Generator Valve Actuator

A: REMOVAL

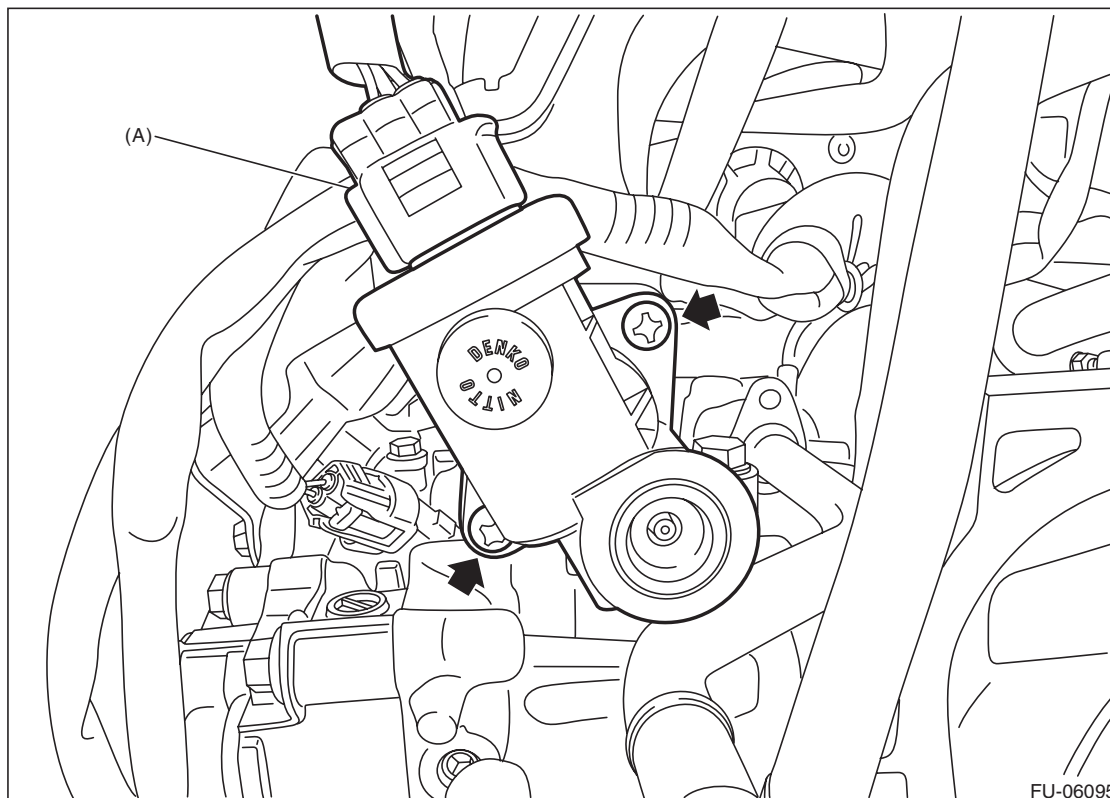
- 1) Disconnect the ground cable from battery.
 - 2) Disconnect the connector (A) from tumble generator valve assembly, and remove the tumble generator valve actuator.
- RH side



Tumble Generator Valve Actuator

FUEL INJECTION (FUEL SYSTEMS)

- LH side



B: INSTALLATION

Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

6 N·m (0.6 kgf-m, 4.4 ft-lb)

C: INSPECTION

- 1) Check that the tumble generator valve actuator has no deformation, cracks or other damages.
- 2) Check tumble generator valve actuator for contamination or clogging.

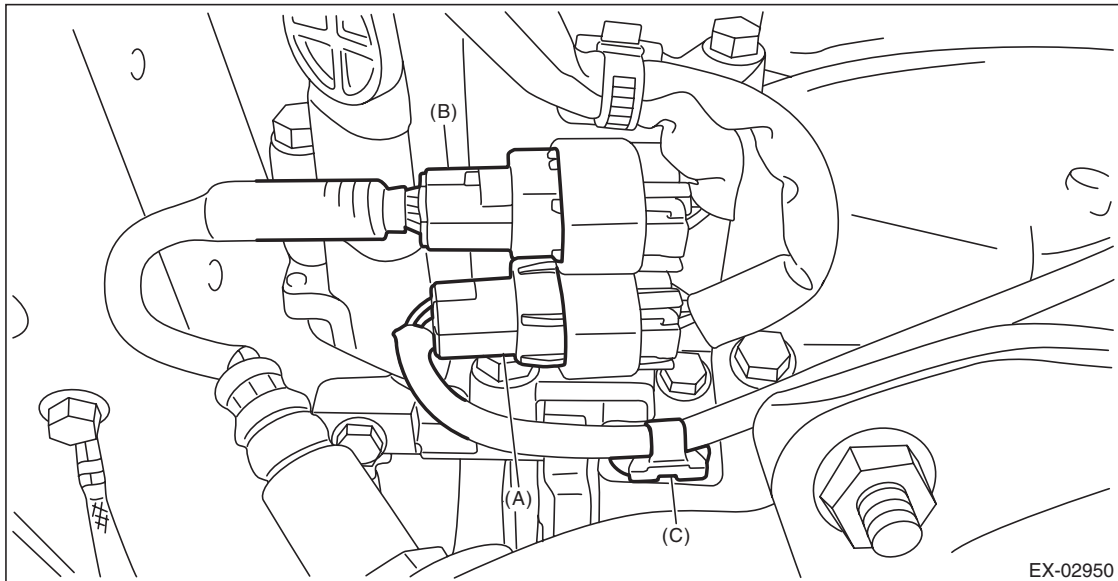
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

18.Front Oxygen (A/F) Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the radiator sub fan and fan motor assembly. <Ref. to CO(H4DO)-67, REMOVAL, Radiator Sub Fan and Fan Motor.>
- 3) Lift up the vehicle.
- 4) Remove the under cover. <Ref. to EI-22, REMOVAL, Front Under Cover.>
- 5) Disconnect the front oxygen (A/F) sensor connector, and remove the clip holding the front oxygen (A/F) sensor harness.



- (A) Front oxygen (A/F) sensor connector (B) Rear oxygen sensor connector (C) Clip

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

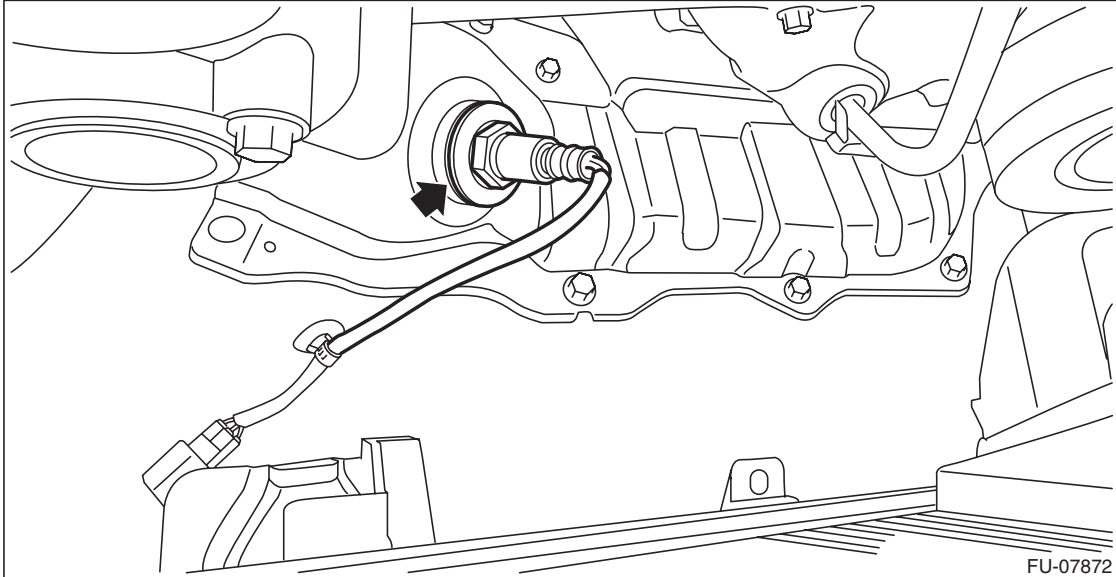
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

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

CAUTION:

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

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

CAUTION:

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

Anti-seize compound:

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

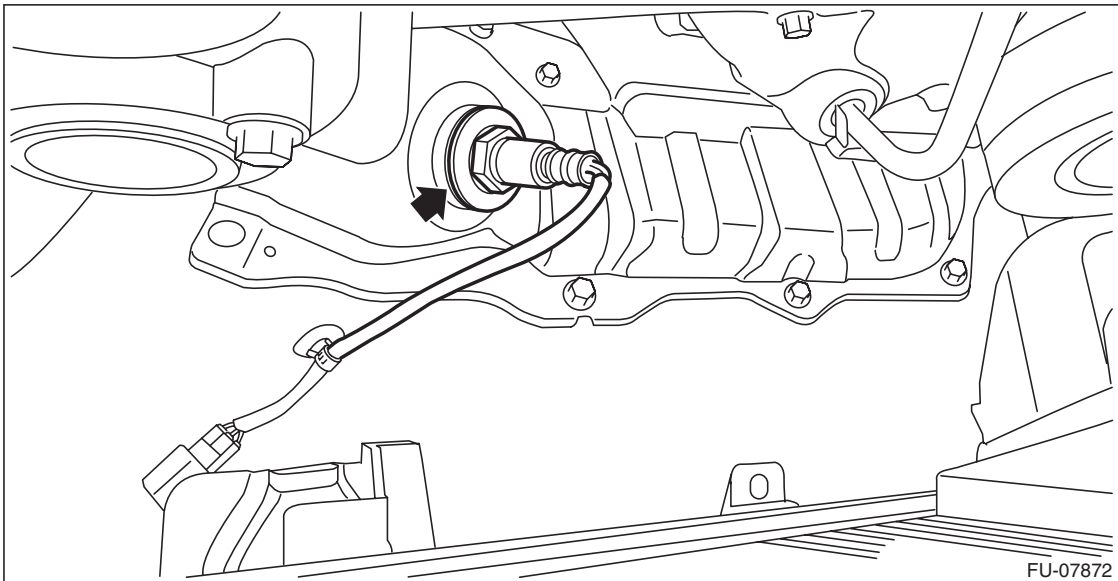
Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

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

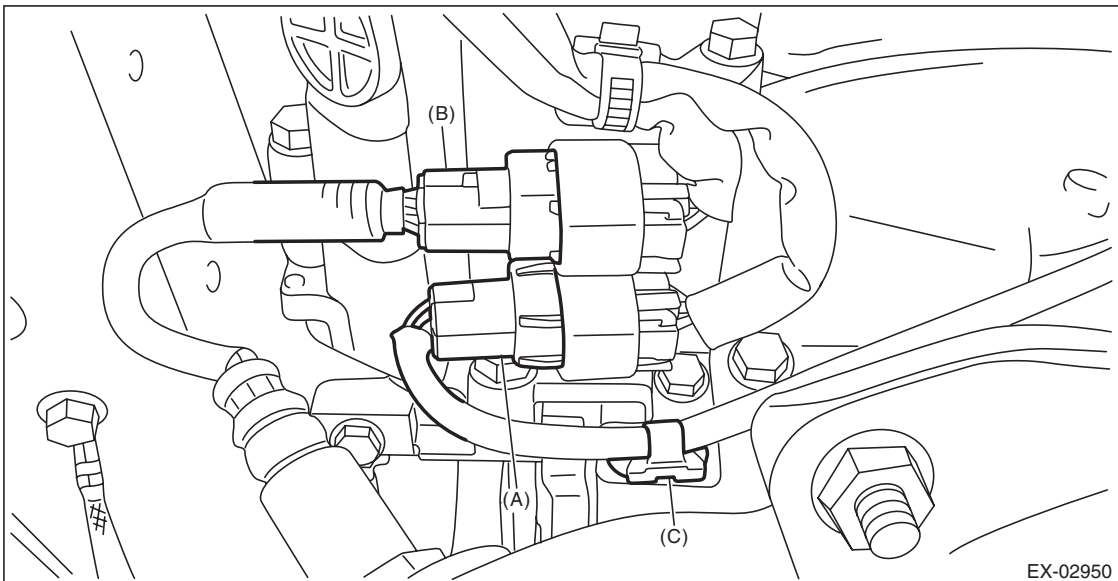
Tightening torque:

21 N·m (2.1 kgf-m, 15.5 ft-lb)



3) Lift up the vehicle.

4) Connect the front oxygen (A/F) sensor connector, and secure the front oxygen (A/F) sensor harness by using the clip.



(A) Front oxygen (A/F) sensor connector

(B) Rear oxygen sensor connector

(C) Clip

5) Install the under cover. <Ref. to EI-22, INSTALLATION, Front Under Cover.>

6) Lower the vehicle.

7) Install the radiator sub fan and fan motor assembly. <Ref. to CO(H4DO)-67, INSTALLATION, Radiator Sub Fan and Fan Motor.>

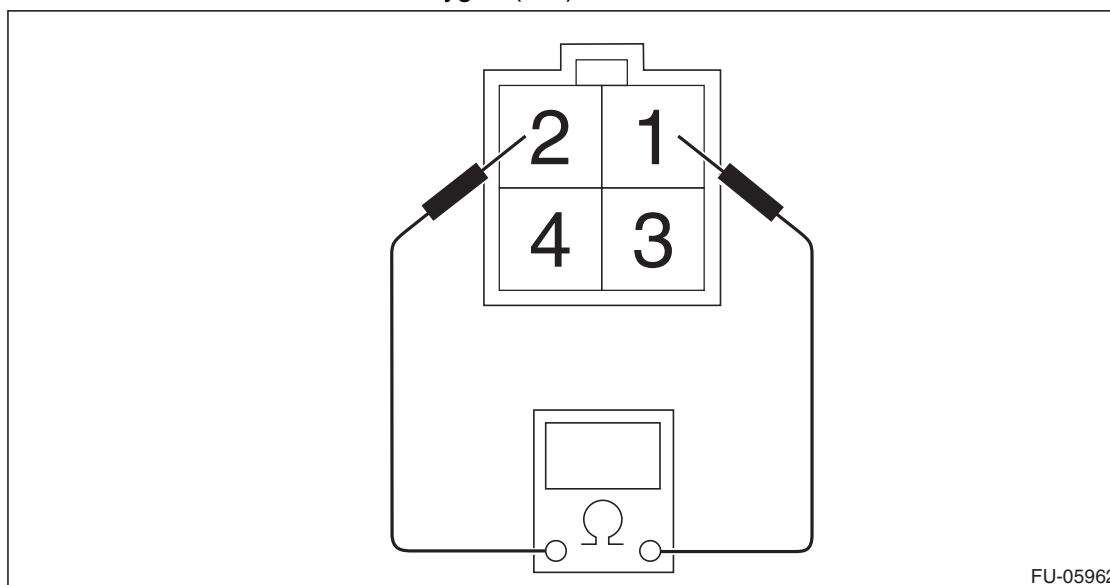
8) Connect the battery ground terminal.

Front Oxygen (A/F) Sensor

FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the front oxygen (A/F) sensor has no deformation, cracks or other damages.
- 2) Measure the resistance between front oxygen (A/F) sensor terminals.



Terminal No.	Standard
1 and 2	$2.2^{+0.45}_{-0.22} \Omega$ (when 20°C (68°F))



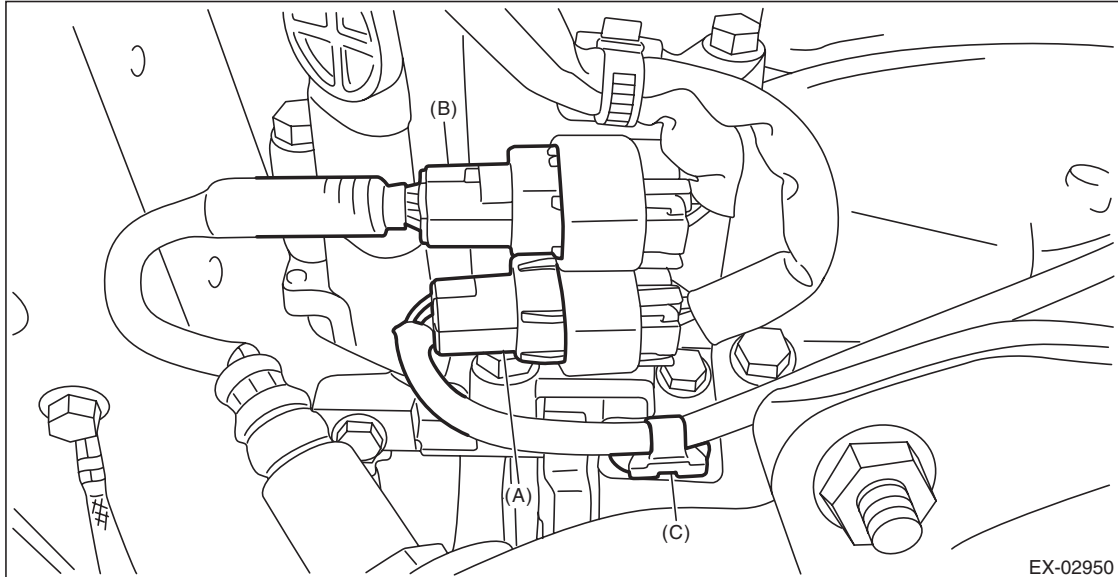
Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

19.Rear Oxygen Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle.
- 3) Remove the under cover. <Ref. to EI-22, REMOVAL, Front Under Cover.>
- 4) Disconnect the rear oxygen sensor connector.

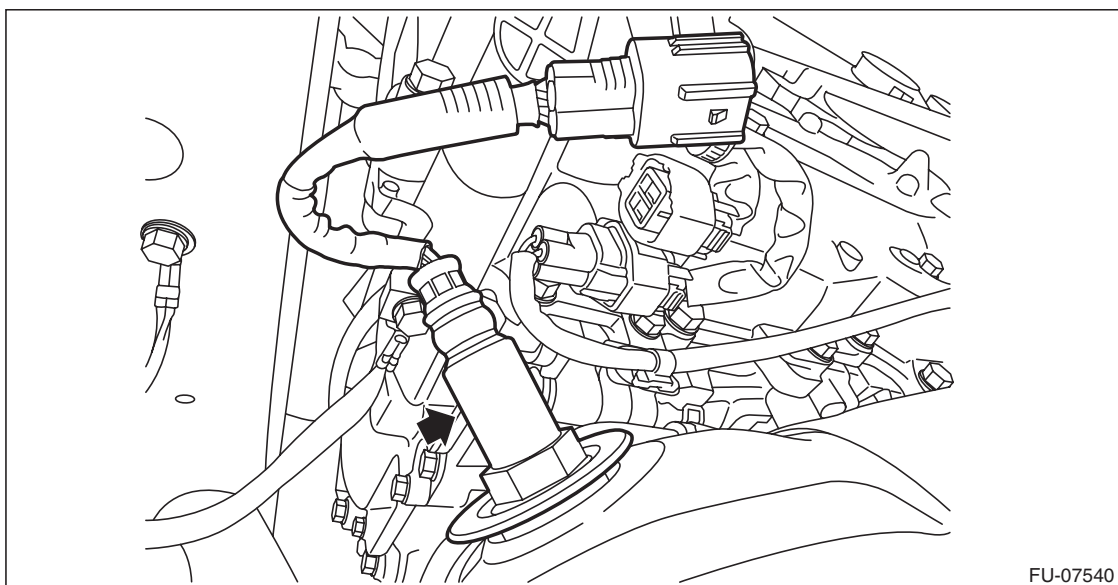


- (A) Front oxygen (A/F) sensor connector (B) Rear oxygen sensor connector (C) Clip

- 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.



Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

CAUTION:

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

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

CAUTION:

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

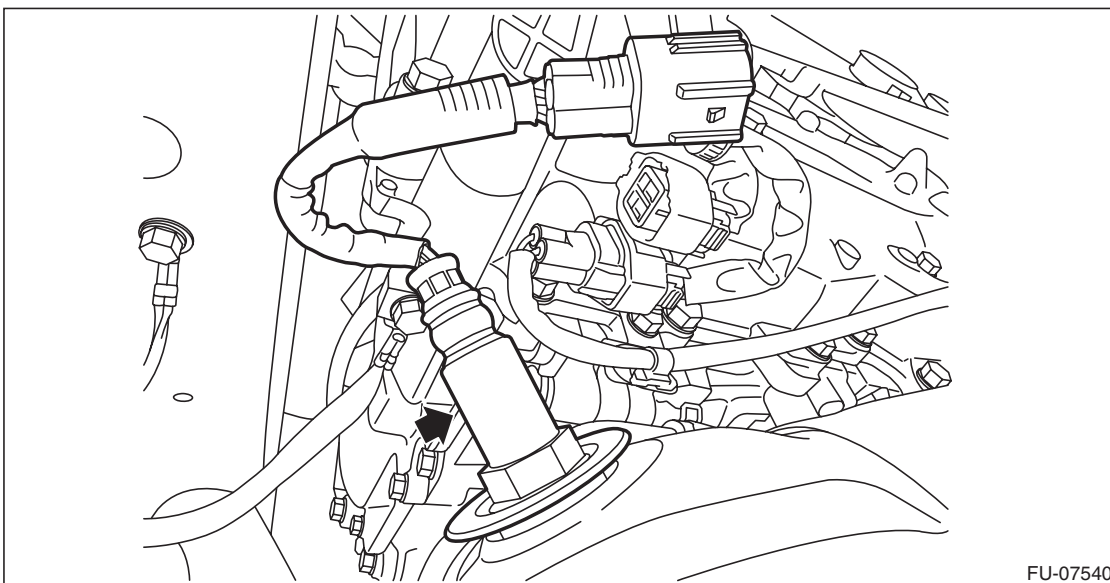
Anti-seize compound:

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

2) Install the rear oxygen sensor.

Tightening torque:

21 N·m (2.1 kgf-m, 15.5 ft-lb)



FU-07540

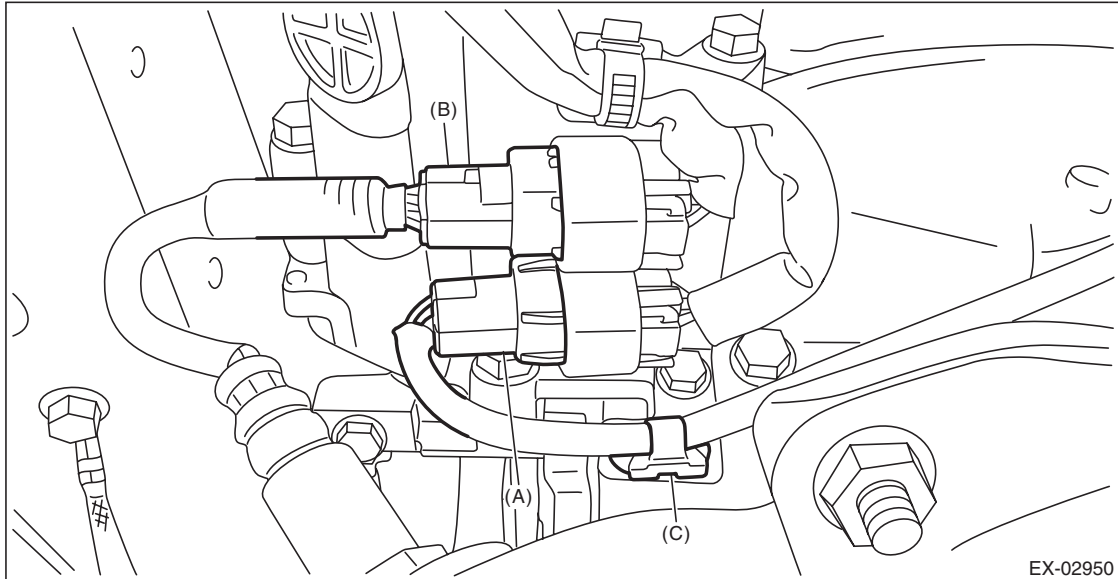
Rear Oxygen Sensor

FUEL INJECTION (FUEL SYSTEMS)

3) Connect the rear oxygen sensor connector.

NOTE:

Be careful not to allow the rear oxygen sensor harness to interfere with the sensor unit and the front oxygen (A/F) sensor harness.



(A) Front oxygen (A/F) sensor connector

(B) Rear oxygen sensor connector

(C) Clip

4) Install the under cover. <Ref. to EI-22, INSTALLATION, Front Under Cover.>

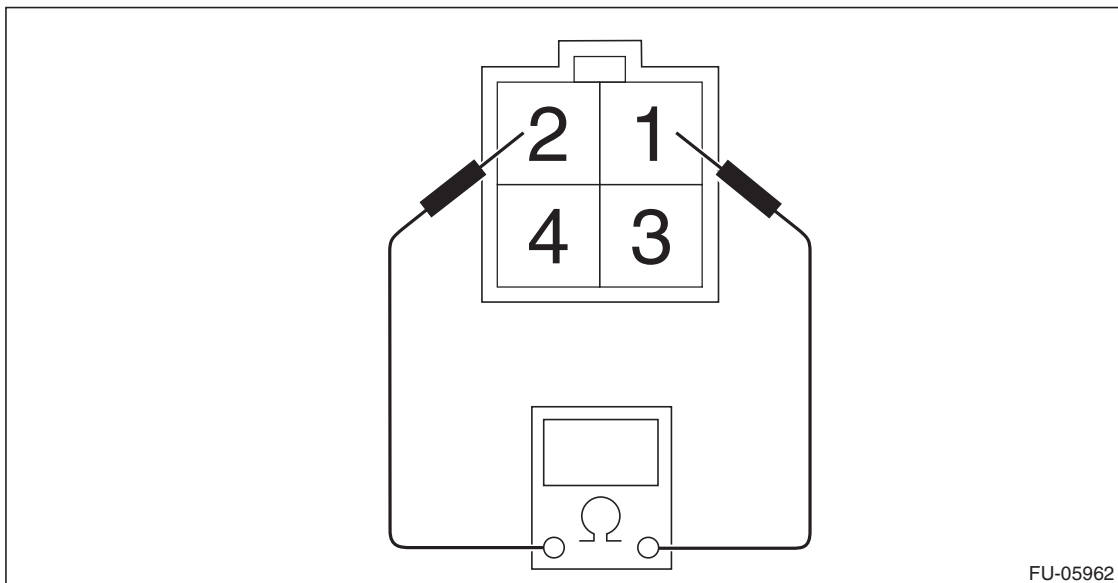
5) Lower the vehicle.

6) Connect the battery ground terminal.

C: INSPECTION

1) Check that the rear oxygen sensor has no deformation, cracks or other damages.

2) Measure the resistance between rear oxygen sensor terminals.



Terminal No.	Standard
1 and 2	Approx. 5.6 Ω (when 20°C (68°F))

Engine Control Module (ECM)

FUEL INJECTION (FUEL SYSTEMS)

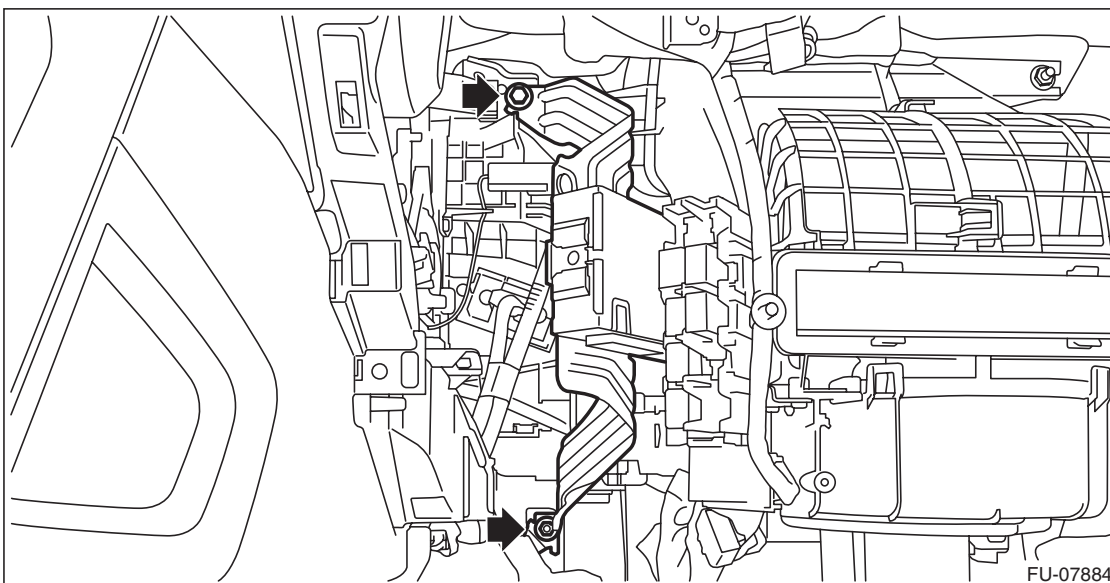
20.Engine Control Module (ECM)

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Disconnect the connector from ECM.



- 4) Remove the bolts and nuts, and remove the ECM.



Engine Control Module (ECM)

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

- When the ECM of model with immobilizer has been replaced, be sure to perform the registration of immobilizer system. (Refer to the "REGISTRATION MANUAL FOR IMMOBILIZER".)
- If replacing ECM or the bracket, replace both parts with new parts at a time.
- After installing the bracket to ECM, do not separate the bracket.
- If the bracket has been installed to ECM in the wrong direction, replace both parts to new parts.

NOTE:

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

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

C: INSPECTION

Check that the ECM has no deformation, cracks or other damages.

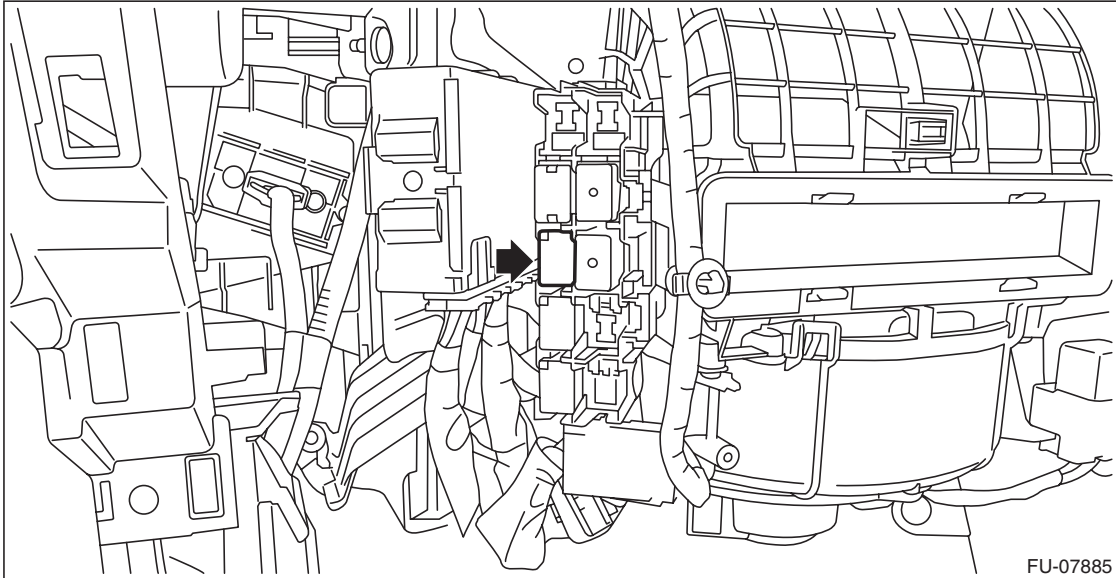
Main Relay

FUEL INJECTION (FUEL SYSTEMS)

21.Main Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Remove the main relay from relay block.

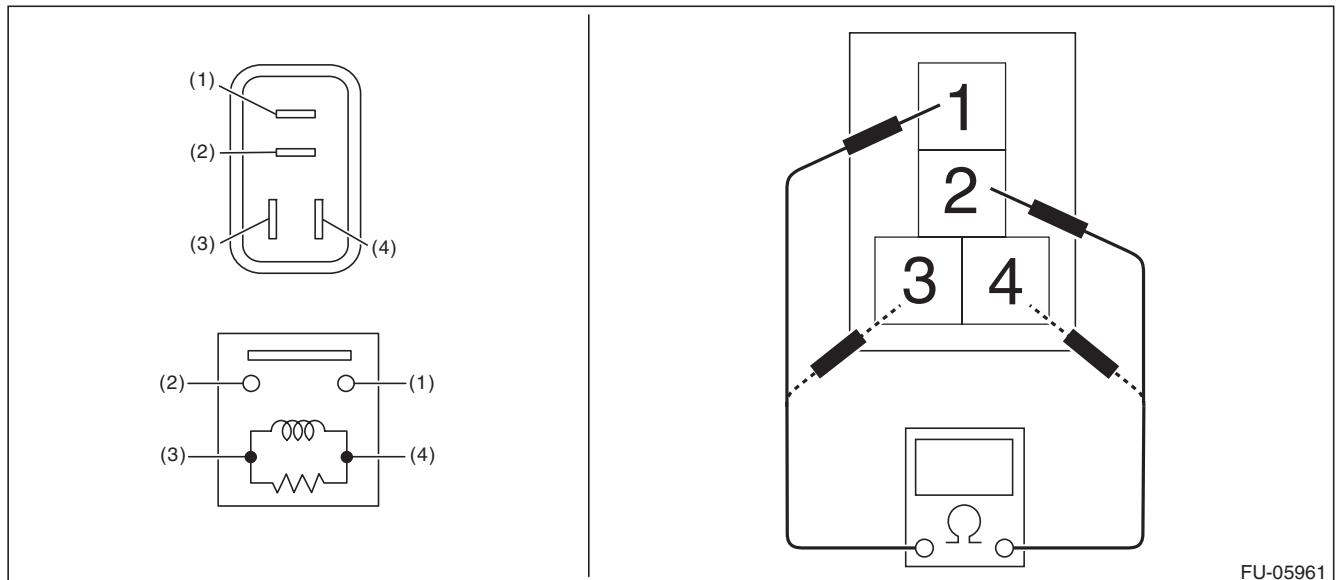


B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

- 1) Check that the main relay has no deformation, cracks or other damages.
- 2) Measure the resistance between main relay terminals.

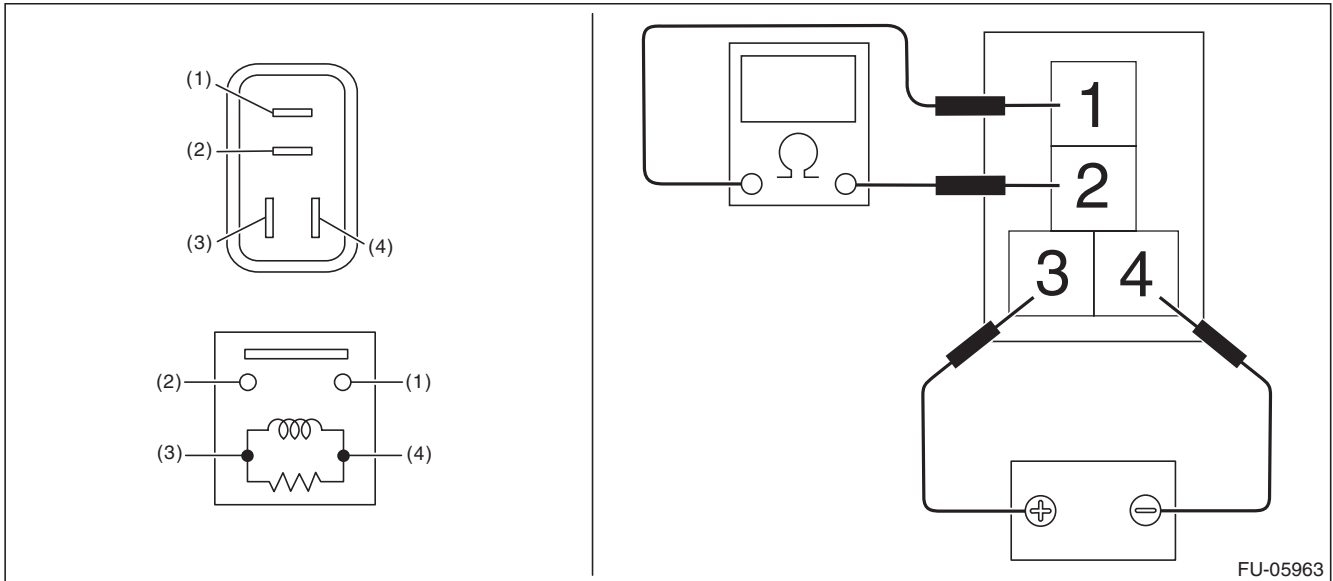


Terminal No.	Standard
1 and 2	1 M Ω or more
3 and 4	130.4 — 230.8 Ω (when 20°C (68°F))

Main Relay

FUEL INJECTION (FUEL SYSTEMS)

3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between the main relay terminals.



Terminal No.	Standard
1 and 2	Less than 1 Ω



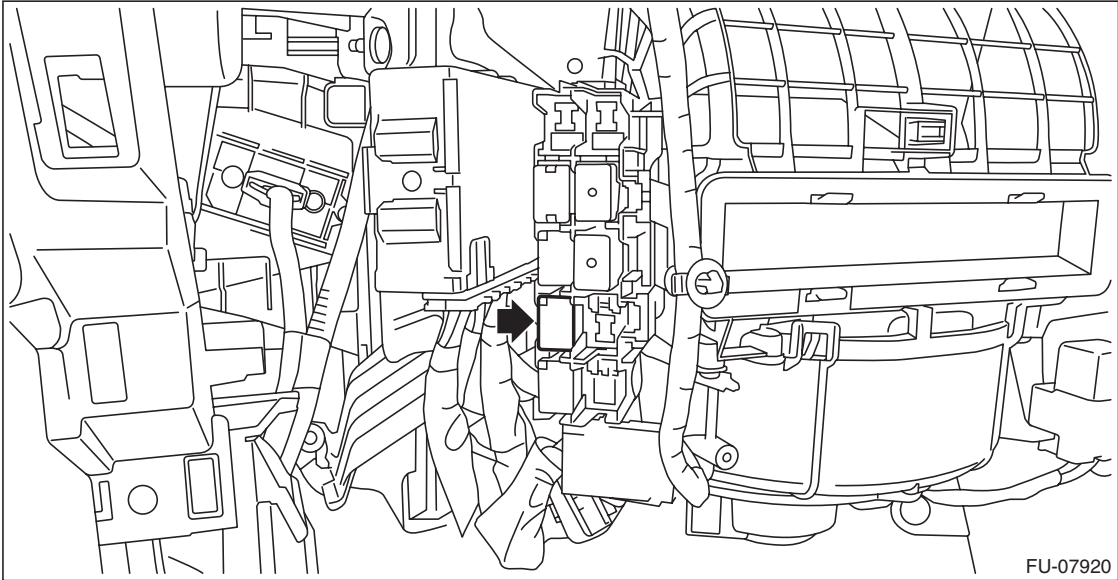
IG Relay

FUEL INJECTION (FUEL SYSTEMS)

22.IG Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Remove the IG relay from the relay block.

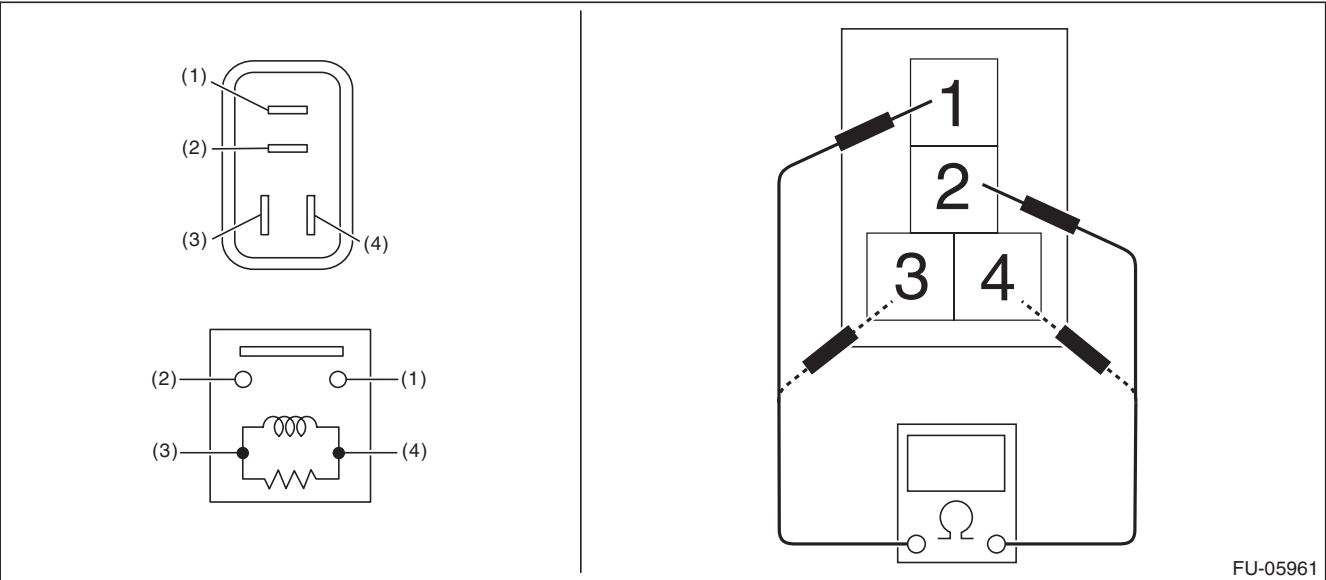


B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

- 1) Check that the IG relay has no deformation, cracks or other damages.
- 2) Measure the resistance between the IG relay terminals.

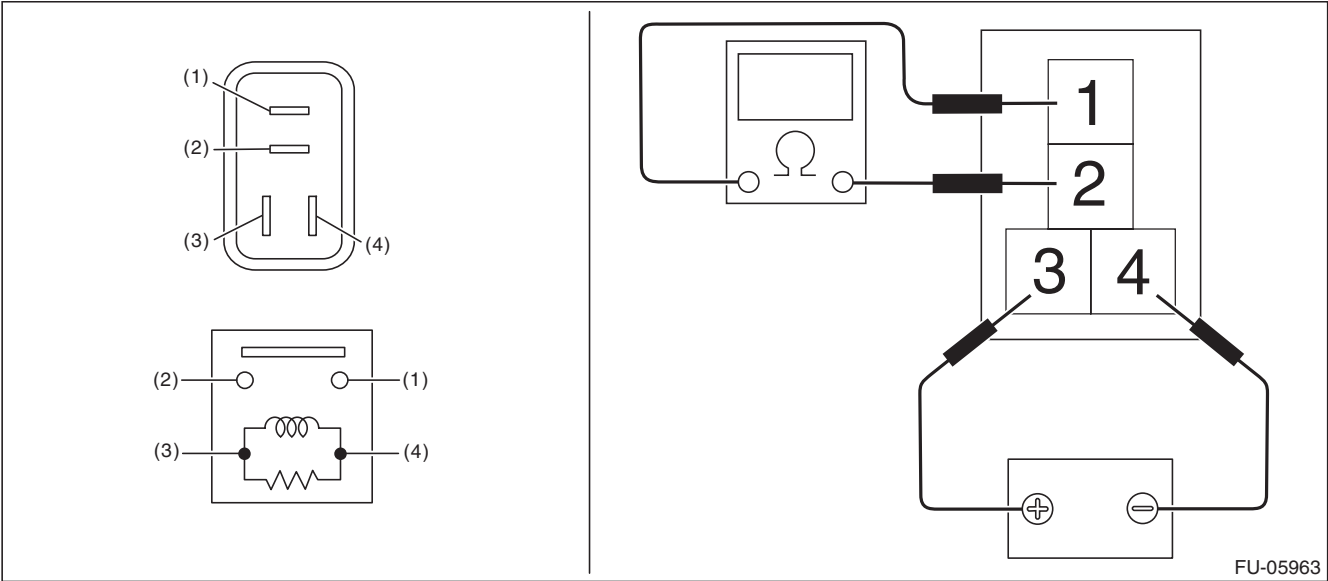


Terminal No.	Standard
1 and 2	1 M Ω or more
3 and 4	130.4 — 230.8 Ω (when 20°C (68°F))

IG Relay

FUEL INJECTION (FUEL SYSTEMS)

3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between IG relay terminals.



Terminal No.	Standard
1 and 2	Less than 1 Ω

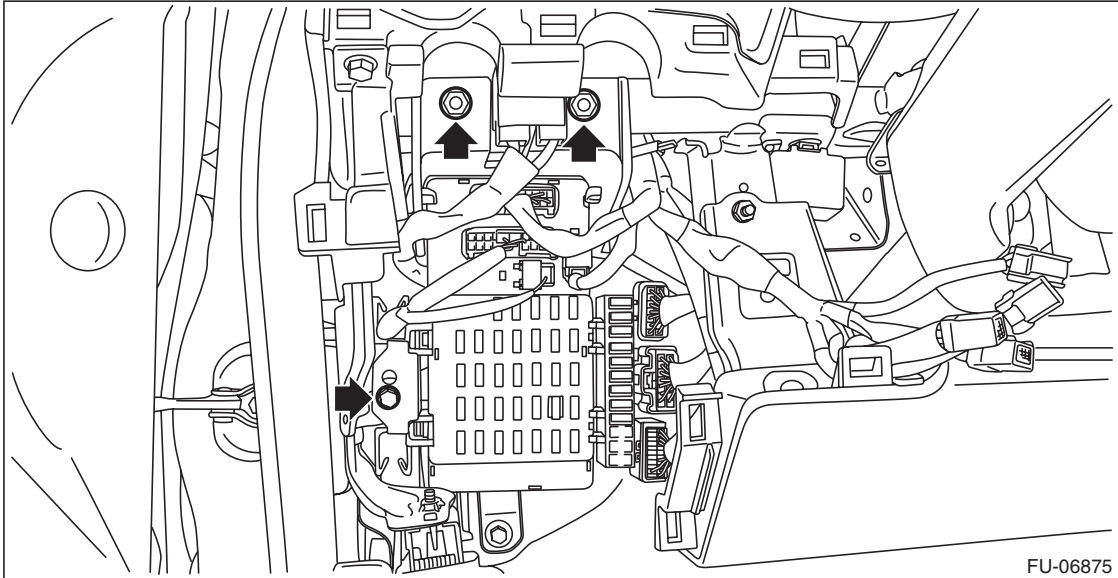
Oxygen Sensor Relay

FUEL INJECTION (FUEL SYSTEMS)

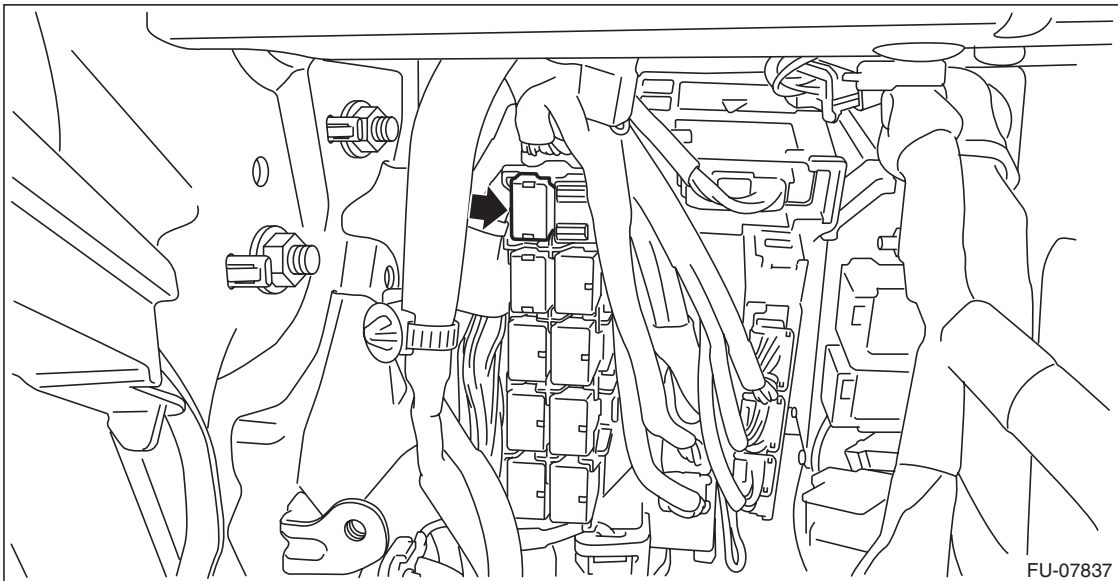
23. Oxygen Sensor Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the instrument panel lower cover. <Ref. to EI-59, REMOVAL, Instrument Panel Lower Cover.>
- 3) Remove the bolts and nuts securing the fuse block and move down the fuse block.



- 4) Remove the oxygen sensor relay from the relay block.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

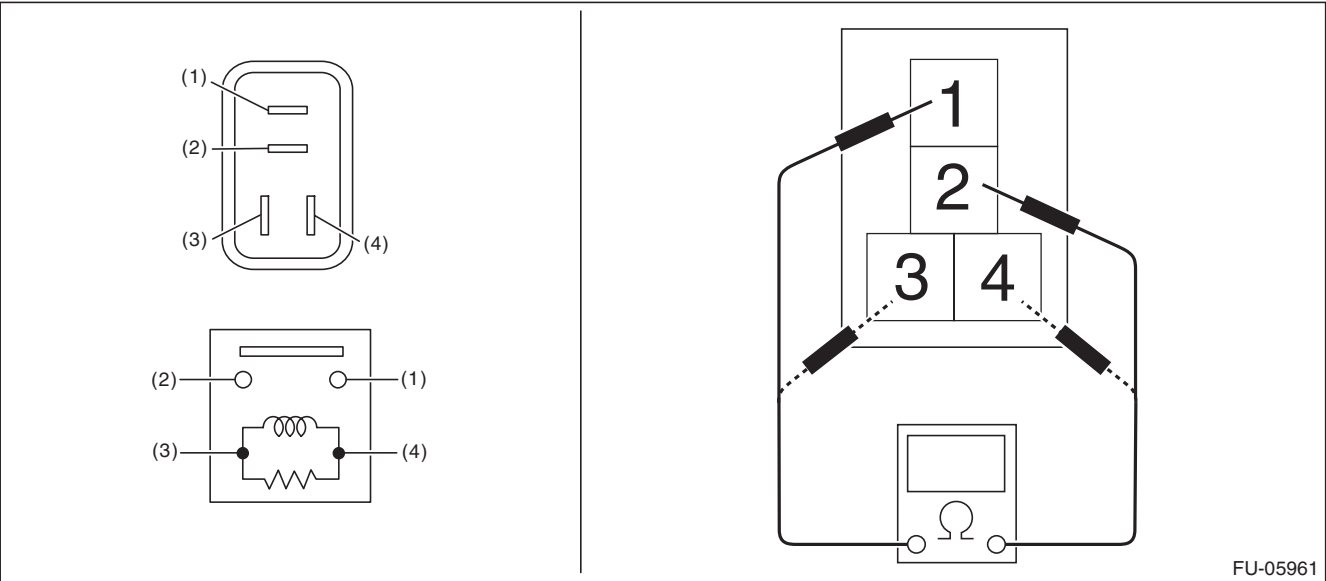
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

Oxygen Sensor Relay

FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

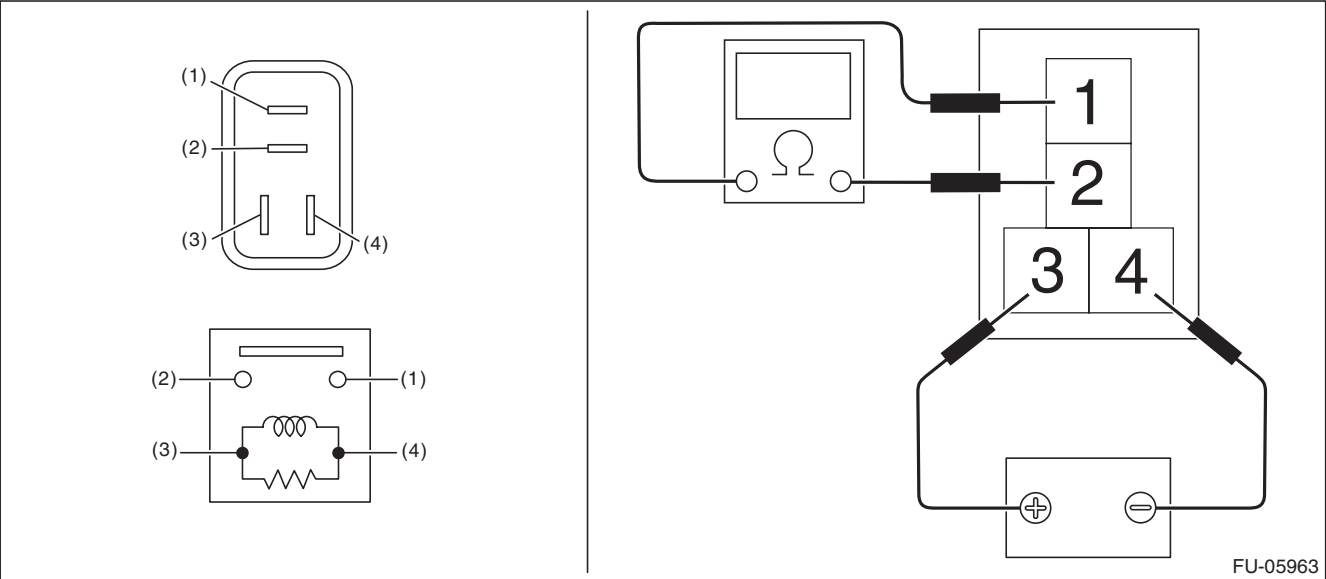
- 1) Check that the oxygen sensor relay has no deformation, cracks or other damages.
- 2) Measure the resistance between oxygen sensor relay terminals.



FU-05961

Terminal No.	Standard
1 and 2	1 M Ω or more
3 and 4	93.8 — 136.4 Ω (when 20°C (68°F))

- 3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between oxygen sensor relay terminals.



FU-05963

Terminal No.	Standard
1 and 2	Less than 1 Ω

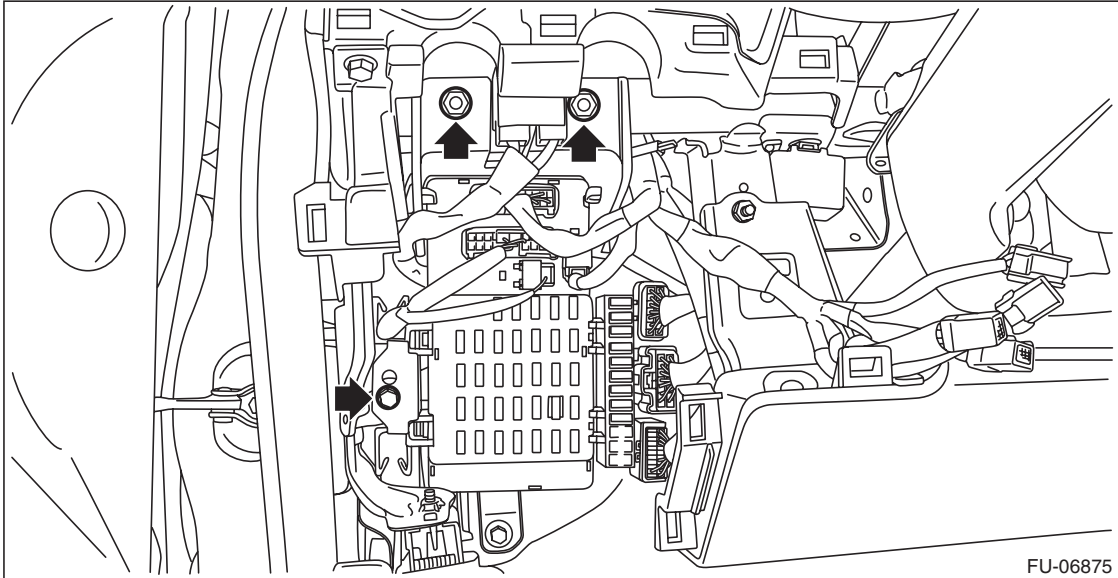
Electronic Throttle Control Relay

FUEL INJECTION (FUEL SYSTEMS)

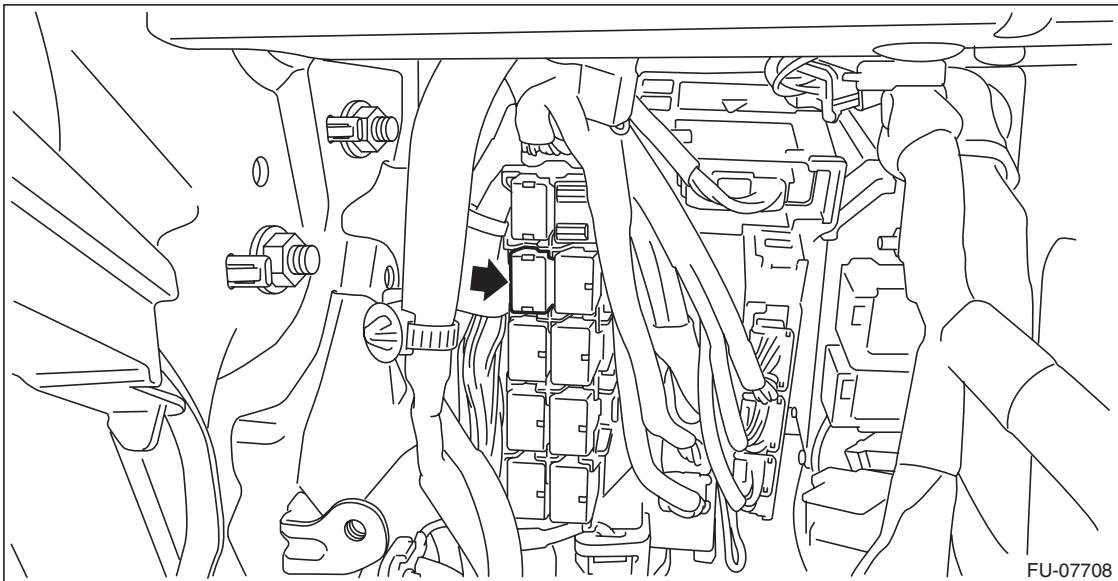
24. Electronic Throttle Control Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the instrument panel lower cover. <Ref. to EI-59, REMOVAL, Instrument Panel Lower Cover.>
- 3) Remove the bolts and nuts securing the fuse block and move down the fuse block.



- 4) Remove the electronic throttle control relay from the relay block.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

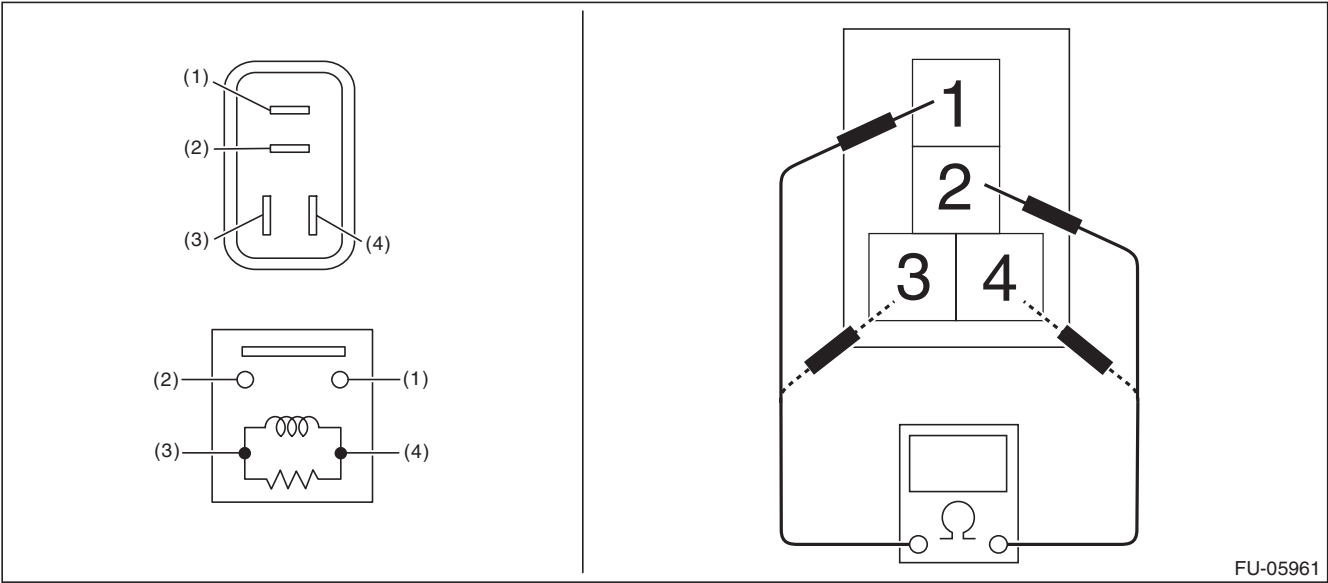
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

Electronic Throttle Control Relay

FUEL INJECTION (FUEL SYSTEMS)

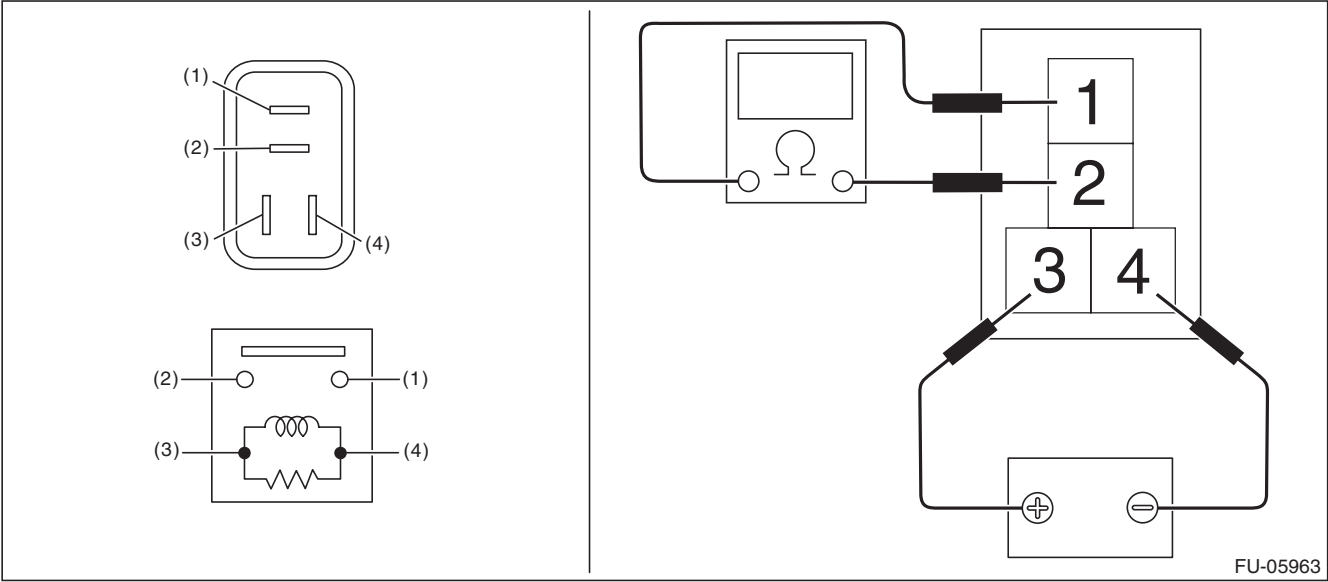
C: INSPECTION

- 1) Check that the electronic throttle control relay has no deformation, cracks or other damages.
- 2) Measure the resistance between electronic throttle control relay terminals.



Terminal No.	Standard
1 and 2	1 M Ω or more
3 and 4	93.8 — 136.4 Ω (when 20°C (68°F))

- 3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between the electronic throttle control relay terminals.



Terminal No.	Standard
1 and 2	Less than 1 Ω

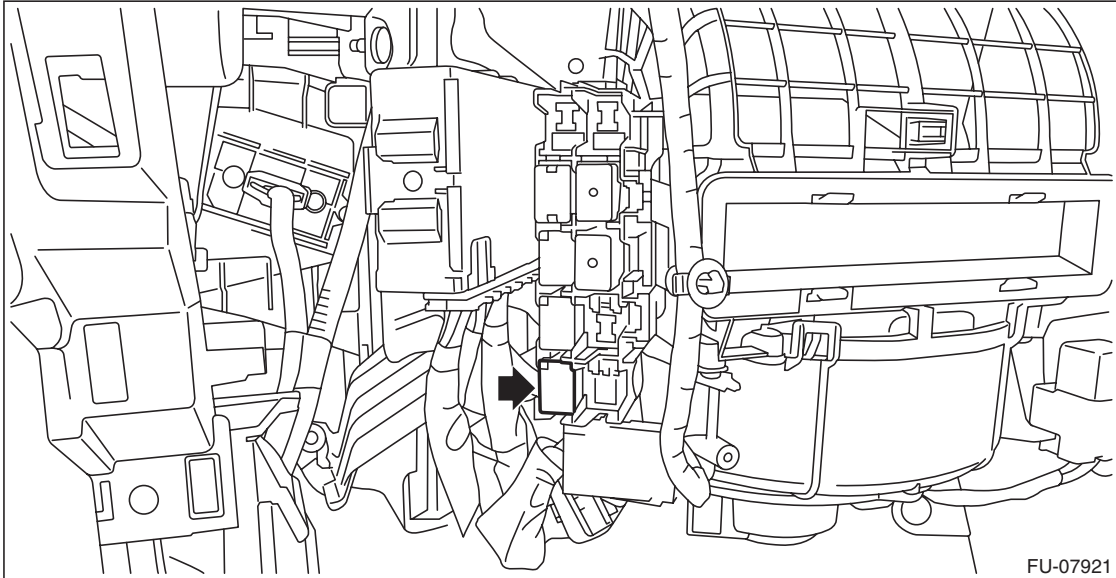
Fuel Pump Relay

FUEL INJECTION (FUEL SYSTEMS)

25.Fuel Pump Relay

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the glove box. <Ref. to EI-61, REMOVAL, Glove Box.>
- 3) Remove the fuel pump relay from relay block.

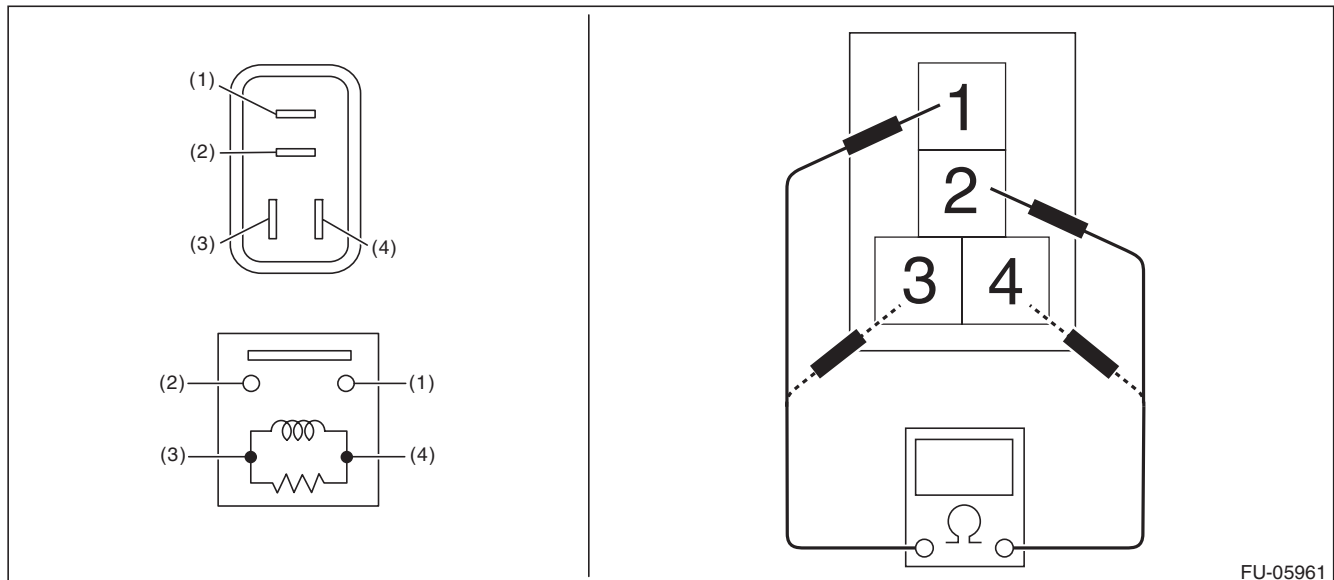


B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

- 1) Check that the fuel pump relay has no deformation, cracks or other damages.
- 2) Measure the resistance between fuel pump relay terminals.

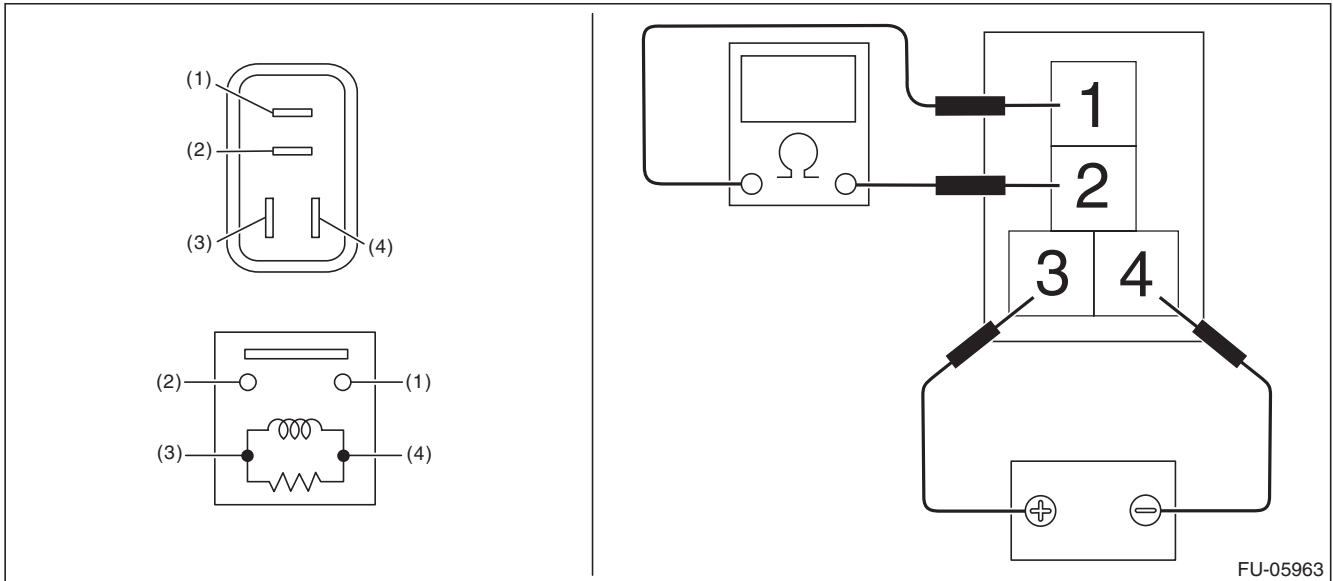


Terminal No.	Standard
1 and 2	1 M Ω or more
3 and 4	93.8 — 136.4 Ω (when 20°C (68°F))

Fuel Pump Relay

FUEL INJECTION (FUEL SYSTEMS)

3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between the fuel pump relay terminals.



Terminal No.	Standard
1 and 2	Less than 1 Ω



Fuel

FUEL INJECTION (FUEL SYSTEMS)

26. Fuel

A: PROCEDURE

1. RELEASING OF FUEL PRESSURE

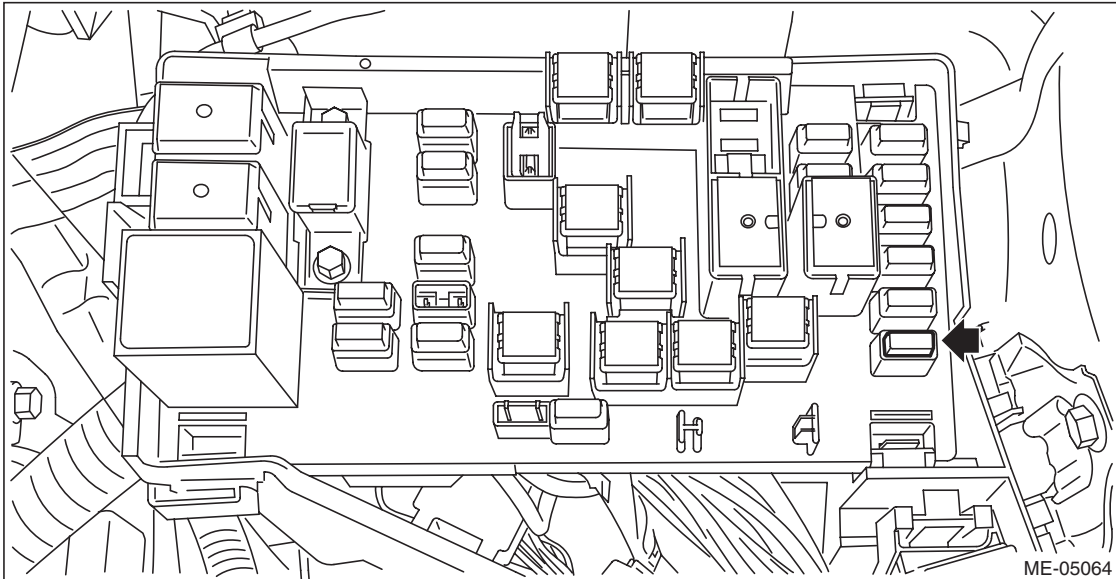
WARNING:

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

CAUTION:

Be careful not to spill fuel.

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



- 2) Start the engine and run it until it stalls.
- 3) After the engine stalls, crank it for five more seconds.
- 4) Turn the ignition switch to OFF.
- 5) Install the fuse of fuel pump to the main fuse box.

2. DRAINING FUEL (WITH SUBARU SELECT MONITOR)

WARNING:

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

CAUTION:

Be careful not to spill fuel.

NOTE:

- If the fuel pump cannot be driven, refer to the procedures for draining from the fuel filler hose. <Ref. to FU(H4DO)-109, DRAINING FUEL (THROUGH THE FUEL FILLER HOSE), PROCEDURE, Fuel.>
 - Be careful not to let the battery run-out.
- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

Fuel

FUEL INJECTION (FUEL SYSTEMS)

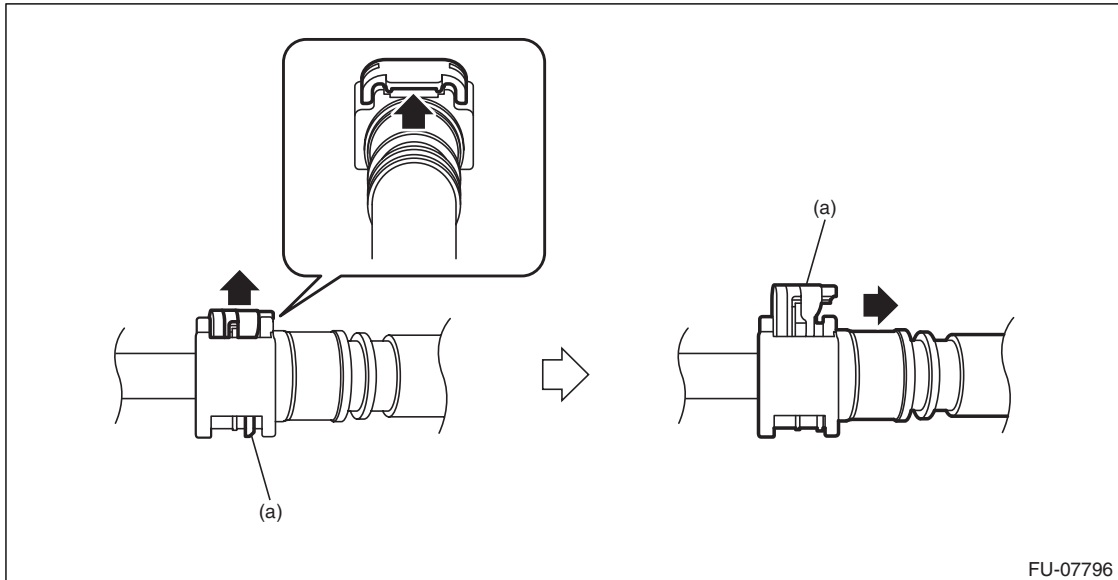
2) Disconnect the quick connector on the fuel delivery tube from the fuel pipe assembly, and remove the clip (A) securing the fuel delivery tube to the fuel pipe assembly.

CAUTION:

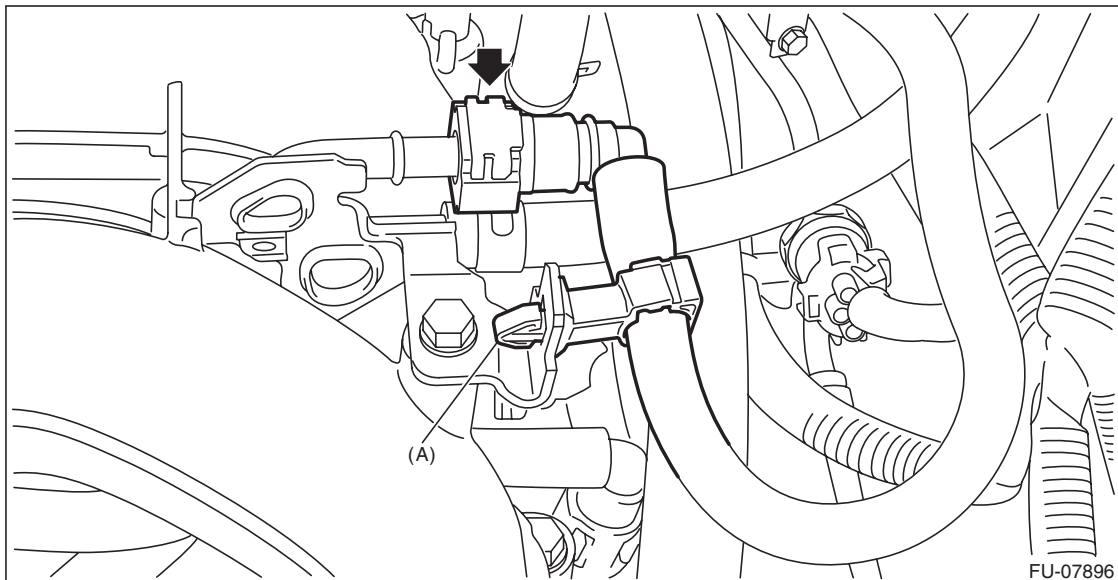
- Be careful not to spill fuel.
- Catch the fuel from the tubes using a container or cloth.

NOTE:

Disconnect the quick connector as shown in the figure.



(a) Slider



3) Connect ST to the fuel delivery tube.

ST 18471AA000 FUEL PIPE ADAPTER

4) Connect the gasoline proof hose to ST and put the end of the hose in the container.

Fuel

FUEL INJECTION (FUEL SYSTEMS)

5) Drive the fuel pump and drain the fuel using Subaru Select Monitor.

CAUTION:

Be careful not to spill fuel.

NOTE:

For detailed operation procedures, refer to "PC application help for Subaru Select Monitor".

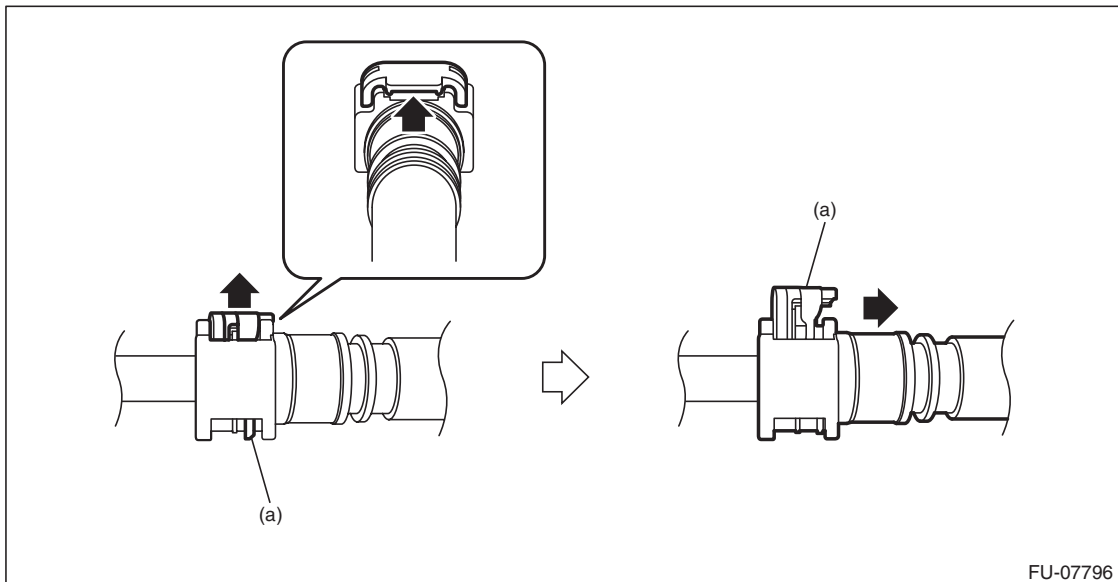
6) Install the related parts in the reverse order after draining the fuel.

CAUTION:

- **Be careful not to spill fuel.**
- **Catch the fuel from the tubes using a container or cloth.**
- **Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.**
- **When connecting the quick connector with slider, make sure to insert the pipe all the way in before locking the slider.**
- **When it is difficult to lock the slider, check that the pipe is fully inserted.**
- **Make sure that the quick connector is securely connected.**

NOTE:

- Disconnect the quick connector on the fuel delivery tube as shown in the figure.

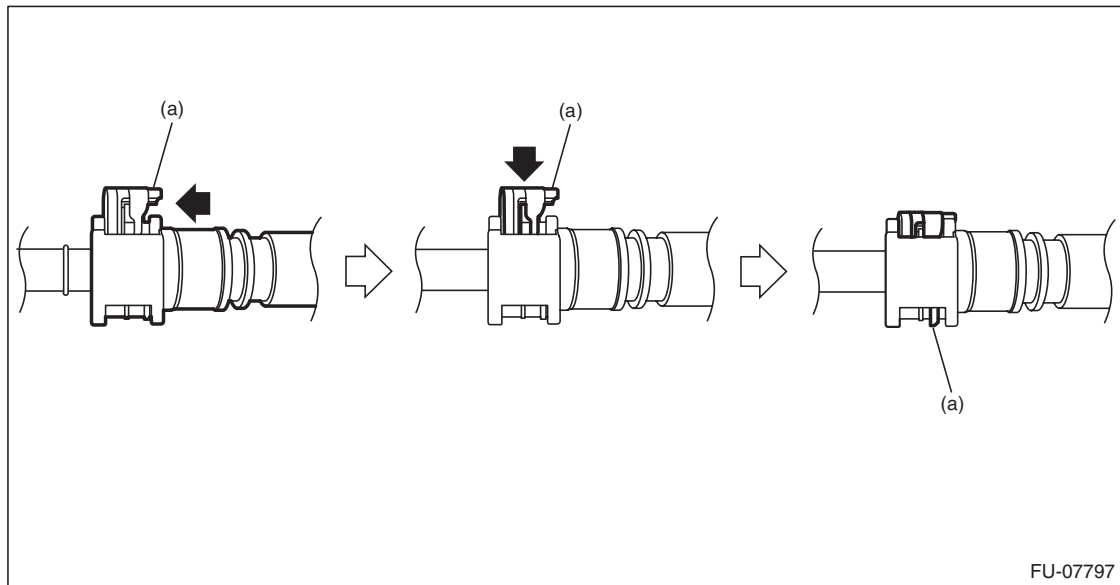


(a) Slider

Fuel

FUEL INJECTION (FUEL SYSTEMS)

- Connect the quick connector on the fuel delivery tube as shown in the figure.



(a) Slider

3. DRAINING FUEL (THROUGH THE FUEL FILLER HOSE)

WARNING:

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

CAUTION:

- Be careful not to spill fuel.
 - Fuel may remain in the fuel filler pipe. Drain the fuel from the fuel filler pipe through the fill opening using the gasoline proof pump and the gasoline proof hose (ø10 or less) before the operation.
- Lift up the vehicle.
 - Remove the rear exhaust pipe and muffler. <Ref. to EX(H4DO)-18, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4DO)-21, REMOVAL, Muffler.>
 - Open the fuel filler lid and remove the fuel filler cap.
 - Drain the fuel from the fuel filler pipe through the filler opening using the gasoline proof pump and the gasoline proof hose (ø10 or less).

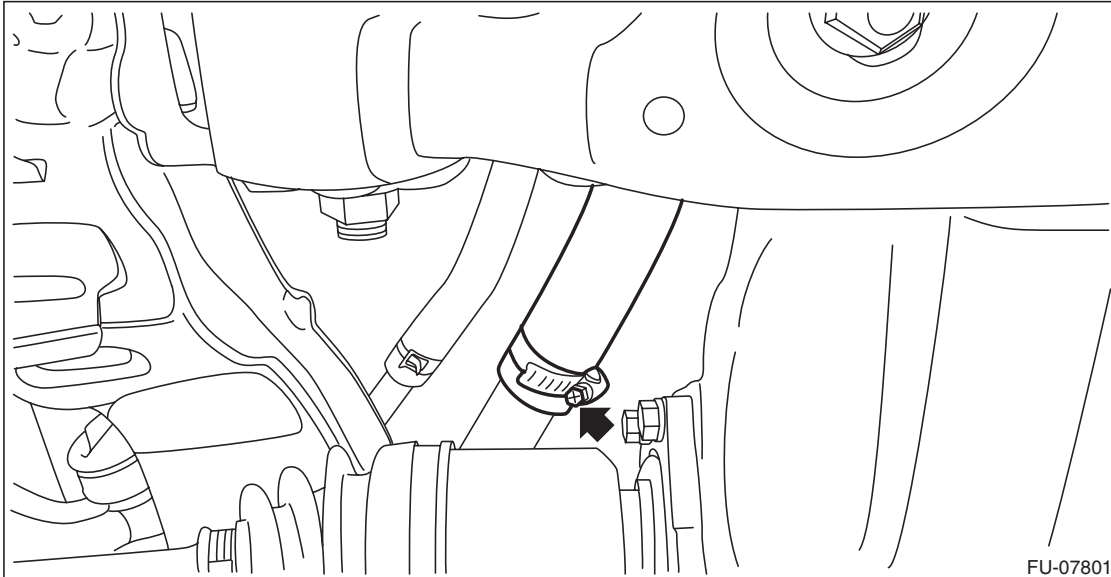
Fuel

FUEL INJECTION (FUEL SYSTEMS)

5) Disconnect the fuel filler hose from the fuel filler pipe assembly.

CAUTION:

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



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

CAUTION:

Be careful not to spill fuel.

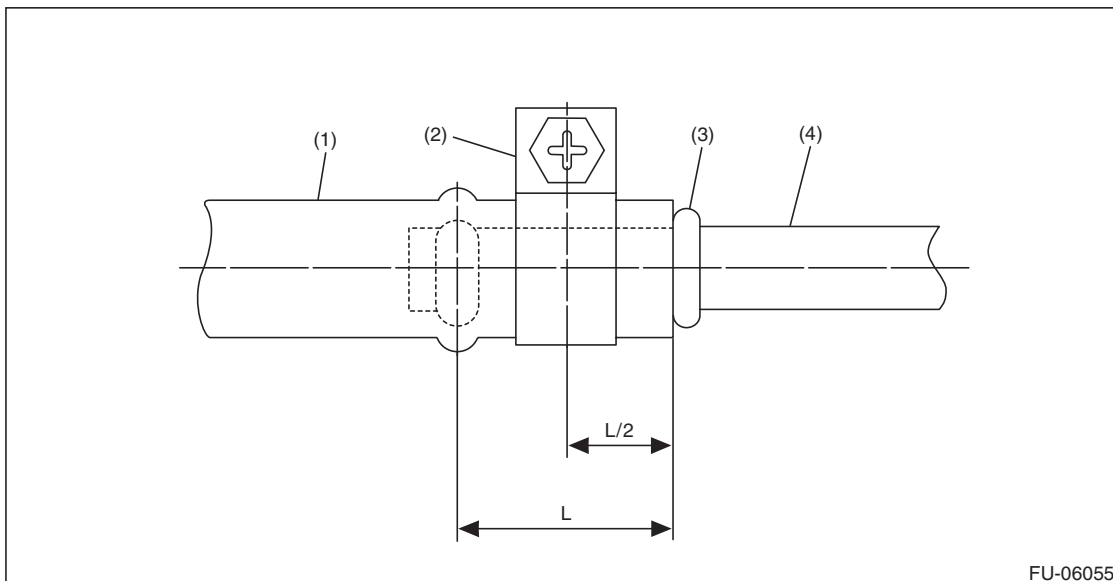
7) Install the related parts in the reverse order after draining the fuel.

NOTE:

Correctly insert the fuel filler hose to the spool, and then install the clamp as shown.

Tightening torque:

2.5 N·m (0.3 kgf-m, 1.8 ft-lb)



- (1) Fuel filler hose
(2) Clamp

- (3) Spool

- (4) Fuel filler pipe

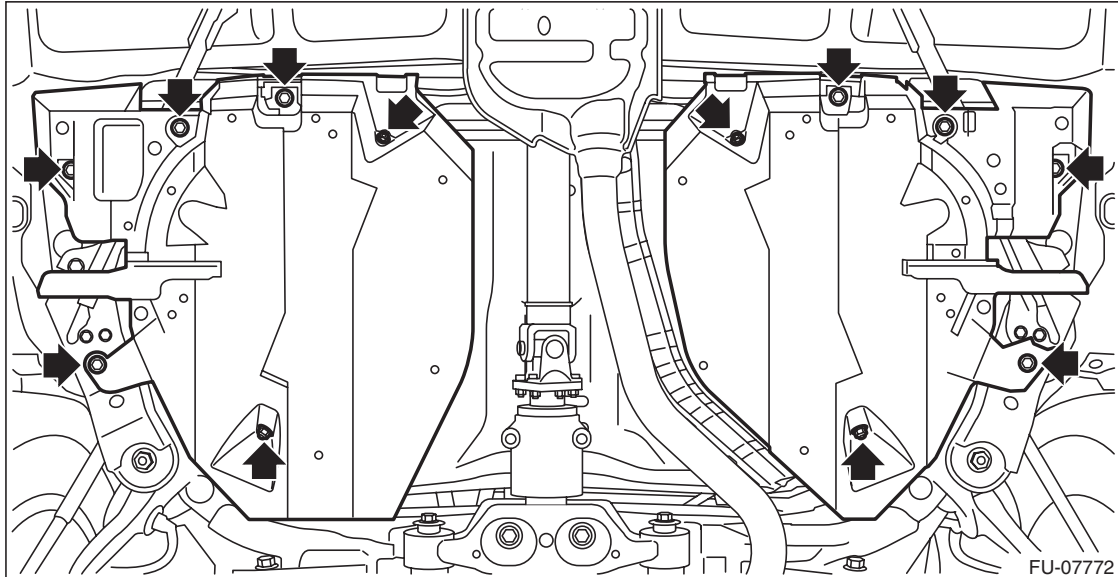
Fuel Tank Protector

FUEL INJECTION (FUEL SYSTEMS)

27. Fuel Tank Protector

A: REMOVAL

- 1) Lift up the vehicle.
- 2) Remove the bolt and nuts and remove the fuel tank protector.



B: INSTALLATION

Install in the reverse order of removal.

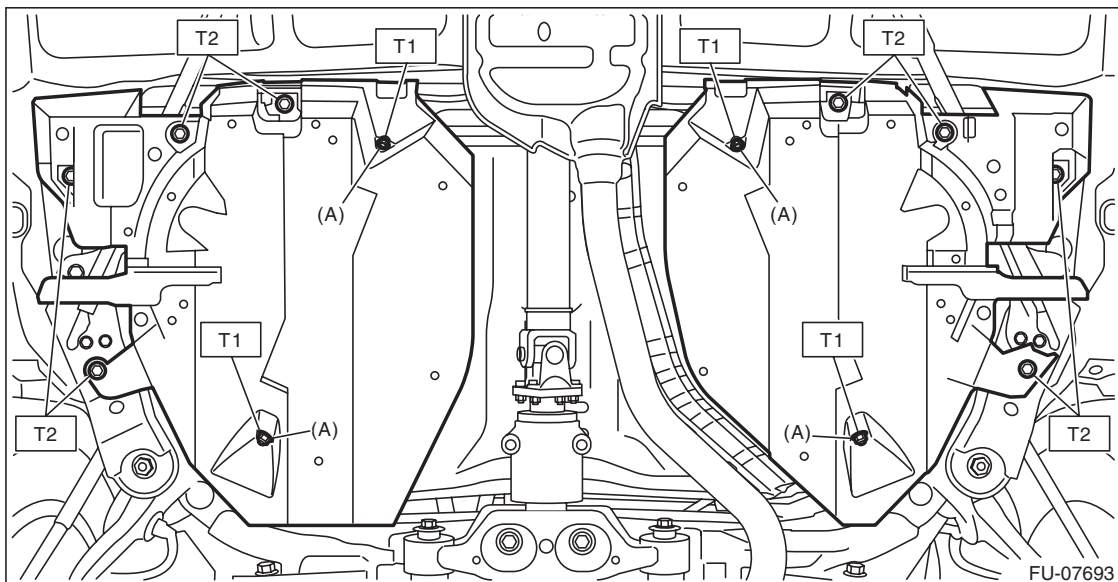
NOTE:

Use a new self-locking nut.

Tightening torque:

T1: 9 N·m (0.9 kgf-m, 6.6 ft-lb)

T2: 18 N·m (1.8 kgf-m, 13.3 ft-lb)



(A) Self-locking nut

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

28.Fuel Tank

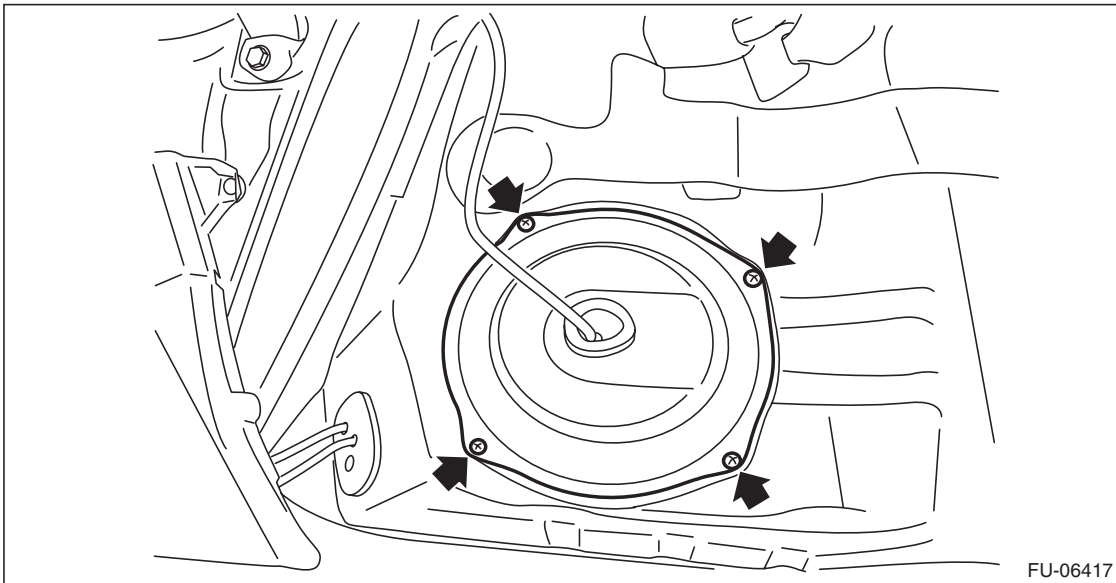
A: REMOVAL

WARNING:

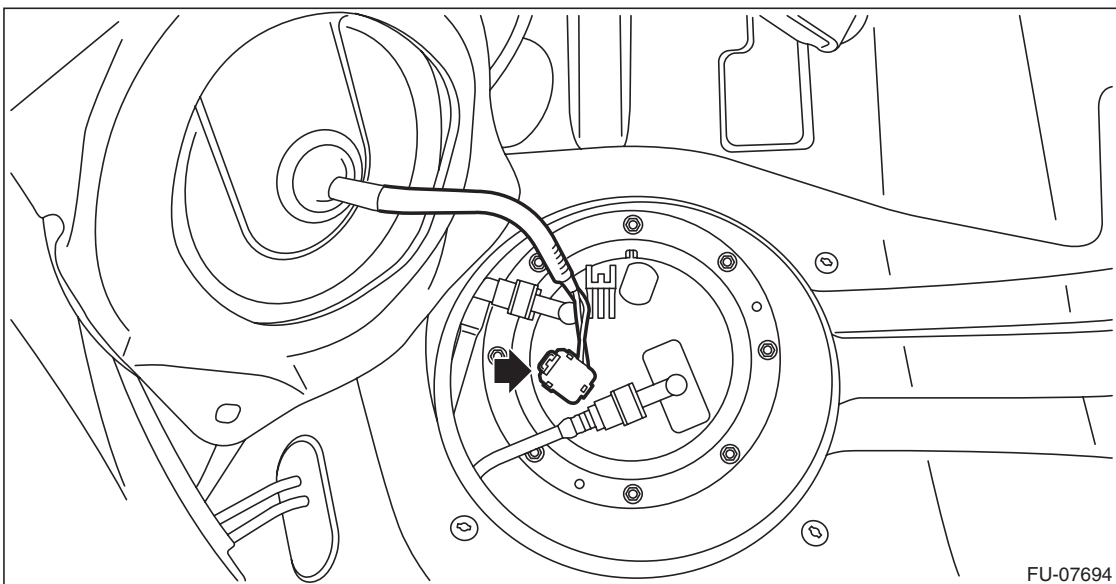
Place "NO OPEN FLAMES" signs near the working area.

CAUTION:

- Be careful not to spill fuel.
 - Catch the fuel from the tubes using a container or cloth.
- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
 - 2) Drain fuel. <Ref. to FU(H4DO)-106, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>
 - 3) Disconnect the ground cable from battery.
 - 4) Remove the rear seat cushion. <Ref. to SE-32, REMOVAL, Rear Seat.>
 - 5) Remove the service hole cover of fuel pump.



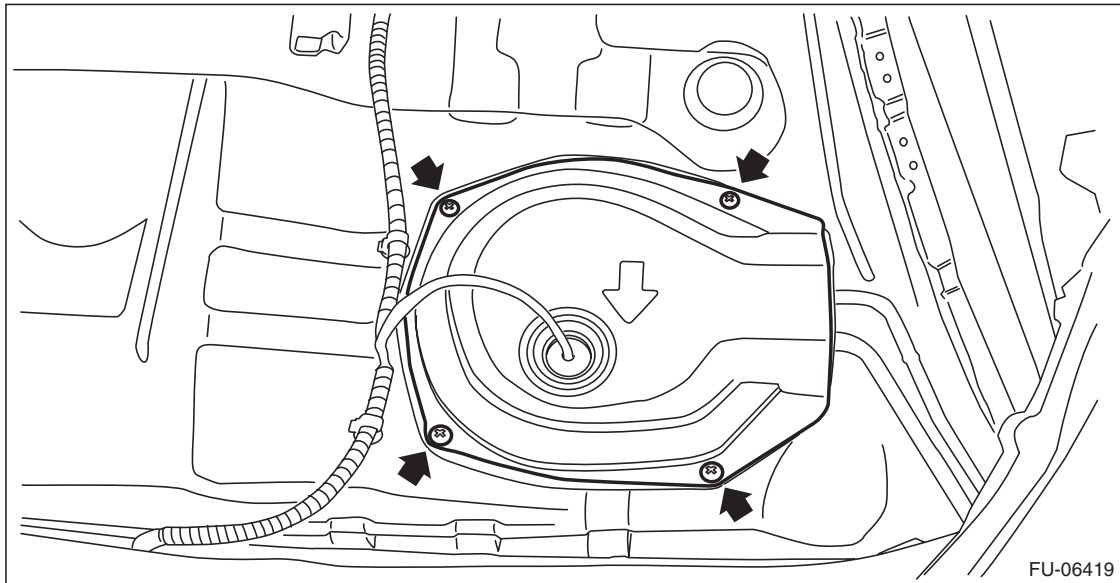
- 6) Disconnect connectors from the fuel pump, and move aside the service hole cover.



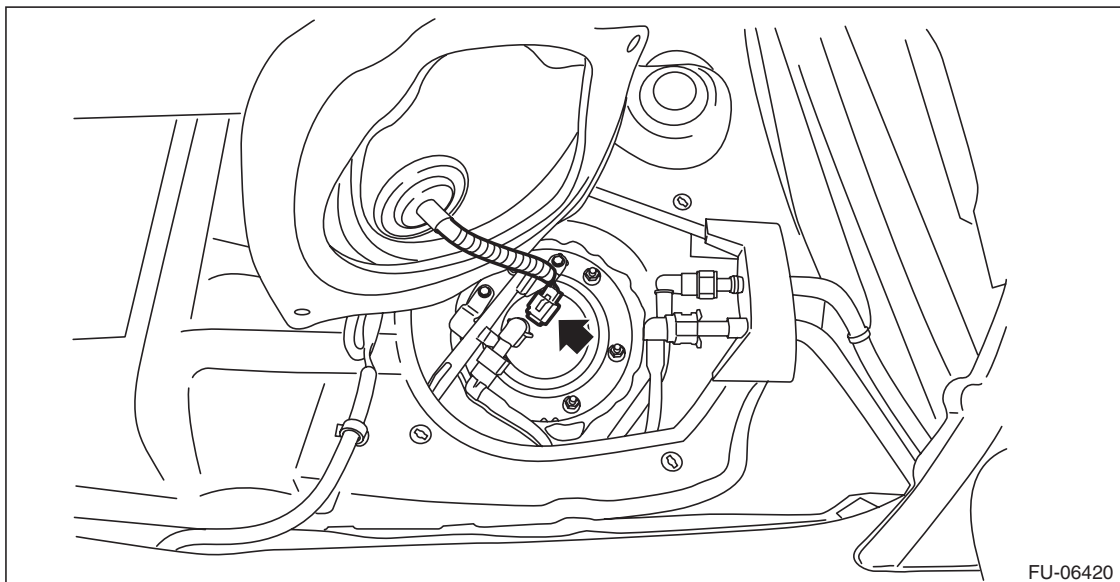
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

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



- 8) Disconnect the connector from the fuel sub level sensor, and move aside the service hole cover.



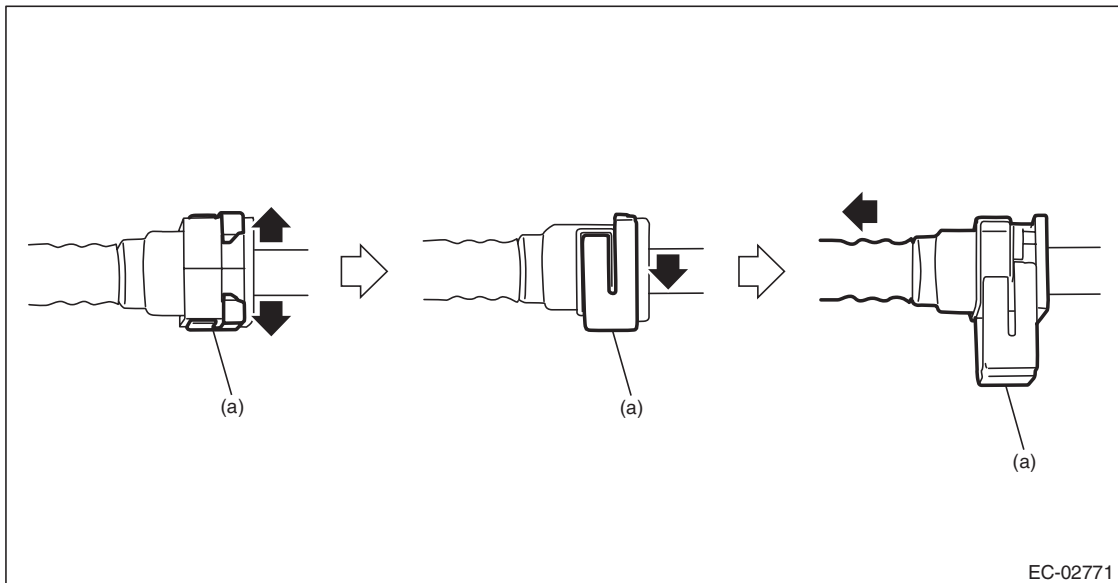
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

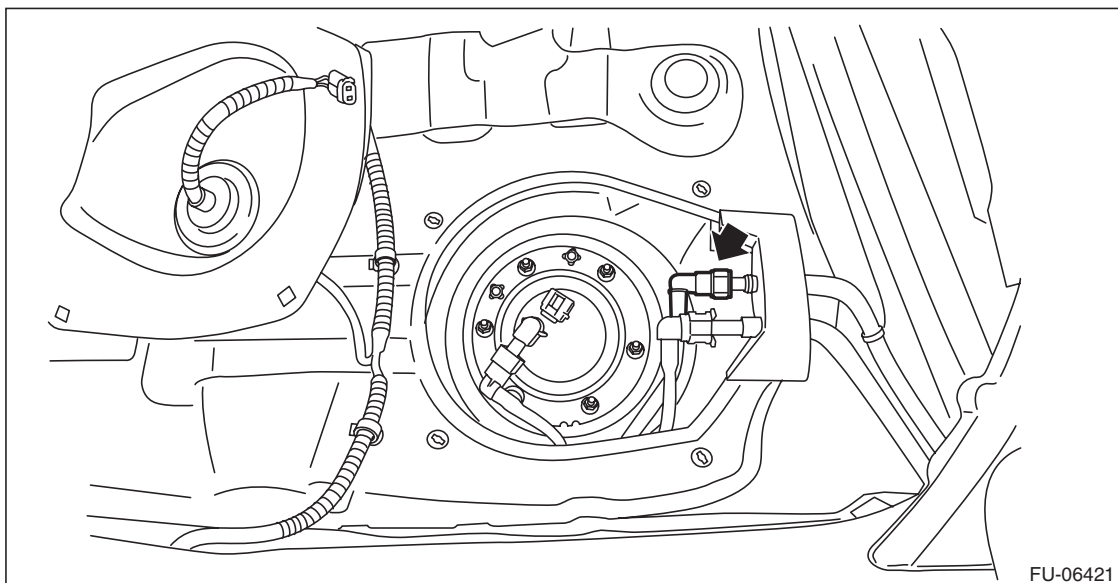
9) Disconnect the quick connector on the fuel delivery tube.

NOTE:

Disconnect the quick connector as shown in the figure.



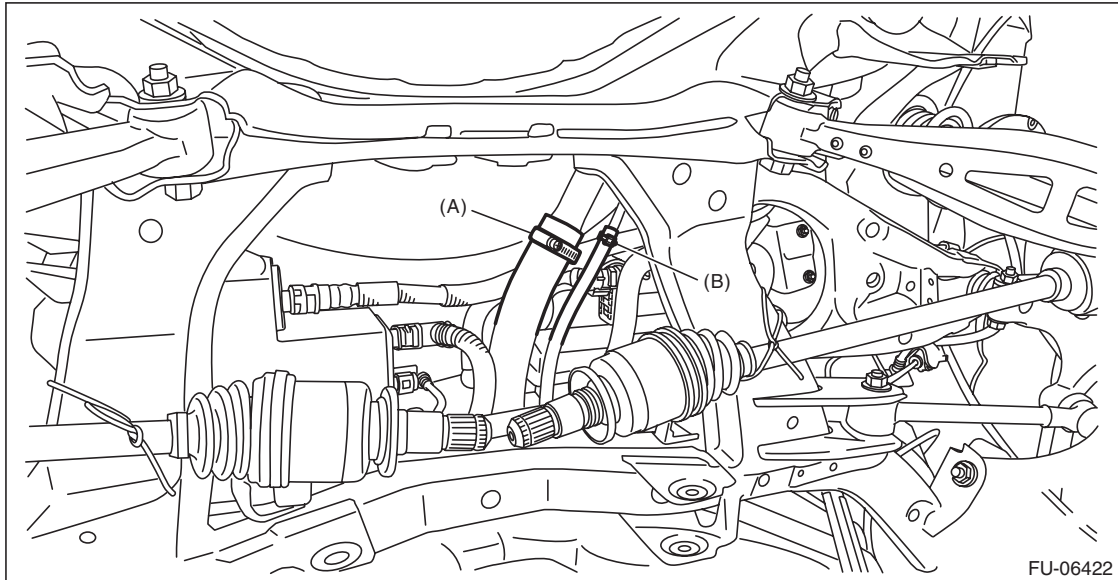
(a) Slider



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

- 10) Lift up the vehicle.
- 11) Remove the rear exhaust pipe and muffler. <Ref. to EX(H4DO)-18, REMOVAL, Rear Exhaust Pipe.>
<Ref. to EX(H4DO)-21, REMOVAL, Muffler.>
- 12) Remove the rear differential. <Ref. to DI-22, REMOVAL, Rear Differential (T-type).> <Ref. to DI-42, REMOVAL, Rear Differential (VA-type).>
- 13) Disconnect fuel filler hose (A) and air vent hose (B) from the fuel filler pipe assembly.



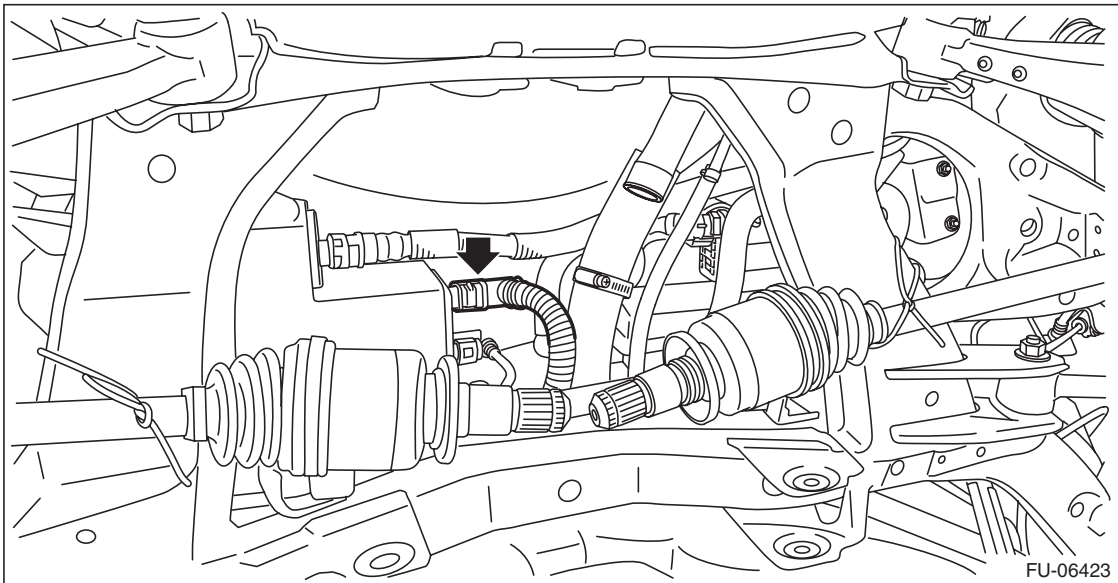
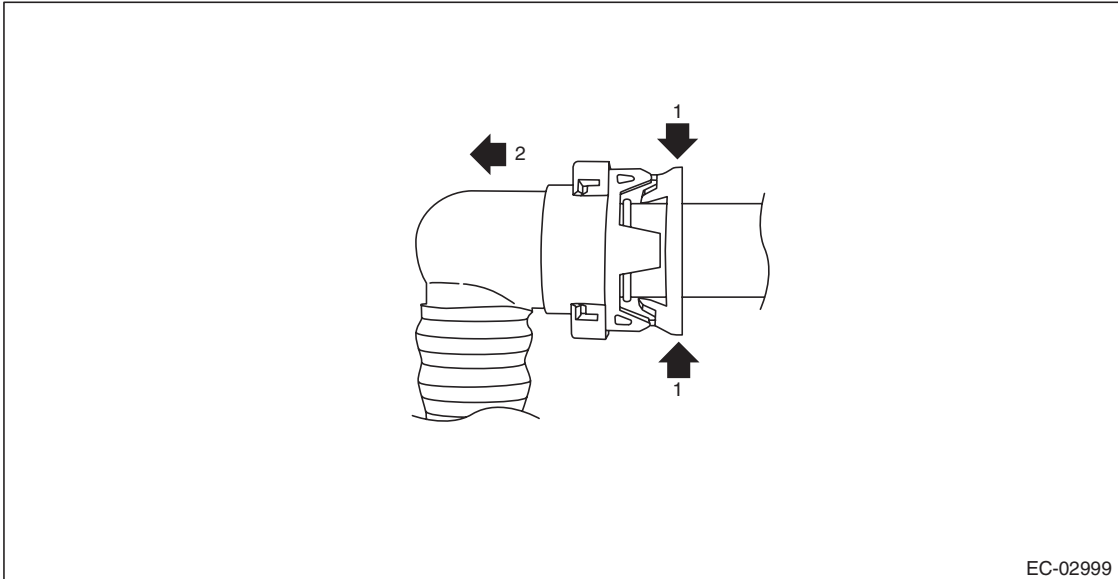
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

14) Disconnect the vent tube from canister.

NOTE:

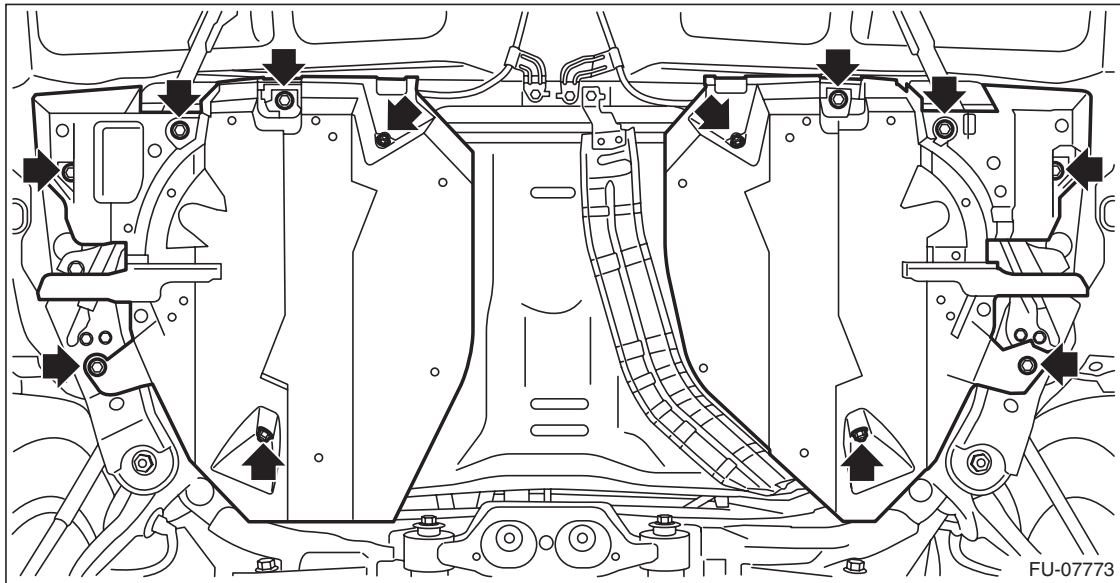
Disconnect the quick connector as shown in the figure.



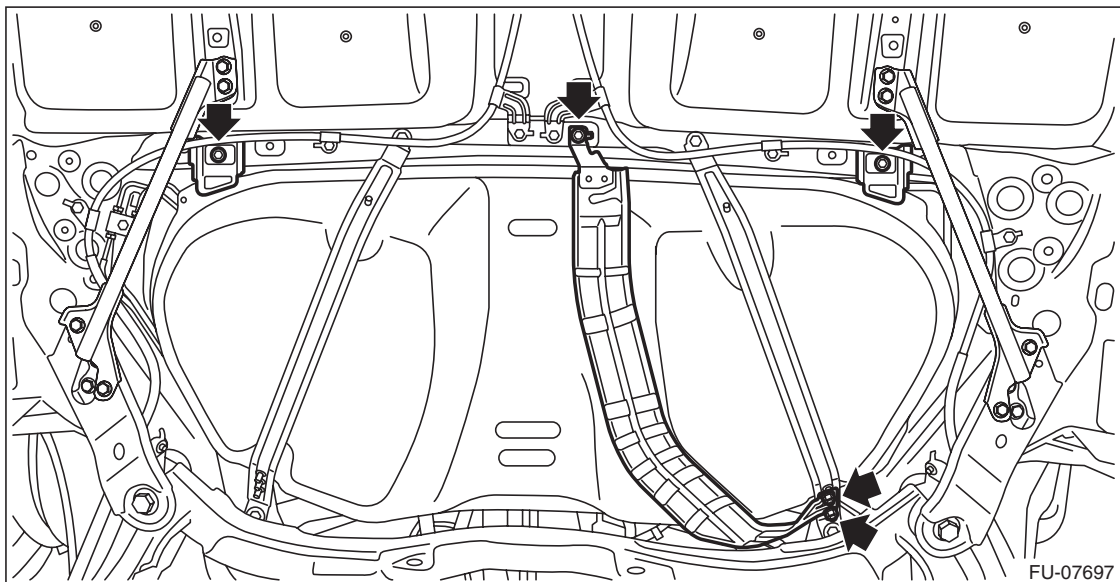
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

15) Remove the fuel tank protector.



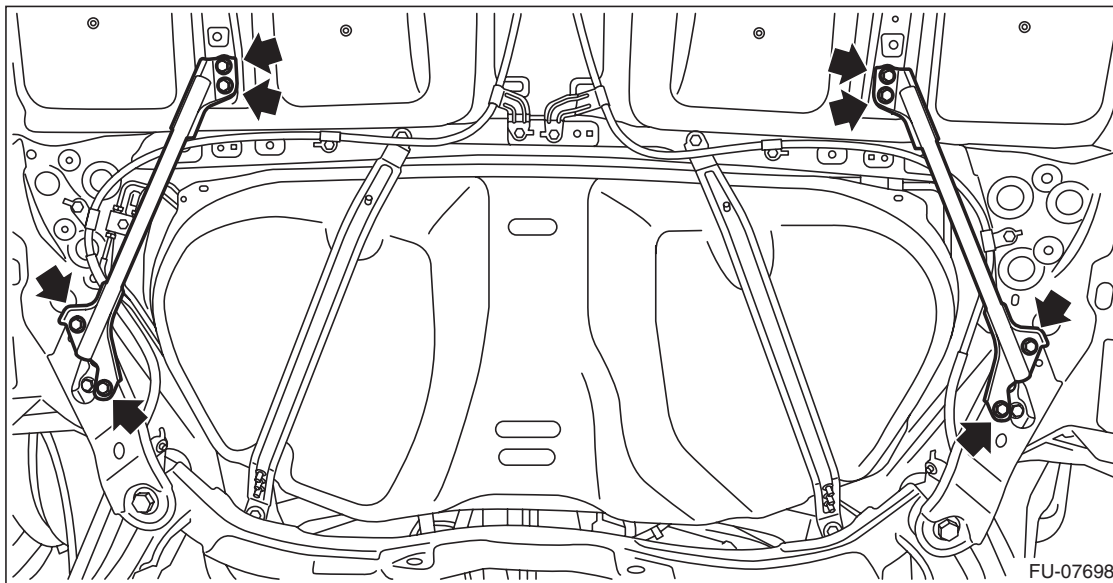
16) Remove the heat shield cover and stopper.



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

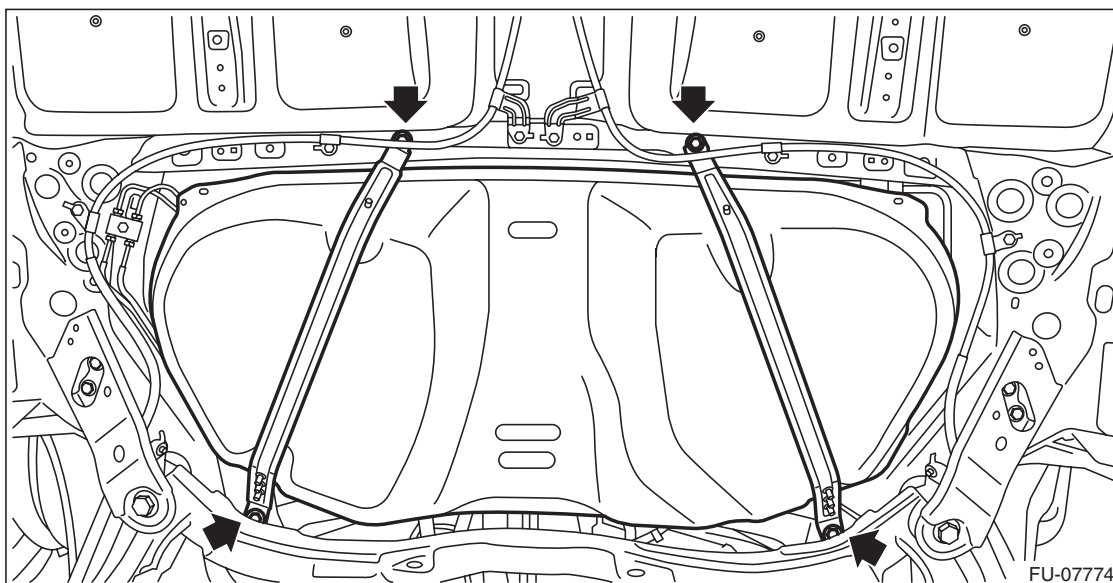
17) Remove the stay - rear frame COMPL.



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

WARNING:

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



Fuel Tank

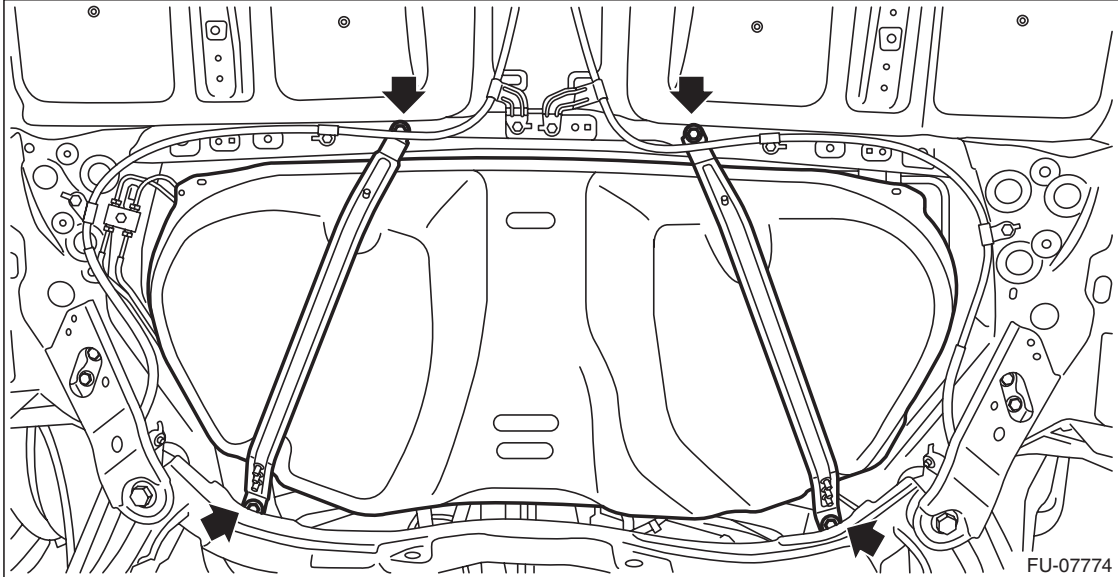
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

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

WARNING:

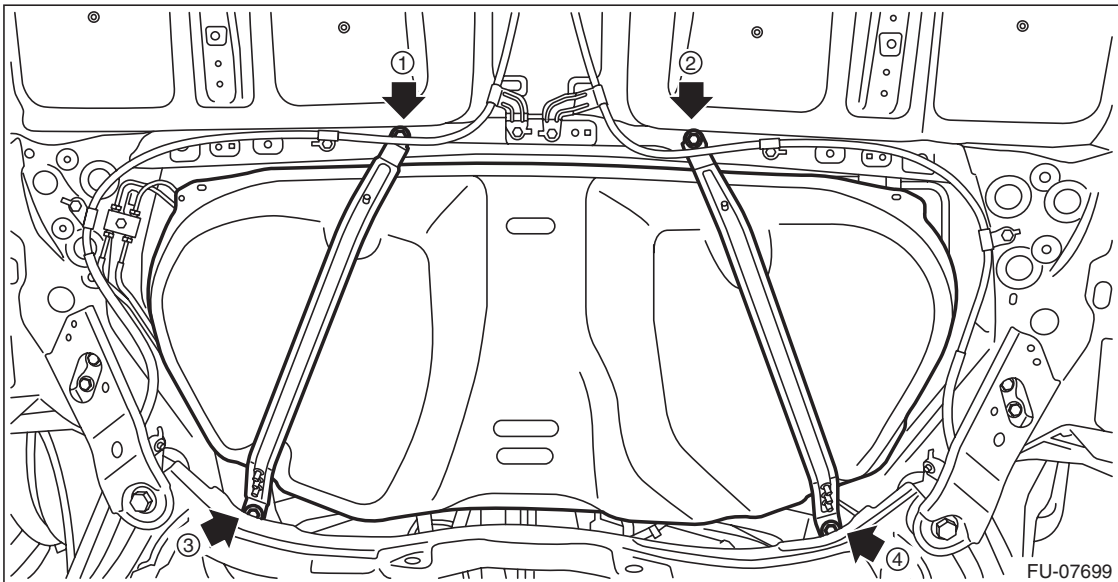
A helper is required to perform this work.



2) Tighten the bolts of the fuel tank band in the order shown in the figure.

Tightening torque:

33 N·m (3.4 kgf-m, 24.3 ft-lb)



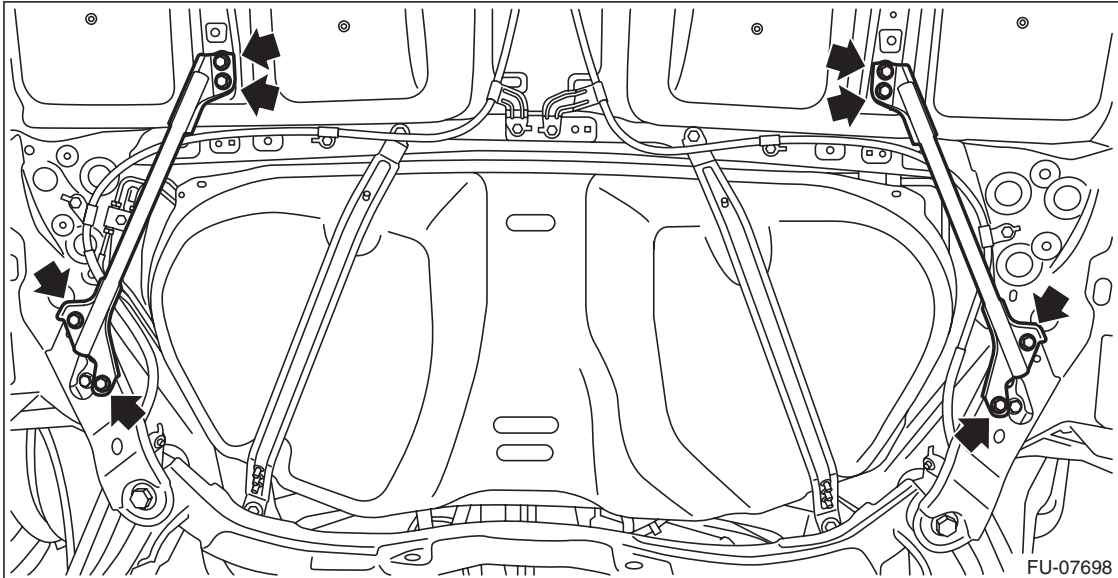
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

3) Install the stay - rear frame COMPL.

Tightening torque:

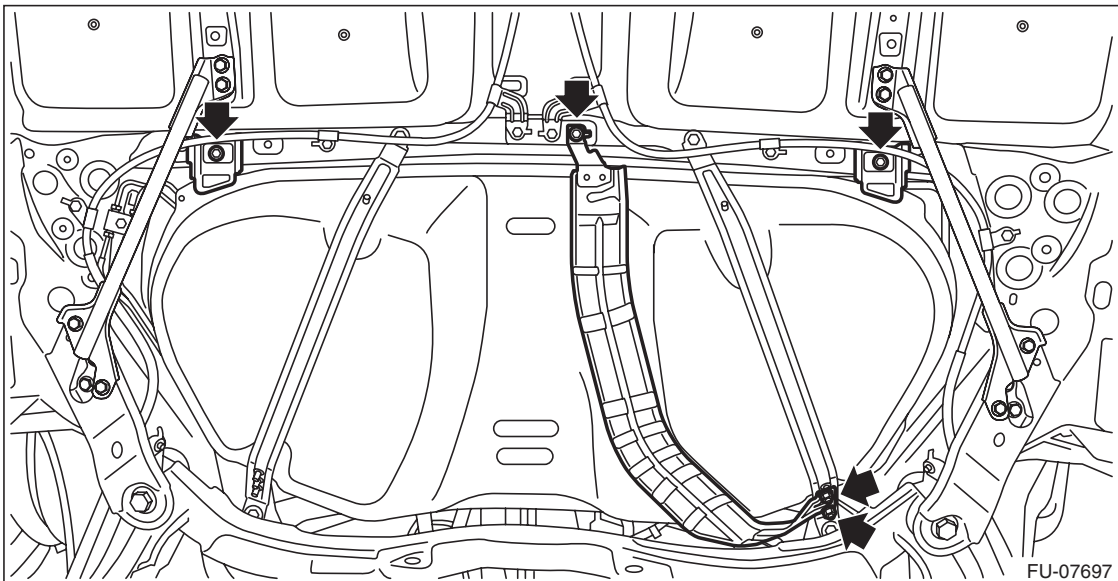
33 N·m (3.4 kgf-m, 24.3 ft-lb)



4) Install the heat shield cover and stopper.

Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

5) Install the fuel tank protector.

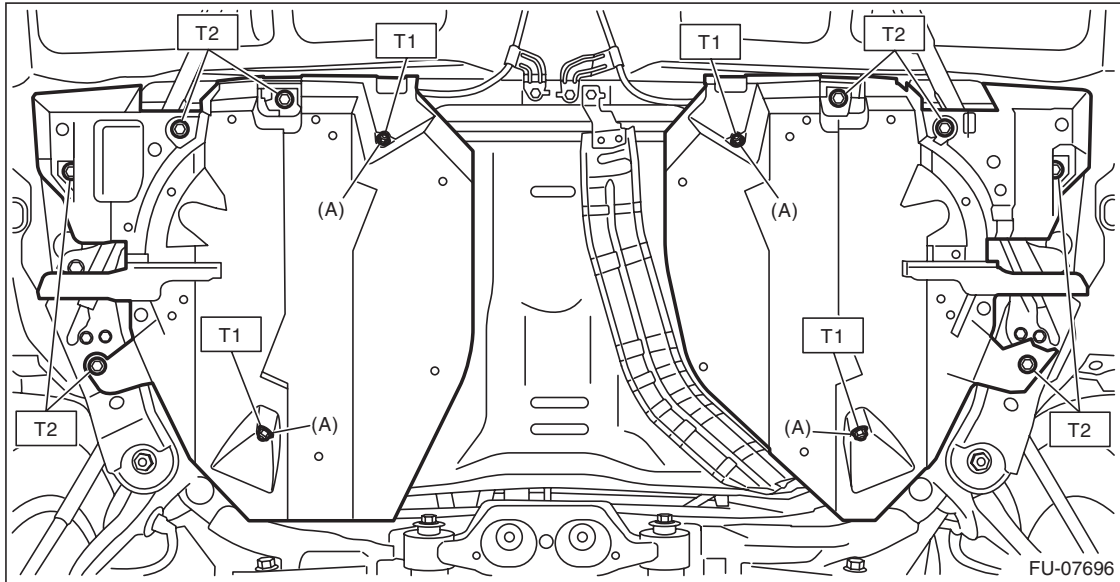
NOTE:

Use a new self-locking nut.

Tightening torque:

T1: 9 N·m (0.9 kgf-m, 6.6 ft-lb)

T2: 18 N·m (1.8 kgf-m, 13.3 ft-lb)



(A) Self-locking nut



Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

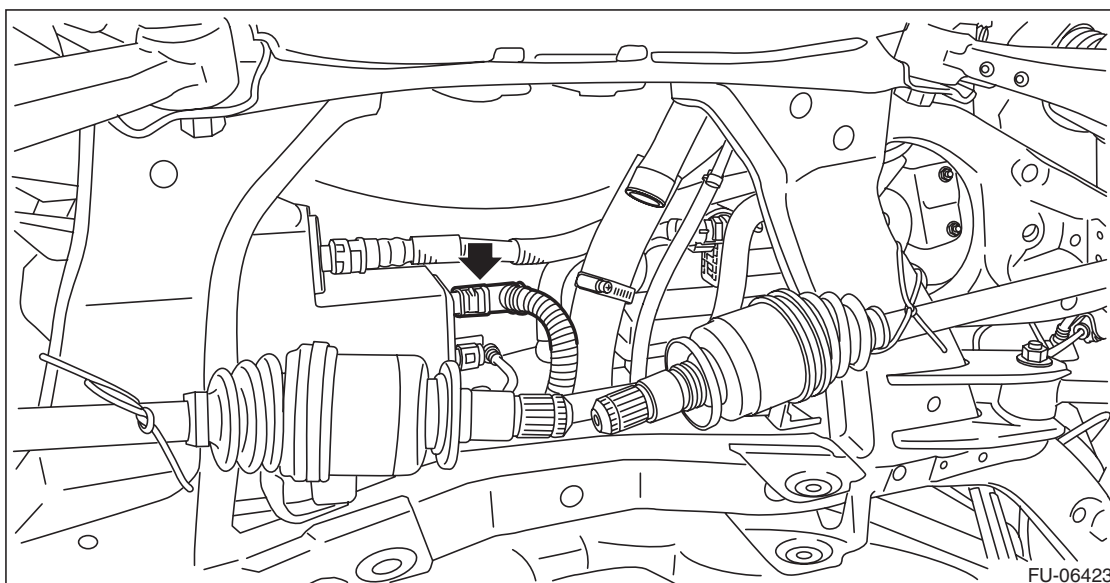
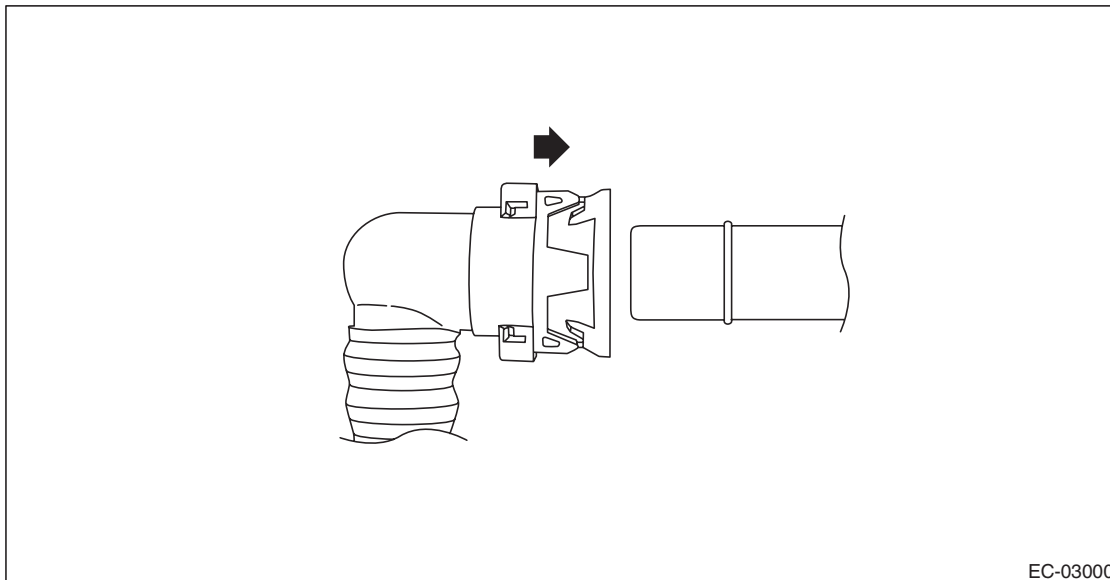
6) Connect the vent tube to the canister.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



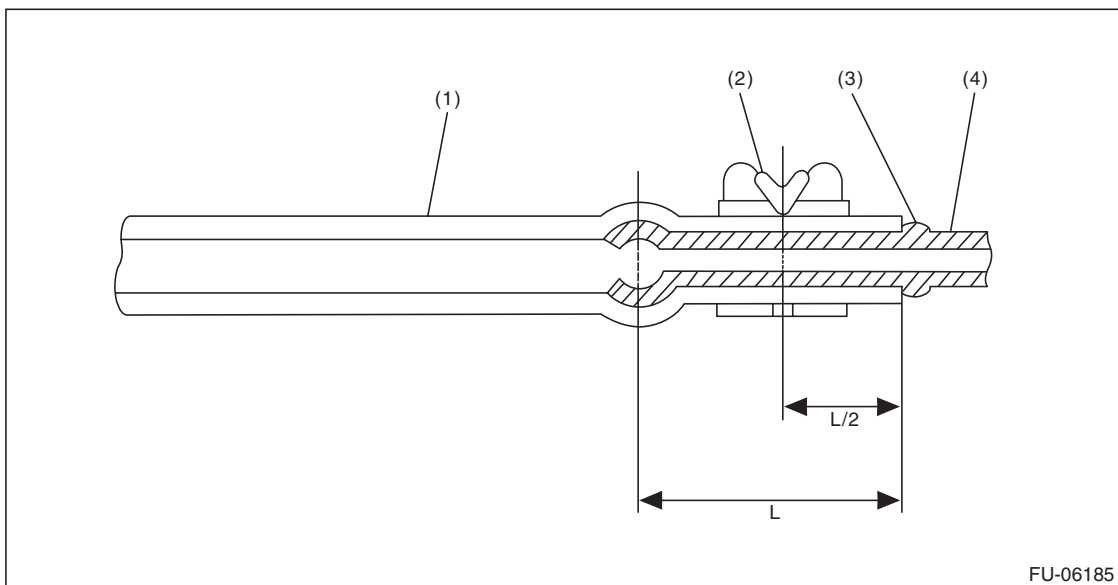
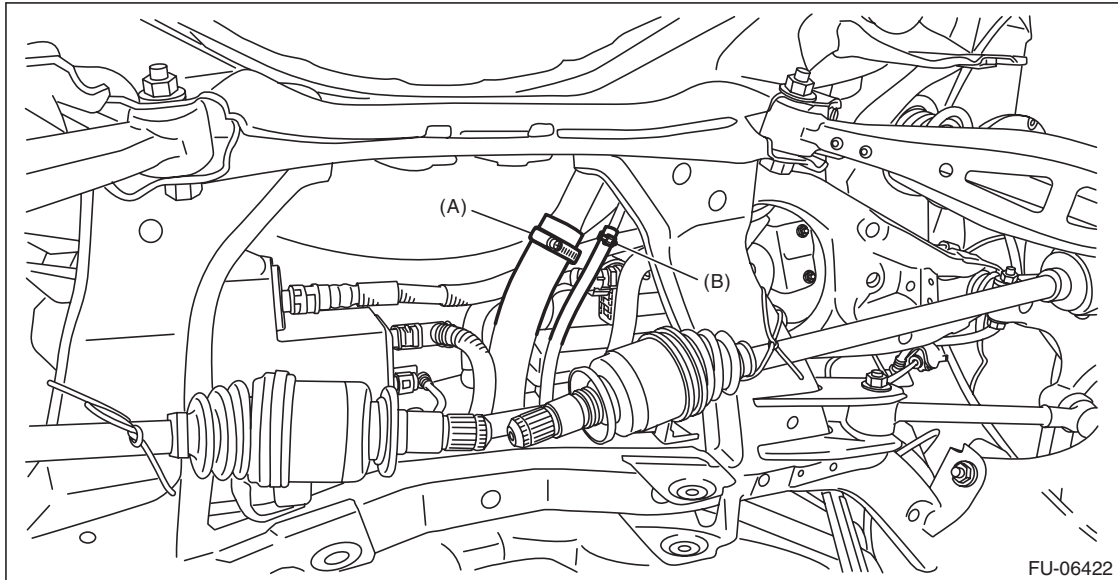
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

7) Securely insert the fuel filler hose (A) and evaporation hose (B) until the hose end contacts the spool, then attach the clamp or clip as shown in the figure.

Tightening torque:

2.5 N·m (0.3 kgf-m, 1.8 ft-lb)



- | | | |
|-------------------|-----------|----------|
| (1) Hose | (3) Spool | (4) Pipe |
| (2) Clamp or clip | | |

8) Install the rear differential. <Ref. to DI-24, INSTALLATION, Rear Differential (T-type).> <Ref. to DI-42, INSTALLATION, Rear Differential (VA-type).>

9) Install the rear exhaust pipe and muffler. <Ref. to EX(H4DO)-19, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DO)-22, INSTALLATION, Muffler.>

Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

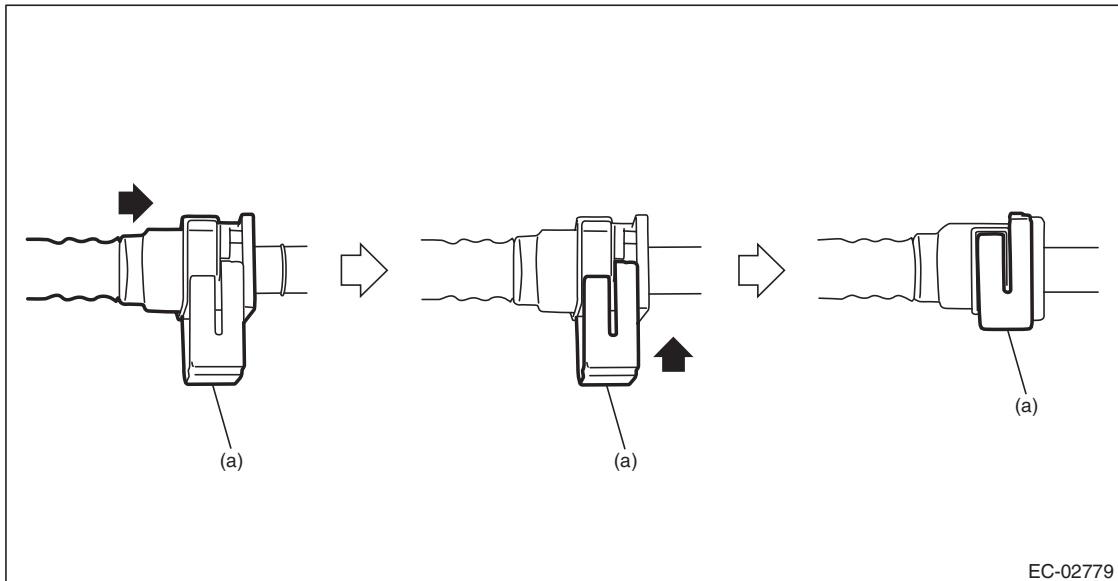
10) Connect the quick connector of the fuel delivery tube.

CAUTION:

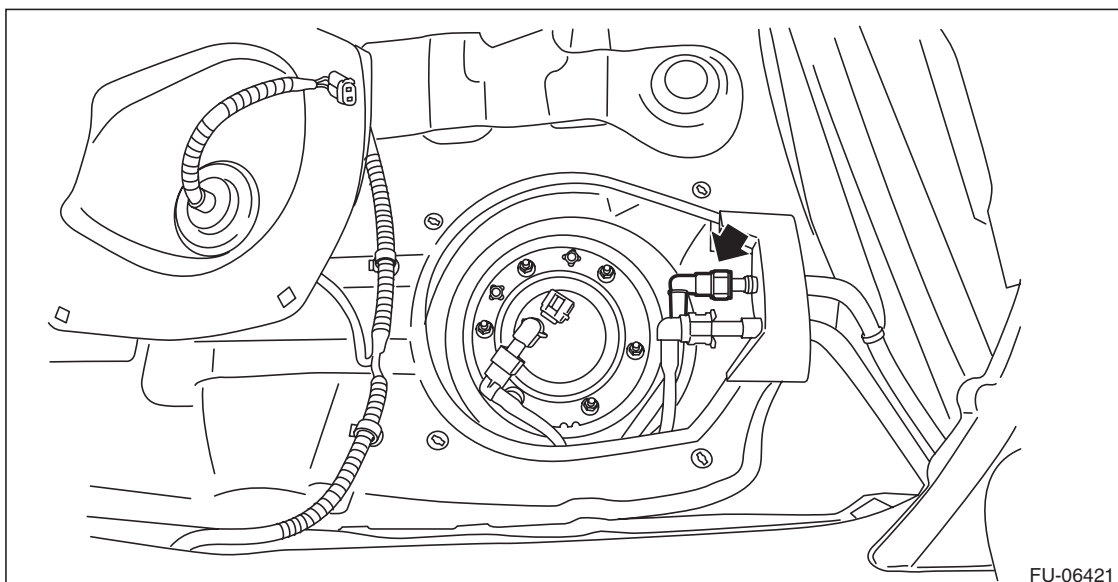
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



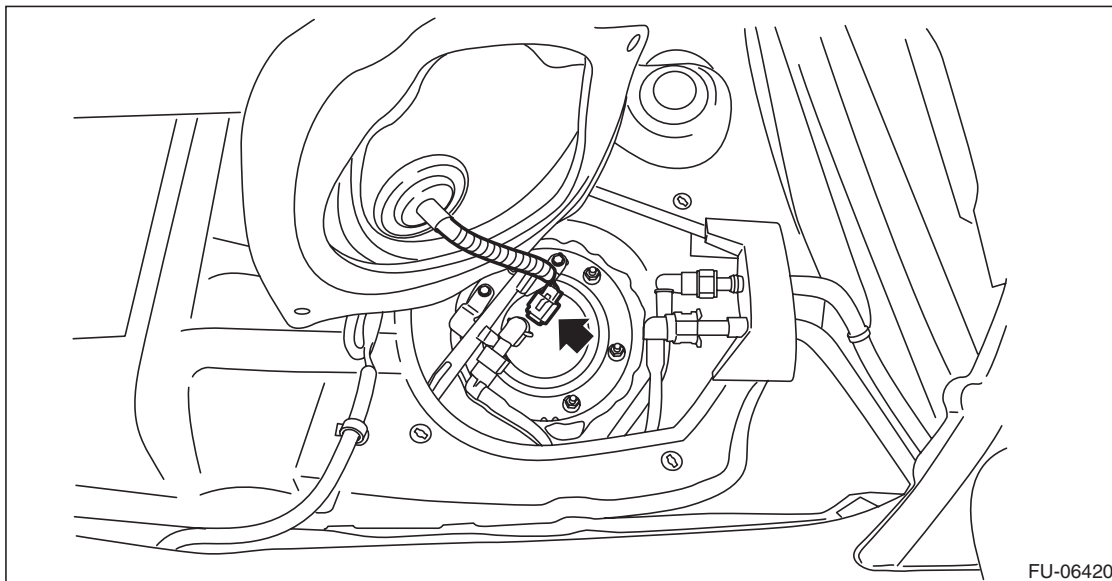
(a) Slider



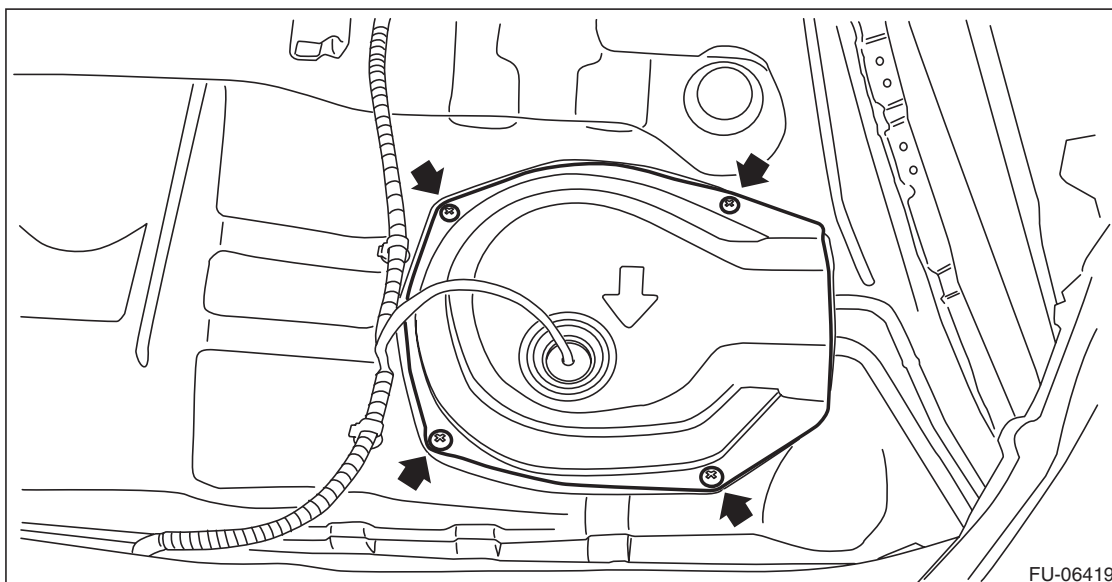
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

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



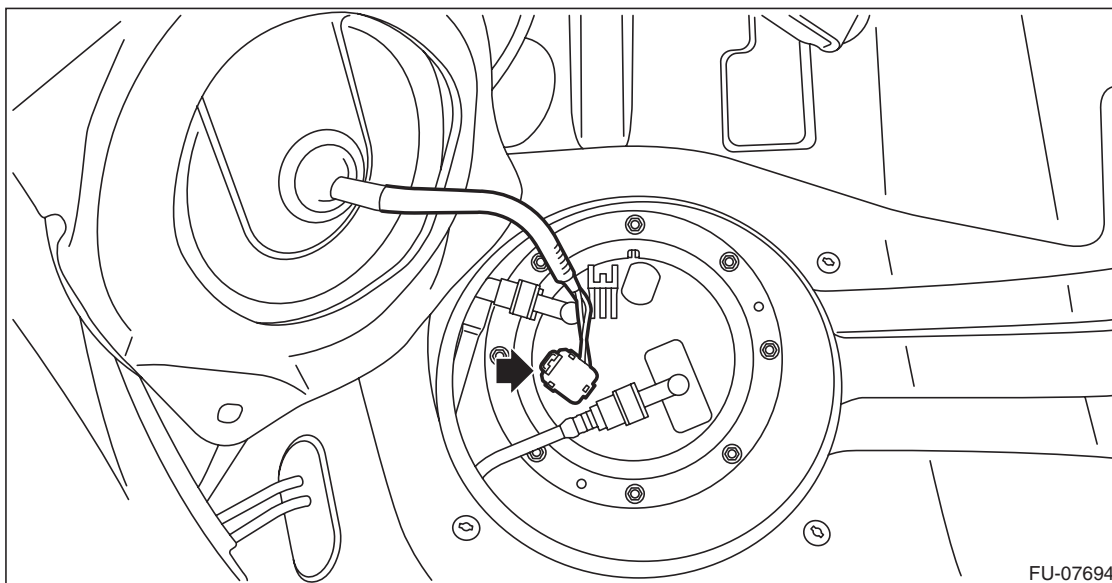
- 12) Install the service hole cover of fuel sub level sensor.



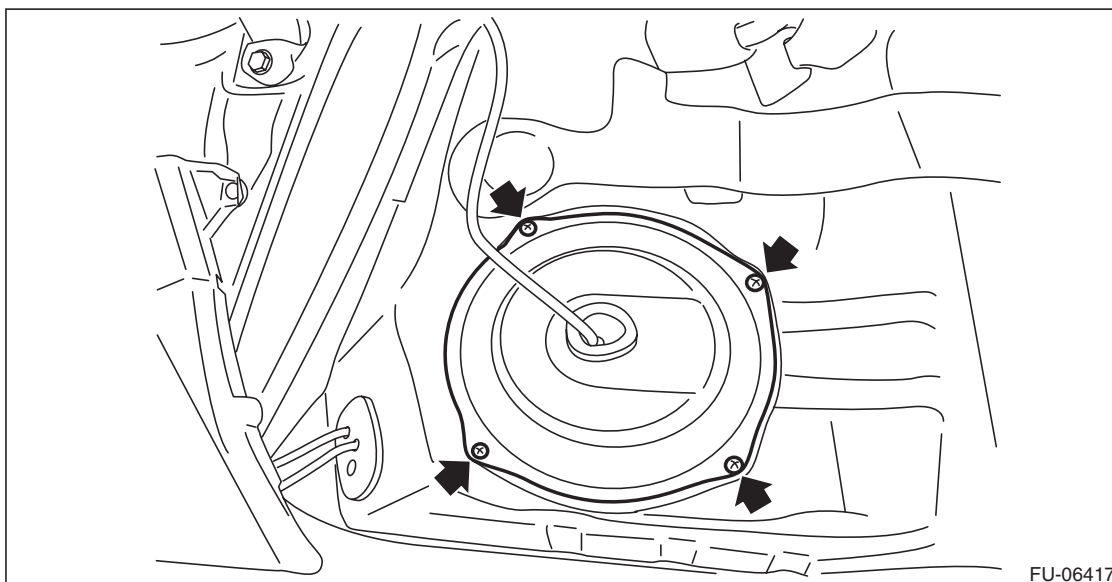
Fuel Tank

FUEL INJECTION (FUEL SYSTEMS)

13) Connect the connector to the fuel pump.



14) Install the service hole cover of fuel pump.



15) Install the rear seat cushion. <Ref. to SE-35, INSTALLATION, Rear Seat.>

16) Connect the battery ground terminal.

C: INSPECTION

- 1) Check that the fuel tank and fuel pipe have no deformation, cracks and other damages.
- 2) Check that the fuel hose has no cracks, damage or loose part.

29. Fuel Filler Pipe

A: REMOVAL

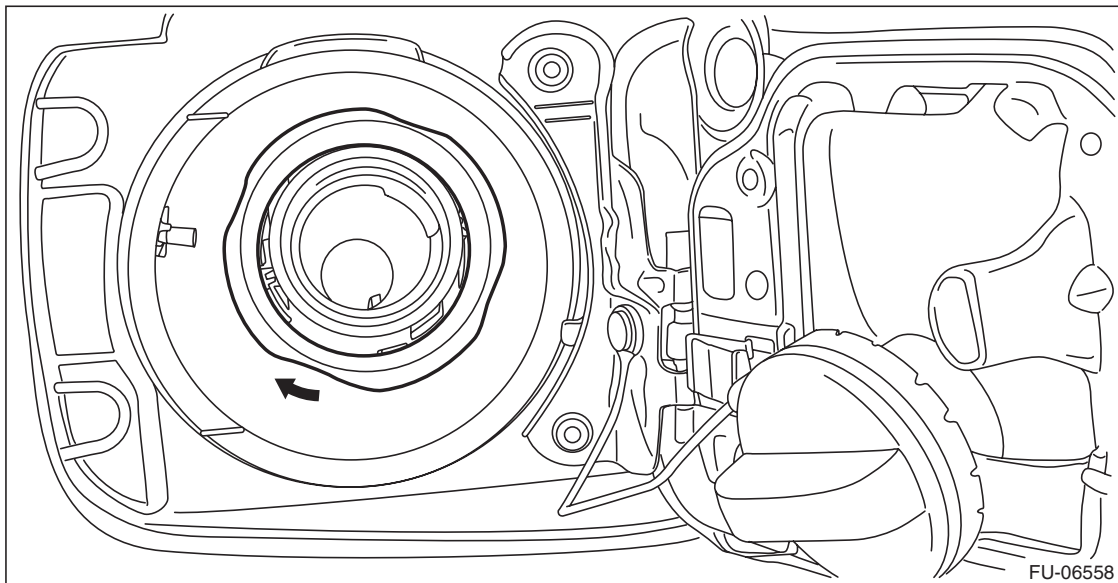
WARNING:

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

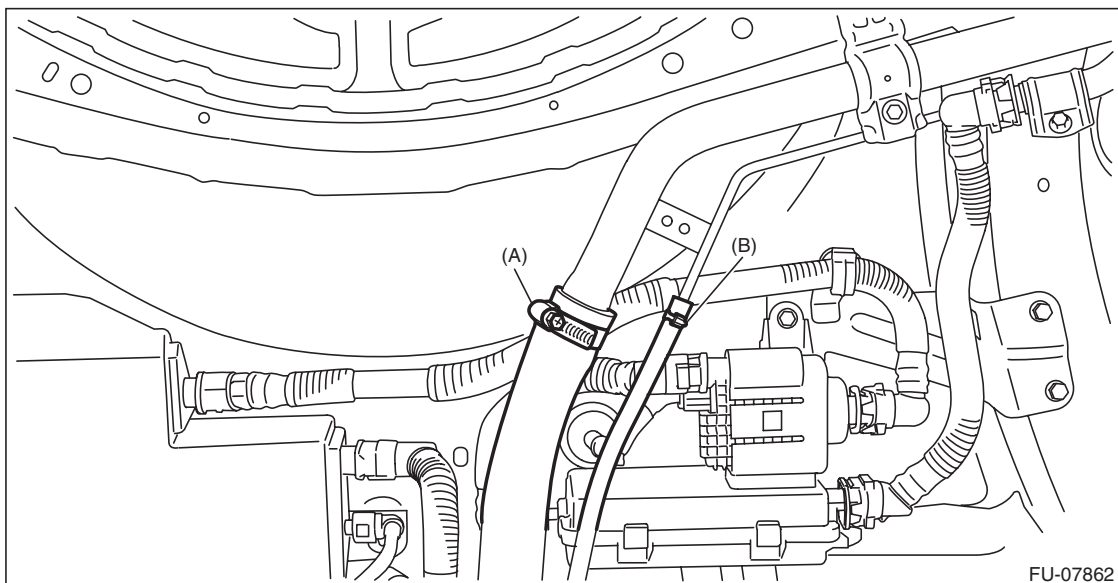
CAUTION:

Be careful not to spill fuel.

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Drain fuel. <Ref. to FU(H4DO)-106, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>
- 3) Disconnect the ground cable from battery.
- 4) Open the fuel filler lid and remove the fuel filler cap.
- 5) Turn the fuel filler pipe protector in the direction of the arrow to unlock and remove it.



- 6) Remove the rear sub frame assembly. <Ref. to RS-9, REMOVAL, Rear Sub Frame.>
- 7) Remove the rear mud guard RH. <Ref. to EI-23, REMOVAL, Mud Guard.>
- 8) Disconnect the fuel filler hose (A) and evaporation hose (B) from the fuel filler pipe assembly.



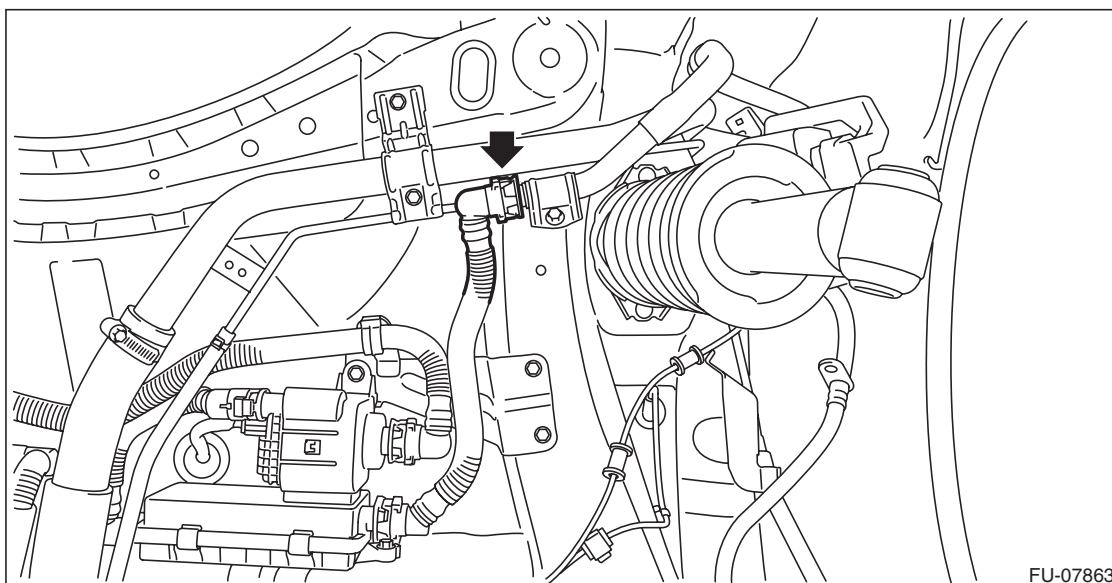
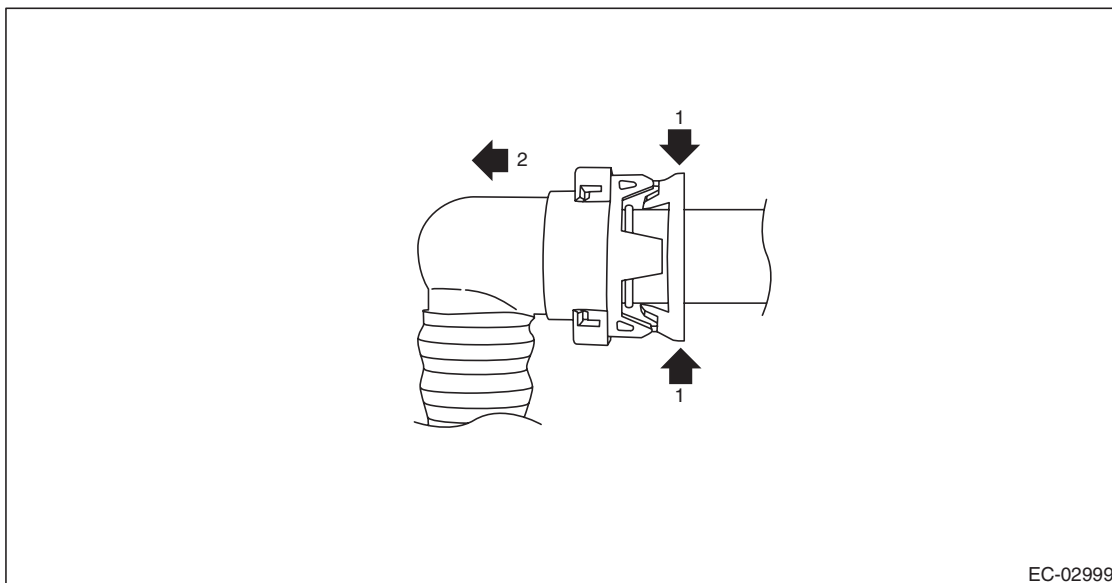
Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

9) Disconnect the quick connectors for the drain pipe from the fuel filler pipe assembly.

NOTE:

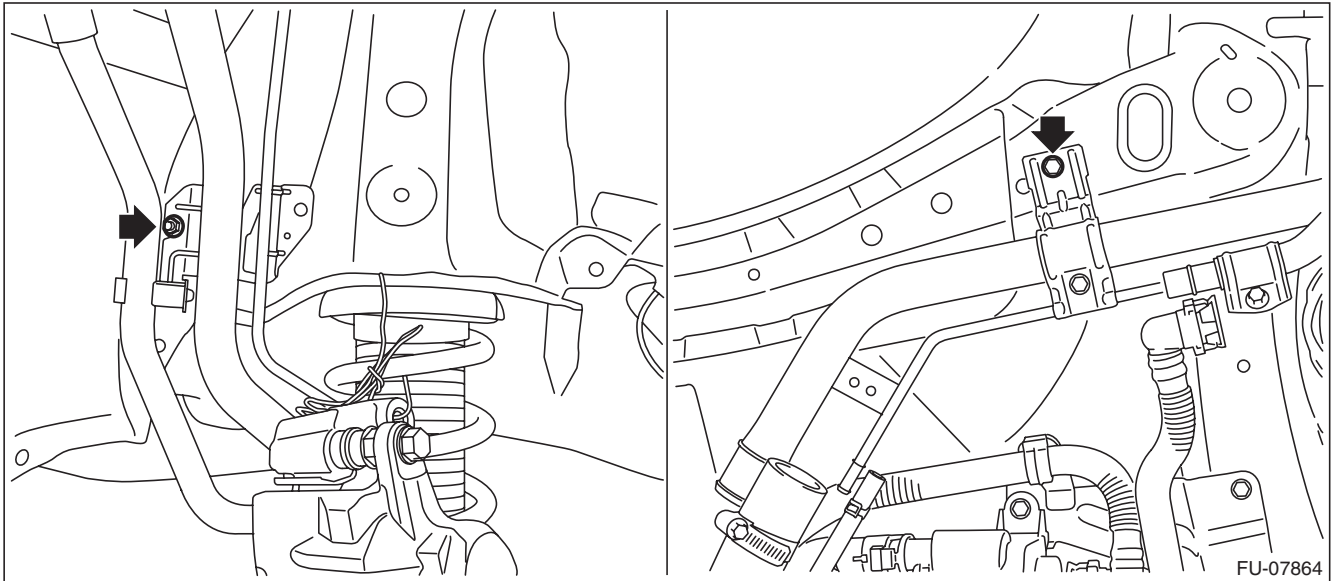
Disconnect the quick connector as shown in the figure.



Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

10) Remove the bolts and nuts which secure the fuel filler pipe assembly to the vehicle.



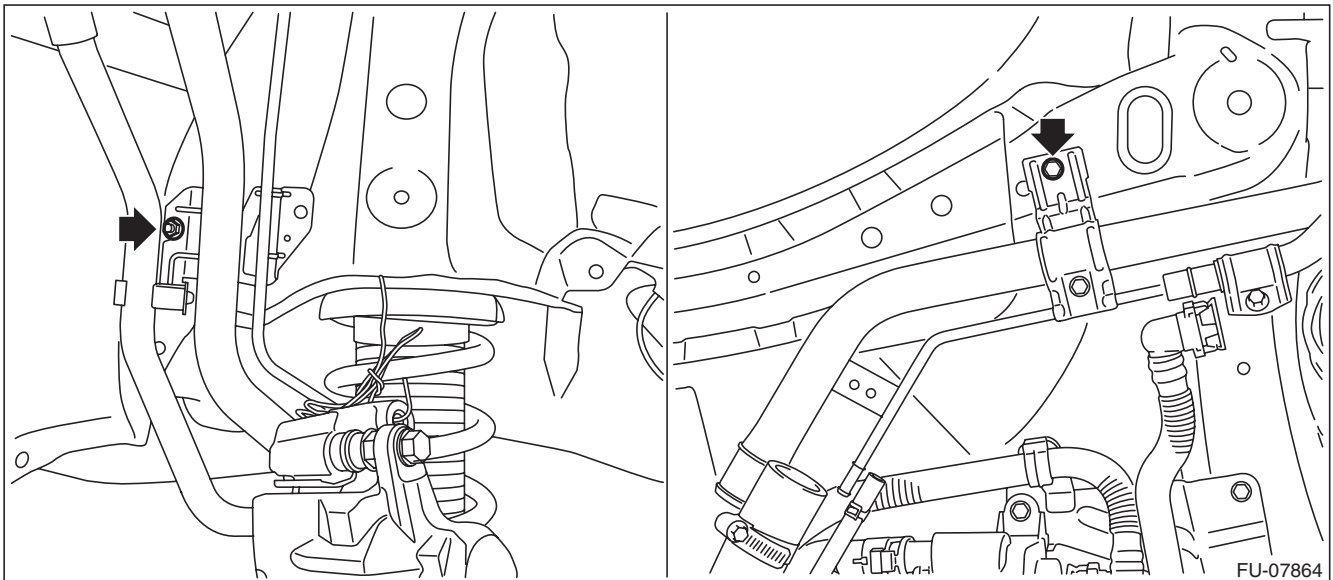
11) Remove the fuel filler pipe assembly from the underside of the vehicle.

B: INSTALLATION

- 1) Open the fuel filler lid.
- 2) Insert the fuel filler pipe assembly into the rubber saucer from inside of the rear fender.
- 3) Install the fuel filler pipe assembly to the vehicle.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

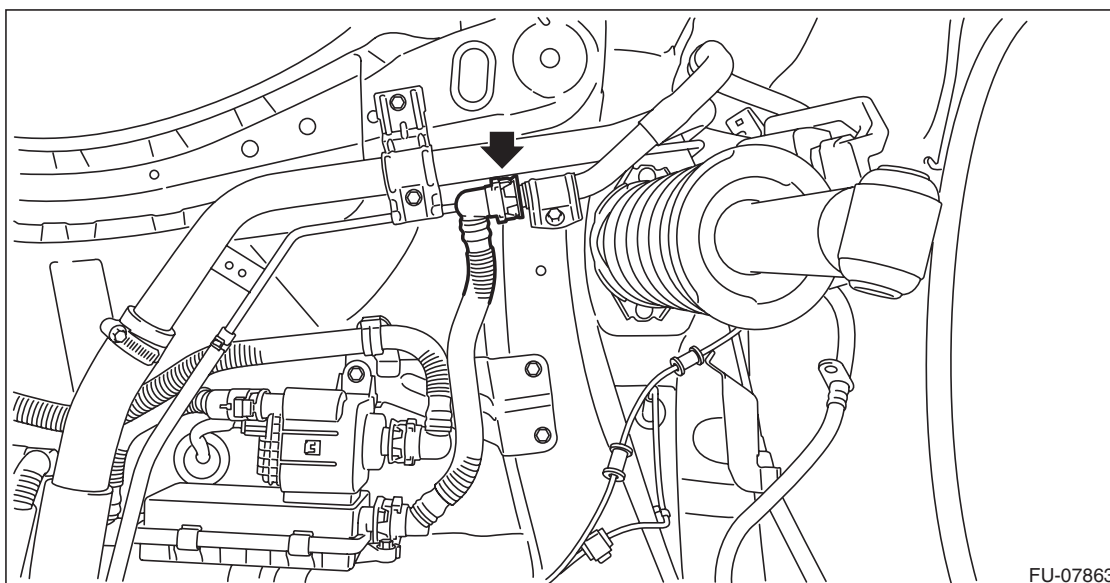
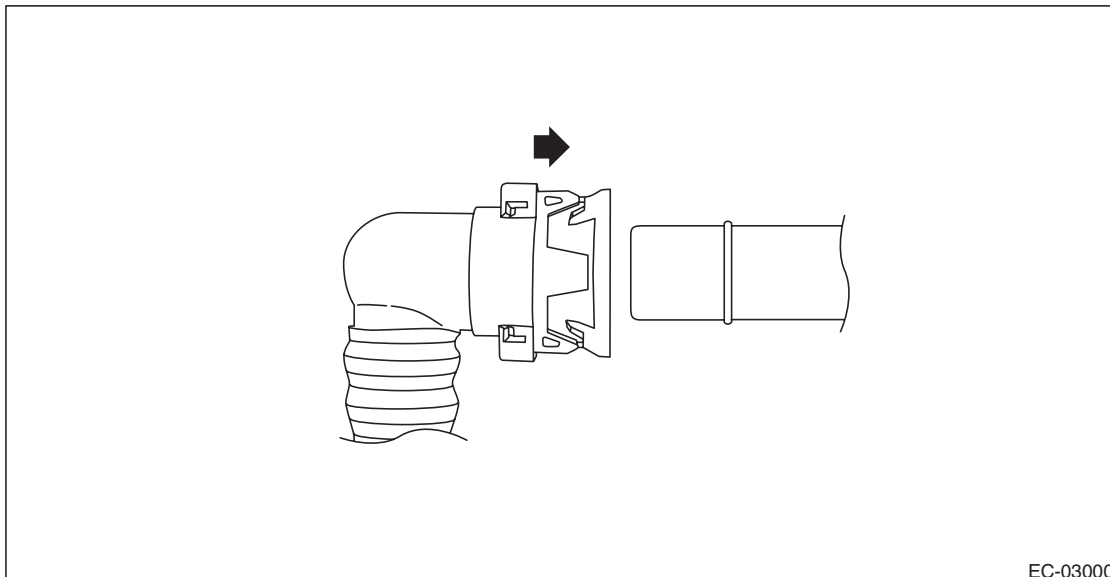
4) Connect the quick connector for drain pipe to the fuel filler pipe assembly.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- Make sure that the quick connector is securely connected.

NOTE:

Connect the quick connector as shown in the figure.



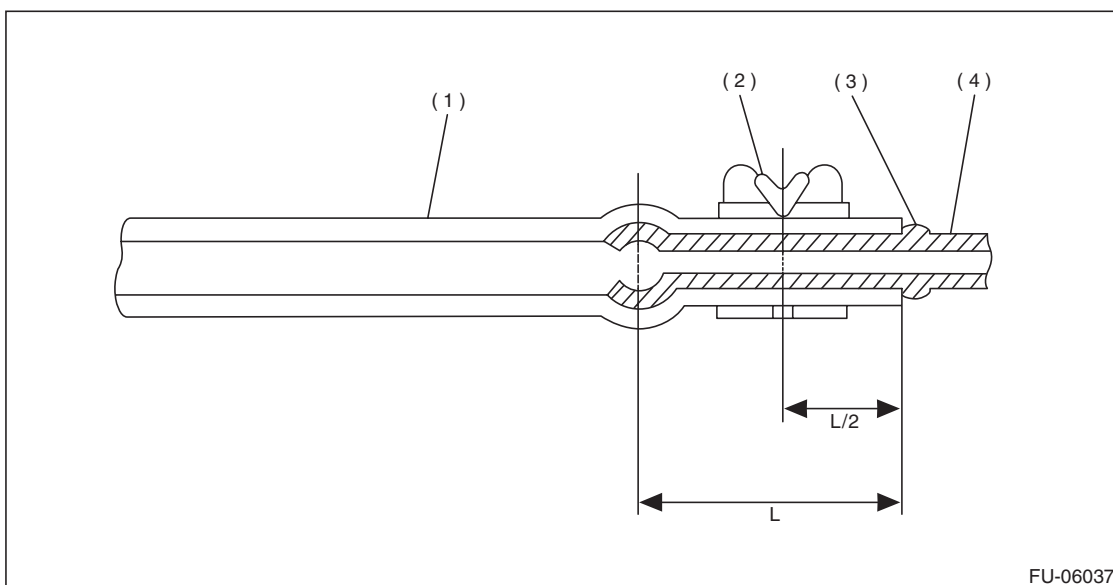
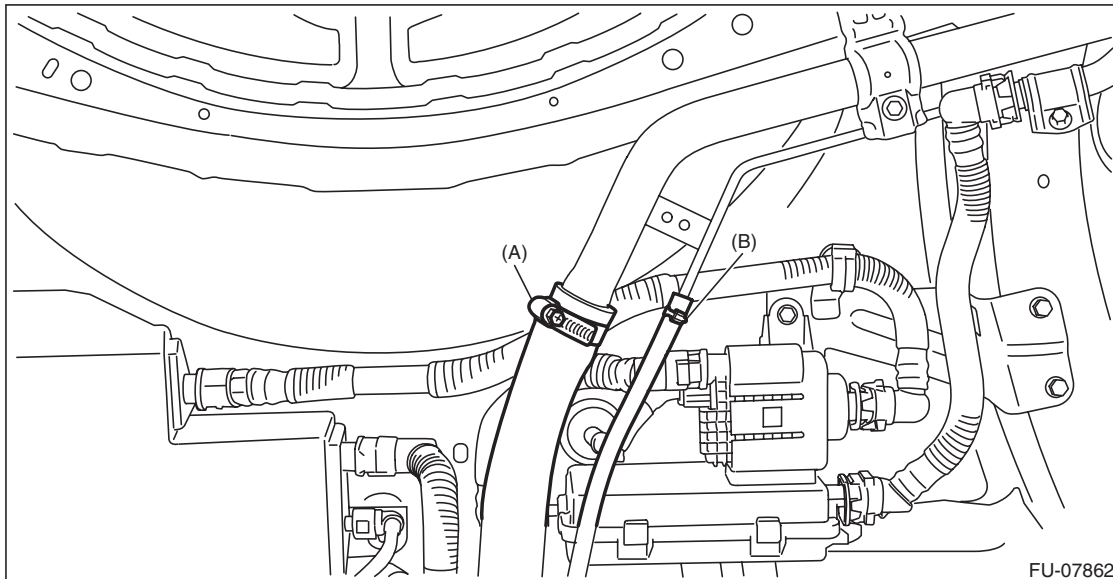
Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

5) Securely insert the fuel filler hose (A) and evaporation hose (B) until the hose end contacts the spool, then attach the clamp or clip as shown in the figure.

Tightening torque:

2.5 N·m (0.3 kgf-m, 1.8 ft-lb)



- (1) Hose (2) Clamp or clip (3) Spool (4) Pipe

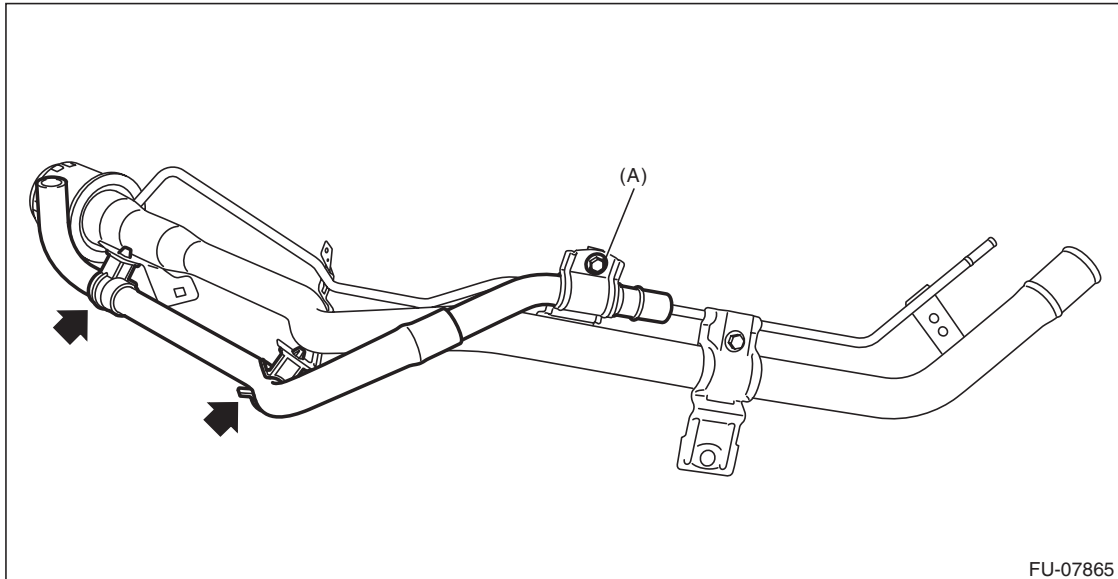
- 6) Install the rear mud guard RH. <Ref. to EI-23, INSTALLATION, Mud Guard.>
7) Install the rear sub frame assembly. <Ref. to RS-14, INSTALLATION, Rear Sub Frame.>
8) Connect the battery ground terminal.
9) Inspect the wheel alignment and adjust if necessary. <Ref. to FS-7, Wheel Alignment.>
10) Perform reinitialization of the auto headlight beam leveler system. (Model with auto headlight beam leveler) <Ref. to LI-16, PROCEDURE, Auto Headlight Beam Leveler System.>
11) Adjust the steering angle sensor. <Ref. to VDC-23, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

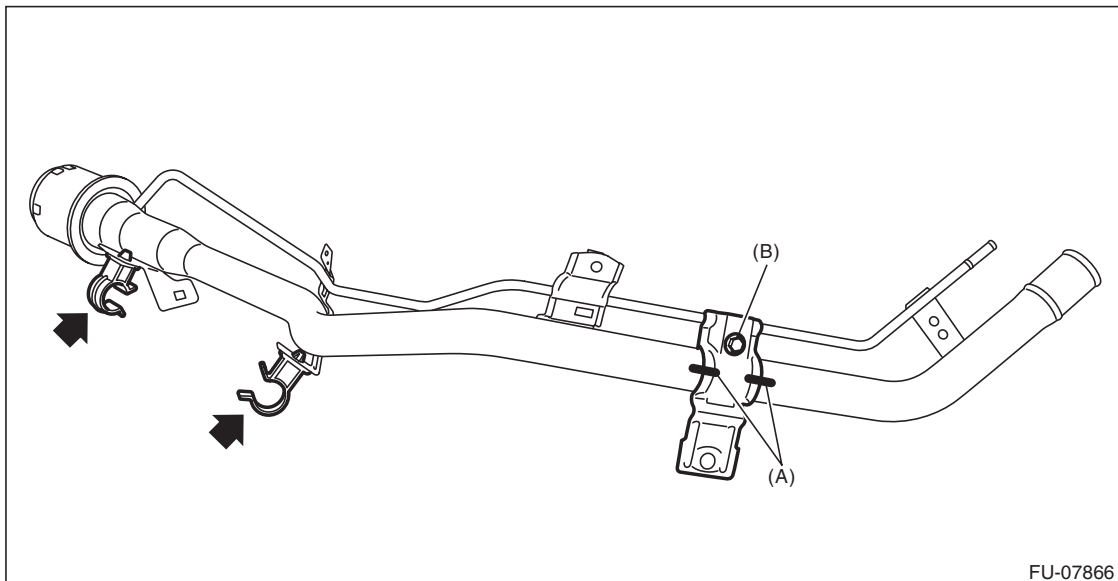
C: DISASSEMBLY

1) Remove the bracket bolt (A) securing the drain pipe, and remove the drain hose from the clip for the fuel filler pipe.



2) Using a marker pen, make alignment marks (A) on the fuel filler pipe and the bracket.

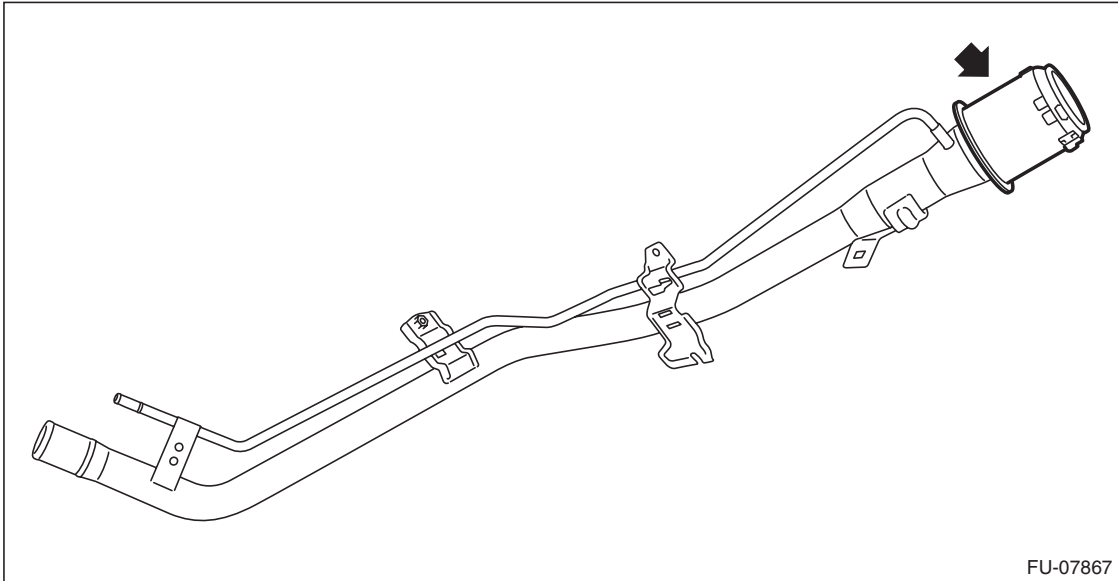
3) Remove the bracket bolt (B) securing the fuel filler pipe, and remove the clip from the fuel filler pipe.



Fuel Filler Pipe

FUEL INJECTION (FUEL SYSTEMS)

4) Remove the neck holder from the fuel filler pipe.

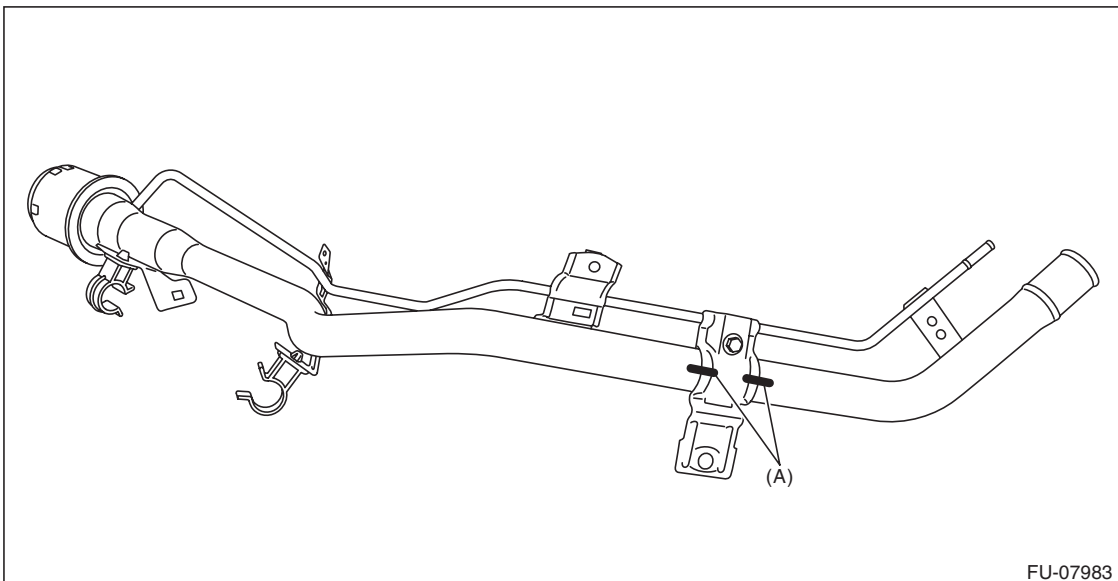


D: ASSEMBLY

Assemble in the reverse order of disassembly.

NOTE:

- Use a new neck holder.
- Install the bracket to the fuel filler pipe by aligning the alignment marks (A).



Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

E: INSPECTION

- 1) Check that the fuel filler pipe assembly has no deformation, cracks or other damages.
- 2) Check that the fuel hose has no cracks, damage or loose part.

Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

30.Fuel Pump

A: REMOVAL

WARNING:

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

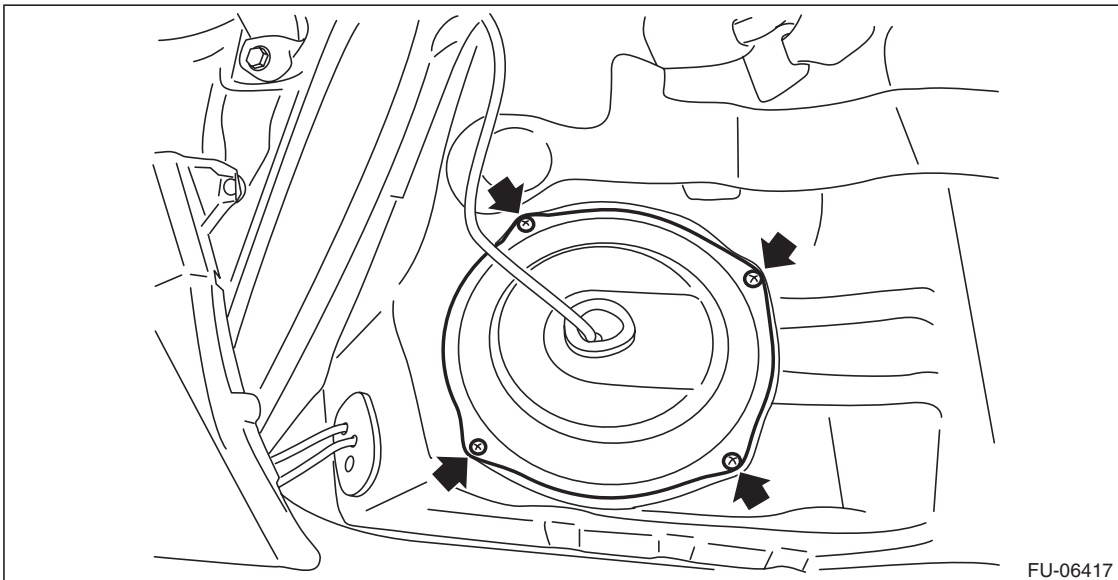
CAUTION:

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

NOTE:

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

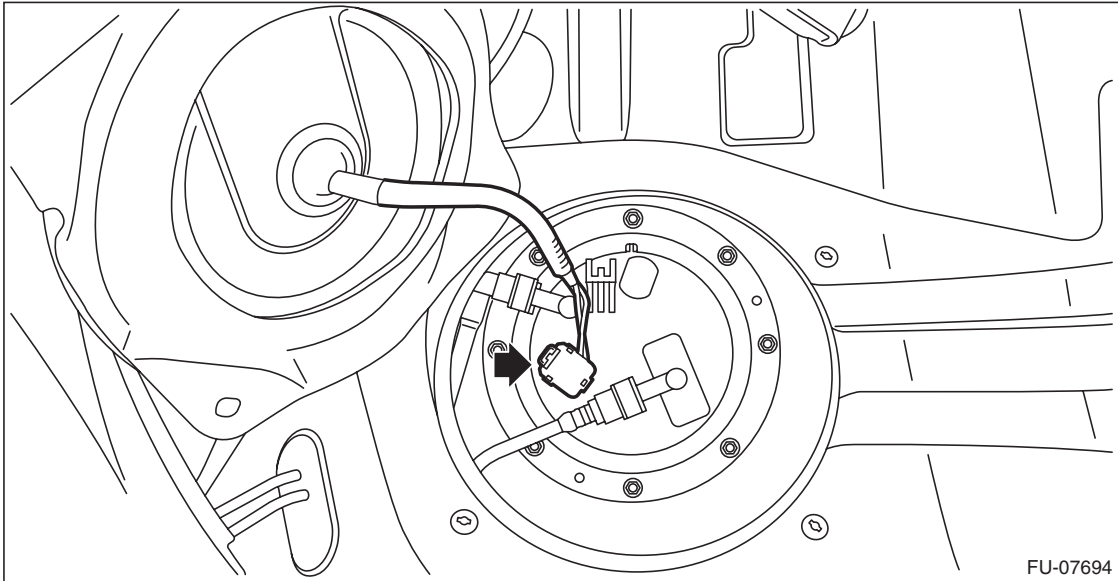
- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Drain fuel. <Ref. to FU(H4DO)-106, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>
- 3) Disconnect the ground cable from battery.
- 4) Remove the rear seat cushion. <Ref. to SE-32, REMOVAL, Rear Seat.>
- 5) Remove the service hole cover of fuel pump.



Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

- 6) Disconnect connectors from the fuel pump, and move aside the service hole cover.



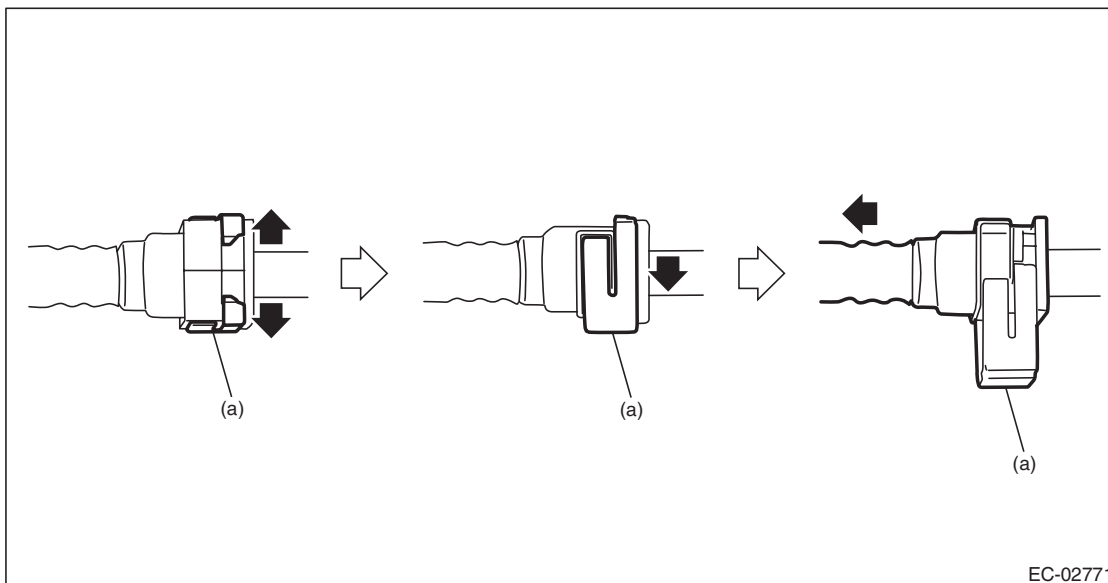
Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

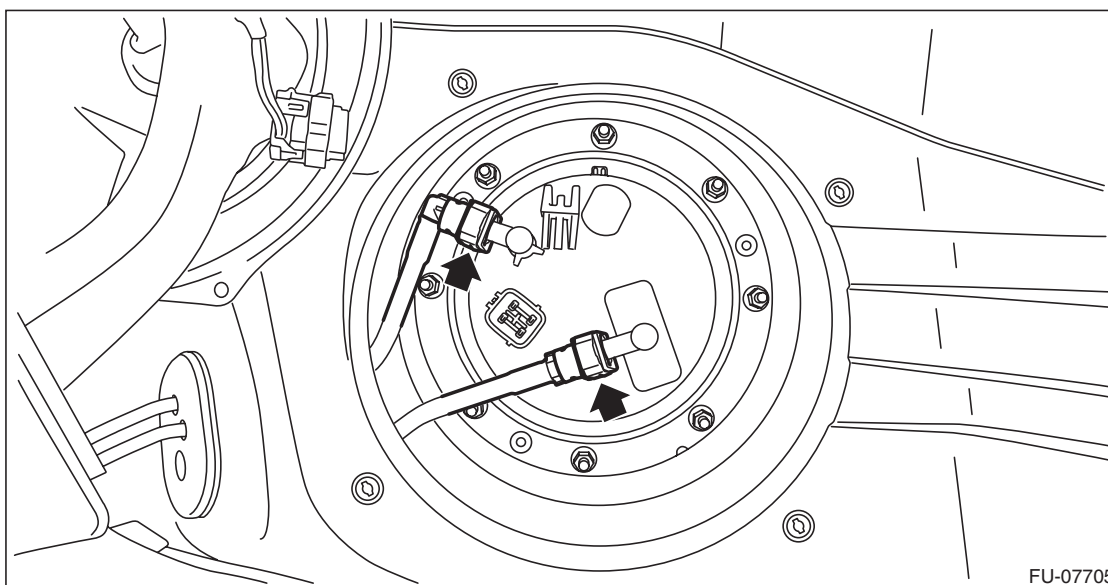
7) Disconnect the quick connector of fuel delivery tube and jet pump tube.

NOTE:

Disconnect the quick connector as shown in the figure.



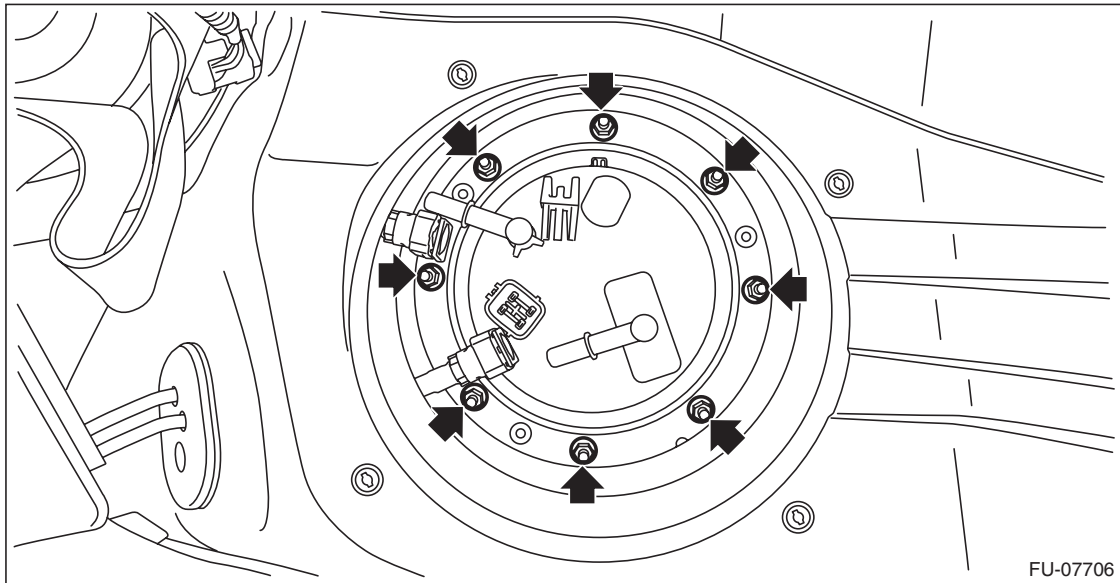
(a) Slider



Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

- 8) Remove the nuts which hold the fuel pump upper plate to the fuel tank.



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



Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

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

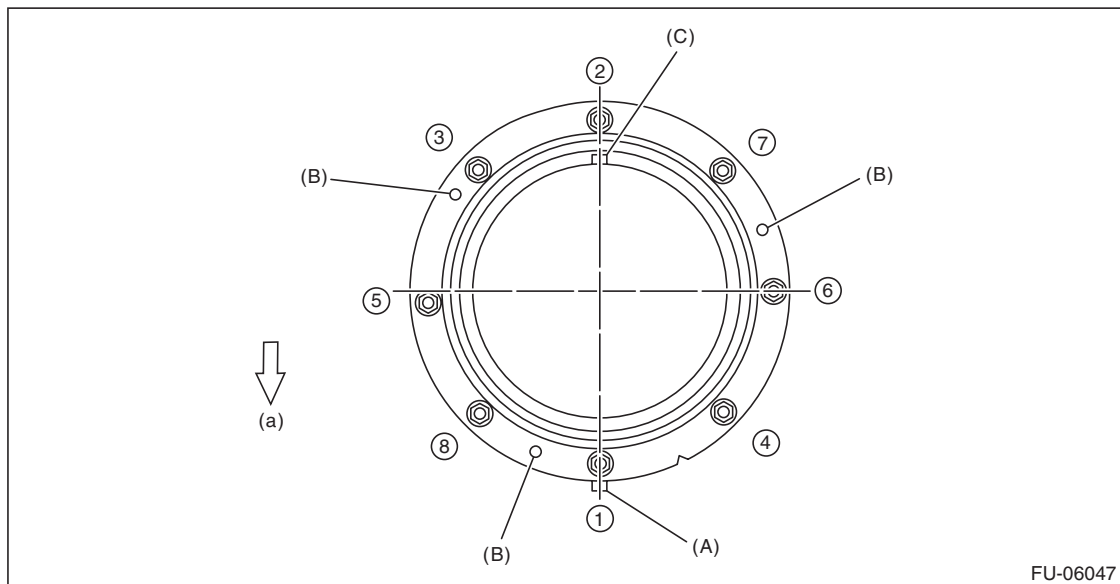
- Make sure the sealing portion is free from fuel or foreign matter before installation.
- Align protrusion (A) of the gasket to the position shown in the figure.
- Insert the protrusion (B) of gasket to the fuel pump upper plate. (3 places)
- Align the protrusion (C) of fuel pump assembly with the cutout on the fuel pump upper plate.
- Tighten the nuts to the specified torque in the order as shown in the figure.

NOTE:

- Use a new gasket.

Tightening torque:

4.4 N·m (0.4 kgf-m, 3.2 ft-lb)



(a) Front side of vehicle

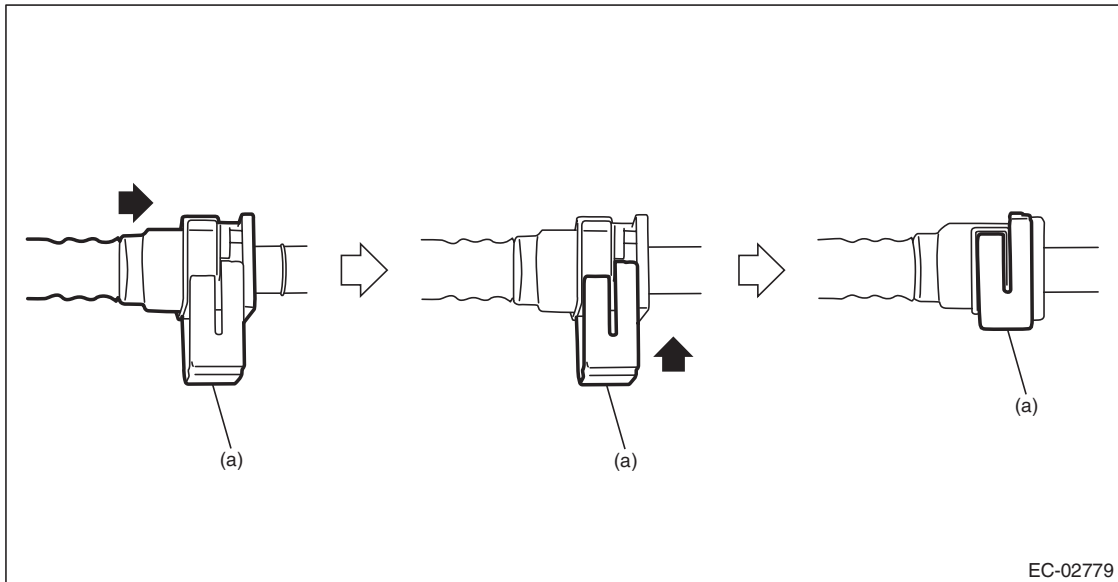
Fuel Pump

FUEL INJECTION (FUEL SYSTEMS)

- Connect the quick connector as shown in the figure.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.



(a) Slider

Fuel Pump

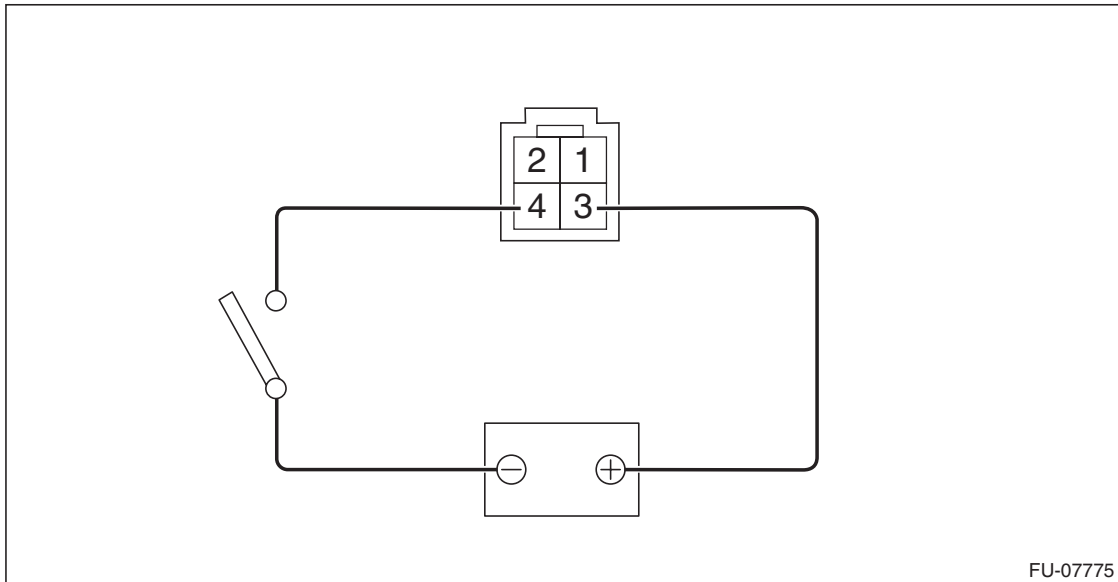
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the fuel pump has no deformation, cracks or other damages.
- 2) Connect the battery positive terminal to terminal No. 3 and the battery ground terminal to terminal No. 4, and inspect the fuel pump operation.

WARNING:

- Wipe off fuel completely.
- Keep the battery as far apart from fuel pump as possible.
- Do not run the fuel pump for a long time under non-load condition.



Fuel Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

31. Fuel Level Sensor

A: REMOVAL

WARNING:

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

CAUTION:

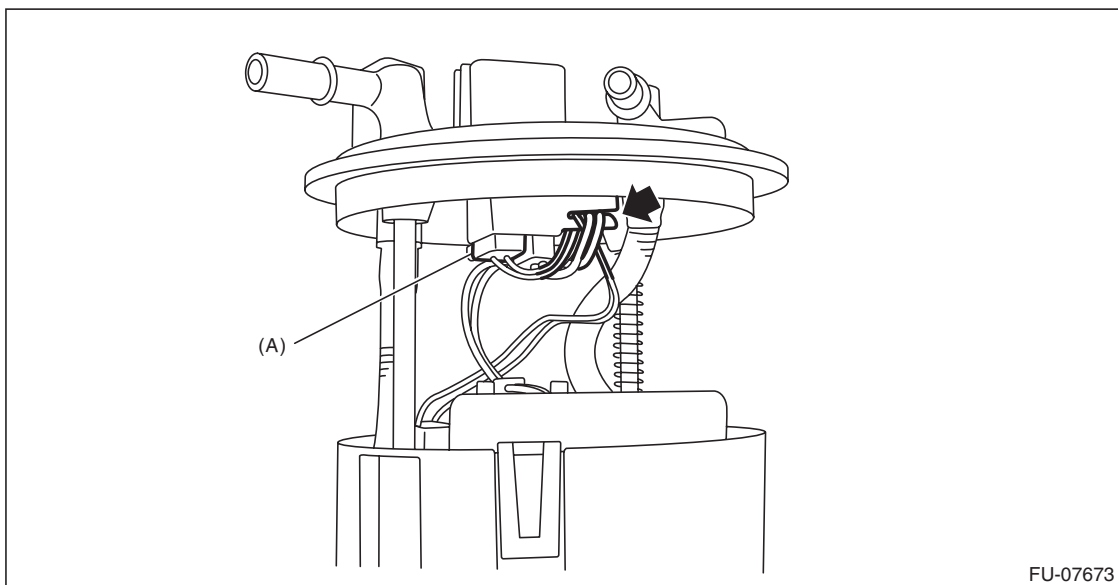
- Be careful not to spill fuel.
- If the fuel gauge indicates that two thirds or more of the fuel is remaining, be sure to drain fuel before starting work to avoid the fuel to spill.

NOTE:

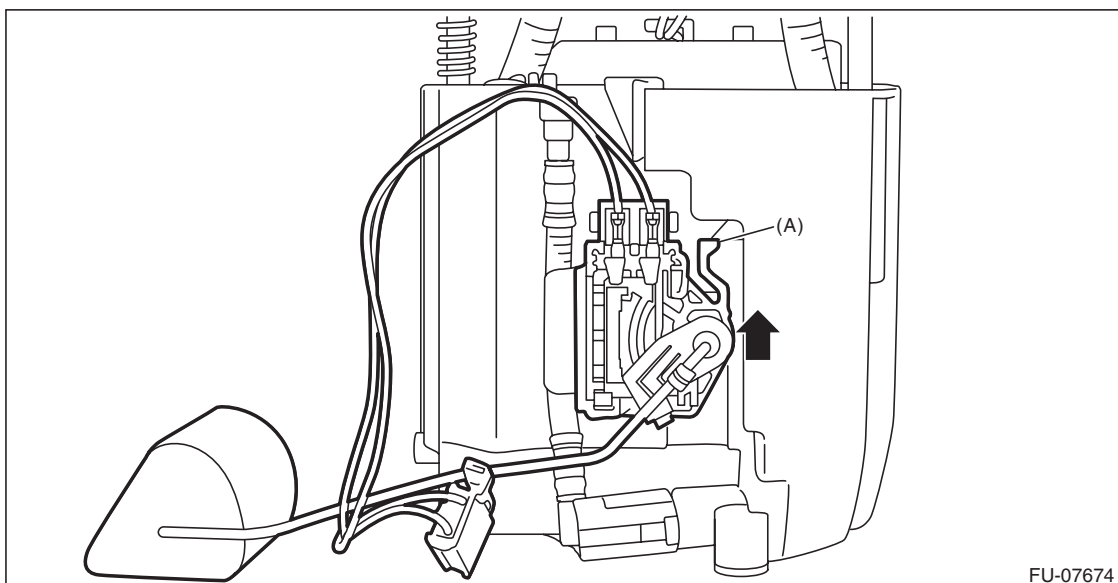
The fuel level sensor is built in fuel pump assembly.

1) Remove the fuel pump assembly. <Ref. to FU(H4DO)-134, REMOVAL, Fuel Pump.>

2) Disconnect the fuel level sensor connector (A), and pull out the connector cable and fuel level sensor harness from the clip.



3) While pressing the claw (A) of the fuel level sensor, slide the fuel level sensor in the direction of the arrow, and remove the fuel level sensor.



Fuel Level Sensor

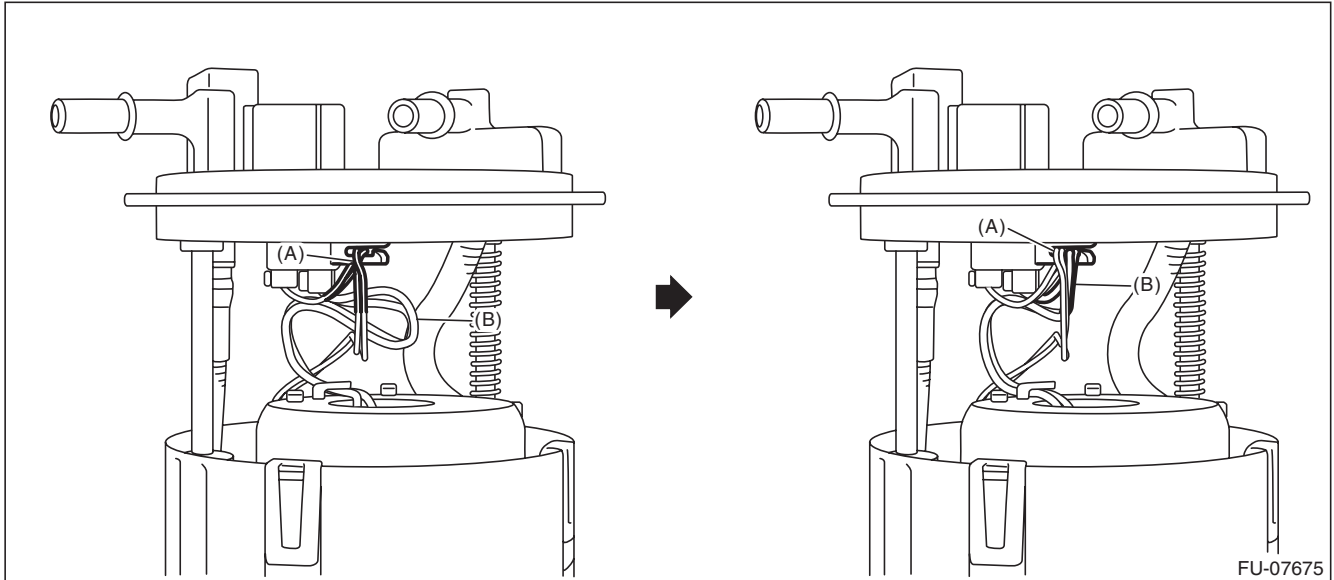
FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

Be sure to install the fuel level sensor harness to the clip first, then install the connector cable. Otherwise, malfunction may occur.



(A) Fuel level sensor harness

(B) Connector cable

FU-07675

Fuel Level Sensor

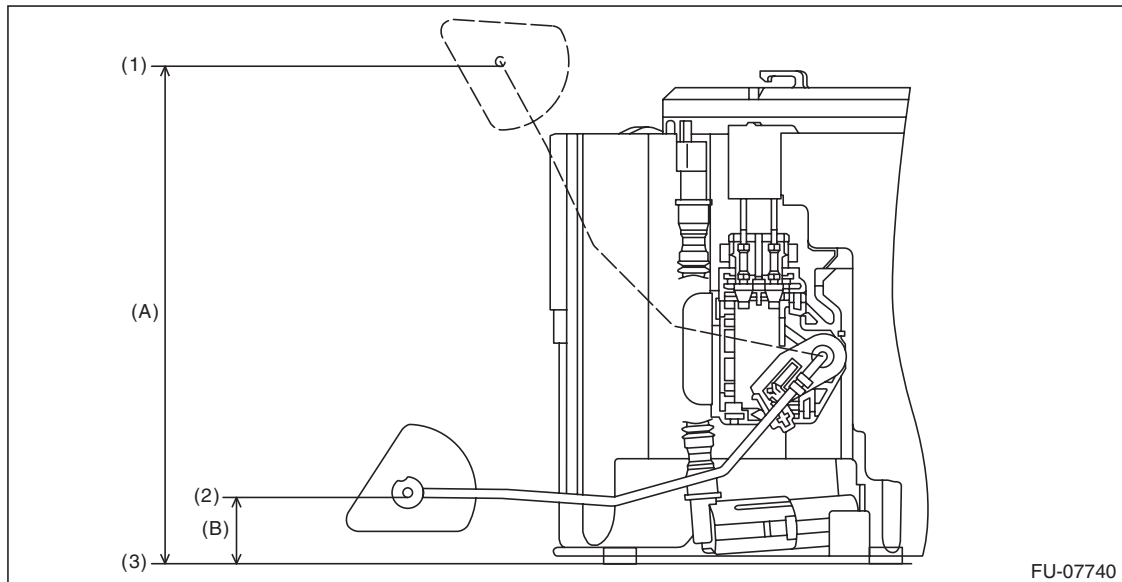
FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the fuel level sensor has no damage.
- 2) Measure the fuel level sensor float position.

NOTE:

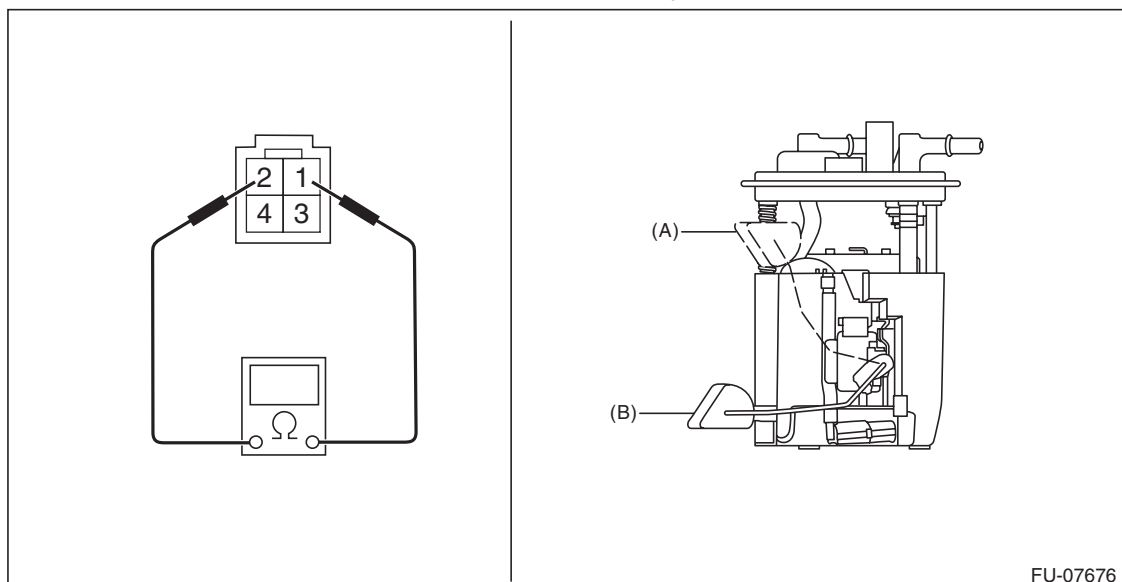
When inspecting the fuel level sensor, perform the work with the sensor installed to the fuel pump.



- (1) FULL (2) EMPTY (3) Fuel tank seating surface

Float position	Standard
FULL to Fuel tank seating surface (A)	133.0±4 mm (5.236±0.157 in)
EMPTY to Fuel tank seating surface (B)	21.6±4 mm (0.850±0.157 in)

- 3) Check the resistance between fuel level sensor terminals by the connector on top of the fuel pump.



Float position	Terminal No.	Standard
FULL (A)	1 and 2	8.7±1.0 Ω
EMPTY (B)		139.1±2.0 Ω

Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

32. Fuel Sub Level Sensor

A: REMOVAL

WARNING:

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

CAUTION:

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

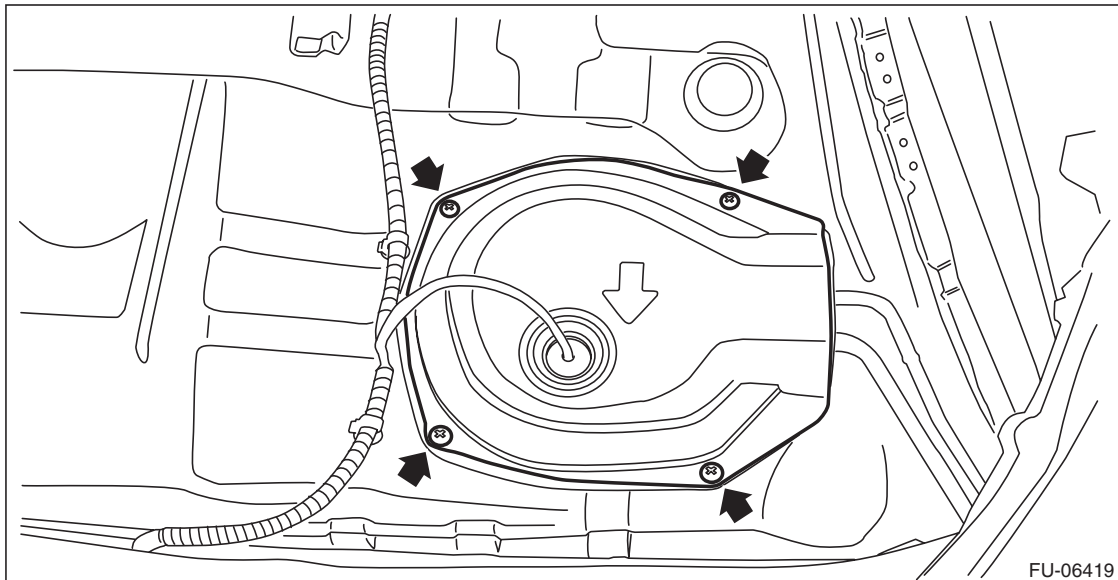
1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

2) Drain fuel. <Ref. to FU(H4DO)-106, DRAINING FUEL (WITH SUBARU SELECT MONITOR), PROCEDURE, Fuel.>

3) Disconnect the ground cable from battery.

4) Remove the rear seat cushion. <Ref. to SE-32, REMOVAL, Rear Seat.>

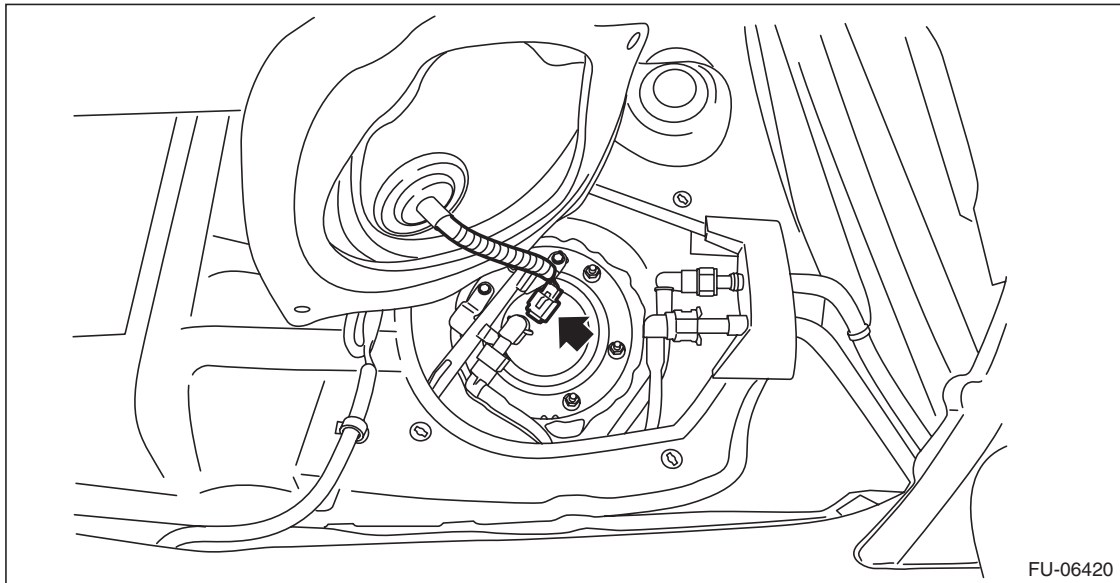
5) Remove the service hole cover of fuel sub level sensor.



Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

- 6) Disconnect the connector from the fuel sub level sensor, and move aside the service hole cover.



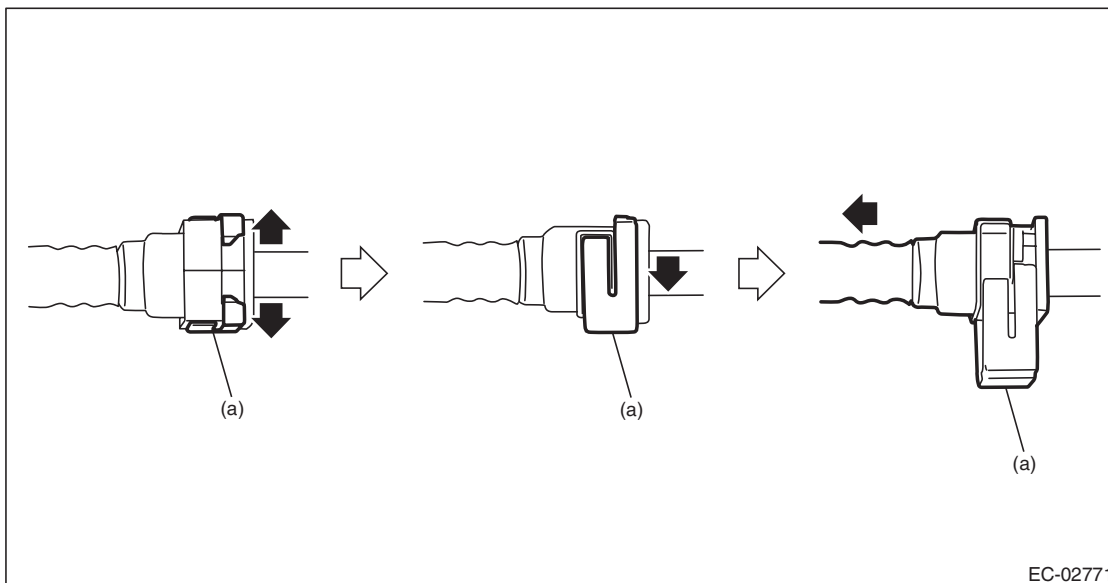
Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

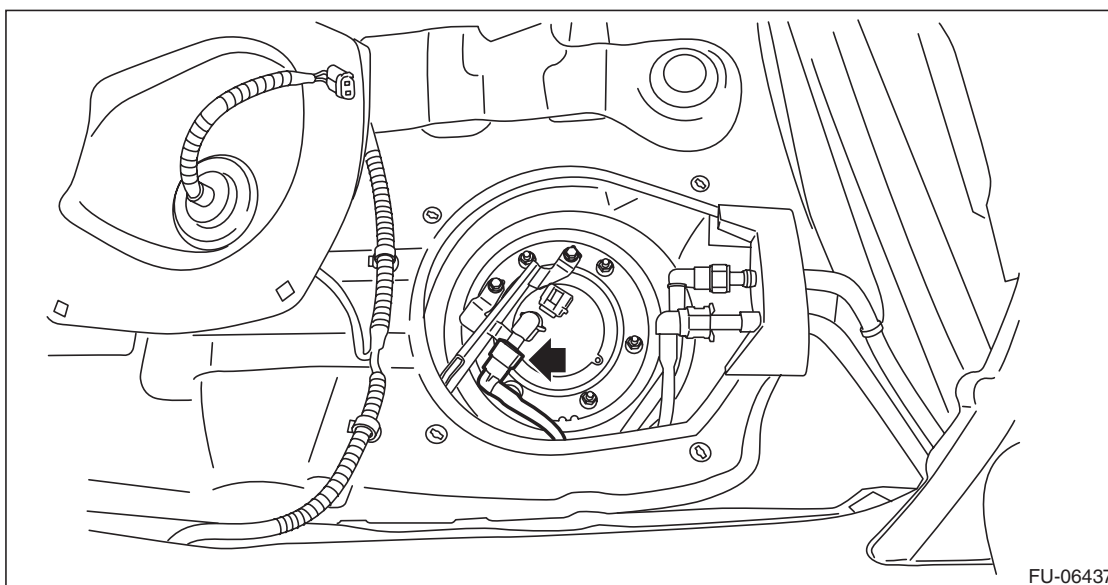
7) Disconnect the quick connector of the jet pump tube.

NOTE:

Disconnect the quick connector as shown in the figure.



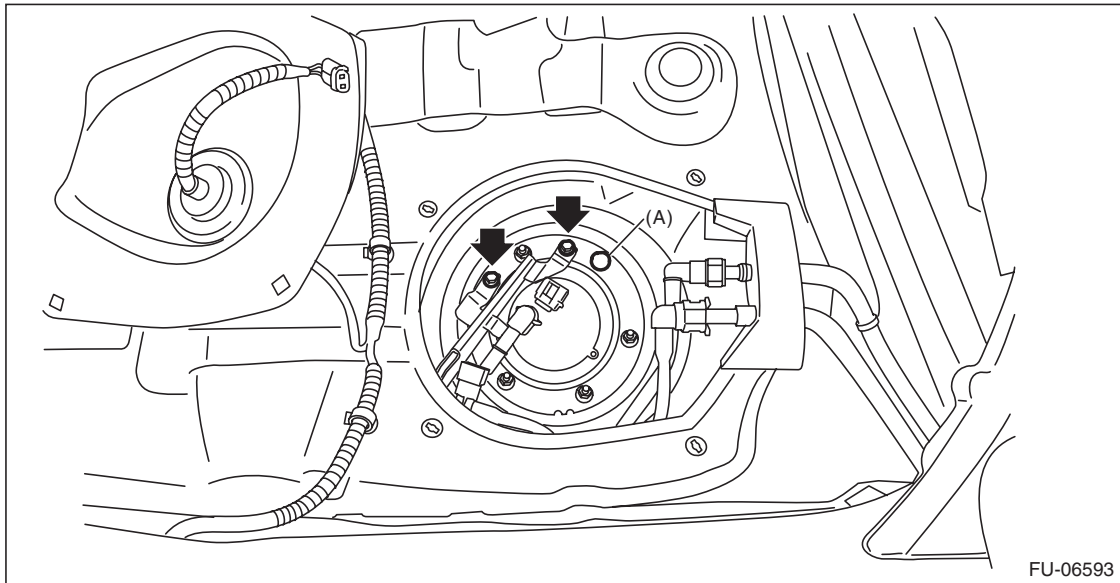
(a) Slider



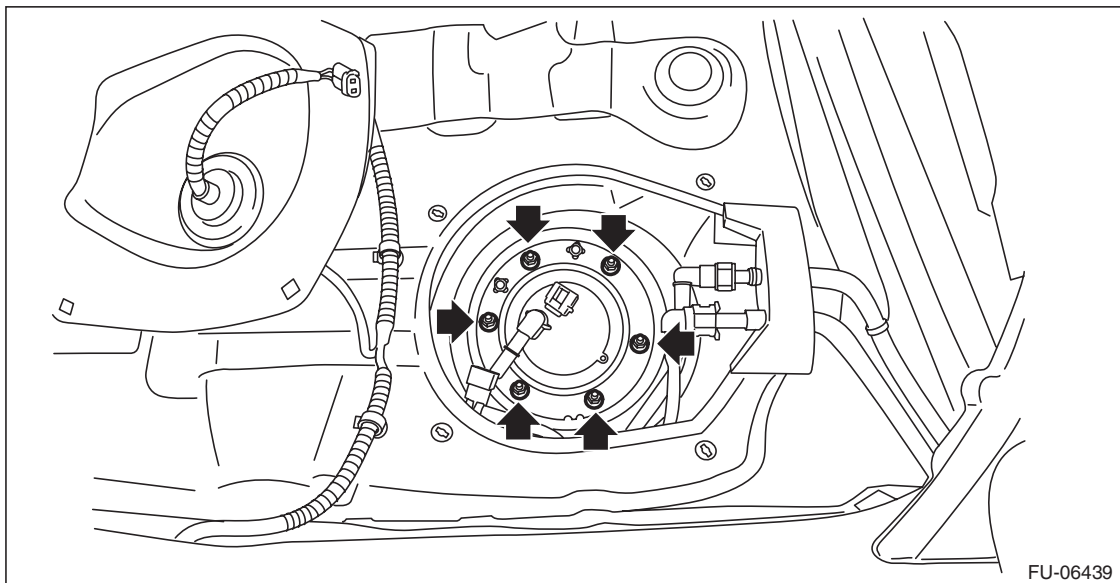
Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

- 8) Remove the fuel sub level sensor protector, and remove the rubber cap (A) from nut.



- 9) Remove the bolts and nuts which hold fuel sub level sensor protector and fuel sub level sensor upper plate to the fuel tank.



- 10) Remove the fuel sub level sensor from the fuel tank.

Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

B: INSTALLATION

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

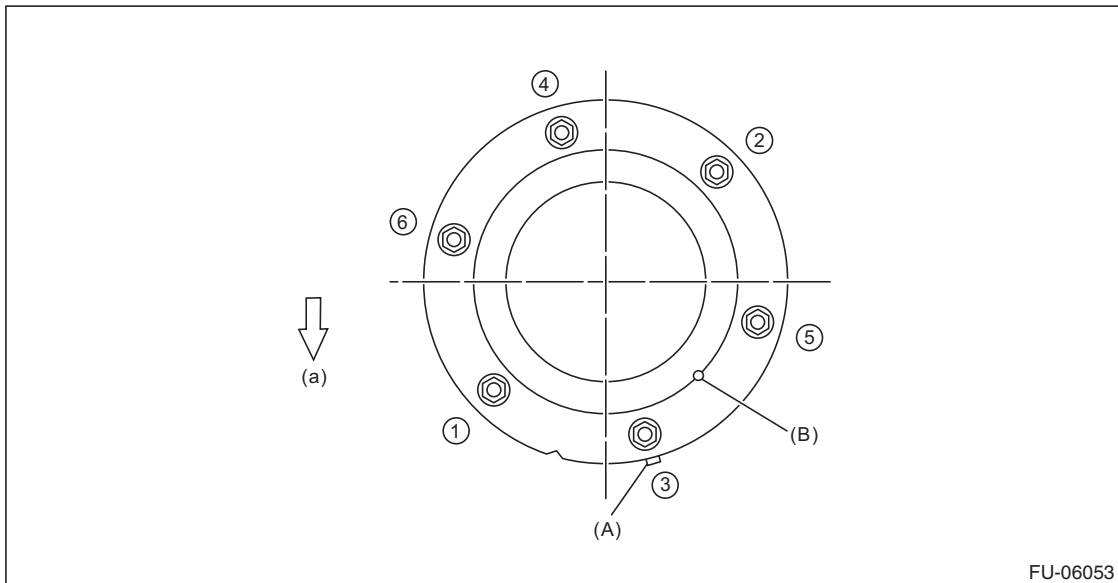
- Make sure the sealing portion is free from fuel or foreign matter before installation.
- Align protrusion (A) of the gasket to the position shown in the figure.
- Align protrusion (B) of the fuel sub level sensor to the cutout in the fuel sub level sensor upper plate.
- Tighten the nuts and bolts to the specified torque in the order as shown in the figure.
- After tightening, install the rubber cap (C) at the position shown in the figure.

NOTE:

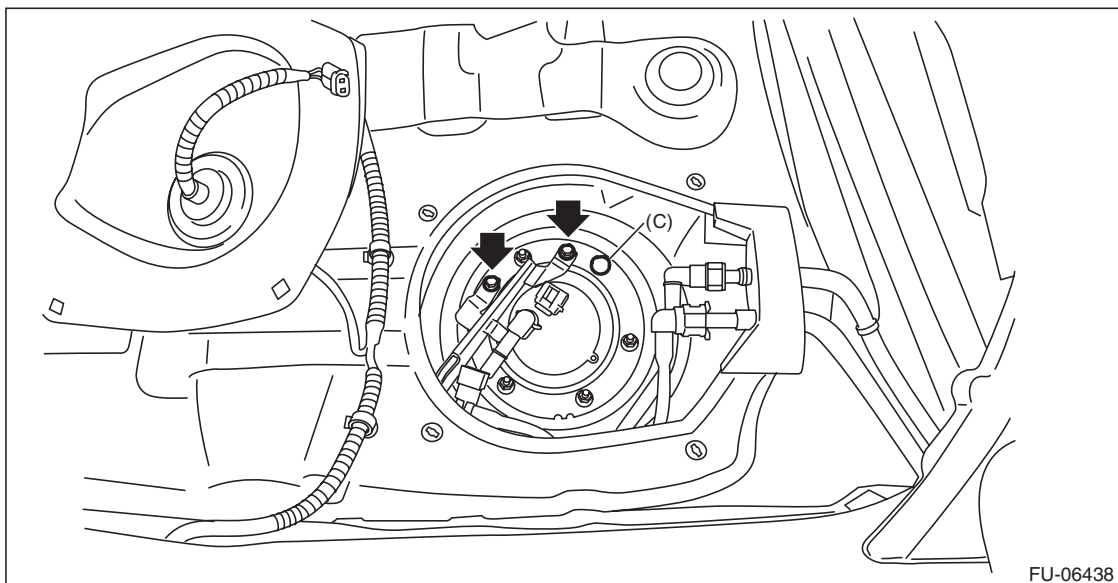
- Use a new gasket.
- Do not forget to install rubber cap (C).

Tightening torque:

4.4 N·m (0.4 kgf-m, 3.2 ft-lb)



(a) Front side of vehicle



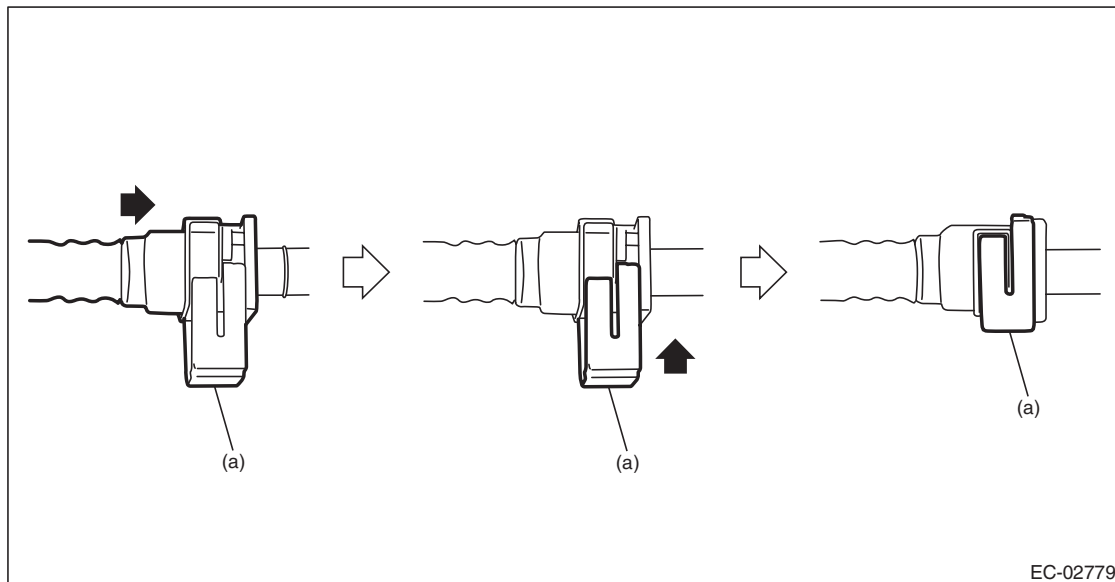
Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

- Connect the quick connector as shown in the figure.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.



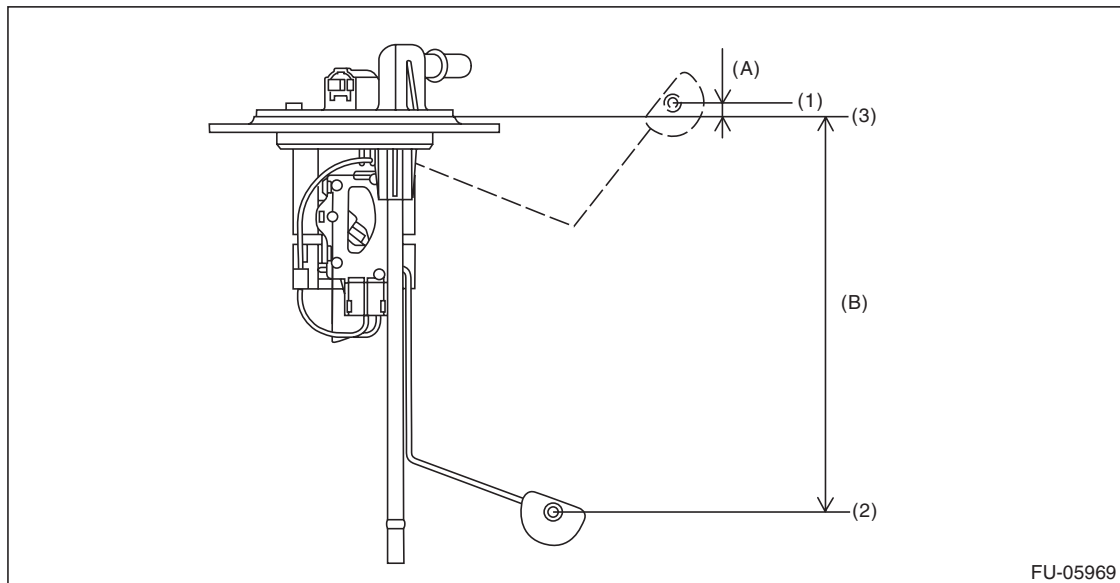
(a) Slider

Fuel Sub Level Sensor

FUEL INJECTION (FUEL SYSTEMS)

C: INSPECTION

- 1) Check that the fuel sub level sensor has no damage.
- 2) Measure the fuel sub level sensor float position.



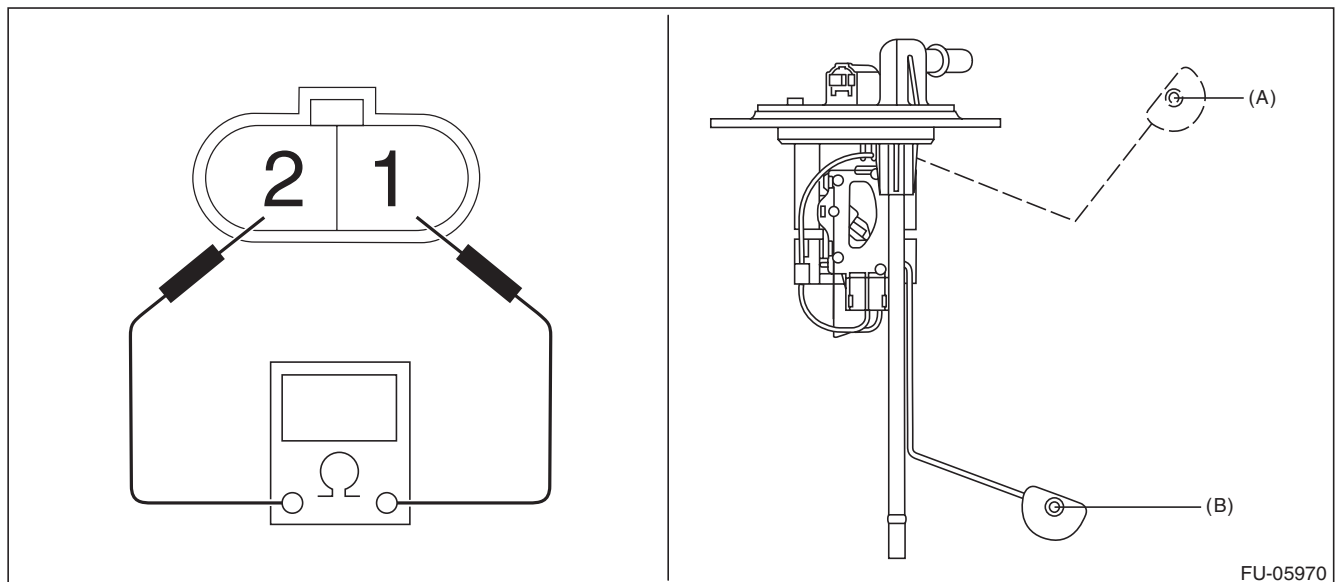
(1) FULL

(2) EMPTY

(3) Datum points

Float position	Standard
FULL to Datum point (A)	5.31 ± 3.5 mm (0.209 $\pm$ 0.138 in)
EMPTY to Datum point (B)	160.6 ± 3.5 mm (6.32 $\pm$ 0.138 in)

- 3) Measure the resistance between fuel sub level sensor terminals.



Float position	Terminal No.	Standard
FULL (A)	1 and 2	8.7 ± 1.0 Ω
EMPTY (B)		270.9 ± 4.0 Ω

33.Fuel Filter

A: REMOVAL

WARNING:

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

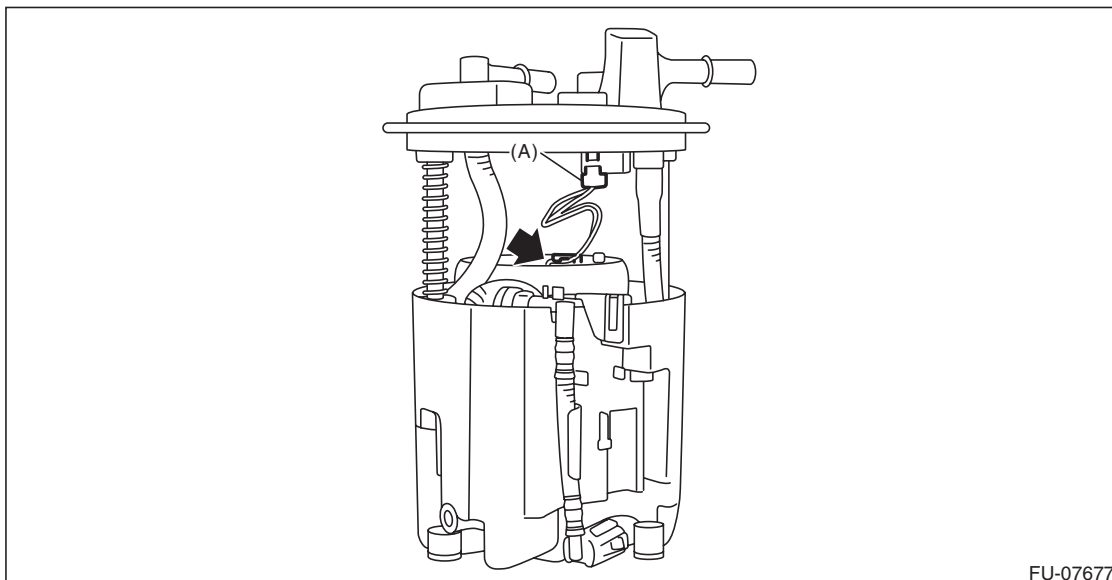
CAUTION:

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

NOTE:

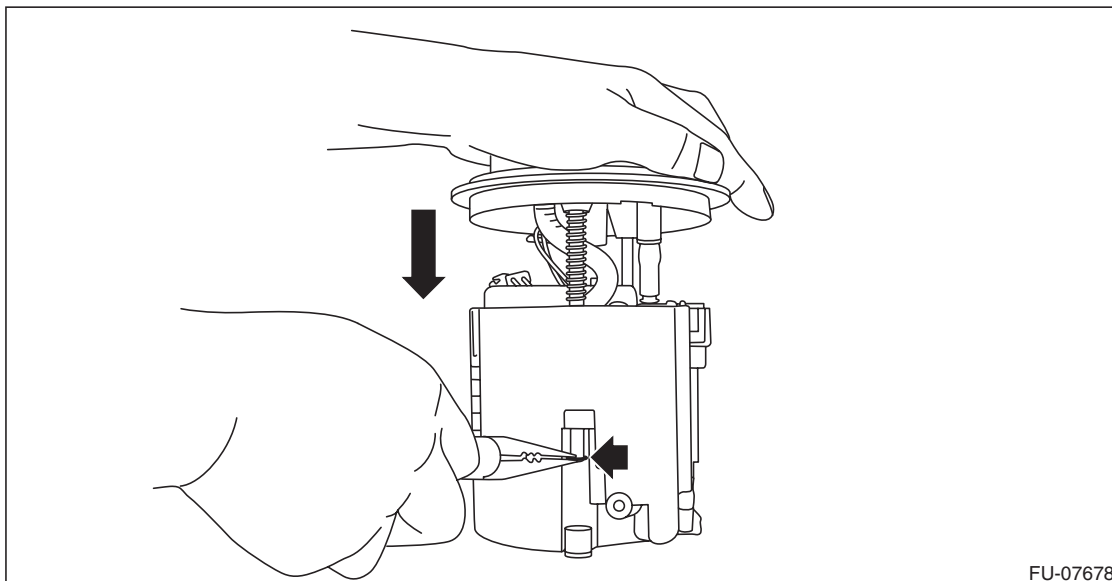
The fuel filter is built in fuel pump assembly.

- 1) Remove the fuel pump assembly. <Ref. to FU(H4DO)-134, REMOVAL, Fuel Pump.>
- 2) Remove the fuel level sensor. <Ref. to FU(H4DO)-141, REMOVAL, Fuel Level Sensor.>
- 3) Remove the connector cable from the clip, and disconnect the connector (A) of the connector cable.



FU-07677

- 4) Push the fuel filter assembly in the direction of the arrow to compress, and detach the connecting clip.

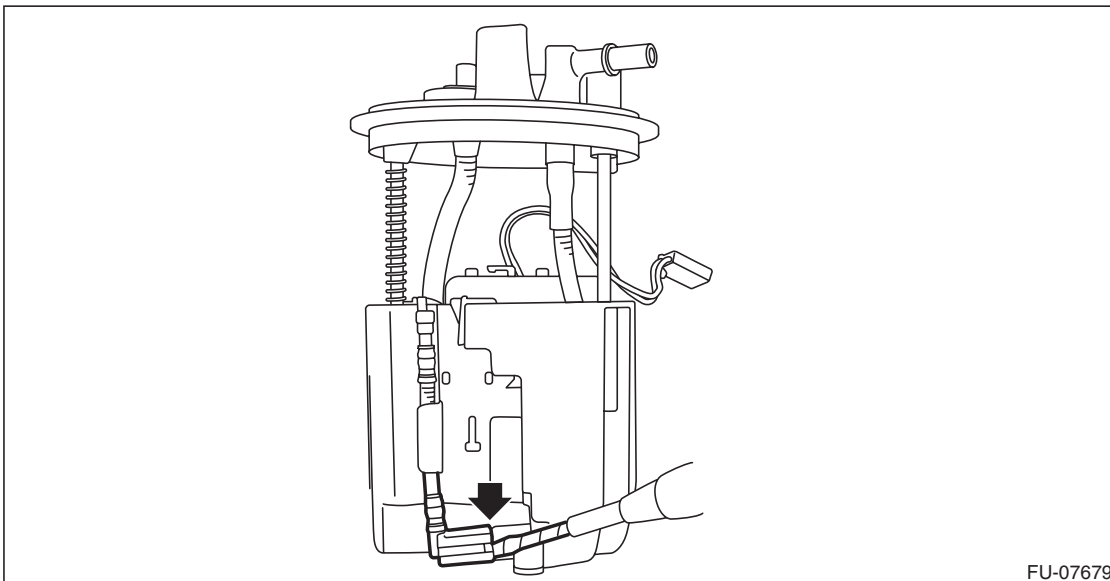


FU-07678

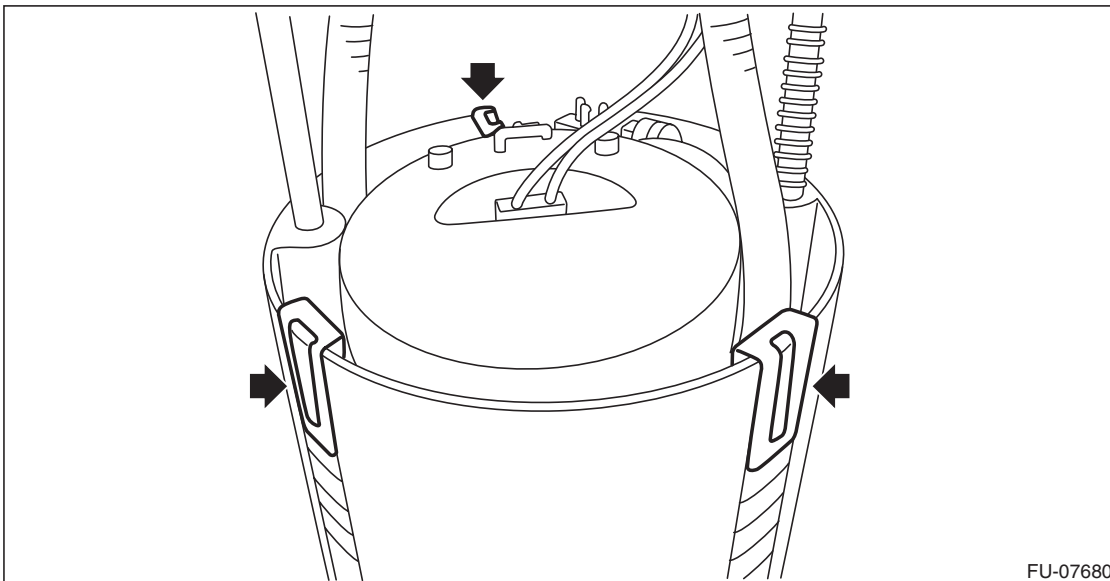
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

5) Release the claw using a flat tip screwdriver or similar tool wrapped with a protection tape, and remove the tube assembly from the fuel chamber assembly.



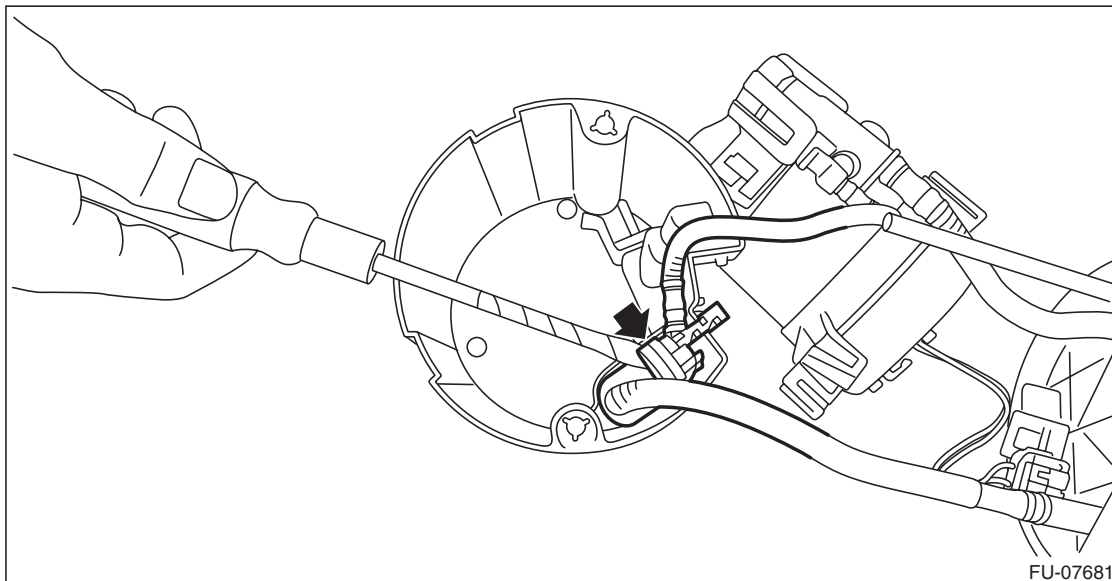
6) Release three claws on the fuel pump holder from the fuel chamber assembly, and raise the fuel filter assembly.



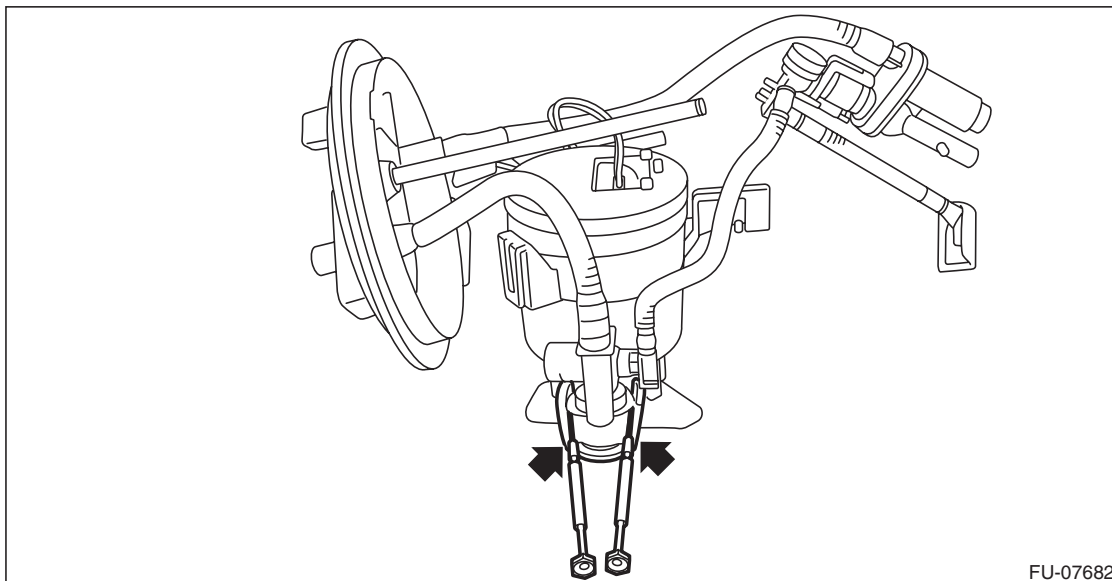
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

7) Using a flat tip screwdriver or similar tool wrapped with a protection tape, remove the tube assembly from the fuel chamber assembly, and separate the fuel filter assembly and fuel chamber assembly.



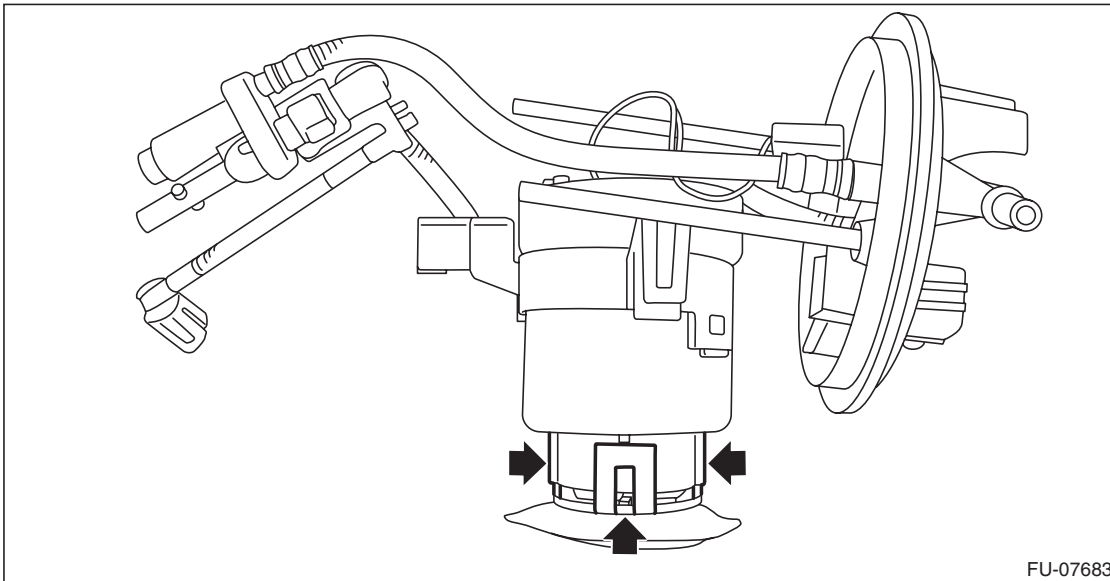
8) Using a precision driver or similar tool wrapped with a protection tape, expand the claws on the fuel pump.



Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

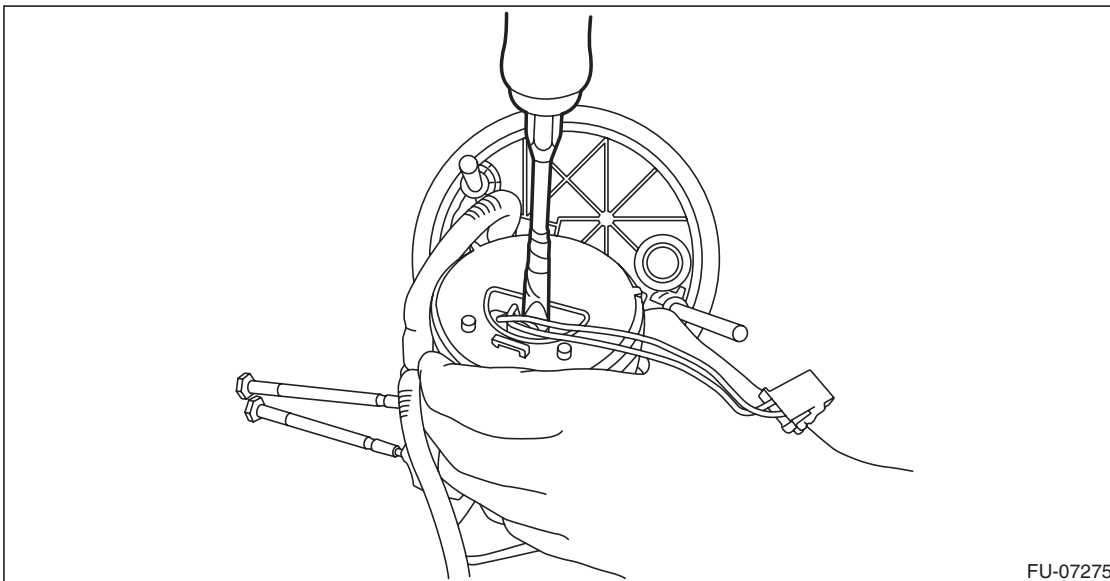
9) Release the claws on the fuel pump.



10) Using a flat tip screwdriver or similar tool wrapped with a protection tape, press on the fuel pump and remove the fuel pump together with the fuel pump holder from the fuel filter assembly.

CAUTION:

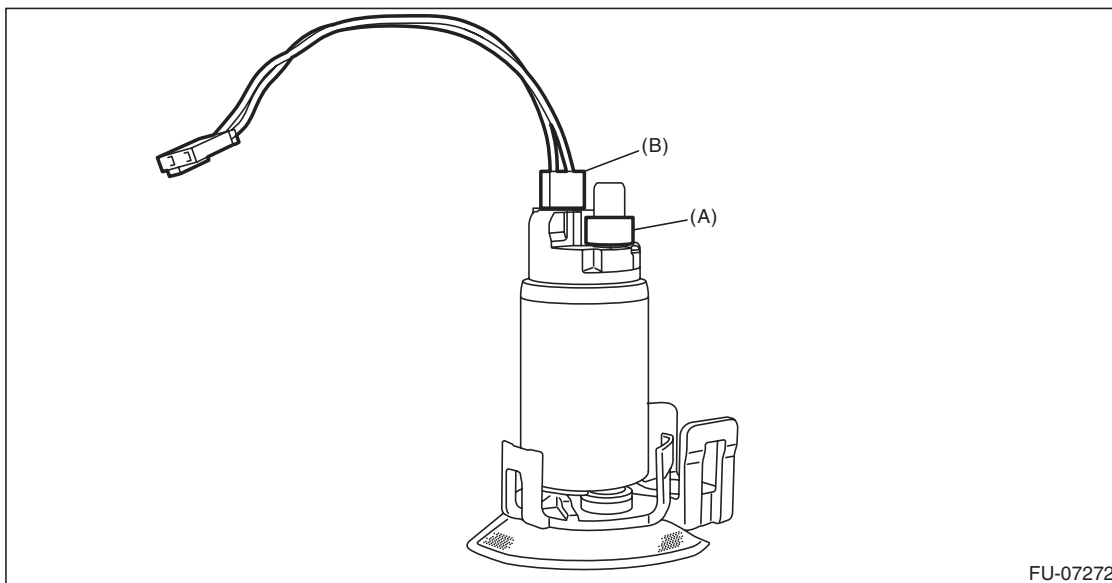
If O-rings remain on the fuel filter assembly side, carefully remove them with a precision screwdriver or similar tool wrapped with a protection tape.



Fuel Filter

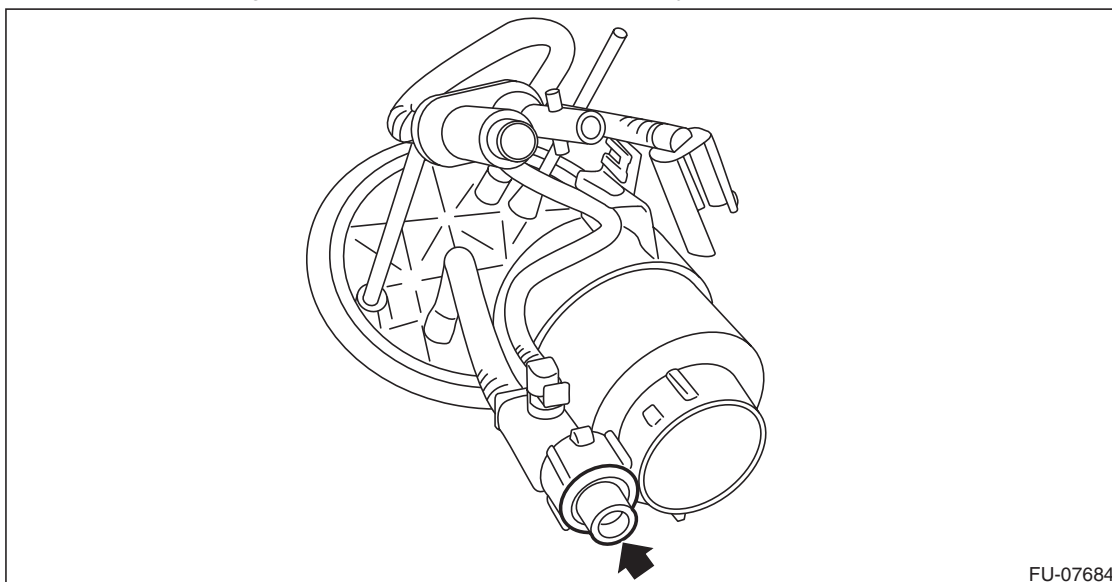
FUEL INJECTION (FUEL SYSTEMS)

- 11) Remove the spacer (A) and connector cable (B) from the fuel pump.



FU-07272

- 12) Remove the pressure regulator from the fuel filter assembly.

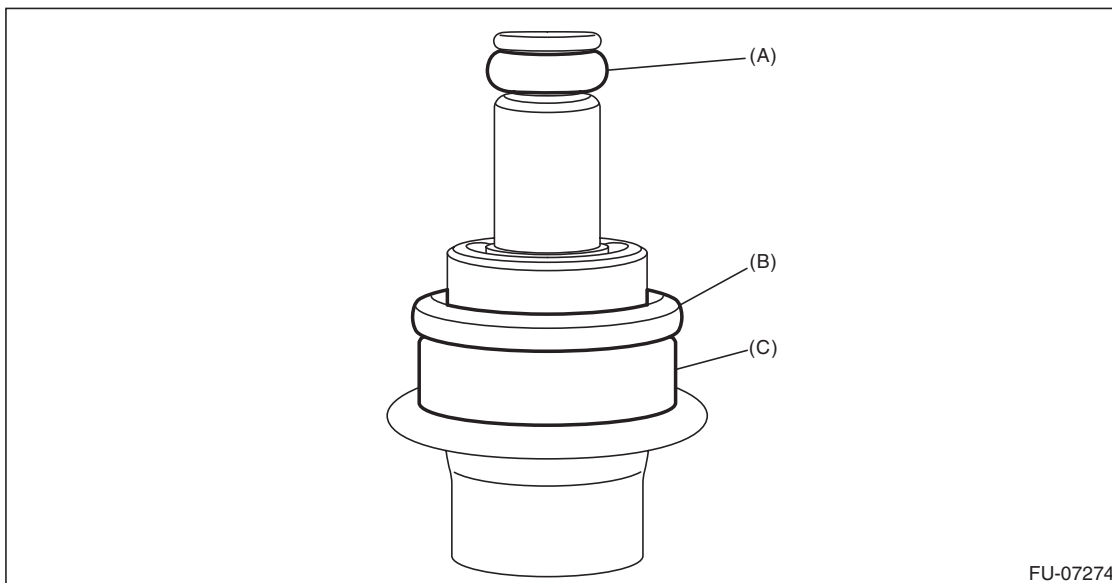


FU-07684

Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

13) Remove O-ring (A), O-ring (B), and backup ring (C) from the pressure regulator.

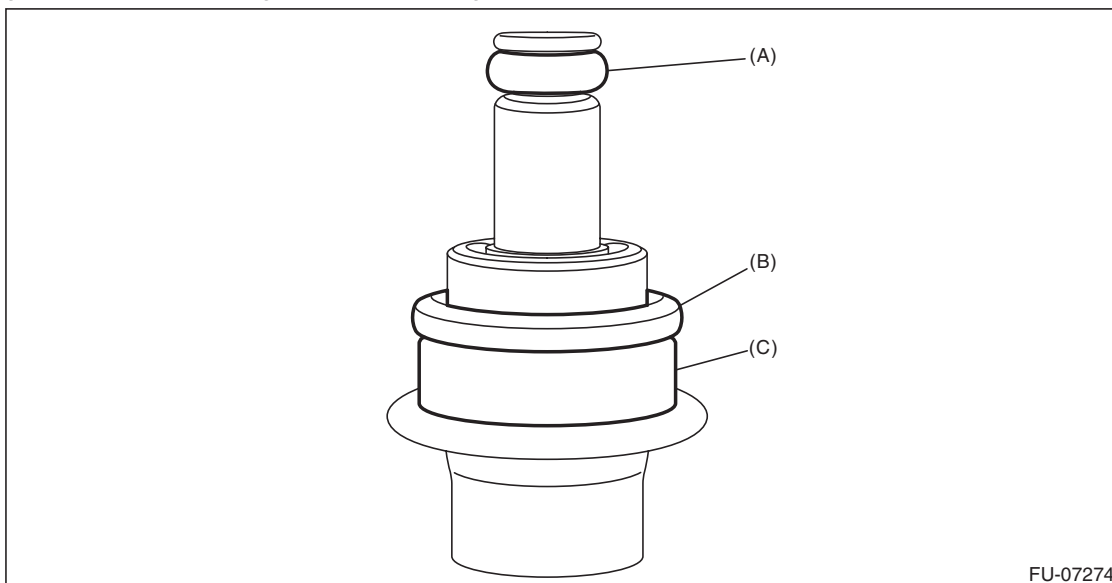


B: INSTALLATION

1) Install O-ring (A), O-ring (B), and backup ring (C) to the pressure regulator.

NOTE:

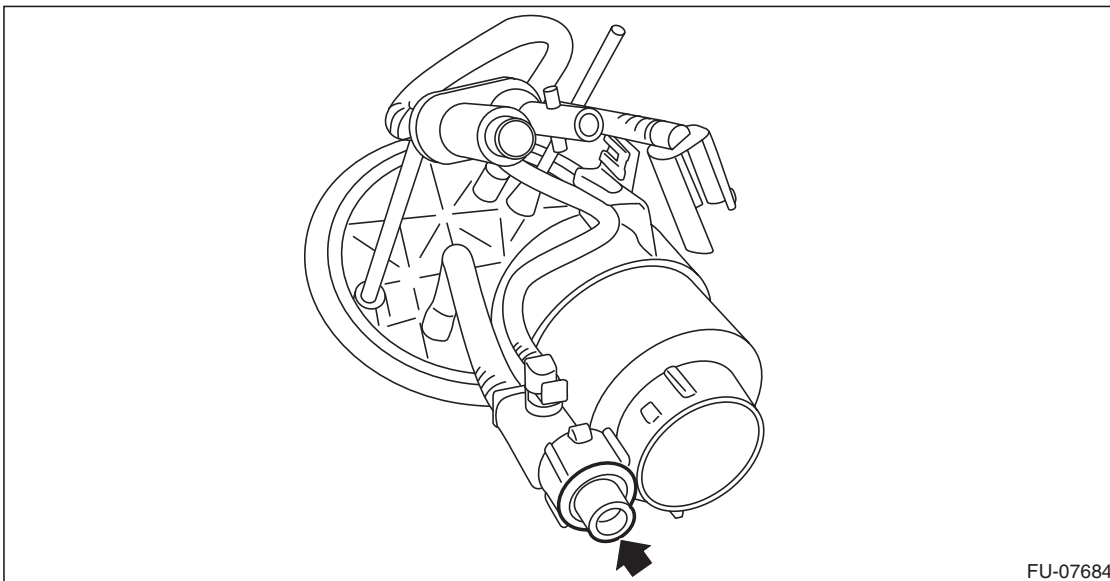
- Use new O-rings.
- Apply gasoline to the O-ring and backup ring.



Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

2) Install the pressure regulator to the fuel filter assembly.

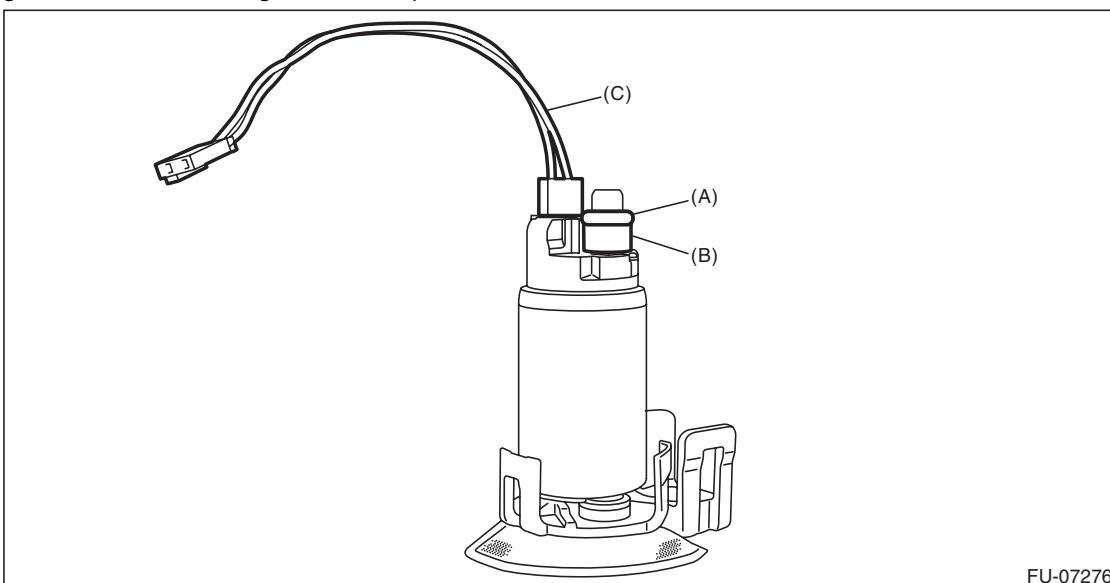


FU-07684

3) Install O-ring (A), spacer (B), and connector cable (C) to the fuel pump.

NOTE:

- Use new O-rings and the connector cable.
- Apply gasoline to the O-rings and the spacer.



FU-07276

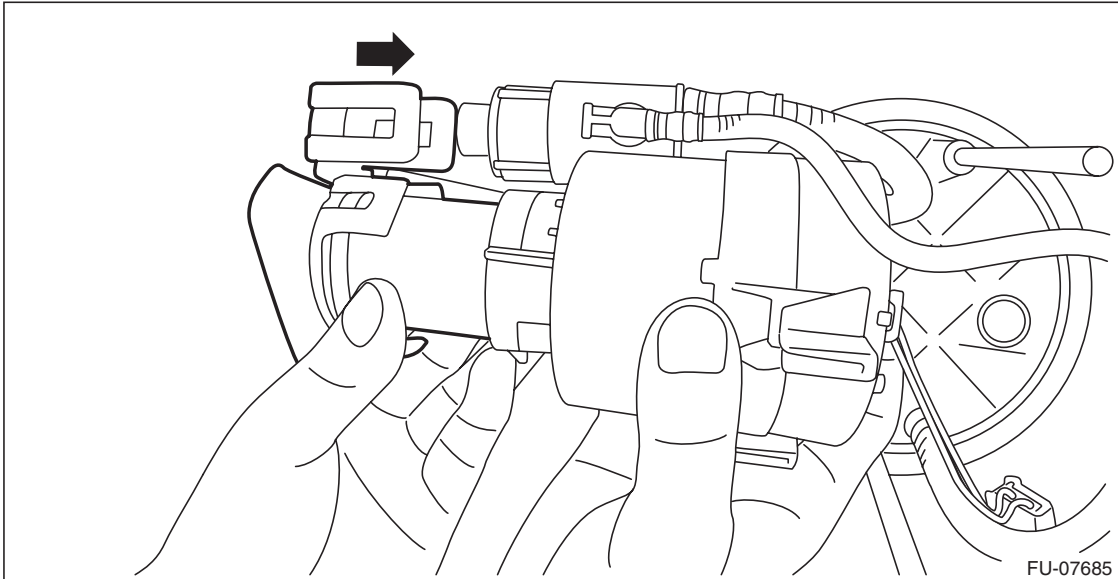
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

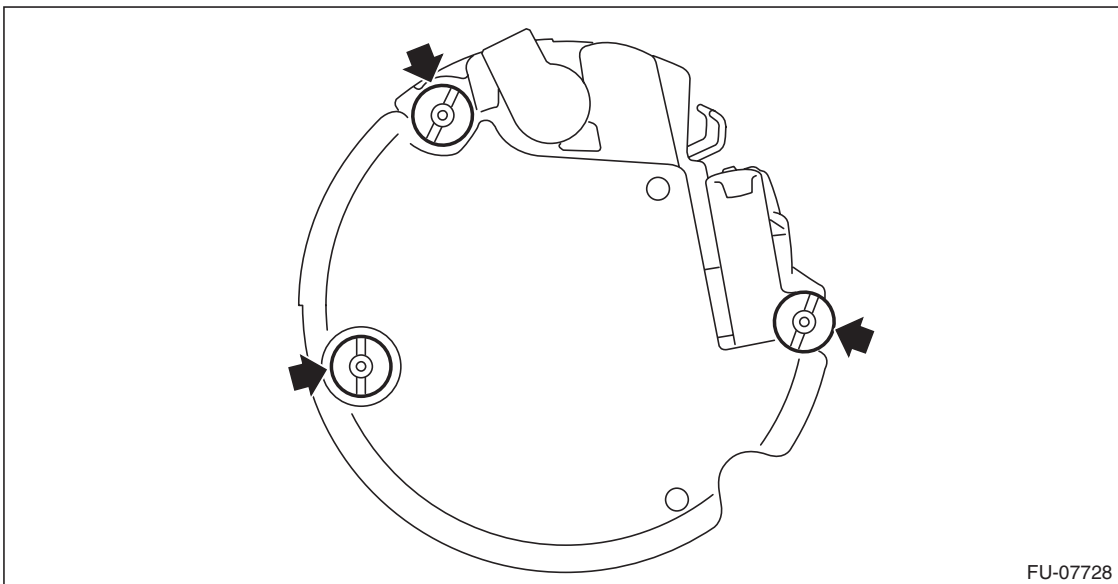
4) Install the fuel pump to the fuel filter assembly.

NOTE:

After installation, make sure five claws are correctly engaged in each position.



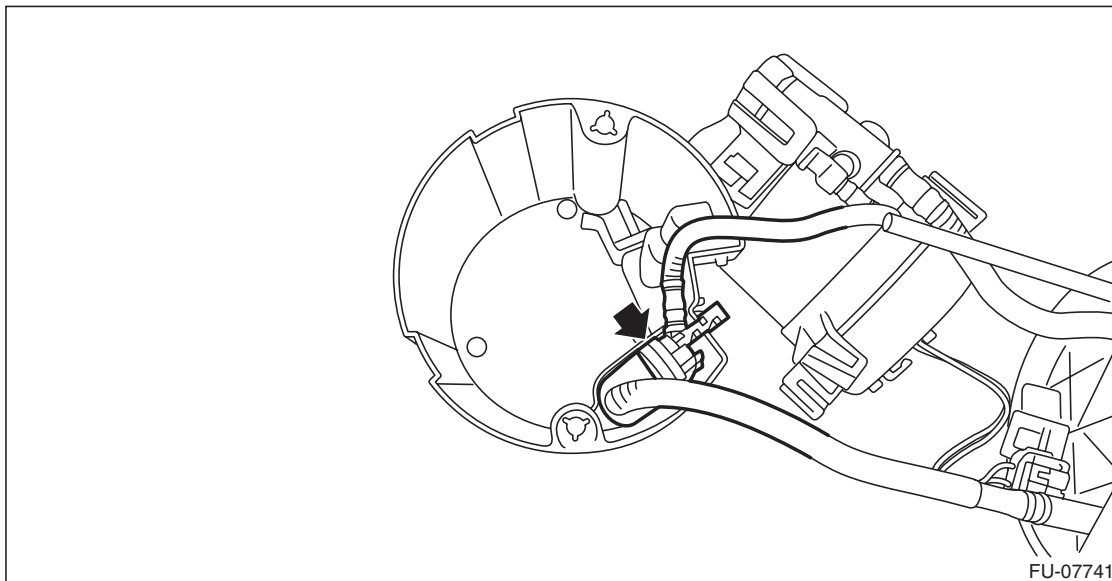
5) Check that the cushions of the fuel chamber assembly for dislocation. If any of them is dislocated, install a new cushion.



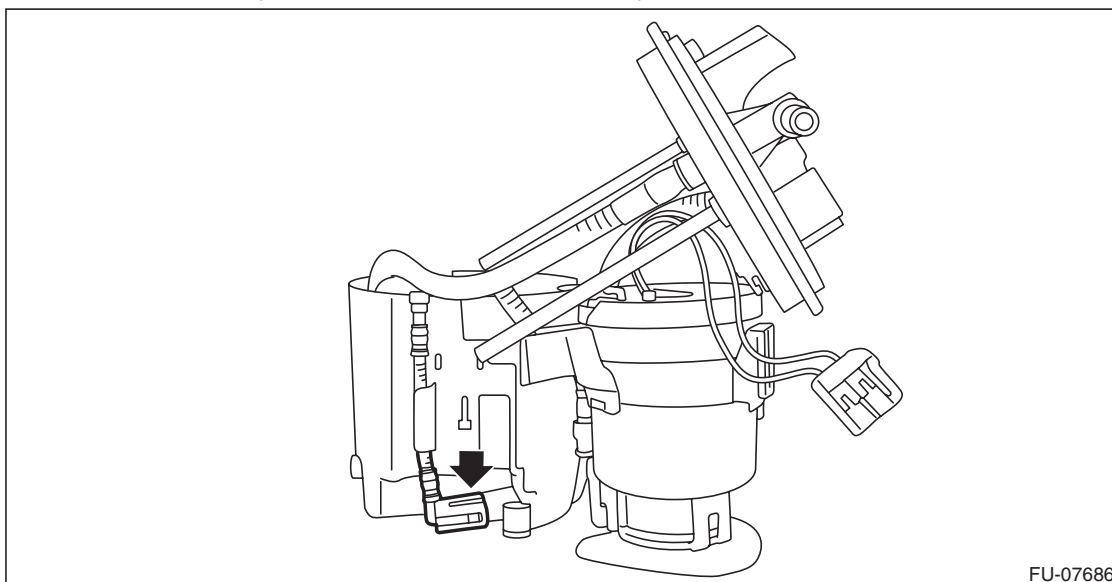
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

- 6) Slowly press in and install the tube assembly to the fuel chamber assembly until a clicking sound is heard.



- 7) Connect the tube assembly to the fuel chamber assembly.



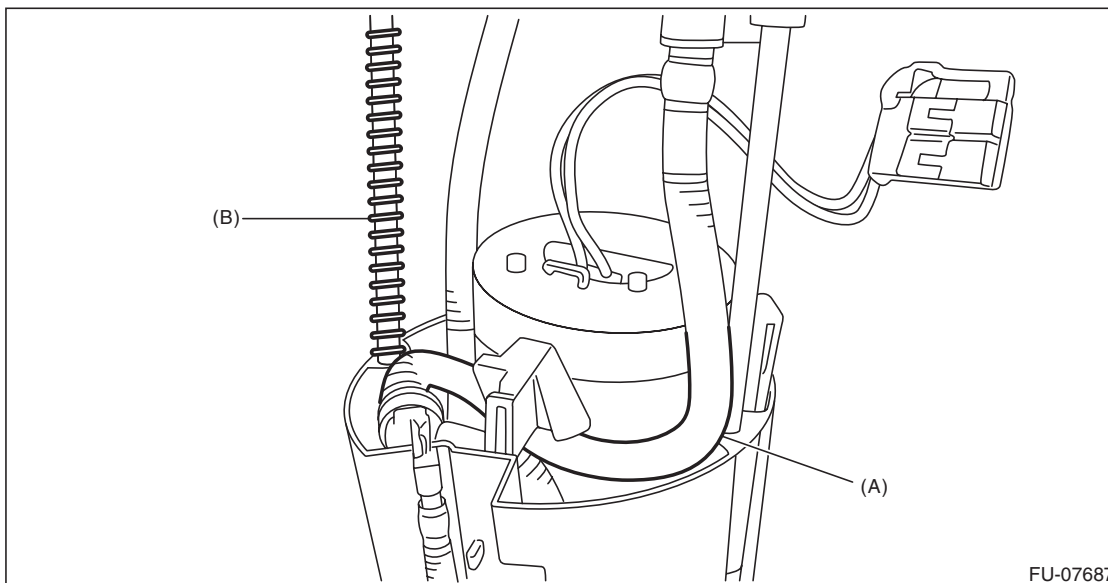
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

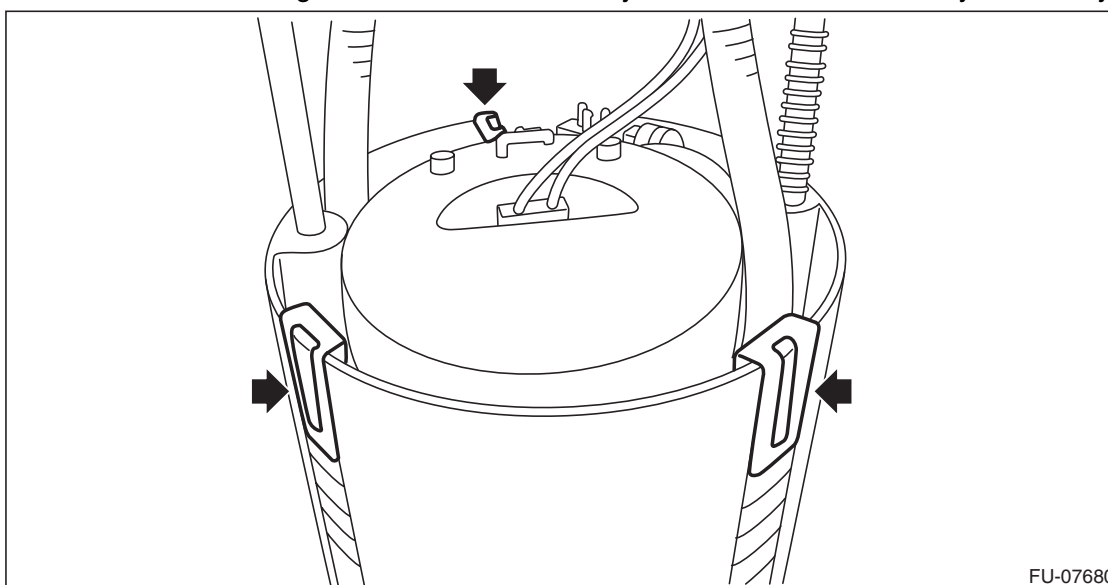
8) Install the fuel filter assembly to the fuel chamber assembly.

NOTE:

- Set the tube (A) and spring (B) for the fuel filter assembly as shown in the figure.



- Check that the claw connecting the fuel camber assembly and the fuel filter assembly is securely fastened.



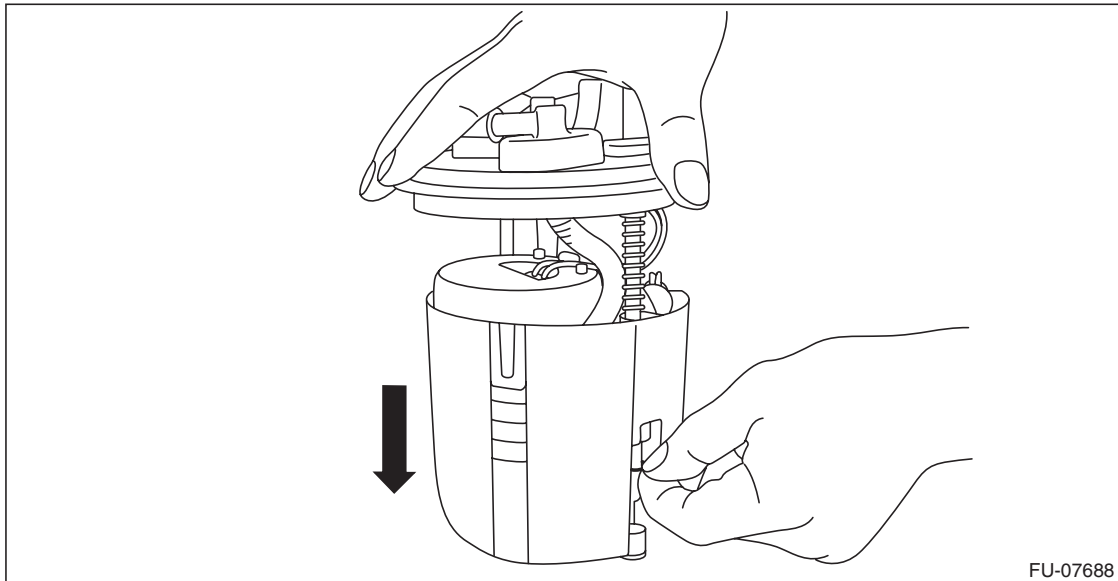
Fuel Filter

FUEL INJECTION (FUEL SYSTEMS)

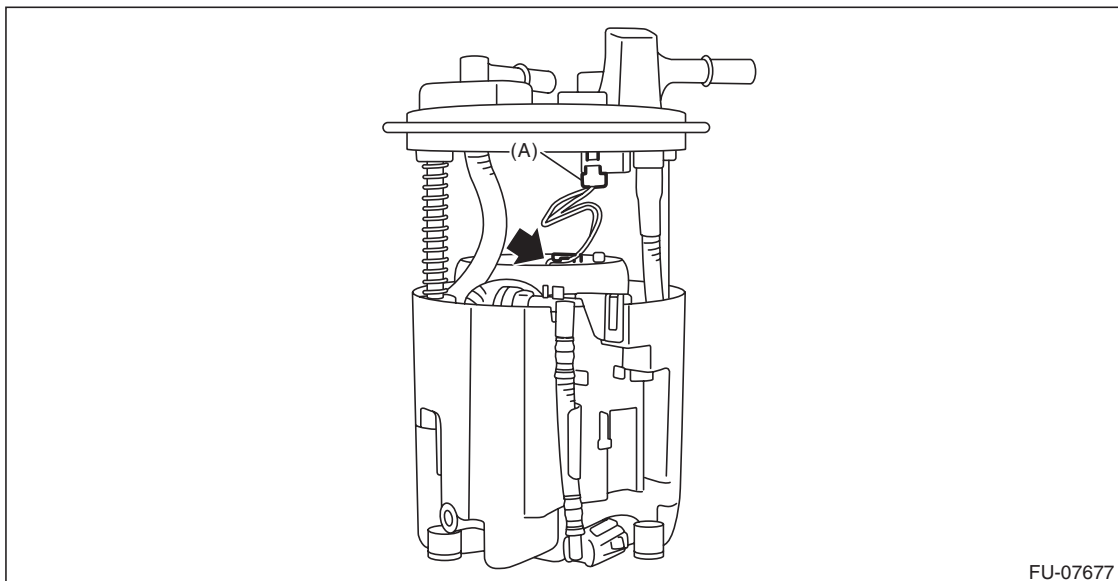
9) Push the fuel filter assembly in the direction of the arrow to compress, and attach the clip.

NOTE:

Use a new clip.



10) Secure the connector cable with the clip, and connect the connector (A) of the connector cable.



11) Install the fuel level sensor. <Ref. to FU(H4DO)-142, INSTALLATION, Fuel Level Sensor.>

12) Inspect the fuel level sensor. <Ref. to FU(H4DO)-143, INSPECTION, Fuel Level Sensor.>

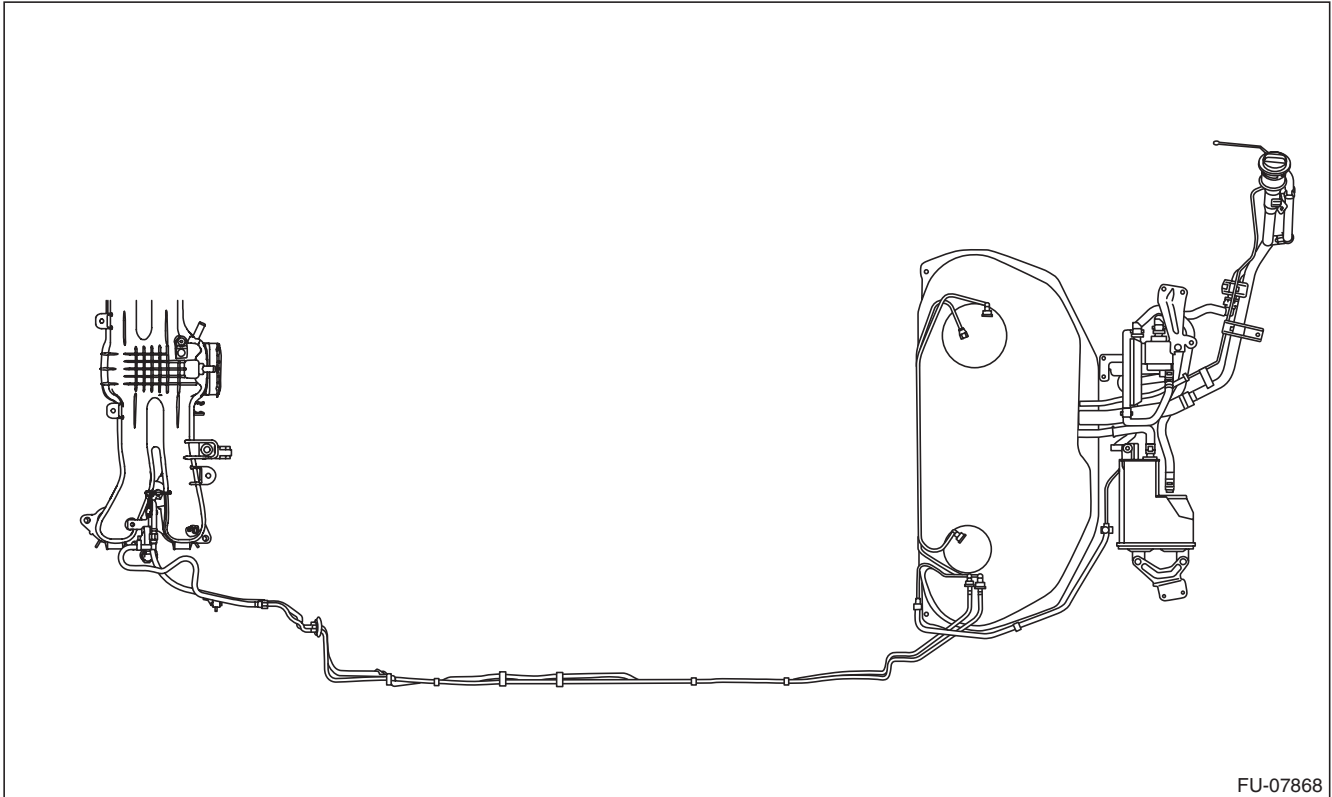
13) Install the fuel pump assembly. <Ref. to FU(H4DO)-138, INSTALLATION, Fuel Pump.>

Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

34. Fuel Delivery and Evaporation Lines

A: REMOVAL



WARNING:

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

CAUTION:

Be careful not to spill fuel.

- 1) Release the fuel pressure. <Ref. to FU(H4DO)-106, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Open the fuel filler lid and remove the fuel filler cap.
- 3) Remove the floor mat. <Ref. to EI-124, REMOVAL, Floor Mat.>

Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

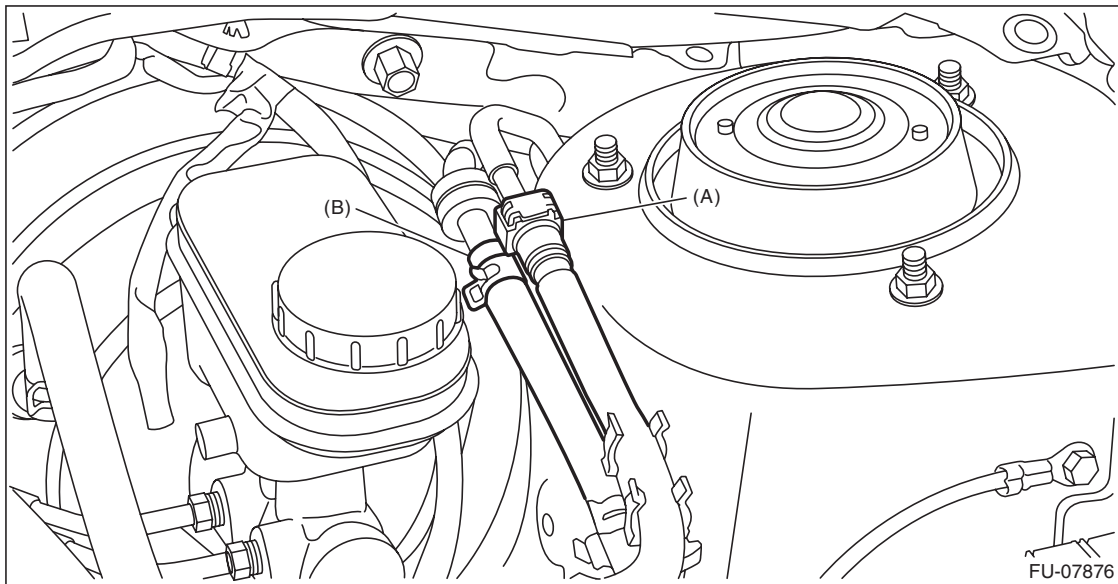
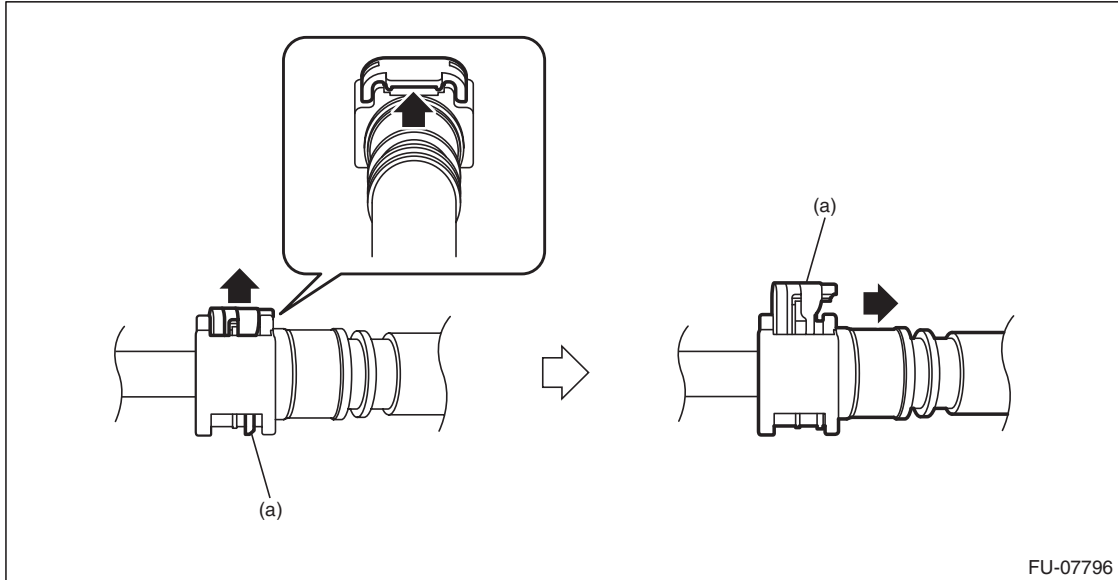
4) In the engine compartment, disconnect the fuel delivery tube (A) and evaporation hose (B).

CAUTION:

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

NOTE:

Disconnect the quick connector as shown in the figure.



5) Remove the fuel tank. <Ref. to FU(H4DO)-112, REMOVAL, Fuel Tank.>

Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

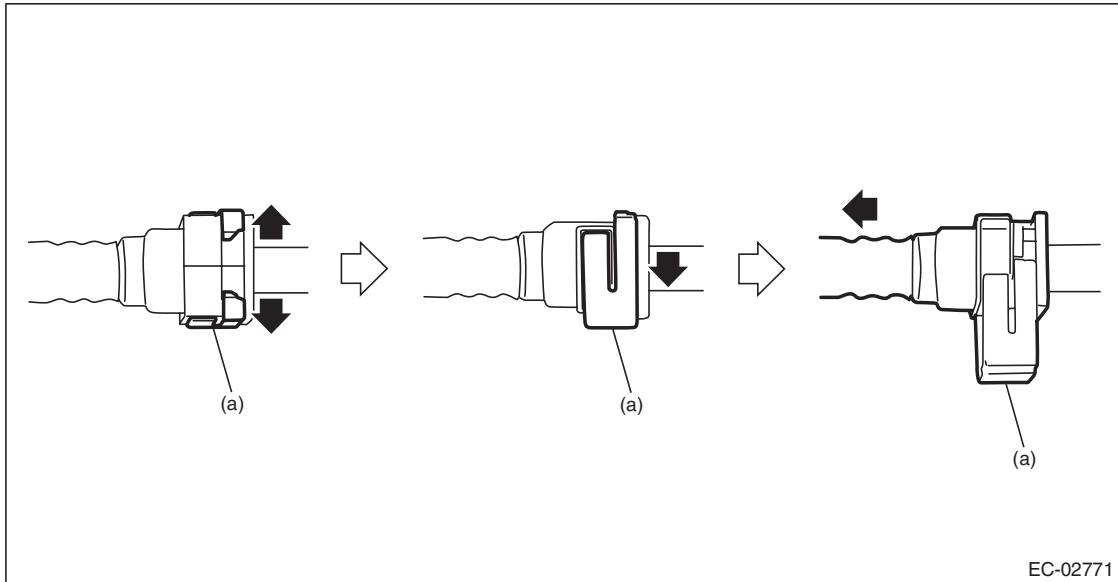
6) Disconnect the quick connector, and remove the fuel delivery tube and jet pump tube from the fuel tank.

CAUTION:

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

NOTE:

Disconnect the quick connector as shown in the figure.

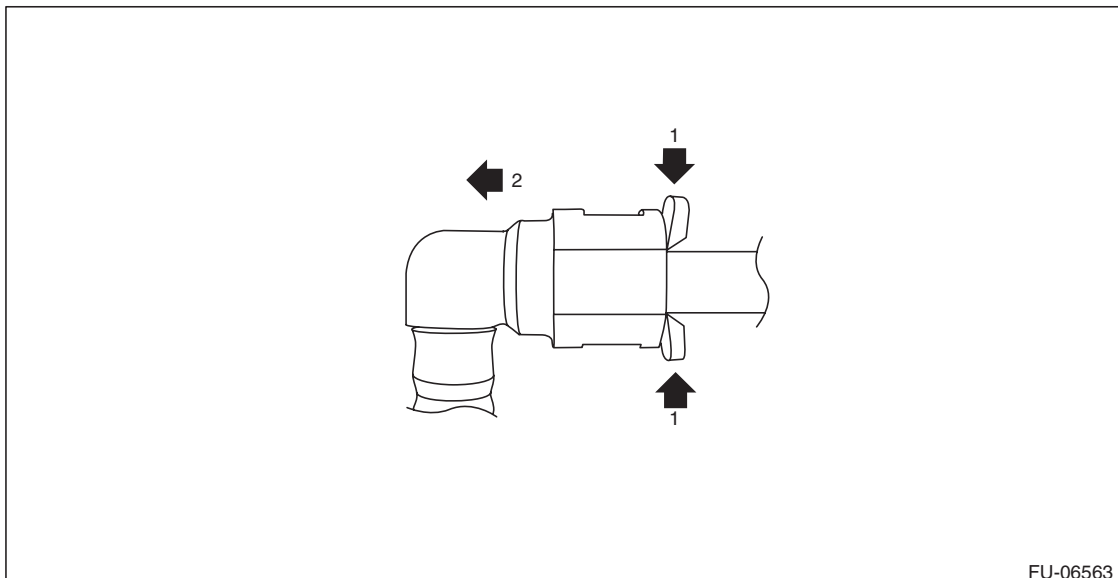


(a) Slider

7) Disconnect the quick connector and remove the purge pipe.

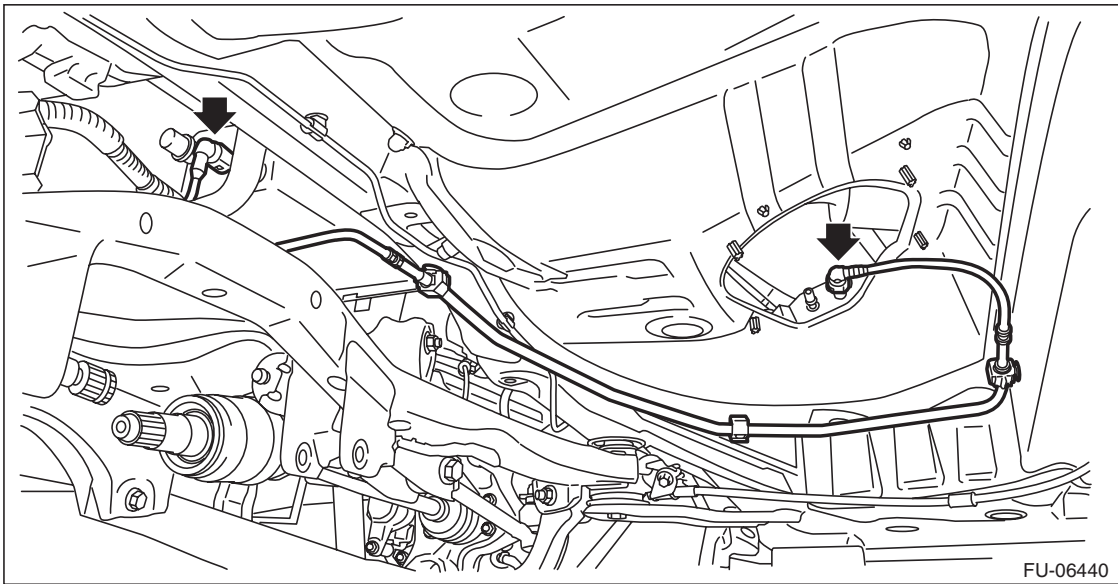
NOTE:

Disconnect the quick connector as shown in the figure.



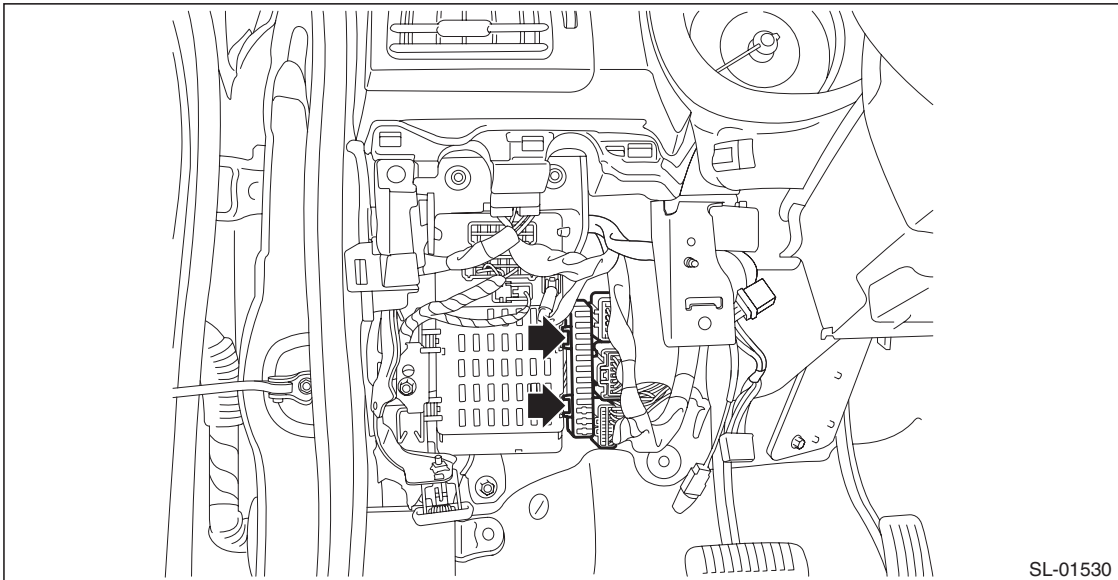
Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)



8) Remove the body integrated unit.

- (1) Remove the knee airbag module. <Ref. to AB-39, REMOVAL, Knee Airbag Module.>
- (2) Release the lock and remove the fuse holder from the relay & fuse box.

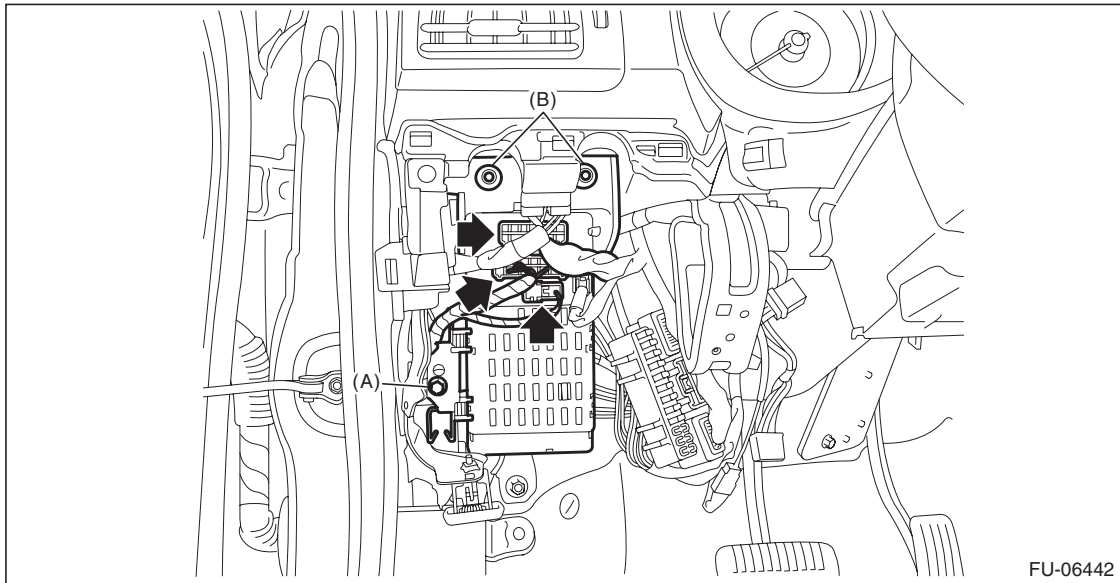


(3) Disconnect the connectors from the relay & fuse box.

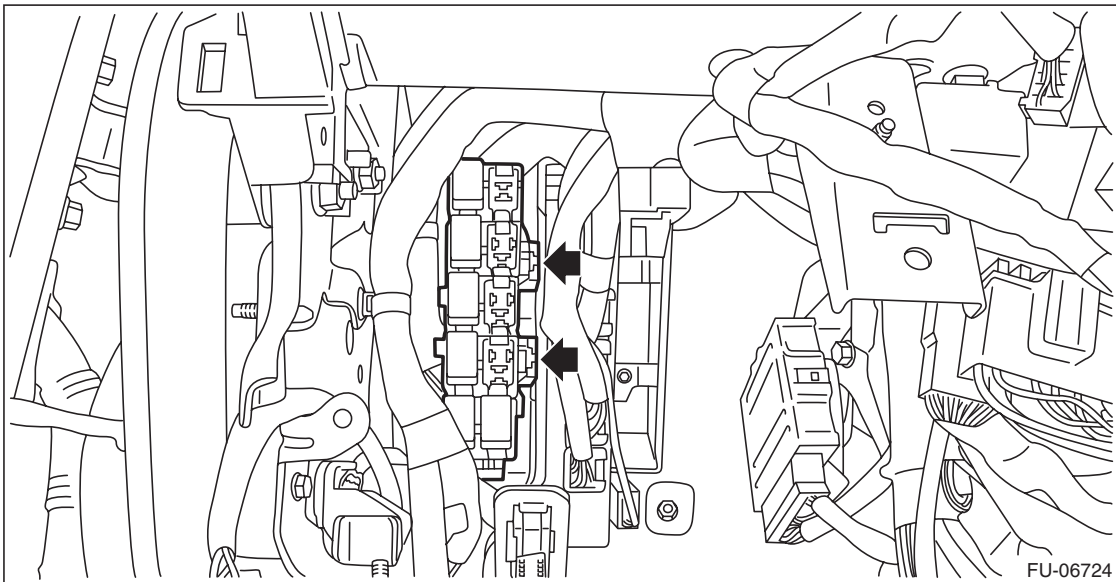
Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

- (4) Remove the bolts (A) and nuts (B), and remove the relay & fuse box.



- (5) Release the lock and remove the relay block.

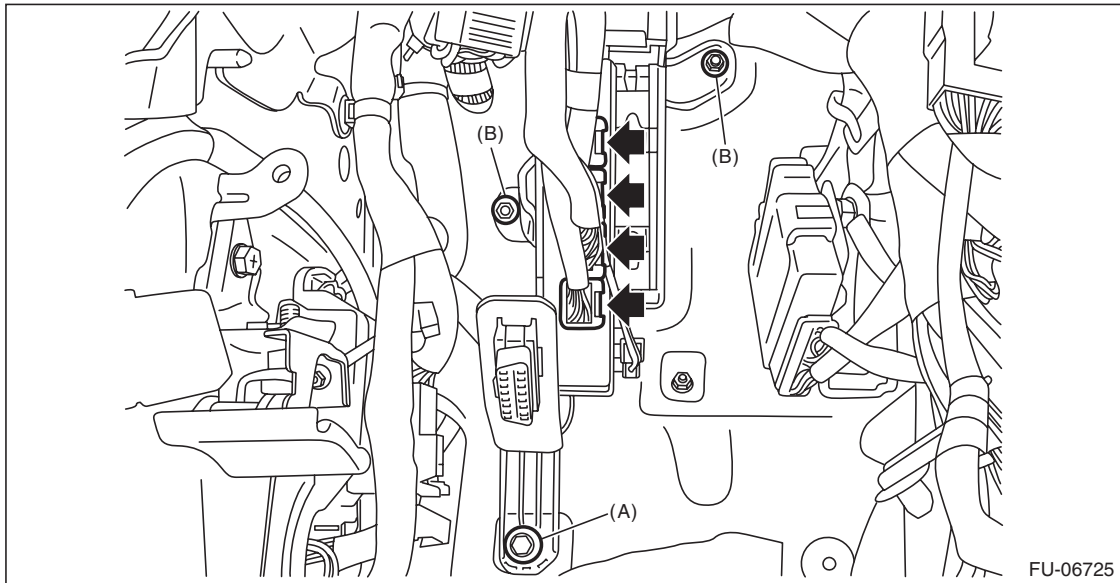


- (6) Disconnect the connector from body integrated unit.

Fuel Delivery and Evaporation Lines

FUEL INJECTION (FUEL SYSTEMS)

- (7) Remove the bolt (A) and nut (B), and remove the body integrated unit along with the bracket.



- 9) Remove the fuel pipe assembly from vehicle.

B: INSTALLATION

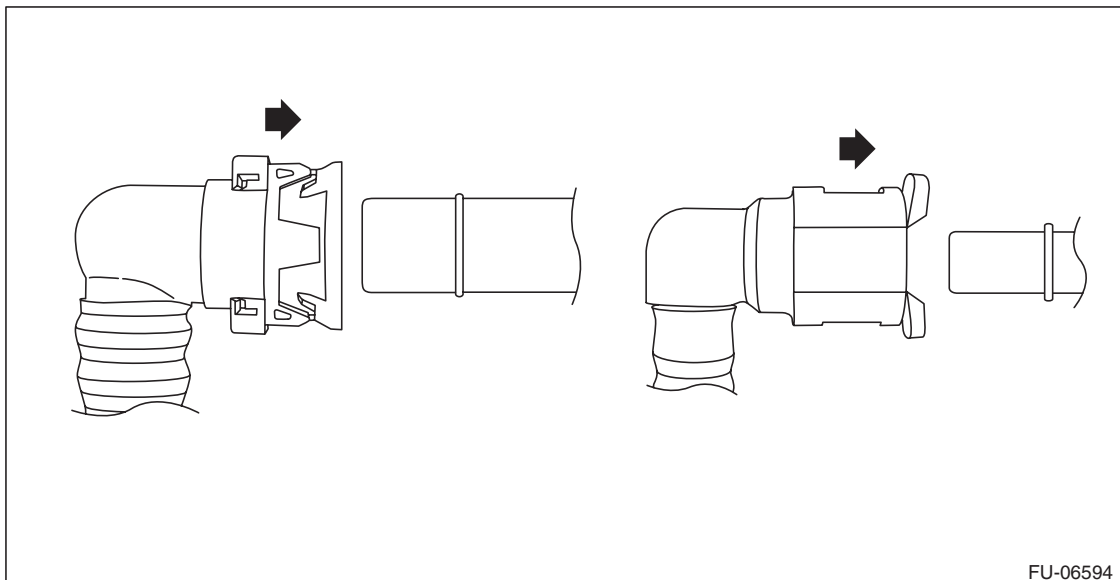
Install in the reverse order of removal while being careful of the following.

1. CONNECTING THE EVAPORATION LINE QUICK CONNECTOR

Connect the quick connector as shown in the figure.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- Make sure that the quick connector is securely connected.



Fuel Delivery and Evaporation Lines

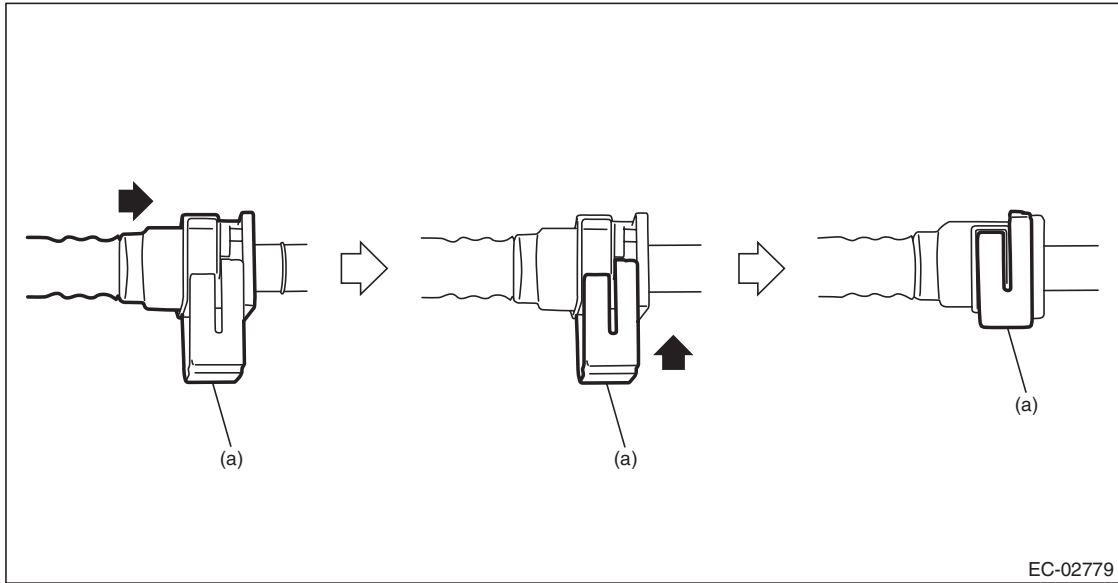
FUEL INJECTION (FUEL SYSTEMS)

2. CONNECTING THE FUEL LINE QUICK CONNECTOR

Connect the quick connector as shown in the figure.

CAUTION:

- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert the pipe all the way in before locking the slider.
- When it is difficult to lock the slider, check that the pipe is fully inserted.
- Make sure that the quick connector is securely connected.



(a) Slider

Fuel Delivery and Evaporation Lines

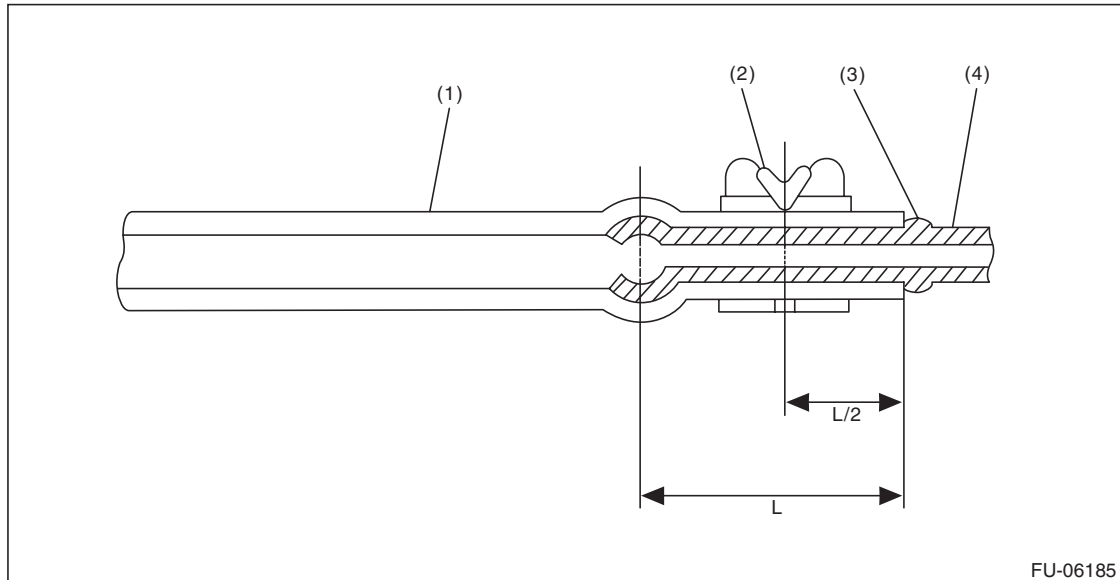
FUEL INJECTION (FUEL SYSTEMS)

3. EVAPORATION HOSE CONNECTION

Connect the evaporation hose by inserting it to the pipe until the hose reaches the spool or bump.

NOTE:

If there is no spool nor bump, connect the evaporation hose by inserting it at 28 mm (1.1 in) to the pipe.



(1) Hose

(3) Spool or bump

(4) Pipe

(2) Clip



Fuel Delivery and Evaporation Lines

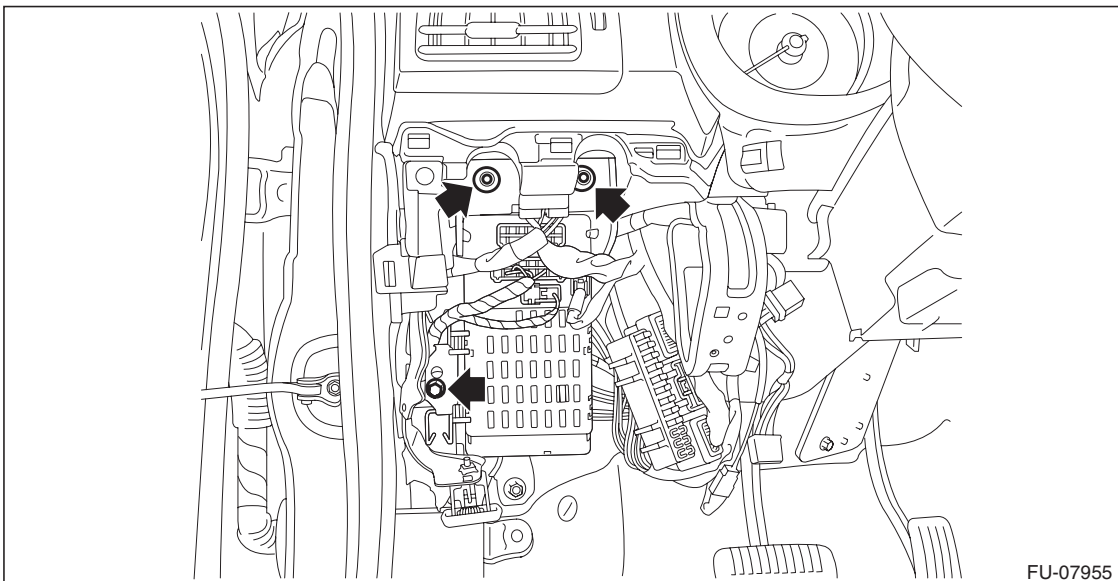
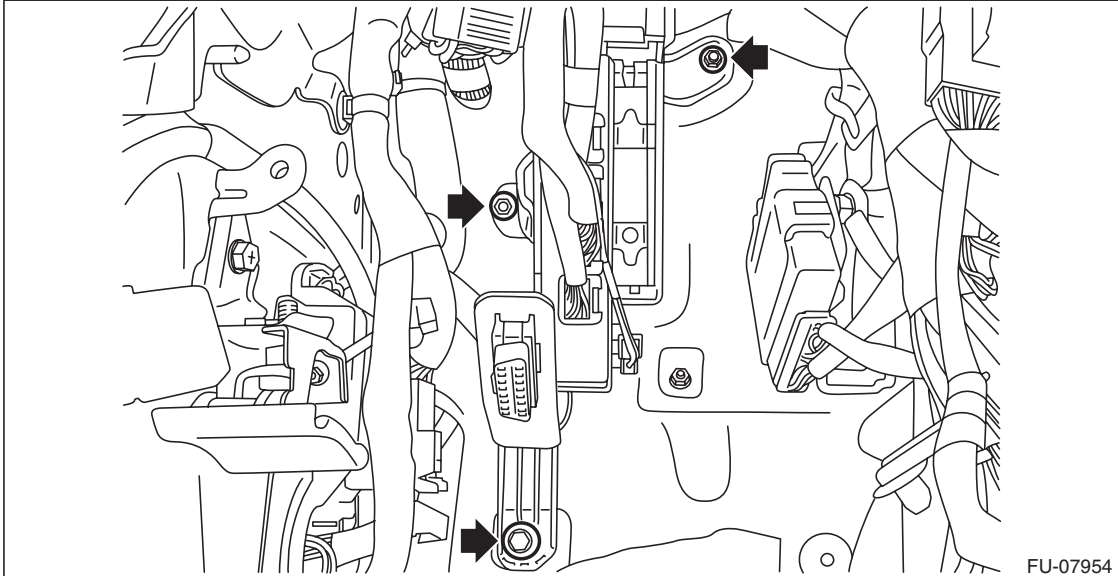
FUEL INJECTION (FUEL SYSTEMS)

4. BODY INTEGRATED UNIT INSTALLATION

Tighten the bolts and nuts in the figure to the torque specified below.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



C: INSPECTION

- 1) Check that the fuel pipe has no deformation, cracks or other damages.
- 2) Check that the hose and tube have no cracks, damage or loose part.

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)

35. Fuel System Trouble in General

A: INSPECTION

Trouble	Possible cause	Corrective action
Insufficient fuel supply to fuel injector	a. Fuel pump does not operate.	
	○ Defective terminal contact	Inspect contact, especially ground, and tighten it securely.
	○ Trouble in electromagnetic or electronic circuit parts	Replace the faulty parts.
	b. Decline of fuel pump function	Replace the fuel pump.
	c. Clogged fuel filter	Replace the fuel filter. Clean or replace the fuel tank if necessary.
	d. Clogged or bent fuel line pipe, hose or tube	Clean, correct or replace the fuel line pipe, hose or tube.
	e. Air is mixed in fuel system.	Check the fuel line connections, correct or replace the defective part.
	f. Damaged diaphragm of pressure regulator	Replace the fuel filter assembly.
Leakage or blow out of fuel	a. Loose connections of fuel line pipe, hose or tube	Check the fuel line connections, correct or replace the defective part.
	b. Cracked fuel line pipe, hose or tube	Replace the fuel line pipe, hose or tube.
	c. Cracked fuel tank or defective welding part	Replace the fuel tank.
	d. Clogged or bent fuel line pipe, hose or tube	Clean, correct or replace the fuel line pipe, hose or tube.
Gasoline smell inside of compartment	a. Loose connections of fuel line pipe, hose or tube	Check the fuel line connections, correct or replace the defective part.
	b. Defective gasket of fuel saucer or fuel filler pipe assembly	Correct or replace the gasket.
	c. Defective canister	Replace the canister.
Defective fuel gauge	a. Defective operation of fuel level sensor	Replace the fuel level sensor.
	b. Defective operation of combination meter <Ref. to IDI(diag)-2, COMBINATION METER, PROCEDURE, Basic Diagnostic Procedure.>	Replace the combination meter.
	c. Defective operation of integrated unit	Replace the integrated unit.
Noise	a. Large operation noise or vibration of fuel pump	Replace the fuel pump.

NOTE:

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

Fuel System Trouble in General

FUEL INJECTION (FUEL SYSTEMS)
