

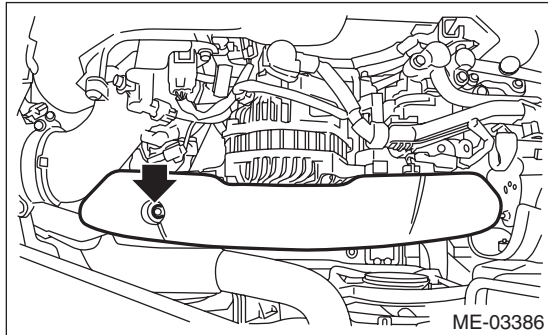
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

### 3. Intake Manifold

#### A: REMOVAL

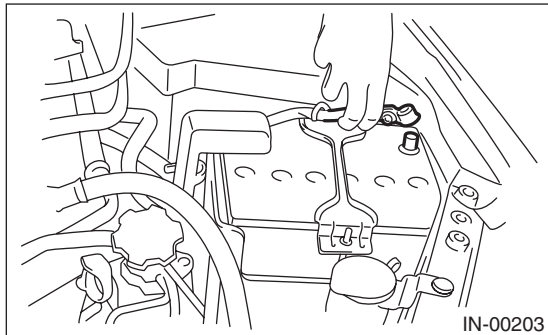
1) Remove the V-belt covers.



2) Collect the refrigerant from A/C system. <Ref. to AC-19, PROCEDURE, Refrigerant Recovery Procedure.>

3) Release the fuel pressure. <Ref. to FU(w/o STI)-65, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>

4) Disconnect the ground cable from battery.



5) Open the fuel filler lid and remove the fuel filler cap.

6) Lift up the vehicle.

7) Remove the under cover. <Ref. to EI-28, REMOVAL, Front Under Cover.>

8) Drain approximately 3.0 L (3.2 US qt, 2.6 Imp qt) of coolant. <Ref. to CO(w/o STI)-13, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

9) Remove the air intake duct and air cleaner case. <Ref. to IN(w/o STI)-10, REMOVAL, Air Intake Duct.> <Ref. to IN(w/o STI)-8, REMOVAL, Air Cleaner Case.>

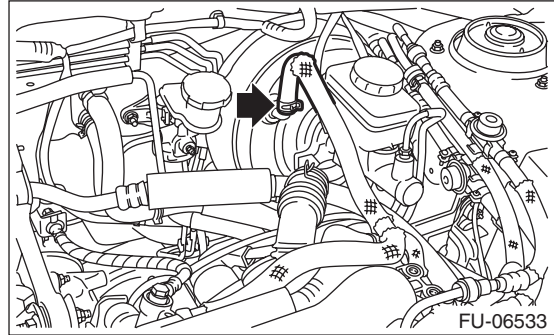
10) Remove the intercooler. <Ref. to IN(w/o STI)-12, REMOVAL, Intercooler.>

11) Remove the generator. <Ref. to SC(STI)-21, REMOVAL, Generator.>

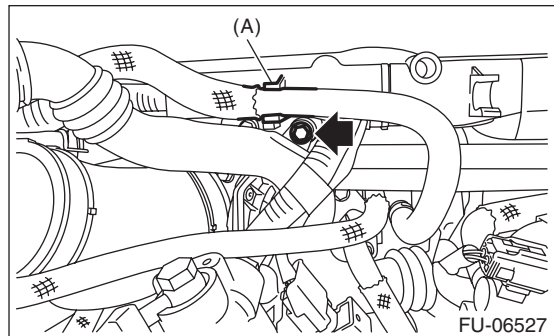
12) Remove the coolant filler tank. <Ref. to CO(w/o STI)-28, REMOVAL, Coolant Filler Tank.>

13) Disconnect the A/C pressure hoses from A/C compressor. <Ref. to AC-41, REMOVAL, Hose and Pipe.>

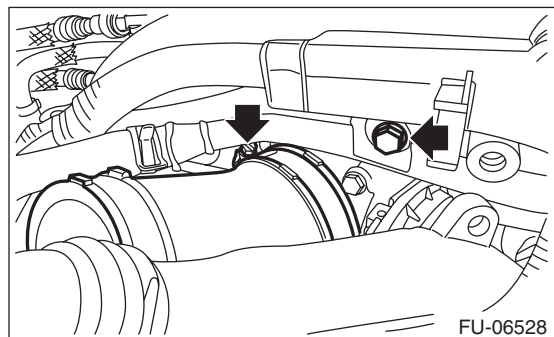
14) Disconnect the brake booster vacuum hose.



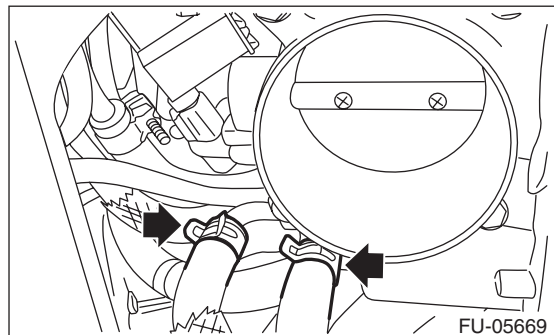
15) Remove the brake booster vacuum hose from the clip (A), and remove the bolts securing the air bypass pipe to the intake manifold.



16) Remove the bolts securing the PCV pipe assembly to the intake manifold, and remove the intake duct from the throttle body.



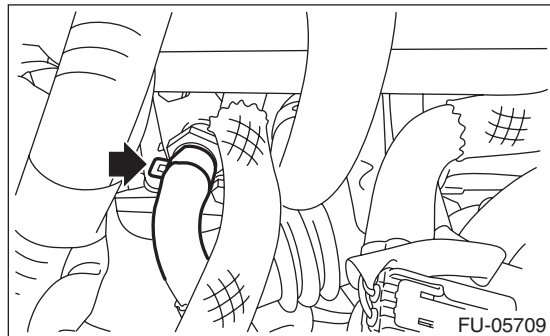
17) Disconnect the engine coolant hose from throttle body.



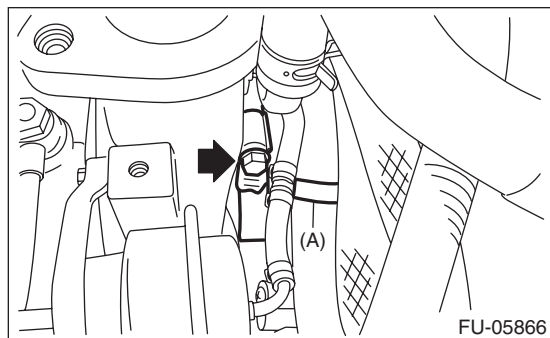
# Intake Manifold

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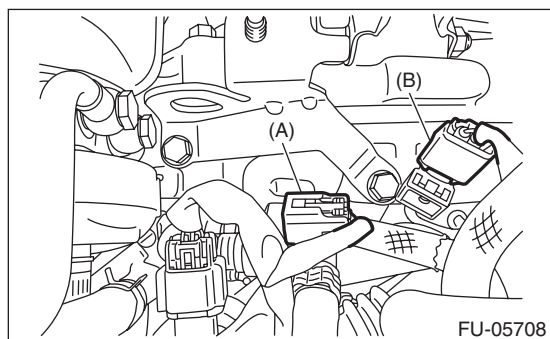
18) Disconnect the vacuum hose from nipple.



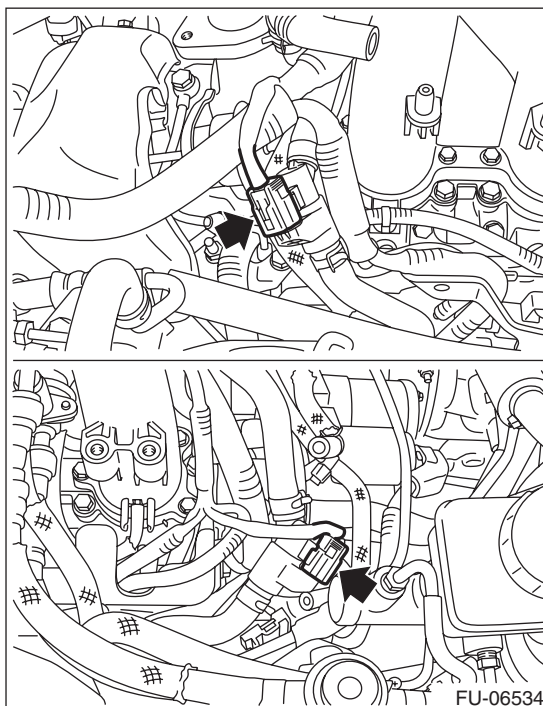
19) Disconnect the air control hose (A) from the waste gate actuator, and loosen the clamp which holds the intake duct to the turbocharger.



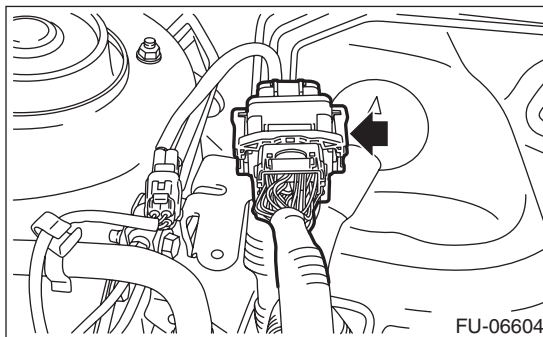
20) Disconnect the connector (A) from the PCV hose assembly A and the connector (B) from the knock sensor.



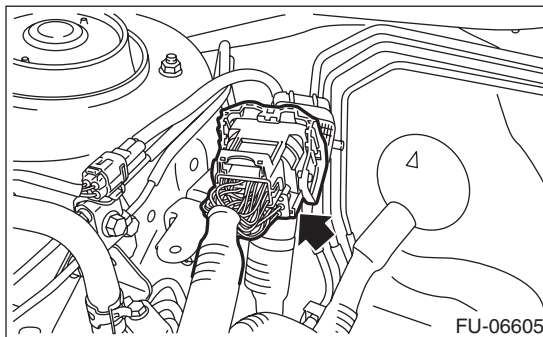
21) Disconnect the connector from the PCV hose assembly B and PCV hose assembly C.



22) Disconnect the bulkhead harness connectors from the engine harness connectors.



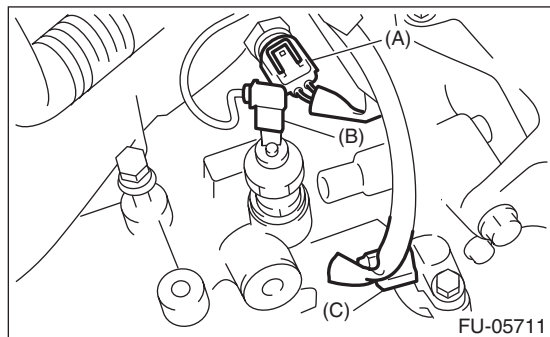
23) Remove the engine harness connector from the engine harness bracket.



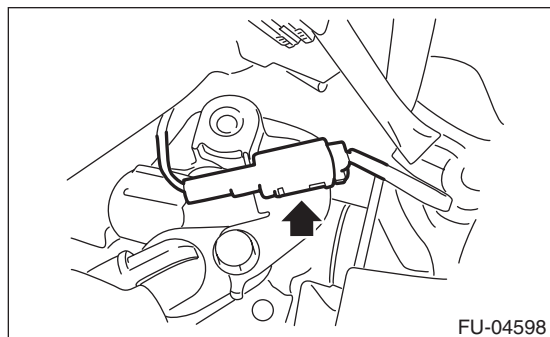
## Intake Manifold

### FUEL INJECTION (FUEL SYSTEMS)

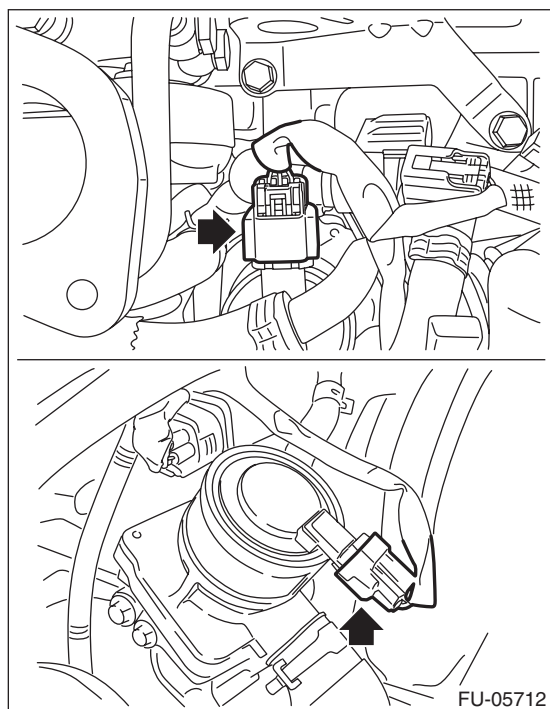
24) Disconnect the connector (A) from the engine coolant temperature sensor, connector (B) from the oil pressure switch, and connector (C) from the crankshaft position sensor.



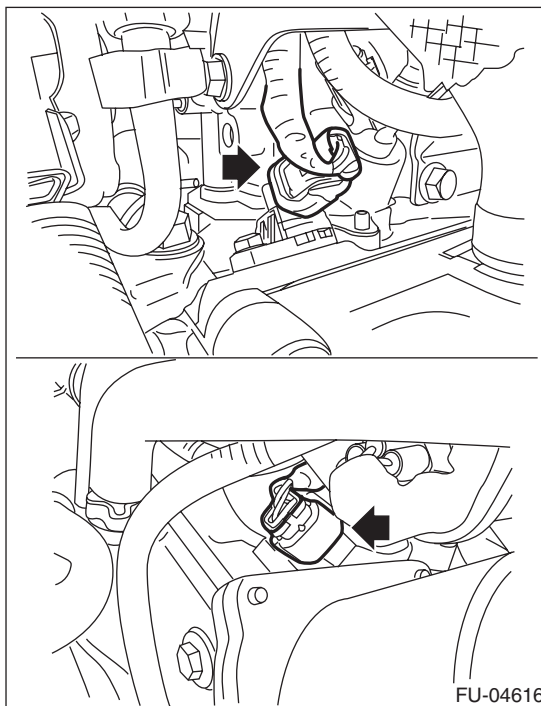
25) Disconnect the connector from power steering pump switch.



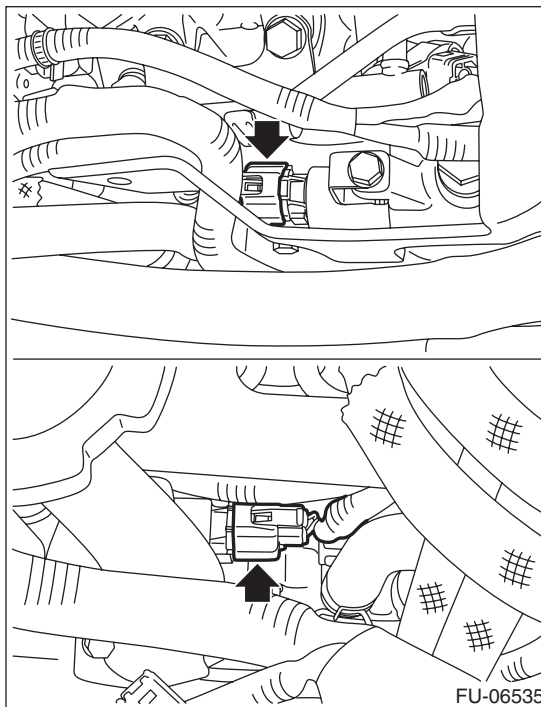
26) Disconnect the connector from the secondary air combination valve.



27) Disconnect the connector from camshaft position sensor.



28) Disconnect the connector from the oil flow control solenoid valve.

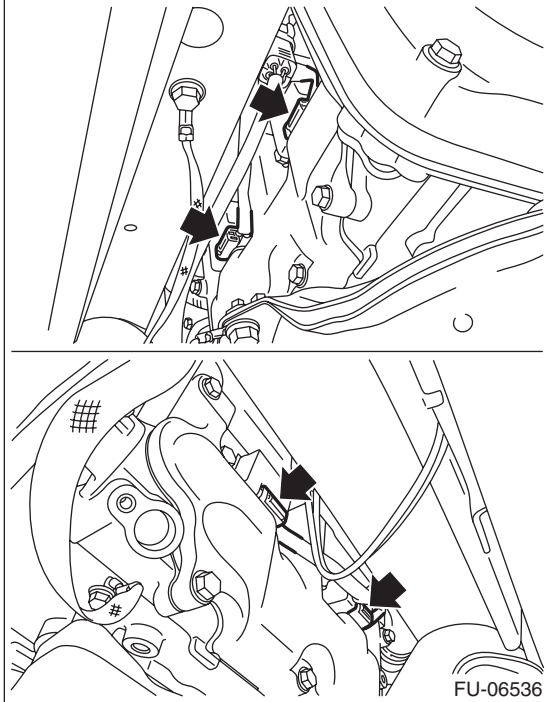


29) Lift up the vehicle.

# Intake Manifold

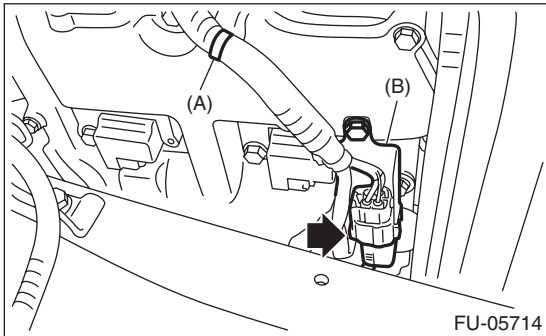
## FUEL INJECTION (FUEL SYSTEMS)

30) Disconnect the connector from ignition coil.



31) Lower the vehicle.

32) Disconnect the connector from the front oxygen (A/F) sensor, and remove the clip (A) and stay (B) which hold the engine harness to the rocker cover RH.

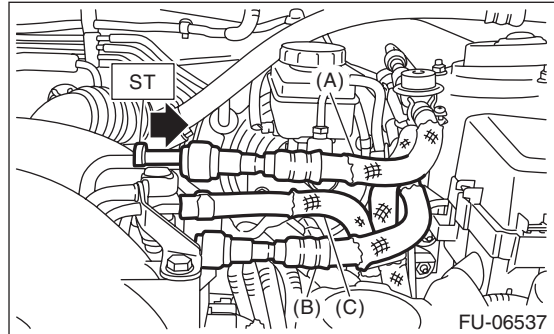


33) Attach ST to the fuel delivery pipe and push ST in the direction of arrow mark to disconnect the fuel delivery hose.

ST 42099AE000 QUICK CONNECTOR RELEASE

### CAUTION:

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



(A) Fuel delivery hose

(B) Fuel return hose

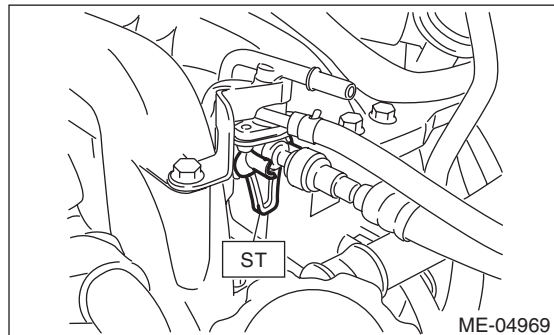
(C) Evaporation hose

34) Disconnect the fuel return hose using the ST.  
ST 18371AA000 CONNECTOR REMOVER

### CAUTION:

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

(1) Attach ST to the fuel return pipe as shown in the figure.

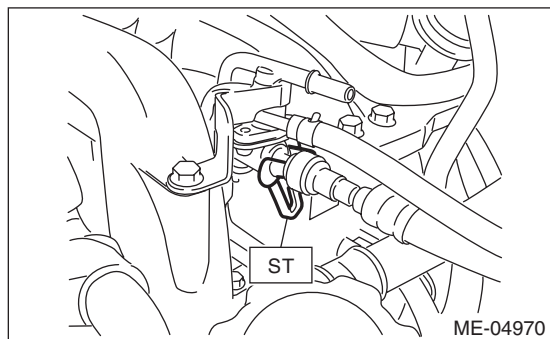




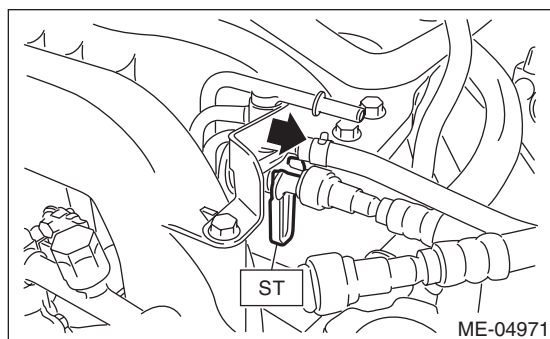
## Intake Manifold

### FUEL INJECTION (FUEL SYSTEMS)

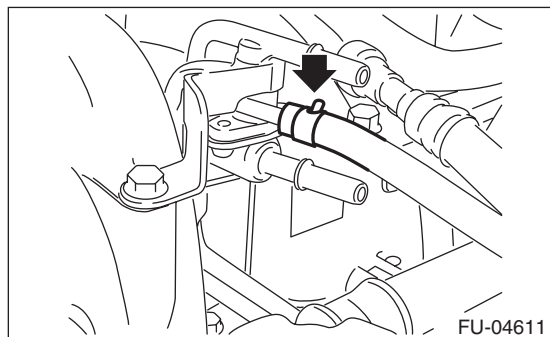
(2) Insert the front side of ST into the quick connector.



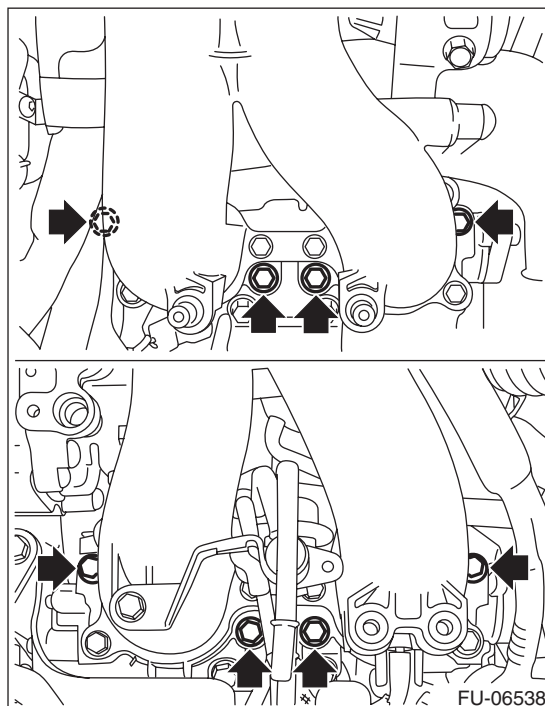
(3) Insert the back side of ST into the quick connector and push ST in the direction of arrow mark to disconnect the fuel return hose.



35) Remove the clip and disconnect the evaporation hose from the fuel pipe.



36) Remove the intake manifold from cylinder head.



## B: INSTALLATION

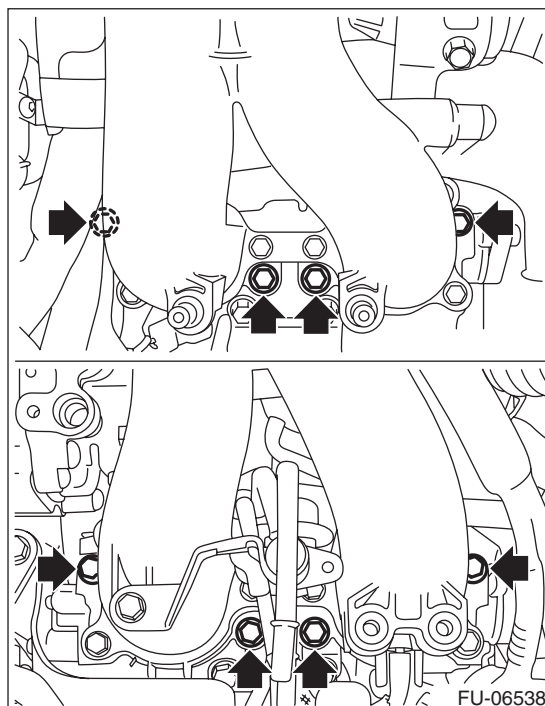
1) Install the intake manifold onto cylinder heads.

NOTE:

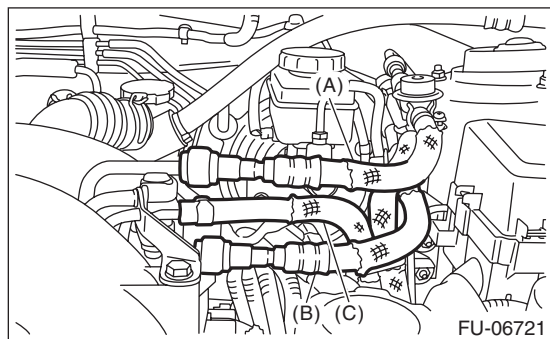
Use a new gasket.

**Tightening torque:**

**25 N·m (2.5 kgf-m, 18.4 ft-lb)**



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

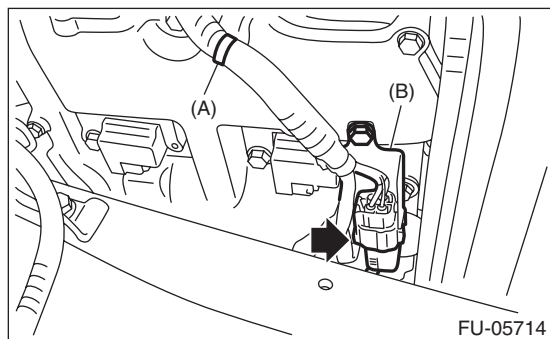


- (A) Fuel delivery hose
- (B) Fuel return hose
- (C) Evaporation hose

3) Connect the front oxygen (A/F) sensor connector, and secure the engine harness to the rocker cover RH with clip (A) and stay (B).

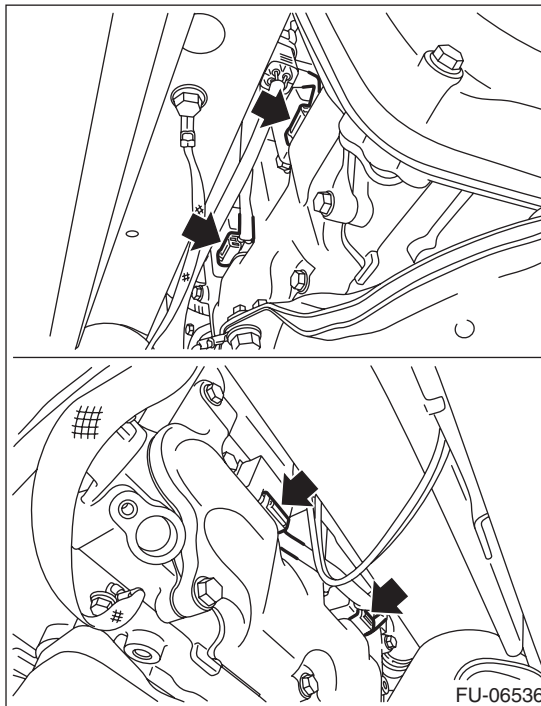
**Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



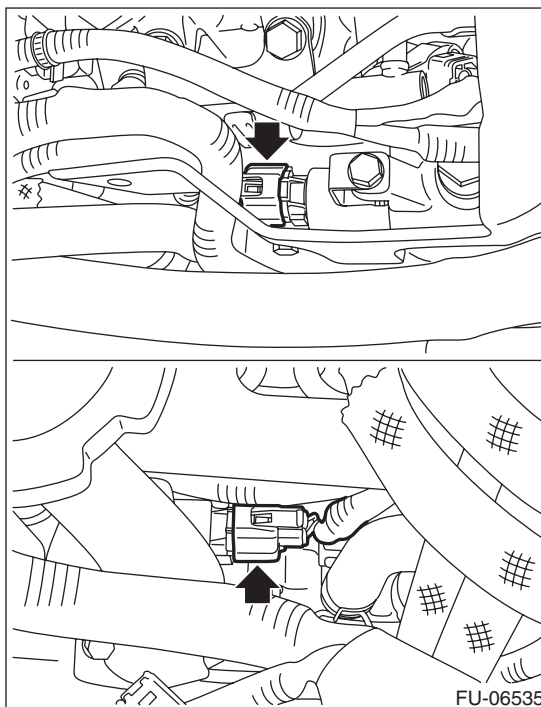
4) Lift up the vehicle.

5) Connect the connector to the ignition coil.



6) Lower the vehicle.

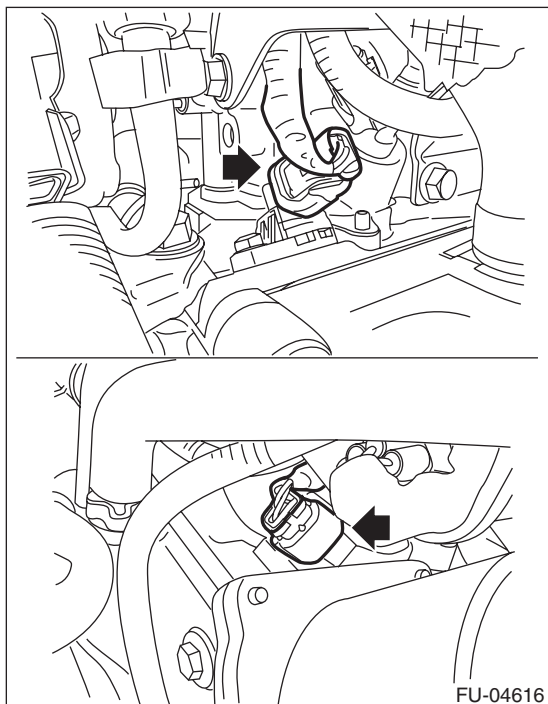
7) Connect the connector to oil flow control solenoid valve.



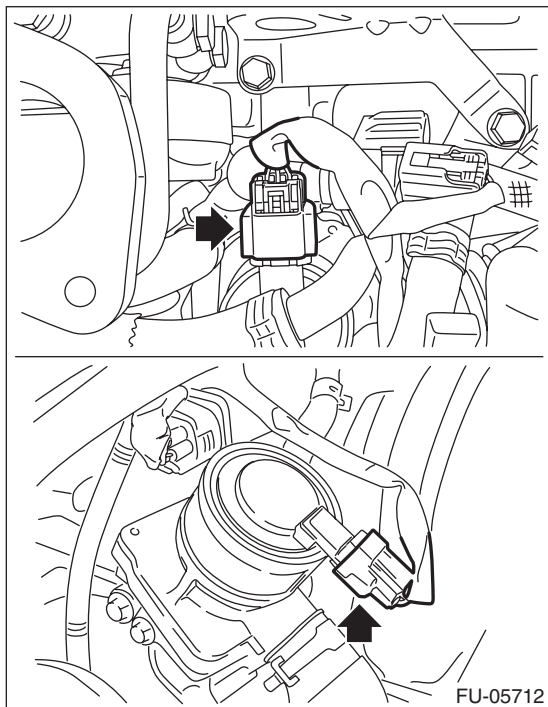
## Intake Manifold

### FUEL INJECTION (FUEL SYSTEMS)

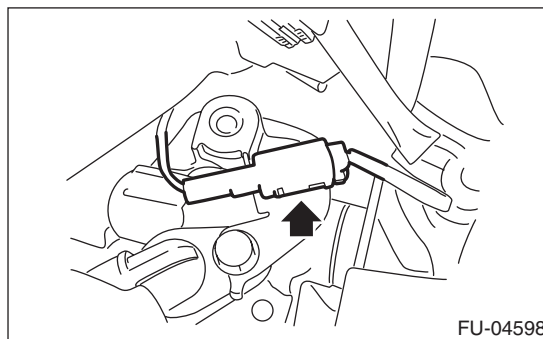
8) Connect the connectors to camshaft position sensor.



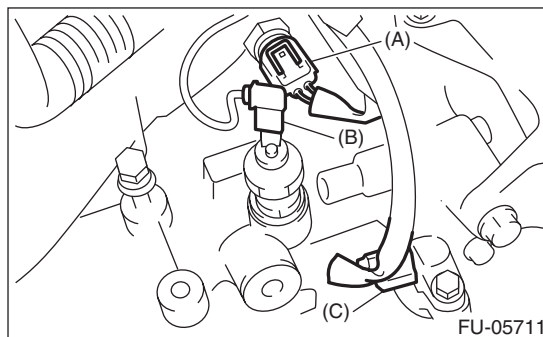
9) Connect the connector to the secondary air combination valve.



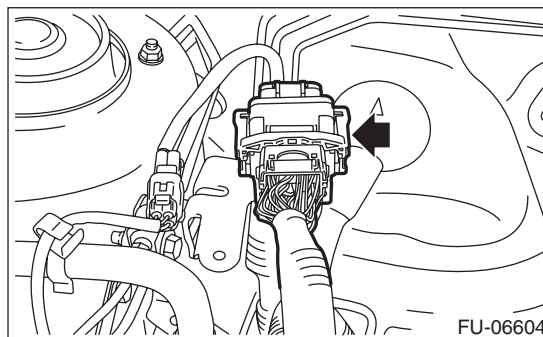
10) Connect the connector to the power steering pump switch.



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



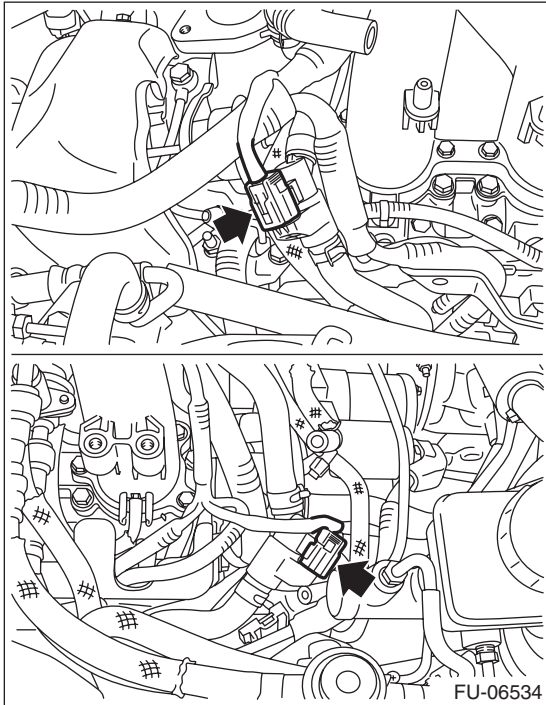
12) Install the engine harness connector to engine harness bracket, then connect the bulkhead harness connector to the engine harness connector.



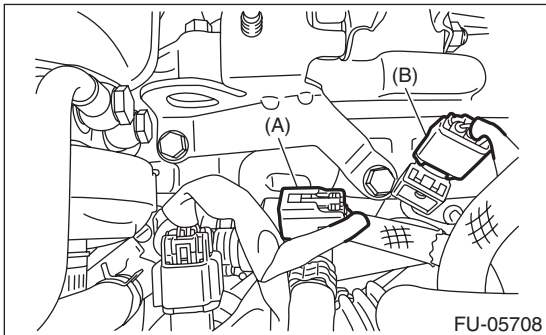
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

13) Connect the connector to the PCV hose assembly B and PCV hose assembly C.



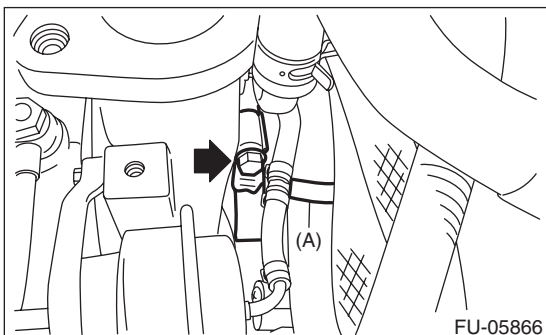
14) Connect the connector (A) to the PCV hose assembly A and the connector (B) to the knock sensor.



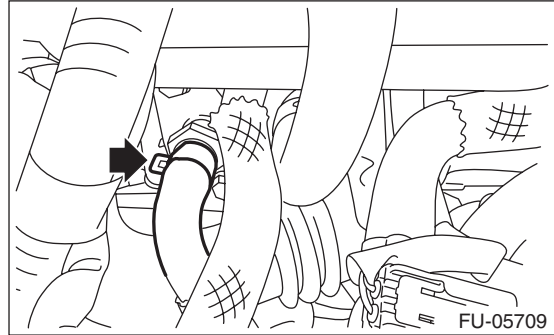
15) Connect the air control hose (A) to the wastegate actuator, and install the turbocharger to the intake duct.

**Tightening torque:**

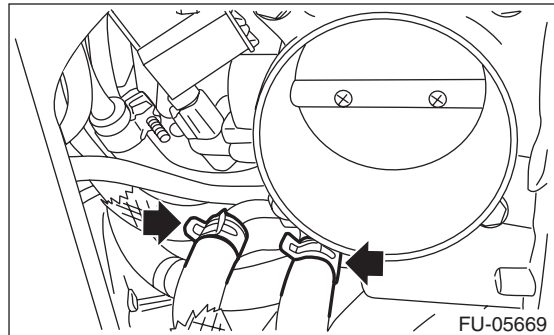
**3 N·m (0.3 kgf-m, 2.2 ft-lb)**



16) Connect the vacuum hose to the nipple.



17) Connect the engine coolant hoses to throttle body.

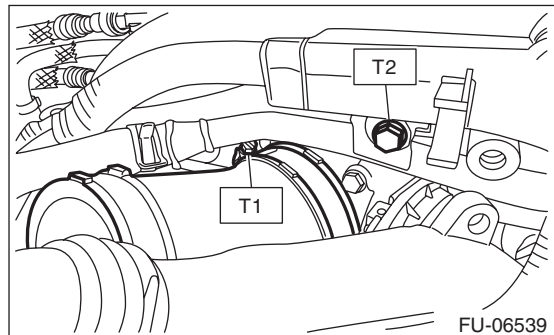


18) Install the intake duct to the throttle body, and install the bolts which secure the PCV pipe assembly to the intake manifold.

**Tightening torque:**

**T1: 3 N·m (0.3 kgf-m, 2.2 ft-lb)**

**T2: 6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**





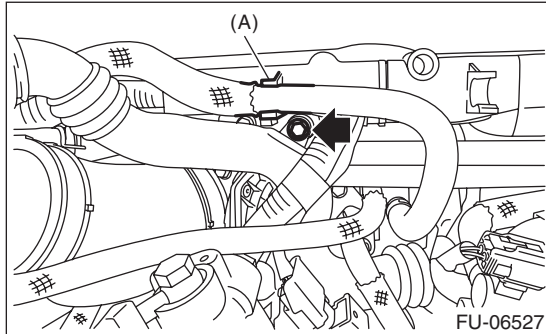
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

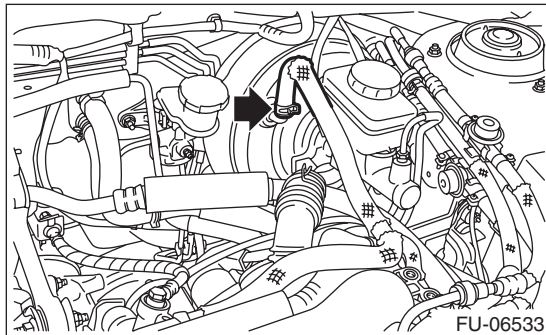
19) Install the bolts which secure the air bypass pipe to the intake manifold, and install the brake booster vacuum hose to the clip (A).

### **Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



20) Connect the brake booster vacuum hose.



21) Install the A/C pressure hoses to A/C compressor. <Ref. to AC-41, INSTALLATION, Hose and Pipe.>

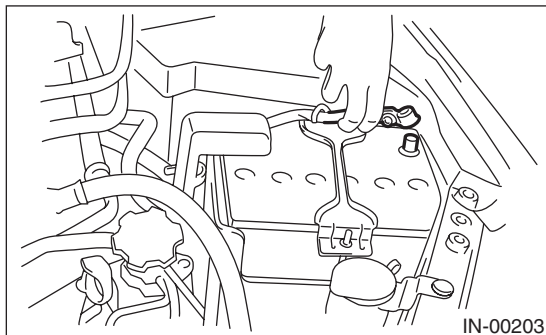
22) Install the coolant filler tank. <Ref. to CO(w/o STI)-28, INSTALLATION, Coolant Filler Tank.>

23) Install the generator. <Ref. to SC(STI)-21, INSTALLATION, Generator.>

24) Install the intercooler. <Ref. to IN(w/o STI)-12, INSTALLATION, Intercooler.>

25) Install the air intake duct and air cleaner case. <Ref. to IN(w/o STI)-8, INSTALLATION, Air Cleaner Case.> <Ref. to IN(w/o STI)-10, INSTALLATION, Air Intake Duct.>

26) Connect the battery ground terminal.



27) Lift up the vehicle.

28) Install the under cover. <Ref. to EI-28, INSTALLATION, Front Under Cover.>

29) Lower the vehicle.

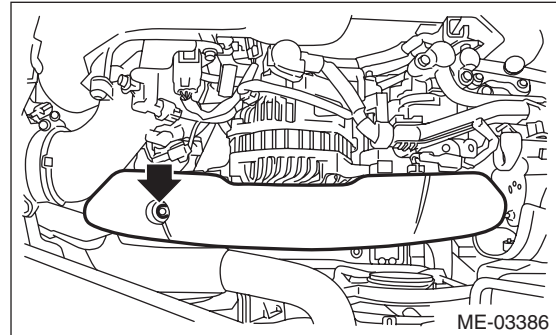
30) Fill engine coolant. <Ref. to CO(w/o STI)-13, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

31) Charge the A/C system with refrigerant. <Ref. to AC-20, PROCEDURE, Refrigerant Charging Procedure.>

32) Install the V-belt cover.

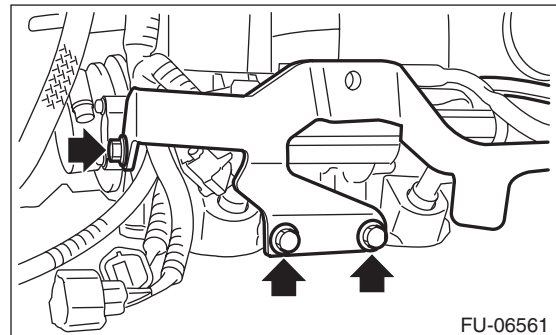
### **Tightening torque:**

**13 N·m (1.3 kgf-m, 9.6 ft-lb)**

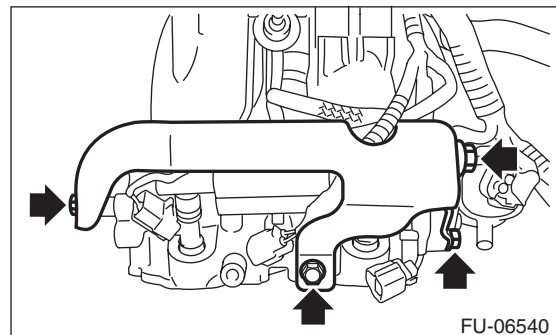


## C: DISASSEMBLY

1) Remove the fuel pipe protector RH from the intake manifold.



2) Remove the engine ground terminal from the fuel pipe protector LH and remove the fuel pipe protector LH from the intake manifold.

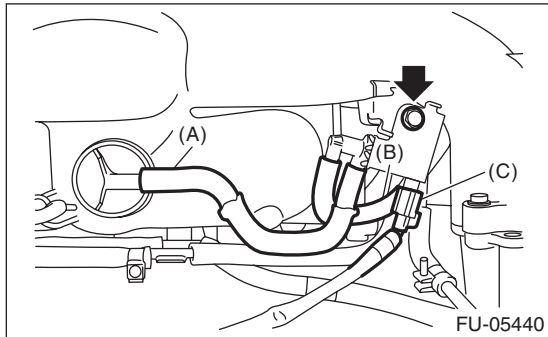


3) Disconnect the vacuum hose (A) from intake manifold.

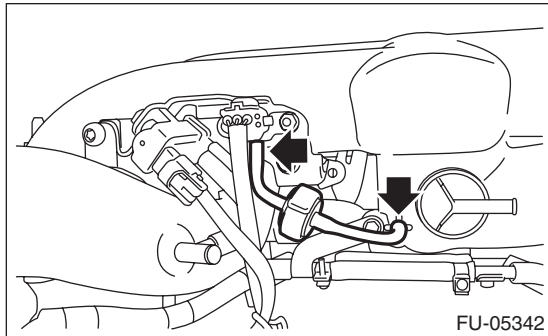
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

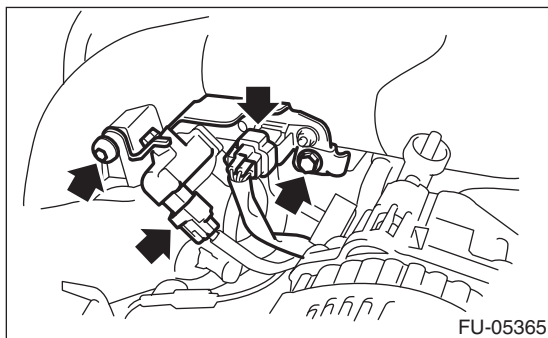
4) Disconnect the vacuum hose (B) and the connector (C) from the fuel pipe, and remove the purge control solenoid valve 1 from the intake manifold.



5) Disconnect the filter assembly.

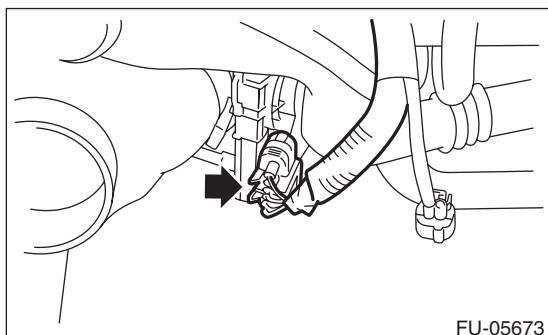


6) Disconnect the connector from the wastegate control solenoid valve and the manifold absolute pressure sensor, and remove the solenoid valve bracket assembly from the intake manifold.

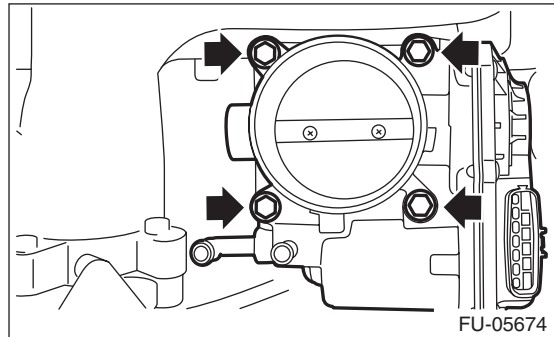


7) Disconnect the connector from the purge control solenoid valve 2, and disconnect the vacuum hose from the intake duct and the fuel pipe.

8) Disconnect the connectors from the throttle position sensor.

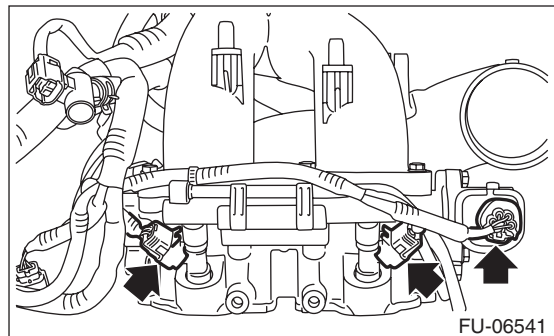


9) Remove the throttle body from the intake manifold.

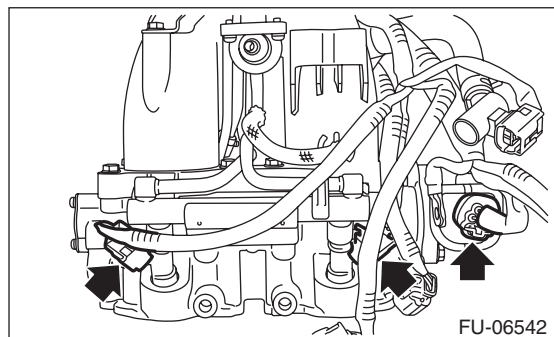


10) Disconnect the connector from the fuel injector and tumble generator valve assembly.

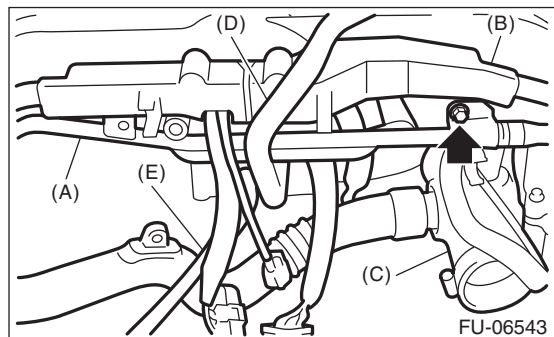
• RH side



• LH side



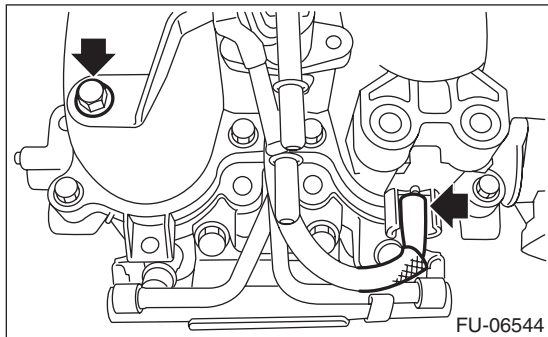
11) Remove the PCV pipe (A), harness assembly (B), intake duct (C), brake booster vacuum hose (D) and vacuum hose (E) from the intake manifold.



# Intake Manifold

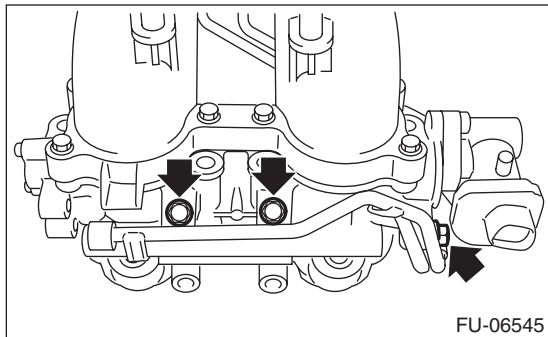
## FUEL INJECTION (FUEL SYSTEMS)

12) Remove the bolt which secures the fuel injector pipe LH onto the intake manifold, and disconnect the pressure regulator vacuum hose from the intake manifold.

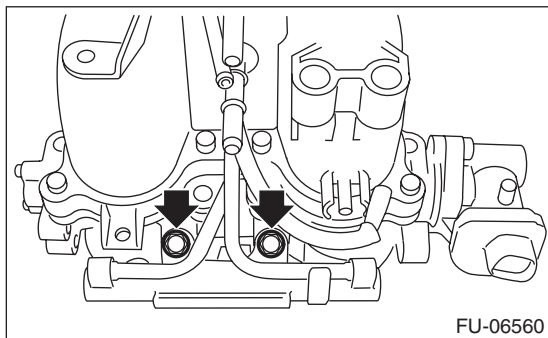


13) Remove the bolts which hold fuel injector pipe onto intake manifold.

- RH side

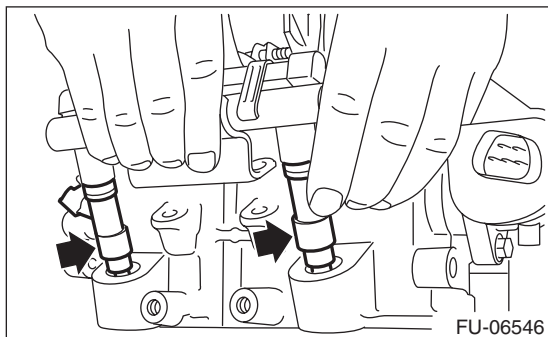


- LH side

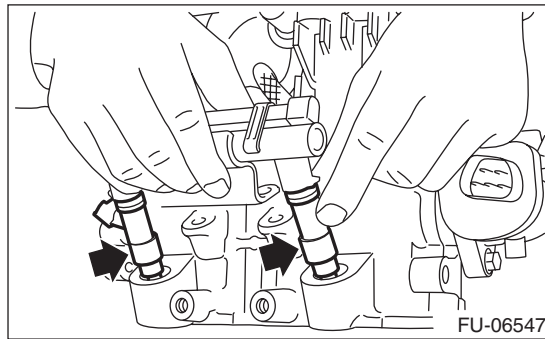


14) Remove the fuel injector.

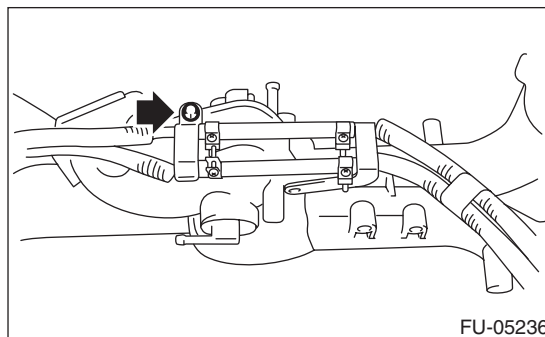
- RH side



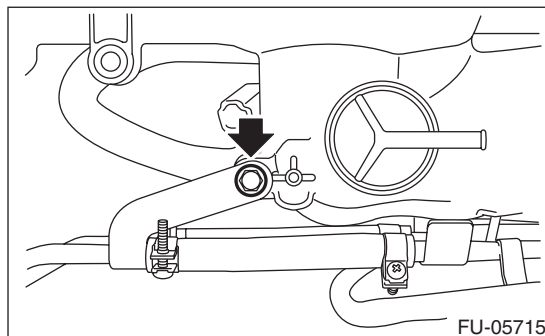
- LH side



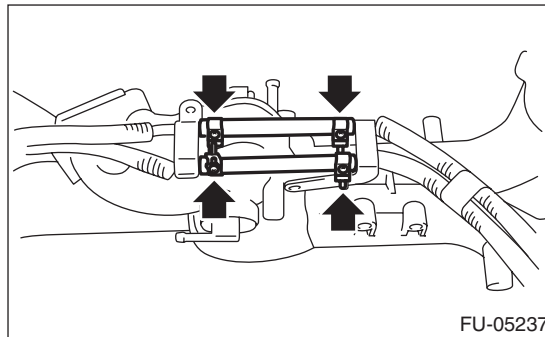
15) Remove the bolts which hold fuel pipe onto intake manifold.



16) Remove the bolt which holds fuel injector pipe RH onto intake manifold.

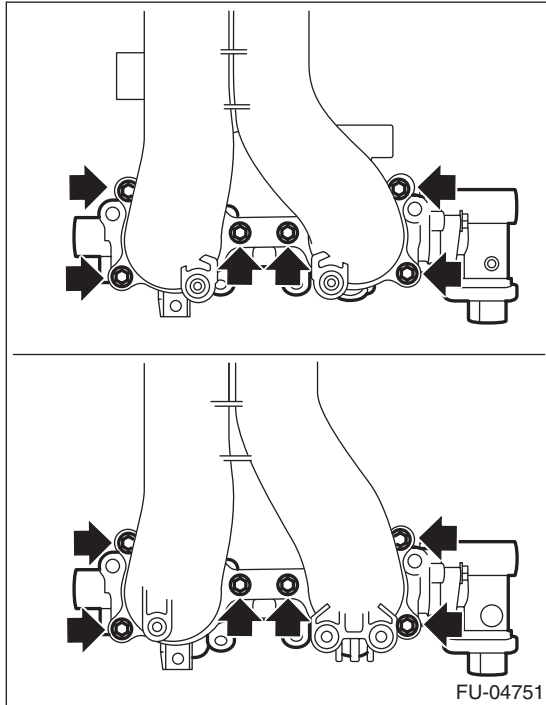


17) Loosen the clamp which holds the fuel hose to the fuel injector pipe RH and the fuel pipe, and then disconnect the pipe from the fuel hose.

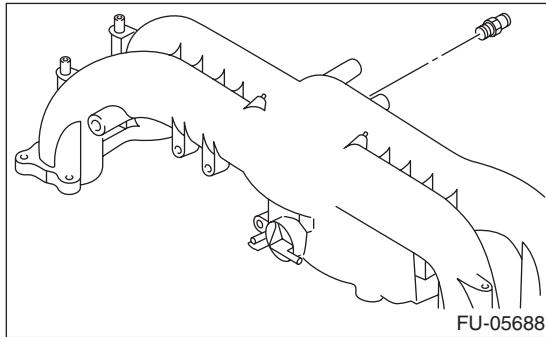


18) Remove the fuel injector pipe and the fuel pipe.

19) Remove the tumble generator valve assembly from the intake manifold.



20) Remove the nipple from the intake manifold.



### D: ASSEMBLY

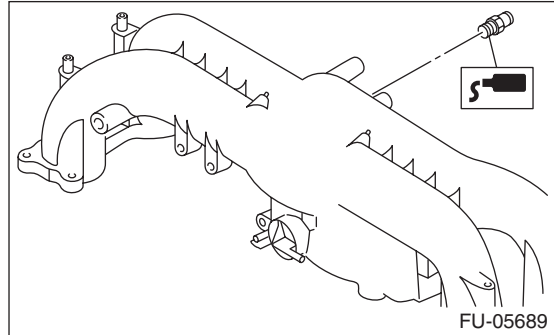
1) Apply liquid gasket to the nipple threads, and install the nipple to the intake manifold.

**Liquid gasket:**

**THREE BOND 1105 (Part No. 004403010) or equivalent**

**Tightening torque:**

**23 N·m (2.3 kgf-m, 17.0 ft-lb)**



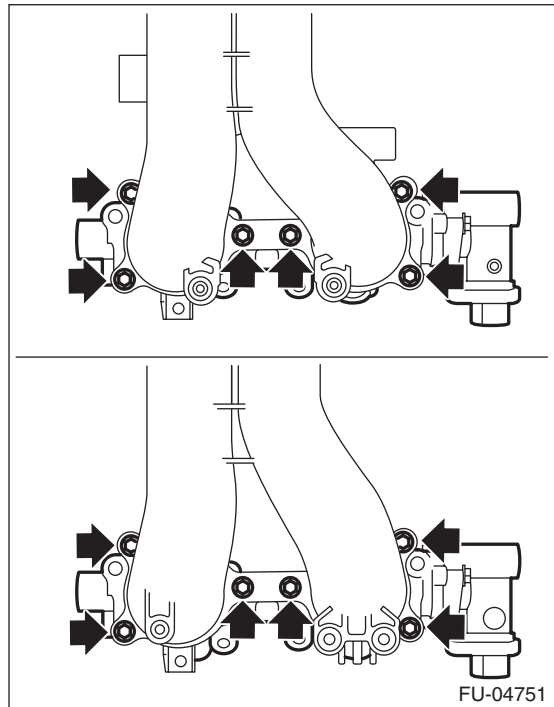
2) Install the tumble generator valve assembly onto intake manifold.

**NOTE:**

Use new O-rings.

**Tightening torque:**

**8.3 N·m (0.8 kgf-m, 6.1 ft-lb)**



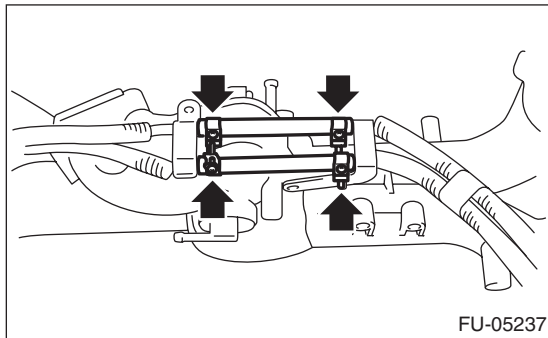
3) Install the fuel injector pipe.



# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

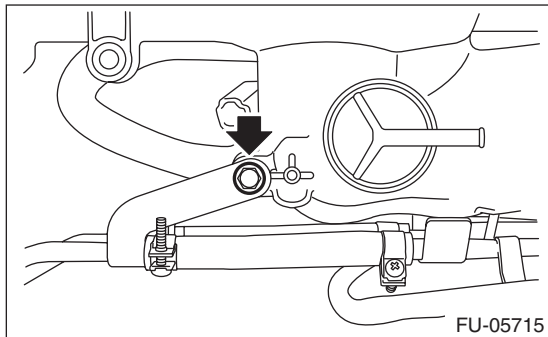
4) Connect fuel hoses to the fuel injector pipe and the fuel pipe. <Ref. to FU(w/o STI)-93, CONNECTING FUEL DELIVERY HOSE, FUEL RETURN HOSE AND FUEL HOSE, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>



5) Secure the fuel injector pipe RH to intake manifold with bolt.

**Tightening torque:**

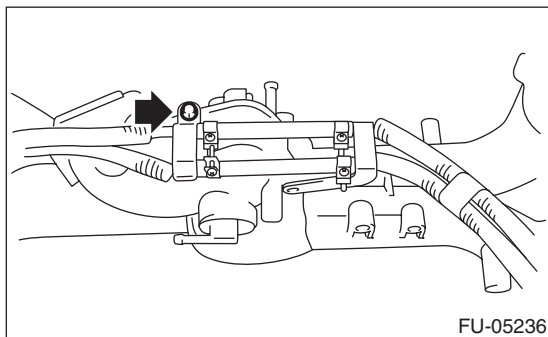
**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



6) Secure the fuel pipe to intake manifold with bolts.

**Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**

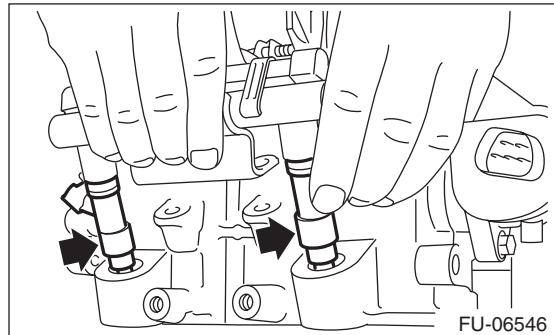


7) Install the fuel injector.

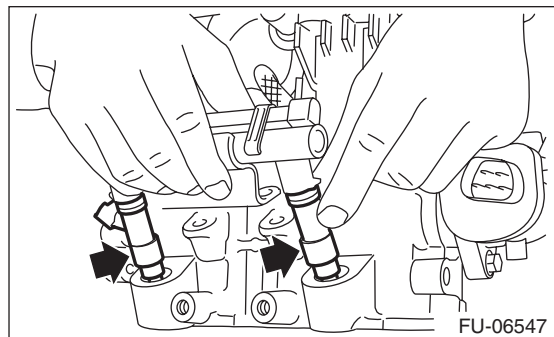
**NOTE:**

Use new O-rings, rubbers and seal rings.

- RH side



- LH side

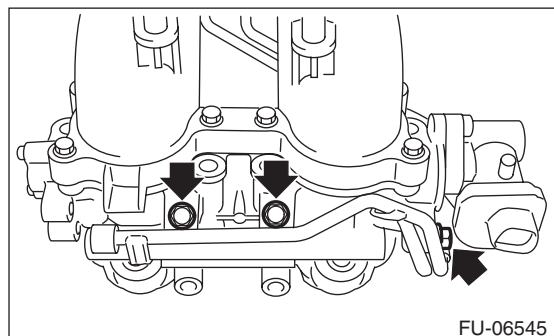


8) Secure the fuel injector pipe to intake manifold with bolts.

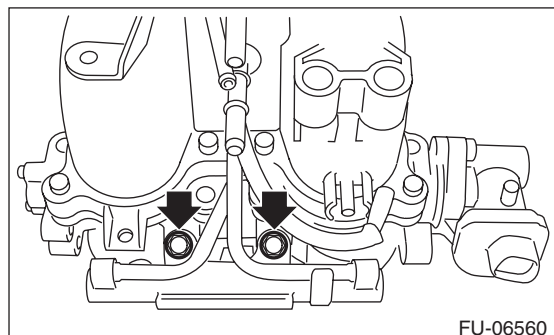
**Tightening torque:**

**19 N·m (1.9 kgf-m, 14.0 ft-lb)**

- RH side



- LH side



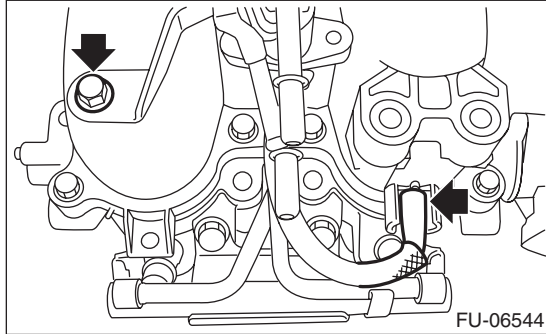
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

9) Secure the fuel injector pipe LH to intake manifold with bolt, and connect the pressure regulator vacuum hose to the intake manifold.

**Tightening torque:**

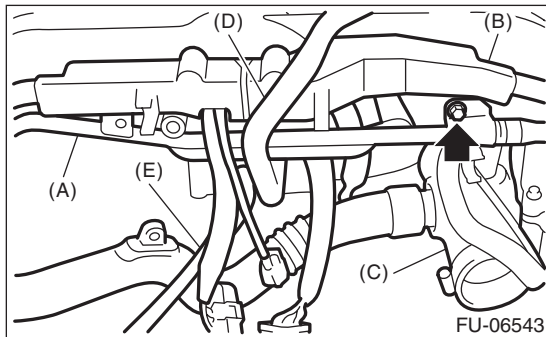
**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



10) Install the PCV pipe (A), harness assembly (B), intake duct (C), brake booster vacuum hose (D) and vacuum hose (E) to the intake manifold.

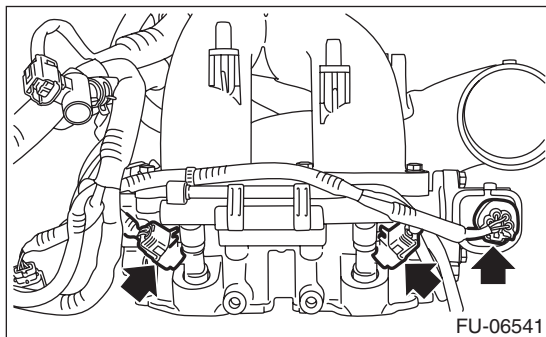
**Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**

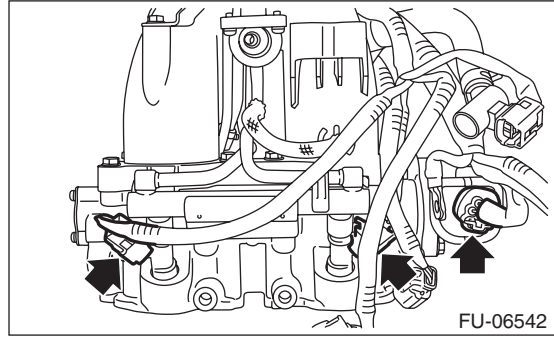


11) Connect the connector to the fuel injector and the tumble generator valve assembly.

• RH side



• LH side



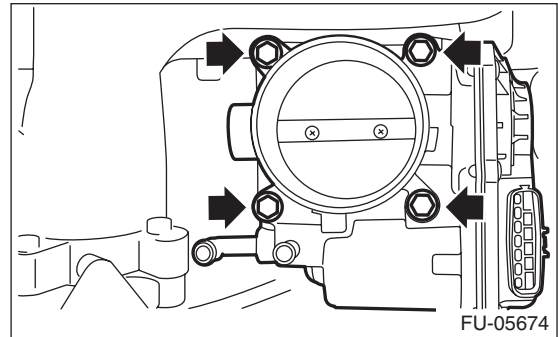
12) Install the throttle body to the intake manifold.

**NOTE:**

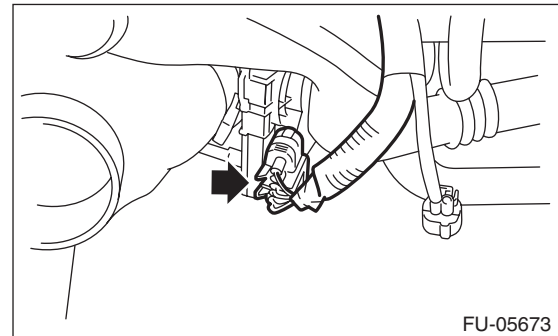
Use new O-rings.

**Tightening torque:**

**8 N·m (0.8 kgf-m, 5.9 ft-lb)**



13) Connect the connector to the throttle position sensor.



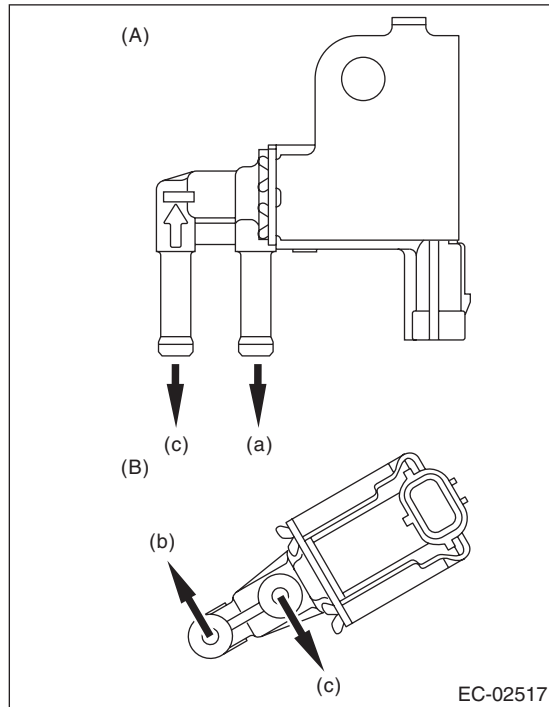
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

14) Connect the vacuum hose to the intake duct and the fuel pipe, then connect the connector to the purge control solenoid valve 2.

**NOTE:**

Connect the vacuum hose as shown in the figure.



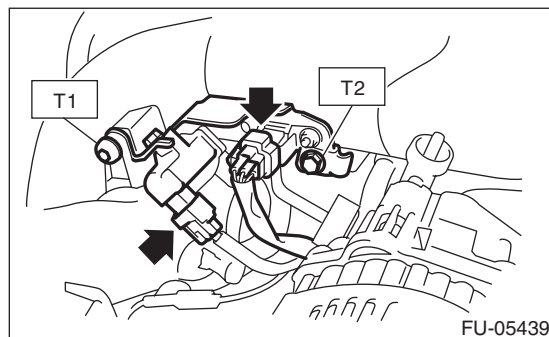
- (A) Purge control solenoid valve 1
- (B) Purge control solenoid valve 2
- (a) To intake manifold
- (b) To intake duct
- (c) To fuel pipe

15) Install the solenoid valve bracket assembly to the intake manifold, and connect the connector to the wastegate control solenoid valve and the manifold absolute pressure sensor.

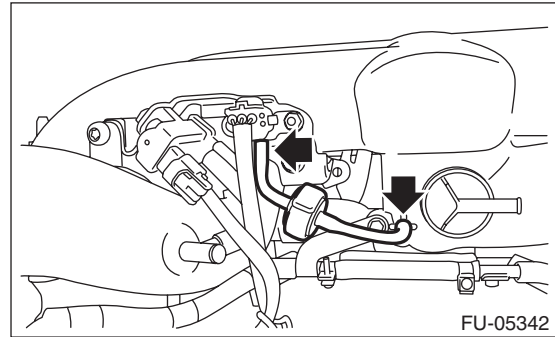
**Tightening torque:**

**T1: 17 N·m (1.7 kgf-m, 12.5 ft-lb)**

**T2: 19 N·m (1.9 kgf-m, 14.0 ft-lb)**



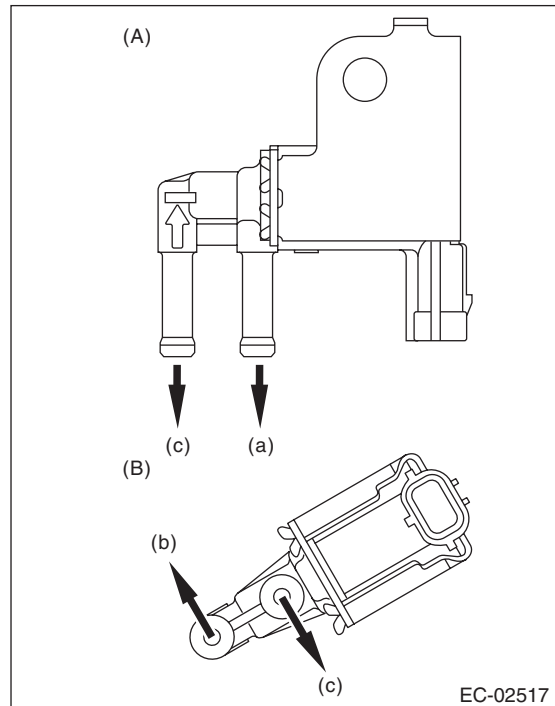
16) Connect the filter assembly.



17) Connect the vacuum hose and the connector the fuel pipe, and install the purge control solenoid valve 1 to the intake manifold.

**NOTE:**

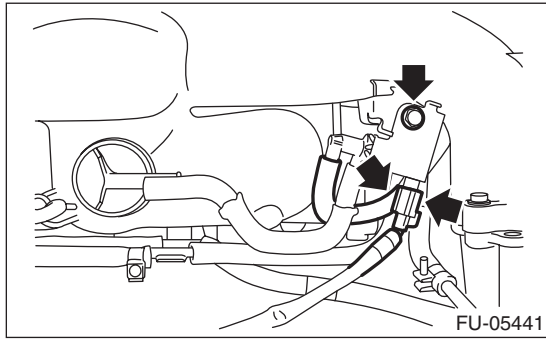
Connect the vacuum hose as shown in the figure.



- (A) Purge control solenoid valve 1
- (B) Purge control solenoid valve 2
- (a) To intake manifold
- (b) To intake duct
- (c) To fuel pipe

### Tightening torque:

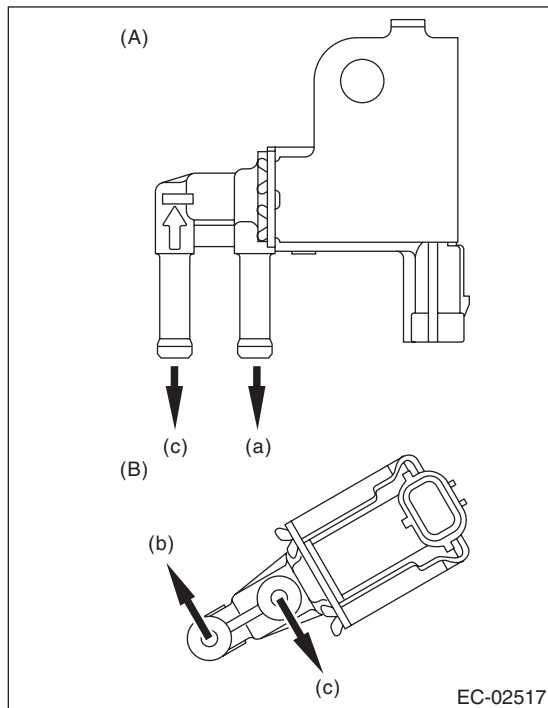
**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



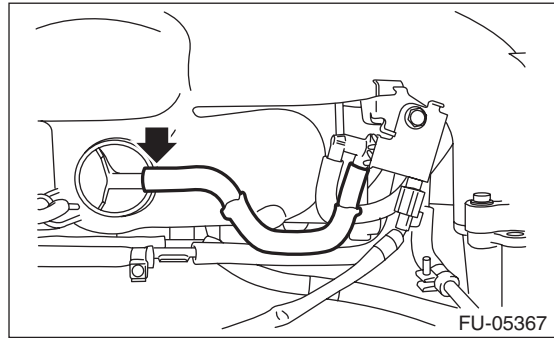
18) Connect the vacuum hose to the intake manifold.

### NOTE:

Connect the vacuum hose as shown in the figure.



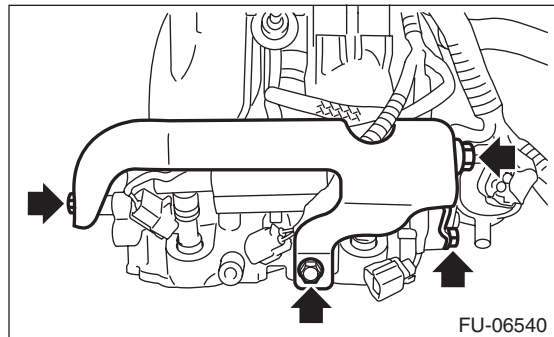
- (A) Purge control solenoid valve 1
- (B) Purge control solenoid valve 2
- (a) To intake manifold
- (b) To intake duct
- (c) To fuel pipe



19) Install the fuel pipe protector LH to the intake manifold, and install the engine ground terminal to the fuel pipe protector LH.

### Tightening torque:

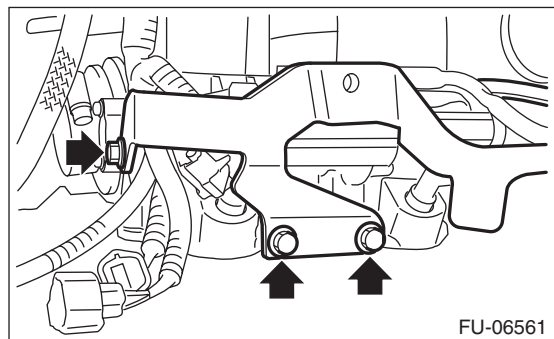
**19 N·m (1.9 kgf-m, 14.0 ft-lb)**



20) Install the fuel pipe protector RH to the intake manifold.

### Tightening torque:

**19 N·m (1.9 kgf-m, 14.0 ft-lb)**



## 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.